CloudEngine 9800, 8800, 6800, and 5800 Series Switches

Hardware Description (V200R020C00 and later versions)

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1 About This Document

Intended Audience

This document is intended for network engineers responsible for network design and deployment. You should understand your network well, including the network topology and service requirements.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
DANGER	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
NOTE	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

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Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	The keywords of a command line are in **boldface**.
Italic	Command arguments are in *italics*.
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x | y | ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[x | y | ...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x | y | ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[x | y | ...]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.
&<1-n>	The parameter before the & sign can be repeated 1 to n times.
#	A line starting with the # sign is comments.

Declaration

- This manual is only a reference for you to configure your devices. The contents in the manual, such as command line syntax, and command outputs, are based on the device conditions in the lab. The manual provides instructions for general scenarios, but do not cover all usage scenarios of all product models. The contents in the manual may be different from your actual device situations due to the differences in software versions, models, and configuration files. The manual will not list every possible difference. You should configure your devices according to actual situations.
- The specifications provided in this manual are tested in lab environment (for example, the tested device has been configured with a certain type of cards or only one protocol is run on the device). Results may differ from the listed specifications when you attempt to obtain the maximum values with multiple functions enabled on the device.
- In this document, public IP addresses may be used in feature introduction and configuration examples and are for reference only unless otherwise specified.

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2 Using the Info-Finder

Info-Finder is a tool platform. It allows you to search for key product information by product series and model. The key product information includes basic information such as the software specifications, life cycles, and hardware information, and operation and maintenance information such as the licenses, alarms, logs, commands, and MIBs. The hardware-related tools are as follows:

- Product image gallery: provides product photos, Visio-format templates, and network element icons for you to produce design drawings and networking diagrams.
- Hardware configuration: automatically generates hardware configuration diagrams after you select components are required and calculates the weight, power consumption, and heat consumption.
- Hardware center: provides the technical specifications of devices and components, as well as the mapping between devices, components, and versions.
- 3D model: Using this function, you can query product images, product overview, and component insertion/removal videos, enabling you to quickly obtain product information in one-stop mode.

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3 Version Requirements for Components

NOTE

- This document describes all the device models and modules supported in a version. To obtain accurate subscription information, visit **https://e.huawei.com** or contact Huawei local sales offices. You can also pay attention to the product change notices (PCNs) and lifecycle management bulletins on this website.
- The figures in this document are for reference only.

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4 Chassis

4.1 Naming Conventions
4.2 Port Rate Description
4.3 CE5800
4.4 CE6800
4.5 CE8800
4.6 CE9800

4.1 Naming Conventions

Figure 4-1 shows the CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches naming conventions.

Figure 4-1 CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches naming conventions

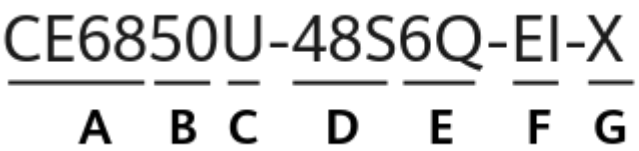


Table 4-1 describes the CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches naming conventions.

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Table 4-1 CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches naming conventions

Field	Meaning
A	CloudEngine series data center switches • **CE98**: CE9800 series • **CE88**: CE8800 series • **CE78**: CE7800 series • **CE68**: CE6800 series • **CE58**: CE5800 series
B	Product model category: • **10**: basic model • **20**: standard model • **50/51/55/56/80/81**: advanced model • **60/61/68**: model with flexible cards • **70/75**: large-buffer model **NOTE** Among CE6800 series switches, the CE6860EI, CE6863, CE6865EI and CE6881E provide fixed 25GE ports.
C	Special function flag. This flag is not present if the product does not provide special functions. **U**: The product supports FC ports.
D	Number and type of downlink interfaces: • **T**: GE/10GBase-T electrical interfaces • **S**: GE/10GE SFP+ optical interfaces or 25GE SFP28 optical interfaces • **Q**: 40GE quad small form-factor pluggable plus (QSFP+) optical interfaces • **xC**: For a model supporting flexible service units, x stands for the number of slots and C is a slot identifier.
E	Number and types of uplink interfaces: • **T**: GE/10GBase-T electrical interfaces • **S**: GE/10GE SFP+ optical interfaces • **Q**: 40GE QSFP+ optical interfaces • **CQ**: 40GE/100GE QSFP28 optical interfaces **NOTE** This field is not present in the product name if the product has only fixed interfaces and the uplink and downlink interfaces are the same type or if the product supports flexible service units.

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Field	Meaning
F	Product model type: • **LI**: model providing basic functions • **EI**: model providing enhanced functions • **HI**: model providing advanced functions
G	Extension bit: **A**: The continuous version.

4.2 Port Rate Description

The port rate is the nominal value of the rate at which a port transmits data. To meet various transmission rate requirements, pluggable modules with different rates are provided, including 400GE, 100GE, 40GE, 25GE, 10GE, and GE optical modules, and GE copper modules. Generally, the rate supported by a port corresponds to the rate of the pluggable module on the port, but it is also affected by the following factors: port rate auto-sensing, port auto-negotiation, port splitting, and port rate configuration.

Port Rate Auto-Sensing

Typically, port rate auto-sensing allows a port to automatically work at the rate of the medium that is installed, and you do not need to run a command to change the port rate.

Port Auto-Negotiation

Different from auto-sensing, auto-negotiation provides a mode of exchanging information between two ports on connected devices. You can connect the two ports through media that support rate auto-negotiation so that some port attribute settings can be negotiated and the two ports can automatically configure their transmission capabilities. The duplex mode, rate, and FEC of the two ports are negotiated. Ports at both ends of a physical link automatically select the same operating parameter settings by exchanging information. In this way, the transmission capabilities of the ports can reach the maximum supported by them.

Port Split

Port split allows a high-bandwidth physical port on the switch to be split into multiple independent low-bandwidth ports. With the port split function, ports on a card can connect to various types of ports on the remote device, allowing for flexible networking and lowering hardware costs.

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Port Rate Configuration

In addition to the preceding methods, you can also run commands to change the port rate. For details, see "Configuring the Interface Rate" in the *Configuration Guide - Interface Management Configuration Guide*

4.3 CE5800

4.3.1 CE5881-48T6CQ (02353RAN)

Overview

Table 4-2 Basic information about the CE5881-48T6CQ

Item	Details
Description	CE5881-48T6CQ switch (44*GE RJ45, 4*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02353RAN
Model	CE5881-48T6CQ
First supported version	V200R020C00
Other part numbers	02353RAP (CE5881-48T6CQ switch (44*GE RJ45,4*10GE RJ45,6*100GE QSFP28,2*AC power modules,4*fan modules,port-side intake)) 02353RAQ (CE5881-48T6CQ switch (44*GE RJ45,4*10GE RJ45,6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE5881

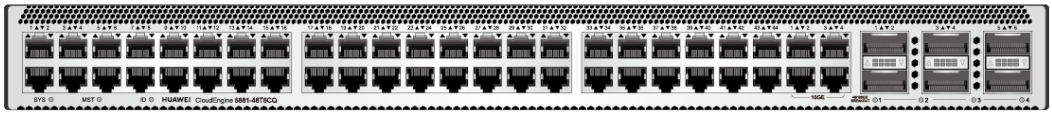
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Appearance

Figure 4-2 Appearance of the CE5881-48T6CQ



Front (power supply side)



Rear (port side)

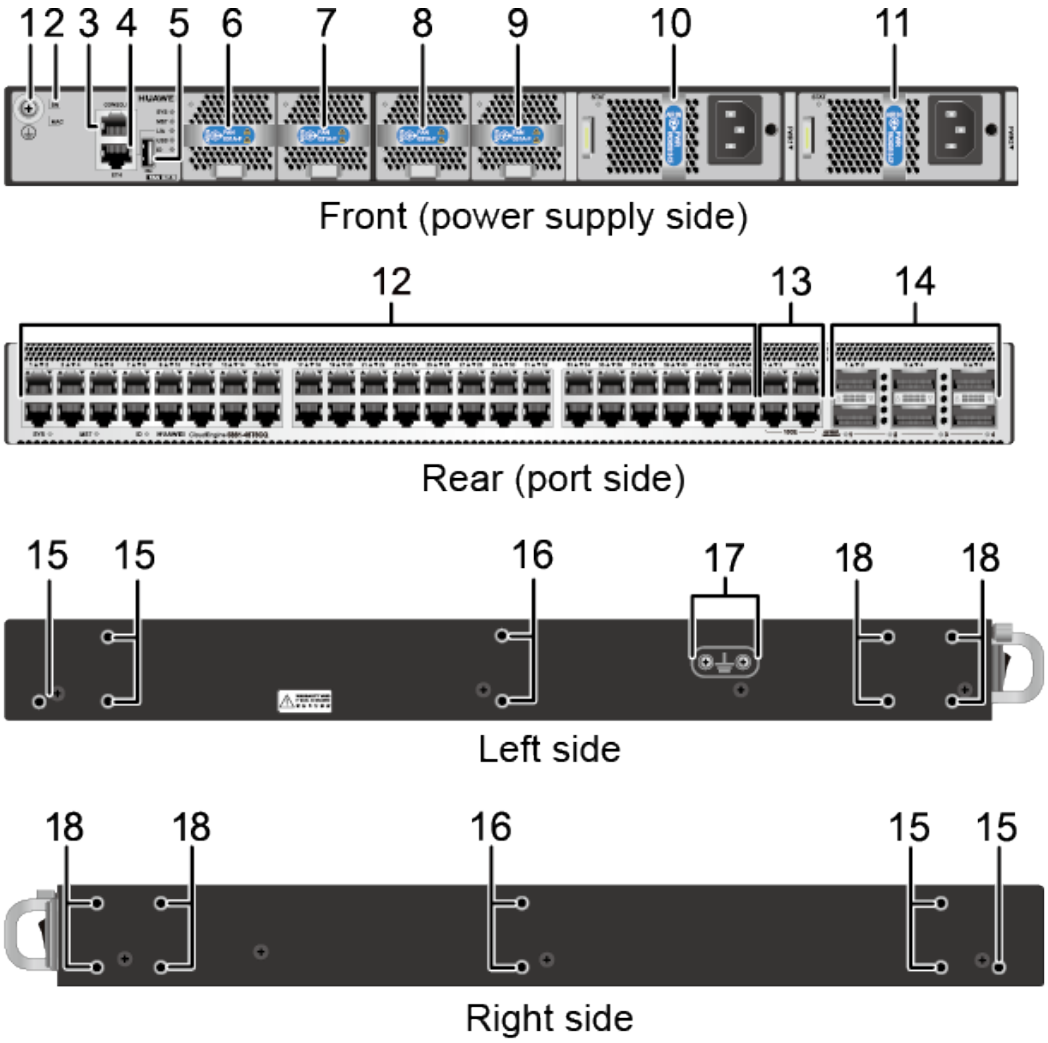
NOTE

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Components

Figure 4-3 Components of the CE5881-48T6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-four 100/1000BASE-T Ethernet electrical ports
13	Four 10GBASE-T Ethernet electrical ports	14	Six 40GE/100GE QSFP28 Ethernet optical ports
15	Three port-side mounting holes for mounting brackets	16	Two middle mounting holes for mounting brackets
17	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal	18	Four power-supply-side mounting holes for mounting brackets

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Slot Layout

Table 4-3 Slots on the CE5881-48T6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	1) Each of the CloudEngine 5800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. 2) The CloudEngine 5800 series switches support 1+1 backup of power modules.When both power modules are working properly, each of them provides half of the power required for the chassis.When one power module fails, the other one provides all power required for the chassis. 3) All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	1) Each of the CloudEngine 5800 series switches has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. 2) It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-4 Indicators on the CE5881-48T6CQ 1

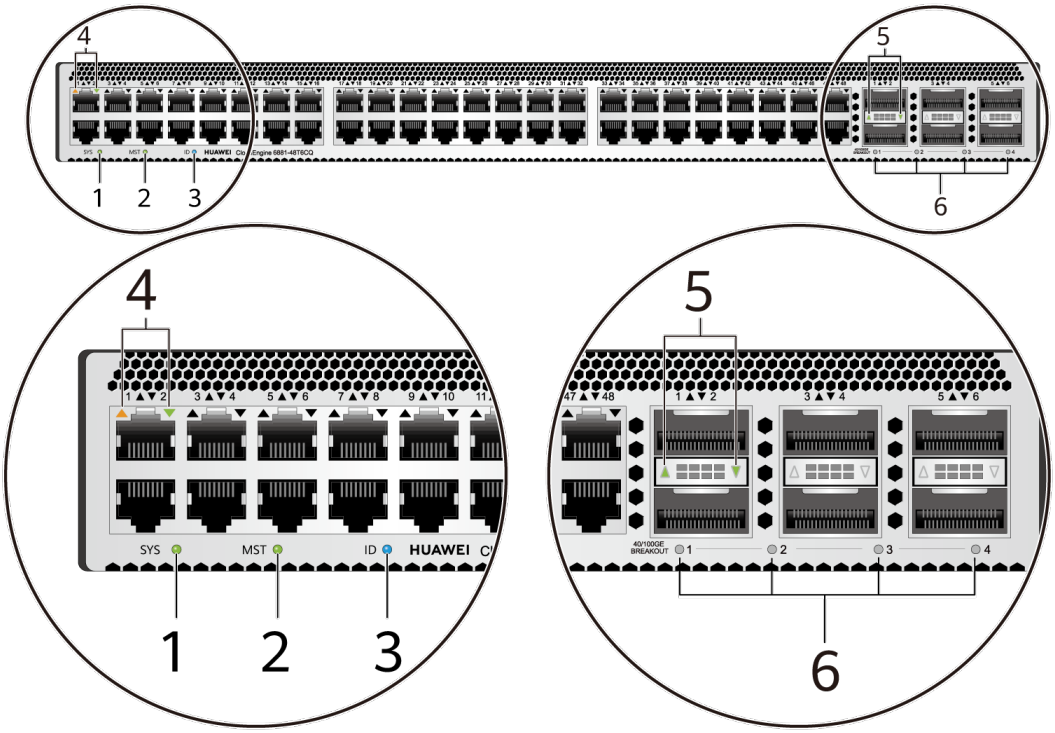
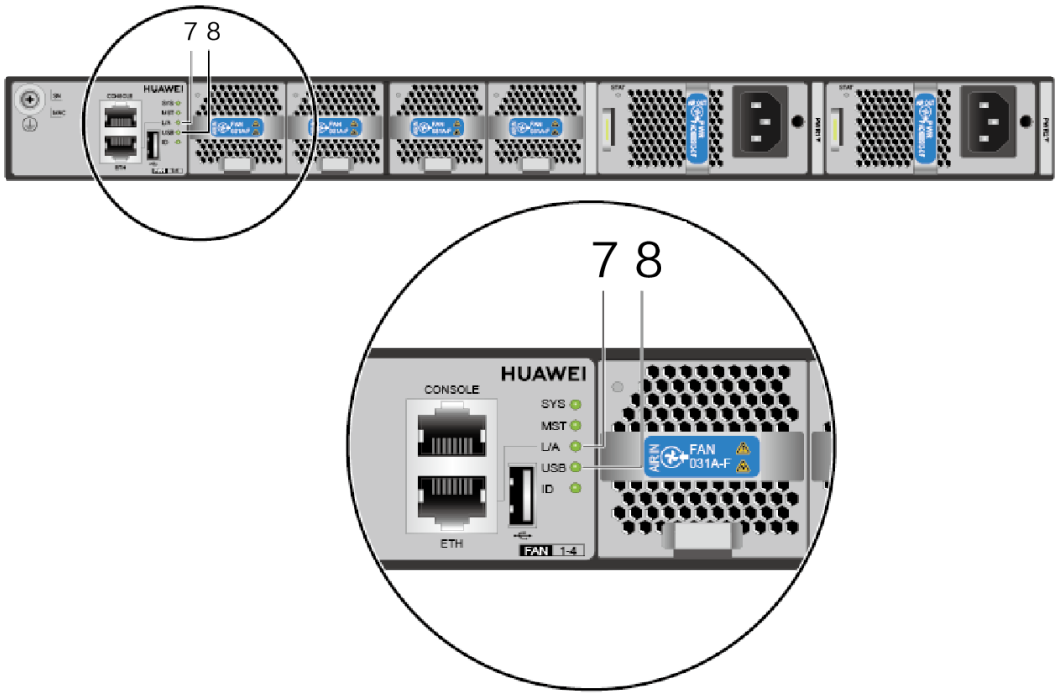


Figure 4-5 Indicators on the CE5881-48T6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (1000BASE-T/ 10GBASE-T electrical port)	5. Service port indicator (40GE/100GE optical port)
6. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/ 100GE QSFP28 optical port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-4 Indicators on the CE5881-48T6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• The system fails to start. • At least one power module does not work normally. • At least one fan module does not work normally.

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Silkscreen	Name	Color	Status	Description
MST	Stack master/ slave indicator	Green	Off	The switch is not a stack master.
		Green	Steady on	The switch is a stack master or standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.
-	Service port indicator (GE electrical port/10GE electrical port) **NOTE** The indicator on the left indicates the port at the top, and the indicator on the right indicates the port at the bottom.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (40GE/100GE optical port) **NOTE** • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	ETH management port indicator	Green	Off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment has failed.

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Ports

Table 4-5 Ports on the CE5881-48T6CQ

Port	Connector Type	Description	Available Components
100/1000BASE-T Ethernet Electrical Port	RJ45	A 100/1000BASE-T Ethernet electrical port receives and sends services at a rate of 100 Mbit/s, or 1000 Mbit/s. A 100/1000BASE-T Ethernet electrical port uses a Category 5 or higher category cable. • Standards compliance: IEEE802.3ab • Applicable cable: straight-through cable and crossover cable • Working mode: 100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Straight-through cable and crossover cable

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Port	Connector Type	Description	Available Components
10GBASE-T Ethernet Electrical Port	RJ45	A 10GBASE-T ethernet electrical port receives and sends service traffic at the rate of 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port can work at the rate of 100 Mbit/s or 1000 Mbit/s through auto-sensing. • Standards compliance: IEEE802.3an, IEEE802.3az • Applicable cable: straight-through cable and crossover cable • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Straight-through cable and crossover cable

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 Optical Port	LC/MPO	A 40GE/100GE QSFP28 optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. A 40GE/100GE QSFP28 optical port cannot be split. • Standards compliance: IEEE802.3ba • Optical port attributes: depending on the module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1) The QSFP+ to QSFP+ high-speed cable and QSFP28 to QSFP28 high-speed cable can only be used as stack cables and M-LAG peer-link interface cables. 2) When a QSFP28 high-speed cable is installed on a 100GE port that works at the rate of 100 Gbit/s, the port supports only the 1 m QSFP28 high-speed cable. 3) When a QSFP28 high-speed cable is installed on a 100GE port and the speed 40000 command is run to set the rate to 40 Gbit/s, the port supports 1 m, 3 m, and 5 m QSFP28 high-speed cables.
Console Port	RJ45	The console port is connected to a console for onsite configuration. ● Standards compliance: RS232 ● Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) ● Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	Console cable.

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Port	Connector Type	Description	Available Components
ETH Management Port	RJ45	The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Supported rate: 10/100/1000 Mbit/s auto-sensing. Full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive.

Heat Dissipation System

The cooling system of the CloudEngine 5800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

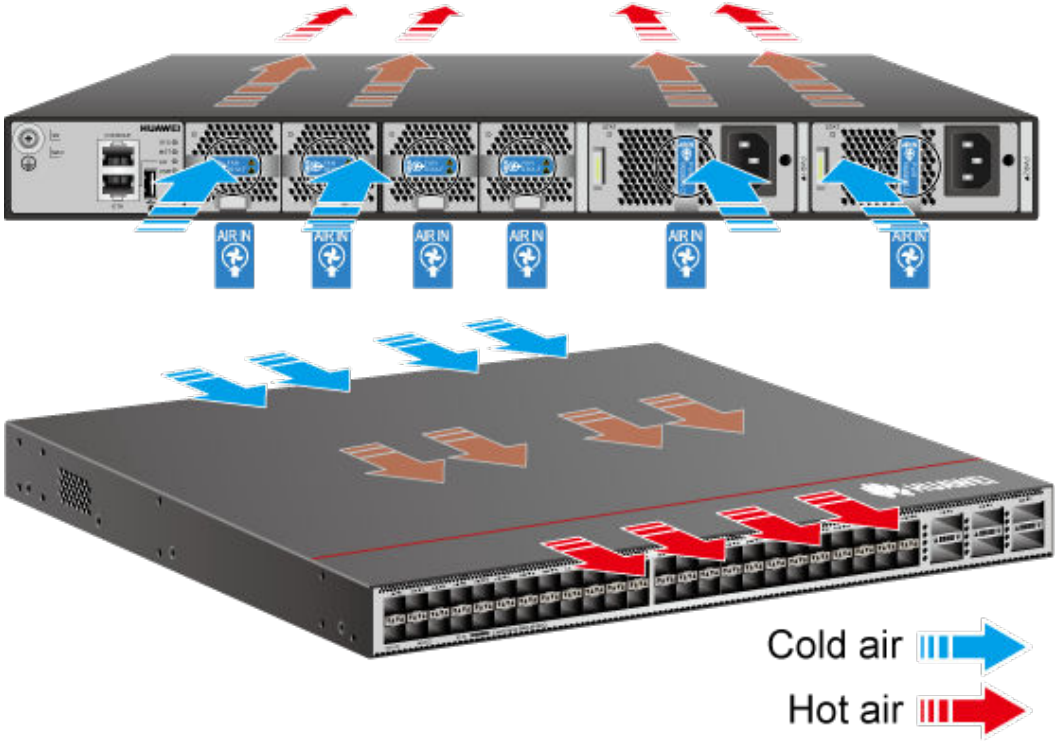
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-6**(using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

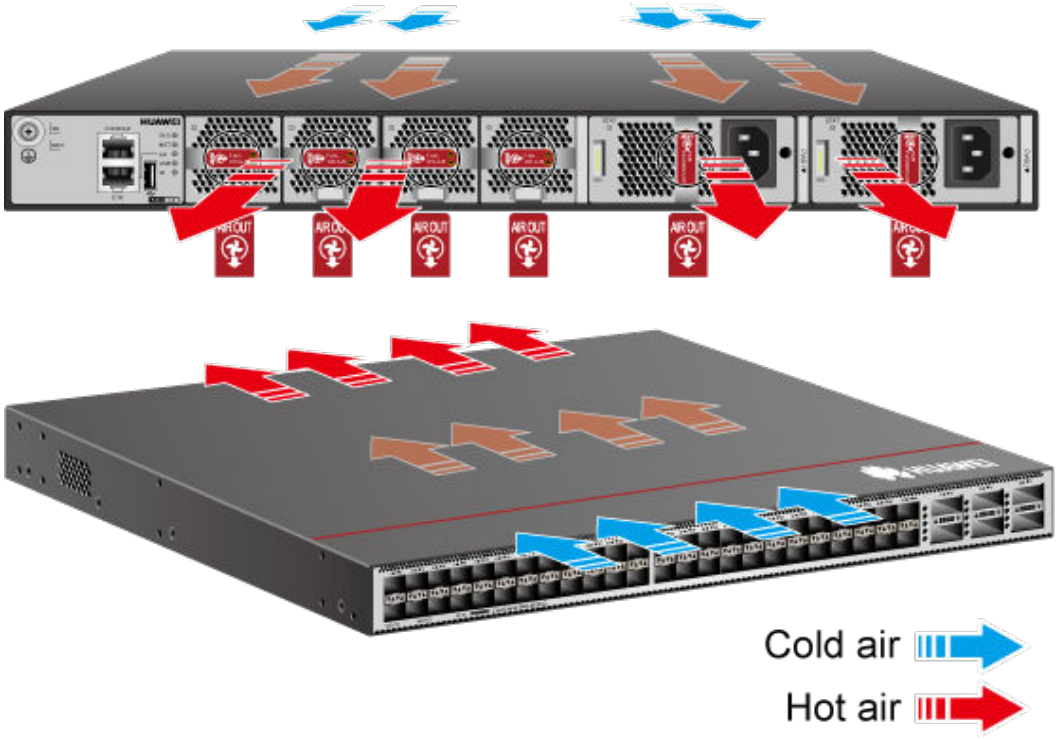
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-7** (using a CE6863 chassis as an example).

Figure 4-6 Front-to-back airflow for port-side exhaust



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Figure 4-7 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 5800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-6 Technical specifications of the CE5881-48T6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	6.6 kg (14.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.9 kg (19.6 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	10.4 kg (22.93 lb)
Weight with packaging (full configuration) [kg (lb)]	12.3 kg (27.12 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHZ
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	44*1000Base-T RJ45 (Only full-duplex is supported)

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Item	Specification
Uplink Service interface	4x10GE RJ45 and 6*100GE QSFP28 (Note: 1. 100GE interfaces are compatible with 40GE; 2. 100G interfaces do not support splitting into 4x25GE and 4x10GE; 3. Auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports.)
Service port supporting the stack function	10GE electrical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 292 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, double power modules) • 307 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, double power modules)
Typical heat dissipation [BTU/hour]	• 996 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, double power modules) • 1047 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, double power modules)
Static power consumption [W]	233 W
Static heat dissipation [BTU/hour]	795 BTU/hour
Maximum power consumption [W]	348 W
Maximum heat dissipation	1187
Number of power modules	2
Redundant power supply	1+1 backup

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Item	Specification
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48 V DC to -60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4

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Item	Specification
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999954691
MTBF [year]	49.15 years
MTTR [hour]	1.95 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: 49 dBA in average (maximum: 52 dBA) • Back-to-front airflow: 50 dBA in average (maximum: 52 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: 69 dBA in average (maximum: 74 dBA) • Back-to-front airflow: 67 dBA in average (maximum: 73 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.3.2 CE5855E-48T4S2Q (02353VWG)

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Overview

Table 4-7 Basic information about the CE5855E-48T4S2Q

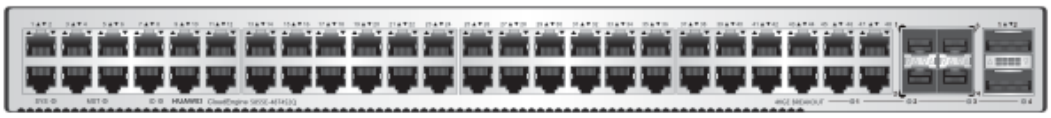
Item	Details
Description	CE5855E-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, without fan and power modules)
Part Number	02353VWG
Model	CE5855E-48T4S2Q
First supported version	V200R020C10
Other part numbers	02353VWJ (CE5855E-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, 2*AC power modules, 3*fan modules, port-side intake)) 02353VWN (CE5855E-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, 2*AC power modules, 3*fan modules, port-side exhaust))
Short Name	CE5855E

Appearance

Figure 4-8 Appearance of the CE5855E-48T4S2Q



Front (power supply side)



Rear (port side)

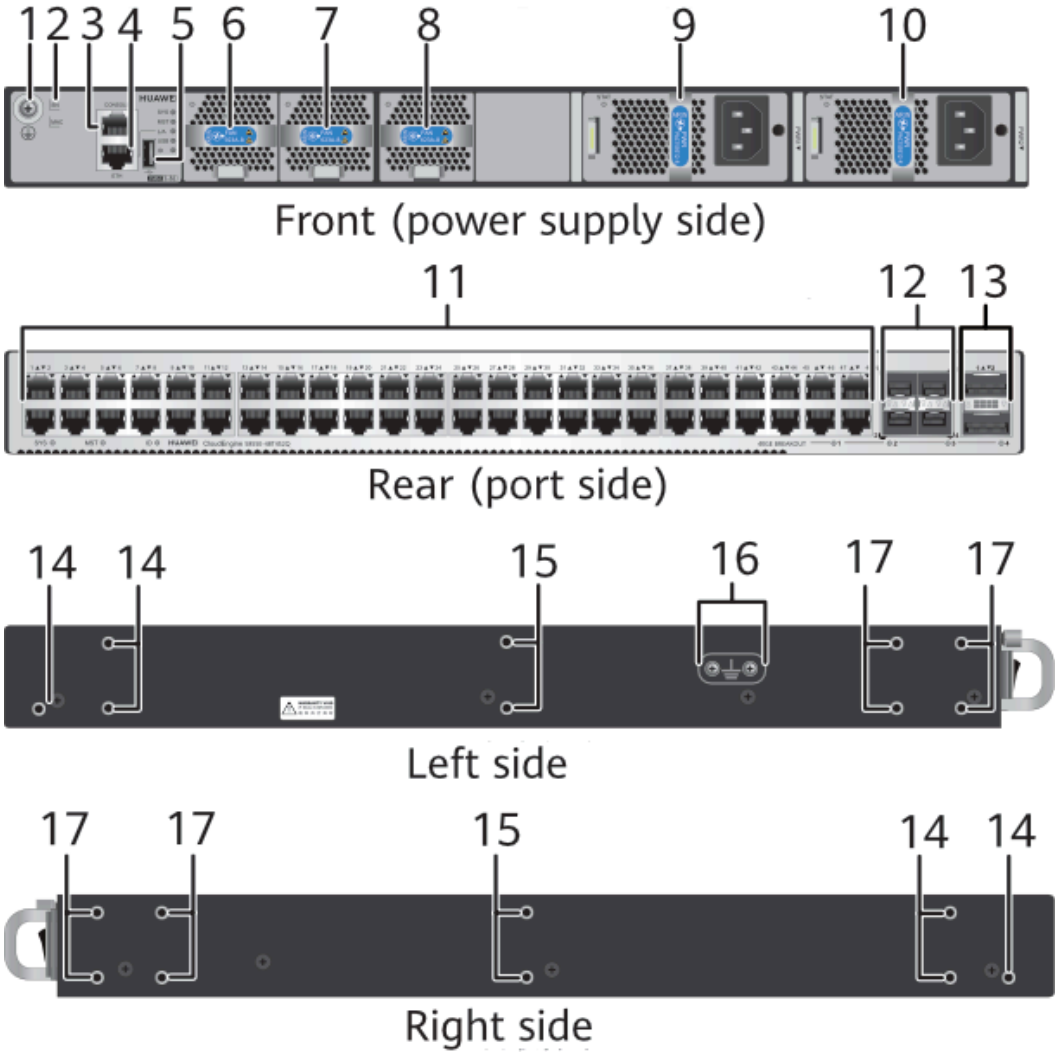
NOTE

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Components

Figure 4-9 Components of the CE5855E-48T4S2Q



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Power supply slot 1	10	Power supply slot 2

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11	Forty-eight 1000BASE-T Ethernet electrical ports	12	Four 10G SFP+ Ethernet optical ports
13	Two 40GE QSFP+ Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-8 Slots on the CE5855E-48T4S2Q

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	1) Each of the CloudEngine 5800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. 2) The CloudEngine 5800 series switches support 1+1 backup of power modules: When both power modules are working properly, each of them provides half of the power required for the chassis. When one power module fails, the other one provides all power required for the chassis. 3) All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	1) Each of the CE5855E-48T4S2Q switches has three fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. 2) It is recommended that three fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-10 Indicators on the CE5855E-48T4S2Q 1

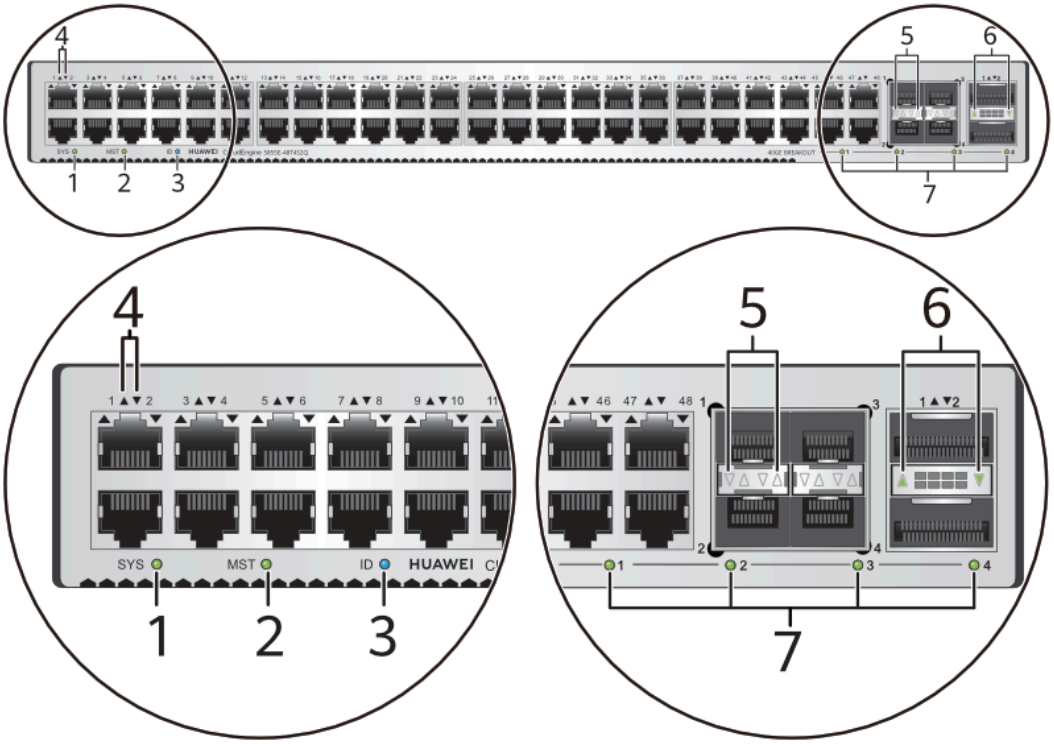
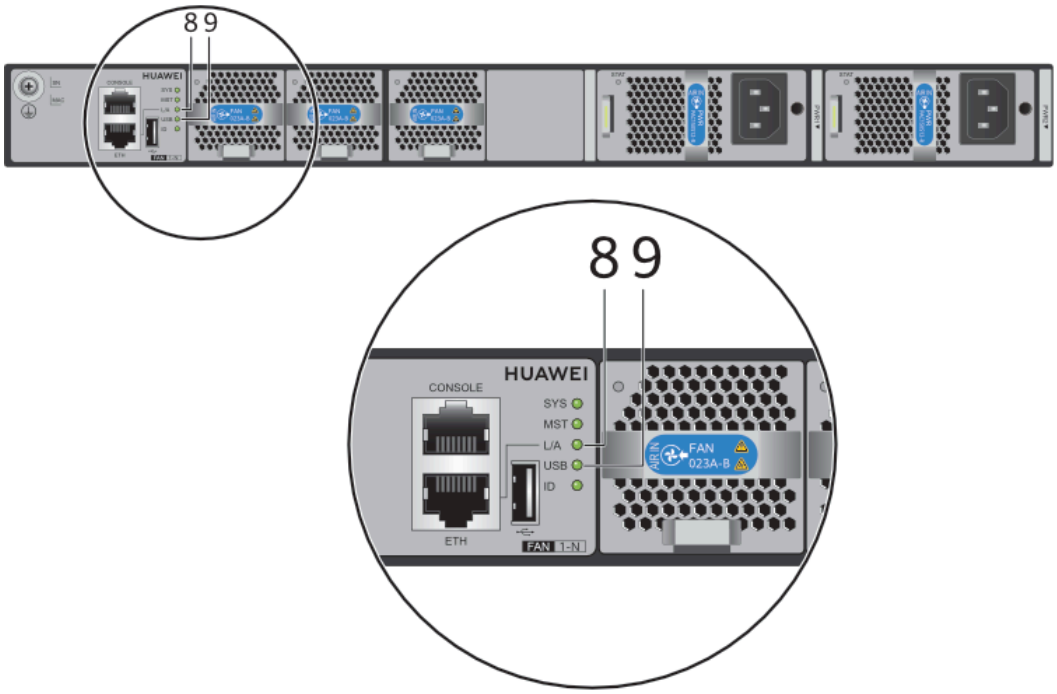


Figure 4-11 Indicators on the CE5855E-48T4S2Q 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (1000BASE-T electrical port)	5. Service port indicator (10GE SFP+ optical port)
6. Service port indicator (40GE QSFP+ optical port)	7. 40G Breakout 1/2/3/4 (sequence number indicators of 10GE ports converted from a 40GE QSFP+ optical port)	8. ETH management port indicator	9. USB-based deployment indicatorc	-

Table 4-9 Indicators on the CE5855E-48T4S2Q

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running properly.
		Red	Steady on	• The system fails to start. • At least one power module does not work properly. • At least one fan module does not work properly.
MST	Stack master/ slave indicator	Green	Off	The switch is not a master switch in the stack.

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Silkscreen	Name	Color	Status	Description
	NOTE • In V200R003C00 and later versions, you can use the dfs-master led enable command to enable the stack master/slave indicator to display the DFS group master and backup status. • After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Steady on	The switch is a master switch in the stack or a standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (GE electrical port) **NOTE** The indicator on the left indicates the port at the top, and the indicator on the right indicates the port at the bottom.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Yellow	Off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (40GE optical port) **NOTE** • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top. • When a 40GE port is configured as four 10GE ports, this indicator shows the status of a 10GE port. The sequence number of the indicated port is identified by indicators 40G Breakout 1/2/3/4 on the lower right corner of the panel. • Each 40GE port has a single-color indicator, which shows the status of the 40GE port by default.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
-	40GE Breakout indicators 1/2/3/4 (10GE ports converted from a 40GE port)	Green	Off	40GE ports are not split into four 10GE ports.

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Silkscreen	Name	Color	Status	Description
	NOTE Indicators 1, 2, 3, 4 turn on in cyclic order, with each indicator keeping on for 5s.	Green	Steady on	At least one 40GE port has been split into four 10GE ports. When one or more 40GE ports are configured as four 10GE ports, these indicators identify the sequence numbers of the 10GE ports. A 40GE port indicator shows the status of a 10GE port converted from the 40GE port: ● When Breakout indicator 1 is on, each 40GE port indicator shows the status of the first 10GE port converted from the corresponding 40GE port. ● When Breakout indicator 2 is on, each 40GE port indicator shows the status of the second 10GE port

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Silkscreen	Name	Color	Status	Description
				converted from the corresponding 40GE port. • When Breakout indicator 3 is on, each 40GE port indicator shows the status of the third 10GE port converted from the corresponding 40GE port. • When Breakout indicator 4 is on, each 40GE port indicator shows the status of the fourth 10GE port converted from the corresponding 40GE port.
L/A	ETH management port indicator	Green	Off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
ACT	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment has failed.

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Ports

Table 4-10 Ports on the CE5855E-48T4S2Q

Port	Connector Type	Description	Available Components
10/100/1000BASE-T Ethernet Electrical Port	RJ45	A 10/100/1000BASE-T Ethernet electrical port receives and sends services at a rate of 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. A 10/100/1000BASE-T Ethernet electrical port uses a Category 5 or higher category cable. • Standards compliance: IEEE802.3ab • Applicable cable: straight-through cable and crossover cable • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Straight-through cable and crossover cable

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Port	Connector Type	Description	Available Components
10GE SFP+ Ethernet Optical Port	LC	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1 Gbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. • Standards compliance: IEEE802.3ae • Optical port attributes: depending on the module or cable in use • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. 10GE optical interfaces installed with GE copper modules support the rate of 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. 2. 10GE optical interfaces do not support the OSXD22N00, LE2MXSC80FF0, or SFP-10G-ZDWT-L optical module.

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Port	Connector Type	Description	Available Components
40GE QSFP+ Ethernet Optical Port	Depending on the optical module	A 40GE QSFP+ Ethernet optical port receives and sends services at the rate of 40 Gbit/s. If a 40GE QSFP+ Ethernet optical port is split into four 10GE ports, it must use 1-to-4 QSFP+ optical modules and optical fibers or 1-to-4 QSFP+ cables. • Standards compliance: IEEE802.3ba • Optical port attributes: depending on the module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to 4*SFP+ AOC cable** **QSFP+ to 4*SFP+ high-speed cable** **QSFP+ to 4*SFP+ high-speed cable** **NOTE** 1) A 40GE QSFP+ port can be split into four 10GE ports. 2) The QSFP-100G-4WDM-40 optical module is not supported.
Console Port	RJ45	The console port is connected to a console for onsite configuration. • Standards compliance: RS232 • Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	**Console cable**

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Port	Connector Type	Description	Available Components
ETH Management Port	RJ45	The ETH management port of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Supported rate: 10/100/1000 Mbit/s auto-sensing. Full-duplex • Maximum transmission distance: 100 m	Category 5 or higher category cable
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive.

Heat Dissipation System

The cooling system of the CloudEngine 5800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

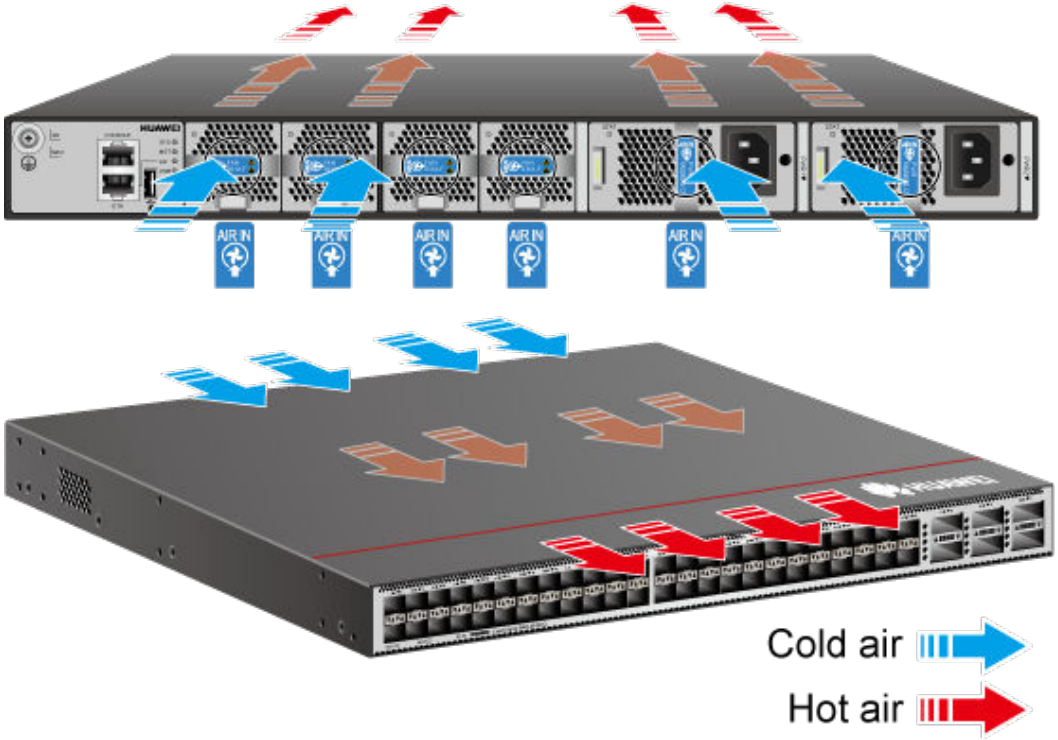
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

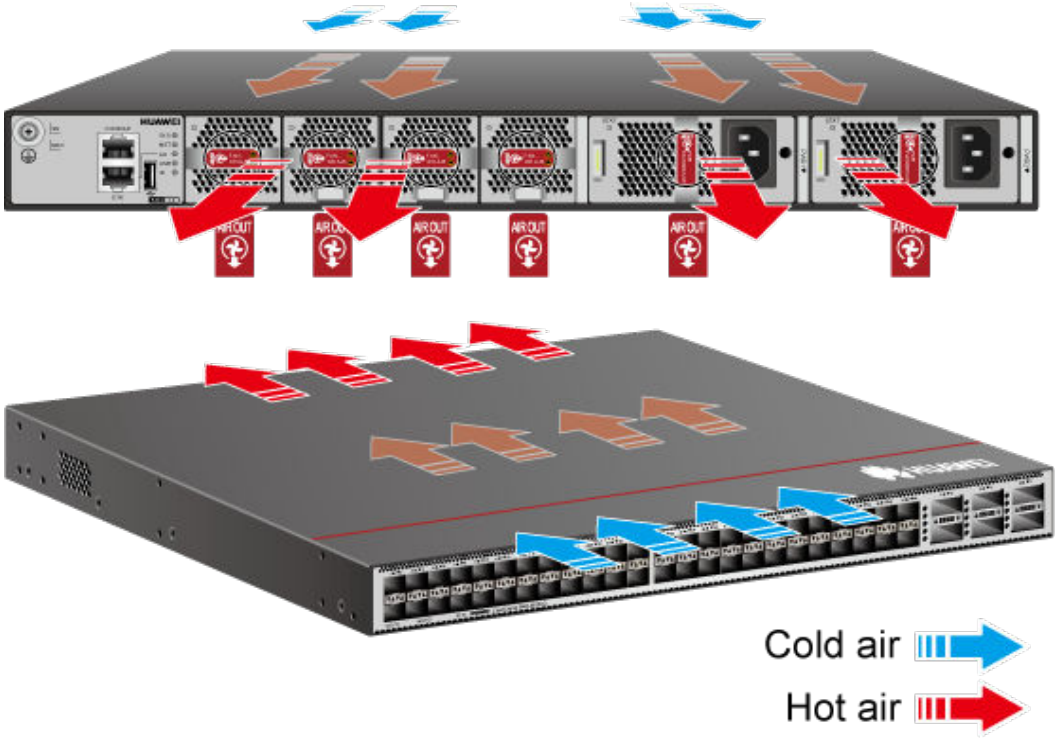
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

Figure 4-12 Front-to-back airflow for port-side exhaust



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Figure 4-13 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 5800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-11 Technical specifications of the CE5855E-48T4S2Q

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.1 kg (11.2 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.5 kg (16.5 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	8.6 kg (19.0 lb)
Weight with packaging (full configuration) [kg (lb)]	11 kg (24.3 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.2 GHz
Memory	DRAM: 2 GB
NOR Flash	128 MB
NAND Flash	1 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10/100/1000BASE-T
Uplink Service interface	4*10G SFP+, 2*40G QSFP+
Service port supporting the stack function	10GE optical ports and 40GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 92 W (50% throughput, 3 m Ethernet cables on 48 ports and high-speed cables on 4 x 10G and 2 x 40G ports, normal temperature, dual AC power modules) • 96 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 4 x 10G and 2 x 40G ports, normal temperature, dual AC power modules)
Typical heat dissipation [BTU/hour]	• 314 BTU/hour (50% throughput, 3 m Ethernet cables on 48 ports and high-speed cables on 4 x 10G and 2 x 40G ports, normal temperature, dual AC power modules) • 327 BTU/hour (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 4 x 10G and 2 x 40G ports, normal temperature, dual AC power modules)
Static power consumption [W]	68 W
Static heat dissipation [BTU/hour]	232 BTU/hour
Maximum power consumption [W]	137 W
Maximum heat dissipation	467
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 150 W AC power module: 100 V AC to 240 V AC, 50/60 Hz • 180 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 150 W AC power module: 90 V AC to 290 V AC; 45 Hz to 65 Hz • 180 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC

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Item	Specification
Maximum input current [A]	• 150 W AC power module: 3 A (100 V AC to 240 V AC) • 180 W DC power module: 6 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 150 W AC power module: 150 W • 180 W DC power module: 180 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	3
Redundant fans	The device supports 2+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.99999643061
MTBF [year]	57.57 years
MTTR [hour]	1.8 hours

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Item	Specification
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: 45.58 dB(A) on average (maximum: 49.2 dB(A)) • Back-to-front airflow: 44.48 dB(A) on average (maximum: 47.6 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: 56.91 dB(A) on average (maximum: 59.6 dB(A)) • Back-to-front airflow: 56.94 dB(A) on average (maximum: 61.8 dB(A))
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.3.3 CE5855F-48T4S2Q

4.3.3.1 CE5855F-48T4S2Q (02354HPQ)

Overview

Table 4-12 Basic information about the CE5855F-48T4S2Q

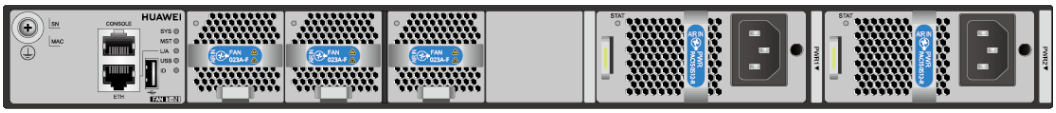
Item	Details
Description	CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, without fan and power modules)
Part Number	02354HPQ
Model	CE5855F-48T4S2Q
First supported version	V200R021C00

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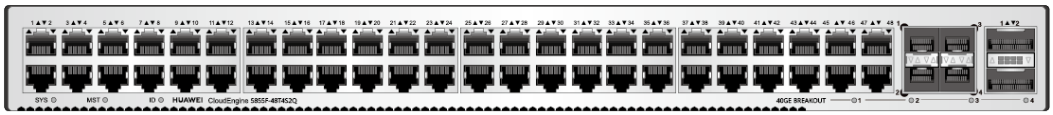
Item	Details
Other part numbers	02354HPR (CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, 2*AC power modules, 3*fan modules, port-side intake)) 02354HPS (CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, 2*AC power modules, 3*fan modules, port-side exhaust))
Short Name	CE5855F

Appearance

Figure 4-14 Appearance of the CE5855F-48T4S2Q



Front (power supply side)



Rear (port side)

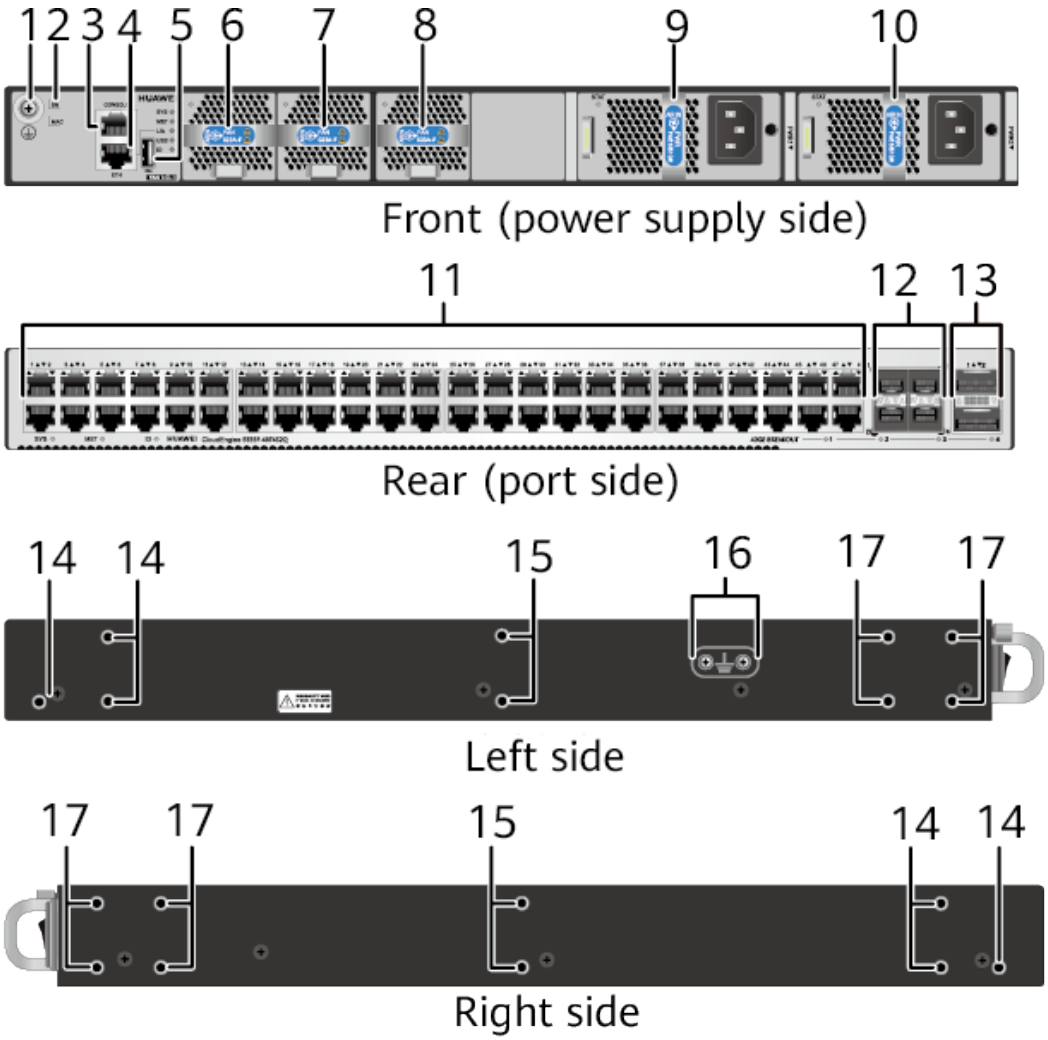
NOTE

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Components

Figure 4-15 Components of the CE5855F-48T4S2Q



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Power supply slot 1	10	Power supply slot 2

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11	Forty-eight 1000BASE-T Ethernet electrical ports	12	Four 10G SFP+ Ethernet optical ports
13	Two 40GE QSFP+ Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-13 Slots on the CE5855F-48T4S2Q

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	1) Each of the CloudEngine 5800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. 2) The CloudEngine 5800 series switches support 1+1 backup of power modules: When both power modules are working properly, each of them provides half of the power required for the chassis. When one power module fails, the other one provides all power required for the chassis. 3) All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	1) Each of the CE5855F-48T4S2Q switches has three fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. 2) It is recommended that three fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-16 Indicators on the CE5855F-48T4S2Q 1

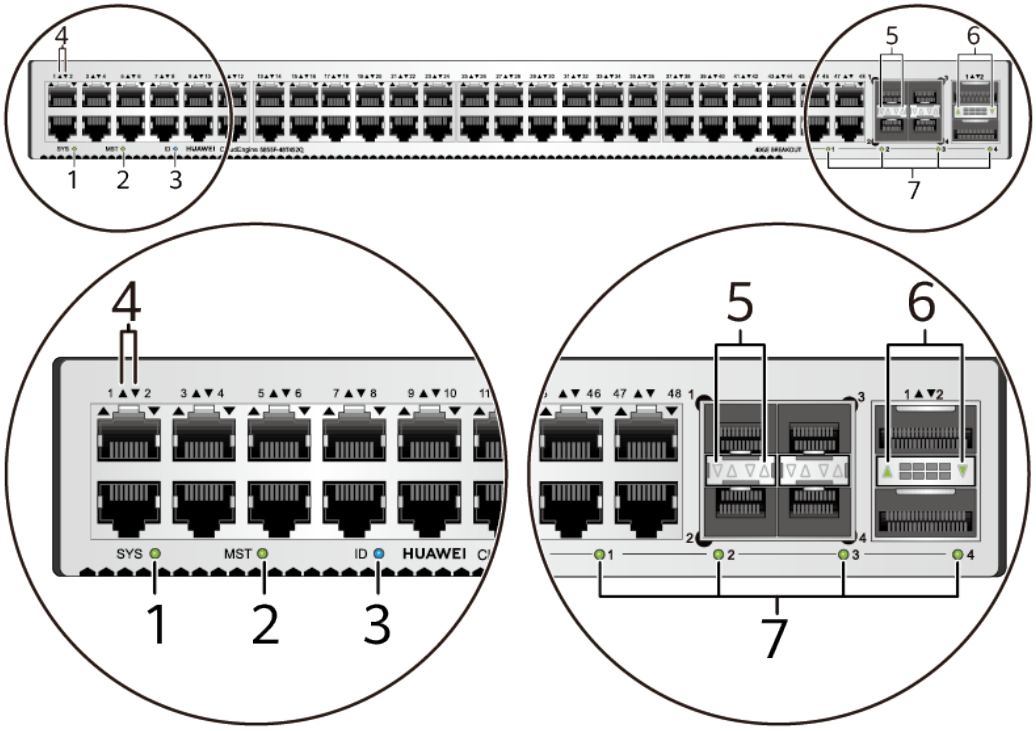
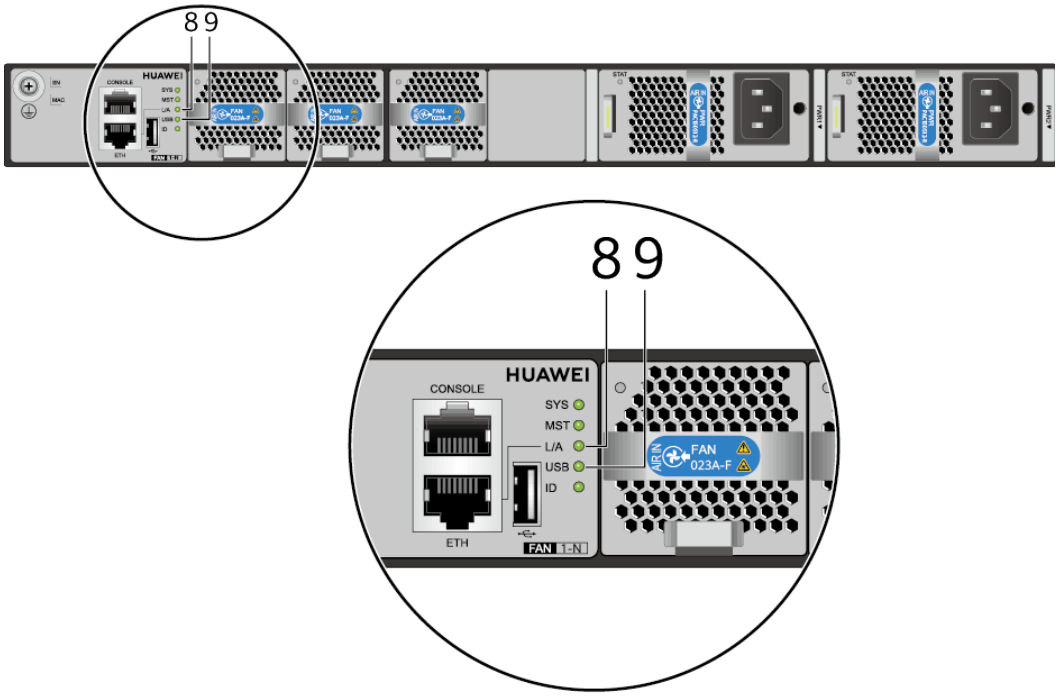


Figure 4-17 Indicators on the CE5855F-48T4S2Q 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (1000BASE-T electrical port)	5. Service port indicator (10GE SFP+ optical port)
6. Service port indicator (40GE QSFP+ optical port)	7. 40G Breakout 1/2/3/4 (sequence number indicators of 10GE ports converted from a 40GE QSFP+ optical port)	8. ETH management port indicator	9. USB-based deployment indicatorc	-

Table 4-14 Indicators on the CE5855F-48T4S2Q

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running properly.
		Red	Steady on	• The system fails to start. • At least one power module does not work properly. • At least one fan module does not work properly.
MST	Stack master/ slave indicator	Green	Off	The switch is not a master switch in the stack.

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Silkscreen	Name	Color	Status	Description
	NOTE • In V200R003C00 and later versions, you can use the dfs-master led enable command to enable the stack master/slave indicator to display the DFS group master and backup status. • After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Steady on	The switch is a master switch in the stack or a standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (GE electrical port) **NOTE** The indicator on the left indicates the port at the top, and the indicator on the right indicates the port at the bottom.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Yellow	Off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (40GE optical port) **NOTE** • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top. • When a 40GE port is configured as four 10GE ports, this indicator shows the status of a 10GE port. The sequence number of the indicated port is identified by indicators 40G Breakout 1/2/3/4 on the lower right corner of the panel. • Each 40GE port has a single-color indicator, which shows the status of the 40GE port by default.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
-	40GE Breakout indicators 1/2/3/4 (10GE ports converted from a 40GE port)	Green	Off	40GE ports are not split into four 10GE ports.

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Silkscreen	Name	Color	Status	Description
	NOTE Indicators 1, 2, 3, 4 turn on in cyclic order, with each indicator keeping on for 5s.	Green	Steady on	At least one 40GE port has been split into four 10GE ports. When one or more 40GE ports are configured as four 10GE ports, these indicators identify the sequence numbers of the 10GE ports. A 40GE port indicator shows the status of a 10GE port converted from the 40GE port: ● When Breakout indicator 1 is on, each 40GE port indicator shows the status of the first 10GE port converted from the corresponding 40GE port. ● When Breakout indicator 2 is on, each 40GE port indicator shows the status of the second 10GE port

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Silkscreen	Name	Color	Status	Description
				converted from the corresponding 40GE port. • When Breakout indicator 3 is on, each 40GE port indicator shows the status of the third 10GE port converted from the corresponding 40GE port. • When Breakout indicator 4 is on, each 40GE port indicator shows the status of the fourth 10GE port converted from the corresponding 40GE port.
L/A	ETH management port indicator	Green	Off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment has failed.

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Ports

Table 4-15 Ports on the CE5855F-48T4S2Q

Port	Connector Type	Description	Available Components
10/100/1000BASE-T Ethernet Electrical Port	RJ45	A 10/100/1000BASE-T Ethernet electrical port receives and sends services at a rate of 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. A 10/100/1000BASE-T Ethernet electrical port uses a Category 5 or higher category cable. • Standards compliance: IEEE802.3ab • Applicable cable: straight-through cable and crossover cable • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Straight-through cable and crossover cable

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Port	Connector Type	Description	Available Components
10GE SFP+ Ethernet Optical Port	LC	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1 Gbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. • Standards compliance: IEEE802.3ae • Optical port attributes: depending on the module or cable in use • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1) 10GE optical interfaces installed with GE copper modules support the rate of 10Mbit/s, 100Mbit/s, or 1000 Mbit/s. 2) 10GE optical interfaces do not support the OSXD22N00, LE2MXSC80FF0, or SFP-10G-ZDWT-L optical module.

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Port	Connector Type	Description	Available Components
40GE QSFP+ Ethernet Optical Port	Depending on the optical module	A 40GE QSFP+ Ethernet optical port receives and sends services at the rate of 40 Gbit/s. If a 40GE QSFP+ Ethernet optical port is split into four 10GE ports, it must use 1-to-4 QSFP+ optical modules and optical fibers or 1-to-4 QSFP+ cables. • Standards compliance: IEEE802.3ba • Optical port attributes: depending on the module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to 4*SFP+ AOC cable** **QSFP+ to 4*SFP+ high-speed cable** **QSFP+ to 4*SFP+ high-speed cable** **NOTE** 1) A 40GE QSFP+ port can be split into four 10GE ports. 2) The QSFP-100G-4WDM-40 optical module is not supported.
Console Port	RJ45	The console port is connected to a console for onsite configuration. • Standards compliance: RS232 • Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	**Console cable**

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Port	Connector Type	Description	Available Components
ETH Management Port	RJ45	The ETH management port of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Supported rate: 10/100/1000 Mbit/s auto-sensing. Full-duplex • Maximum transmission distance: 100 m	Category 5 or higher category cable
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive.

Heat Dissipation System

The cooling system of the CloudEngine 5800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

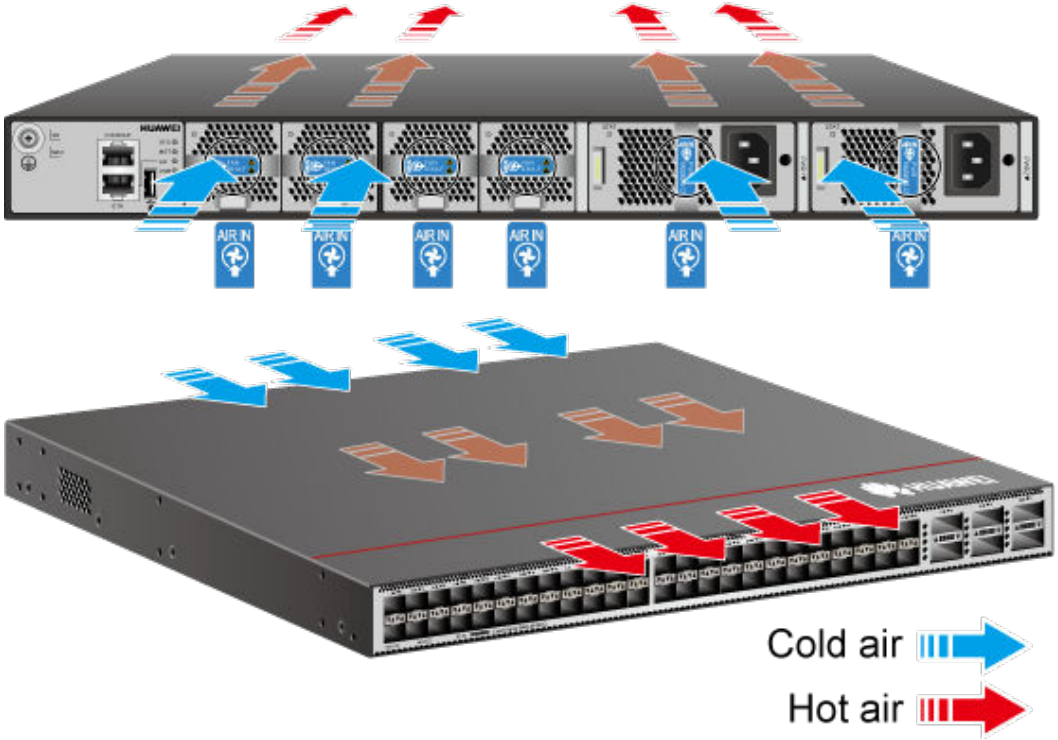
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

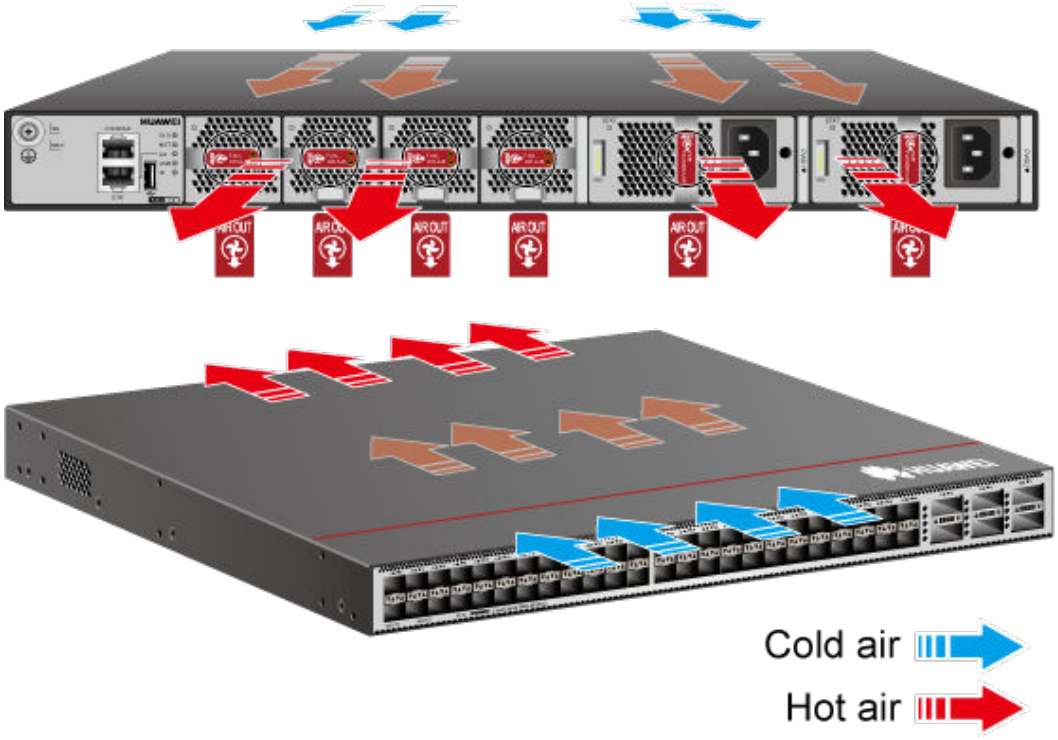
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

Figure 4-18 Front-to-back airflow for port-side exhaust



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Figure 4-19 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 5800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-16 Technical specifications of the CE5855F-48T4S2Q

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.2 kg (11.5 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.6 kg (16.8 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	8.7 kg (19.2 lb)
Weight with packaging (full configuration) [kg (lb)]	11.1 kg (24.5 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 2 GB
NOR Flash	64 MB
NAND Flash	1 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10/100/1000BASE-T
Uplink Service interface	4*10G SFP+, 2*40G QSFP+
Service port supporting the stack function	10GE optical ports and 40GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 98 W (50% throughput, 3 m Ethernet cables on 48 ports and high-speed cables on four 10GE and two 40GE ports, normal temperature, dual AC power modules) • 102 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on four 10GE and two 40GE ports, normal temperature, dual AC power modules)
Typical heat dissipation [BTU/hour]	• 334 BTU/hour (50% throughput, 3 m Ethernet cables on 48 ports and high-speed cables on four 10GE and two 40GE ports, normal temperature, dual AC power modules) • 348 BTU/hour (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on four 10GE and two 40GE ports, normal temperature, dual AC power modules)
Static power consumption [W]	74 W
Static heat dissipation [BTU/hour]	252 BTU/hour
Maximum power consumption [W]	141 W
Maximum heat dissipation	481 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 150 W AC power module : 100 V AC to 240 V AC, 50/60 Hz • 180 W DC power module : -48 V DC to -60 V DC • 1200 W high-voltage DC power module : 240 V DC to 380 V DC
Input voltage range [V]	• 150 W AC power module : 90 V AC to 290 V AC, 45 Hz to 65 Hz • 180 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module : 190 V DC to 400 V DC

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Item	Specification
Maximum input current [A]	• 150 W AC power module : 3 A (100 V AC to 240 V AC) • 180 W DC power module : 6 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module : 8 A
Rated output power [W]	• 150 W AC power module : 150 W • 180 W DC power module : 180 W • 1200 W high-voltage DC power module : 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode. • DC: 4 kV in common mode and 2 kV in differential mode. • HVDC: 4 kV in common mode and 2 kV in differential mode.
Types of fans	Pluggable
Number of fans	3
Redundant fans	The device supports 2+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.99999643061
MTBF [year]	57.57 years
MTTR [hour]	1.8 hours

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Item	Specification
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 45.58 dBA (maximum: 49.2 dBA) • Back-to-front airflow: average 44.48 dBA (maximum: 47.6 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 56.91 dBA (maximum: 59.6 dBA) • Back-to-front airflow: average 56.94 dBA (maximum: 61.8 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0 to 1800 m (0 to 5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.3.3.2 CE5855F-48T4S2Q (02354HPQ-001)

Overview

Table 4-17 Basic information about the CE5855F-48T4S2Q

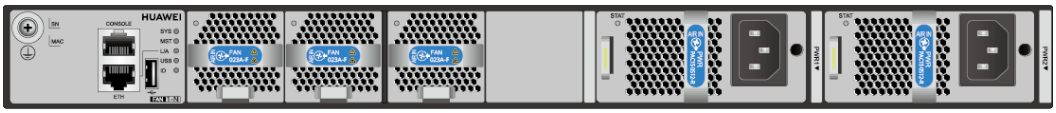
Item	Details
Description	CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, without fan and power modules)
Part Number	02354HPQ-001
Model	CE5855F-48T4S2Q
First supported version	V200R021C10SPC600

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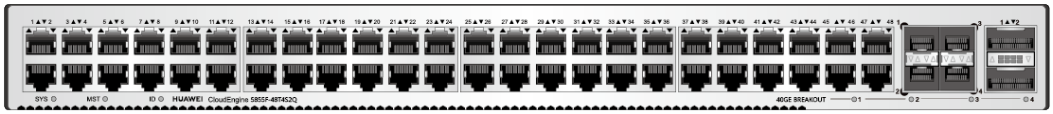
Item	Details
Other part numbers	02354HPR-001 (CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, 2*AC power modules, 3*fan modules, port-side intake)) 02354HPS-001 (CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, 2*AC power modules, 3*fan modules, port-side exhaust)) 02355MSV (CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, without fan and power modules)) 02355MSW (CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, 2*AC power modules, 3*fan modules, port-side intake)) 02355MSX (CE5855F-48T4S2Q switch (48*GE RJ45, 4*10GE SFP+, 2*40GE QSFP+, 2*AC power modules, 3*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE5855F

Appearance

Figure 4-20 Appearance of the CE5855F-48T4S2Q



Front (power supply side)



Rear (port side)

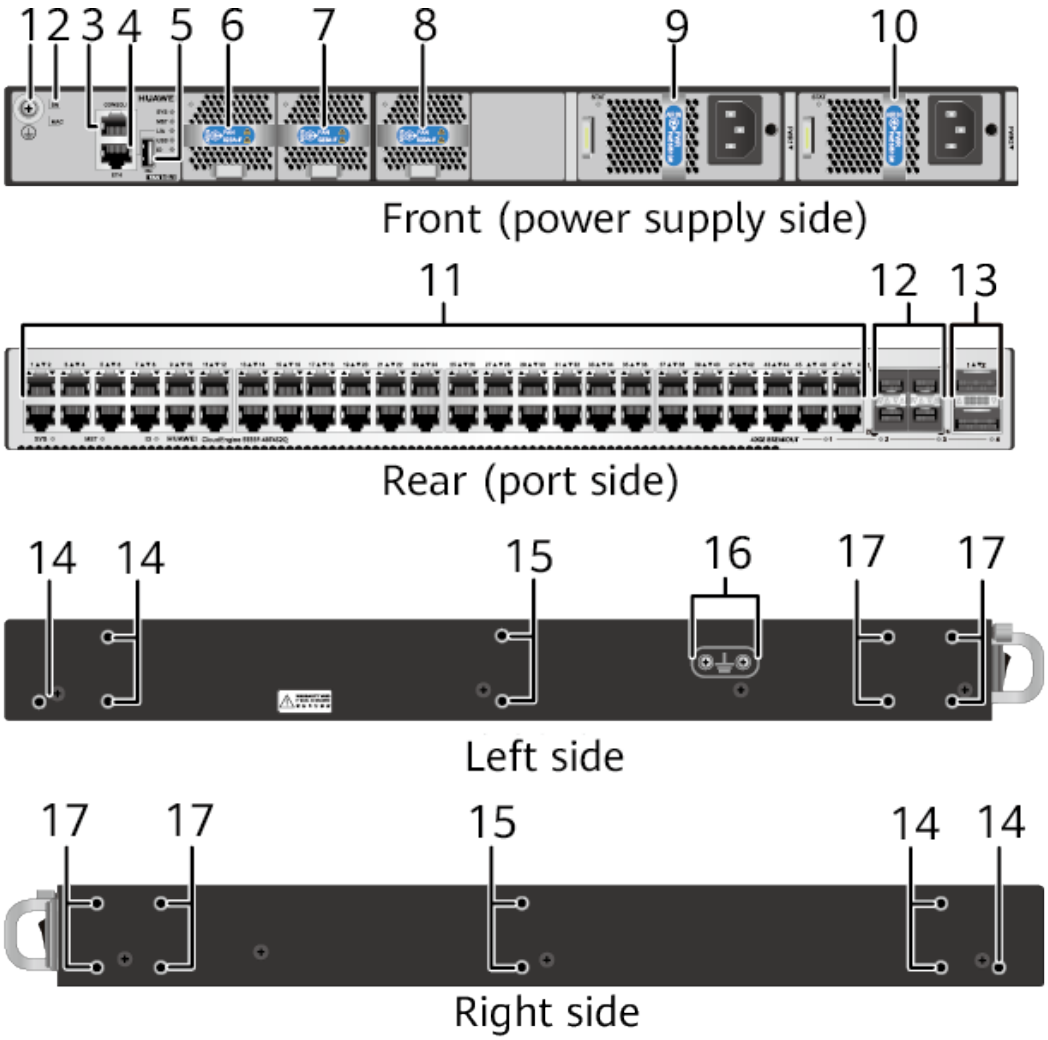
NOTE

The figures in this document are for reference only.

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Components

Figure 4-21 Components of the CE5855F-48T4S2Q



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Power supply slot 1	10	Power supply slot 2

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11	Forty-eight 1000BASE-T Ethernet electrical ports	12	Four 10G SFP+ Ethernet optical ports
13	Two 40GE QSFP+ Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-18 Slots on the CE5855F-48T4S2Q

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	1) Each of the CloudEngine 5800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. 2) The CloudEngine 5800 series switches support 1+1 backup of power modules: When both power modules are working properly, each of them provides half of the power required for the chassis. When one power module fails, the other one provides all power required for the chassis. 3) All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) Each of the CE5855F-48T4S2Q switches has three fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. 2) It is recommended that three fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-22 Indicators on the CE5855F-48T4S2Q 1

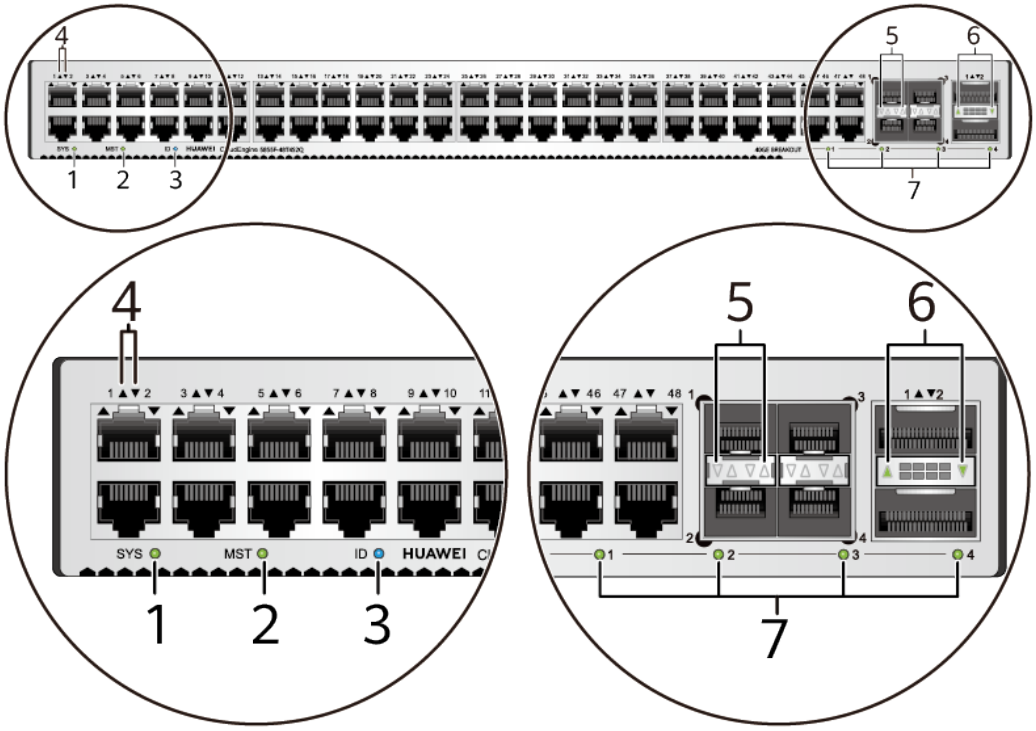
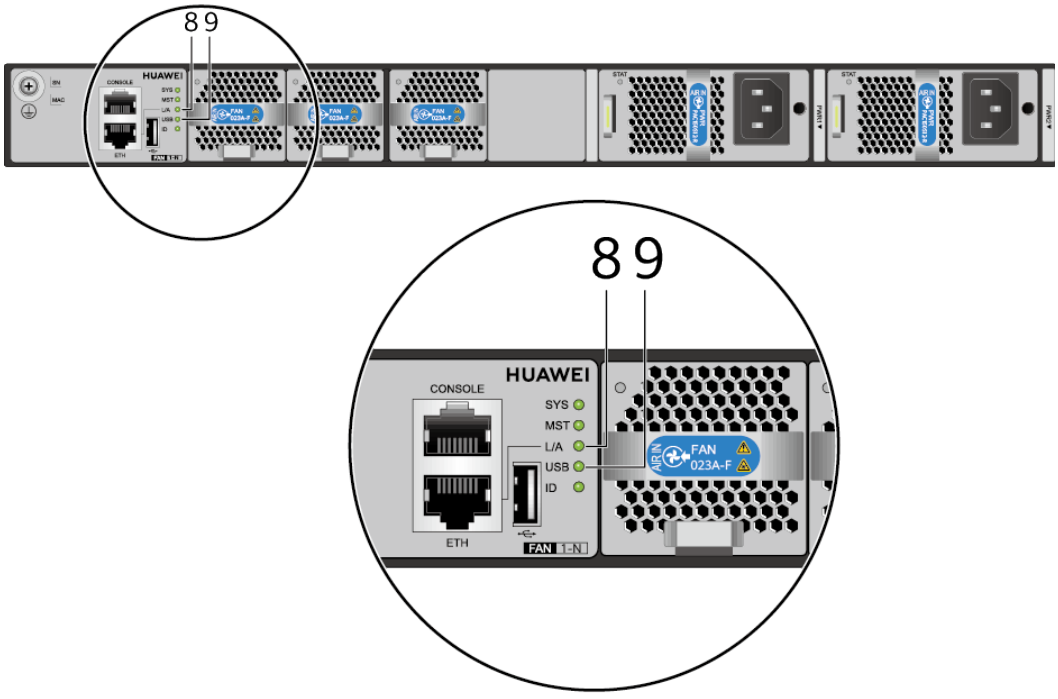


Figure 4-23 Indicators on the CE5855F-48T4S2Q 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (1000BASE-T electrical port)	5. Service port indicator (10GE SFP+ optical port)
6. Service port indicator (40GE QSFP+ optical port)	7. 40G Breakout 1/2/3/4 (sequence number indicators of 10GE ports converted from a 40GE QSFP+ optical port)	8. ETH management port indicator	9. USB-based deployment indicatorc	-

Table 4-19 Indicators on the CE5855F-48T4S2Q

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE • In V200R003C00 and later versions, you can use the dfs-master led enable command to enable the stack master/slave indicator to display the DFS group master and backup status. • After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is not used and is off by default.
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (GE electrical port) **NOTE** The indicator on the left indicates the port at the top, and the indicator on the right indicates the port at the bottom.	Green	Steady off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE optical port)	Green	Steady off	The port is not connected or has been shut down.

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Silkscreen	Name	Color	Status	Description
	NOTE • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top. • When a 40GE port is configured as four 10GE ports, this indicator shows the status of a 10GE port. The sequence number of the indicated port is identified by indicators 40G Breakout 1/2/3/4 on the lower right corner of the panel. • Each 40GE port has a single-color indicator, which shows the status of the 40GE port by default.	Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	40GE Breakout indicators 1/2/3/4 (10GE ports converted from a 40GE port)	Green	Steady off	40GE ports are not split into four 10GE ports.

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Silkscreen	Name	Color	Status	Description
	NOTE Indicators 1, 2, 3, 4 turn on in cyclic order, with each indicator keeping on for 5s.	Green	Steady on	At least one 40GE port has been split into four 10GE ports. When one or more 40GE ports are configured as four 10GE ports, these indicators identify the sequence numbers of the 10GE ports. A 40GE port indicator shows the status of a 10GE port converted from the 40GE port: ● When Breakout indicator 1 is on, each 40GE port indicator shows the status of the first 10GE port converted from the corresponding 40GE port. ● When Breakout indicator 2 is on, each 40GE port indicator shows the status of the second 10GE port

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Silkscreen	Name	Color	Status	Description
				converted from the corresponding 40GE port. • When Breakout indicator 3 is on, each 40GE port indicator shows the status of the third 10GE port converted from the corresponding 40GE port. • When Breakout indicator 4 is on, each 40GE port indicator shows the status of the fourth 10GE port converted from the corresponding 40GE port.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-20 Ports on the CE5855F-48T4S2Q

Port	Connector Type	Description	Available Components
10/100/1000BASE-T Ethernet Electrical Port	RJ45	A 10/100/1000BASE-T Ethernet electrical port receives and sends services at a rate of 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s. A 10/100/1000BASE-T Ethernet electrical port uses a Category 5 or higher category cable. • Standards compliance: IEEE802.3ab • Applicable cable: straight-through cable and crossover cable • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Both straight-through cables and crossover cables can be used.

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Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1 Gbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. • Standards compliance: IEEE802.3ae • Optical port attributes: depending on the module or cable in use • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1) 10GE optical interfaces installed with GE copper modules support the rate of 10Mbit/s, 100Mbit/s, or 1000 Mbit/s. 2) 10GE optical interfaces do not support the OSXD22N00, LE2MXSC80FF0, or SFP-10G-ZDWT-L optical module.

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Port	Connector Type	Description	Available Components
40GE QSFP+ Ethernet Optical Port	The connector type of the optical fiber depends on the optical module.	A 40GE QSFP+ Ethernet optical port receives and sends services at the rate of 40 Gbit/s. If a 40GE QSFP+ Ethernet optical port is split into four 10GE ports, it must use 1-to-4 QSFP+ optical modules and optical fibers or 1-to-4 QSFP+ cables. • Standards compliance: IEEE802.3ba • Optical port attributes: depending on the module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to 4*SFP+ AOC cable** **QSFP+ to 4*SFP+ high-speed cable** **QSFP+ to 4*SFP+ high-speed cable** **NOTE** 1) A 40GE QSFP+ port can be split into four 10GE ports. 2) The QSFP-100G-4WDM-40 optical module is not supported.
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	**Console cable**

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) of a device is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. • Complied standard: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 5800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

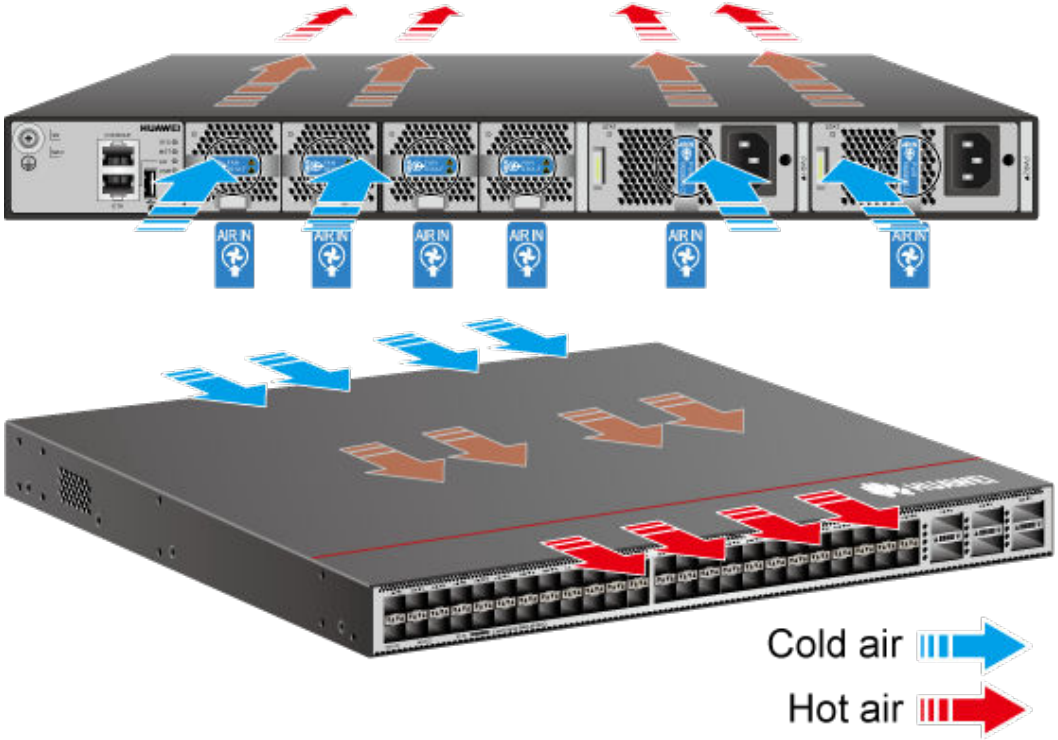
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

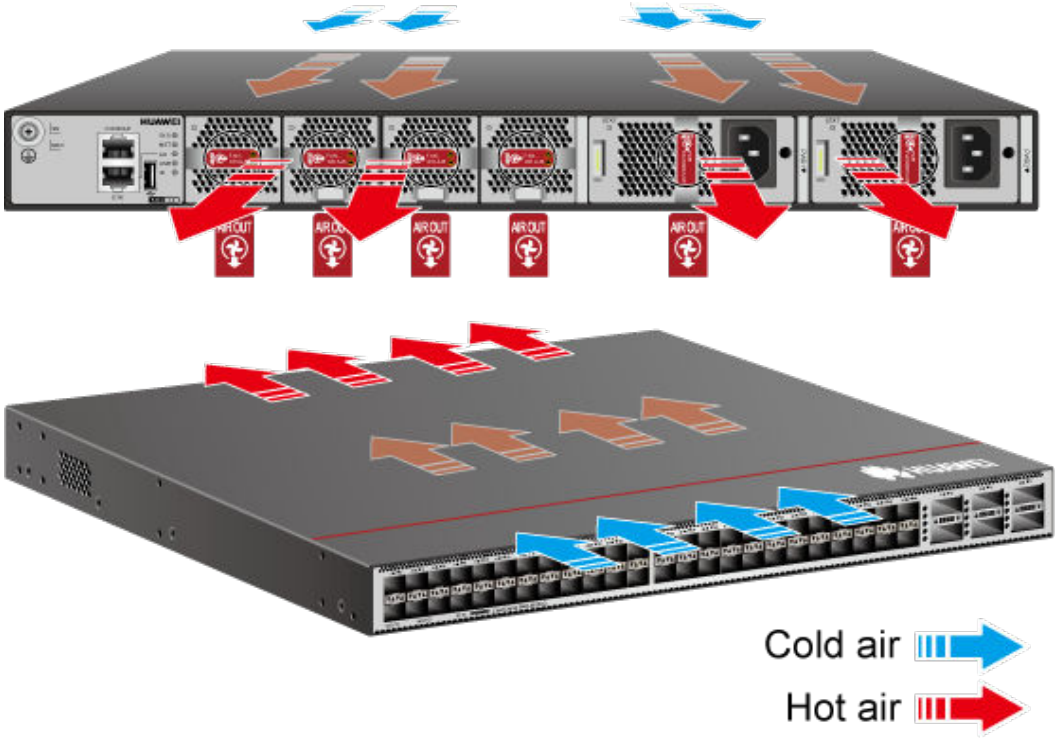
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

Figure 4-24 Front-to-back airflow for port-side exhaust



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Figure 4-25 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 5800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-21 Technical specifications of the CE5855F-48T4S2Q

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.2 kg (11.5 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.6 kg (16.8 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	8.7 kg (19.2 lb)
Weight with packaging (full configuration) [kg (lb)]	11.1 kg (24.5 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 2 GB
NOR Flash	64 MB
NAND Flash	1 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10/100/1000BASE-T
Uplink Service interface	4*10G SFP+, 2*40G QSFP+
Service port supporting the stack function	10GE optical ports and 40GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 98 W (50% throughput, 3 m Ethernet cables on 48 ports and high-speed cables on four 10GE and two 40GE ports, normal temperature, dual AC power modules) • 102 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on four 10GE and two 40GE ports, normal temperature, dual AC power modules)
Typical heat dissipation [BTU/hour]	• 334 BTU/hour (50% throughput, 3 m Ethernet cables on 48 ports and high-speed cables on four 10GE and two 40GE ports, normal temperature, dual AC power modules) • 348 BTU/hour (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on four 10GE and two 40GE ports, normal temperature, dual AC power modules)
Static power consumption [W]	74 W
Static heat dissipation [BTU/hour]	252 BTU/hour
Maximum power consumption [W]	141 W
Maximum heat dissipation	481 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 150 W AC power module : 100 V AC to 240 V AC, 50/60 Hz • 180 W DC power module : -48 V DC to -60 V DC • 1200 W high-voltage DC power module : 240 V DC to 380 V DC
Input voltage range [V]	• 150 W AC power module : 90 V AC to 290 V AC, 45 Hz to 65 Hz • 180 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module : 190 V DC to 400 V DC

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Item	Specification
Maximum input current [A]	• 150 W AC power module : 3 A (100 V AC to 240 V AC) • 180 W DC power module : 6 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module : 8 A
Rated output power [W]	• 150 W AC power module : 150 W • 180 W DC power module : 180 W • 1200 W high-voltage DC power module : 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode. • DC: 4 kV in common mode and 2 kV in differential mode. • HVDC: 4 kV in common mode and 2 kV in differential mode.
Types of fans	Pluggable
Number of fans	3
Redundant fans	The device supports 2+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.99999643061
MTBF [year]	57.57 years
MTTR [hour]	1.8 hours

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Item	Specification
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 45.58 dBA (maximum: 49.2 dBA) • Back-to-front airflow: average 44.48 dBA (maximum: 47.6 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 56.91 dBA (maximum: 59.6 dBA) • Back-to-front airflow: average 56.94 dBA (maximum: 61.8 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0 to 1800 m (0 to 5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4 CE6800

4.4.1 CE6820-48S6CQ (02352TLE)

Overview

Table 4-22 Basic information about the CE6820-48S6CQ

Item	Details
Description	CE6820-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, without fan and power modules)
Part Number	02352TLE
Model	CE6820-48S6CQ
First supported version	V200R005C20

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Item	Details
Other part numbers	02352TLJ (CE6820-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)) 02352TLG (CE6820-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake))
Short Name	CE6820

Appearance

Figure 4-26 Appearance of the CE6820-48S6CQ



Front (power supply side)



Rear (port side)

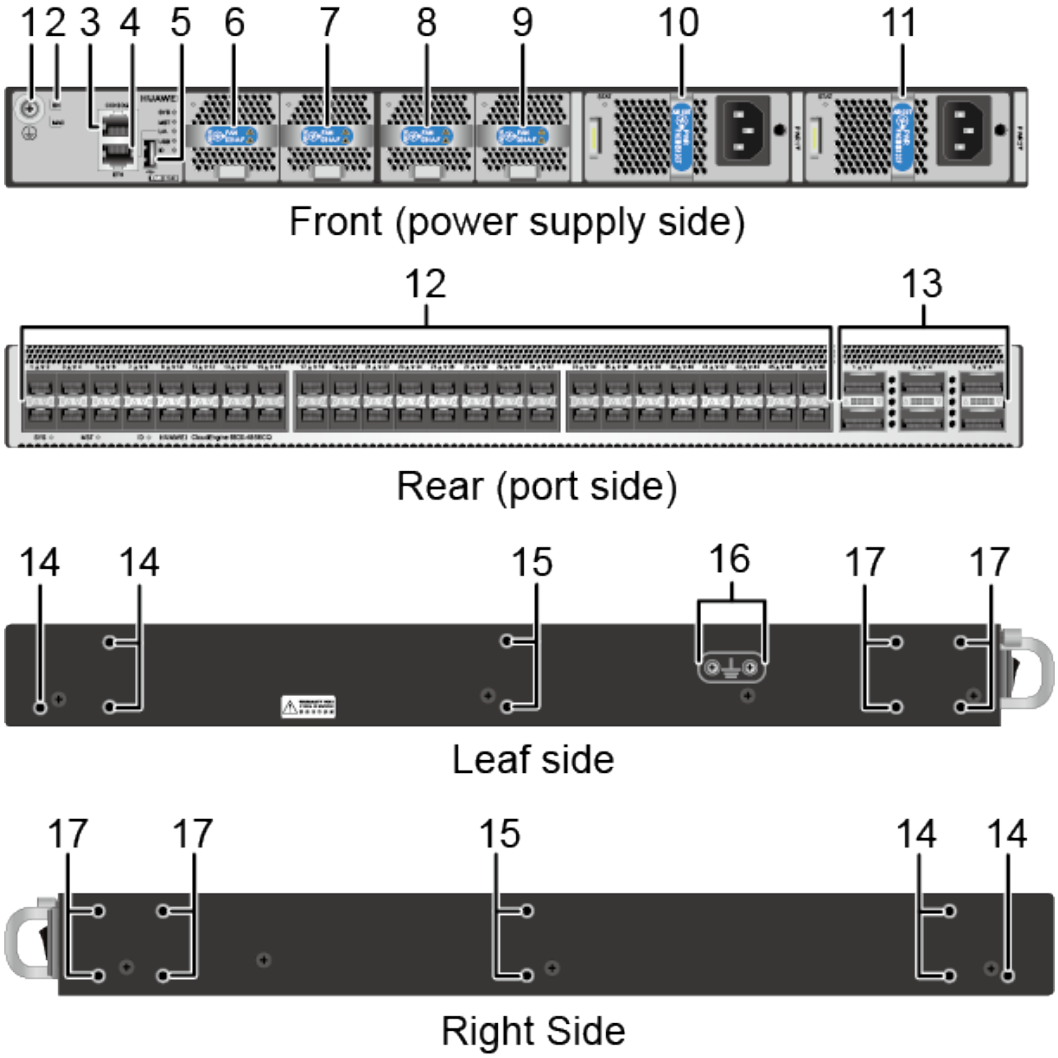
NOTE

The figures in this document are for reference only.

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Components

Figure 4-27 Components of the CE6820-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-23 Slots on the CE6820-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	• Each of the CloudEngine 6800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. • The CloudEngine 6800 series switches support 1+1 backup of power modules: When both power modules are working properly, each of them provides half of the power required for the chassis. When one power module fails, the other one provides all power required for the chassis. - All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	• Each of the CloudEngine 6800 series switches has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-28 Indicators on the CE6820-48S6CQ 1

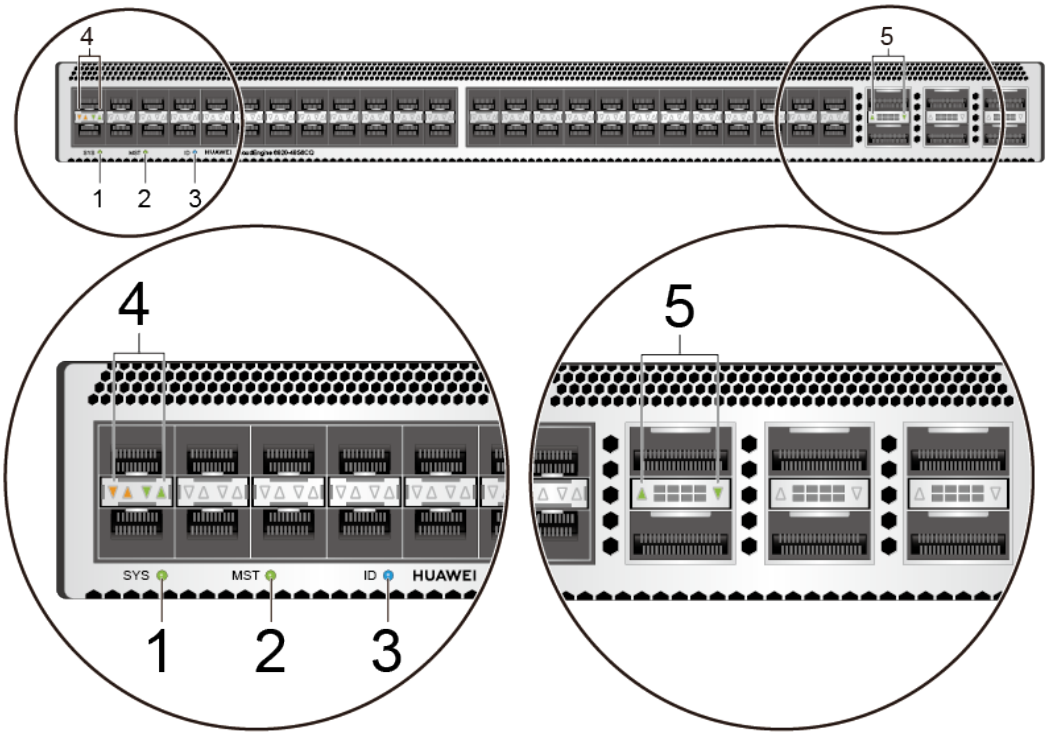
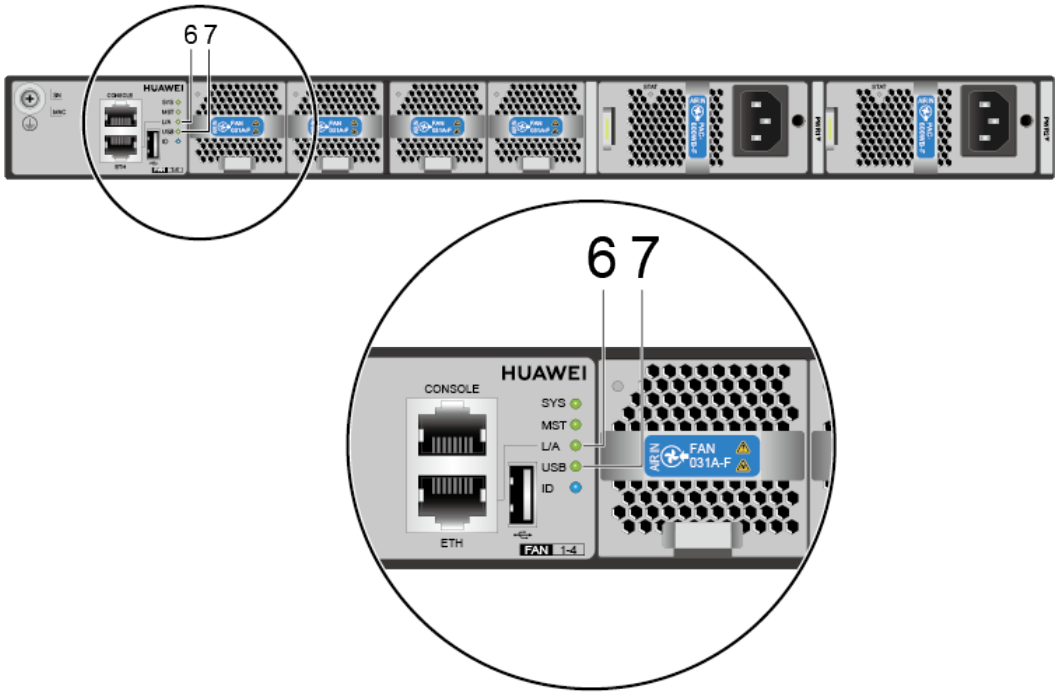


Figure 4-29 Indicators on the CE6820-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-24 Indicators on the CE6820-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Off	The switch is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE In V200R003C00 and later versions, you can use the dfs-master led enable command to enable the stack master/slave indicator to display the DFS group master and backup status.After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Steady on	The switch is a stack master or standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Yellow	Off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	ETH management port indicator	Green	Off	No link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment has failed.

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Ports

Table 4-25 Ports on the CE6820-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ Ethernet Optical Port	LC	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1000 Mbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. • Optical attributes: depending on the module or cable in use • Standards compliance: IEEE 802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1) 10GE optical interfaces installed with GE copper modules only support the rate of 100Mbit/s, or 1000 Mbit/s. 2) 10GE optical interfaces do not support the OSXD22N00, or LE2MXSC80FF0 optical module.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 Optical Port	Depending on the optical module	A 40GE/100GE QSFP28 optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • A 40GE/100GE QSFP28 optical port cannot be split. • Optical attributes: depending on the module or cable in use • Standards compliance: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4 x 25GE or 4 x 10GE ports. Auto-negotiation of copper cables is not supported. QSFP+ to QSFP+ and QSFP28 to QSFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 2. When a QSFP28 high-speed cable is installed on a 100GE port that works at 100 Gbit/s, the port supports only 1 m QSFP28 high-speed cables. 3. When a 100GE port is configured to work at 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console Port	RJ45	The console port is connected to a console for onsite configuration. • Standards compliance: RS232 • Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	Console cable
ETH Management Port	RJ45	The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-30 Front-to-back airflow for port-side exhaust

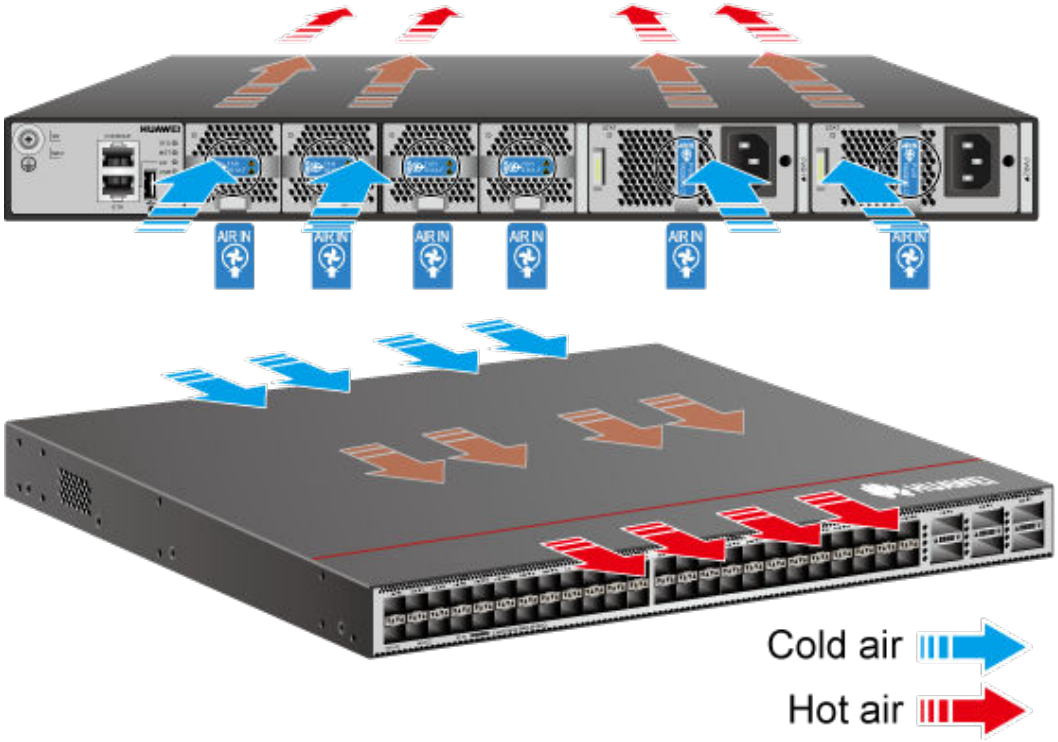
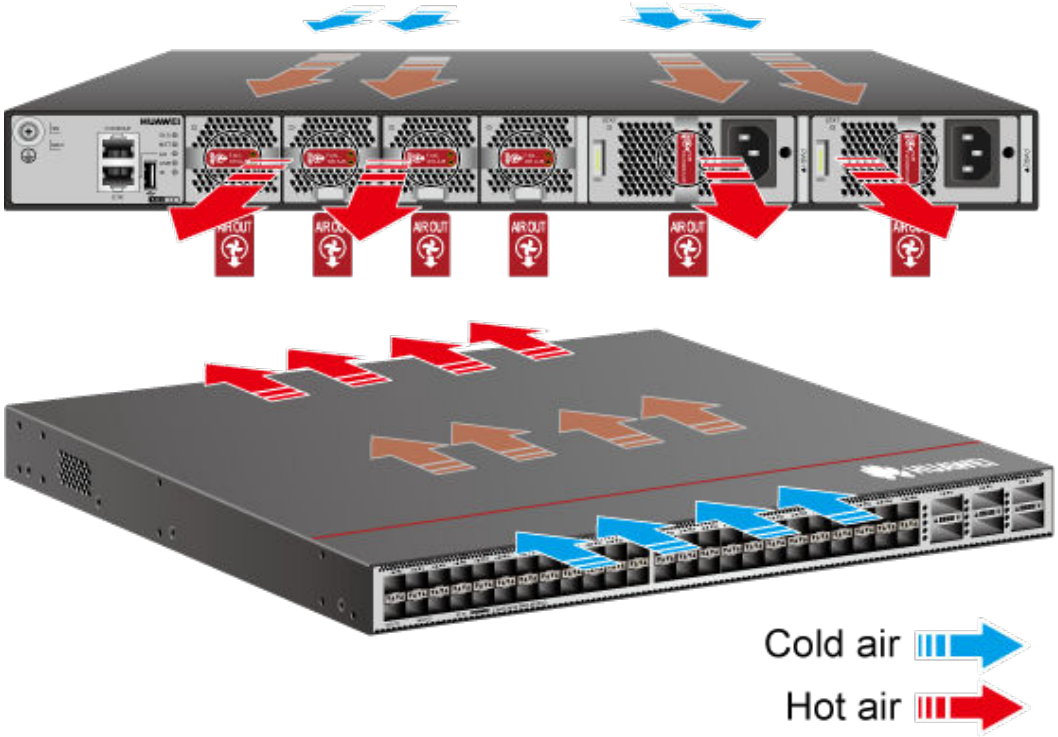


Figure 4-31 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-26 Technical specifications of the CE6820-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.6 kg (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.7 kg (17.0 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9kg (excluding optical modules, power modules, and fan modules)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	2GB
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*10GE SFP+ (Note: 1. 10GE interfaces are compatible with GE; 2. The interfaces do not support 10GE LRM/80KM linear optical modules)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE 1 m copper cables and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports.
Service port supporting the stack function	10GE optical ports, and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 162 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 196 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 553 BTU/hr (100% throughput, SFP + high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 669BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	102 W
Static heat dissipation [BTU/hour]	348 BTU/hour
Maximum power consumption [W]	282 W
Maximum heat dissipation	962
Number of power modules	2
Redundant power supply	1+1 backup

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Item	Specification
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Maximum output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.99999618
MTBF [year]	45.48 year
MTTR [hour]	1.52 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 55 dB(A) • Back-to-front airflow: < 56 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 71 dB(A) • Back-to-front airflow: < 72 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.2 CE6856-48T6Q-HI

Version Mapping

Table 4-27 lists the mappings between the CE6856-48T6Q-HI and software versions.

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Table 4-27 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE6800	CE6856	CE6856-48T6Q-HI	CE6856HI	V200R002C50 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

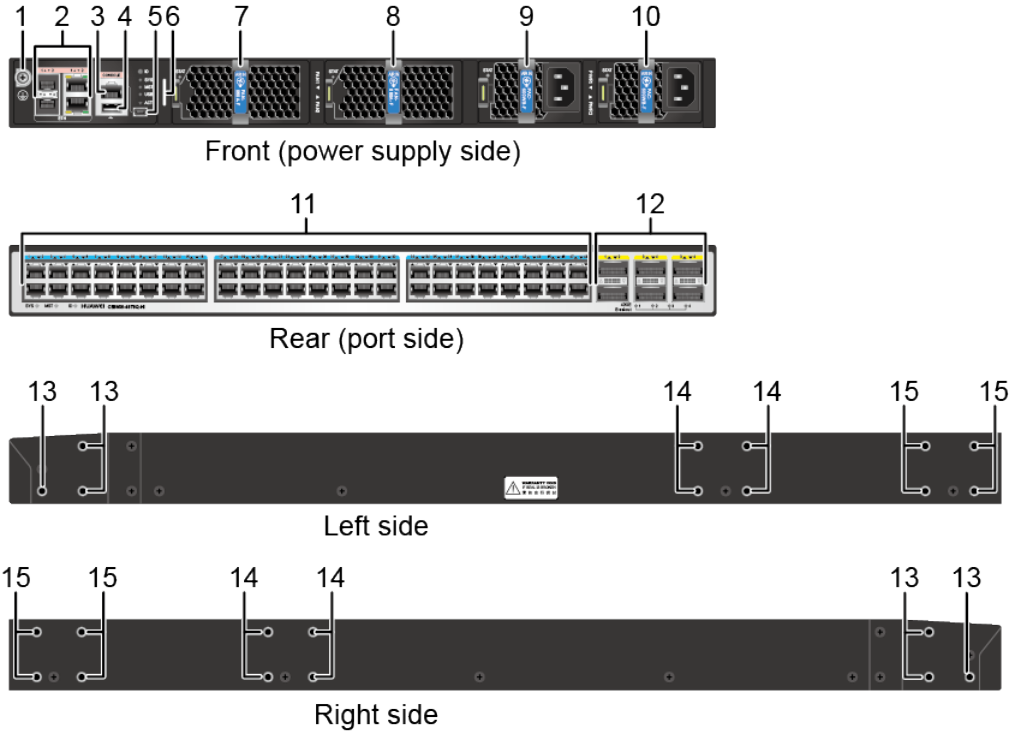
Appearance and Structure

NOTE

The appearances of devices and modules are subject to actually delivered products. The figures in this document are for reference only.

CE6856-48T6Q-HI appearance

Figure 4-32 CE6856-48T6Q-HI



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1	Ground screw	2	Two ETH management ports (combo) Applicable modules for the GE optical port of the combo port: • **9.3 FE SFP_eSFP Optical Modules** • **9.4 GE eSFP Optical Modules** **NOTE** The combo optical port uses a 100M or GE optical module and matching fibers. A 100M optical module can be used only after the switch starts successfully.
3	Console port	4	USB port
5	Mini USB port	6	Barcode label **NOTE** This label is drawable, and you can pull it outward to view the ESN barcode and MAC address of the switch.
7	Fan slot 1 Applicable fan modules: • **6.9 FAN-060A Series Fan Modules**	8	Fan slot 2 Applicable fan modules: • **6.9 FAN-060A Series Fan Modules**
9	Power supply slot 1 Applicable power modules: • **600 W AC&240 V DC power module (PAC-600WB)** • **5.12 600 W High-Voltage DC Power Module** • **5.26 1200 W DC Power Module (PDC-1K2WA)** • **5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)**	10	Power supply slot 2 Applicable power modules: • **600 W AC&240 V DC power module (PAC-600WB)** • **5.12 600 W High-Voltage DC Power Module** • **5.26 1200 W DC Power Module (PDC-1K2WA)** • **5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)**

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11	Forty-eight 10GBASE-T Ethernet electrical ports	12	Six 40GE QSFP+ Ethernet optical ports **NOTE** A 40GE QSFP+ port can be split into four 10GE ports. In V200R005C00 and later versions, a QSA convertor can be installed on a 40GE interface that has been split. Installing a medium whose rate is 10 Gbit/s on the QSA convertor makes a 40GE interface function as a 10GE interface. Only the first split interface works and other three split interfaces are unavailable. If a QSA convertor is installed on an interface that is not split or a medium whose rate is not 10 Gbit/s is installed on the QSA convertor on an interface that has been split, the interface enters the Down(Transceiver type mismatch) status. Applicable modules and cables: • **9.9 40GE QSFP+ Optical Modules** • **8.9.4 QSFP+ to QSFP+ AOC cable** • **8.9.5 QSFP+ to 4*SFP+ AOC cable** • **8.8.5 QSFP+ to 4*SFP+ High-Speed Cable** • **8.8.4 QSFP+ to QSFP+ High-Speed Cable**
13	Three port-side mounting holes for mounting brackets	14	Four middle mounting holes for mounting brackets
15	Four power-supply-side mounting holes for mounting brackets	-	-

Slot

- Power supply slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) have two power supply slots, in which power modules can be installed to provide power to the chassis. A chassis can have one or two power modules. Double power modules can provide higher reliability.

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) support double power modules (1+1 backup).

  – When both power modules are working properly, they equally provide power for a chassis.

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  - When one power module fails, the other one provides all power required for a chassis.

  All power modules are hot swappable.

- Fan slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI, CE6863-48S6CQ, CE6881-48S6CQ, CE6820-48S6CQ, CE6863-48S6CQ-K, CE6881-48S6CQ-K, CE6881E-48S6CQ and CE6857-48S6CQ-EI) have two fan slots, in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have two working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Airflow

The cooling systems of the CloudEngine 8800, 7800, 6800, and 5800 series switches have front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used. The airflow direction of the power modules and fan modules required on the CloudEngine 8800, 7800, 6800, and 5800 series switches depends on how the switches are installed in cabinets. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If CloudEngine 8800, 7800, 6800, and 5800 series switches are installed with the power supply side facing the front, you are advised to use fan modules and power modules with front-to-back airflow in the switches.

NOTE

- Front-to-back airflow: The power modules and fan modules using front-to-back airflow are marked  or 

. Air flows into the chassis from the power supply side and flows out from the port side, as shown in **Figure 4-33** (CE5800 as an example).
- Back-to-front airflow: The power modules and fan modules using back-to-front airflow are marked  or 

. Air flows into the chassis from the port side and flows out from the power supply side, as shown in **Figure 4-144** (CE5800 as an example).
- When the power module and fan module use forcible heat dissipation, they must use the same airflow method. For example, if the power module with back-to-front airflow is used, the fan module with back-to-front airflow must be used.

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Figure 4-33 Front-to-back airflow (air flows out from the port side)

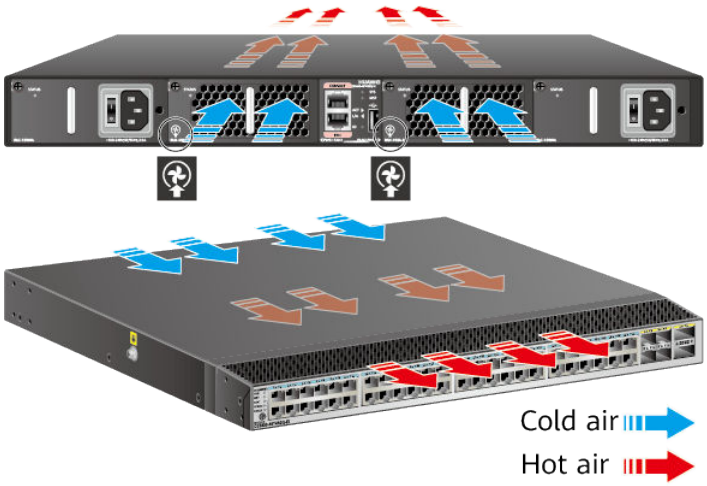
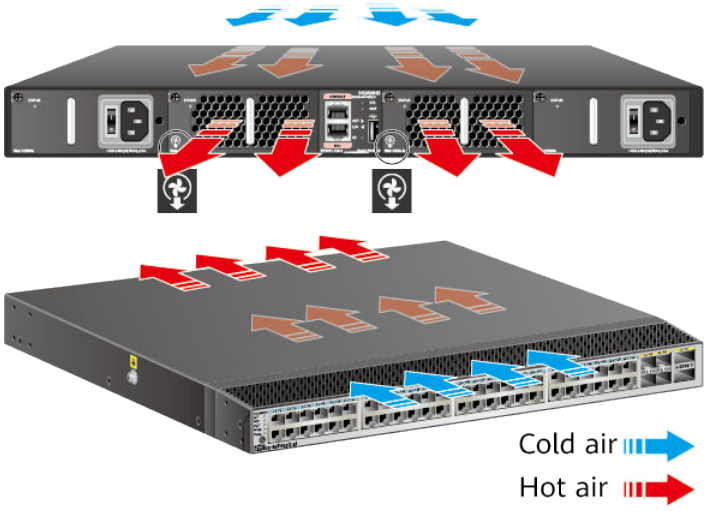


Figure 4-34 Back-to-front airflow (air flows in from the port side)



Indicators

The downlink service port indicators of the CE6856-48T6Q-HI are 10GE electrical port indicators, and other indicators on the CE6856-48T6Q-HI are the same as those on the CE6850-48S6Q-HI. This figure shows the indicators on the CE6850-48S6Q-HI.

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Figure 4-35 Indicators on the CE6850-48S6Q-HI rear panel

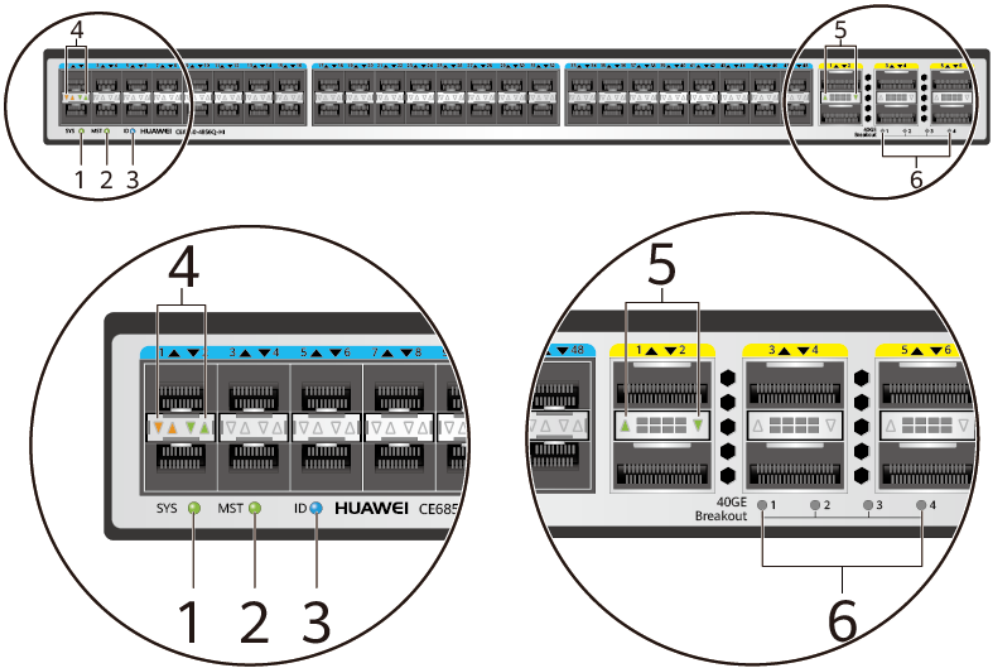


Figure 4-36 Indicators on the CE6850-48S6Q-HI front panel

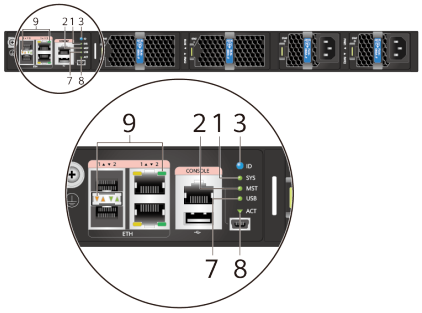


Table 4-28 Indicators on the CE6856-48T6Q-HI

No.	Indicator	Name	Color	Status	Description
1	SYS	System status indicator	Green	Off	The system is not running.
				Fast blinking	The system is starting.
				Slow blinking	The system is running properly.

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No.	Indicator	Name	Color	Status	Description
			Red	Steady on	• The system fails to start. • At least one power module does not work properly. • At least one fan module does not work properly.
2	MST	Stack master/slave indicator **NOTE** In V200R003C00 and later versions, you can use the **dfs-master led enable** command to enable the stack master/slave indicator to display the DFS group master and backup status. After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Off	The device is not a stack master.
				Steady on	The device is a stack master or standalone switch.
3	ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
				Steady on	The ID indicator can be turned on or off remotely to help field engineers find the switch to be maintained.
4	-	Service port indicator	Green	Off	The port is not connected or has been shut down.

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No.	Indicator	Name	Color	Status	Description
		(10GE electrical port) **NOTE** Each 10GE electrical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.		Steady on	The port is connected.
			Yellow	Off	The port is not sending or receiving data.
				Blinking	The port is sending or receiving data.
5	-	Service port indicator (40GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	The port is not connected or has been shut down.
				Steady on	The port is connected.
				Blinking	The port is sending or receiving data.
			When a 40GE port is divided into four 10GE ports, this indicator shows the status of a 10GE port. The sequence number of the indicated port is identified by indicators 40GE Breakout 1/2/3/4 on the lower right corner of the panel. **NOTE** Each 40GE port has a single-color indicator, which shows the status of the 40GE port by default. If a 40GE port is not split and is connected to four 10GE ports on a remote device using a 1-to-4 cable, the 40GE port cannot go Up and its indicator is off.		

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No.	Indicator	Name	Color	Status	Description
6	-	40GE Breakout 1/2/3/4 (sequence number indicators of 10GE ports converted from a 40GE port) **NOTE** Indicators 1, 2, 3, and 4 turn on in cyclic order, with each indicator keeping on for 5s.	Green	Off	40GE ports are working in 40GE mode and no port is split into four 10GE ports.

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No.	Indicator	Name	Color	Status	Description
				Steady on	At least one 40GE port is split into four 10GE ports and works in 10GE mode. When a 40GE port is divided into four 10GE ports, these indicators identify the sequence numbers of the 10GE ports together with the service port indicator (40GE optical port). A port indicator (5 in **Figure 4-35**) shows the status of a 10GE port converted from the corresponding 40GE port: • When Breakout indicator 1 is on, each 40GE port indicator shows the status of the first 10GE port converted from the corresponding 40GE port. • When Breakout indicator 2 is on, each 40GE port indicator shows the status of the second 10GE port converted from the corresponding 40GE port. • When Breakout indicator 3 is on, each 40GE port indicator shows the status of the third 10GE port converted from the corresponding 40GE port. • When Breakout indicator 4 is on, each 40GE port indicator shows the status of the fourth 10GE port converted from the corresponding 40GE port. Example: If the first 40GE port in **Figure 4-35** is split into four 10GE ports and the second 40GE port is not split: • When Breakout indicator 1 is on, the indicator of 40GE port 1 shows the status of the first 10GE port converted from 40GE port 1, and the indicator of 40GE port 2 still shows the status of 40GE port 2. • When Breakout indicator 2 is on, the indicator of 40GE port 1

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No.	Indicator	Name	Color	Status	Description
					shows the status of the second 10GE port converted from 40GE port 1, and the indicator of 40GE port 2 still shows the status of 40GE port 2.
7	USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
				Steady on	USB-based deployment is complete.
				Blinking	The system is reading data from a USB flash drive.
			Red	Steady on	USB-based deployment fails.
8	ACT	Mini USB port indicator	Green	Off	The mini USB port is not activated and the current console port is available.
				Steady on	The mini USB port is activated and the current console port is unavailable.
9	-	Management port indicator	Green	Off	No link is established on the port.
				Steady on	A link is established on the port.
			Yellow	Blinking	The port is sending or receiving data.

Ports

10GBASE-T Ethernet Electrical Port

A 10GBASE-T Ethernet electrical port receives and sends service traffic at the rate of 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port can work at the rate of 100 Mbit/s or 1000 Mbit/s through auto-sensing. 10GBASE-T Ethernet electrical ports must use Category 6A shielded Ethernet cables or higher Ethernet cables. **Table 4-29** shows the attributes of a 10GBASE-T Ethernet electrical port.

Table 4-29 Attributes of a 10GBASE-T Ethernet electrical port

Attribute	Description
Connector type	RJ45

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Attribute	Description
Standards compliance	IEEE802.3an and IEEE802.3az
Applicable cable	Straight-through cable and crossover cable
Working mode	Supported rate: 100/1000 Mbit/s and 10 Gbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

40GE QSFP+ Ethernet Optical Port

A 40GE QSFP+ Ethernet optical port receives and sends services at the rate of 40 Gbit/s. If a 40GE QSFP+ Ethernet optical port is split into four 10GE ports, it must use 1-to-4 QSFP+ optical modules and optical fibers or 1-to-4 QSFP+ cables. **Table 4-30** describes the attributes of a 40GE QSFP+ Ethernet optical port.

Table 4-30 Attributes of a 40GE QSFP+ Ethernet optical port

Attribute	Description
Connector type	LC/MPO
Optical port attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ba
Working mode	Full-duplex

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. **Table 4-31** describes the attributes of the console port.

Table 4-31 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)

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Attribute	Description
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

NOTE

- The console port and Mini USB port share one internal serial port. You can use the console port or Mini USB port as the serial port according to your needs. When the Mini USB is activated, the console port cannot be used.
- When both the console port and Mini-USB port have a cable connected, the Mini-USB port is used.

Mini USB Port

The Mini USB port can connect to a configuration terminal for onsite configuration of the system, but the configuration terminal must have a USB serial port driver installed. The Mini USB port is used as the serial port once a link is established on the port.

ETH Management Port (Combo)

The ETH management port (combo) consists of an electrical port and an optical port. You can connect the electrical or optical port to a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The electrical and optical ports are logically multiplexed, and only one of them can work at a time.

NOTE

The combo port automatically selects the working mode as follows:

- If the optical port has no optical module installed and the electrical port has no network cable connected, the port type depends on which port is connected first. If the electrical port is connected by a network cable first, the electrical port is used for data switching. If the optical port has an optical module installed first, the optical port is used for data switching.
- If the electrical port has a network cable connected and is in Up state, the electrical port is still used for data switching when the optical port has an optical module installed.
- If the optical port has an optical module installed and is in Up state, the optical port is still used for data switching when the electrical port has a network cable connected.
- If the optical port has an optical module and optical fiber installed and the electrical port has a network cable connected, the optical port is used for data switching after the switch restarts.

The combo electrical port uses a Category 5 or higher category network cable. **Table 4-32** describes the attributes of the combo electrical port.

Table 4-32 Attributes of the combo electrical port

Attribute	Description
Connector type	RJ45

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Attribute	Description
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

The combo optical port uses a 100M or GE optical module and matching optical fibers. A 100M optical module can be used only after the switch starts successfully. If a 10GE optical module is installed, the interface can go Up, but the system displays an alarm message, indicating that the interface does not support the optical module. If a GE copper module is installed and the remote interface also has a GE copper module installed, the local interface can go Up but does not support rate configuration. **Table 4-33** describes the attributes of the combo optical port.

Table 4-33 Attributes of the combo optical port

Attribute	Description
Connector type	LC
Standards compliance	IEEE802.3z
Working mode	100/1000 Mbit/s Full-duplex

The CE6856-48T6Q-HI switch has two ETH management ports (combo). Pay attention to the following when using the two management ports:

- The two ports cannot be used together, and you must choose one of them to use.
- Before start of a CE6856-48T6Q-HI switch, you can select interface 1 or interface 2 in the BIOS menu. Interface 1 is the default choice. For details, see "Modify parameters" in the *Basic Configuration Guide - BIOS Menu*.
- After registration of the switch succeeds:
  - If both the management ports have a cable connected and are in Up state, port 1 acts as the primary management port and port 2 becomes the backup automatically. The management interface number displayed on the command line interface is MEth0/0/0, regardless of which port is used.
  - If cables are connected to the two ETH management ports after successful registration of the switch, the port that is connected first is used as the primary management port.

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– If port 1 fails, the system switches management traffic to port 2 automatically. When port 1 recovers, management traffic cannot be switched back to port 1, unless port 2 fails or the switch restarts. You can observe indicators on the ETH management ports to determine which port is used currently. (The Link indicator of the ETH management port used is steady green. If data is being transmitted on this port, its ACT indicator is blinking yellow. The indicators of the backup port are off.)

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-34 lists technical specifications of the CE6856-48T6Q-HI switch.

Table 4-34 Technical specifications

Item		Description
Physical specifications		• Dimensions (W x D x H): 442.0 mm x 600.0 mm x 43.6 mm (17.4 in. x 23.6 in. x 1.72 in.) • Weight (with two power modules and two fan modules, calculated based on the heaviest model if multiple models are supported): 12.6 kg (27.78 lb)
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: –40°C to +70°C (–40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 53 dBA • Front-to-back airflow: < 53 dBA
Power specifications	Power source type	AC/DC/high-voltage DC
	AC power input	• Rated input voltage range: 100 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz

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Item		Description
	DC power input	• Rated voltage range: –48 V DC to –60 V DC • Maximum voltage range: –38.4 V DC to –72 V DC
	High-voltage DC power input	• Rated voltage of 240 V high-voltage DC power input: 240 V DC • Maximum voltage range of 240 V high-voltage DC power input: 188 V DC to 290 V DC • Rated voltage range of 380 V high-voltage DC power input: 240 V DC to 380 V DC • Maximum voltage range of 380 V high-voltage DC power input: 188 V DC to 400 V DC
	Rated input current	• 600 W AC&240 V DC power module (PAC-600WB series): 8 A (100 V AC to 240 V AC)/4 A (240 V DC) • 600 W high-voltage DC power module (PHD-600WA series): 4 A (240 V DC to 380 V DC) • 1200 W DC power module (PDC-1K2WA series): 38 A (–48 V DC to –60 V DC)
Chassis power consumption	Maximum power consumption	346 W
	Typical power consumption	219 W (100% throughput, 3 m Ethernet cables on 48 ports and QSFP+ cables on 6 ports, double power modules)
Chassis heat dissipation	Maximum heat dissipation	1181 BTU/hr
	Typical heat dissipation	747 BTU/hr (100% throughput, 3 m Ethernet cables on 48 ports and QSFP+ cables on 6 ports, double power modules)
Surge protection		Ethernet electrical ports: 2 kV in common mode Power module: • AC: 4 kV in common mode and 2.5 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling

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Item		Description
	Airflow	Front-to-back or back-to-front, depending on the fan modules and power modules
Reliability and availability	Power module backup	1+1 backup
	Fan module backup	1+1 backup not supported **NOTE** A CE6800 chassis uses two fan modules, with each fan module containing two fans. The four fans in the chassis work in 3+1 backup mode.
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	54.48
	Mean time to repair (MTTR)	1.81
	Availability	0.99999620929
Technical specifications	Processor	1.2 GHz, quad-core
	DRAM Memory	4 GB
	NOR Flash	16 MB
	NAND Flash	1 GB
Stack	Service port supporting the stack function	10GE electrical ports and 40GE optical ports
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

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Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-35 provides the ordering information.

Table 4-35 Ordering information

Part Number	Part Model	Part Description
02351LVC	CE6856-48T6Q-HI	CE6856-48T6Q-HI Switch (48-Port 10GE RJ45, 6-Port 40GE QSFP+, Without Power Module and FAN Box)
02351YPR	CE6856-HI-F-B00	CE6856-48T6Q-HI Switch (48-Port 10GE RJ45, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
02351YPQ	CE6856-HI-B-B00	CE6856-48T6Q-HI Switch (48-Port 10GE RJ45, 6-Port 40GE QSFP+, 2*AC Power Module, 2*FAN Box, Port-side Intake)

4.4.3 CE6857-48S6CQ-EI

Version Mapping

Table 4-36 lists the mappings between the CE6857-48S6CQ-EI and software versions.

Table 4-36 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE6800	CE6857	CE6857-48S6CQ-EI	CE6857EI	V200R005C10 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

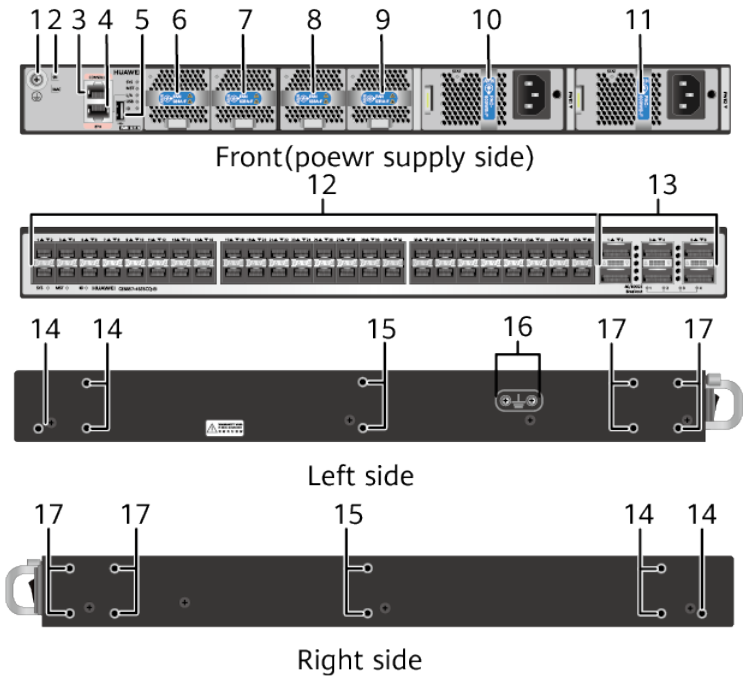
Appearance and Structure

NOTE

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Figure 4-37 CE6857-48S6CQ-EI



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1 Applicable fan modules: • **FAN-031A series fan modules**
7	Fan slot 2 Applicable fan modules: • **FAN-031A series fan modules**	8	Fan slot 3 Applicable fan modules: • **FAN-031A series fan modules**
9	Fan slot 4 Applicable fan modules: • **FAN-031A series fan modules**	10	Power supply slot 1 Applicable power modules: • **5.4 350 W DC Power Module (PDC350S12)** • **5.7 600 W AC Power Module (PAC600S12)**

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11	Power supply slot 2 Applicable power modules: • **5.4 350 W DC Power Module (PDC350S12)** • **5.7 600 W AC Power Module (PAC600S12)**	12	Forty-eight 10GE SFP+ Ethernet optical ports Applicable modules and cables: • **9.7 10GE SFP+ Optical Modules** (OSXD22N00, LE2MXSC80FF0 and SFP-10G-ZDWT-L not supported) • **9.4 GE eSFP Optical Modules**(Auto-negotiation is not supported) • **9.5 GE SFP Copper Modules** (works at 1000 Mbit/s) • **8.9.2 SFP+ to SFP+ AOC Cable** • **8.8.2 SFP+ to SFP+ High-Speed Cable** **NOTE** The 1000base-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.
13	Six 40GE/100GE QSFP28 Ethernet optical ports Applicable modules and cables: • **9.9 40GE QSFP+ Optical Modules** • **9.10 100GE QSFP28 Optical Modules** (QSFP28-100G-4WDM-40 not supported) • **8.9.4 QSFP+ to QSFP+ AOC cable** • **8.8.4 QSFP+ to QSFP+ High-Speed Cable** • **8.9.6 QSFP28 to QSFP28 AOC Cable** • **8.8.6 QSFP28 to QSFP28 High-Speed Cable**	14	Three port-side mounting holes for mounting brackets

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15	Two middle mounting holes for mounting brackets	16	Equipotential junction Grounding screw used in dual OT scenarios.
17	Four power-supply-side mounting holes for mounting brackets	-	-

Slot Description

Power Slots

Each of the CloudEngine 6800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability.

The CloudEngine 6800 series switches support 1+1 backup of power modules.

- When both power modules are working properly, each of them provides half of the power required for the chassis.
- When one power module fails, the other one provides all power required for the chassis.

All power modules of the devices are hot swappable.

Fan Slots

Each of the CloudEngine 6800 series switches has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability.

It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.

All fan modules are hot swappable.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

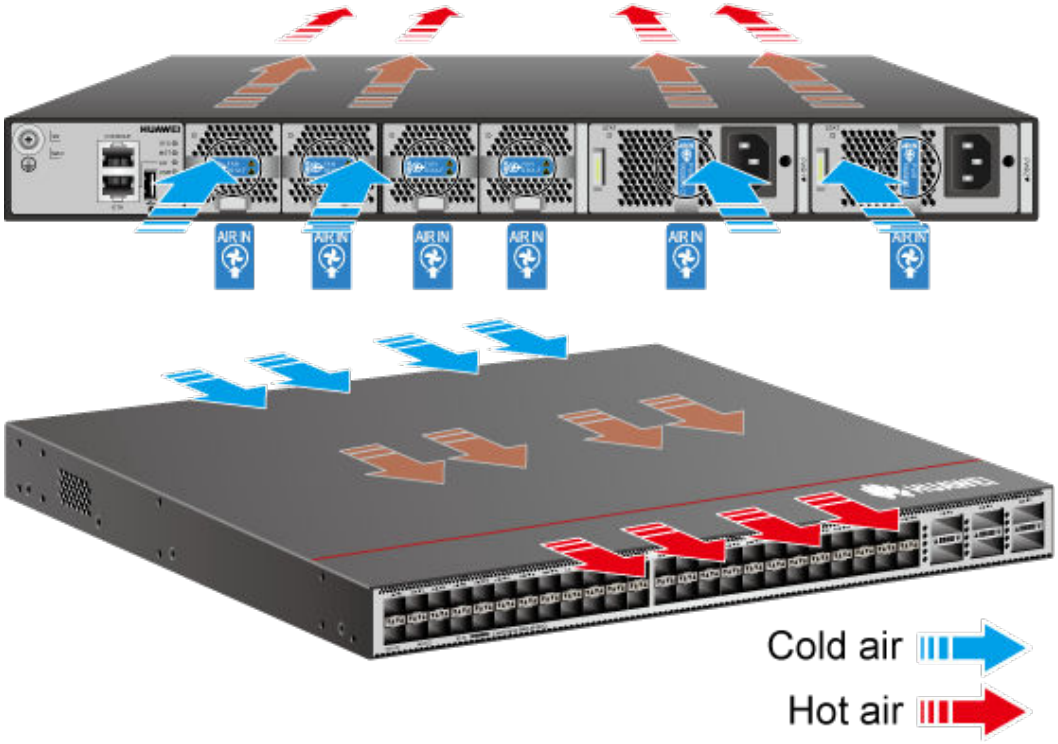
. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-38** (using a CE6863 chassis as an example).

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- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

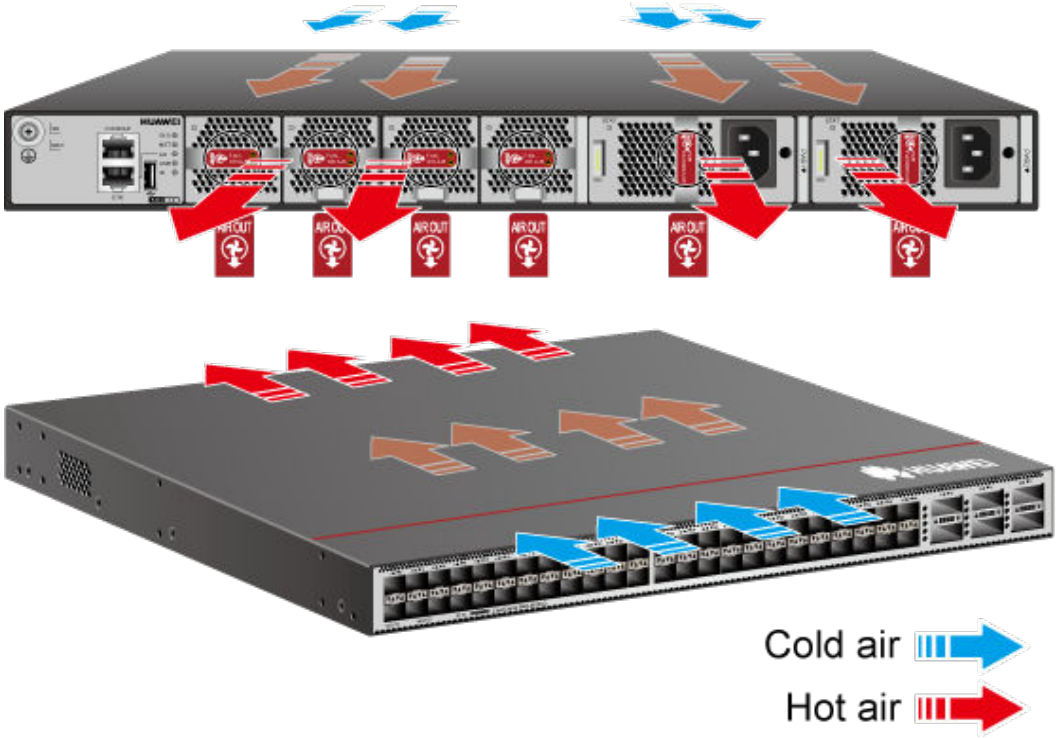
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-39** (using a CE6863 chassis as an example).

Figure 4-38 Front-to-back airflow for port-side exhaust



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Figure 4-39 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Indicators

The CE6857-48S6CQ-EI switch does not have the ETH management port indicator. The service port indicators are 10GE and 40GE/100GE port indicators, and other indicators are the same as those on the CE6865-48S8CQ-EI. The **CE6865-48S8CQ-EI** is used as an example here to describe the indicators.

Ports

10GE SFP+ Ethernet Optical Port

A 10GE SFP+ Ethernet optical port supports auto-sensing to 1 Gbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. **Table 4-37** describes the attributes of a 10GE SFP+ Ethernet optical port.

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Table 4-37 Attributes of a 10GE SFP+ Ethernet optical port

Attribute	Description
Connector type	LC
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ae
Working mode	Supported rate: 1000 Mbit/s and 10 Gbit/s auto-sensing Full-duplex

40GE/100GE QSFP28 Optical Port

Table 4-38 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 4-38 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depending on the optical module
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ba
Working mode	Full-duplex

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. Table 4-39 describes the attributes of the console port.

Table 4-39 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

ETH Management Port (RJ45)

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The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. **Table 4-40** describes the attributes of the ETH management port (RJ45).

Table 4-40 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-41 lists technical specifications of the CE6857-48S6CQ-EI switch.

Table 4-41 Technical specifications

Item		Description
Physical specifications		• Dimensions (W x D x H): 442.0 mm x 420.0 mm x 43.6 mm (17.4 in. x 16.5 in. x 1.72 in.) • Weight (with two power modules and two fan modules, calculated based on the heaviest model if multiple models are supported): 7.6 Kg (16.76 lb)
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)

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Item		Description
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 53 dBA • Front-to-back airflow: < 52 dBA
Power specifications	Power source type	AC
	AC power input	• Rated input voltage range: 100 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	DC power input	• Rated voltage range: -48 V DC to -60 V DC • Maximum voltage range: -38.4 V DC to -72 V DC
	High-voltage DC power input	Not supported
	Rated input current	• 350 W DC power (PDC350S12 series): 11 A (-48 V DC to -60 V DC) • 600 W AC power (PAC600S12 series): 9 A (100 V AC to 240 V AC)
Chassis power consumption	Maximum power consumption	287 W
	Typical power consumption	152 W (100% throughput, SFP28 cables on 48 ports and QSFP28 cables on 6 ports, double power modules) 195 W (100% throughput, all optical interfaces on the switch are equipped with the short-distance optical modules, double power modules)
Chassis heat dissipation	Maximum heat dissipation	979 BTU/Hr

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Item		Description
	Typical heat dissipation	519 BTU/Hr (100% throughput, SFP28 cables on 48 ports and QSFP28 cables on 6 ports, double power modules) 665 BTU/Hr (100% throughput, all optical interfaces on the switch are equipped with the short-distance optical modules, double power modules)
Surge protection		Power module: • AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Front-to-back or back-to-front, depending on the fan modules and power modules
Reliability	Power module backup	1+1 backup
	Fan module backup	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	45.3 years
	Mean time to repair (MTTR)	1.68 hours
	Availability	0.99999576002
Technical specifications	Processor	1.4 GHz, four-core
	DRAM Memory	4 GB
	NOR Flash	64 MB
	NAND Flash	2 GB

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Item		Description
Stack	Service port supporting the stack function	10GE optical ports, 40GE optical ports, and 100GE optical ports
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-42 provides the ordering information.

Table 4-42 Ordering information

Part Number	Part Model	Part Description
02352CHS	CE6857-EI-F-B0B	CE6857-48S6CQ-EI switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)
02352CHR	CE6857-EI-B-B0B	CE6857-48S6CQ-EI switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)
02352CHQ	CE6857-48S6CQ-EI	CE6857-48S6CQ-EI switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)

4.4.4 CE6857E-48S6CQ

4.4.4.1 CE6857E-48S6CQ (02353VWU)

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Overview

Table 4-43 Basic information about the CE6857E-48S6CQ

Item	Details
Description	CE6857E-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)
Part Number	02353VWU
Model	CE6857E-48S6CQ
First supported version	V200R020C10
Other part numbers	02353VWW (CE6857E-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02353VWX (CE6857E-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6857E

Appearance

Figure 4-40 Appearance of the CE6857E-48S6CQ



Front (power supply side)



Rear (port side)

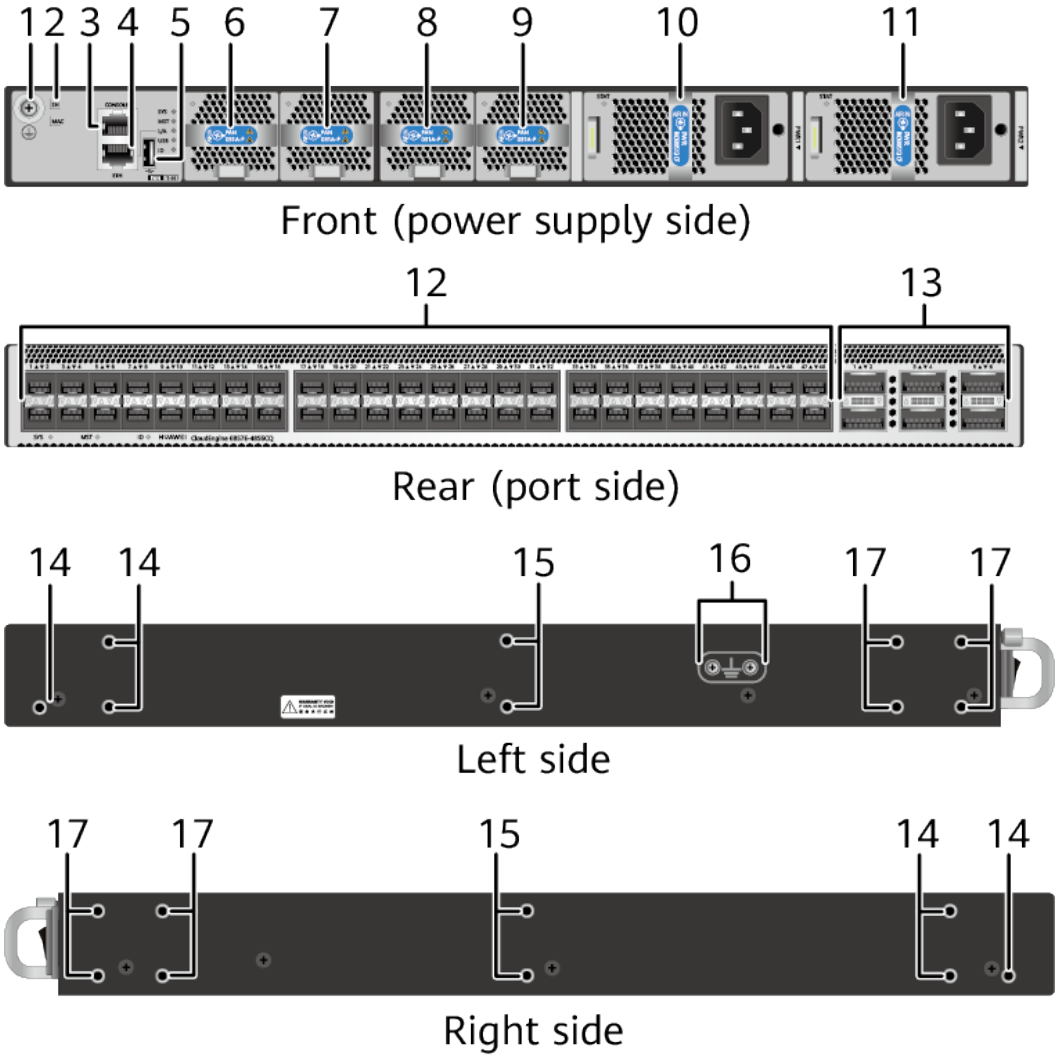
NOTE

The figures in this document are for reference only.

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Components

Figure 4-41 Components of the CE6857E-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-44 Slots on the CE6857E-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	1) Each of the CloudEngine 6800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. 2) The CloudEngine 6800 series switches support 1+1 backup of power modules. When both power modules are working properly, each of them provides half of the power required for the chassis. When one power module fails, the other one provides all power required for the chassis. 3) All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	1) Each of the CloudEngine 6800 series switches has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. 2) It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-42 Indicators on the CE6857E-48S6CQ 1

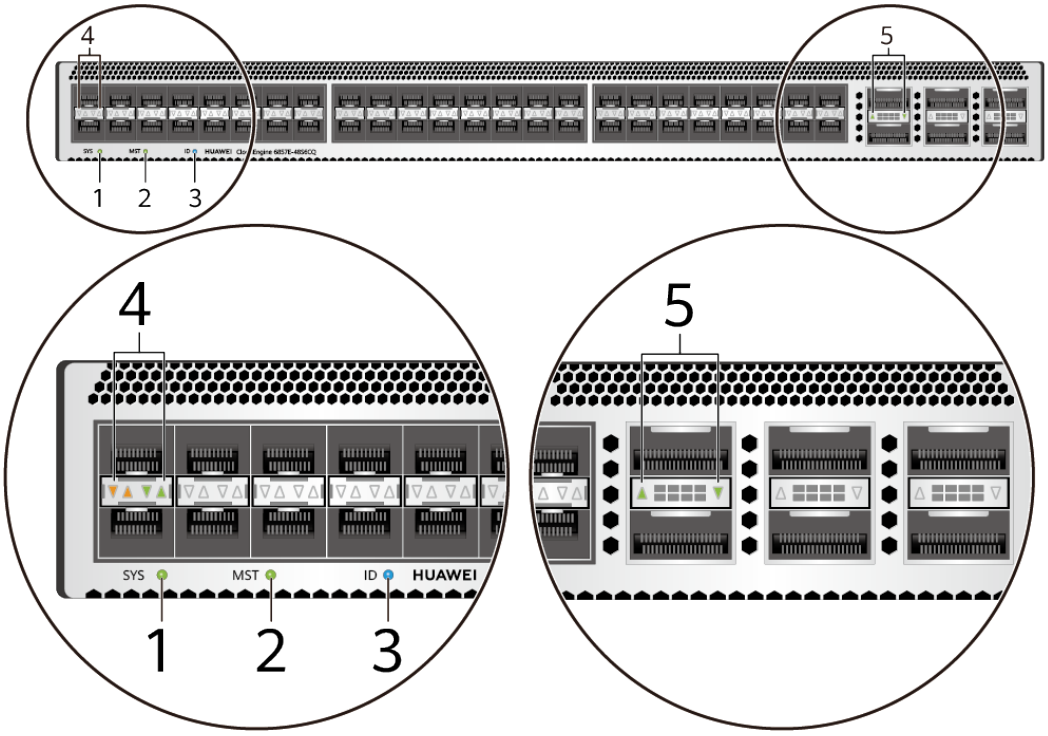
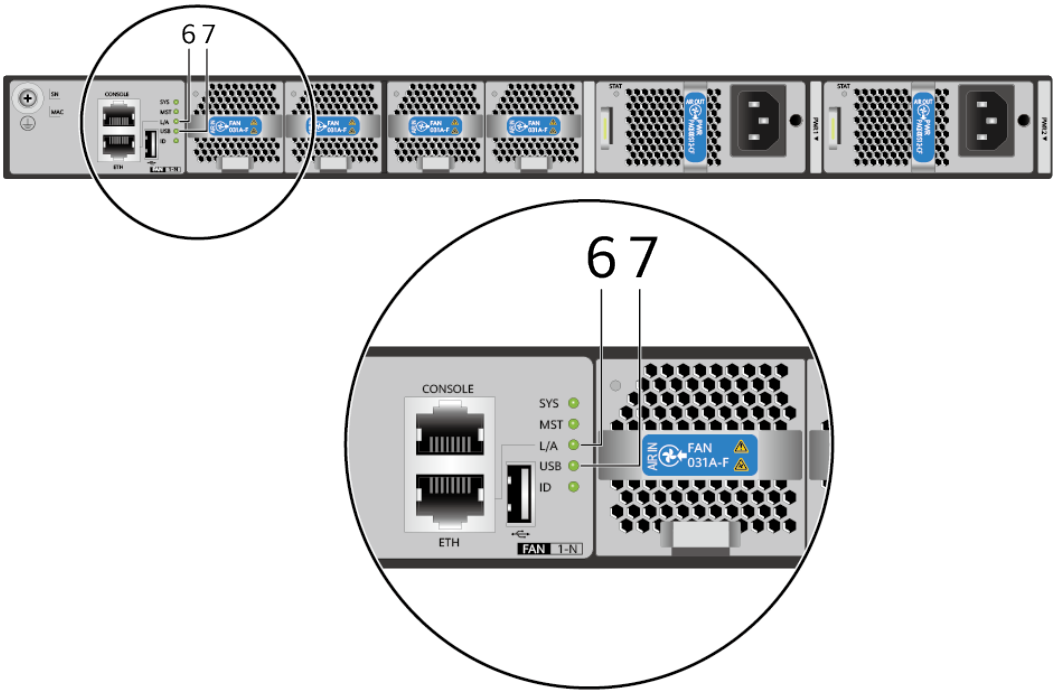


Figure 4-43 Indicators on the CE6857E-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE SFP+ Ethernet optical port)	5. Service port indicator (40GE/100GE QSFP28 Ethernet optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-45 Indicators on the CE6857E-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running properly.
		Red	Steady on	• The system fails to start. • At least one power module does not work properly. • At least one fan module does not work properly.
MST	Stack master/ slave indicator	Green	Off	The switch is not a master switch in the stack.

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Silkscreen	Name	Color	Status	Description
	NOTE • In V200R003C00 and later versions, you can use the dfs-master led enable command to enable the stack master/slave indicator to display the DFS group master and backup status. • After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Steady on	The switch is a master switch in the stack or a standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Yellow	Off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	ETH management port indicator	Green	Off	No link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment has failed.

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Ports

Table 4-46 Ports on the CE6857E-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ Ethernet Optical Port	SFP+	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1000 Mbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. - Optical attributes: depending on the module or cable in use	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. The 1000BASE-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 2. 10GE optical interfaces installed with GE copper modules support only the rate of 1000 Mbit/s. 3. 10GE optical interfaces do not support the OSXD22N00, LE2MXSC80FF0, or SFP-10G-ZDWT-L optical module.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 Optical Port	Depending on the optical module	A 40GE/100GE QSFP28 optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • A 40GE/100GE QSFP28 optical port cannot be split. • Optical attributes: depending on the module or cable in use • Standards compliance: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **NOTE** The QSFP-100G-4WDM-40 optical module is not supported.

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Port	Connector Type	Description	Available Components
Console Port	RJ45	The console port is connected to a console for onsite configuration. • Standards compliance: RS232 • Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	Console cable
ETH Management Port	RJ45	The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category 5 or higher category cable

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Port	Connector Type	Description	Available Components
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-44 Front-to-back airflow for port-side exhaust

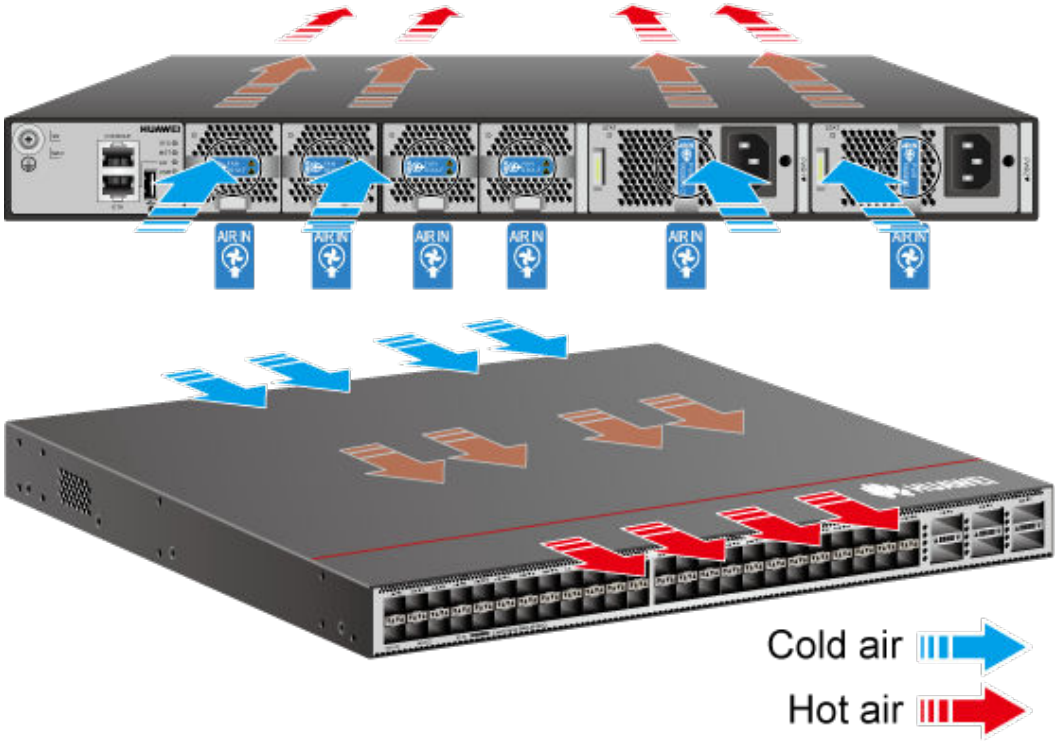
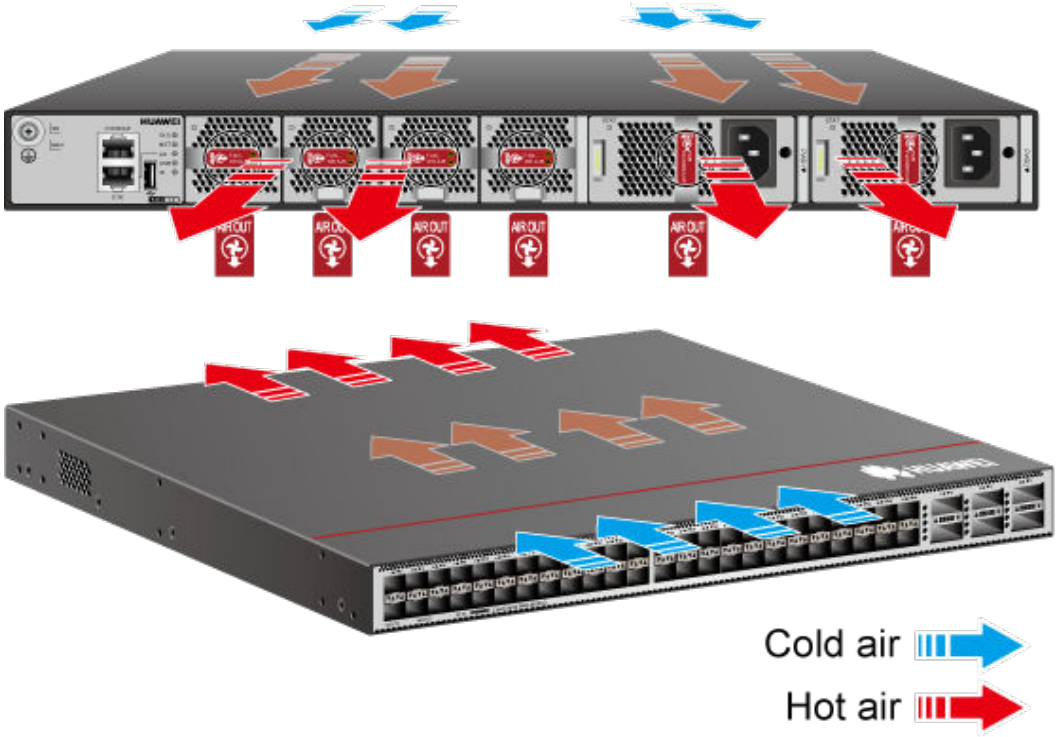


Figure 4-45 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-47 Technical specifications of the CE6857E-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.5 kg (12.1 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.75 kg (17.1 lb) (including AC power modules and fan modules, excluding optical modules)
Weight with packaging [kg (lb)]	8.75 kg (19.3 lb)
Weight with packaging (full configuration) [kg (lb)]	11 kg (24.3 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.6 GHz
Memory	DRAM: 4 GB
NOR Flash	128 MB
SSD Flash	8 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE SFP+ (10GE LRM/80 km linear optical modules are not supported. In addition, the 1000BASE-X auto-negotiation function is not supported. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.)
Uplink Service interface	6*100GE QSFP28 (Note: 1. Each 100GE QSFP28 port can be used as a 40GE port. 2. A 100GE QSFP28 port cannot be split into 4x25GE and 4x10GE ports.)
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 148 W (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 185 W (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 505 BTU/hour (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 631 BTU/hour (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Static power consumption [W]	106 W
Static heat dissipation [BTU/hour]	362 BTU/hour
Maximum power consumption [W]	318 W

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Item	Specification
Maximum heat dissipation	1085 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48V DC to -60V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Port-side intake or exhaust, depending on the fan modules and power modules.
Availability	0.9999961836
MTBF [year]	49.35 years
MTTR [hour]	1.65 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 50 dBA (maximum: 54 dBA) • Back-to-front airflow: average 53 dBA (maximum: 57 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 69 dBA (maximum: 73 dBA) • Back-to-front airflow: average 72 dBA (maximum: 77 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0 to 1800 m (0 to 5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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4.4.4.2 CE6857E-48S6CQ (02353VWU-001)

Overview

Table 4-48 Basic information about the CE6857E-48S6CQ

Item	Details
Description	CE6857E-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)
Part Number	02353VWU-001
Model	CE6857E-48S6CQ
First supported version	V200R022C00
Other part numbers	02353VWW-001 (CE6857E-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02353VWX-001 (CE6857E-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6857E

Appearance

Figure 4-46 Appearance of the CE6857E-48S6CQ



Front (power supply side)



Rear (port side)

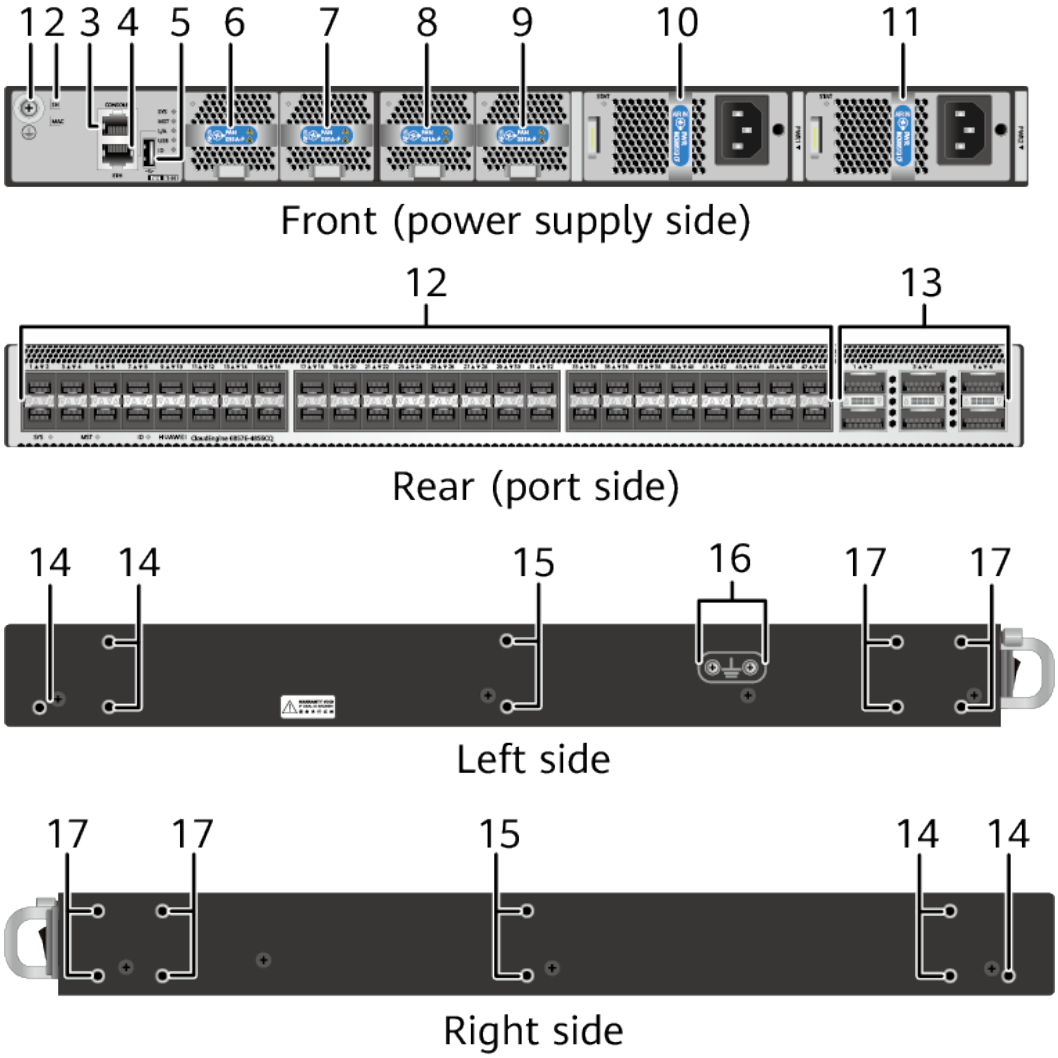
NOTE

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Components

Figure 4-47 Components of the CE6857E-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-49 Slots on the CE6857E-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-48 Indicators on the CE6857E-48S6CQ 1

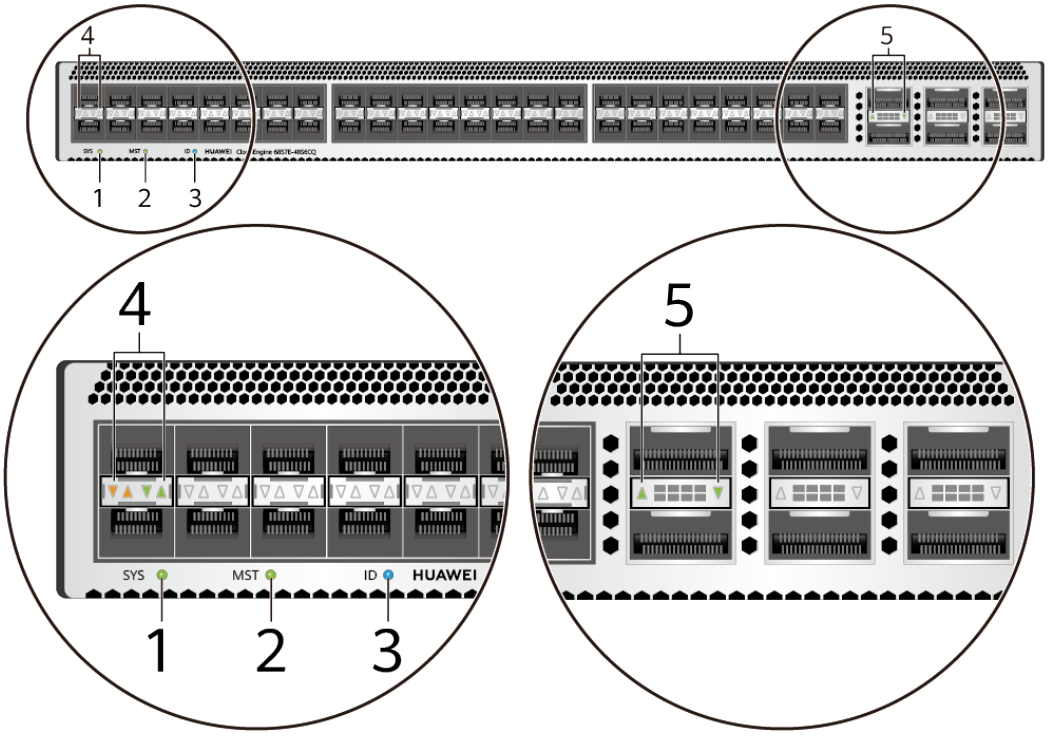
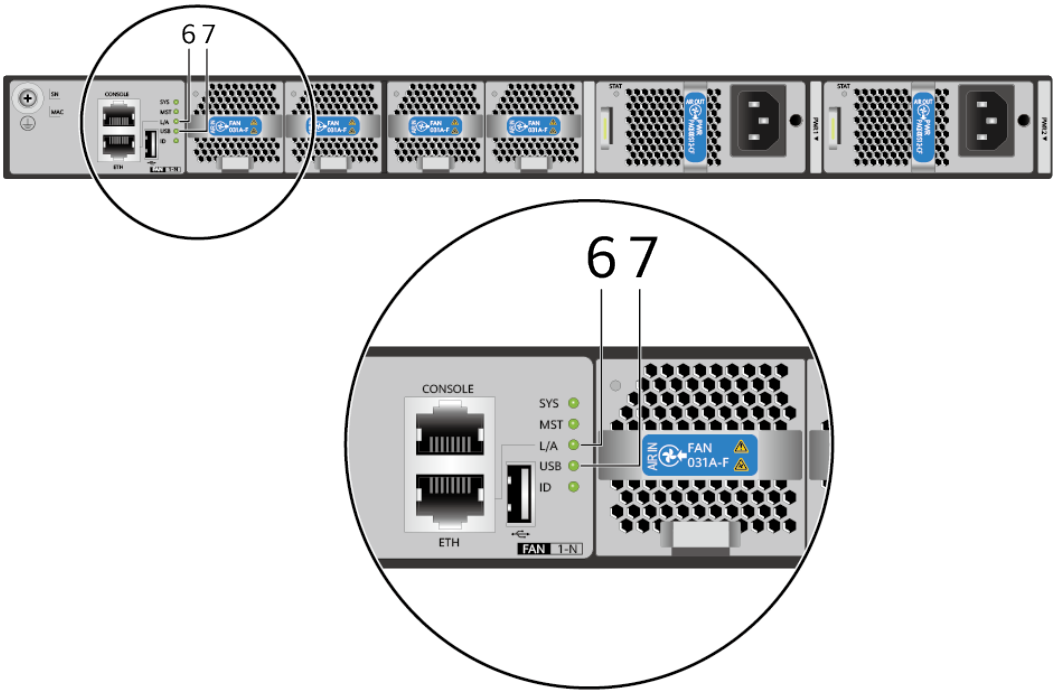


Figure 4-49 Indicators on the CE6857E-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE SFP+ Ethernet optical port)	5. Service port indicator (40GE/100GE QSFP28 Ethernet optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-50 Indicators on the CE6857E-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-51 Ports on the CE6857E-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	SFP+	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1000 Mbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. - Optical attributes: depending on the module or cable in use	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. The 1000BASE-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 2. 10GE optical interfaces installed with GE copper modules support only the rate of 1000 Mbit/s. 3. 10GE optical interfaces do not support the OSXD22N00, LE2MXSC80FF0, or SFP-10G-ZDWT-L optical module.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **NOTE** The QSFP-100G-4WDM-40 optical module is not supported.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-50 Front-to-back airflow for port-side exhaust

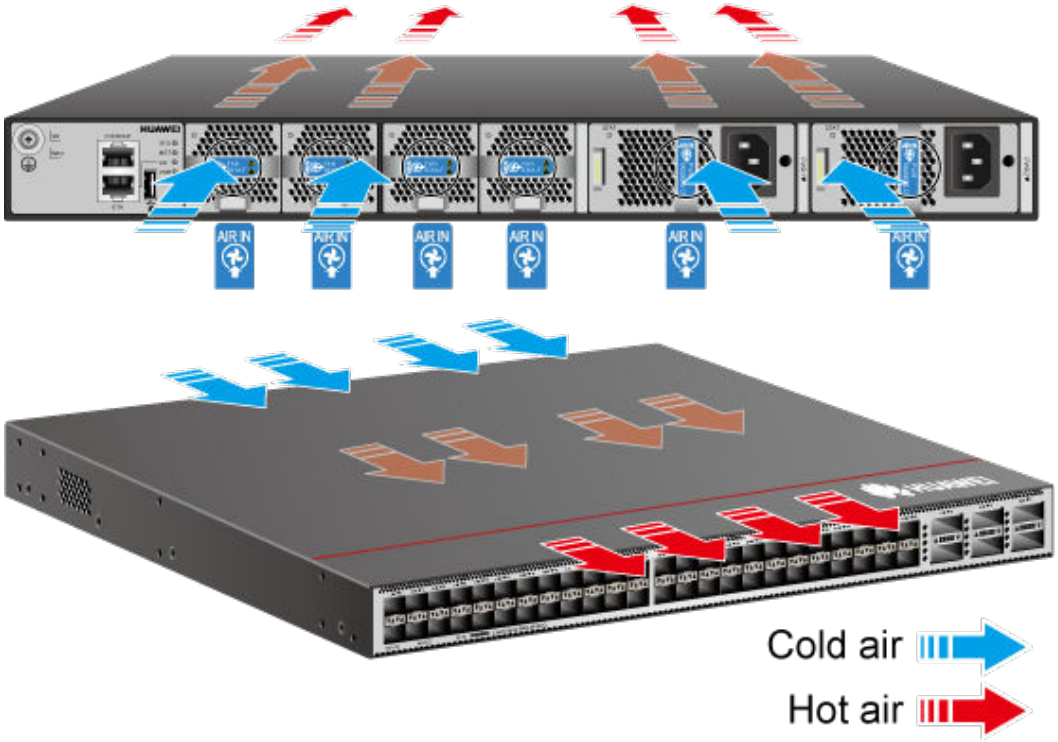
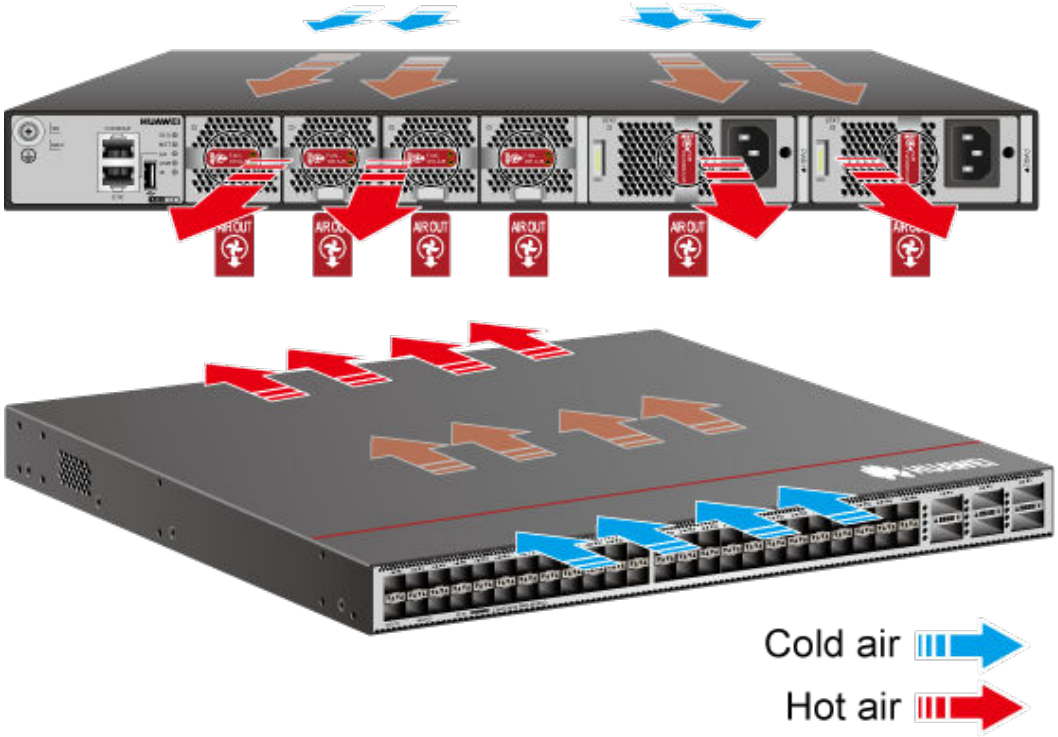


Figure 4-51 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-52 Technical specifications of the CE6857E-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.5 kg (12.1 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.75 kg (17.1 lb) (including AC power modules and fan modules, excluding optical modules)
Weight with packaging [kg (lb)]	8.75 kg (19.3 lb)
Weight with packaging (full configuration) [kg (lb)]	11 kg (24.3 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.6 GHz
Memory	DRAM: 4 GB
NOR Flash	128 MB
SSD Flash	8 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE SFP+ (10GE LRM/80 km linear optical modules are not supported. In addition, the 1000BASE-X auto-negotiation function is not supported. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.)
Uplink Service interface	6*100GE QSFP28 (Note: 1. Each 100GE QSFP28 port can be used as a 40GE port. 2. A 100GE QSFP28 port cannot be split into 4x25GE and 4x10GE ports.)
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 148 W (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 185 W (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 505 BTU/hour (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 631 BTU/hour (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Static power consumption [W]	106 W
Static heat dissipation [BTU/hour]	362 BTU/hour
Maximum power consumption [W]	318 W

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Item	Specification
Maximum heat dissipation	1085 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48V DC to -60V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Port-side intake or exhaust, depending on the fan modules and power modules.
Availability	0.9999961836
MTBF [year]	49.35 years
MTTR [hour]	1.65 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 50 dBA (maximum: 54 dBA) • Back-to-front airflow: average 53 dBA (maximum: 57 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 69 dBA (maximum: 73 dBA) • Back-to-front airflow: average 72 dBA (maximum: 77 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0 to 1800 m (0 to 5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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4.4.5 CE6857E-48T6CQ (02353VWQ)

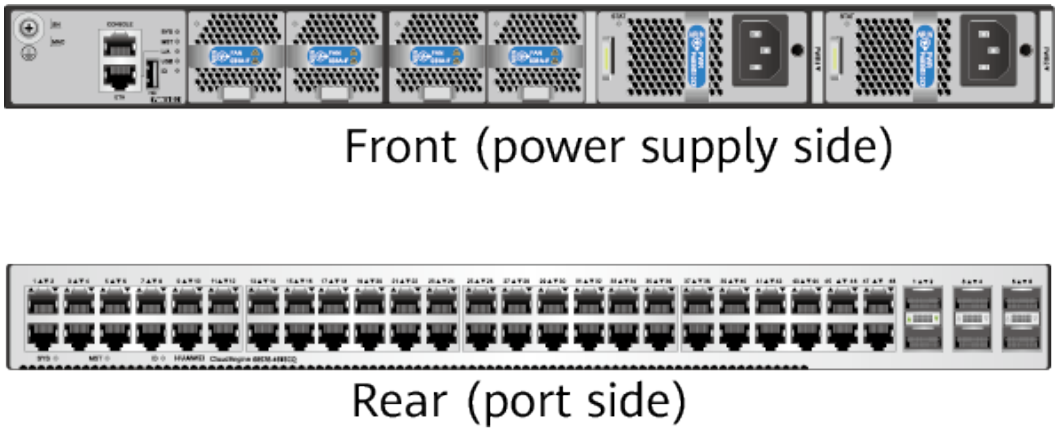
Overview

Table 4-53 Basic information about the CE6857E-48T6CQ

Item	Details
Description	CE6857E-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02353VWQ
Model	CE6857E-48T6CQ
First supported version	V200R020C10
Other part numbers	02353VWR (CE6857E-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02353VWT (CE6857E-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6857E

Appearance

Figure 4-52 Appearance of the CE6857E-48T6CQ



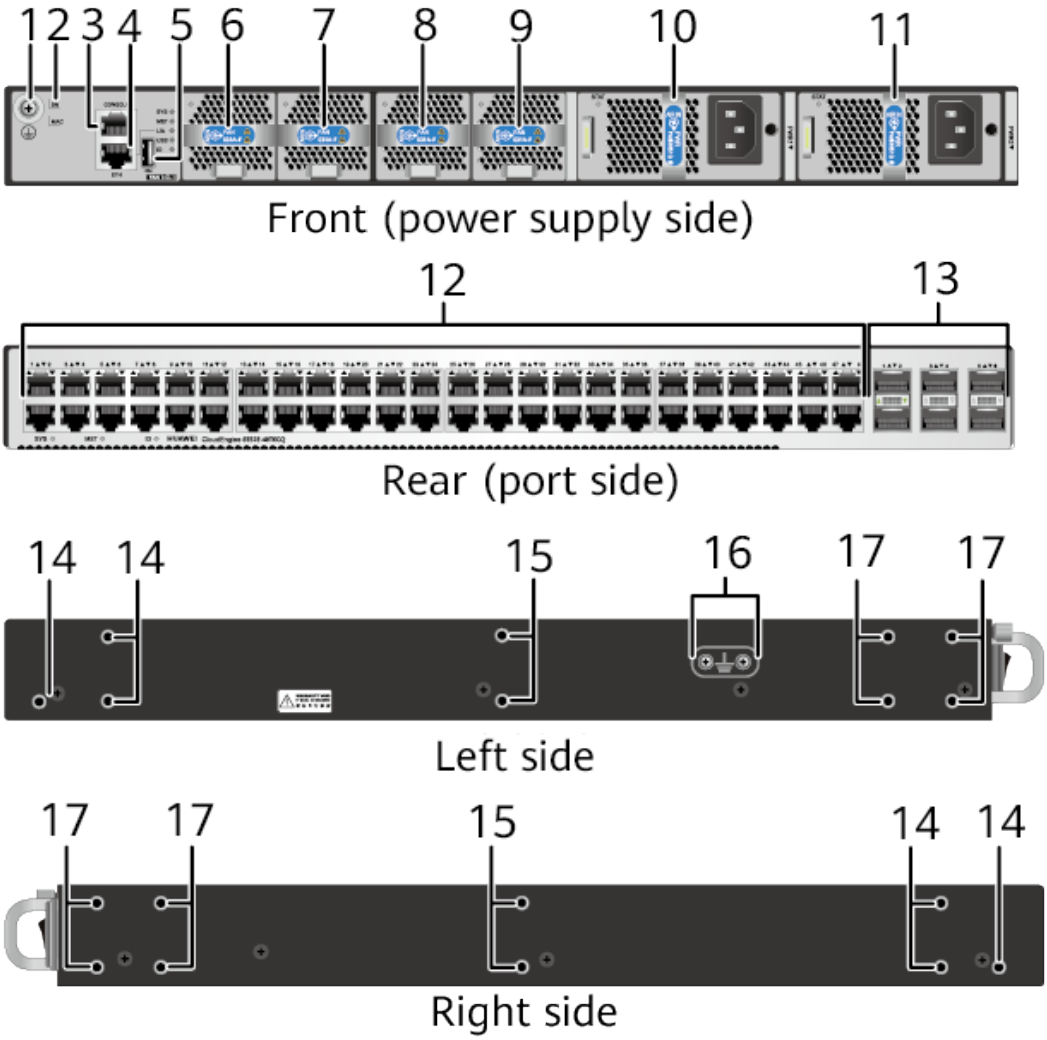
NOTE

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Components

Figure 4-53 Components of the CE6857E-48T6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-54 Slots on the CE6857E-48T6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	1) Each of the CloudEngine 6800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. 2) The CloudEngine 6800 series switches support 1+1 backup of power modules: When both power modules are working properly, each of them provides half of the power required for the chassis. When one power module fails, the other one provides all power required for the chassis. 3) All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	1) Each of the CloudEngine 6800 series switches has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. 2) It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-54 Indicators on the CE6857E-48T6CQ 1

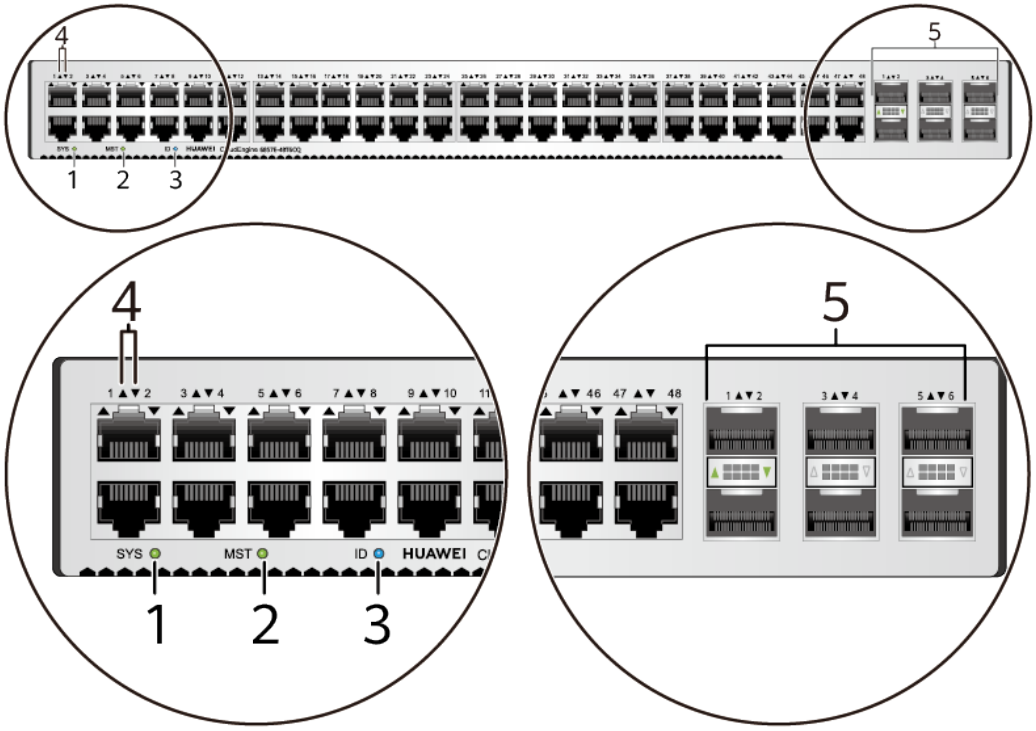
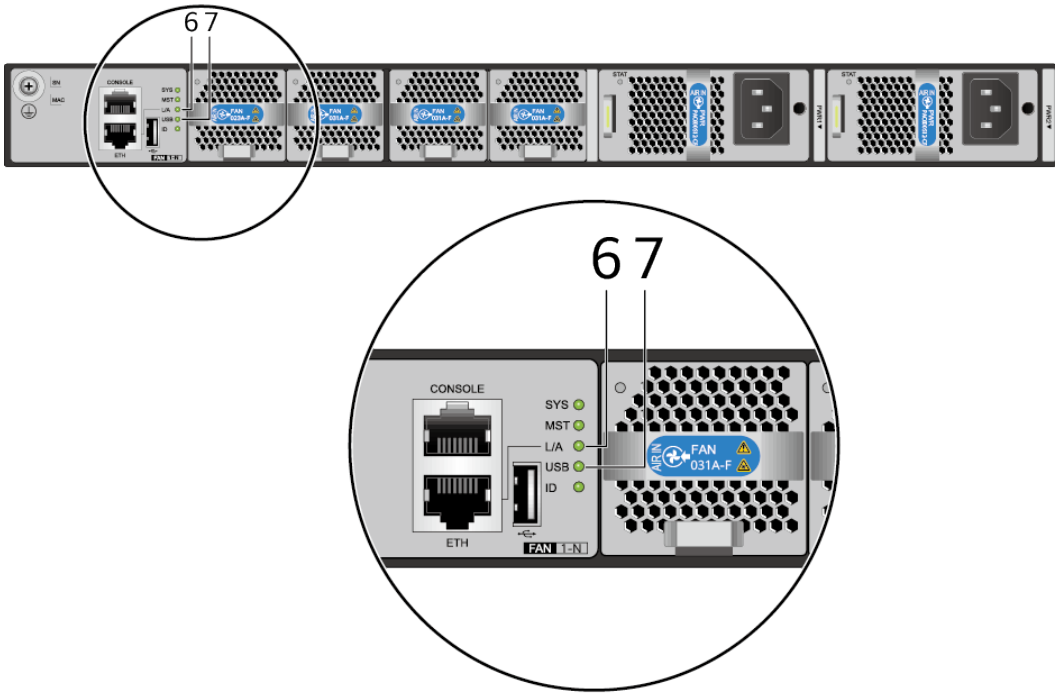


Figure 4-55 Indicators on the CE6857E-48T6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T Ethernet electrical port)	5. Service port indicator (40GE/100GE QSFP28 Ethernet optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-55 Indicators on the CE6857E-48T6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running properly.
		Red	Steady on	• The system fails to start. • At least one power module does not work properly. • At least one fan module does not work properly.
MST	Stack master/ slave indicator	Green	Off	The switch is not a master switch in the stack.

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Silkscreen	Name	Color	Status	Description
	NOTE In V200R003C00 and later versions, you can use the dfs-master led enable command to enable the stack master/slave indicator to display the DFS group master and backup status. After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Steady on	The switch is a master switch in the stack or a standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
L/A	ETH management port indicator	Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-56 Ports on the CE6857E-48T6CQ

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet Electrical Port	RJ45	A 10GBASE-T Ethernet port receives and sends service traffic at a rate of 1000 Mbit/s or 10 Gbit/s. The port can work at the rate of 1000 Mbit/s through auto-sensing. It must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Standards compliance: IEEE 802.3an and IEEE 802.3az • Applicable cable: straight-through cable and crossover cable • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Straight-through cable and crossover cable

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 Optical Port	Depending on the optical module	A 40GE/100GE QSFP28 optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical attributes: depending on the module or cable in use • Standards compliance: IEEE 802.3ba • Working mode: full-duplex	• **40GE QSFP+ optical modules** • **100GE QSFP28 optical modules** • **40GE QSFP+ to 40GE QSFP + AOC cable** • **100GE QSFP28 to 100GE QSFP28 AOC cable** • **40GE QSFP+ to 40GE QSFP + high-speed cable** • **100GE QSFP28 to 100GE QSFP28 high-speed cable** In V2R21C00 and later versions, only 40G/100G uplink ports 3 and 4 can be configured to work in 4x25G or 4x10G mode, and they support the following cables: • **40GE QSFP+ to 4*10GE SFP + high-speed cable** • **40GE QSFP+ to 4* 10GE SFP + AOC cable** • **100GE QSFP28 to 4*25GE SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE The QSFP-100G-4WDM-40 optical module is not supported.
Console Port	RJ45	The console port is connected to a console for onsite configuration. • Standards compliance: RS232 • Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	**Console cable**

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Port	Connector Type	Description	Available Components
ETH Management Port	RJ45	The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category 5 or higher category cable
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

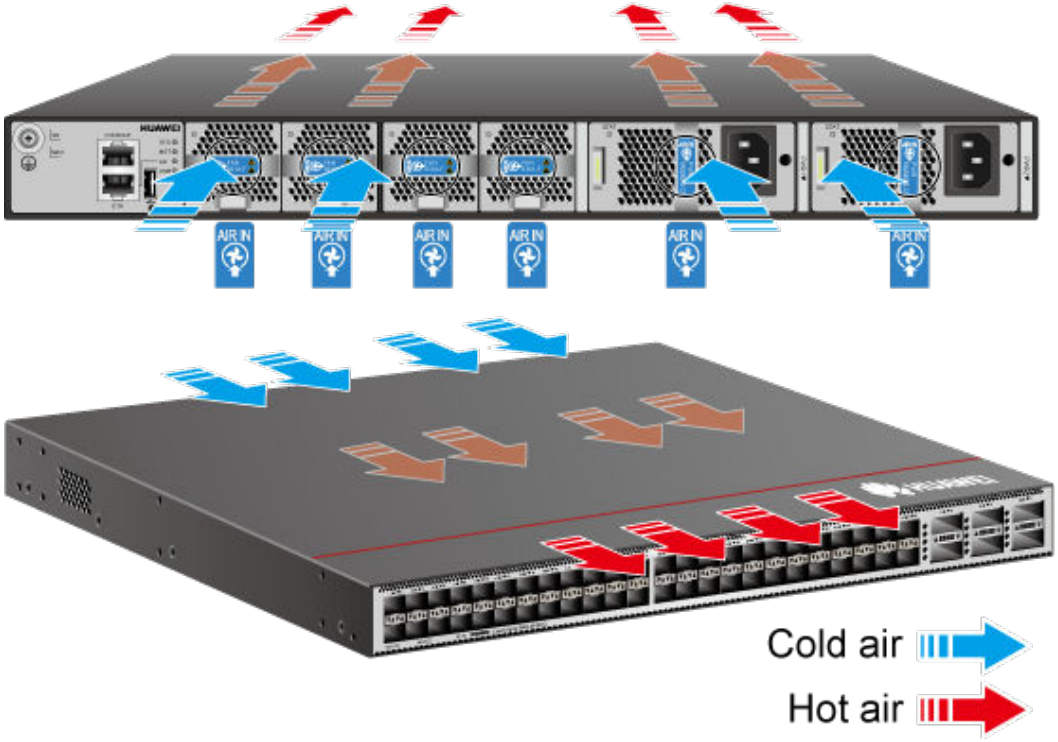
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

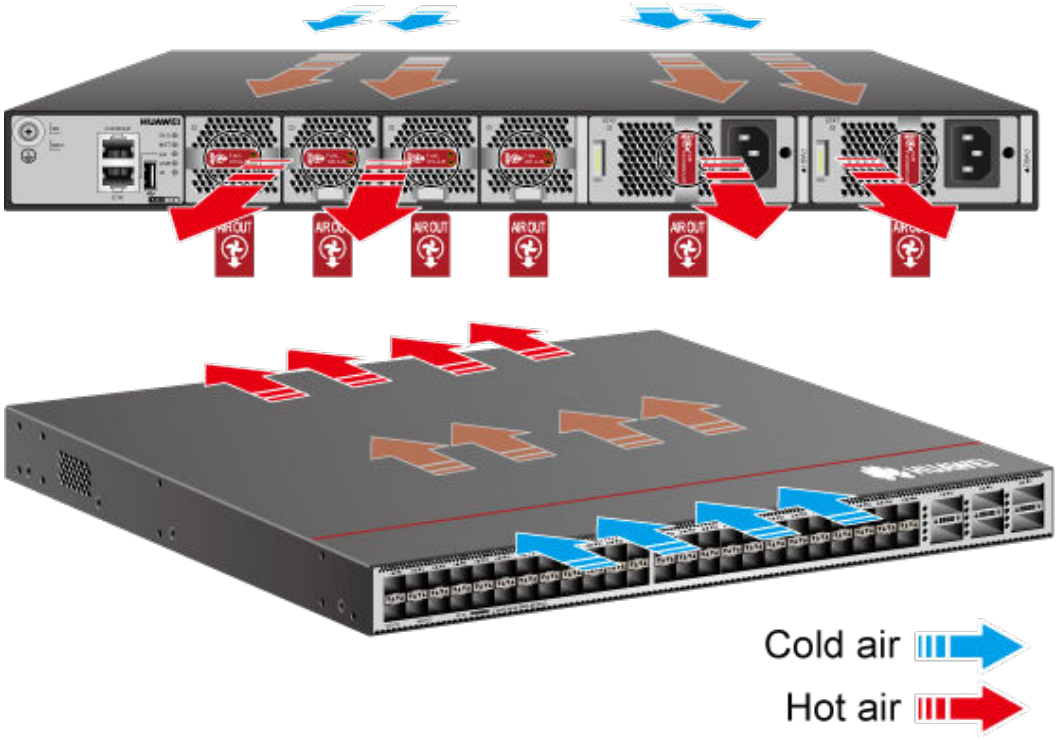
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

Figure 4-56 Front-to-back airflow for port-side exhaust



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Figure 4-57 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-57 Technical specifications of the CE6857E-48T6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.75 kg (12.7 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.05kg (17.7 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9.15 kg (20.2 lb)
Weight with packaging (full configuration) [kg (lb)]	11.4 kg (25.1 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.6 GHz
Memory	DRAM: 4 GB
NOR Flash	128 MB
SSD Flash	8 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (10GE interfaces are compatible with GE but do not support 100M/10M electrical interfaces. They only support full-duplex, not half-duplex.)

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Item	Specification
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100G QSFP28 port can be configured to work at 40 Gbit/s. 2. In V2R20C10, 40G/100G uplink ports cannot be split. In V2R21C00 and later versions, 40G/100G uplink ports 3 and 4 can be split into 4x25G and 4x10G ports, and the other 40G/100G uplink ports cannot be split.
Service port supporting the stack function	10GE electrical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 252 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 270 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Typical heat dissipation [BTU/hour]	• 860 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 921 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	136 W
Static heat dissipation [BTU/hour]	464 BTU/hr
Maximum power consumption [W]	363 W
Maximum heat dissipation	1239 BTU/hr
Number of power modules	2
Redundant power supply	1+1 backup

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Item	Specification
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48V DC to -60V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode. • DC: 4 kV in common mode and 2 kV in differential mode. • HVDC: 4 kV in common mode and 2 kV in differential mode.
Types of fans	Pluggable
Number of fans	4

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Item	Specification
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.999996178
MTBF [year]	46.59 years
MTTR [hour]	1.56 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 50 dBA (maximum: 54 dBA) • Back-to-front airflow: average 53 dBA (maximum: 57 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 69 dBA (maximum: 73 dBA) • Back-to-front airflow: average 72 dBA (maximum: 77 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.6 CE6857F-48S6CQ

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4.4.6.1 CE6857F-48S6CQ (02354HPX)

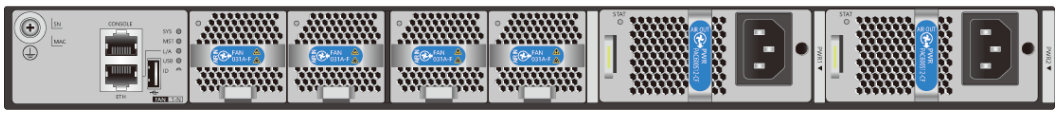
Overview

Table 4-58 Basic information about the CE6857F-48S6CQ

Item	Details
Description	CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)
Part Number	02354HPX
Model	CE6857F-48S6CQ
First supported version	V200R021C00
Other part numbers	02354HPY (CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354HQA (CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6857F

Appearance

Figure 4-58 Appearance of the CE6857F-48S6CQ



Front (power supply side)



Rear (port side)

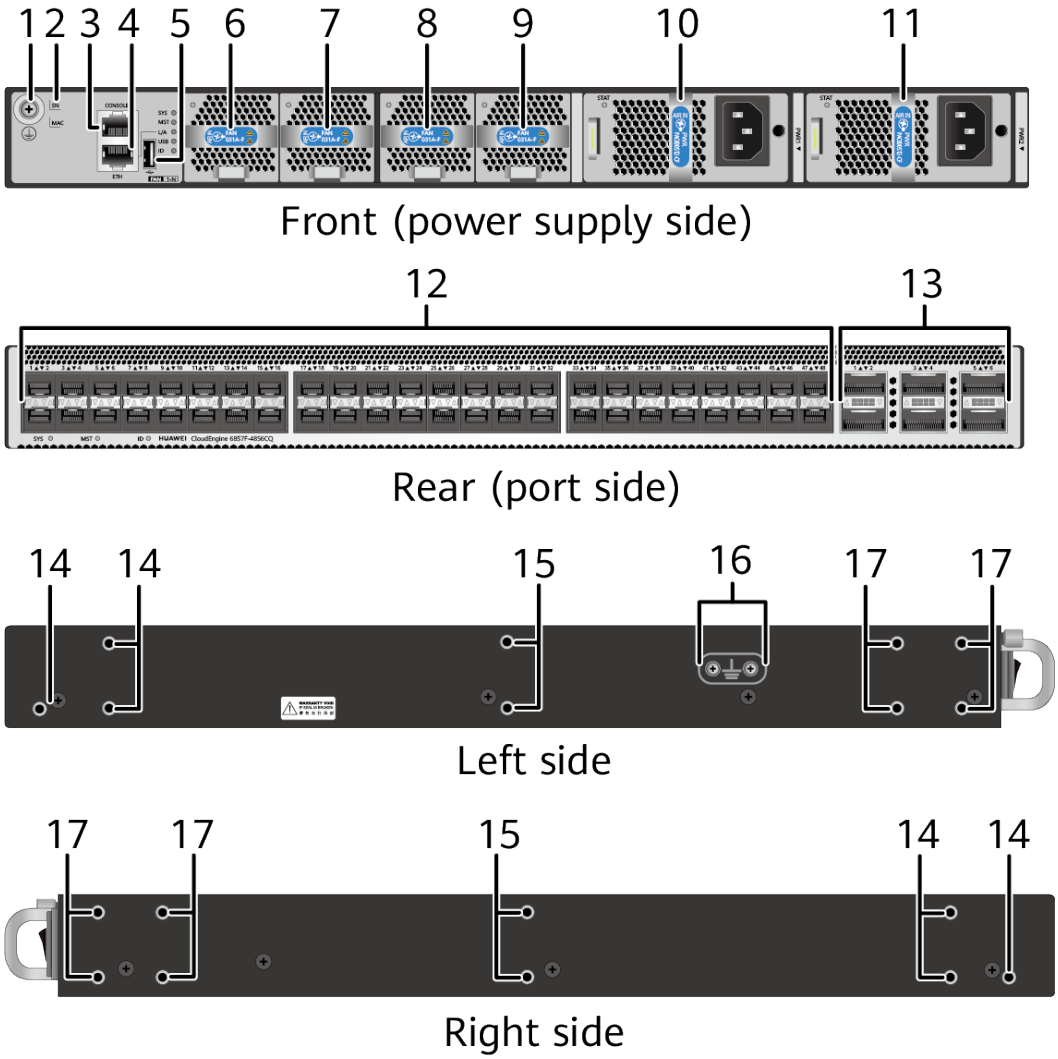
NOTE

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Components

Figure 4-59 Components of the CE6857F-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-59 Slots on the CE6857F-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	1) Each of the CloudEngine 6800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. 2) The CloudEngine 6800 series switches support 1+1 backup of power modules. When both power modules are working properly, each of them provides half of the power required for the chassis. When one power module fails, the other one provides all power required for the chassis. 3) All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	1) Each of the CloudEngine 6800 series switches has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. 2) It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-60 Indicators on the CE6857F-48S6CQ 1

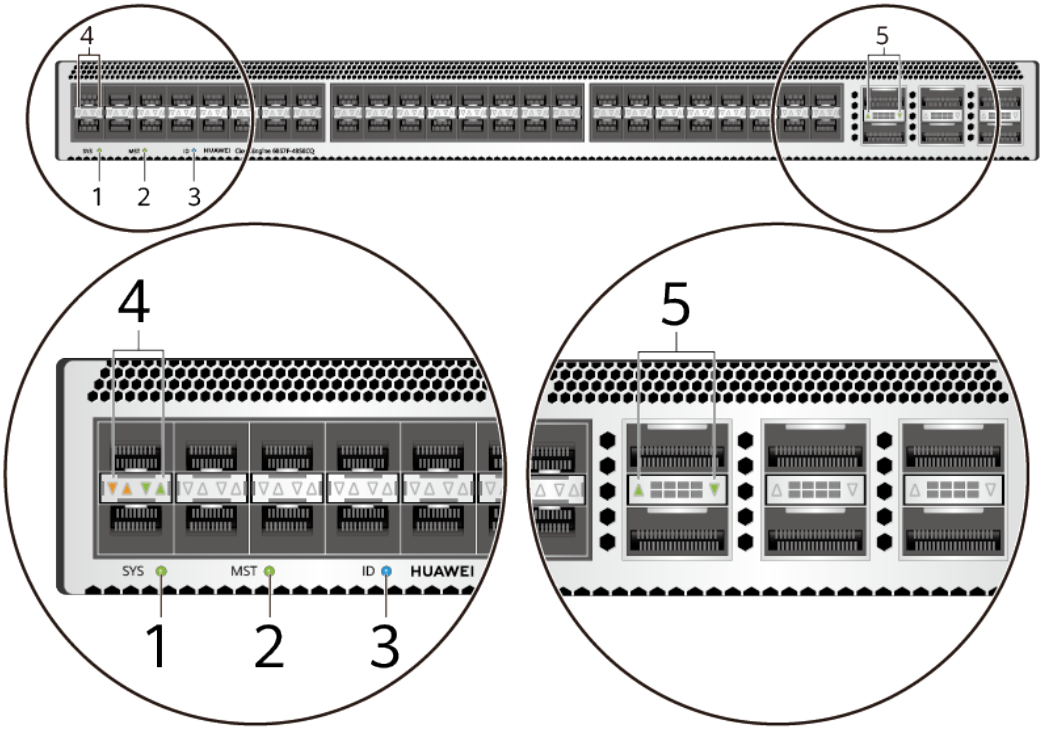
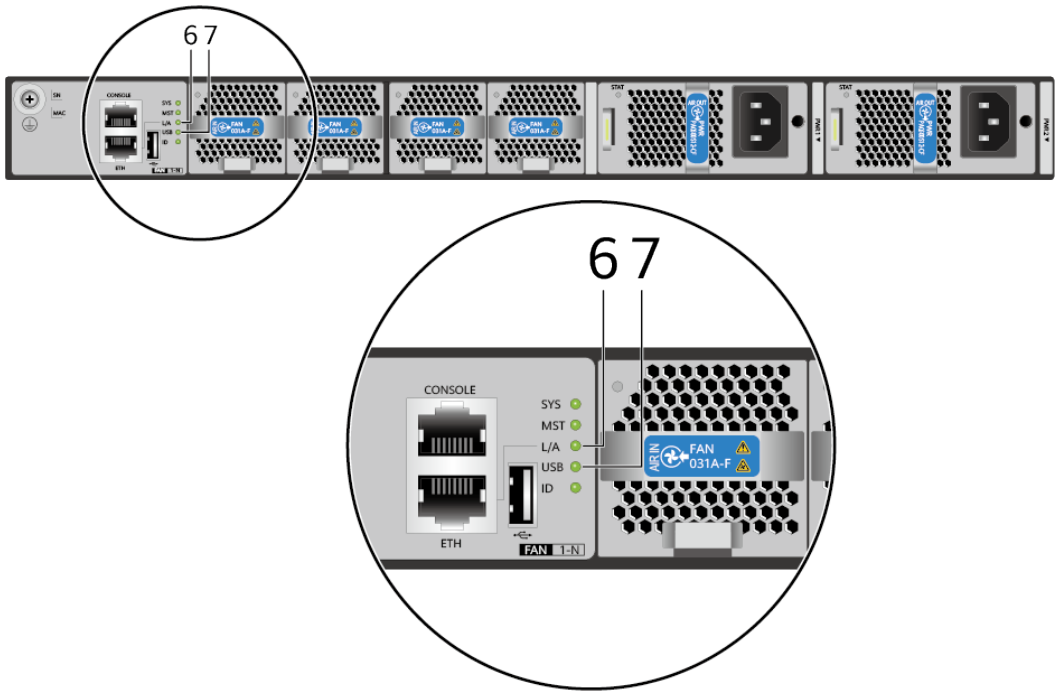


Figure 4-61 Indicators on the CE6857F-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE SFP+ Ethernet optical port)	5. Service port indicator (40GE/100GE QSFP28 Ethernet optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-60 Indicators on the CE6857F-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running properly.
		Red	Steady on	• The system fails to start. • At least one power module does not work properly. • At least one fan module does not work properly.
MST	Stack master/ slave indicator	Green	Off	The switch is not a master switch in the stack.

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Silkscreen	Name	Color	Status	Description
	NOTE • In V200R003C00 and later versions, you can use the dfs-master led enable command to enable the stack master/slave indicator to display the DFS group master and backup status. • After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Steady on	The switch is a master switch in the stack or a standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Yellow	Off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	ETH management port indicator	Green	Off	No link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment has failed.

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Ports

Table 4-61 Ports on the CE6857F-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ Ethernet Optical Port	SFP+	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1000 Mbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. - Optical attributes: depending on the module or cable in use	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. The 1000BASE-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 2. 10GE optical interfaces installed with GE copper modules support only the rate of 1000 Mbit/s. 3. 10GE optical interfaces do not support the OSXD22N00, LE2MXSC80FF0, or SFP-10G-ZDWT-L optical module.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 Optical Port	Depending on the optical module	A 40GE/100GE QSFP28 optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • A 40GE/100GE QSFP28 optical port cannot be split. • Optical attributes: depending on the module or cable in use • Standards compliance: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **NOTE** The QSFP-100G-4WDM-40 optical module is not supported.

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Port	Connector Type	Description	Available Components
Console Port	RJ45	The console port is connected to a console for onsite configuration. • Standards compliance: RS232 • Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	Console cable
ETH Management Port	RJ45	The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category 5 or higher category cable

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Port	Connector Type	Description	Available Components
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-62 Front-to-back airflow for port-side exhaust

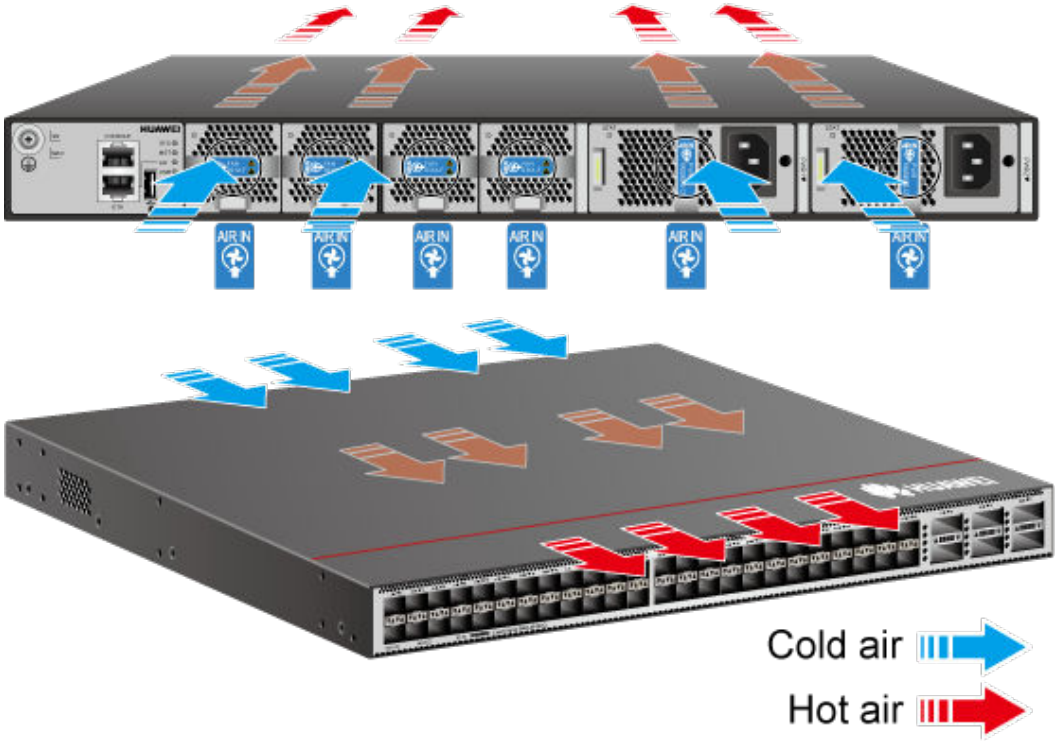
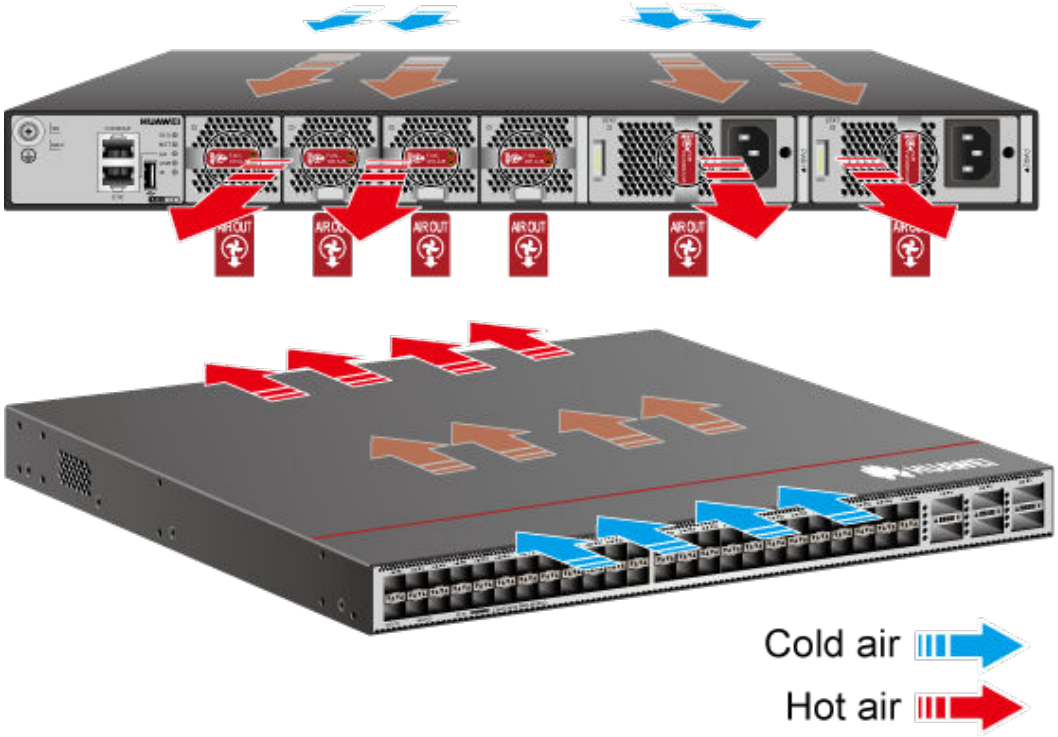


Figure 4-63 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-62 Technical specifications of the CE6857F-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.5 kg (12.1 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.75 kg (17.1 lb) (including AC power modules and fan modules, excluding optical modules)
Weight with packaging [kg (lb)]	8.75 kg (19.3 lb)
Weight with packaging (full configuration) [kg (lb)]	11 kg (24.3 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE SFP+ (10GE LRM/80 km linear optical modules are not supported. In addition, the 1000BASE-X auto-negotiation function is not supported. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.)
Uplink Service interface	6*100GE QSFP28 (Note: 1. Each 100GE QSFP28 port can be used as a 40GE port. 2. A 100GE QSFP28 port cannot be split into 4x25GE and 4x10GE ports.)
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 148 W (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 185 W (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 505 BTU/hour (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 631 BTU/hour (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Static power consumption [W]	106 W
Static heat dissipation [BTU/hour]	362 BTU/hour
Maximum power consumption [W]	318 W

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Item	Specification
Maximum heat dissipation	1085 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48V DC to -60V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Port-side intake or exhaust, depending on the fan modules and power modules.
Availability	0.9999961836
MTBF [year]	49.35 years
MTTR [hour]	1.65 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 50 dBA (maximum: 54 dBA) • Back-to-front airflow: average 53 dBA (maximum: 57 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 69 dBA (maximum: 73 dBA) • Back-to-front airflow: average 72 dBA (maximum: 77 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0 to 1800 m (0 to 5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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4.4.6.2 CE6857F-48S6CQ (02354HPX-001)

Overview

Table 4-63 Basic information about the CE6857F-48S6CQ

Item	Details
Description	CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)
Part Number	02354HPX-001
Model	CE6857F-48S6CQ
First supported version	V200R021C10SPC600
Other part numbers	02354HPY-001 (CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354HQA-001 (CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)) 02355MSS (CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)) 02355MST (CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02355MSU (CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6857F

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Appearance

Figure 4-64 Appearance of the CE6857F-48S6CQ



Front (power supply side)



Rear (port side)

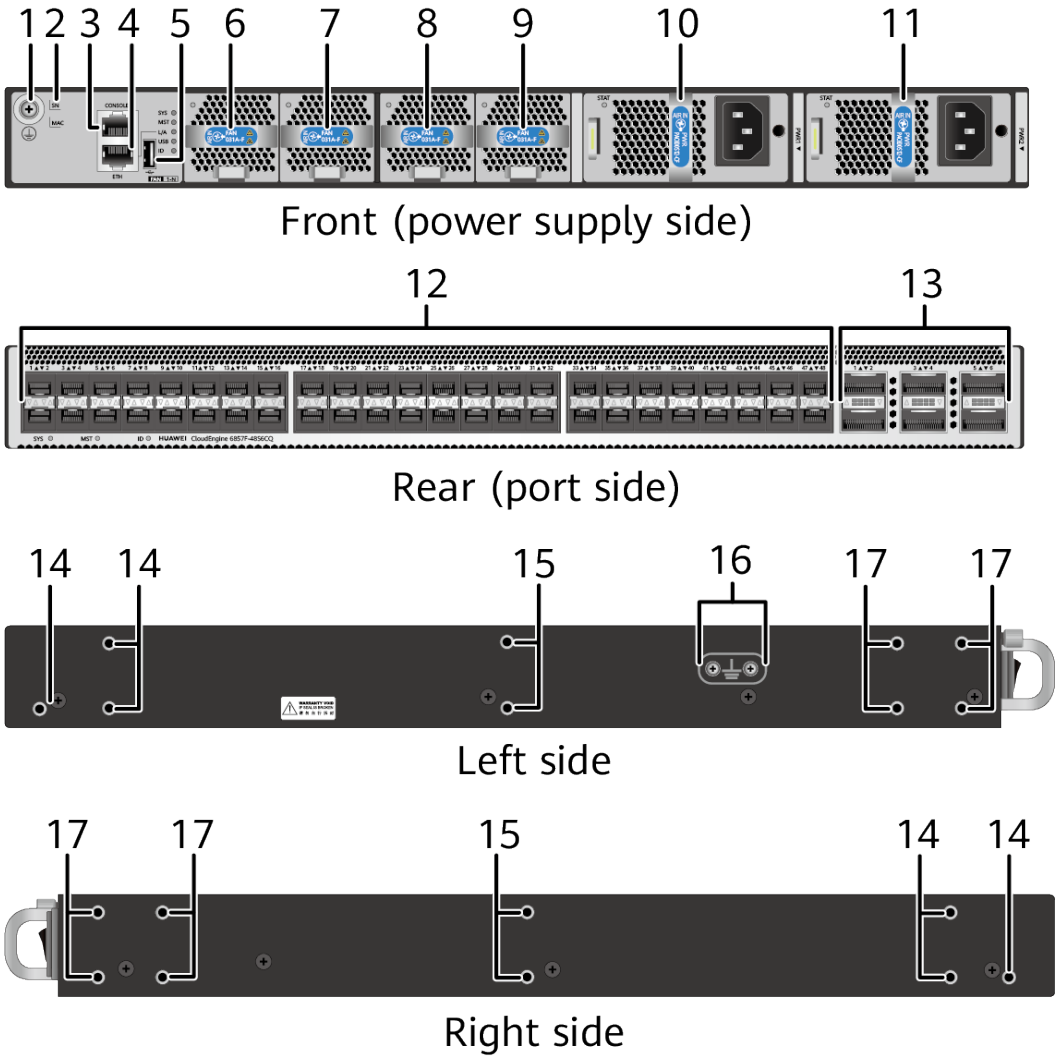
NOTE

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Components

Figure 4-65 Components of the CE6857F-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-64 Slots on the CE6857F-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-66 Indicators on the CE6857F-48S6CQ 1

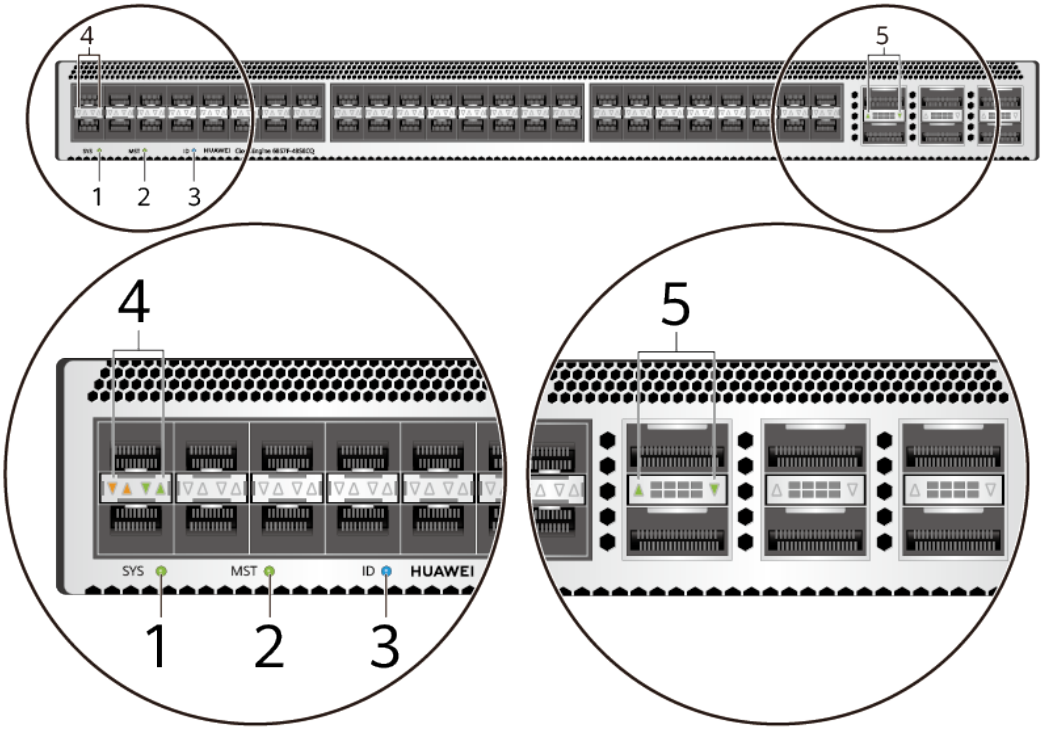
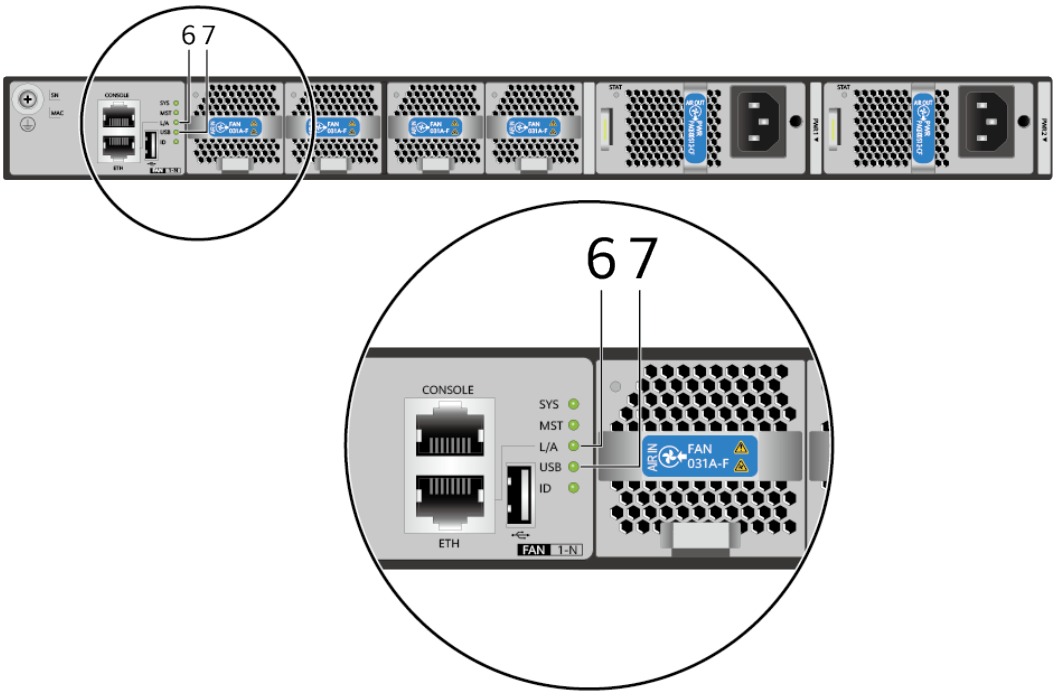


Figure 4-67 Indicators on the CE6857F-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE SFP+ Ethernet optical port)	5. Service port indicator (40GE/100GE QSFP28 Ethernet optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-65 Indicators on the CE6857F-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-66 Ports on the CE6857F-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	SFP+	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1000 Mbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. - Optical attributes: depending on the module or cable in use	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. The 1000BASE-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 2. 10GE optical interfaces installed with GE copper modules support only the rate of 1000 Mbit/s. 3. 10GE optical interfaces do not support the OSXD22N00, LE2MXSC80FF0, or SFP-10G-ZDWT-L optical module.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **NOTE** The QSFP-100G-4WDM-40 optical module is not supported.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-68 Front-to-back airflow for port-side exhaust

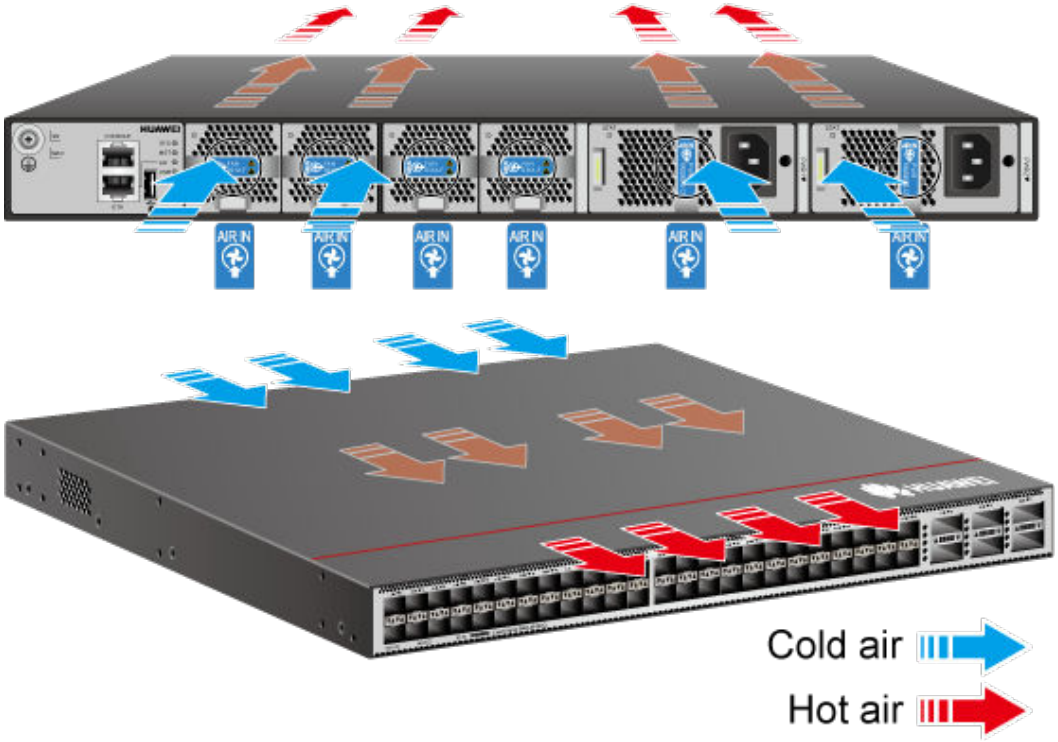
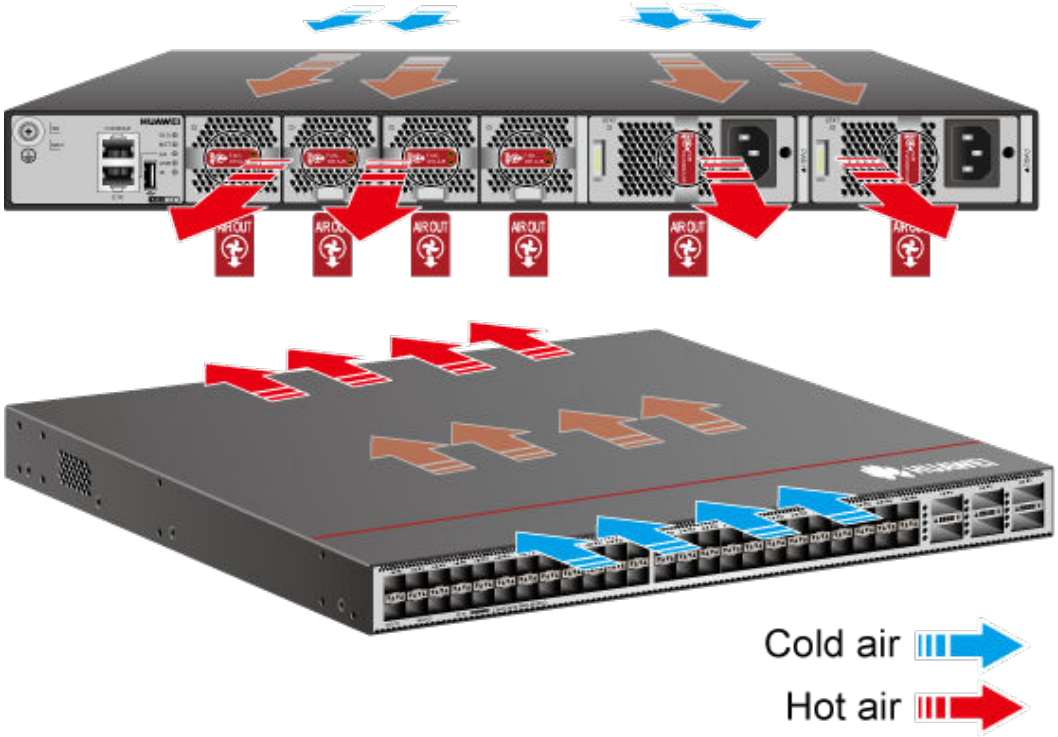


Figure 4-69 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-67 Technical specifications of the CE6857F-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.5 kg (12.1 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.75 kg (17.1 lb) (including AC power modules and fan modules, excluding optical modules)
Weight with packaging [kg (lb)]	8.75 kg (19.3 lb)
Weight with packaging (full configuration) [kg (lb)]	11 kg (24.3 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE SFP+ (10GE LRM/80 km linear optical modules are not supported. In addition, the 1000BASE-X auto-negotiation function is not supported. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.)
Uplink Service interface	6*100GE QSFP28 (Note: 1. Each 100GE QSFP28 port can be used as a 40GE port. 2. A 100GE QSFP28 port cannot be split into 4x25GE and 4x10GE ports.)
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 148 W (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 185 W (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 505 BTU/hour (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 631 BTU/hour (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Static power consumption [W]	106 W
Static heat dissipation [BTU/hour]	362 BTU/hour
Maximum power consumption [W]	318 W

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Item	Specification
Maximum heat dissipation	1085 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48V DC to -60V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Port-side intake or exhaust, depending on the fan modules and power modules.
Availability	0.9999961836
MTBF [year]	49.35 years
MTTR [hour]	1.65 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 50 dBA (maximum: 54 dBA) • Back-to-front airflow: average 53 dBA (maximum: 57 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 69 dBA (maximum: 73 dBA) • Back-to-front airflow: average 72 dBA (maximum: 77 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0 to 1800 m (0 to 5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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4.4.6.3 CE6857F-48S6CQ (02354HPX-002)

Overview

Table 4-68 Basic information about the CE6857F-48S6CQ

Item	Details
Description	CE6857F-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)
Part Number	02354HPX-002
Model	CE6857F-48S6CQ
First supported version	V200R021C10SPC600
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6857F

Appearance

Figure 4-70 Appearance of the CE6857F-48S6CQ



Front (power supply side)



Rear (port side)

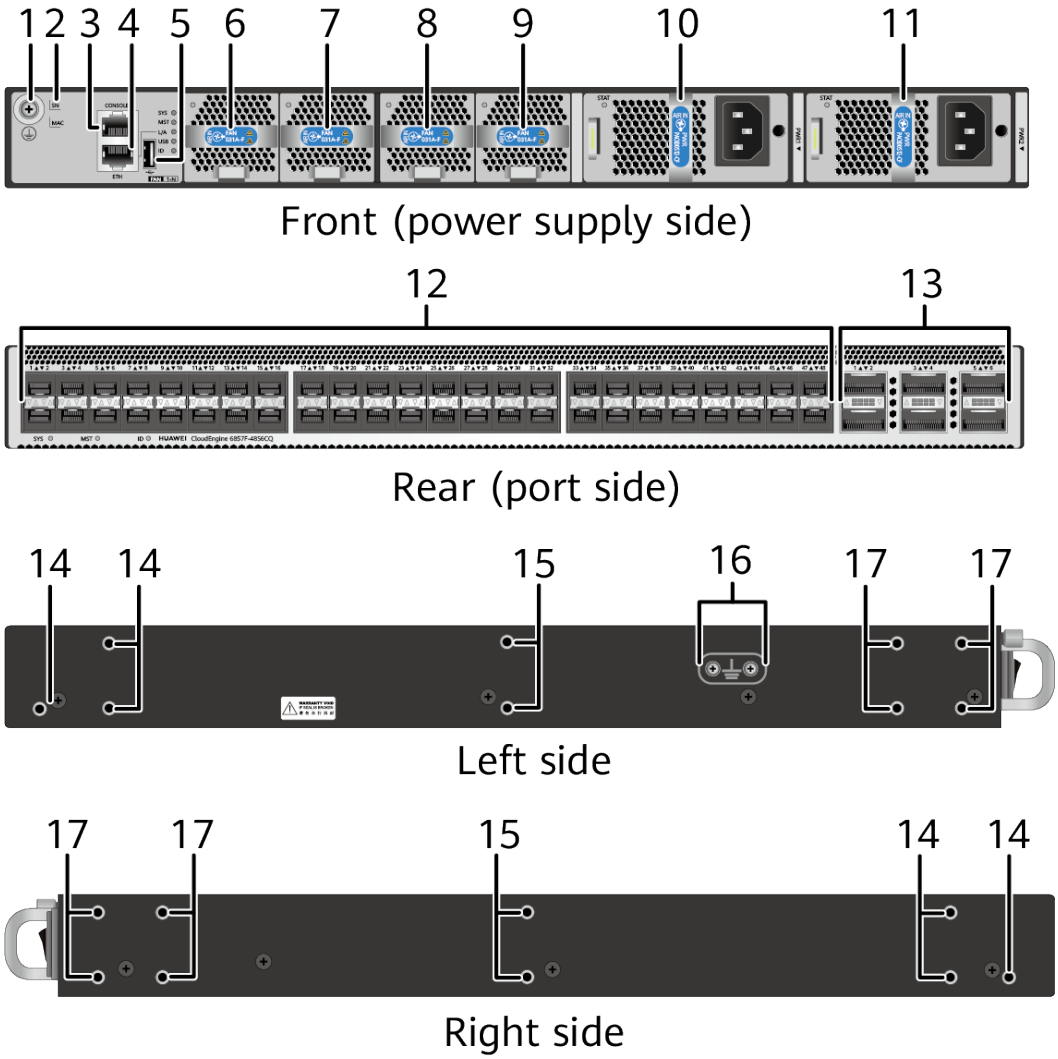
NOTE

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Components

Figure 4-71 Components of the CE6857F-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-69 Slots on the CE6857F-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-72 Indicators on the CE6857F-48S6CQ 1

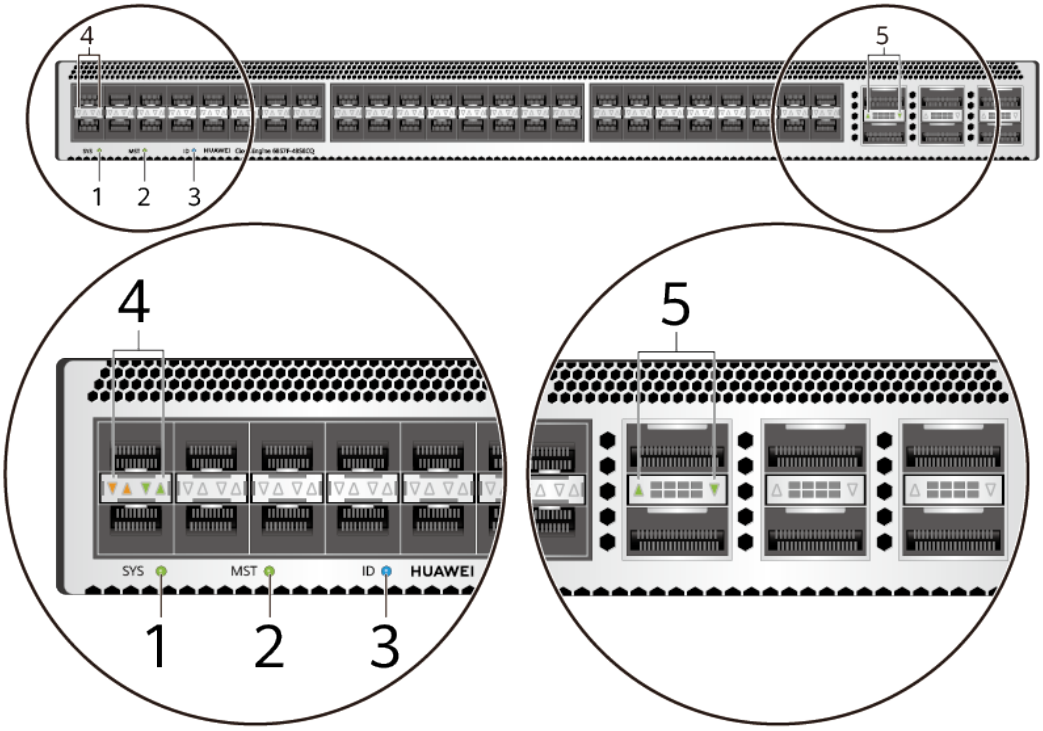
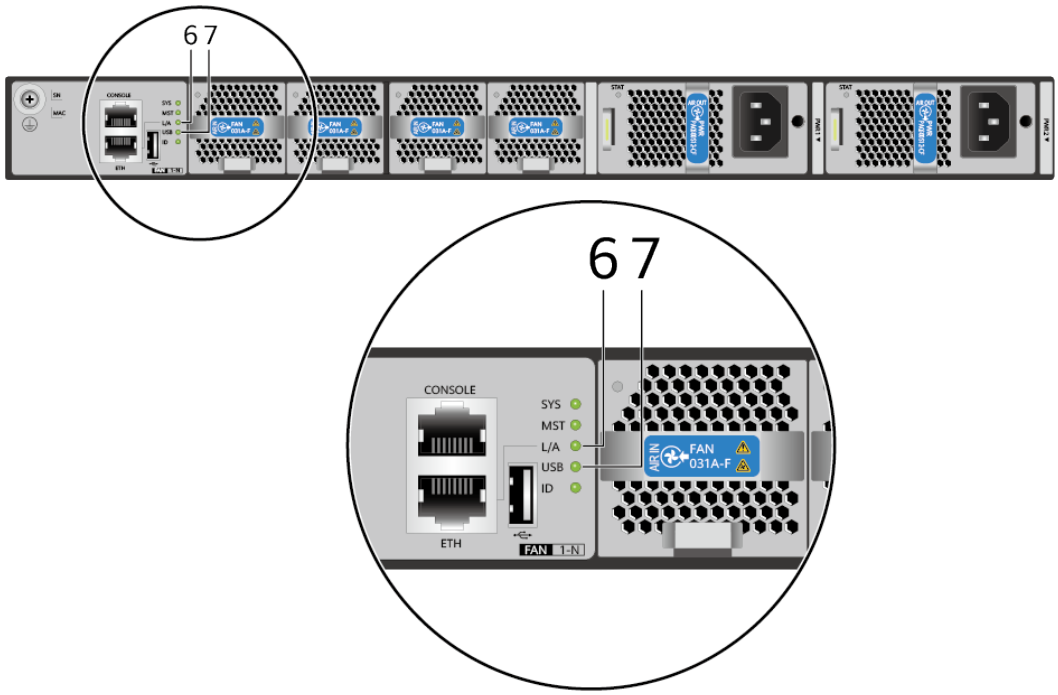


Figure 4-73 Indicators on the CE6857F-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE SFP+ Ethernet optical port)	5. Service port indicator (40GE/100GE QSFP28 Ethernet optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-70 Indicators on the CE6857F-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). • Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-71 Ports on the CE6857F-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	SFP+	A 10GE SFP+ Ethernet optical port supports auto-sensing to 1000 Mbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. - Optical attributes: depending on the module or cable in use	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. The 1000BASE-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 2. 10GE optical interfaces installed with GE copper modules support only the rate of 1000 Mbit/s. 3. 10GE optical interfaces do not support the OSXD22N00, LE2MXSC80FF0, or SFP-10G-ZDWT-L optical module.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **NOTE** The QSFP-100G-4WDM-40 optical module is not supported.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-74 Front-to-back airflow for port-side exhaust

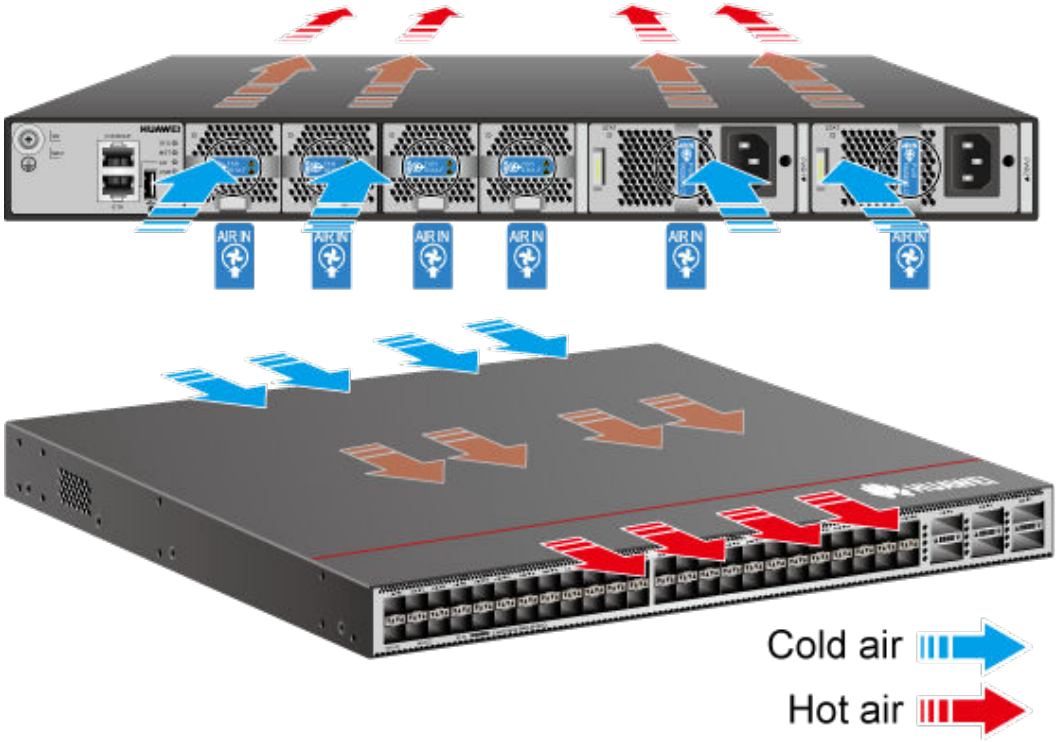
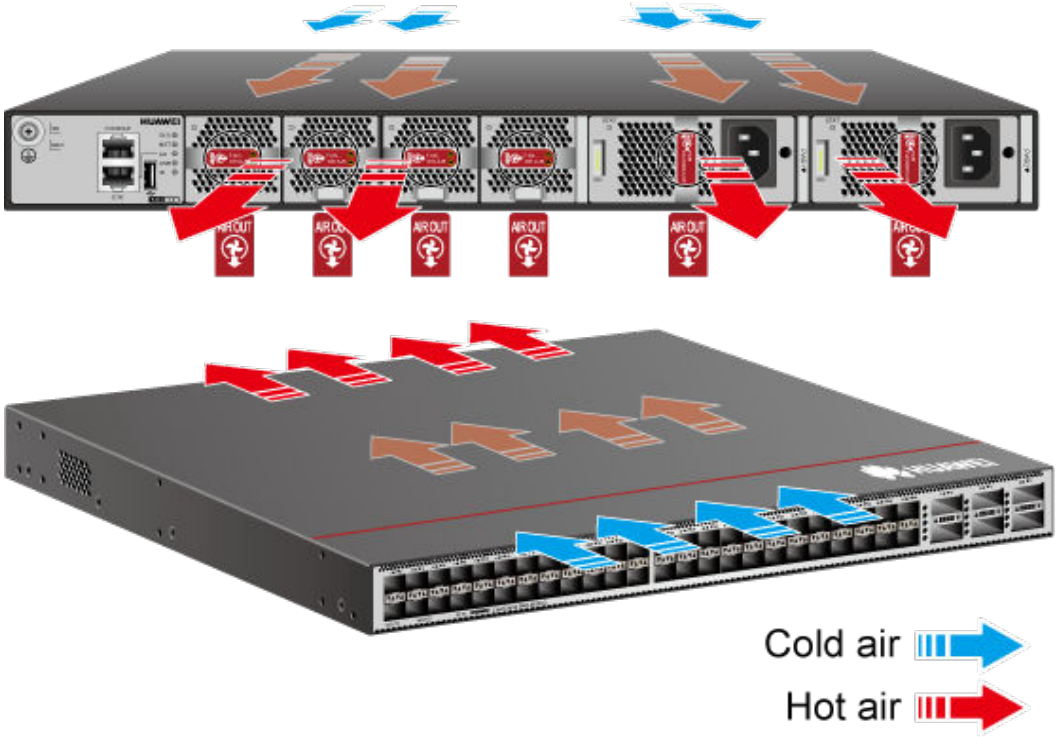


Figure 4-75 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-72 Technical specifications of the CE6857F-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.5 kg (12.1 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.75 kg (17.1 lb) (including AC power modules and fan modules, excluding optical modules)
Weight with packaging [kg (lb)]	8.75 kg (19.3 lb)
Weight with packaging (full configuration) [kg (lb)]	11 kg (24.3 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE SFP+ (10GE LRM/80 km linear optical modules are not supported. In addition, the 1000BASE-X auto-negotiation function is not supported. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.)
Uplink Service interface	6*100GE QSFP28 (Note: 1. Each 100GE QSFP28 port can be used as a 40GE port. 2. A 100GE QSFP28 port cannot be split into 4x25GE and 4x10GE ports.)
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 148 W (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 185 W (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 505 BTU/hour (50% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 631 BTU/hour (50% throughput, short-distance optical modules on all optical ports, dual power modules)
Static power consumption [W]	106 W
Static heat dissipation [BTU/hour]	362 BTU/hour
Maximum power consumption [W]	318 W

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Item	Specification
Maximum heat dissipation	1085 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48V DC to -60V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Port-side intake or exhaust, depending on the fan modules and power modules.
Availability	0.9999961836
MTBF [year]	49.35 years
MTTR [hour]	1.65 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 50 dBA (maximum: 54 dBA) • Back-to-front airflow: average 53 dBA (maximum: 57 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 69 dBA (maximum: 73 dBA) • Back-to-front airflow: average 72 dBA (maximum: 77 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0 to 1800 m (0 to 5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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4.4.7 CE6857F-48T6CQ

4.4.7.1 CE6857F-48T6CQ (02354HPW)

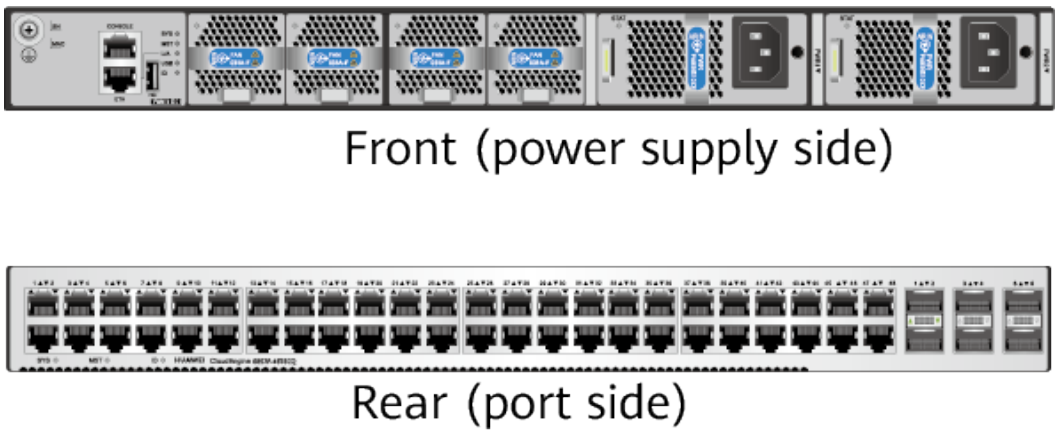
Overview

Table 4-73 Basic information about the CE6857F-48T6CQ

Item	Details
Description	CE6857F-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02354HPW
Model	CE6857F-48T6CQ
First supported version	V200R021C00
Other part numbers	02354HPU (CE6857F-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354HPV (CE6857F-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6857F

Appearance

Figure 4-76 Appearance of the CE6857F-48T6CQ



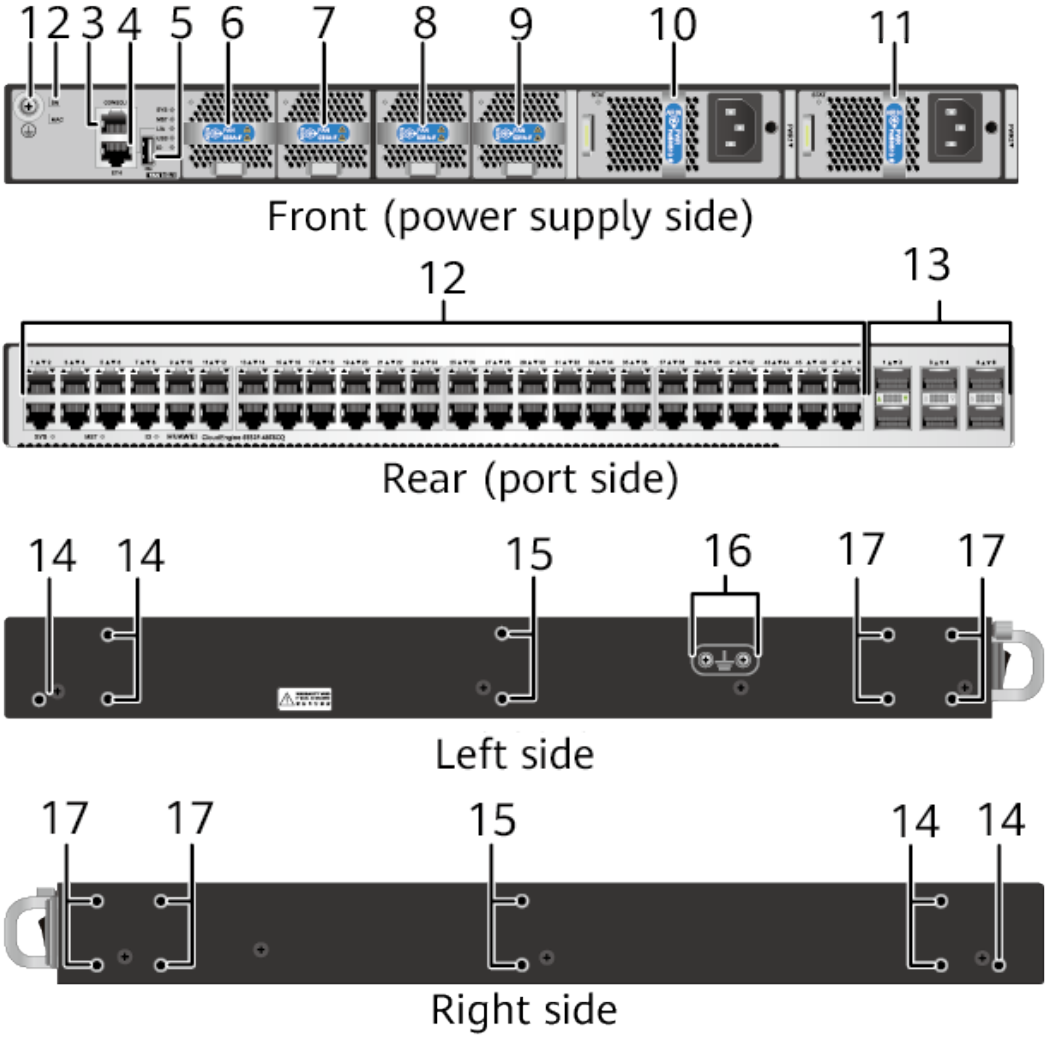
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NOTE

The figures in this document are for reference only.

Components

Figure 4-77 Components of the CE6857F-48T6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3

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9	Fan slot 4	10	Power supply slot 1
11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-74 Slots on the CE6857F-48T6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	1) Each of the CloudEngine 6800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. 2) The CloudEngine 6800 series switches support 1+1 backup of power modules: When both power modules are working properly, each of them provides half of the power required for the chassis. When one power module fails, the other one provides all power required for the chassis. 3) All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	1) Each of the CloudEngine 6800 series switches has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. 2) It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-78 Indicators on the CE6857F-48T6CQ 1

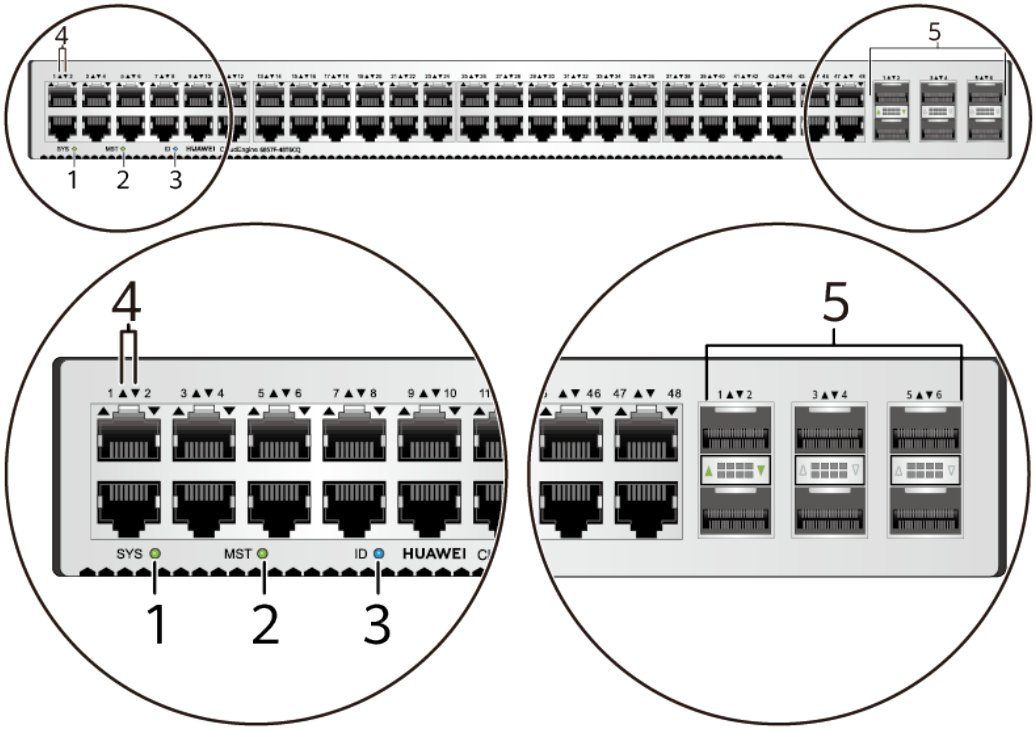
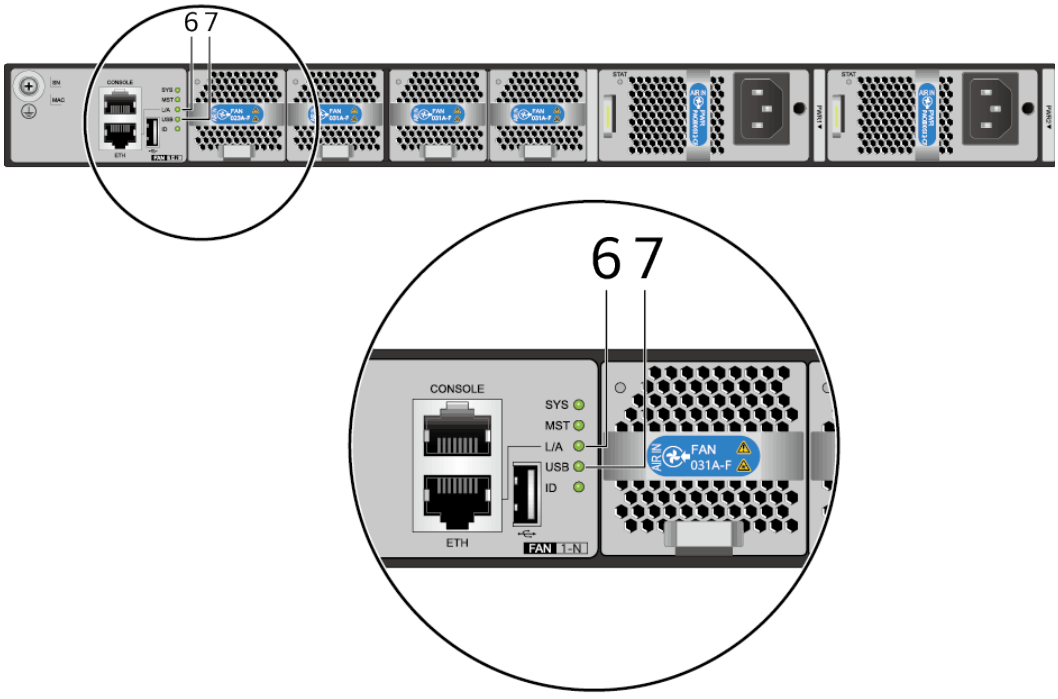


Figure 4-79 Indicators on the CE6857F-48T6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T Ethernet electrical port)	5. Service port indicator (40GE/100GE QSFP28 Ethernet optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-75 Indicators on the CE6857F-48T6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running properly.
		Red	Steady on	• The system fails to start. • At least one power module does not work properly. • At least one fan module does not work properly.
MST	Stack master/ slave indicator	Green	Off	The switch is not a master switch in the stack.

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Silkscreen	Name	Color	Status	Description
	NOTE In V200R003C00 and later versions, you can use the dfs-master led enable command to enable the stack master/slave indicator to display the DFS group master and backup status. After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Steady on	The switch is a master switch in the stack or a standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
L/A	ETH management port indicator	Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-76 Ports on the CE6857F-48T6CQ

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet Electrical Port	RJ45	A 10GBASE-T Ethernet port receives and sends service traffic at a rate of 1000 Mbit/s or 10 Gbit/s. The port can work at the rate of 1000 Mbit/s through auto-sensing. It must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Standards compliance: IEEE 802.3an and IEEE 802.3az • Applicable cable: straight-through cable and crossover cable • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Straight-through cable and crossover cable

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 Optical Port	Depending on the optical module	A 40GE/100GE QSFP28 optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical attributes: depending on the module or cable in use • Standards compliance: IEEE 802.3ba • Working mode: full-duplex	• **40GE QSFP+ optical modules** • **100GE QSFP28 optical modules** • **40GE QSFP+ to 40GE QSFP + AOC cable** • **100GE QSFP28 to 100GE QSFP28 AOC cable** • **40GE QSFP+ to 40GE QSFP + high-speed cable** • **100GE QSFP28 to 100GE QSFP28 high-speed cable** In V2R21C00 and later versions, only 40G/100G uplink ports 3 and 4 can be configured to work in 4x25G or 4x10G mode, and they support the following cables: • **40GE QSFP+ to 4*10GE SFP + high-speed cable** • **40GE QSFP+ to 4* 10GE SFP + AOC cable** • **100GE QSFP28 to 4*25GE SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE The QSFP-100G-4WDM-40 optical module is not supported.
Console Port	RJ45	The console port is connected to a console for onsite configuration. • Standards compliance: RS232 • Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	**Console cable**

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Port	Connector Type	Description	Available Components
ETH Management Port	RJ45	The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category 5 or higher category cable
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

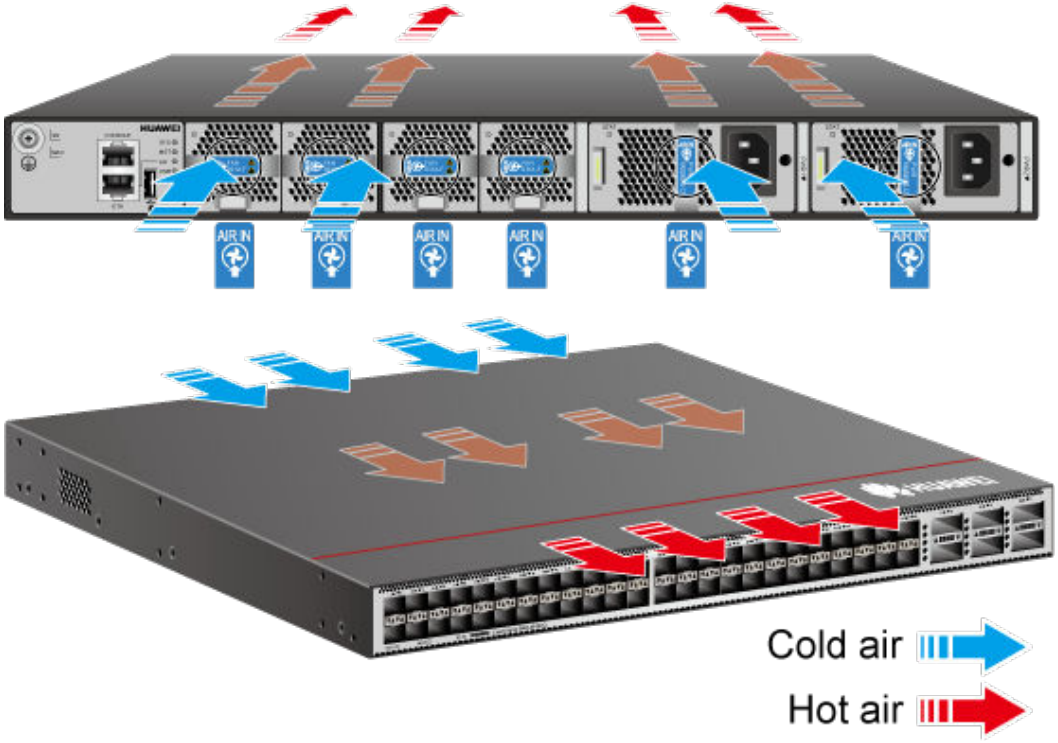
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

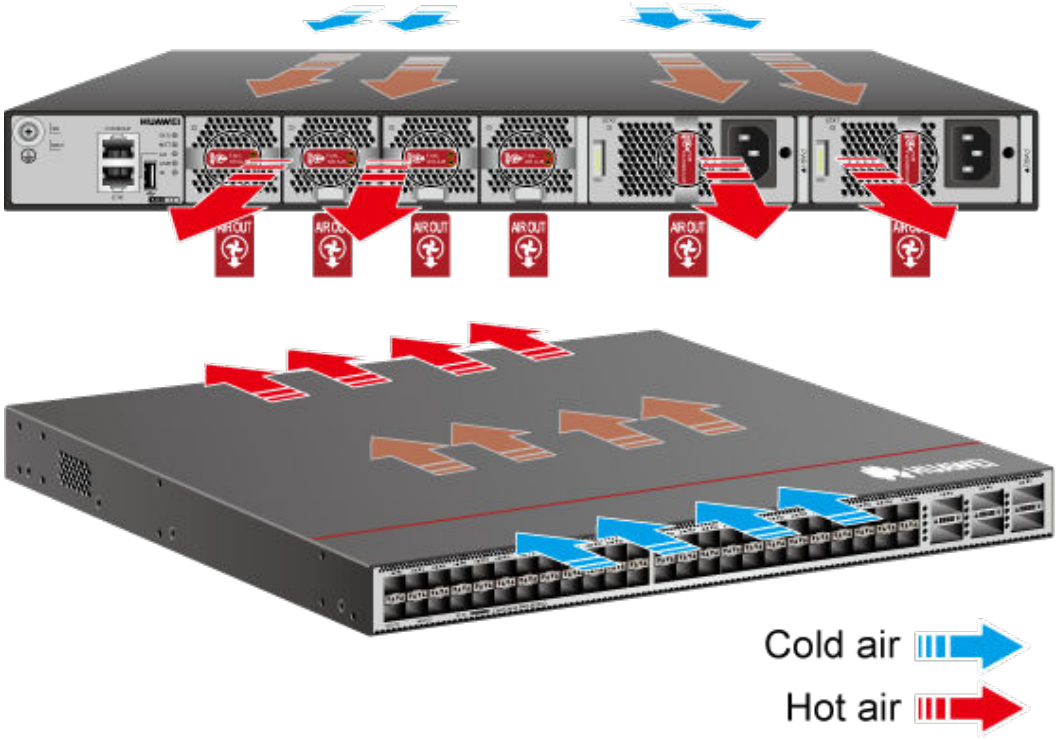
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 6** (using a CE6863 chassis as an example).

Figure 4-80 Front-to-back airflow for port-side exhaust



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Figure 4-81 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-77 Technical specifications of the CE6857F-48T6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.75 kg (12.7 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.05kg (17.7 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9.15 kg (20.2 lb)
Weight with packaging (full configuration) [kg (lb)]	11.4 kg (25.1 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (10GE interfaces are compatible with GE but do not support 100M/10M electrical interfaces. They only support full-duplex, not half-duplex.)

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Item	Specification
Uplink Service interface	6*100GE QSFP28 (Note: 1. Each 100G QSFP28 port can be used as a 40GE port. 2. 40GE/100GE uplink ports 3 and 4 can be split into 4x25G and 4x10G ports. Other 40GE/100GE uplink ports cannot be split.)
Service port supporting the stack function	10GE electrical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 252 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 270 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Typical heat dissipation [BTU/hour]	• 860 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 921 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	136 W
Static heat dissipation [BTU/hour]	464 BTU/hr
Maximum power consumption [W]	363 W
Maximum heat dissipation	1239 BTU/hr
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48 V DC to -60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC

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Item	Specification
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode. • DC: 4 kV in common mode and 2 kV in differential mode. • HVDC: 4 kV in common mode and 2 kV in differential mode.
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling

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Item	Specification
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.999996178
MTBF [year]	46.59 years
MTTR [hour]	1.56 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 50 dBA (maximum: 54 dBA) • Back-to-front airflow: average 53 dBA (maximum: 57 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 69 dBA (maximum: 73 dBA) • Back-to-front airflow: average 72 dBA (maximum: 77 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.7.2 CE6857F-48T6CQ (02354HPW-001)

Overview

Table 4-78 Basic information about the CE6857F-48T6CQ

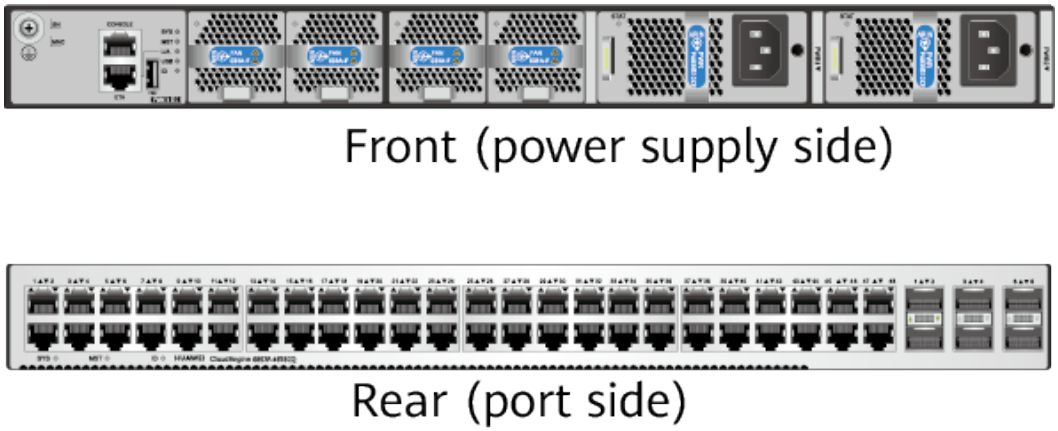
Item	Details
Description	CE6857F-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)

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Item	Details
Part Number	02354HPW-001
Model	CE6857F-48T6CQ
First supported version	V200R021C10SPC600
Other part numbers	02354HPU-001 (CE6857F-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354HPV-001 (CE6857F-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6857F

Appearance

Figure 4-82 Appearance of the CE6857F-48T6CQ



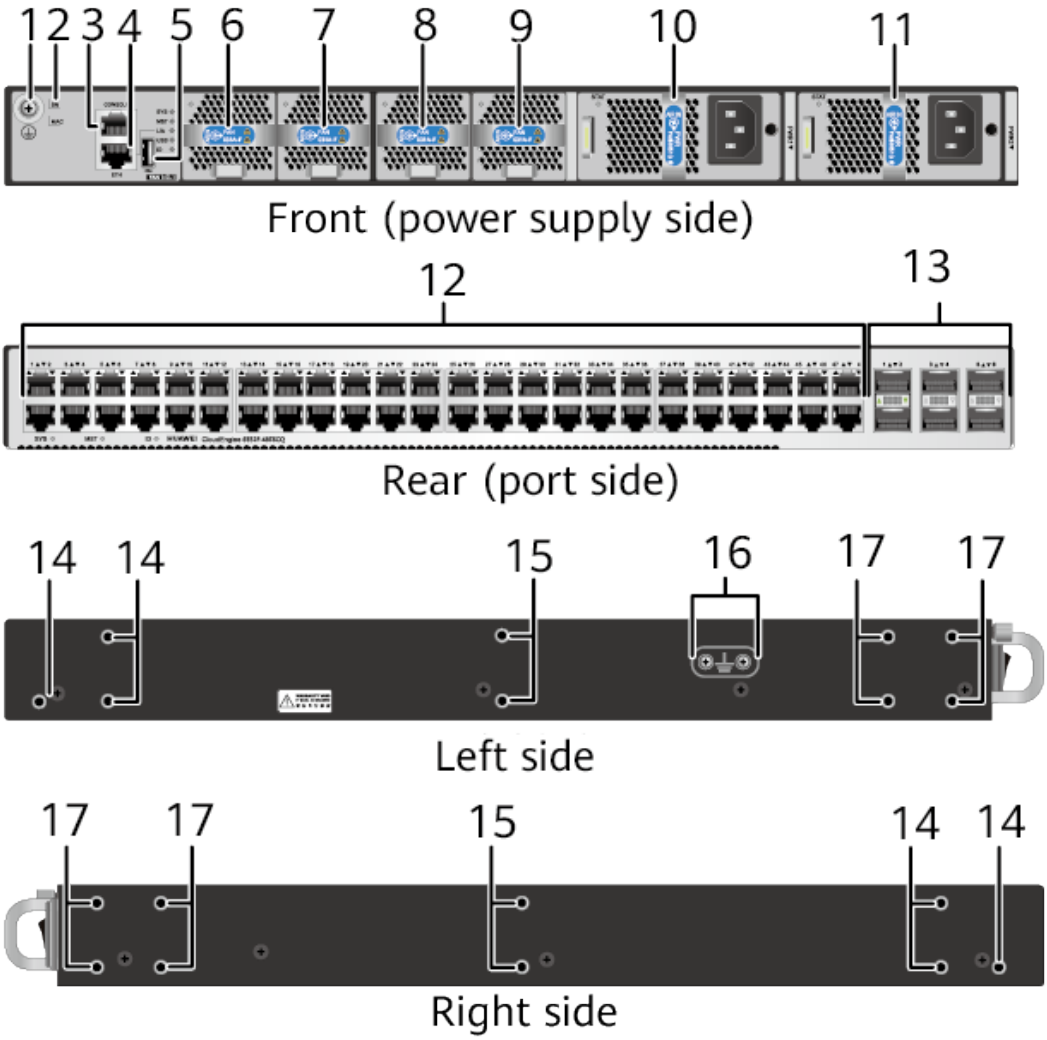
NOTE

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Components

Figure 4-83 Components of the CE6857F-48T6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-79 Slots on the CE6857F-48T6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-84 Indicators on the CE6857F-48T6CQ 1

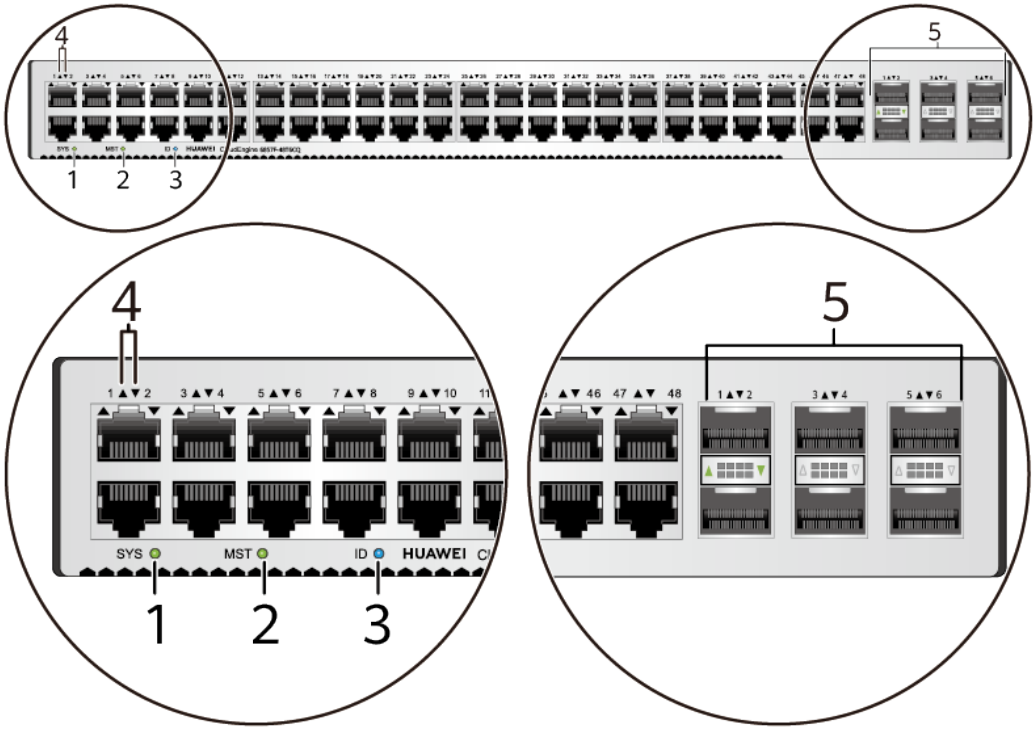
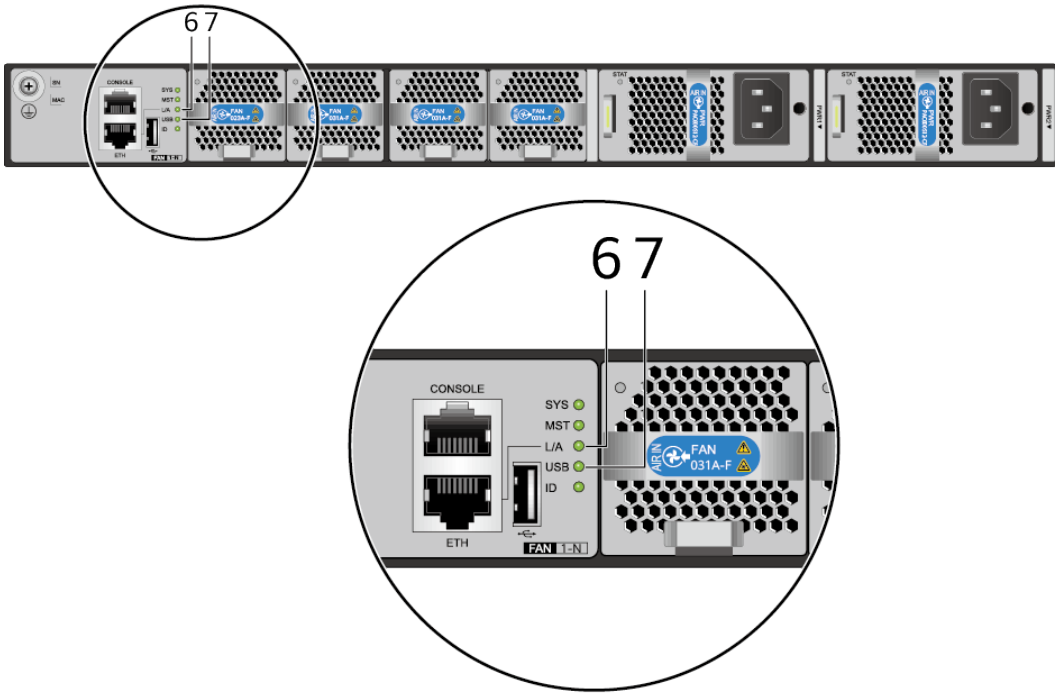


Figure 4-85 Indicators on the CE6857F-48T6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T Ethernet electrical port)	5. Service port indicator (40GE/100GE QSFP28 Ethernet optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-80 Indicators on the CE6857F-48T6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-81 Ports on the CE6857F-48T6CQ

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet electrical port	RJ45	A 10GBASE-T Ethernet port receives and sends service traffic at a rate of 1000 Mbit/s or 10 Gbit/s. The port can work at the rate of 1000 Mbit/s through auto-sensing. It must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Standards compliance: IEEE 802.3an and IEEE 802.3az • Applicable cable: straight-through cable and crossover cable • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Both straight-through cables and crossover cables can be used.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	• **40GE QSFP+ optical modules** • **100GE QSFP28 optical modules** • **40GE QSFP+ to 40GE QSFP + AOC cable** • **100GE QSFP28 to 100GE QSFP28 AOC cable** • **40GE QSFP+ to 40GE QSFP + high-speed cable** • **100GE QSFP28 to 100GE QSFP28 high-speed cable** In V2R21C00 and later versions, only 40G/100G uplink ports 3 and 4 can be configured to work in 4x25G or 4x10G mode, and they support the following cables: • **40GE QSFP+ to 4*10GE SFP + high-speed cable** • **40GE QSFP+ to 4* 10GE SFP + AOC cable** • **100GE QSFP28 to 4*25GE SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE The QSFP-100G-4WDM-40 optical module is not supported.
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	**Console cable**

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power

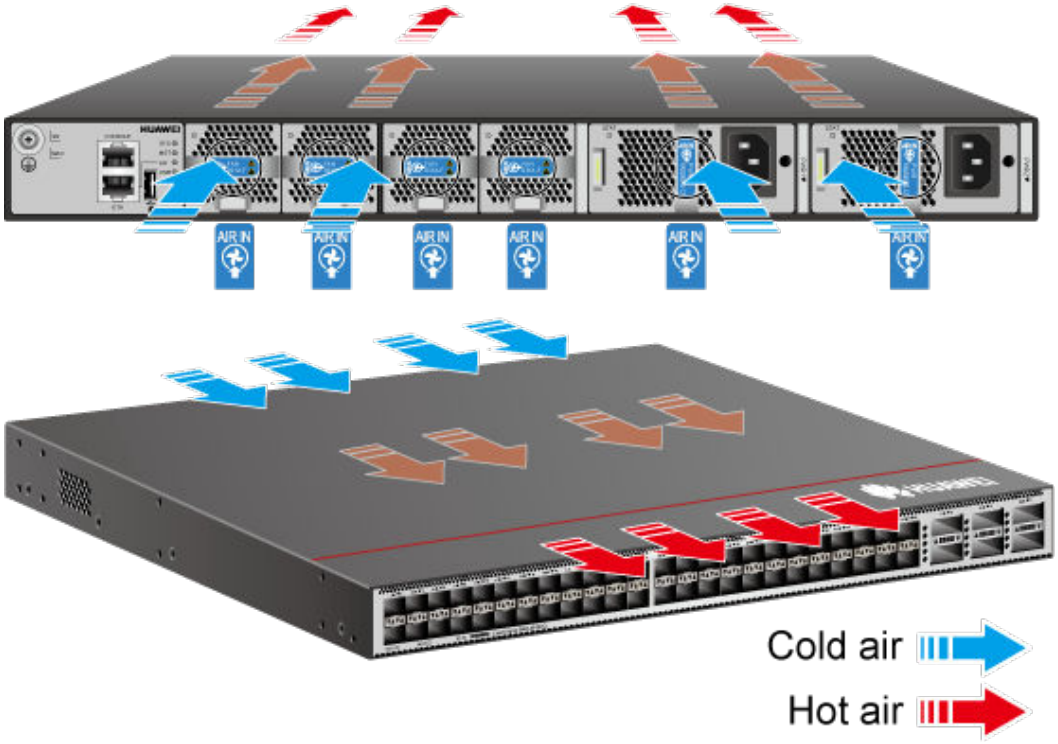
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supply side and is exhausted from the port side, as shown in **Figure 5** (using a CE6863 chassis as an example).

- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

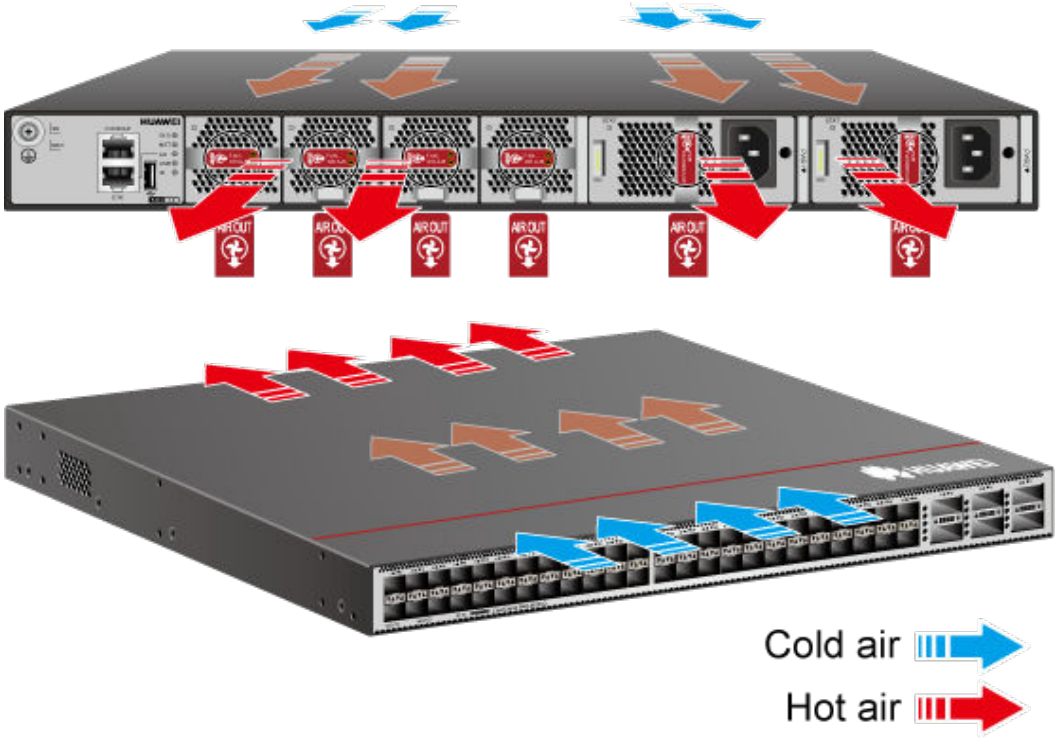
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 6** (using a CE6863 chassis as an example).

Figure 4-86 Front-to-back airflow for port-side exhaust



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Figure 4-87 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-82 Technical specifications of the CE6857F-48T6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.7 in. x 17.4 in. x 16.5 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the handle on the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.7 in. x 17.4 in. x 17.6 in.)
Weight without packaging [kg (lb)]	5.75 kg (12.7 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.05kg (17.7 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9.15 kg (20.2 lb)
Weight with packaging (full configuration) [kg (lb)]	11.4 kg (25.1 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (10GE interfaces are compatible with GE but do not support 100M/10M electrical interfaces. They only support full-duplex, not half-duplex.)

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Item	Specification
Uplink Service interface	6*100GE QSFP28 (Note: 1. Each 100G QSFP28 port can be used as a 40GE port. 2. 40GE/100GE uplink ports 3 and 4 can be split into 4x25G and 4x10G ports. Other 40GE/100GE uplink ports cannot be split.)
Service port supporting the stack function	10GE electrical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 252 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 270 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Typical heat dissipation [BTU/hour]	• 860 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 921 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	136 W
Static heat dissipation [BTU/hour]	464 BTU/hr
Maximum power consumption [W]	363 W
Maximum heat dissipation	1239 BTU/hr
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module : AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module : -48 V DC to -60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380V DC

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Item	Specification
Input voltage range [V]	• 600 W AC&240 V DC power module : AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module : -38.4 V DC to -72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module : 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module : 30 A (-48 V DC to -60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module : 600 W • 1000 W DC power module : 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode. • DC: 4 kV in common mode and 2 kV in differential mode. • HVDC: 4 kV in common mode and 2 kV in differential mode.
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling

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Item	Specification
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.999996178
MTBF [year]	46.59 years
MTTR [hour]	1.56 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 50 dBA (maximum: 54 dBA) • Back-to-front airflow: average 53 dBA (maximum: 57 dBA)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: average 69 dBA (maximum: 73 dBA) • Back-to-front airflow: average 72 dBA (maximum: 77 dBA)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is between 1800 m and 5000 m (5906 ft. and 16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.8 CE6863-48S6CQ

4.4.8.1 CE6863-48S6CQ (02352NUN)

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Overview

Table 4-83 Basic information about the CE6863-48S6CQ

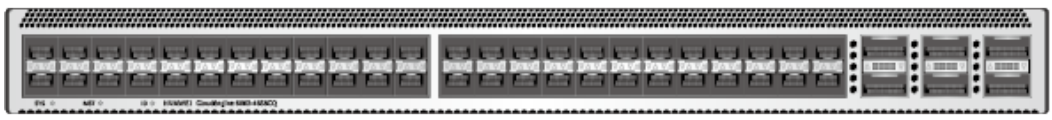
Item	Details
Description	CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, without fan and power modules)
Part Number	02352NUN
Model	CE6863-48S6CQ
First supported version	V200R005C20
Other part numbers	02352NUP (CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02352NUQ (CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)) 02353KXU (2*CE6863-48S6CQ-B switch [48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake], 8*QSFP-100G-SR4) 02353KXV (2*CE6863-48S6CQ-F switch [48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust],8*QSFP-100G-SR4)

Appearance

Figure 4-88 Appearance of the CE6863-48S6CQ



Front (power supply side)



Rear (port side)

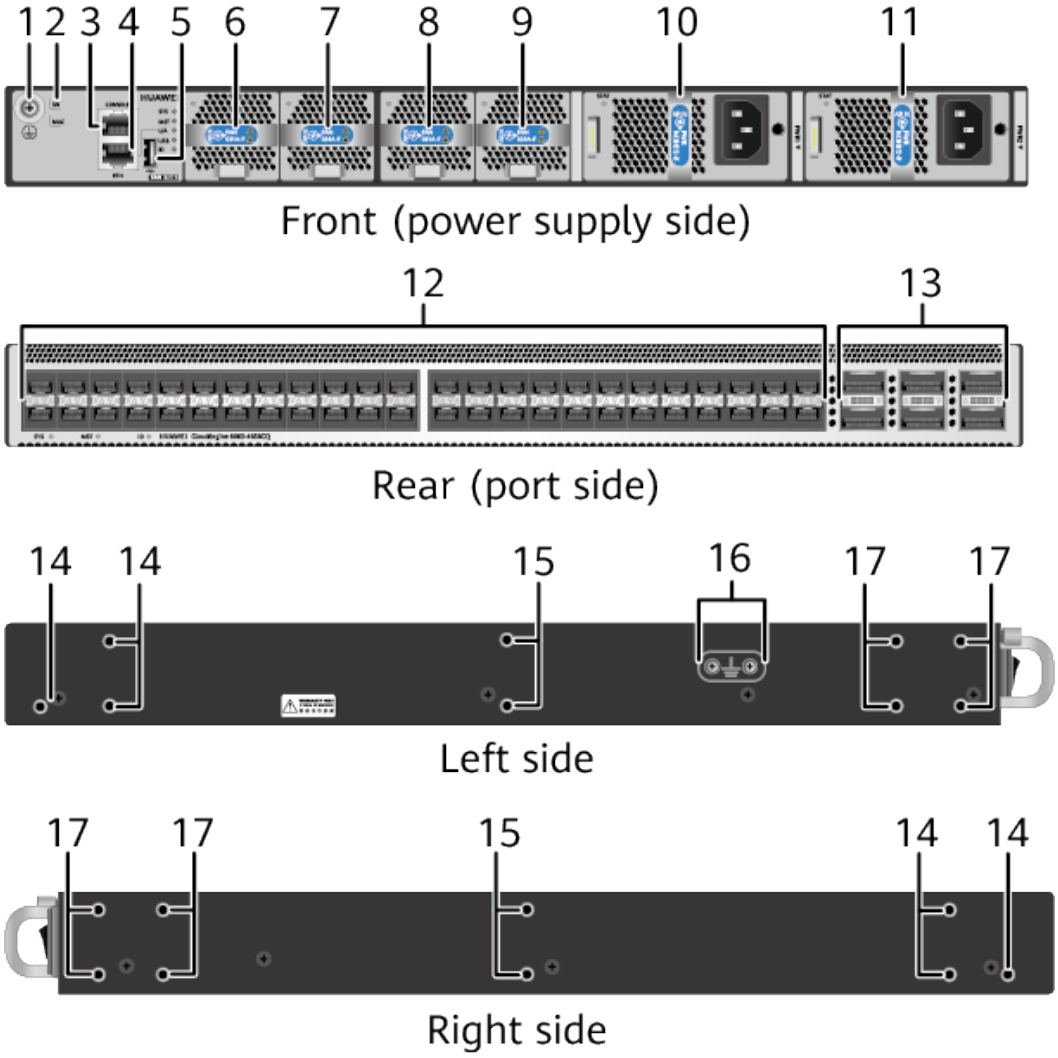
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NOTE

The figures in this document are for reference only.

Components

Figure 4-89 Components of the CE6863-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1

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7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1
11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-84 Slots on the CE6863-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-90 Indicators on the CE6863-48S6CQ 1

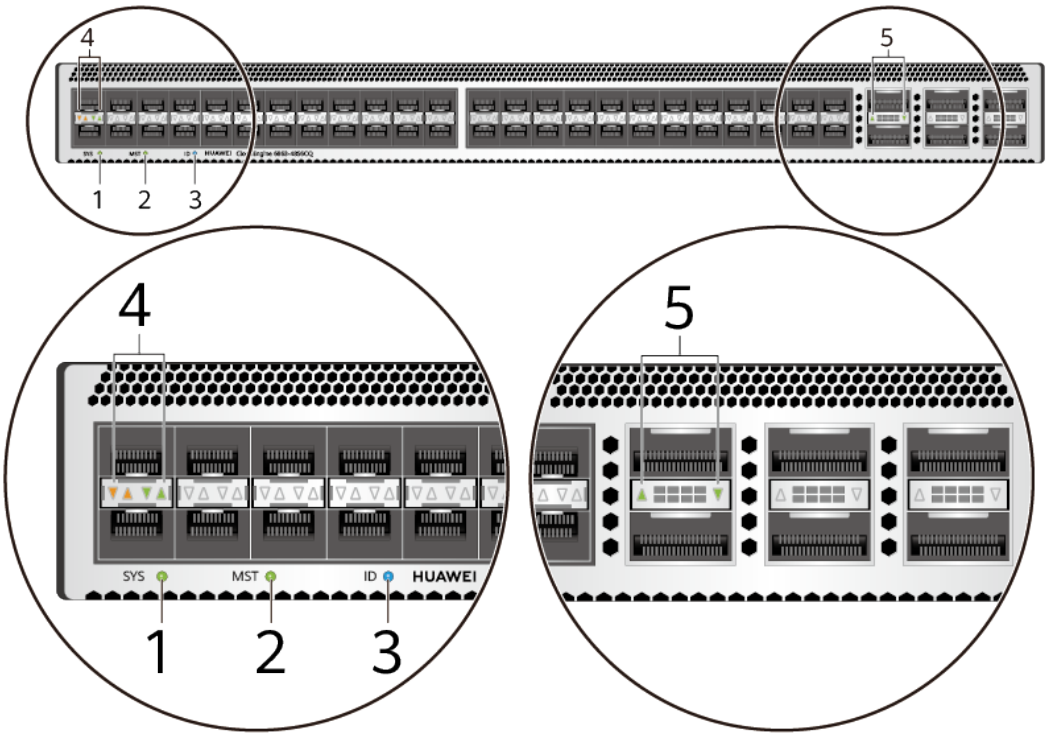
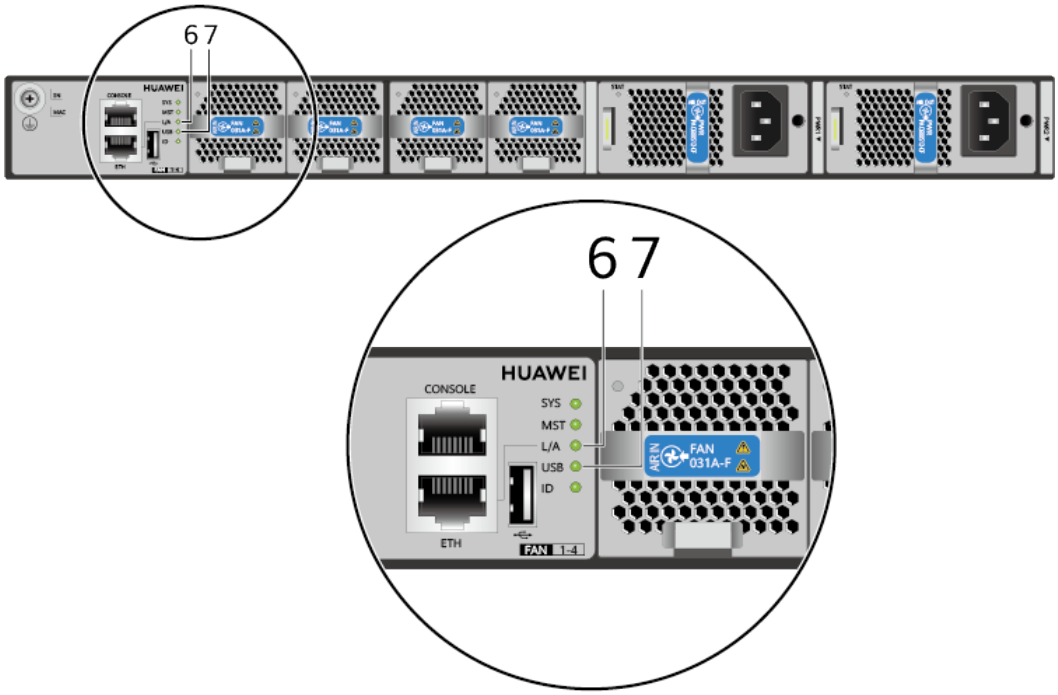


Figure 4-91 Indicators on the CE6863-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-85 Indicators on the CE6863-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-86 Ports on the CE6863-48S6CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-92 Front-to-back airflow for port-side exhaust

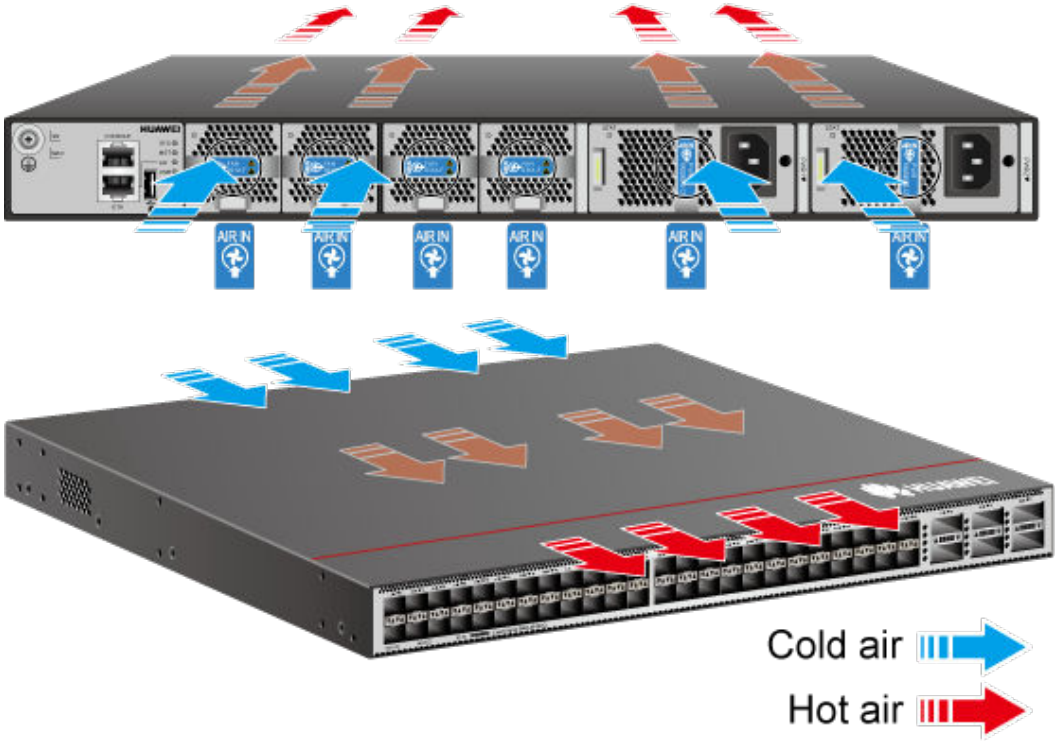
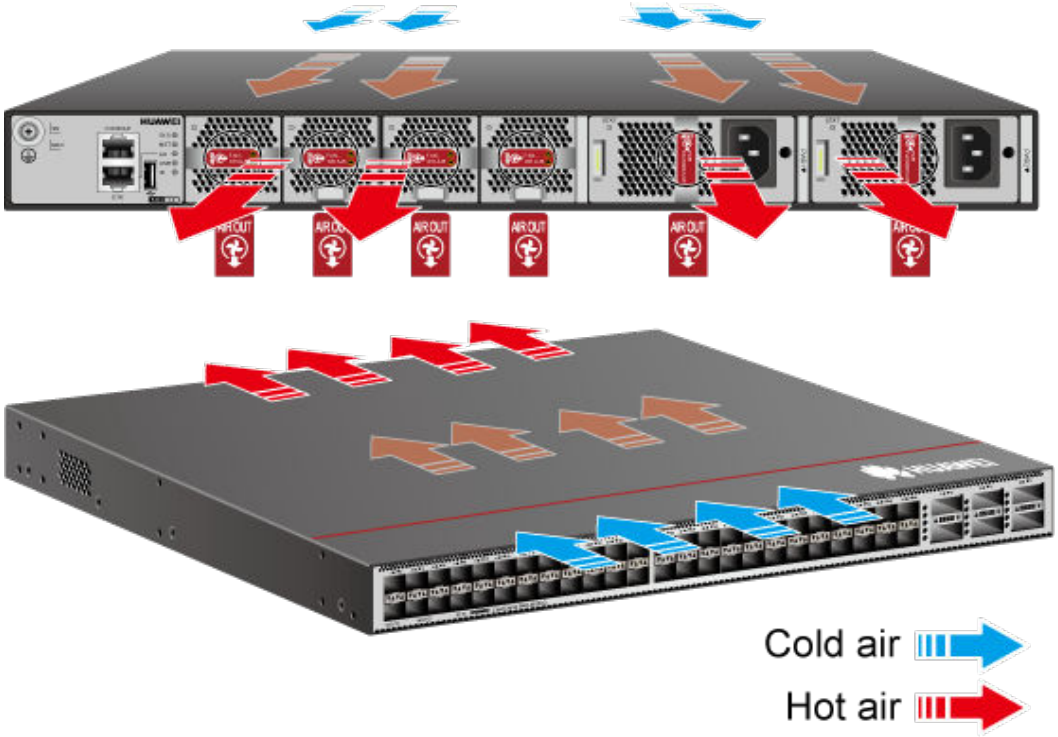


Figure 4-93 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-87 Technical specifications of the CE6863-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be configured to work at 10 Gbit/s or 1 Gbit/s. Every four downlink 25GE ports form a group, and can be configured to work at 10 Gbit/s or 1 Gbit/s through the command; 2. 10GE LRM/80KM linear optical modules are not supported; 3. 1 m 25GE copper cables and 1 m/3 m/5 m 10GE copper cables are supported, and auto-negotiation of copper cables is not supported; 4. 25GE copper cables can only be used on stack ports and M-LAG peer-link ports.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE optical ports, and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W

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Item	Specification
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V DC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.

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Item	Specification
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999962836
MTBF [year]	47.81 year
MTTR [hour]	1.95 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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4.4.8.2 CE6863-48S6CQ (02352NUN-001)

Overview

Table 4-88 Basic information about the CE6863-48S6CQ

Item	Details
Description	CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, without fan and power modules)
Part Number	02352NUN-001
Model	CE6863-48S6CQ
First supported version	V200R021C10SPC600
Other part numbers	02352NUP-001 (CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02352NUQ-001 (CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6863

Appearance

Figure 4-94 Appearance of the CE6863-48S6CQ



Front (power supply side)



Rear (port side)

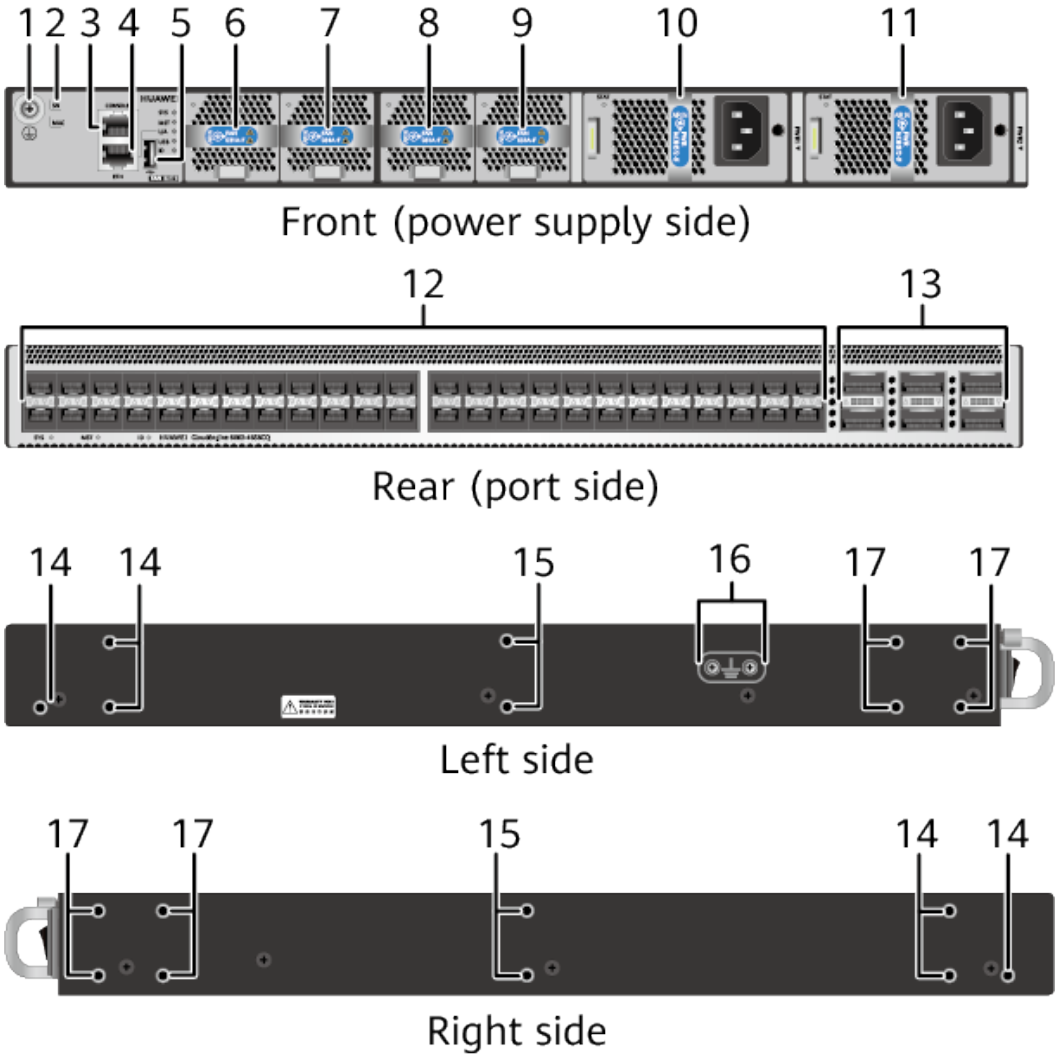
NOTE

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Components

Figure 4-95 Components of the CE6863-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-89 Slots on the CE6863-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-96 Indicators on the CE6863-48S6CQ 1

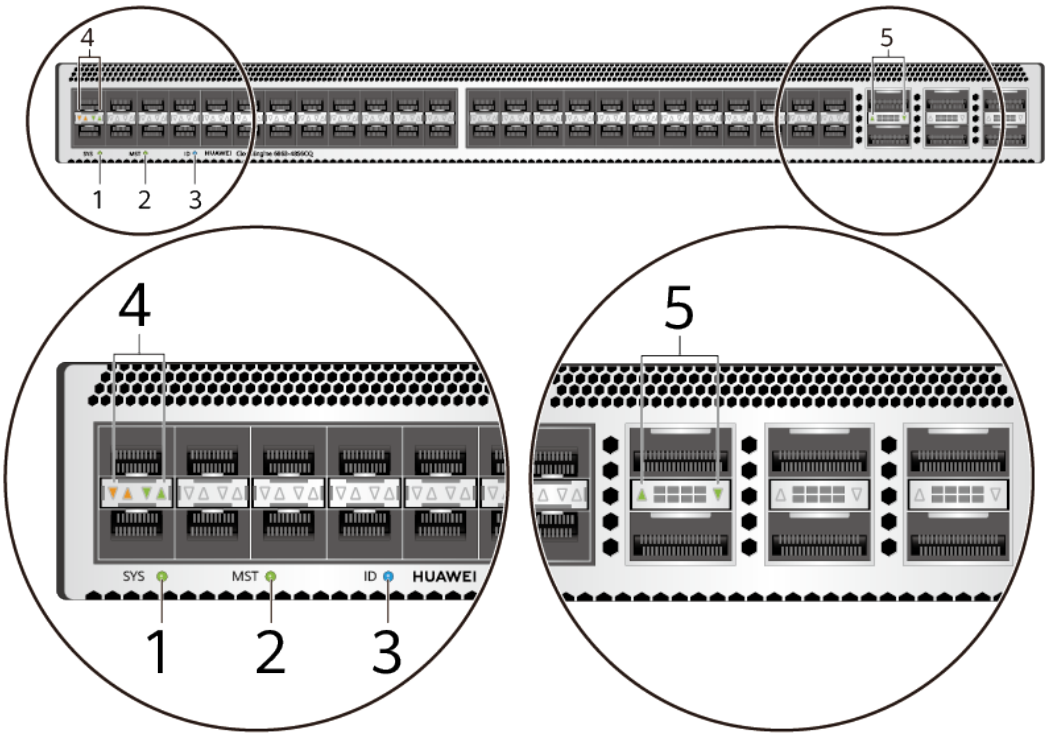
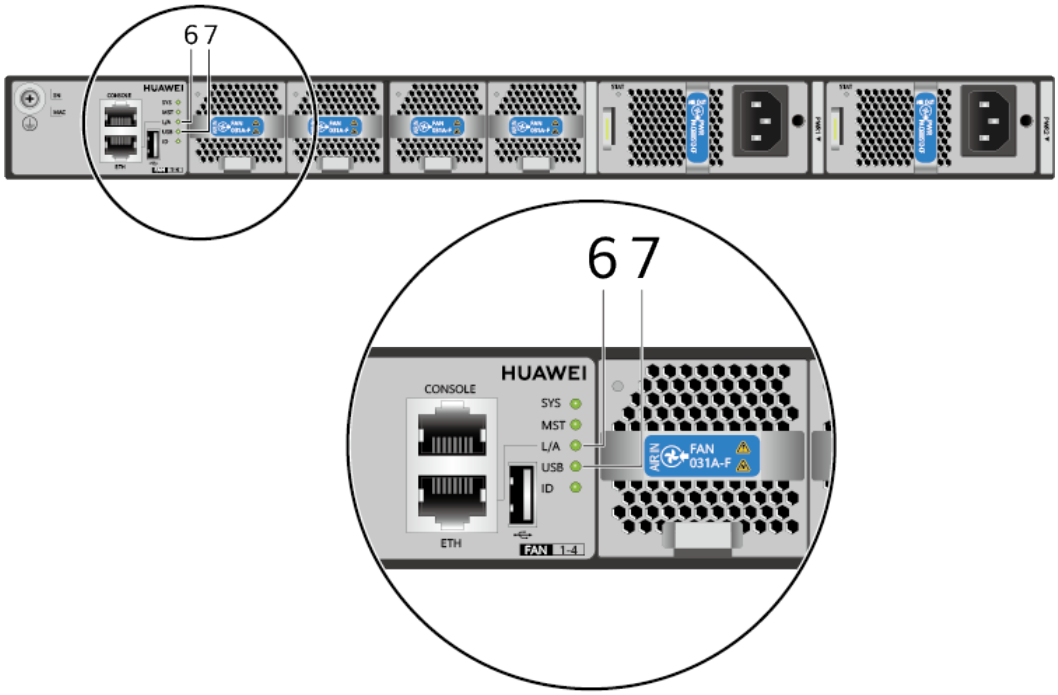


Figure 4-97 Indicators on the CE6863-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-90 Indicators on the CE6863-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-91 Ports on the CE6863-48S6CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-98 Front-to-back airflow for port-side exhaust

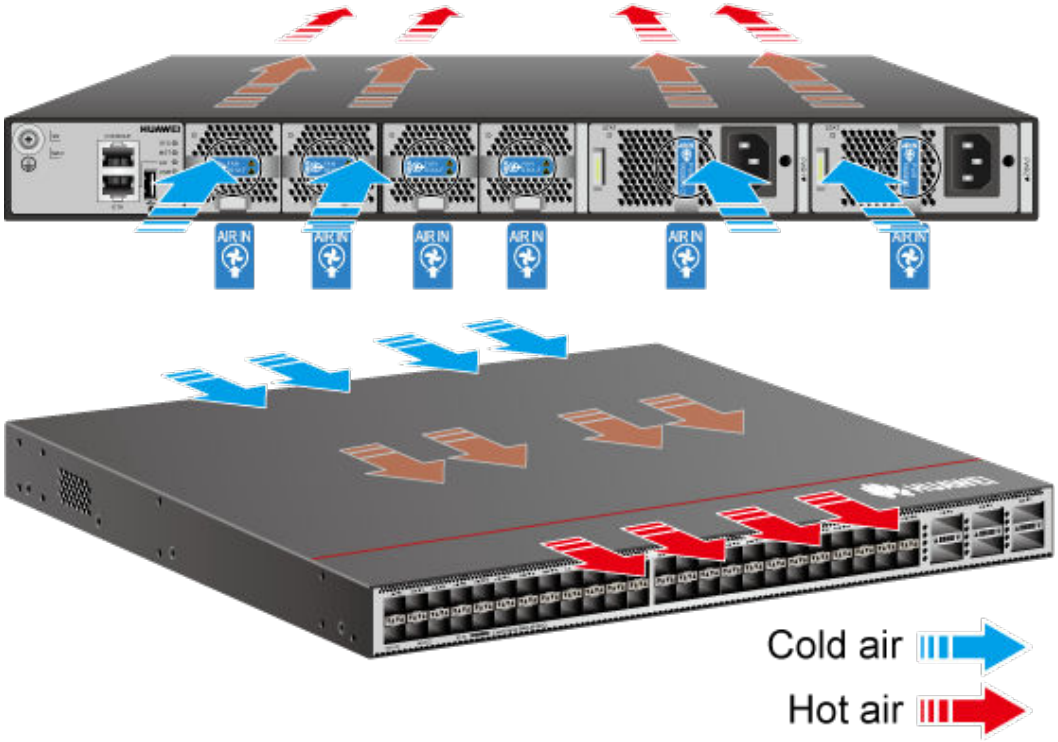
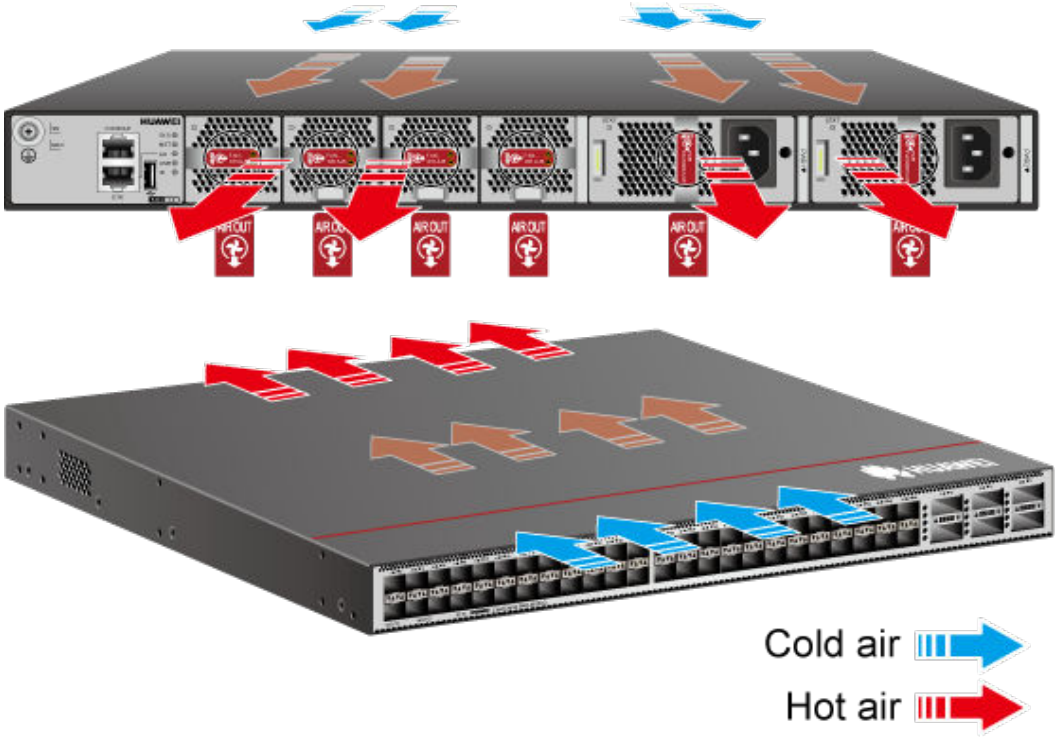


Figure 4-99 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-92 Technical specifications of the CE6863-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	8.95 kg
Weight with packaging (full configuration) [kg (lb)]	11.05 kg (24.36 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be used as 10GE and GE ports. Every four downlink 25GE ports form one group and can be configured to work at 10 Gbit/s or 1 Gbit/s using commands. 2. 10GE LRM/80KM linear optical modules are not supported. 3. 25GE 1 m copper cables and 10GE 1 m/3 m/5 m copper cables are supported, and auto-negotiation of copper cables is not supported. 4. 25GE copper cables can only be used on stack interfaces and M-LAG peer-link interfaces.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	Rated AC input voltage range: 100 V AC to 240 V AC; 50/60 Hz Rated –48 V DC input voltage range: –48 V DC to –60 V DC Rated input voltage range for 600 W AC & 240 V DC: 240 V DC Rated input voltage range for 1200 W HVDC: 240 V DC to 380 V DC
Input voltage range [V]	Maximum AC input voltage range: 90 V AC to 290 V AC; 45 Hz to 65 Hz Maximum –48 V DC input voltage range: –38.4 V DC to –72 V DC Maximum input voltage range for 600 W AC & 240 V DC: 190 V DC to 290 V DC Maximum input voltage range for 1200 W HVDC: 190 V DC to 400 V DC
Maximum input current [A]	600 W AC&240 V DC power module (PAC600S12 series): · 8 A (100 V AC to 240 V DC) · 4 A (240 V DC) 1000 W DC power module (PDC1000S12 series): 30 A (–48 V DC to –60 V DC) 1200 W high-voltage DC power module (PHD1K2S12 series): 8 A

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Item	Specification
Rated output power [W]	600 W (AC&240 V HVDC) 1000 W (–48 V DC) 1200 W (380 V HVDC)
Certification	· Compliance with safety standards · Compliance with EMC standards · Compliance with environment and environmental protection standards
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999962836
MTBF [year]	47.81 years
MTTR [hour]	1.95 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40ºC to +70ºC (-40°F to +158°F)

4.4.8.3 CE6863-48S6CQ (02352NUN-002)

Overview

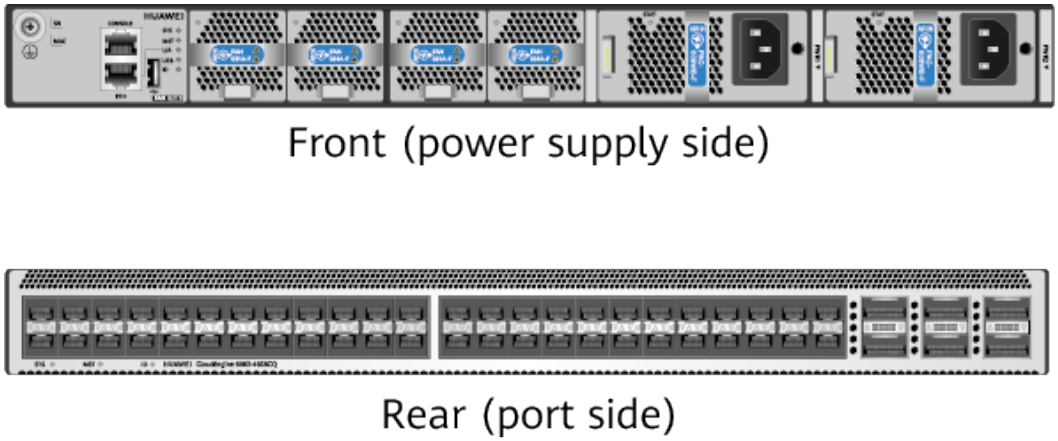
Table 4-93 Basic information about the CE6863-48S6CQ

Item	Details
Description	CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, without fan and power modules)
Part Number	02352NUN-002
Model	CE6863-48S6CQ
First supported version	V200R021C10SPC600
Other part numbers	02352NUP-002 (CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02352NUQ-002 (CE6863-48S6CQ switch (48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6863

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Appearance

Figure 4-100 Appearance of the CE6863-48S6CQ



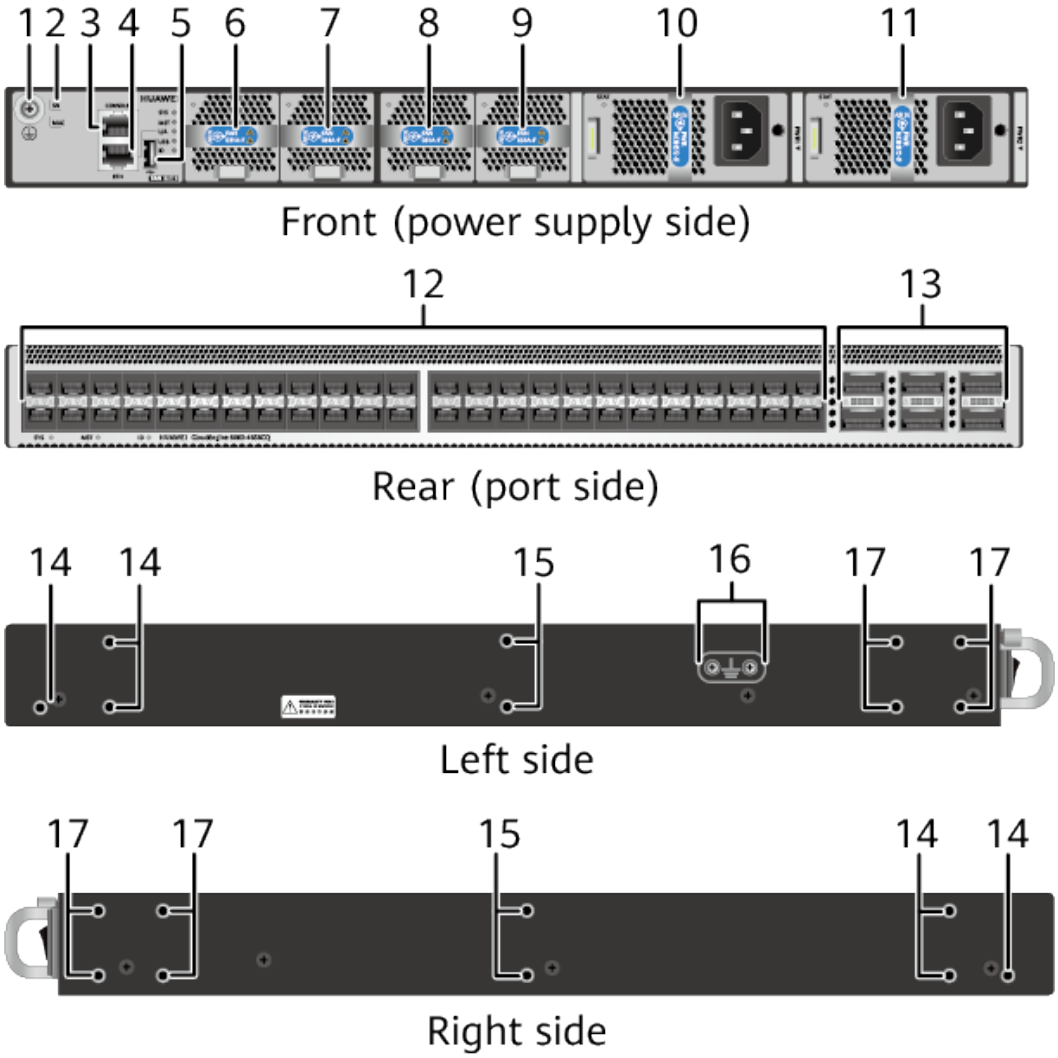
NOTE

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Components

Figure 4-101 Components of the CE6863-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-94 Slots on the CE6863-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-102 Indicators on the CE6863-48S6CQ 1

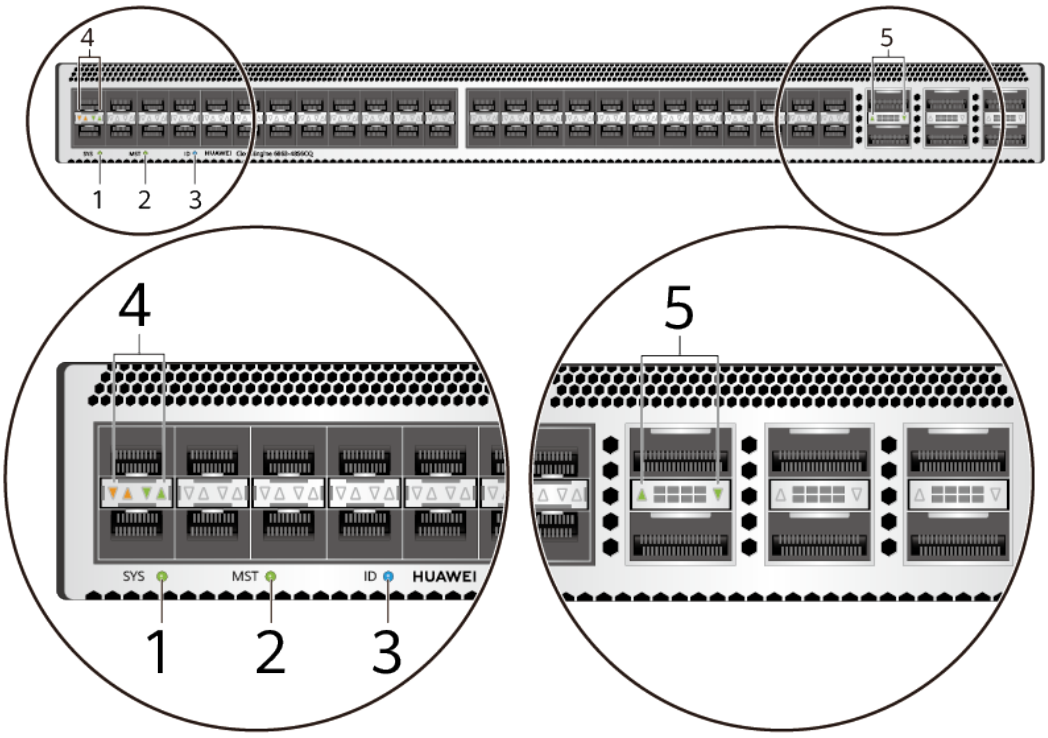
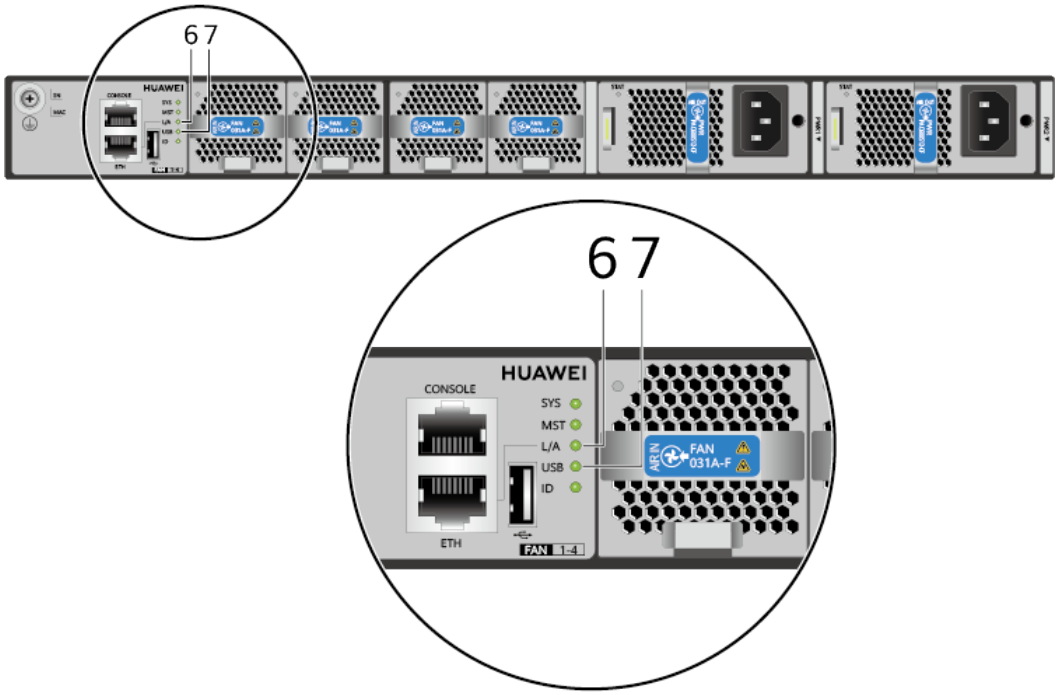


Figure 4-103 Indicators on the CE6863-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-95 Indicators on the CE6863-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-96 Ports on the CE6863-48S6CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-104 Front-to-back airflow for port-side exhaust

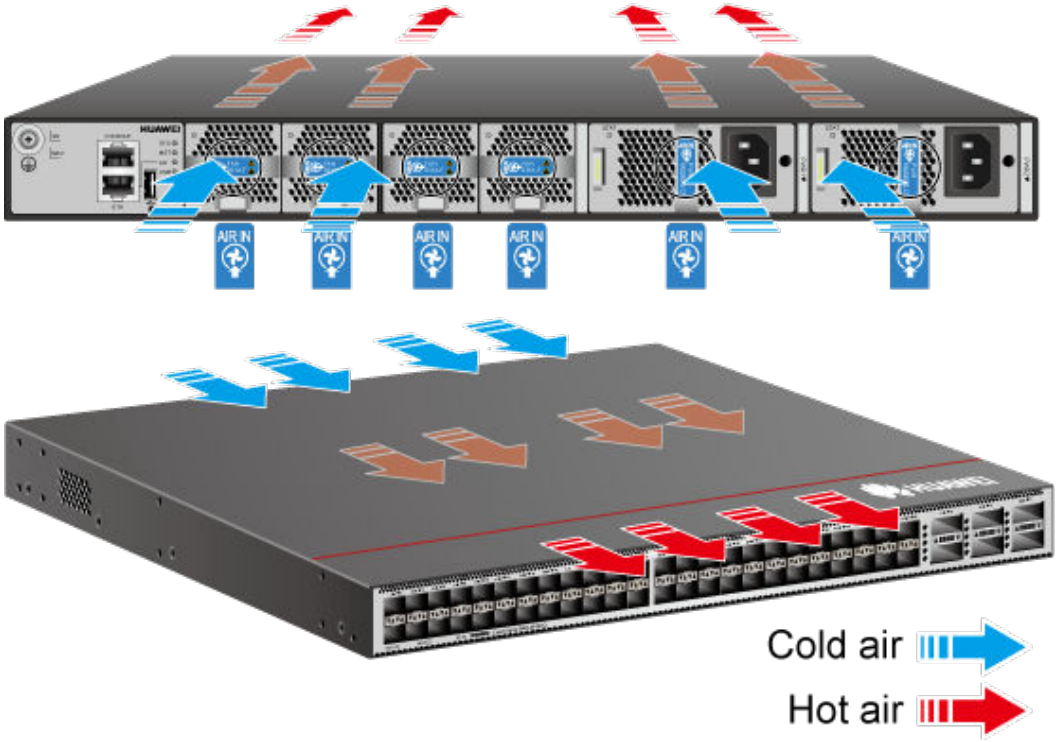
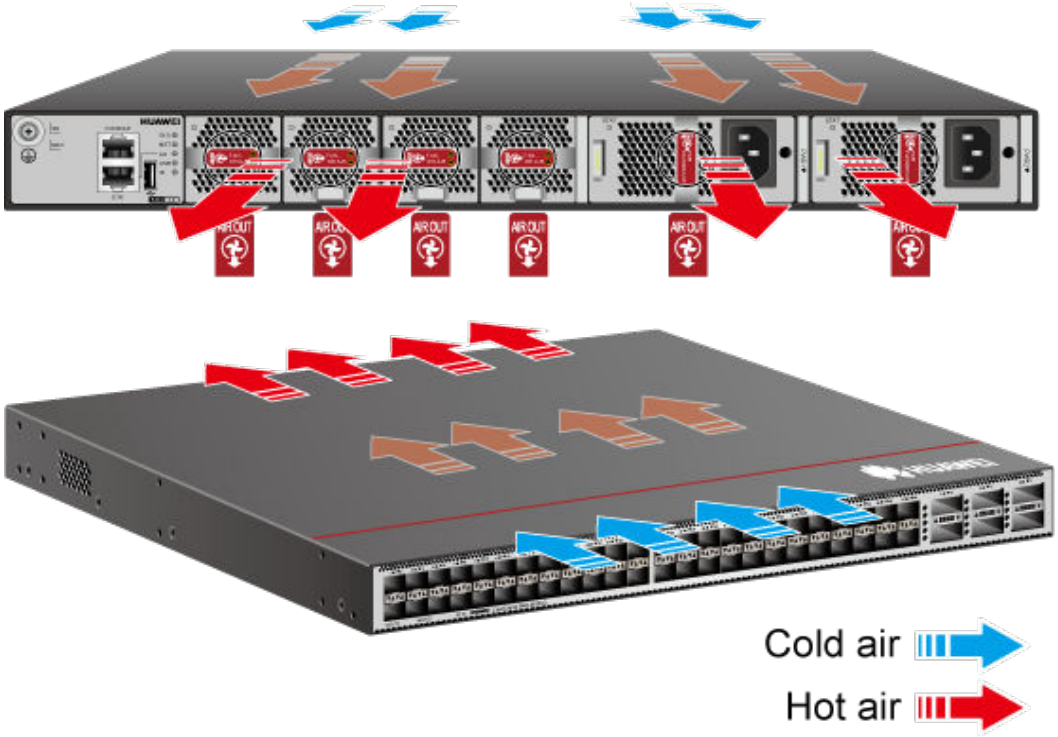


Figure 4-105 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-97 Technical specifications of the CE6863-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	8.95 kg
Weight with packaging (full configuration) [kg (lb)]	11.05 kg (24.36 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be used as 10GE and GE ports. Every four downlink 25GE ports form one group and can be configured to work at 10 Gbit/s or 1 Gbit/s using commands. 2. 10GE LRM/80KM linear optical modules are not supported. 3. 25GE 1 m copper cables and 10GE 1 m/3 m/5 m copper cables are supported, and auto-negotiation of copper cables is not supported. 4. 25GE copper cables can only be used on stack interfaces and M-LAG peer-link interfaces.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	Rated AC input voltage range: 100 V AC to 240 V AC; 50/60 Hz Rated –48 V DC input voltage range: –48 V DC to –60 V DC Rated input voltage range for 600 W AC & 240 V DC: 240 V DC Rated input voltage range for 1200 W HVDC: 240 V DC to 380 V DC
Input voltage range [V]	Maximum AC input voltage range: 90 V AC to 290 V AC; 45 Hz to 65 Hz Maximum –48 V DC input voltage range: –38.4 V DC to –72 V DC Maximum input voltage range for 600 W AC & 240 V DC: 190 V DC to 290 V DC Maximum input voltage range for 1200 W HVDC: 190 V DC to 400 V DC
Maximum input current [A]	600 W AC&240 V DC power module (PAC600S12 series): · 8 A (100 V AC to 240 V DC) · 4 A (240 V DC) 1000 W DC power module (PDC1000S12 series): 30 A (–48 V DC to –60 V DC) 1200 W high-voltage DC power module (PHD1K2S12 series): 8 A

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Item	Specification
Rated output power [W]	600 W (AC&240 V HVDC) 1000 W (–48 V DC) 1200 W (380 V HVDC)
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999962836
MTBF [year]	47.81 years
MTTR [hour]	1.95 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

4.4.9 CE6863-48S6CQ-K

4.4.9.1 CE6863-48S6CQ-K (02353JAG)

Overview

Table 4-98 Basic information about the CE6863-48S6CQ-K

Item	Details
Description	CE6863-48S6CQ-K switch (48*25G SFP28, 6*100G QSFP28, without fan and power modules)
Part Number	02353JAG
Model	CE6863-48S6CQ-K
First supported version	V200R019C10
Other part numbers	02353JAK (CE6863-48S6CQ-K switch (48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake))

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Appearance

Figure 4-106 Appearance of the CE6863-48S6CQ-K



Front (power supply side)



Rear (port side)

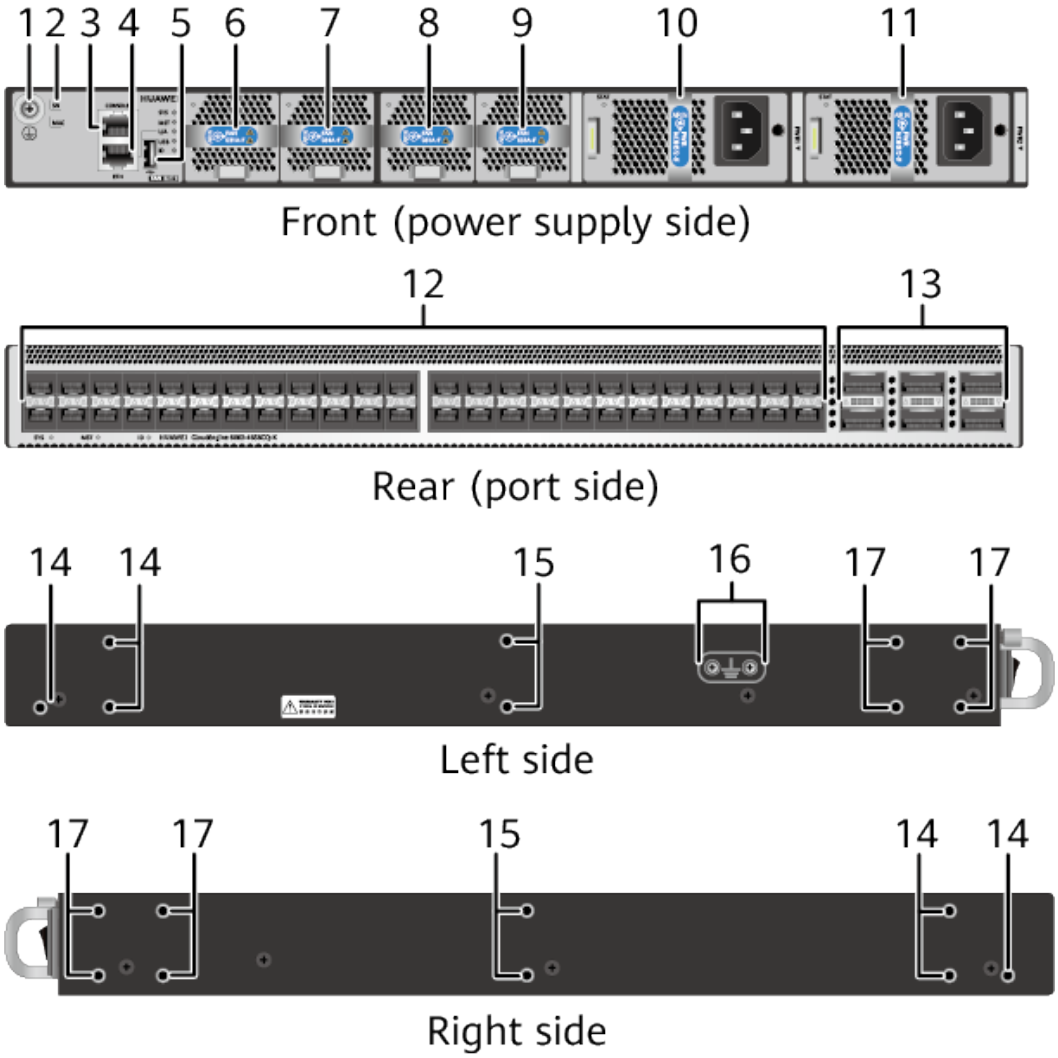
NOTE

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Components

Figure 4-107 Components of the CE6863-48S6CQ-K



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-99 Slots on the CE6863-48S6CQ-K

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-108 Indicators on the CE6863-48S6CQ-K 1

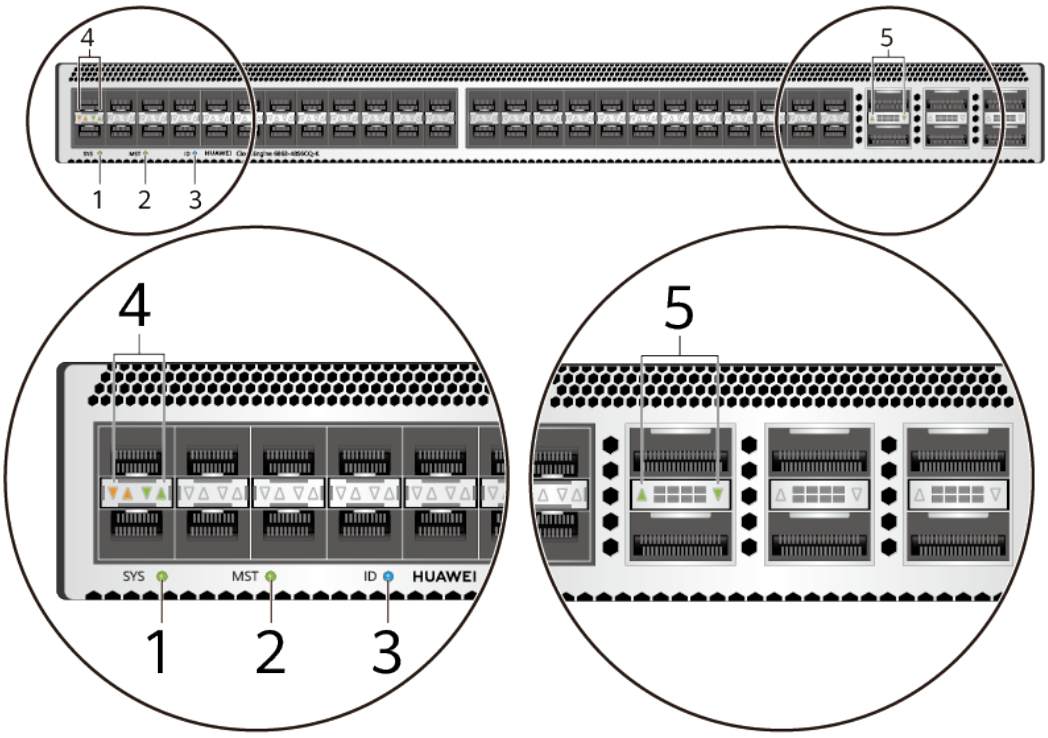
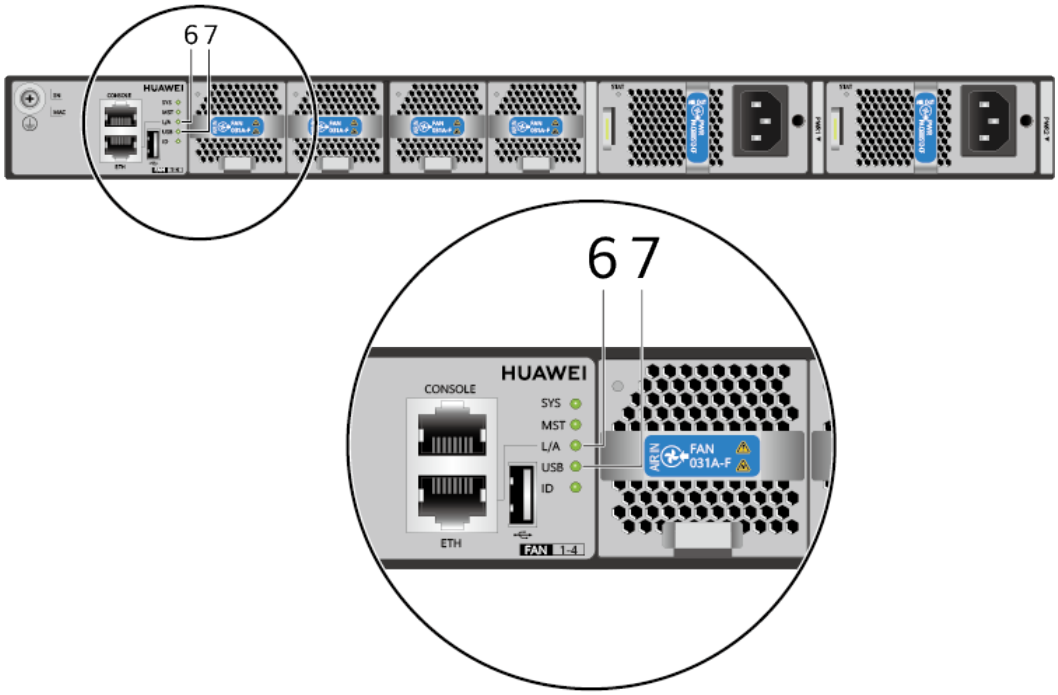


Figure 4-109 Indicators on the CE6863-48S6CQ-K 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-100 Indicators on the CE6863-48S6CQ-K

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-101 Ports on the CE6863-48S6CQ-K

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-110** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-111** (using a CE6863 chassis as an example).

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Figure 4-110 Front-to-back airflow for port-side exhaust

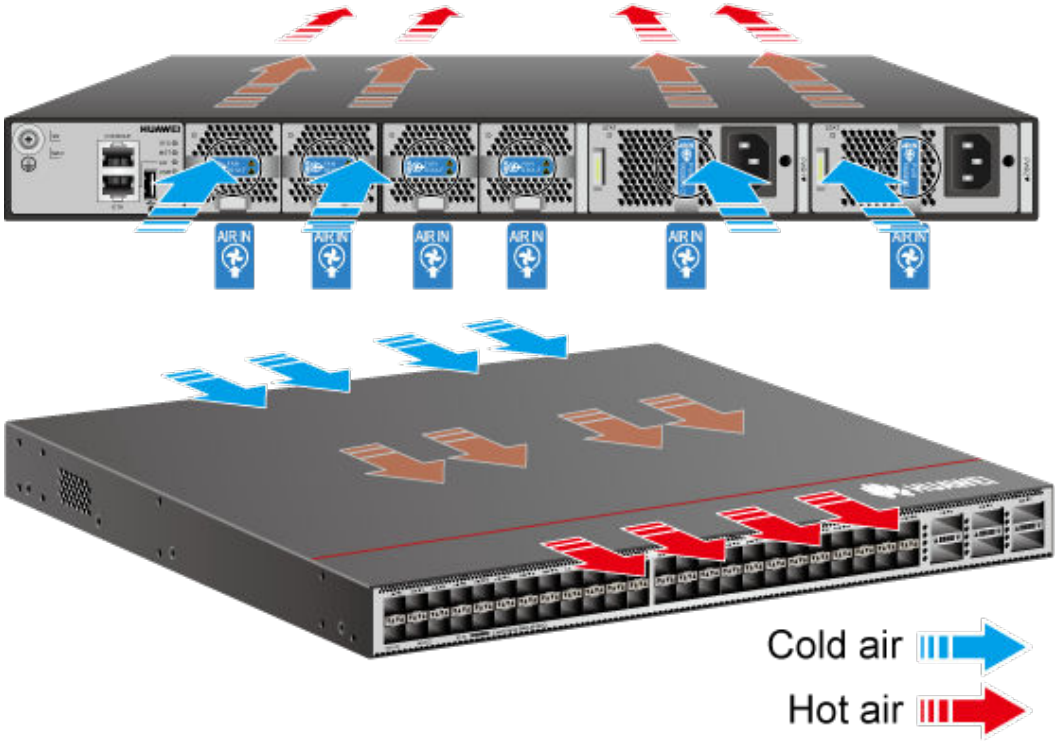
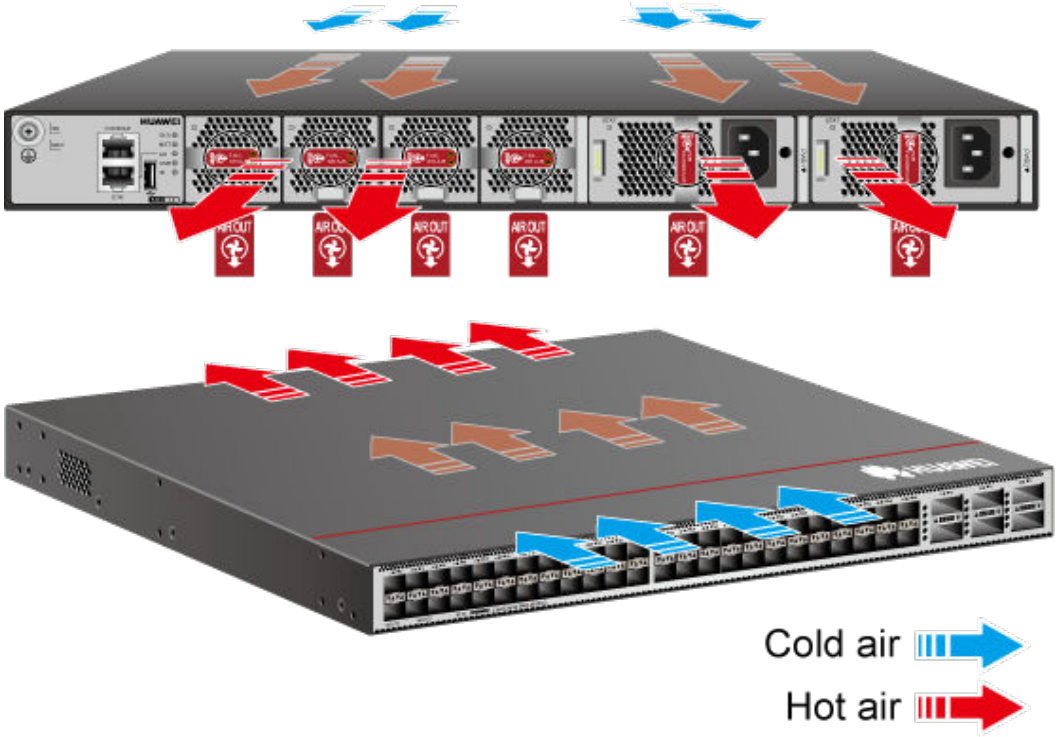


Figure 4-111 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-102 Technical specifications of the CE6863-48S6CQ-K

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be configured to work at 10 Gbit/s or 1 Gbit/s. Every four downlink 25GE ports form a group, and can be configured to work at 10 Gbit/s or 1 Gbit/s through the command; 2. 10GE LRM/80KM linear optical modules are not supported; 3. 1 m 25GE copper cables and 1 m/3 m/5 m 10GE copper cables are supported, and auto-negotiation of copper cables is not supported; 4. 25GE copper cables can only be used on stack ports and M-LAG peer-link ports.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE optical ports, and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W

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Item	Specification
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V DC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.

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Item	Specification
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999962836
MTBF [year]	47.81 year
MTTR [hour]	1.95 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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4.4.9.2 CE6863-48S6CQ-K (02353JAG-001)

Overview

Table 4-103 Basic information about the CE6863-48S6CQ-K

Item	Details
Description	CE6863-48S6CQ-K switch (48*25G SFP28, 6*100G QSFP28, without fan and power modules)
Part Number	02353JAG-001
Model	CE6863-48S6CQ-K
First supported version	V200R021C10SPC600
Other part numbers	02353JAK-001 (CE6863-48S6CQ-K switch (48*25G SFP28, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354TDR-001 (CE6863-48S6CQ-K switch (48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))

Appearance

Figure 4-112 Appearance of the CE6863-48S6CQ-K



Front (power supply side)



Rear (port side)

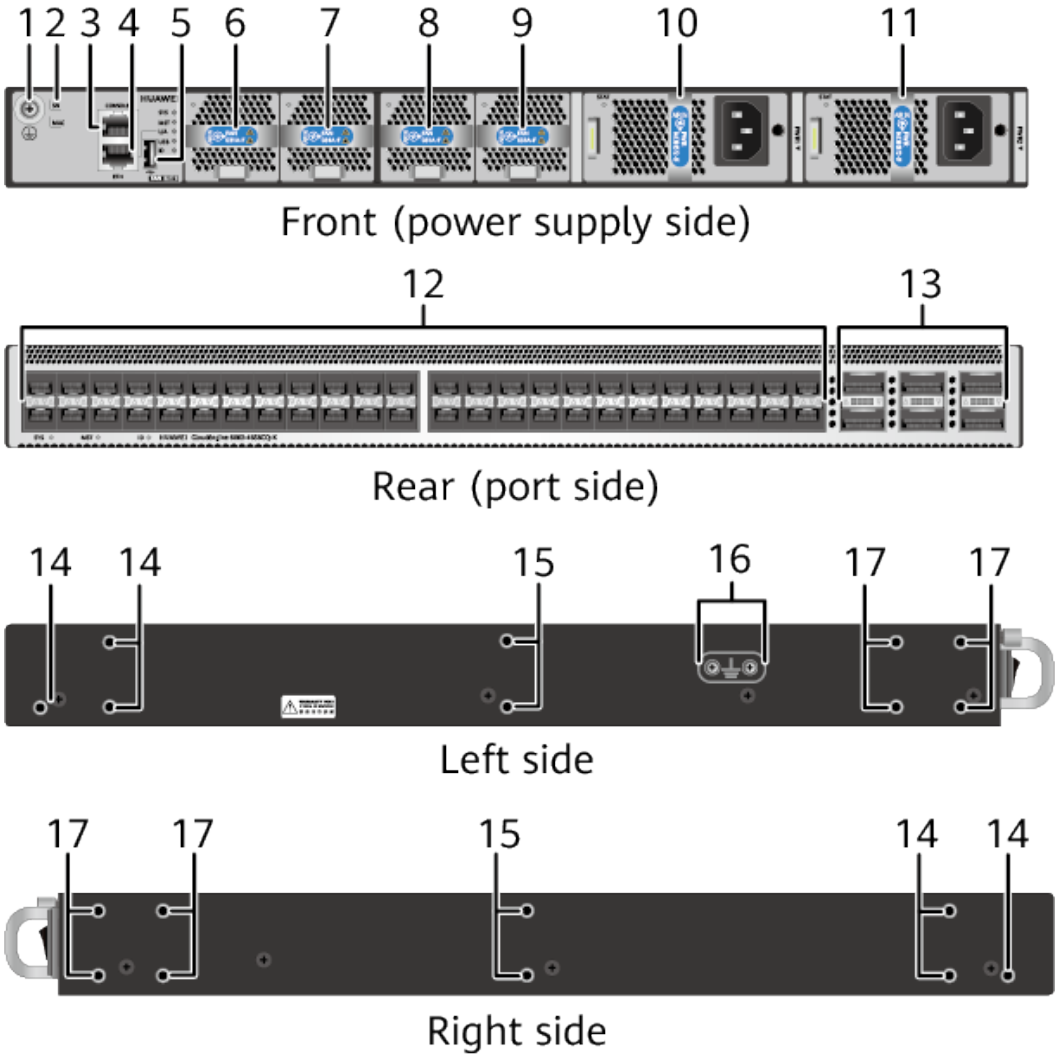
NOTE

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Components

Figure 4-113 Components of the CE6863-48S6CQ-K



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-104 Slots on the CE6863-48S6CQ-K

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-114 Indicators on the CE6863-48S6CQ-K 1

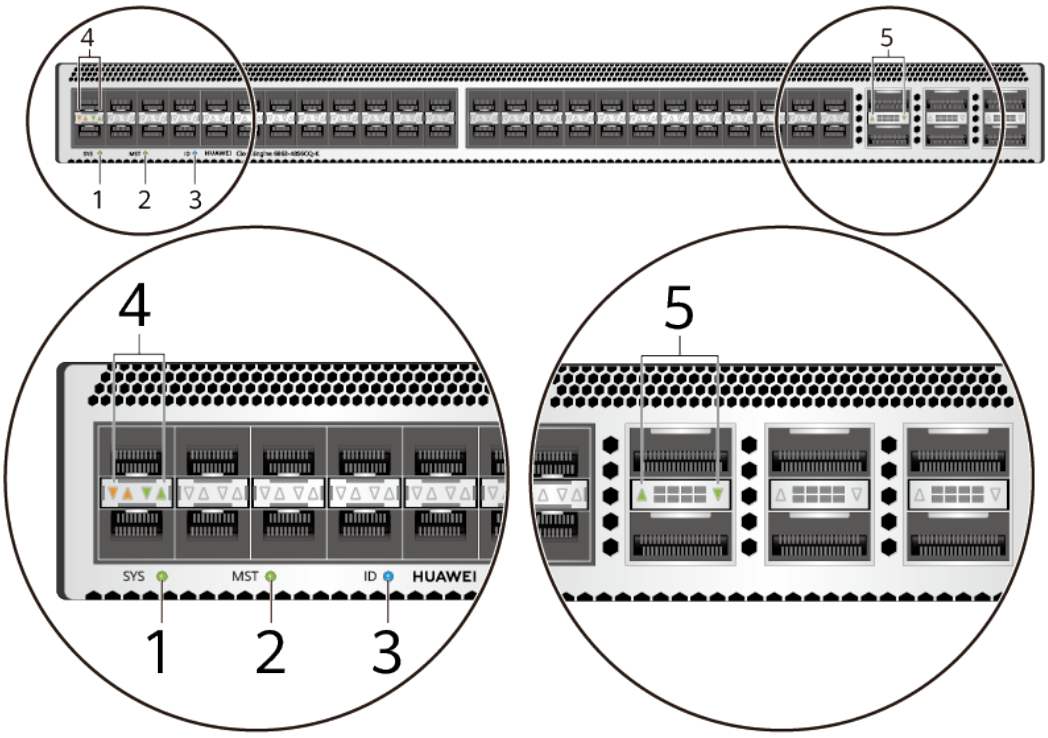
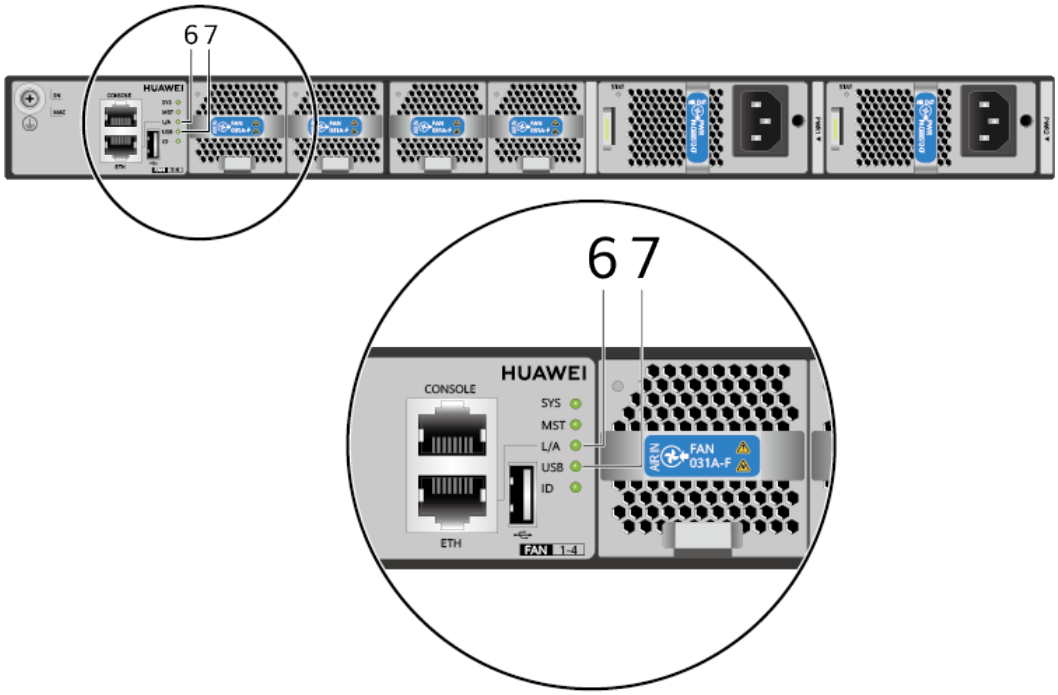


Figure 4-115 Indicators on the CE6863-48S6CQ-K 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-105 Indicators on the CE6863-48S6CQ-K

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-106 Ports on the CE6863-48S6CQ-K

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-116 Front-to-back airflow for port-side exhaust

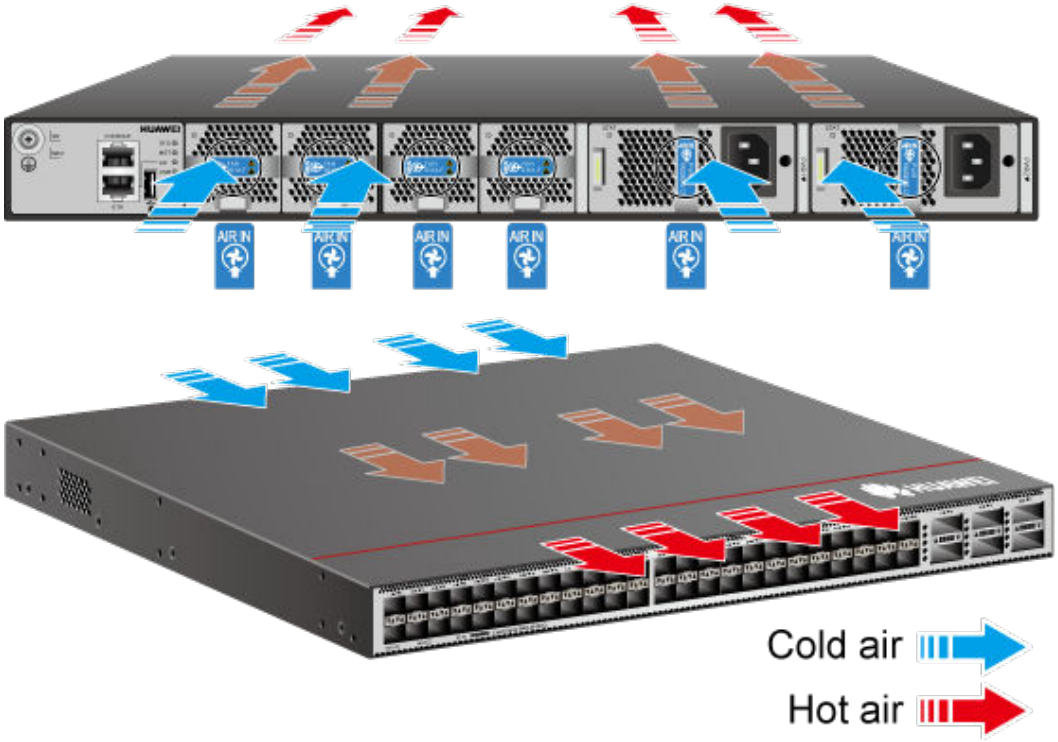
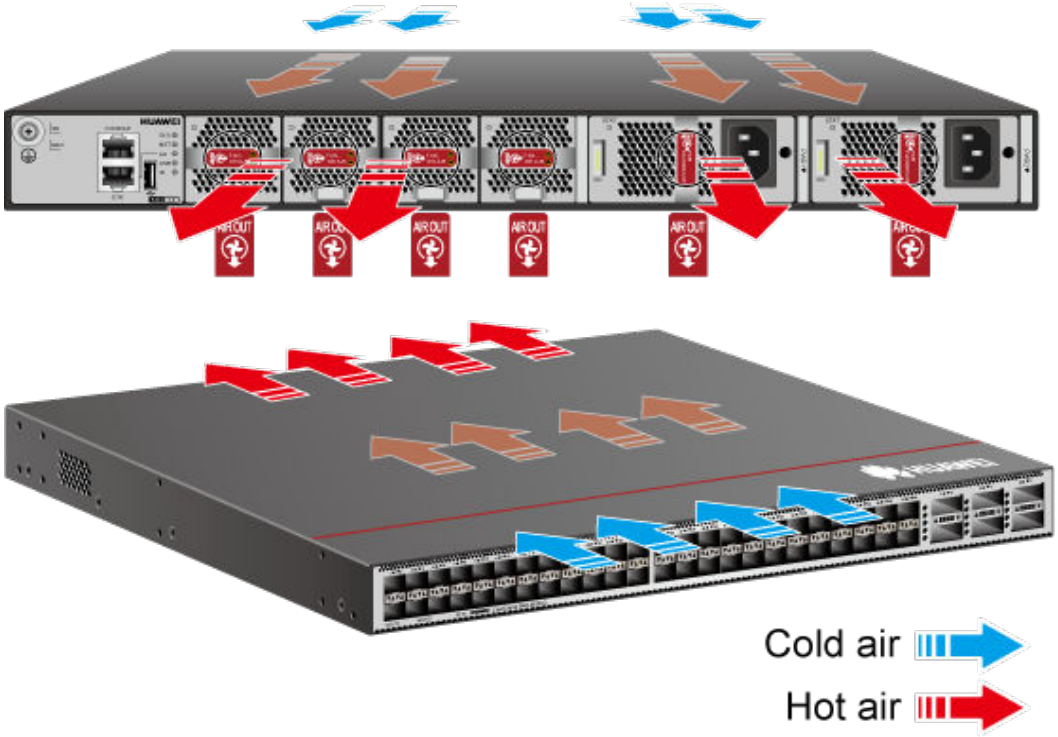


Figure 4-117 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-107 Technical specifications of the CE6863-48S6CQ-K

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be used as 10GE and GE ports. Every four downlink 25GE ports form one group and can be configured to work at 10 Gbit/s or 1 Gbit/s using commands. 2. 10GE LRM/80KM linear optical modules are not supported. 3. 25GE 1 m copper cables and 10GE 1 m/3 m/5 m copper cables are supported, and auto-negotiation of copper cables is not supported. 4. 25GE copper cables can only be used on stack interfaces and M-LAG peer-link interfaces.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W

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Item	Specification
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC PSU: 8 A (100 V AC to 240 V DC); 4 A (240 V DC) • 1000 W DC PSU: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999962836
MTBF [year]	47.81 year
MTTR [hour]	1.95 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

4.4.10 CE6863E-48S6CQ

4.4.10.1 CE6863E-48S6CQ (02354GCT)

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Overview

Table 4-108 Basic information about the CE6863E-48S6CQ

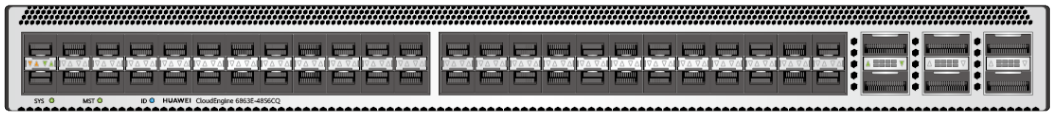
Item	Details
Description	CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, without fan and power modules)
Part Number	02354GCT
Model	CE6863E-48S6CQ
First supported version	V200R021C00
Other part numbers	02354GCW (CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354GCX (CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6863E

Appearance

Figure 4-118 Appearance of the CE6863E-48S6CQ



Front (power supply side)



Rear (port side)

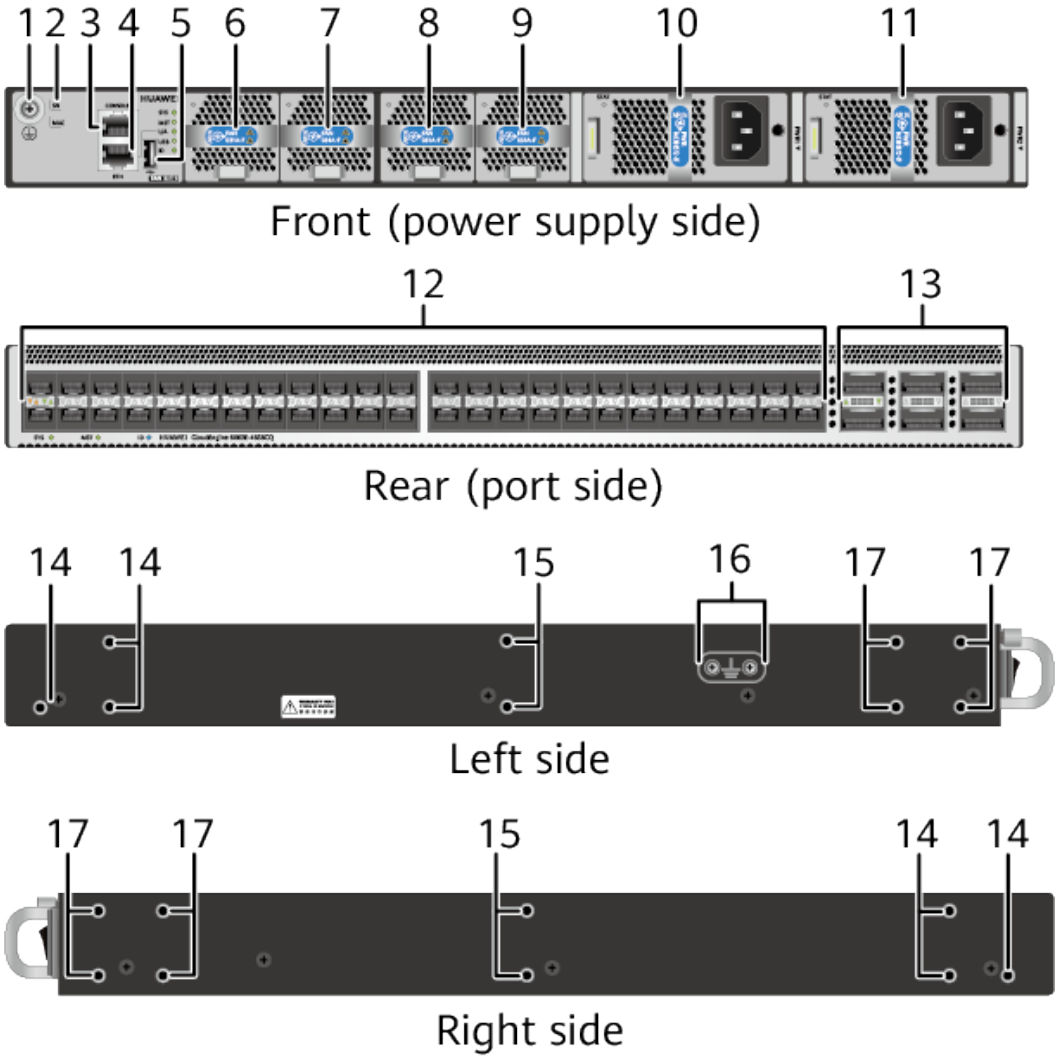
NOTE

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Components

Figure 4-119 Components of the CE6863E-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-109 Slots on the CE6863E-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-120 Indicators on the CE6863E-48S6CQ 1

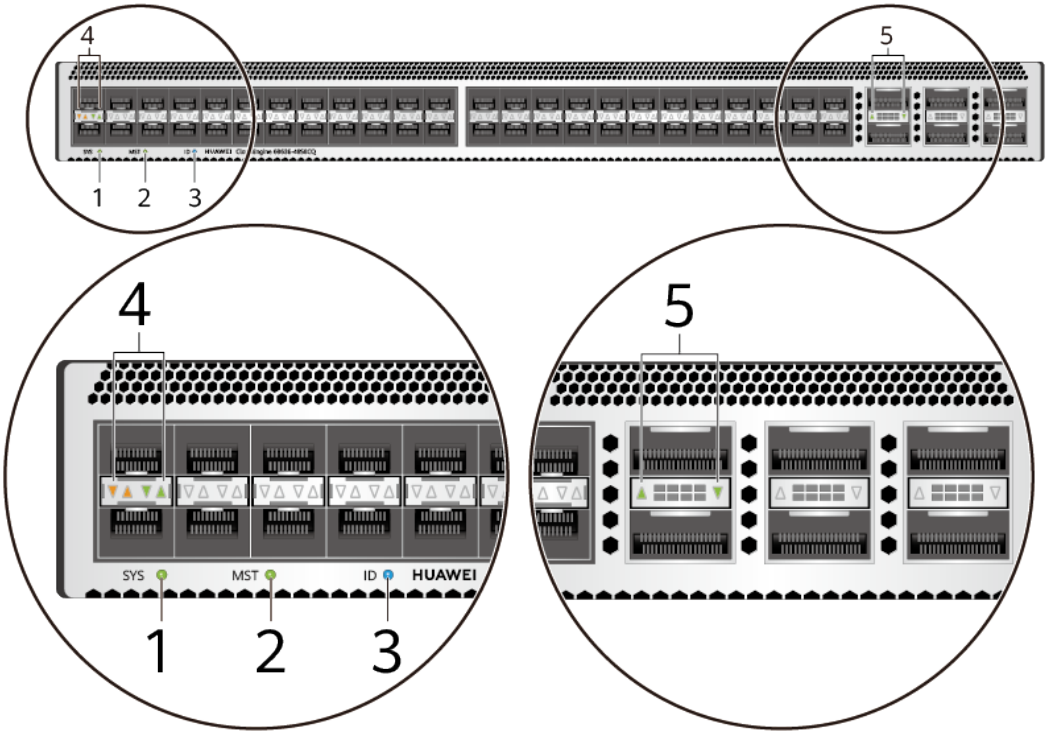
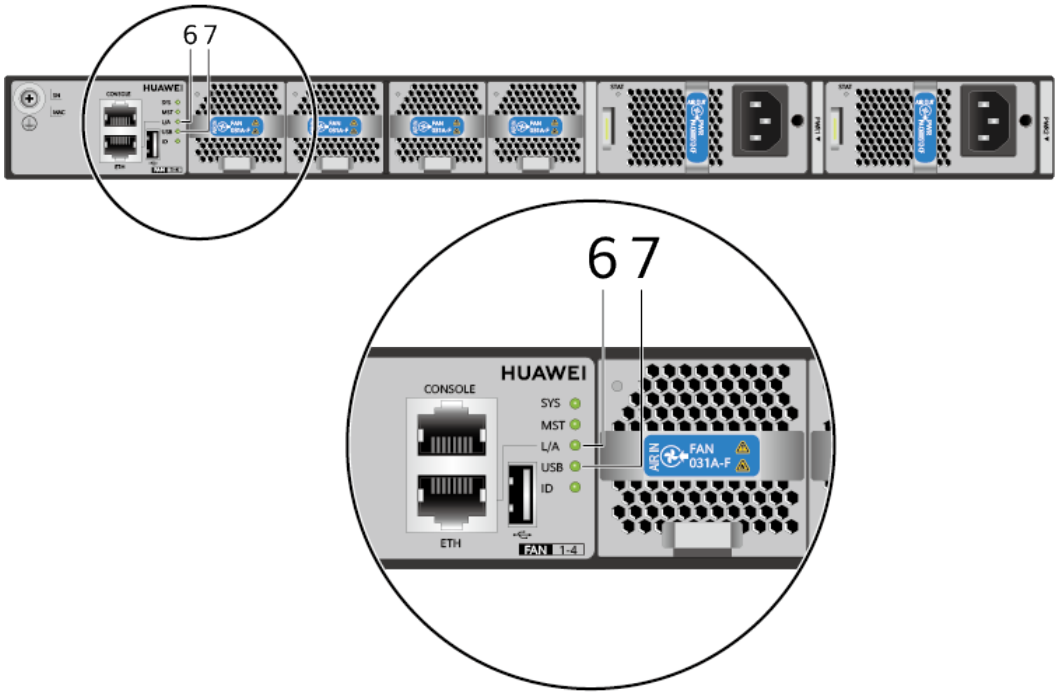


Figure 4-121 Indicators on the CE6863E-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-110 Indicators on the CE6863E-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-111 Ports on the CE6863E-48S6CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-122 Front-to-back airflow for port-side exhaust

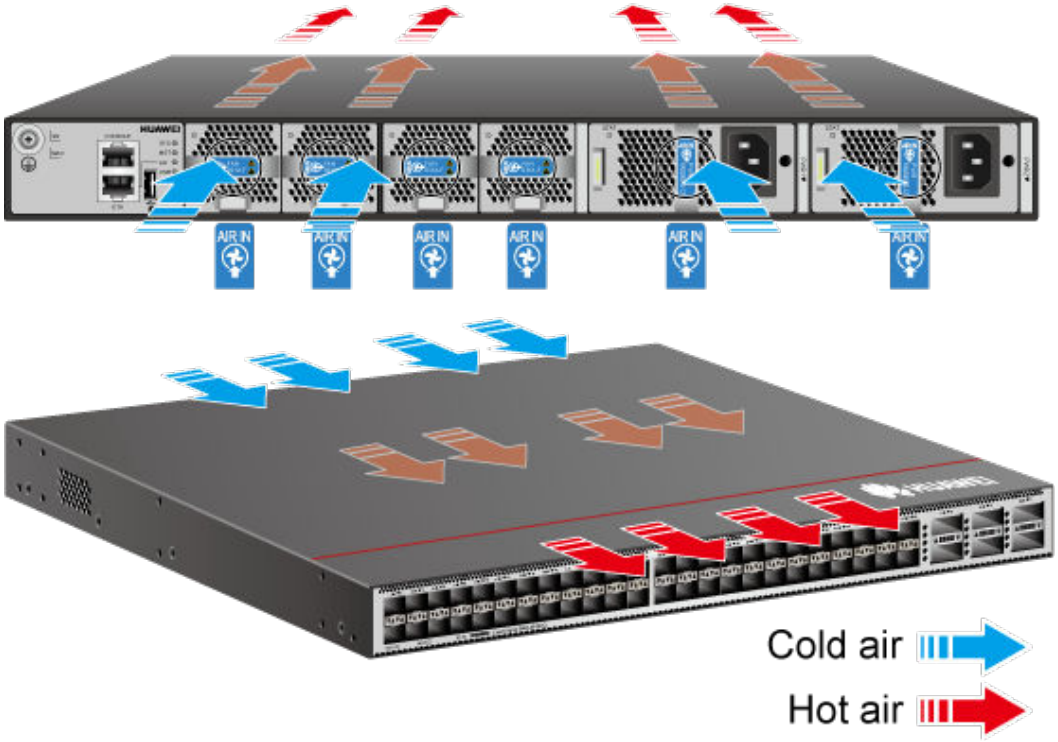
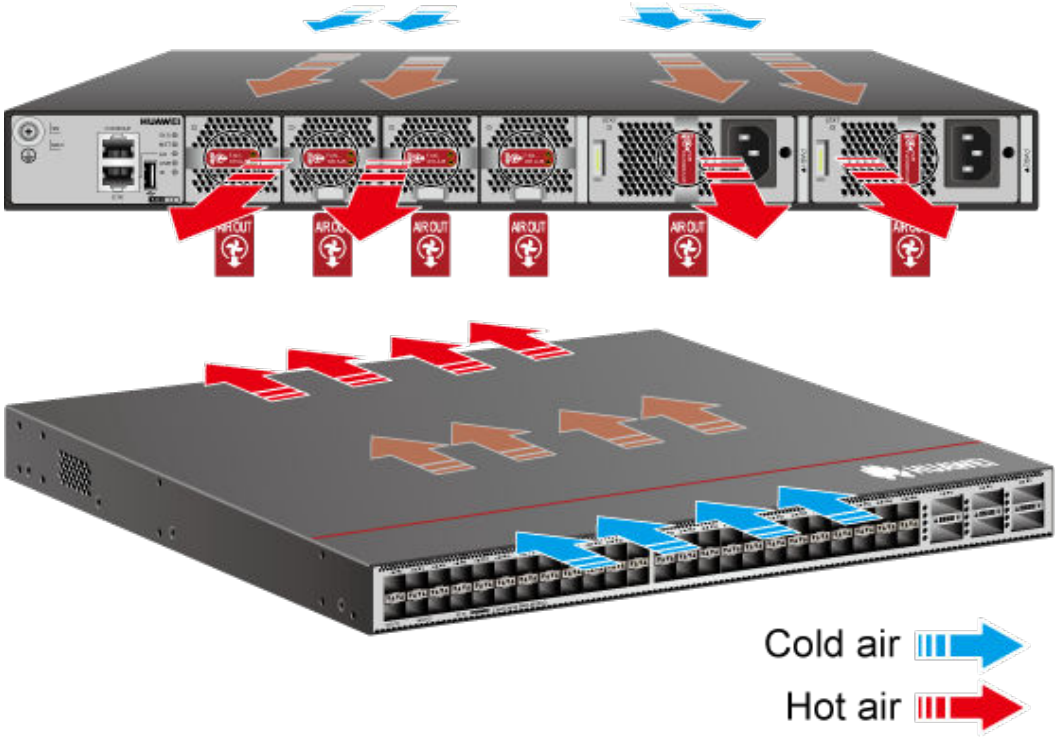


Figure 4-123 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-112 Technical specifications of the CE6863E-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	8.95 kg
Weight with packaging (full configuration) [kg (lb)]	11.05kg
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be configured to work at 10 Gbit/s or 1 Gbit/s. Every four downlink 25GE ports form a group, and can be configured to work at 10 Gbit/s or 1 Gbit/s through the command; 2. 10GE LRM/80KM linear optical modules are not supported; 3. 1 m 25GE copper cables and 1 m/3 m/5 m 10GE copper cables are supported, and auto-negotiation of copper cables is not supported; 4. 25GE copper cables can only be used on stack ports and M-LAG peer-link ports.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE optical ports, and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	Rated AC input voltage range: 100 V AC to 240 V AC; 50/60 Hz Rated –48 V DC input voltage range: –48 V DC to –60 V DC Rated input voltage range for 600 W AC & 240 V DC: 240 V DC Rated input voltage range for 1200 W HVDC: 240 V DC to 380 V DC
Input voltage range [V]	Maximum AC input voltage range: 90 V AC to 290 V AC; 45 Hz to 65 Hz Maximum –48 V DC input voltage range: –38.4 V DC to –72 V DC Maximum input voltage range for 600 W AC & 240 V DC: 190 V DC to 290 V DC Maximum input voltage range for 1200 W HVDC: 190 V DC to 400 V DC
Maximum input current [A]	600 W AC&240 V DC power module (PAC600S12 series): · 8 A (100 V AC to 240 V DC) · 4 A (240 V DC) 1000 W DC power module (PDC1000S12 series): 30 A (–48 V DC to –60 V DC) 1200 W high-voltage DC power module (PHD1K2S12 series): 8 A

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Item	Specification
Rated output power [W]	600 W (AC&240 V HVDC) 1000 W (–48 V DC) 1200 W (380 V HVDC)
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999962836
MTBF [year]	47.81 years
MTTR [hour]	1.95 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

4.4.10.2 CE6863E-48S6CQ (02354GCT-001)

Overview

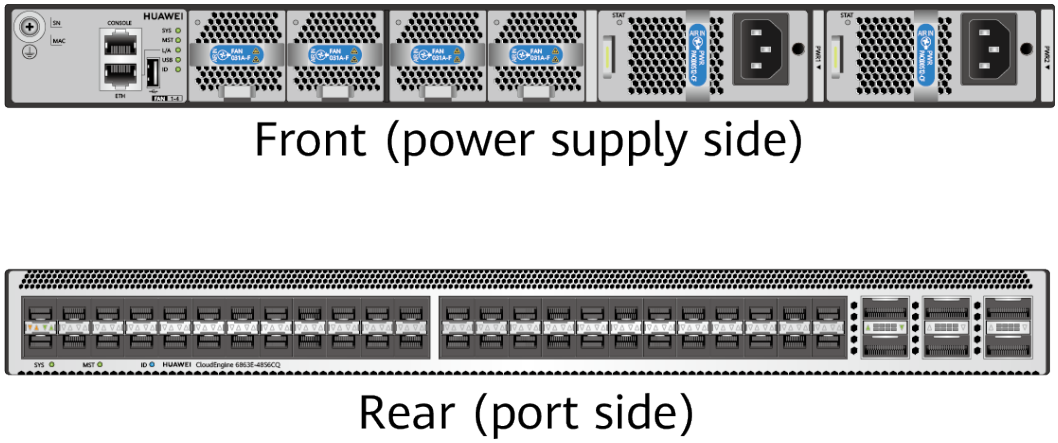
Table 4-113 Basic information about the CE6863E-48S6CQ

Item	Details
Description	CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, without fan and power modules)
Part Number	02354GCT-001
Model	CE6863E-48S6CQ
First supported version	V200R021C10SPC600
Other part numbers	02354GCW-001 (CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354GCX-001 (CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH010 or a later version.
Short Name	CE6863E

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Appearance

Figure 4-124 Appearance of the CE6863E-48S6CQ



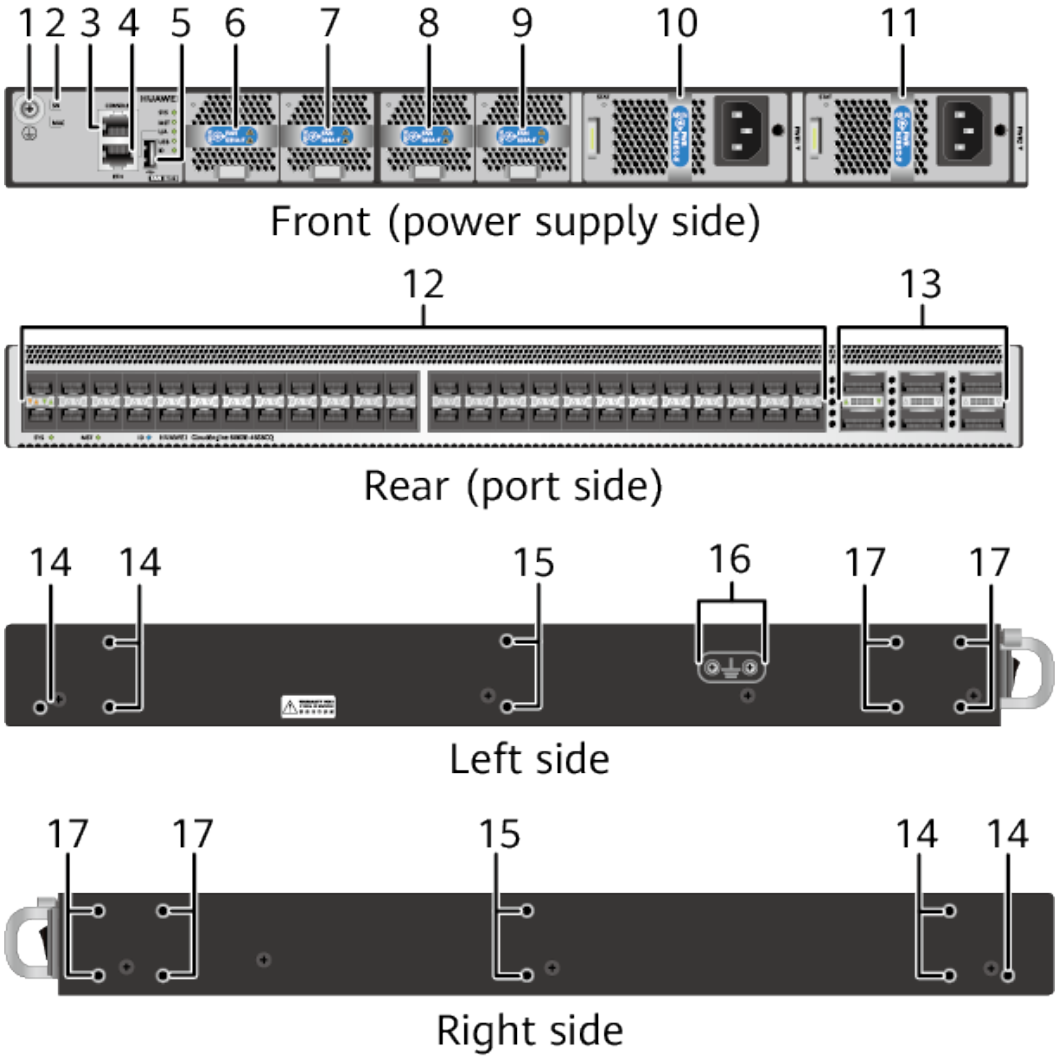
NOTE

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Components

Figure 4-125 Components of the CE6863E-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-114 Slots on the CE6863E-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-126 Indicators on the CE6863E-48S6CQ 1

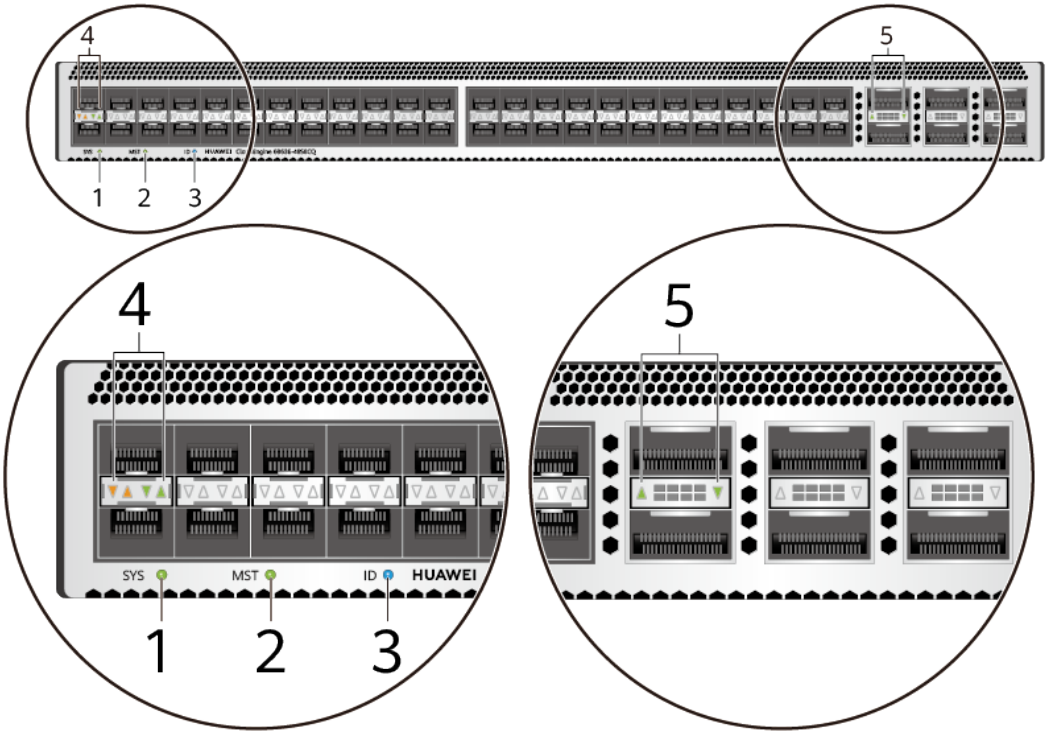
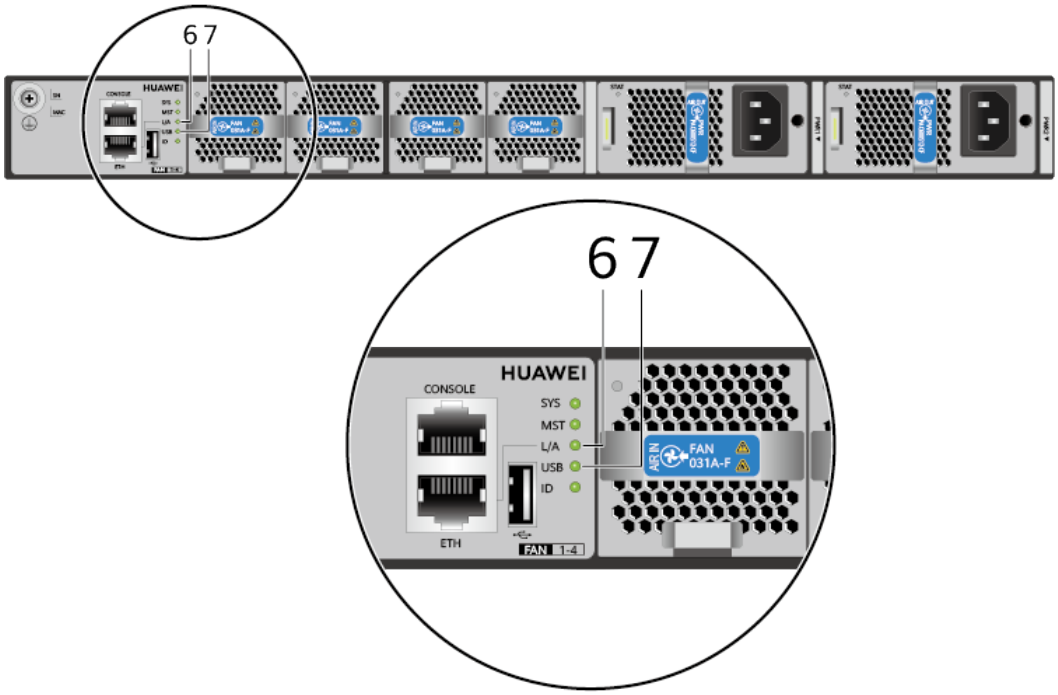


Figure 4-127 Indicators on the CE6863E-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-115 Indicators on the CE6863E-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-116 Ports on the CE6863E-48S6CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-128 Front-to-back airflow for port-side exhaust

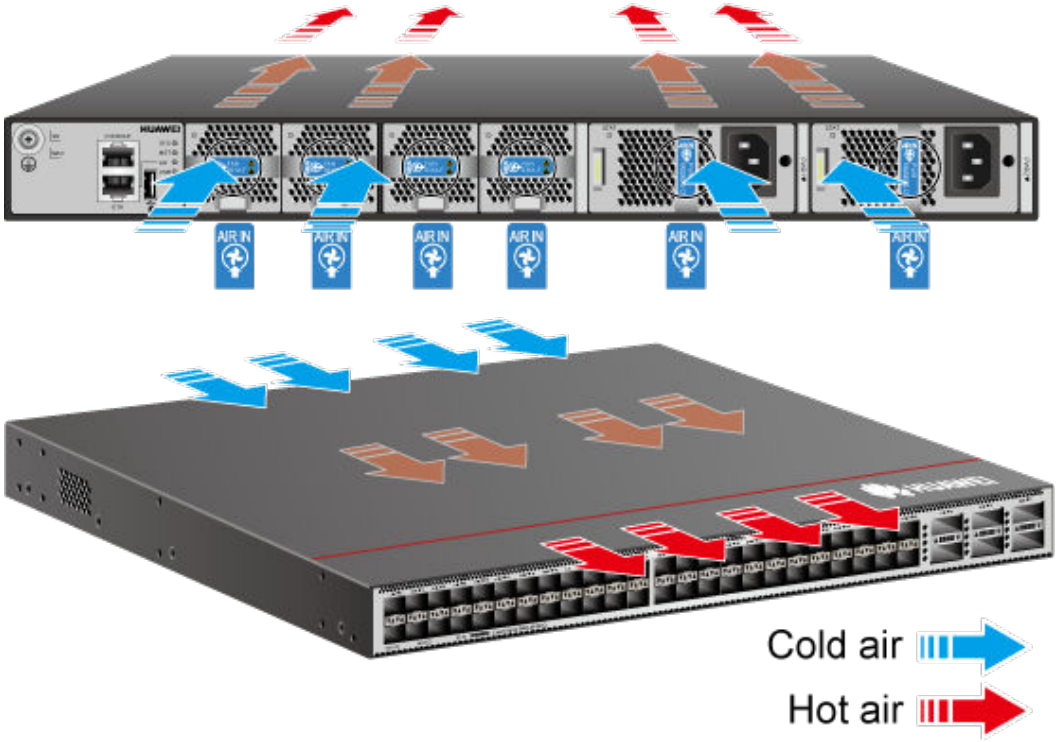
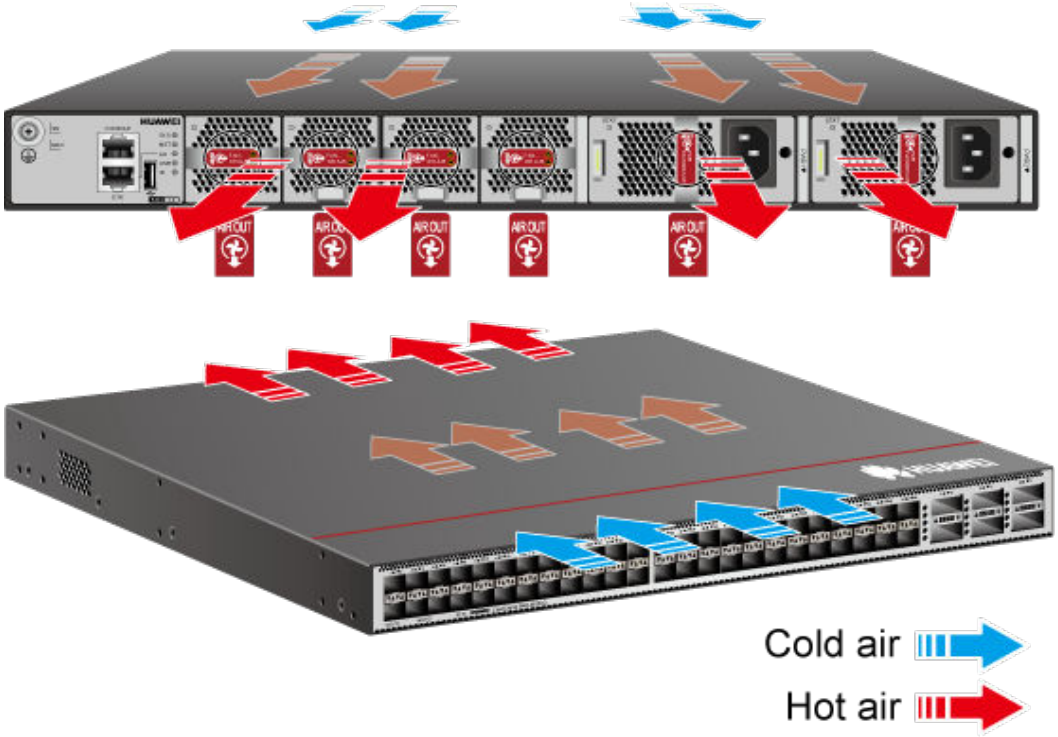


Figure 4-129 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-117 Technical specifications of the CE6863E-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	8.95 kg
Weight with packaging (full configuration) [kg (lb)]	11.05 kg (24.36 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be used as 10GE and GE ports. Every four downlink 25GE ports form one group and can be configured to work at 10 Gbit/s or 1 Gbit/s using commands. 2. 10GE LRM/80KM linear optical modules are not supported. 3. 25GE 1 m copper cables and 10GE 1 m/3 m/5 m copper cables are supported, and auto-negotiation of copper cables is not supported. 4. 25GE copper cables can only be used on stack interfaces and M-LAG peer-link interfaces.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	Rated AC input voltage range: 100 V AC to 240 V AC; 50/60 Hz Rated –48 V DC input voltage range: –48 V DC to –60 V DC Rated input voltage range for 600 W AC & 240 V DC: 240 V DC Rated input voltage range for 1200 W HVDC: 240 V DC to 380 V DC
Input voltage range [V]	Maximum AC input voltage range: 90 V AC to 290 V AC; 45 Hz to 65 Hz Maximum –48 V DC input voltage range: –38.4 V DC to –72 V DC Maximum input voltage range for 600 W AC & 240 V DC: 190 V DC to 290 V DC Maximum input voltage range for 1200 W HVDC: 190 V DC to 400 V DC
Maximum input current [A]	600 W AC&240 V DC power module (PAC600S12 series): · 8 A (100 V AC to 240 V DC) · 4 A (240 V DC) 1000 W DC power module (PDC1000S12 series): 30 A (–48 V DC to –60 V DC) 1200 W high-voltage DC power module (PHD1K2S12 series): 8 A

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Item	Specification
Rated output power [W]	600 W (AC&240 V HVDC) 1000 W (–48 V DC) 1200 W (380 V HVDC)
Certification	· Compliance with safety standards · Compliance with EMC standards · Compliance with environment and environmental protection standards
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999962836
MTBF [year]	47.81 years
MTTR [hour]	1.95 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40ºC to +70ºC (-40°F to +158°F)

4.4.10.3 CE6863E-48S6CQ (02354GCT-002)

Overview

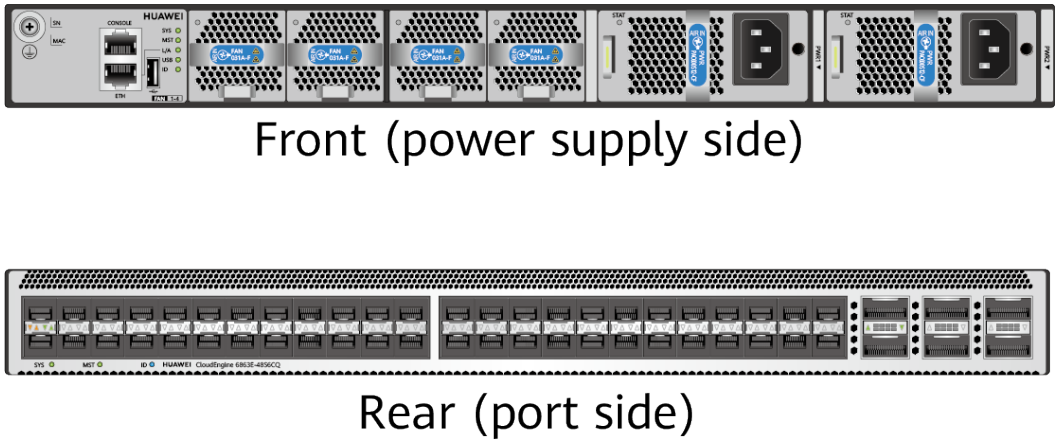
Table 4-118 Basic information about the CE6863E-48S6CQ

Item	Details
Description	CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, without fan and power modules)
Part Number	02354GCT-002
Model	CE6863E-48S6CQ
First supported version	V200R021C10SPC600
Other part numbers	02354GCW-002 (CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354GCX-002 (CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6863E

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Appearance

Figure 4-130 Appearance of the CE6863E-48S6CQ



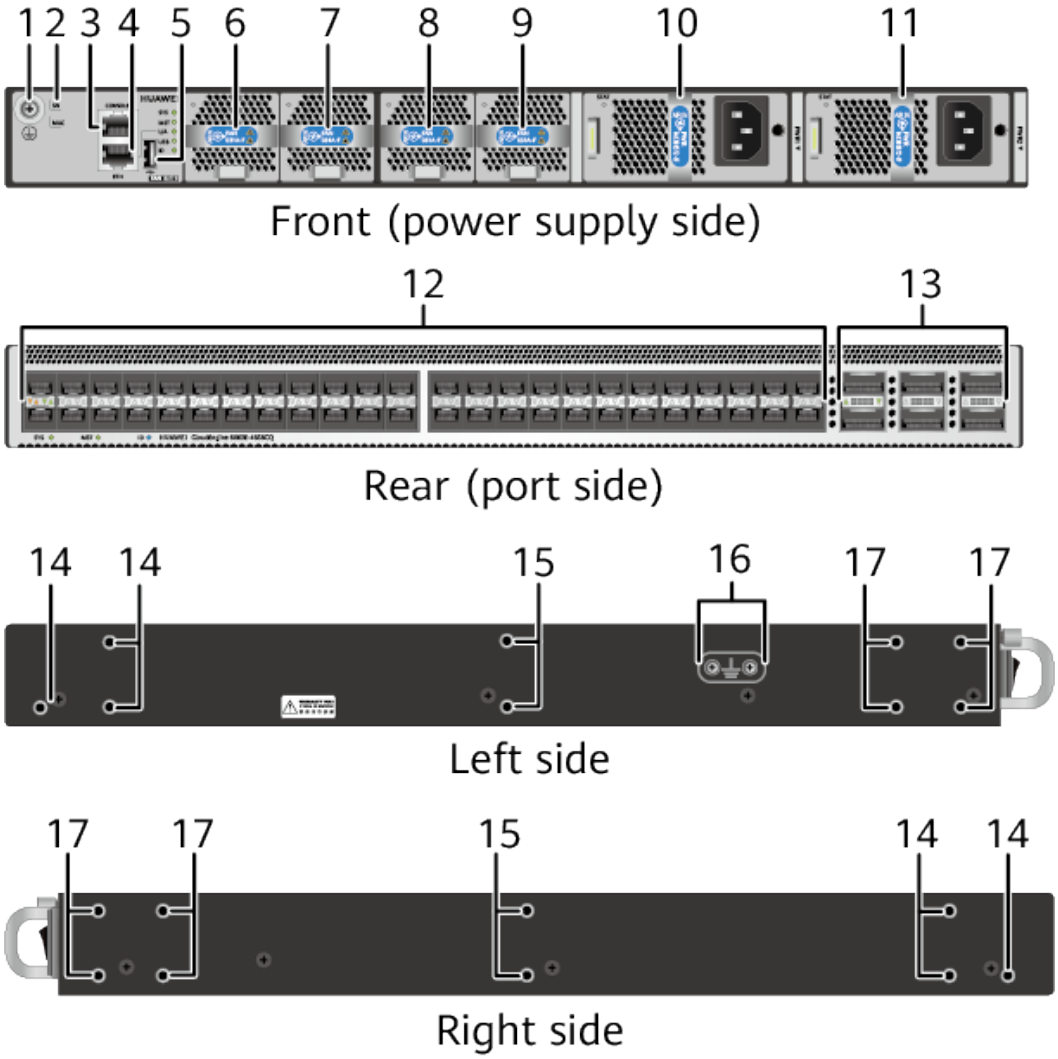
NOTE

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Components

Figure 4-131 Components of the CE6863E-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-119 Slots on the CE6863E-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-132 Indicators on the CE6863E-48S6CQ 1

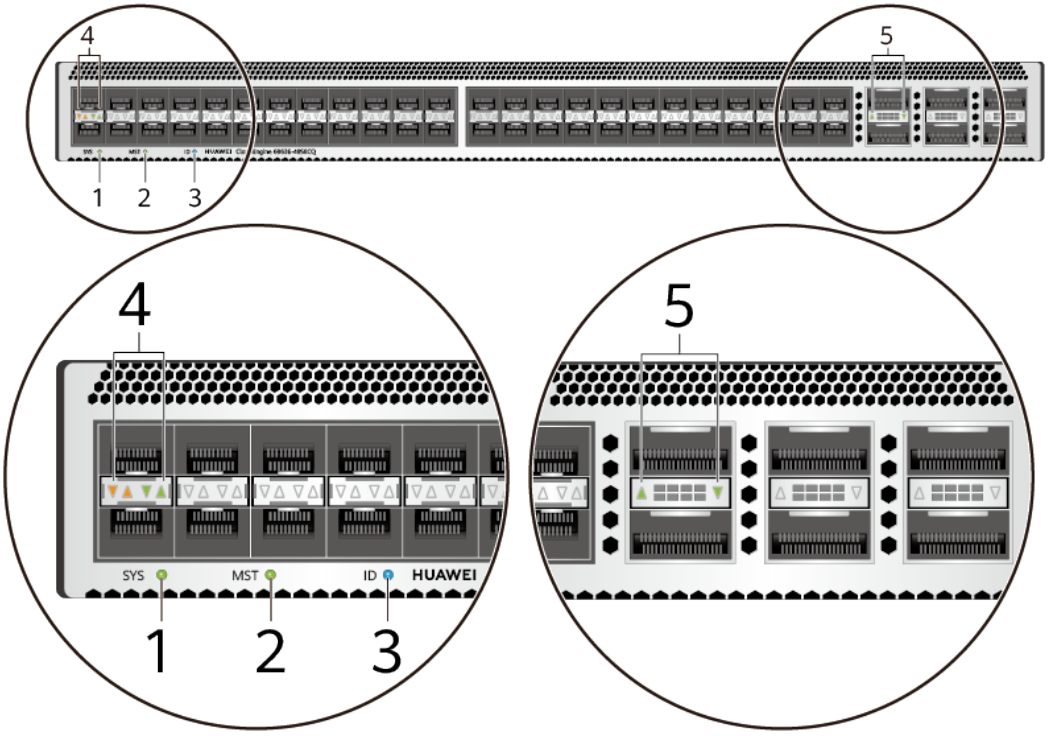
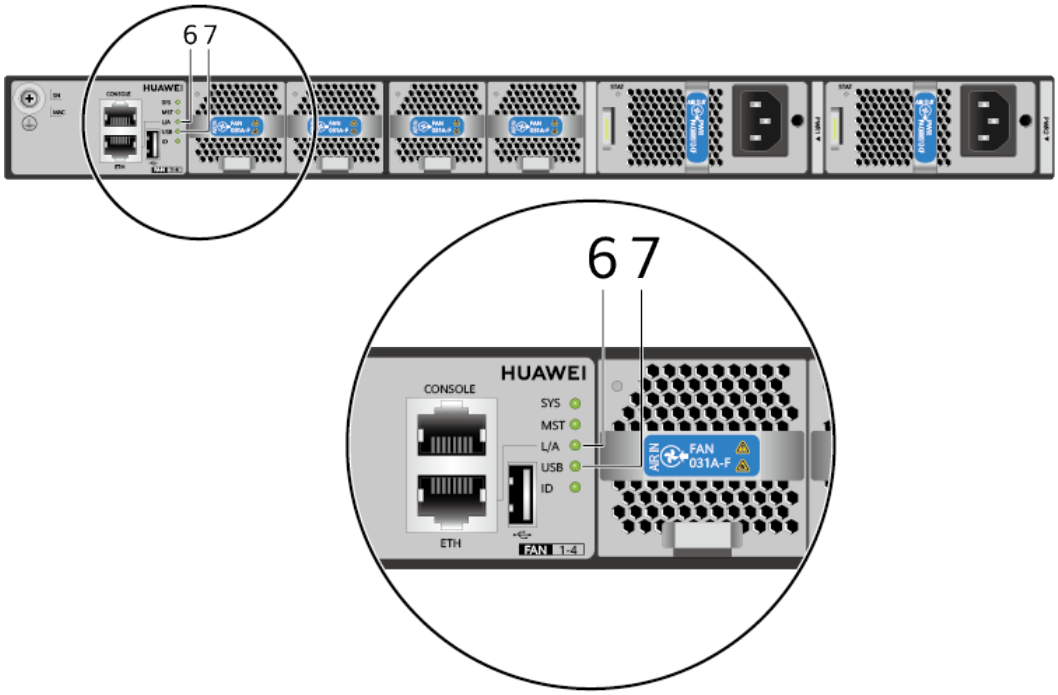


Figure 4-133 Indicators on the CE6863E-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-120 Indicators on the CE6863E-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-121 Ports on the CE6863E-48S6CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-134 Front-to-back airflow for port-side exhaust

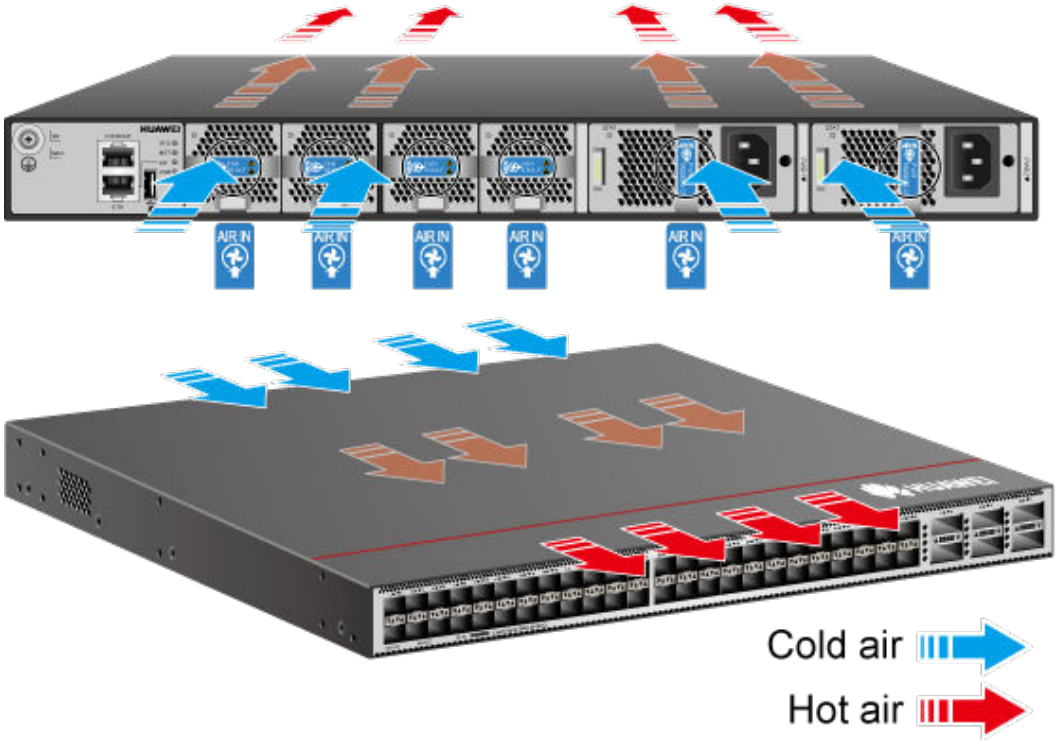
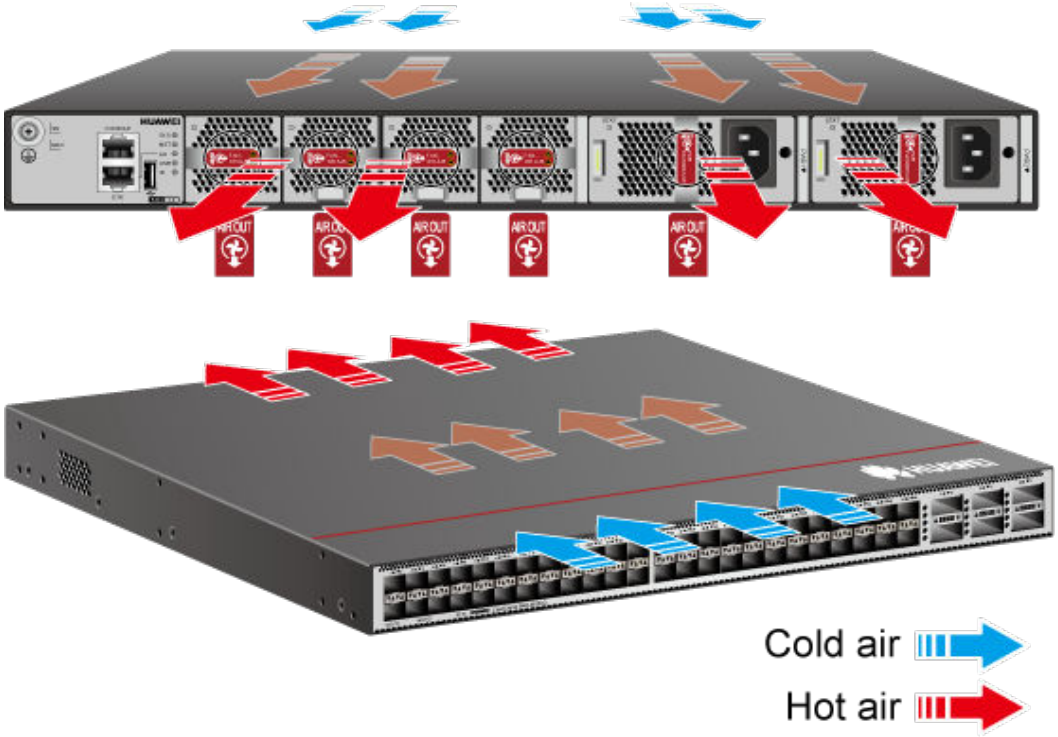


Figure 4-135 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-122 Technical specifications of the CE6863E-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	8.95 kg
Weight with packaging (full configuration) [kg (lb)]	11.05 kg (24.36 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be used as 10GE and GE ports. Every four downlink 25GE ports form one group and can be configured to work at 10 Gbit/s or 1 Gbit/s using commands. 2. 10GE LRM/80KM linear optical modules are not supported. 3. 25GE 1 m copper cables and 10GE 1 m/3 m/5 m copper cables are supported, and auto-negotiation of copper cables is not supported. 4. 25GE copper cables can only be used on stack interfaces and M-LAG peer-link interfaces.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE optical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	Rated AC input voltage range: 100 V AC to 240 V AC; 50/60 Hz Rated –48 V DC input voltage range: –48 V DC to –60 V DC Rated input voltage range for 600 W AC & 240 V DC: 240 V DC Rated input voltage range for 1200 W HVDC: 240 V DC to 380 V DC
Input voltage range [V]	Maximum AC input voltage range: 90 V AC to 290 V AC; 45 Hz to 65 Hz Maximum –48 V DC input voltage range: –38.4 V DC to –72 V DC Maximum input voltage range for 600 W AC & 240 V DC: 190 V DC to 290 V DC Maximum input voltage range for 1200 W HVDC: 190 V DC to 400 V DC
Maximum input current [A]	600 W AC&240 V DC power module (PAC600S12 series): · 8 A (100 V AC to 240 V DC) · 4 A (240 V DC) 1000 W DC power module (PDC1000S12 series): 30 A (–48 V DC to –60 V DC) 1200 W high-voltage DC power module (PHD1K2S12 series): 8 A

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Item	Specification
Rated output power [W]	600 W (AC&240 V HVDC) 1000 W (–48 V DC) 1200 W (380 V HVDC)
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999962836
MTBF [year]	47.81 years
MTTR [hour]	1.95 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

4.4.10.4 CE6863E-48S6CQ (02354GCT-004)

Overview

Table 4-123 Basic information about the CE6863E-48S6CQ

Item	Details
Description	CE6863E-48S6CQ switch (48*25GE SFP28, 6*100GE QSFP28, without fan and power modules)
Part Number	02354GCT-004
Model	CE6863E-48S6CQ
First supported version	V200R021C10SPC600

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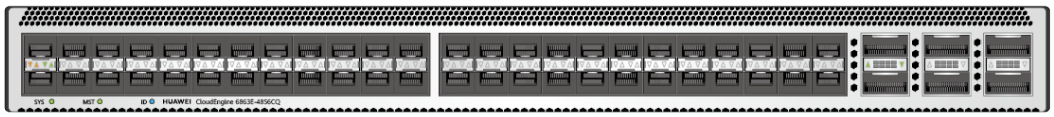
Item	Details
Other part numbers	02354GCW-004 (CE6863E-48S6CQ Switch, 48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake) 02354GCX-004 (CE6863E-48S6CQ Switch, 48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust) 02355MCQ(CE6863E-48S6CQ switch, 48*25GE SFP28, 6*100GE QSFP28, without fan and power modules) 02355MCR(CE6863E-48S6CQ switch, 48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake) 02355MCS(CE6863E-48S6CQ switch, 48*25GE SFP28, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6863E

Appearance

Figure 4-136 Appearance of the CE6863E-48S6CQ



Front (power supply side)



Rear (port side)

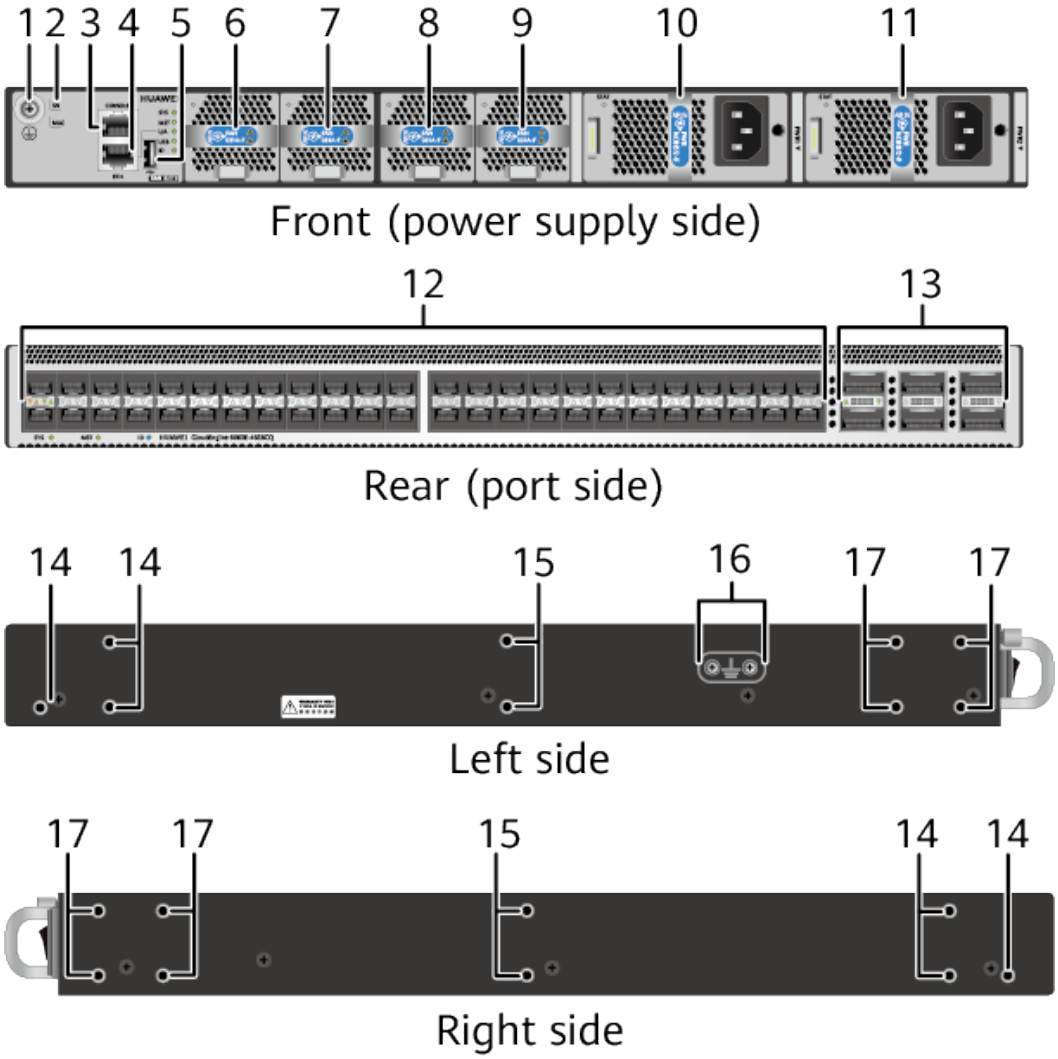
NOTE

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Components

Figure 4-137 Components of the CE6863E-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-124 Slots on the CE6863E-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-138 Indicators on the CE6863E-48S6CQ 1

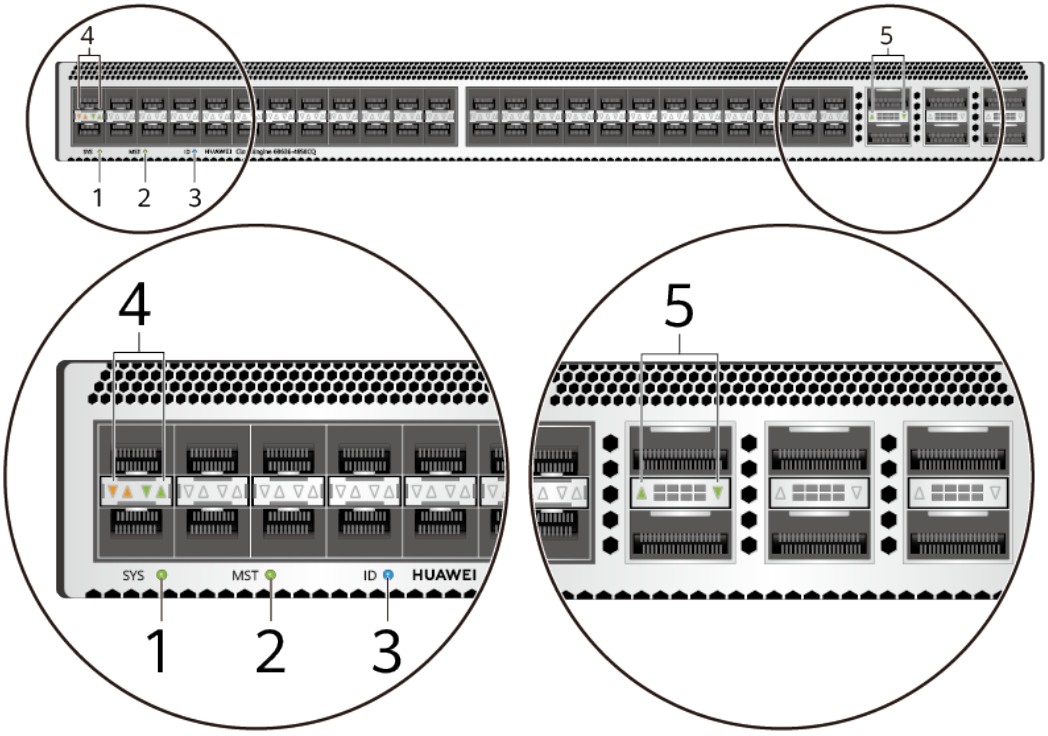
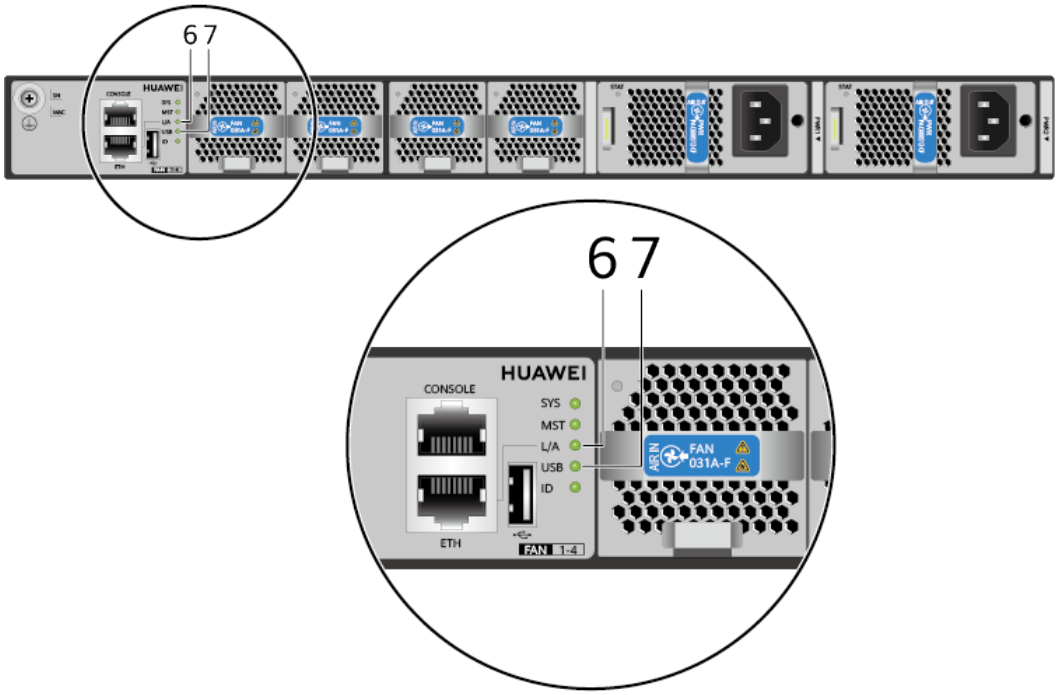


Figure 4-139 Indicators on the CE6863E-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-125 Indicators on the CE6863E-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-126 Ports on the CE6863E-48S6CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s,	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		they support only 25GE media and will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. ● Complied standard: IEEE 802.3by ● Working mode: full-duplex	**NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-140 Front-to-back airflow for port-side exhaust

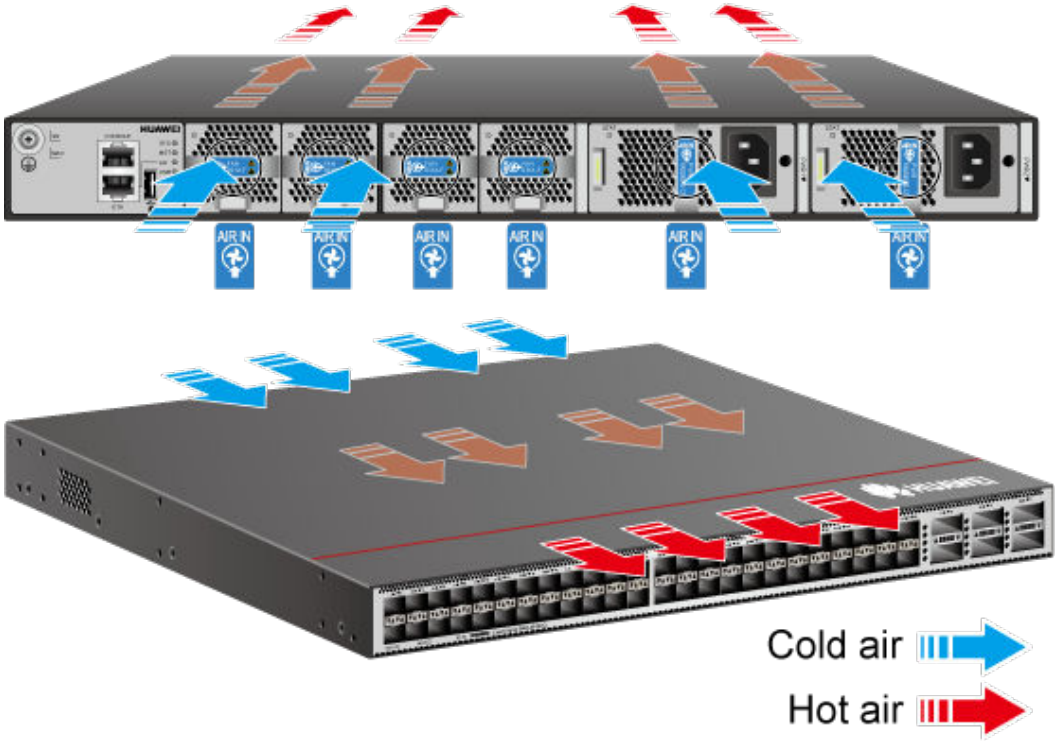
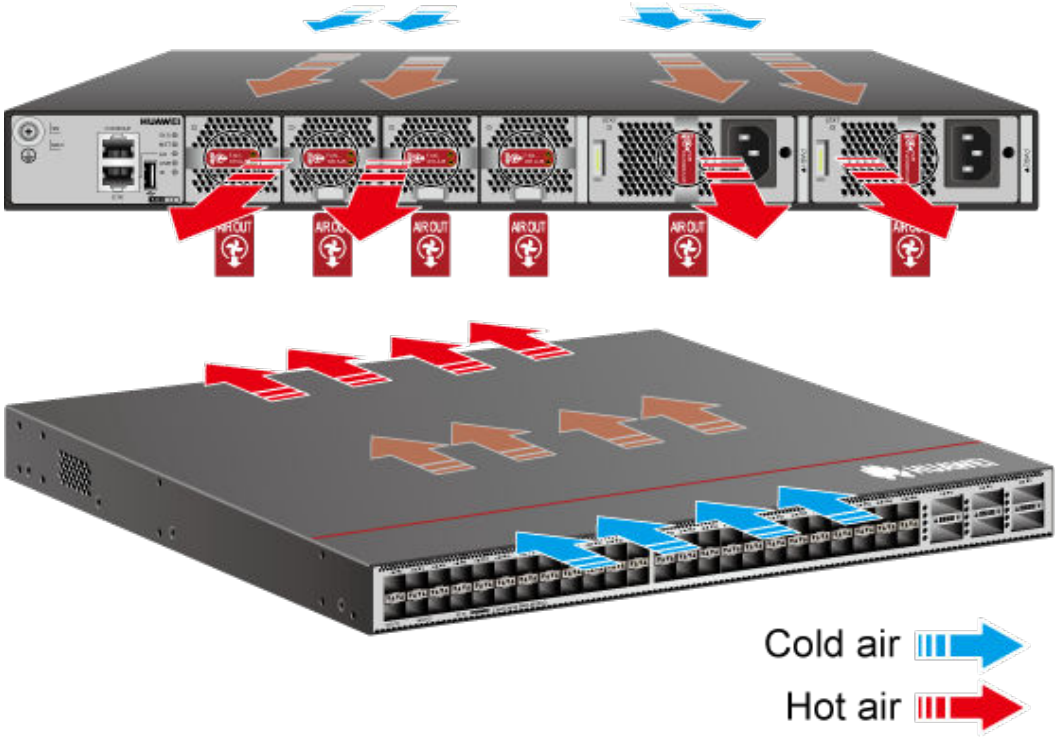


Figure 4-141 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-127 Technical specifications of the CE6863E-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	8.95 kg
Weight with packaging (full configuration) [kg (lb)]	11.05 kg (24.36 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 (Note: 1. 25GE ports can be configured to work at 10 Gbit/s or 1 Gbit/s. Every four downlink 25GE ports form a group, and can be configured to work at 10 Gbit/s or 1 Gbit/s through the command. 2. 10GE LRM/80KM linear optical modules are not supported. 3. 1 m 25GE copper cables and 1 m/3 m/5 m 10GE copper cables are supported, and auto-negotiation of copper cables is not supported. 4. 25GE copper cables can be used only on stack ports and M-LAG peer-link ports.)
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	25GE and 100GE optical ports
RTC	Supported
Typical power consumption [W]	226 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 261 W (100% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	771 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 891 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	167 W
Static heat dissipation [BTU/hour]	570 BTU/hour
Maximum power consumption [W]	384 W
Maximum heat dissipation	1310 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	Rated AC input voltage range: 100 V AC to 240 V AC; 50/60 Hz Rated –48 V DC input voltage range: –48 V DC to –60 V DC Rated input voltage range for 600 W AC & 240 V DC: 240 V DC Rated input voltage range for 1200 W HVDC: 240 V DC to 380 V DC
Input voltage range [V]	Maximum AC input voltage range: 90 V AC to 290 V AC; 45 Hz to 65 Hz Maximum –48 V DC input voltage range: –38.4 V DC to –72 V DC Maximum input voltage range for 600 W AC & 240 V DC: 190 V DC to 290 V DC Maximum input voltage range for 1200 W HVDC: 190 V DC to 400 V DC
Maximum input current [A]	600 W AC&240 V DC power module (PAC600S12 series): · 8 A (100 V AC to 240 V DC) · 4 A (240 V DC) 1000 W DC power module (PDC1000S12 series): 30 A (–48 V DC to –60 V DC) 1200 W high-voltage DC power module (PHD1K2S12 series): 8 A

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Item	Specification
Rated output power [W]	600 W (AC&240 V HVDC) 1000 W (–48 V DC) 1200 W (380 V HVDC)
Certification	· Compliance with safety standards · Compliance with EMC standards · Compliance with environment and environmental protection standards
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999962836
MTBF [year]	47.81 years
MTTR [hour]	1.95 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.11 CE6865-48S8CQ-EI

Version Mapping

Table 4-128 lists the mappings between the CE6865-48S8CQ-EI and software versions.

Table 4-128 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE6800	CE6865	CE6865-48S8CQ-EI	CE6865EI	V200R005C00 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

Appearance and Structure

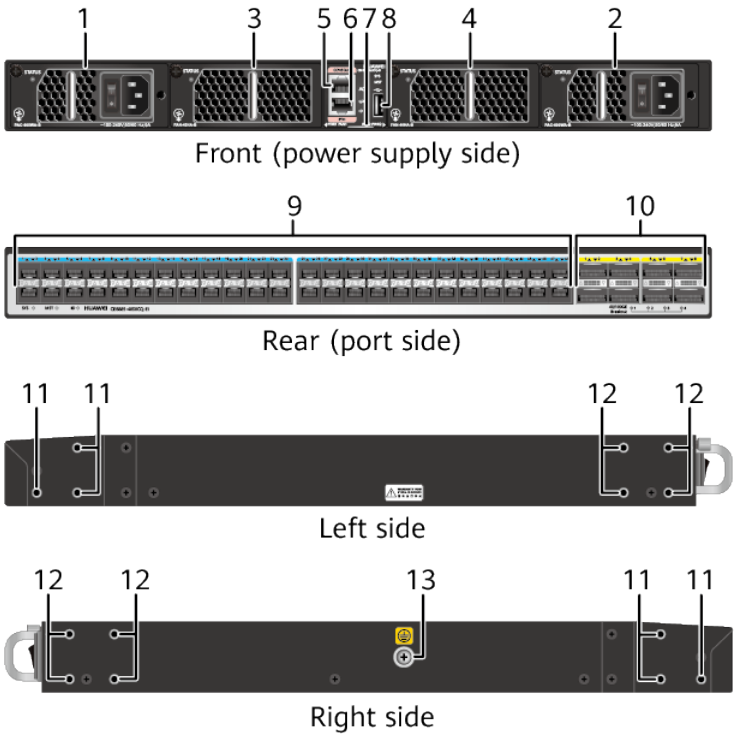
NOTE

The appearances of devices and modules are subject to actually delivered products. The figures in this document are for reference only.

CE6865-48S8CQ-EI appearance

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Figure 4-142 CE6865-48S8CQ-EI



1	Power supply slot 1 Applicable power modules: • **5.3 350 W DC Power Module (PDC-350WA)** • **5.5 600 W AC Power Module (PAC-600WA)** • **5.13 600 W DC Power Module (PDC600S12)** **NOTE** At the ambient temperature of 0°C to 40°C, the 350 W DC module can be used only when all optical interfaces on the switch are equipped with the following short-distance optical modules: 25GBase-SR (power consumption ≤ 1 W) and 100GE optical modules (transmission distance ≤ 2 km; power consumption ≤ 3.5 W) such as 100GBase-SR4, 100GBase-CWDM4, 100GBase-CLR4, and 100GBase-PSM4.	2	Power supply slot 2 Applicable power modules: • **5.3 350 W DC Power Module (PDC-350WA)** • **5.5 600 W AC Power Module (PAC-600WA)** • **5.13 600 W DC Power Module (PDC600S12)** **NOTE** At the ambient temperature of 0°C to 40°C, the 350 W DC module can be used only when all optical interfaces on the switch are equipped with the following short-distance optical modules: 25GBase-SR (power consumption ≤ 1 W) and 100GE optical modules (transmission distance ≤ 2 km; power consumption ≤ 3.5 W) such as 100GBase-SR4, 100GBase-CWDM4, 100GBase-CLR4, and 100GBase-PSM4.
3	Fan slot 1 Applicable fan modules: • **6.8 FAN-40HA Series Fan Modules**	4	Fan slot 2 Applicable fan modules: • **6.8 FAN-40HA Series Fan Modules**

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5	Console port	6	ETH management port (RJ45)
7	Barcode label **NOTE** This label is drawable, and you can pull it outward to view the ESN barcode and MAC address of the switch.	8	USB port
9	Forty-eight 10GE/25GE SFP28 Ethernet optical ports Applicable modules and cables: • **9.7 10GE SFP+ Optical Modules** (OSXD22N00, LE2MXSC80FF0 and SFP-10G-ZDWT-L not supported) • **GE SFP Copper Modules** (supported from V200R005C00 version and only works at 1000 Mbit/s) • **9.4 GE eSFP Optical Modules** (supported from V200R005C00 version) • **9.8 25GE SFP28 Optical Modules** (only supports SFP-25G-SR) • **8.9.2 SFP+ to SFP+ AOC Cable** • **8.9.3 SFP28 to SFP28 AOC Cable** • **8.8.2 SFP+ to SFP+ High-Speed Cable** • **8.8.3 SFP28 to SFP28 High-Speed Cable** **NOTE** The 1000base-X auto-negotiation function is not supported when a GE optical module is installed into a 25GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.	10	Eight 40GE/100GE QSFP28 Ethernet optical ports **NOTE** A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. Applicable modules and cables: • **9.9 40GE QSFP+ Optical Modules** • **9.10 100GE QSFP28 Optical Modules** • **8.9.4 QSFP+ to QSFP+ AOC cable** • **8.9.5 QSFP+ to 4*SFP+ AOC cable** • **8.8.5 QSFP+ to 4*SFP+ High-Speed Cable** • **8.8.4 QSFP+ to QSFP+ High-Speed Cable** • **8.9.6 QSFP28 to QSFP28 AOC Cable** • **8.8.6 QSFP28 to QSFP28 High-Speed Cable** • **QSFP28 to 4*SFP28 High-Speed Cable**
11	Three port-side mounting holes for mounting brackets	12	Four power-supply-side mounting holes for mounting brackets

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13	Ground screw	-	-

Slot

- Power supply slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) have two power supply slots, in which power modules can be installed to provide power to the chassis. A chassis can have one or two power modules. Double power modules can provide higher reliability.

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) support double power modules (1+1 backup).

  – When both power modules are working properly, they equally provide power for a chassis.
  – When one power module fails, the other one provides all power required for a chassis.

  All power modules are hot swappable.

- Fan slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI, CE6863-48S6CQ, CE6881-48S6CQ, CE6820-48S6CQ, CE6863-48S6CQ-K, CE6881-48S6CQ-K, CE6881E-48S6CQ and CE6857-48S6CQ-EI) have two fan slots, in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have two working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Airflow

The cooling systems of the CloudEngine 8800, 7800, 6800, and 5800 series switches have front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used. The airflow direction of the power modules and fan modules required on the CloudEngine 8800, 7800, 6800, and 5800 series switches depends on how the switches are installed in cabinets. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If CloudEngine 8800, 7800, 6800, and 5800 series switches are installed with the power supply side facing the front, you are advised to use fan modules and power modules with front-to-back airflow in the switches.

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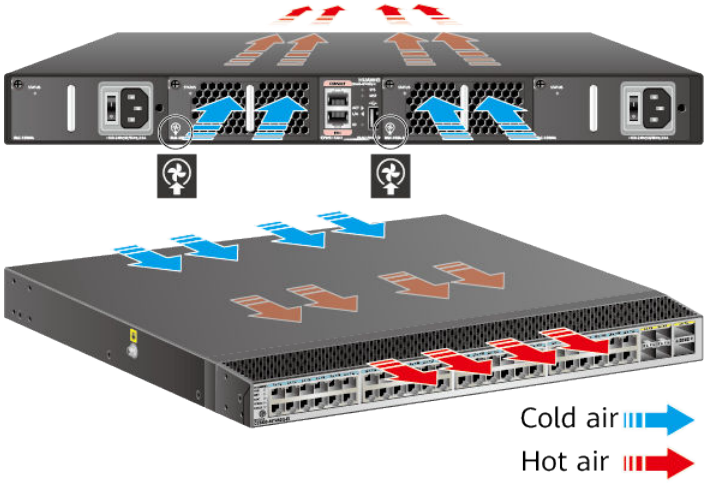
NOTE

- Front-to-back airflow: The power modules and fan modules using front-to-back airflow are marked  or 

. Air flows into the chassis from the power supply side and flows out from the port side, as shown in **Figure 4-143** (CE5800 as an example).
- Back-to-front airflow: The power modules and fan modules using back-to-front airflow are marked  or 

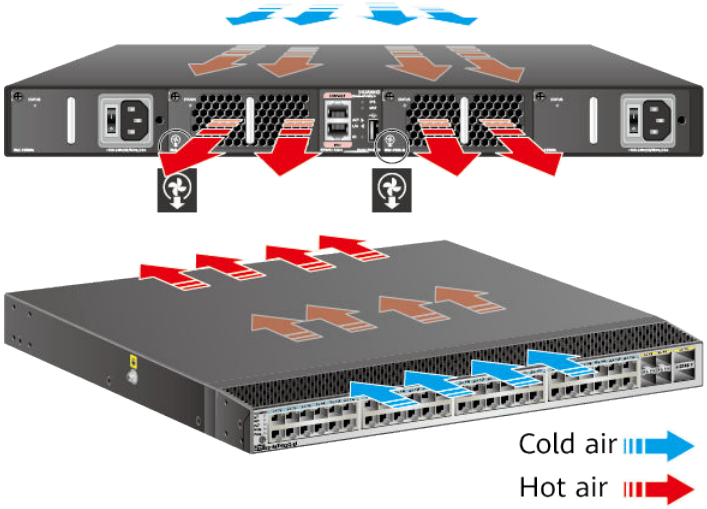
. Air flows into the chassis from the port side and flows out from the power supply side, as shown in **Figure 4-144** (CE5800 as an example).
- When the power module and fan module use forcible heat dissipation, they must use the same airflow method. For example, if the power module with back-to-front airflow is used, the fan module with back-to-front airflow must be used.

Figure 4-143 Front-to-back airflow (air flows out from the port side)



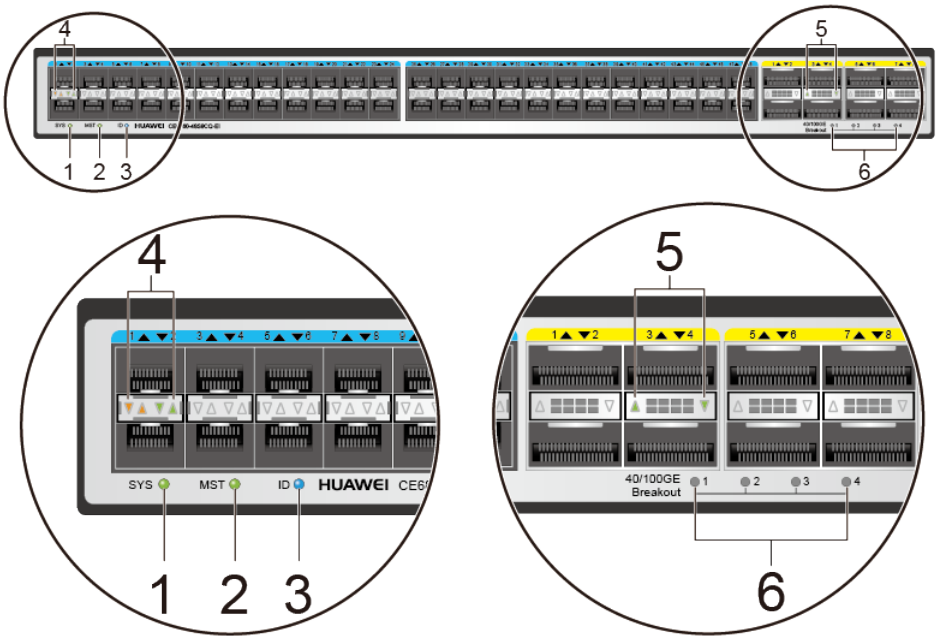
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Figure 4-144 Back-to-front airflow (air flows in from the port side)



Indicators

Figure 4-145 Indicators on the CE6865-48S8CQ-EI rear panel



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Figure 4-146 Indicators on the CE6865-48S8CQ-EI front panel

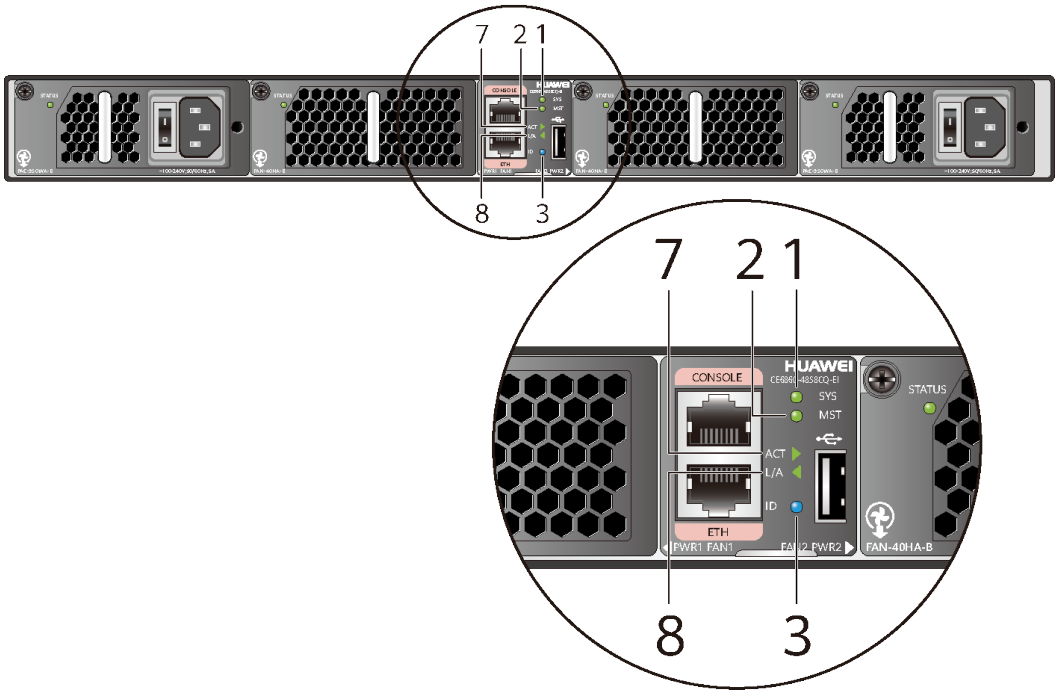


Table 4-129 Indicator description

No.	Indicator	Name	Color	Status	Description
1	SYS	System status indicator	Green	Off	The system is not running.
				Fast blinking	The system is starting.
				Slow blinking	The system is running normally.
			Red	Steady on	• The system fails to start. • At least one power module does not work normally. • At least one fan module does not work normally.
2	MST	Stack master/ slave indicator	Green	Off	The switch is not a stack master.

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No.	Indicator	Name	Color	Status	Description
		NOTE In V200R003C00 and later versions, you can use the **dfs-master led enable** command to enable the stack master/slave indicator to display the DFS group master and backup status. After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.		Steady on	The switch is a stack master or standalone switch.
3	ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
				Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.
4	-	Service port indicator (10GE/25GE optical port)	Green	Off	No link has been established on the port or the port has been shut down.
				Steady on	A link is established on the port.
			Yellow	Off	The port is not sending or receiving data.

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No.	Indicator	Name	Color	Status	Description
		NOTE Each 10GE/25GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.		Blinking	The port is sending or receiving data.
5	-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
				Steady on	A link is established on the port.
				Blinking	The port is sending or receiving data.
			When a 40GE/100GE port is configured as four 10GE ports or four 25GE ports, this indicator shows the status of a 10GE/25GE port. The sequence number of the indicated port is identified by indicators 40G/100G Breakout 1/2/3/4 on the lower right corner of the panel. **NOTE** Each 40GE/100GE port has a single-color indicator, which shows the status of the 40GE/100GE port by default.		
6	-	40G/100G Breakout 1/2/3/4 (sequence number indicators of	Green	Off	40GE/100GE ports are working in 40GE or 100GE mode and not split into four 10GE ports or four 25GE ports.

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No.	Indicator	Name	Color	Status	Description
		10GE/25GE ports converted from a 40GE/100GE port) **NOTE** Indicators 1, 2, 3, 4 turn on in cyclic order, with each indicator keeping on for 5s.		Steady on	At least one 40GE/100GE port has been split into four 10GE ports or four 25GE ports. When one or more 40GE/100GE ports are split into four 10GE ports or four 25GE ports, these indicators identify the sequence numbers of the 10GE/25GE ports. A port indicator (5 in **Figure 4-145**) shows the status of a 10GE/25GE port converted from the corresponding 40GE/100GE port: • When indicator 1 is on, each port indicator shows the status of the first 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 2 is on, each port indicator shows the status of the second 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 3 is on, each port indicator shows the status of the third 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 4 is on, each port indicator shows the status of the fourth 10GE/25GE port derived from the corresponding 40GE/100GE port.
7	ACT	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
				Steady on	USB-based deployment has been completed.
				Blinking	The system is reading data from a USB flash drive.
			Red	Steady on	USB-based deployment has failed.
8	L/A	ETH management port indicator	Green	Off	No link is established on the port.
				Steady on	A link is established on the port.

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No.	Indicator	Name	Color	Status	Description
				Blinking	The port is sending or receiving data.

Ports

10GE/25GE SFP28 Optical Port

10GE/25GE SFP28 optical ports cannot work at the rate of 100 Mbit/s. **Table 4-130** shows the attributes of a 10GE/25GE SFP28 optical port.

Table 4-130 Attributes of a 10GE/25GE SFP28 optical port

Attribute	Description
Connector type	Depending on the optical module
Optical attributes	Depending on the module or cable in use
Port use constraints	The 48 10GE/25GE SFP28 optical ports of a CE6865EI switch work at the rate of 25 Gbit/s by default and do not support GE/10GE auto-sensing. You can set the port rate to 10 Gbit/s or 1 Gbit/s using the **port mode 10g** or **port mode ge** command, respectively. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12...45-48). • If the rate of any port in a port group is set to 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, all the other ports in this group also work at the rate of 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s. • When the ports in a port group work at the rate of 25 Gbit/s, they support only 25GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at the rate of 10 Gbit/s, they support only 10GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at the rate of 1 Gbit/s, they support only GE modules or cables and will go Down if other types of modules or cables are used.
Standards compliance	IEEE802.3by

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Attribute	Description
Working mode	Full-duplex

40GE/100GE QSFP28 Optical Port

Table 4-131 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 4-131 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depending on the optical module
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ba
Working mode	Full-duplex

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. Table 4-132 describes the attributes of the console port.

Table 4-132 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

ETH Management Port (RJ45)

The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. Table 4-133 describes the attributes of the ETH management port (RJ45).

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Table 4-133 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-134 lists technical specifications of the CE6865-48S8CQ-EI switch.

Table 4-134 Technical specifications

Item		Description
Physical specifications		• Dimensions (W x D x H): 442.0 mm x 420.0 mm x 43.6 mm (17.4 in. x 16.5 in. x 1.72 in.) • Weight (with two power modules and two fan modules, calculated based on the heaviest model if multiple models are supported): 8.8 kg (19.40 lb)
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 65 dBA • Front-to-back airflow: < 65 dBA

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Item		Description
Power specifications	Power source type	AC/DC
	AC power input	• Rated input voltage range: 100 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	DC power input	• Rated voltage range: -48 V DC to -60 V DC • Maximum voltage range: -38.4 V DC to -72 V DC
	High-voltage DC power input	Not supported
	Rated input current	• 350 W DC power (PDC-350WA series): 11 A (-48 V DC to -60 V DC) • 600 W AC power (PAC-600WA series): 9 A (100 V AC to 240 V AC) • 600 W DC power (PDC600S12 series): 20 A (-48 V DC to -60 V DC)
Chassis power consumption	Maximum power consumption	420W
	Typical power consumption	259 W (100% throughput, SFP28 cables on 48 ports and QSFP28 cables on 8 ports, double power modules)
Chassis heat dissipation	Maximum heat dissipation	1433 BTU/hr
	Typical heat dissipation	884 BTU/hr (100% throughput, SFP28 cables on 48 ports and QSFP28 cables on 8 ports, double power modules)
Surge protection		Power module: • AC: 6 kV in common mode and 6 kV in differential mode • DC: 2 kV in common mode and 1 kV in differential mode

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Item		Description
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Front-to-back or back-to-front, depending on the fan modules and power modules
Reliability and availability	Power module backup	1+1 backup
	Fan module backup	1+1 backup not supported **NOTE** A CE6800 chassis uses two fan modules, with each fan module containing two fans. The four fans in the chassis work in 3+1 backup mode.
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	38.85
	Mean time to repair (MTTR)	1.48
	Availability	0.999997178
Technical specifications	Processor	1.5 GHz, 8-core
	DRAM Memory	4 GB
	NOR Flash	32 MB
	NAND Flash	2 GB
Stack	Service port supporting the stack function	25GE optical ports and 100GE optical ports
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

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Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-135 provides the ordering information.

Table 4-135 Ordering information

Part Number	Part Model	Part Description
02351RFC	CE6865-48S8CQ-EI	CE6865-48S8CQ-EI Switch (48-Port 25GE SFP28, 8*100GE QSFP28, Without Fan and Power Module)
02351RFE	CE6865-EI-F-B0B	CE6865-48S8CQ-EI Switch (48-Port 25GE SFP28, 8*100GE QSFP28, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
02351RFD	CE6865-EI-B-B0B	CE6865-48S8CQ-EI Switch (48-Port 25GE SFP28, 8*100GE QSFP28, 2*AC Power Module, 2*FAN Box, Port-side Intake)

4.4.12 CE6865E-48S8CQ

4.4.12.1 CE6865E-48S8CQ (02354CPT)

Overview

Table 4-136 Basic information about the CE6865E-48S8CQ

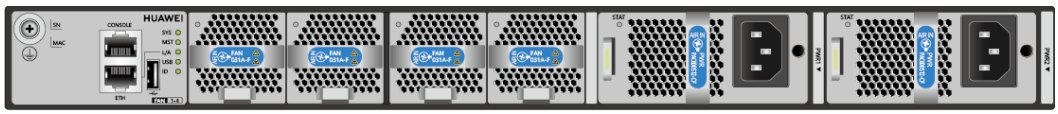
Item	Details
Description	CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, without fan and power modules)
Part Number	02354CPT
Model	CE6865E-48S8CQ
First supported version	V200R021C00

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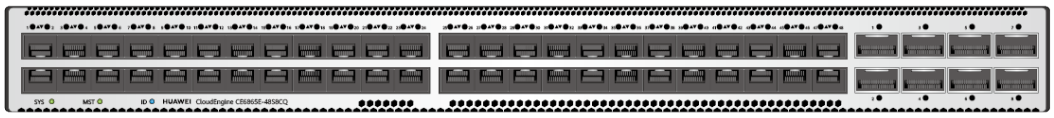
Item	Details
Other part numbers	02354CPN (CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354CPV (CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6865E

Appearance

Figure 4-147 Appearance of the CE6865E-48S8CQ



Front (power supply side)



Rear (port side)

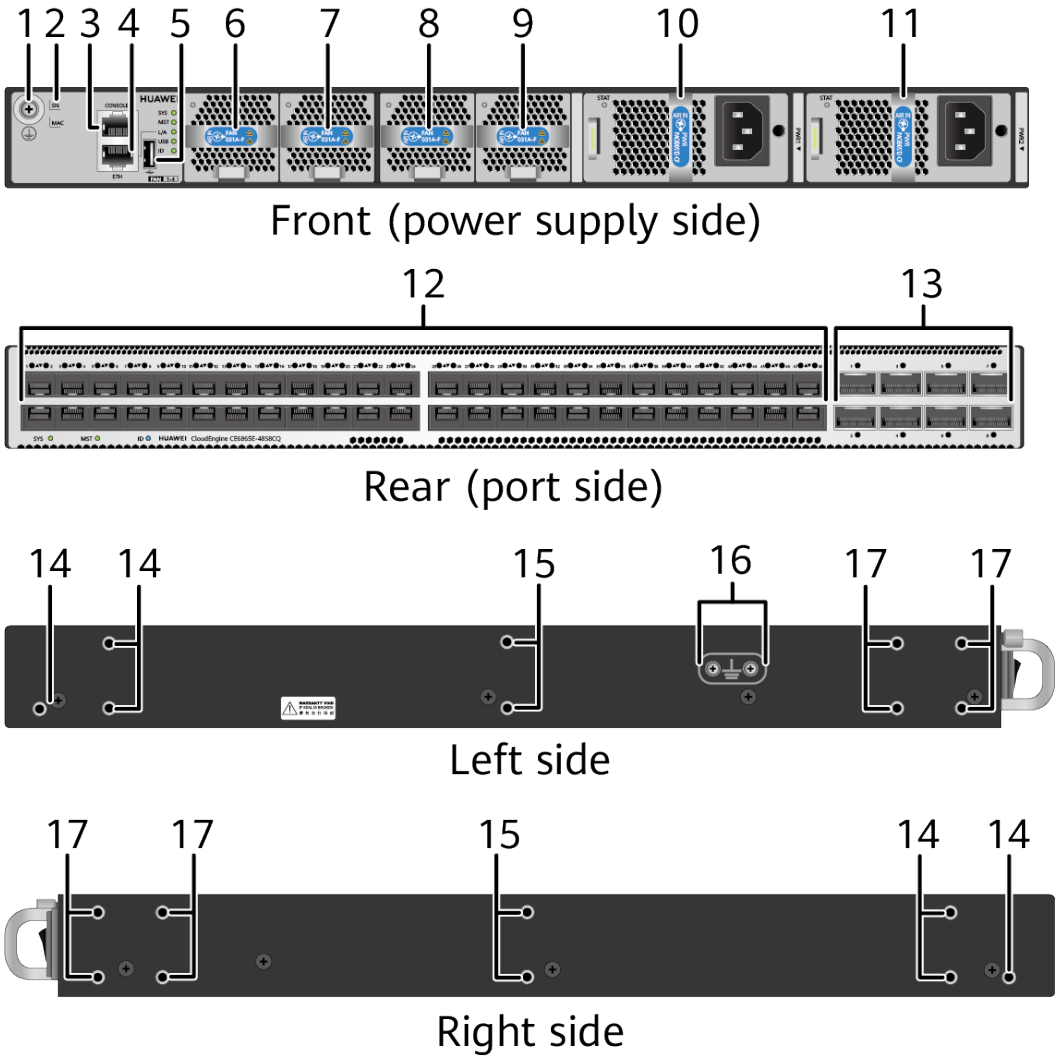
NOTE

The figures in this document are for reference only.

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Components

Figure 4-148 Components of the CE6865E-48S8CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Eight 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-137 Slots on the CE6865E-48S8CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Slots	-	Horizontal	Each of the CloudEngine 6800 series switches has two power module slots and supports pluggable power modules. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support 1+1 backup of power modules.When both power modules are working properly, each of them provides half of the power required for the chassis.When one power module fails, the other one provides all power required for the chassis. All power modules of the devices are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal	Each of the CloudEngine 6800 series switches has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. All fan modules are hot swappable.

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Indicators

Figure 4-149 Indicators on the CE6865E-48S8CQ 1

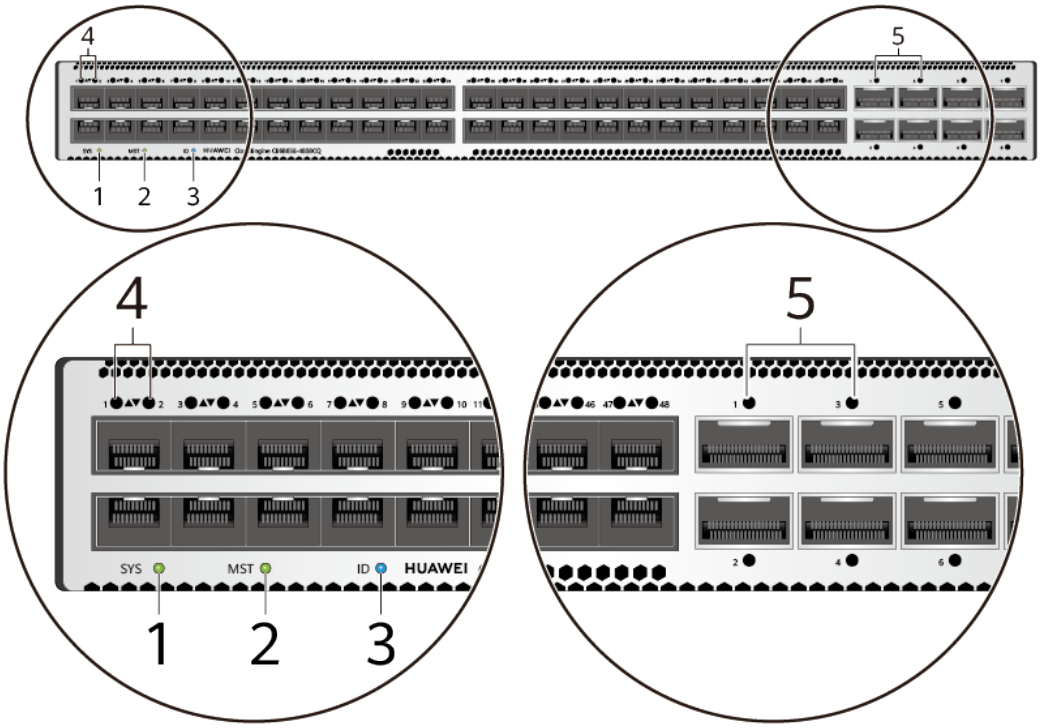
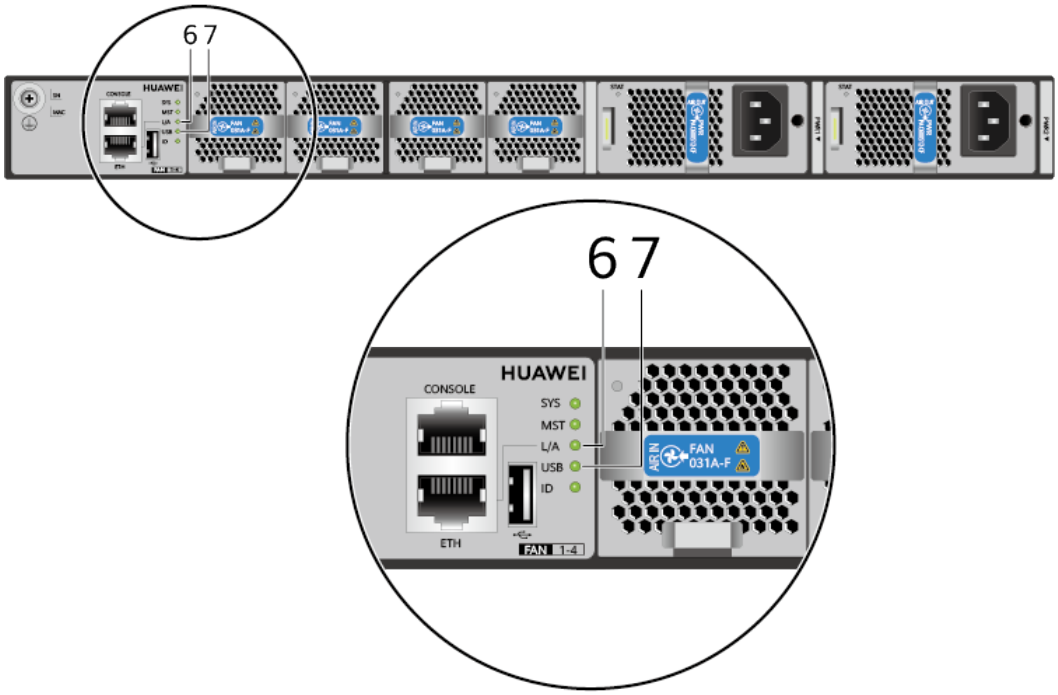


Figure 4-150 Indicators on the CE6865E-48S8CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-138 Indicators on the CE6865E-48S8CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Off	The switch is not a stack master.
		Green	Steady on	The switch is a stack master or standalone switch.
ID	ID indicator	Blue	Off	The ID indicator is not used (default state).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Off	No link has been established on the port or the port has been shut down.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
L/A	ETH management port indicator	Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-139 Ports on the CE6865E-48S8CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 Optical Port	Depending on the optical module	• Optical attributes: depending on the module or cable in use • Limitation: A 10GE/25GE SFP28 optical port works at the rate of 25 Gbit/s by default and does not support GE/10GE auto-sensing. You can set the port rate to 10 Gbit/s or 1 Gbit/s using the port mode 10g or port mode ge command, respectively. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). • If the rate of any port in a port group is set to 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, all the other ports in this group also work at the rate of 1 Gbit/s, 10	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		Gbit/s, or 25 Gbit/s. • When the ports in a port group work at the rate of 25 Gbit/s, they support only 25GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at the rate of 10 Gbit/s, they support only 10GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at the rate of 1 Gbit/s, they support only GE modules or cables and will go Down if other types of modules or cables are used. • 10GE LRM/80 km linear optical modules are not supported.	**NOTE** 1. A 10GE optical port with a GE copper module installed can only work at 1000 Mbit/s. GE copper modules cannot be installed in ports directly above or below another GE copper module. 2. 10GE optical ports do not support OSXD22N00 and LE2MXSC80FF0. The 1000BASE-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 3. When working at 25 Gbit/s, the port supports 1 m, 3 m, and 5 m SFP28 high-speed cables. When a non-1 m copper cable is used, the RS-FEC function must be enabled. Otherwise, the port will be in Down (Transceiver type mismatch) state. 4. When a 25GE port is configured to work at 10 Gbit/s using the port mode 10g command, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
		• Standards compliance: IEEE 802.3by • Working mode: full-duplex	
40GE/100GE QSFP28 Optical Port	Depending on the optical module	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
Console Port	RJ45	The console port is connected to a console for onsite configuration. • Standards compliance: RS232 • Working mode: duplex Universal Asynchronous Receiver/ Transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s; default value: 9600 bit/s	Console cable
ETH Management Port	RJ45	The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. • Standards compliance: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category 5 or higher category cable

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Port	Connector Type	Description	Available Components
USB Port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB 2.0-compliant USB flash drive

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-151 Front-to-back airflow for port-side exhaust

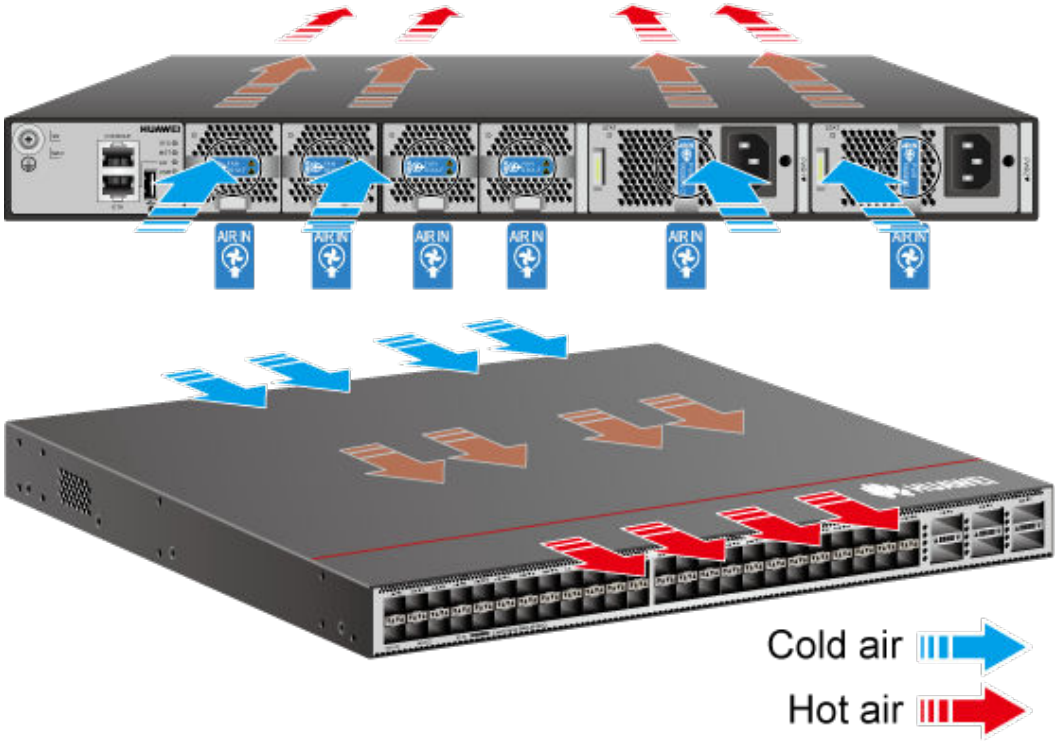
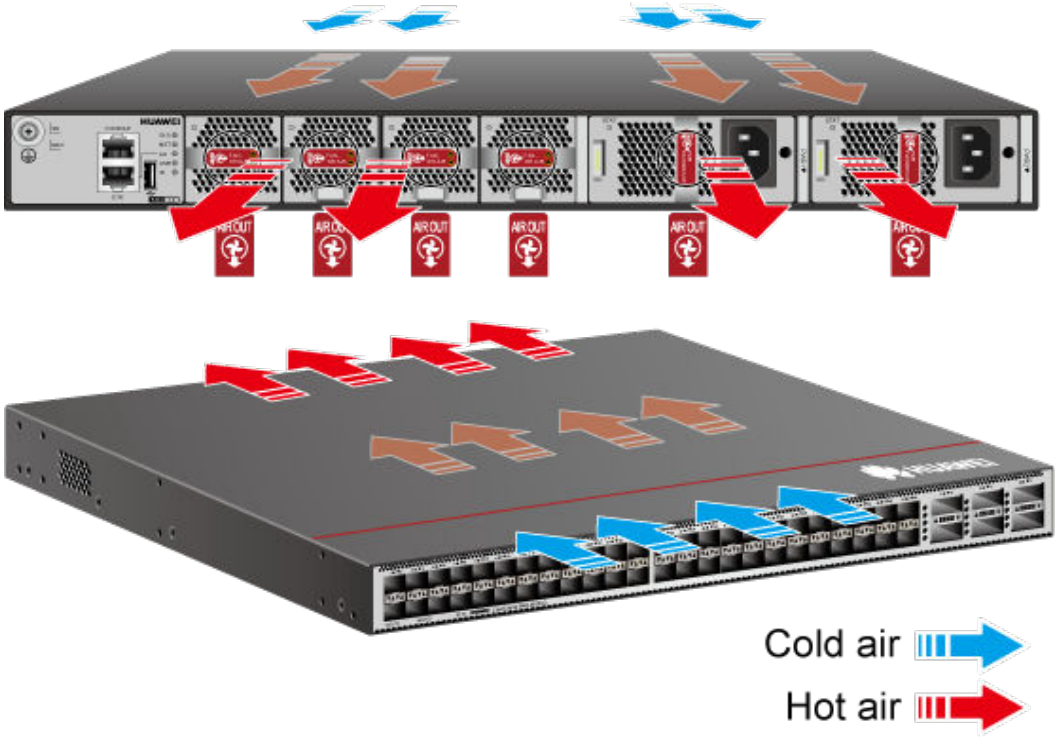


Figure 4-152 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-140 Technical specifications of the CE6865E-48S8CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.58 in.)
Weight without packaging [kg (lb)]	6.2kg (13.67 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.8 kg (19.40 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9.45 kg (20.83 lb)
Weight with packaging (full configuration) [kg (lb)]	11.75 kg (25.9 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 **NOTE** 1. A 25GE port works at 25 Gbit/s by default and cannot work at 1 Gbit/s or 10 Gbit/s through auto-sensing, but can be configured to work at 10 Gbit/s or 1 Gbit/s through commands. When a 25GE port is configured to work at 10 Gbit/s or 1 Gbit/s, the rate of the other three ports in the same group also needs to be switched. The rate of a single port cannot be switched independently. 2. 10GE LRM/80 km linear optical modules are not supported. 3. The 1000BASE-X auto-negotiation function is not supported. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 4. GE copper modules cannot be installed in ports directly above or below another GE copper module.
Uplink Service interface	8*100GE QSFP28 (Note: Each 100G QSFP28 port can be configured to work at 40 Gbit/s, and can be split into four 10GE or 25GE ports. After split, they cannot be used as GE ports.)
Service port supporting the stack function	25GE optical ports, and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 179 W (50% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 232 W (50% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 610 BTU/hour (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 791 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	133 W
Static heat dissipation [BTU/hour]	453 BTU/hour
Maximum power consumption [W]	378 W
Maximum heat dissipation	1290 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W

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Item	Specification
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999966836
MTBF [year]	36.9 year
MTTR [hour]	1.85 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Front-to-back airflow: 49.8 dB(A) on average (maximum: 53.6 dB(A)) Back-to-front airflow: 47.8 dB(A) on average (maximum: 51.2 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	Front-to-back airflow: 67.6 dB(A) on average (maximum: 73.4 dB(A)) Back-to-front airflow: 68 dB(A) on average (maximum: 75.4 dB(A))
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.12.2 CE6865E-48S8CQ (02354CPT-003)

Overview

Table 4-141 Basic information about the CE6865E-48S8CQ

Item	Details
Description	CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, without fan and power modules)
Part Number	02354CPT-003
Model	CE6865E-48S8CQ
First supported version	V200R021C10SPC600

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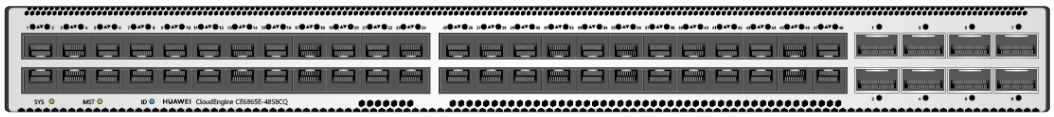
Item	Details
Other part numbers	02354CPN-003 (CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354CPV-003 (CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)) 02355MSB(CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, without fan and power modules)) 02355MSC(CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02355MSD(CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6865E

Appearance

Figure 4-153 Appearance of the CE6865E-48S8CQ



Front (power supply side)



Rear (port side)

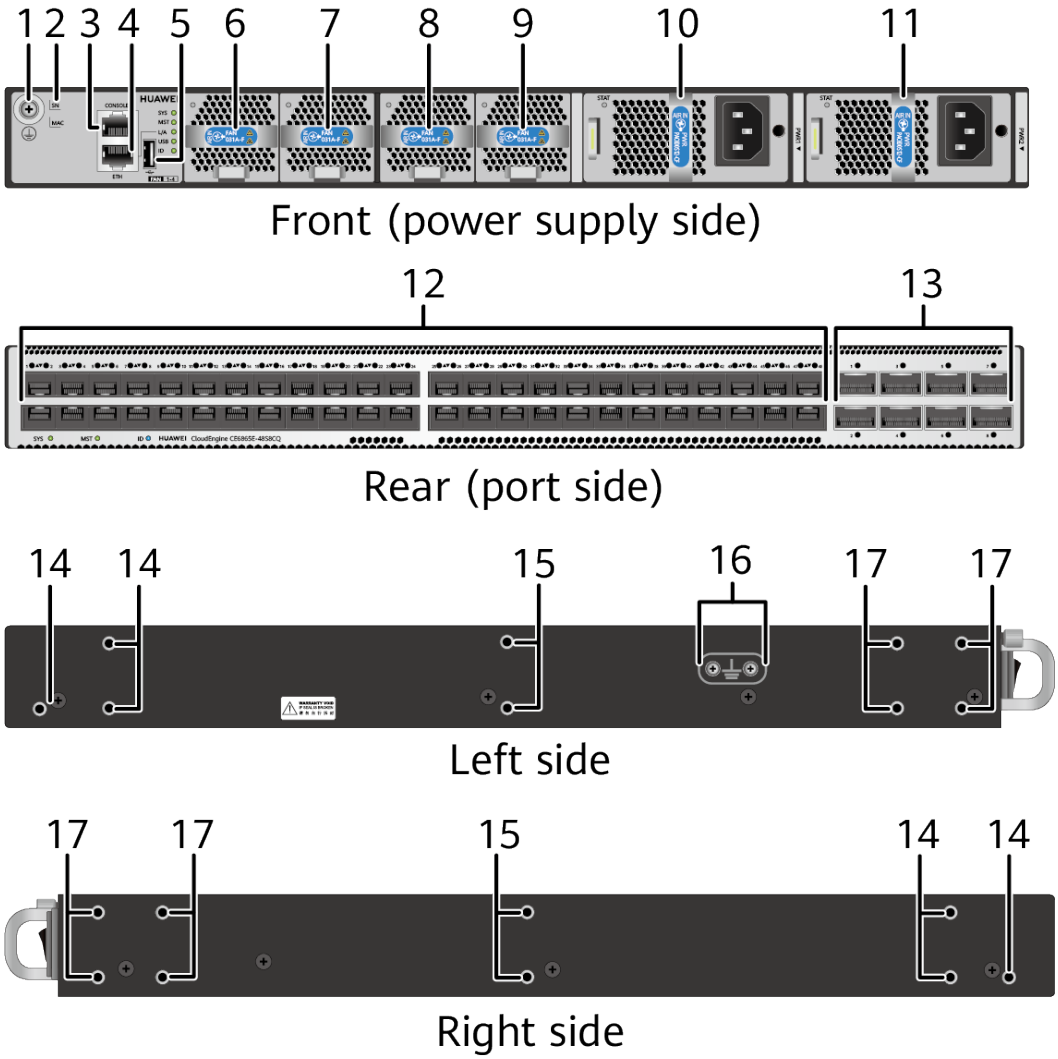
NOTE

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Components

Figure 4-154 Components of the CE6865E-48S8CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Eight 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-142 Slots on the CE6865E-48S8CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The switch has two power supply slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The switch supports dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	The switch has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. All fan modules are hot swappable.

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Indicators

Figure 4-155 Indicators on the CE6865E-48S8CQ 1

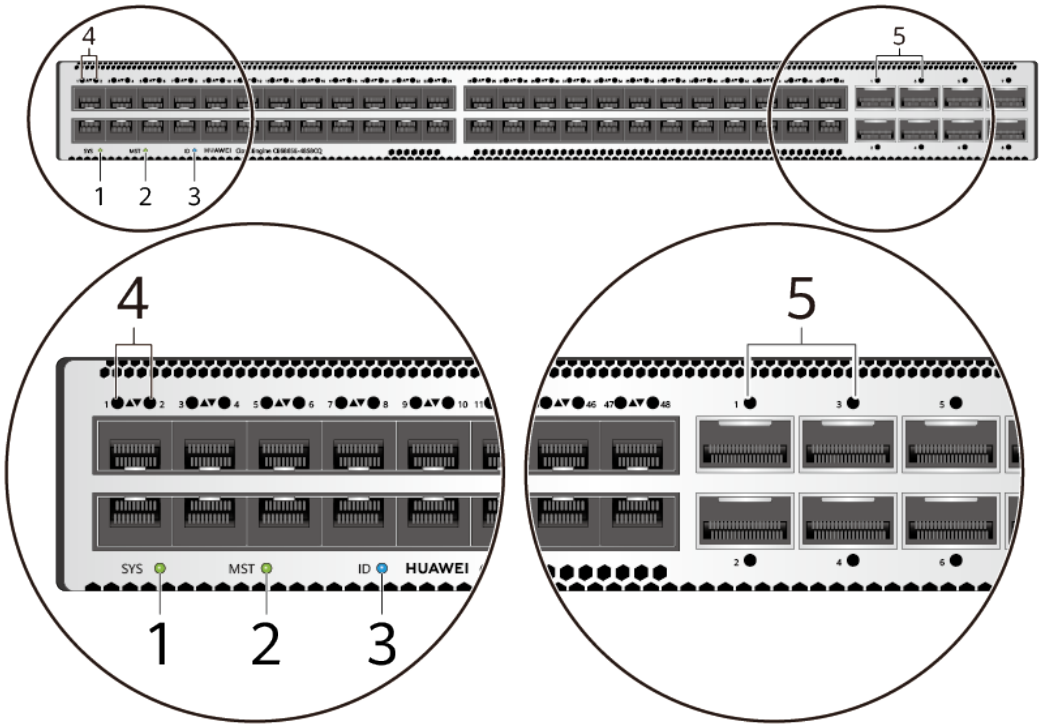
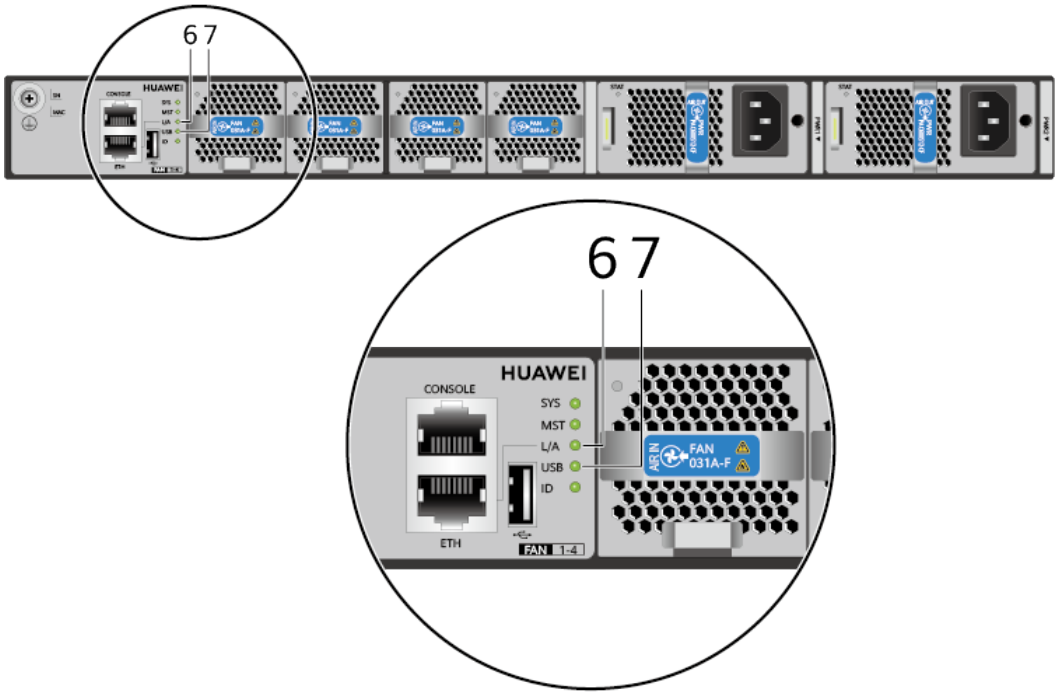


Figure 4-156 Indicators on the CE6865E-48S8CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-143 Indicators on the CE6865E-48S8CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-144 Ports on the CE6865E-48S8CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical attributes: depending on the module or cable in use • Limitation: A 10GE/25GE SFP28 optical port works at the rate of 25 Gbit/s by default and does not support GE/10GE auto-sensing. You can set the port rate to 10 Gbit/s or 1 Gbit/s using the port mode 10g or port mode ge command, respectively. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). • If the rate of any port in a port group is set to 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, all the other ports in this group also work at the rate of 1 Gbit/s, 10	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		Gbit/s, or 25 Gbit/s. • When the ports in a port group work at the rate of 25 Gbit/s, they support only 25GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at the rate of 10 Gbit/s, they support only 10GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at the rate of 1 Gbit/s, they support only GE modules or cables and will go Down if other types of modules or cables are used. • 10GE LRM/80 km linear optical modules are not supported.	**NOTE** 1. A 10GE optical port with a GE copper module installed can only work at 1000 Mbit/s. GE copper modules cannot be installed in ports directly above or below another GE copper module. 2. 10GE optical ports do not support OSXD22N00 and LE2MXSC80FF0. The 1000BASE-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 3. When working at 25 Gbit/s, the port supports 1 m, 3 m, and 5 m SFP28 high-speed cables. When a non-1 m copper cable is used, the RS-FEC function must be enabled. Otherwise, the port will be in Down (Transceiver type mismatch) state. 4. When a 25GE port is configured to work at 10 Gbit/s using the port mode 10g command, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
		• Standards compliance: IEEE 802.3by • Working mode: full-duplex	
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-157 Front-to-back airflow for port-side exhaust

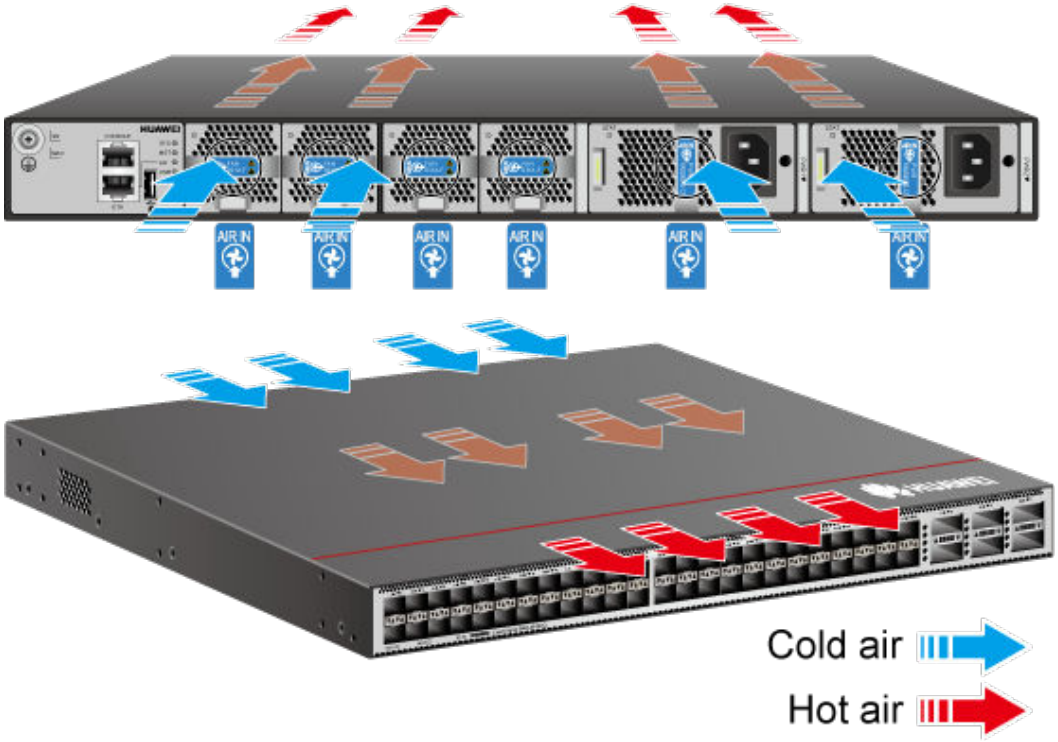
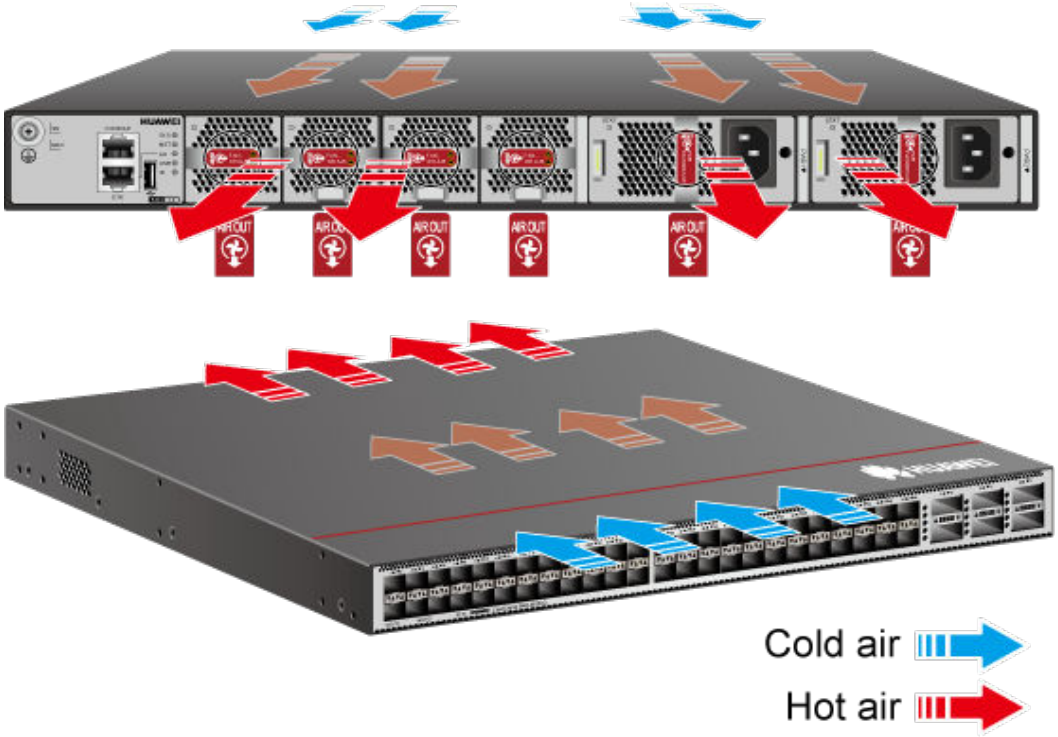


Figure 4-158 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-145 Technical specifications of the CE6865E-48S8CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.58 in.)
Weight without packaging [kg (lb)]	6.2kg (13.67 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.8 kg (19.40 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9.45 kg (20.83 lb)
Weight with packaging (full configuration) [kg (lb)]	11.75 kg (25.9 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 **NOTE** 1. A 25GE port works at 25 Gbit/s by default and cannot work at 1 Gbit/s or 10 Gbit/s through auto-sensing, but can be configured to work at 10 Gbit/s or 1 Gbit/s through commands. When a 25GE port is configured to work at 10 Gbit/s or 1 Gbit/s, the rate of the other three ports in the same group also needs to be switched. The rate of a single port cannot be switched independently. 2. 10GE LRM/80 km linear optical modules are not supported. 3. The 1000BASE-X auto-negotiation function is not supported. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 4. GE copper modules cannot be installed in ports directly above or below another GE copper module.
Uplink Service interface	8*100GE QSFP28 (Note: Each 100G QSFP28 port can be configured to work at 40 Gbit/s, and can be split into four 10GE or 25GE ports. After split, they cannot be used as GE ports.)
Service port supporting the stack function	25GE optical ports, and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 179 W (50% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 232 W (50% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 610 BTU/hour (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 791 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	133 W
Static heat dissipation [BTU/hour]	453 BTU/hour
Maximum power consumption [W]	378 W
Maximum heat dissipation	1290 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W

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Item	Specification
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999966836
MTBF [year]	36.9 year
MTTR [hour]	1.85 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Front-to-back airflow: 49.8 dB(A) on average (maximum: 53.6 dB(A)) Back-to-front airflow: 47.8 dB(A) on average (maximum: 51.2 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	Front-to-back airflow: 67.6 dB(A) on average (maximum: 73.4 dB(A)) Back-to-front airflow: 68 dB(A) on average (maximum: 75.4 dB(A))
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.12.3 CE6865E-48S8CQ (02354CPT-006)

Overview

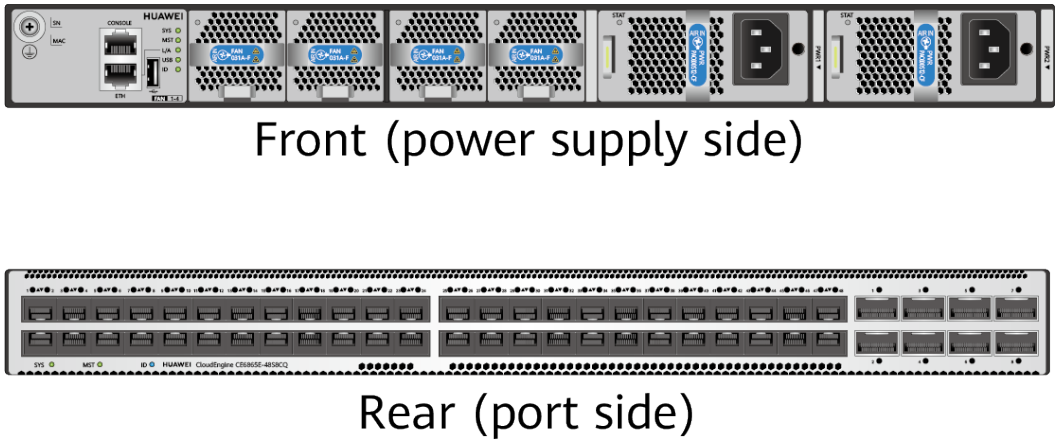
Table 4-146 Basic information about the CE6865E-48S8CQ

Item	Details
Description	CE6865E-48S8CQ switch (48*25G SFP28, 8*100G QSFP28, without fan and power modules)
Part Number	02354CPT-006
Model	CE6865E-48S8CQ
First supported version	V200R021C10SPC600
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6865E

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Appearance

Figure 4-159 Appearance of the CE6865E-48S8CQ



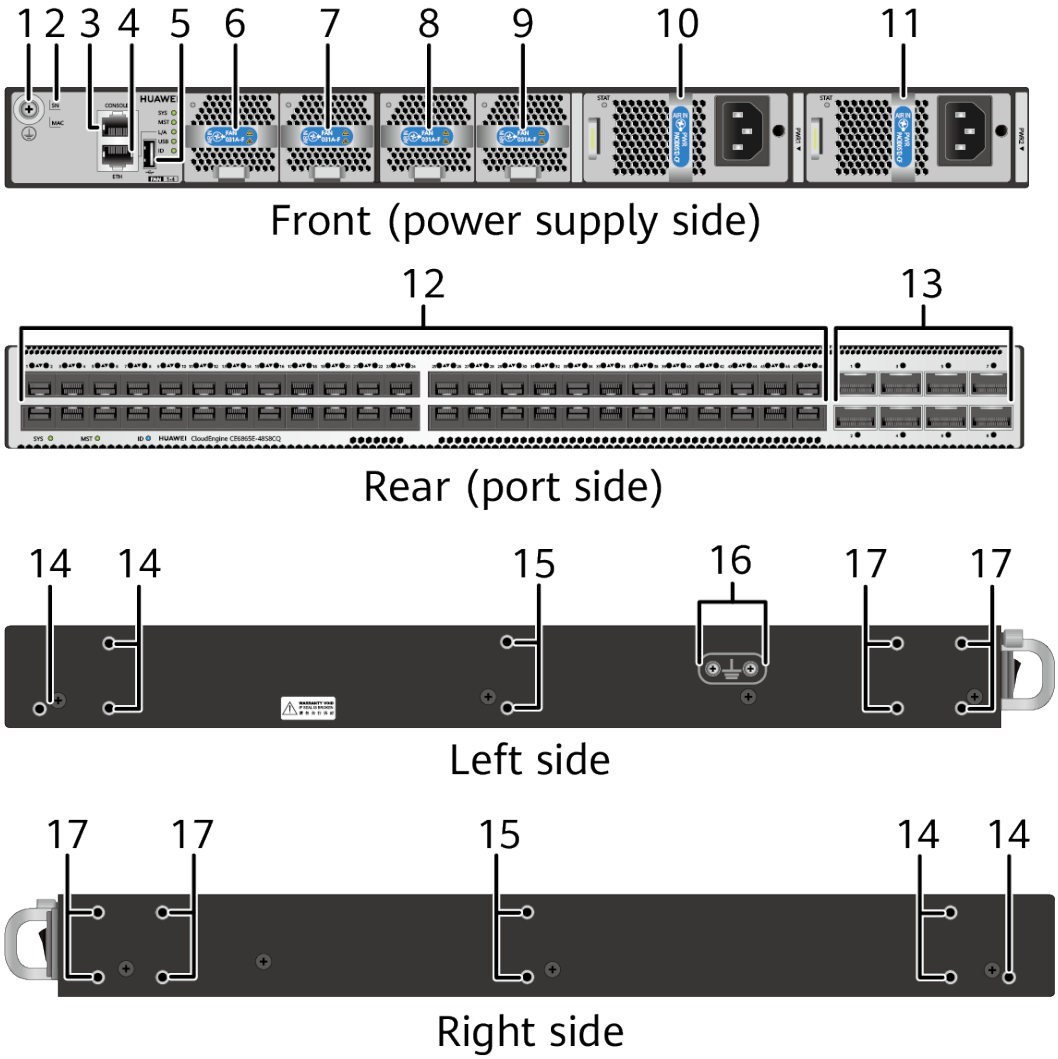
NOTE

The figures in this document are for reference only.

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Components

Figure 4-160 Components of the CE6865E-48S8CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE/25GE SFP28 Ethernet optical ports
13	Eight 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-147 Slots on the CE6865E-48S8CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-161 Indicators on the CE6865E-48S8CQ 1

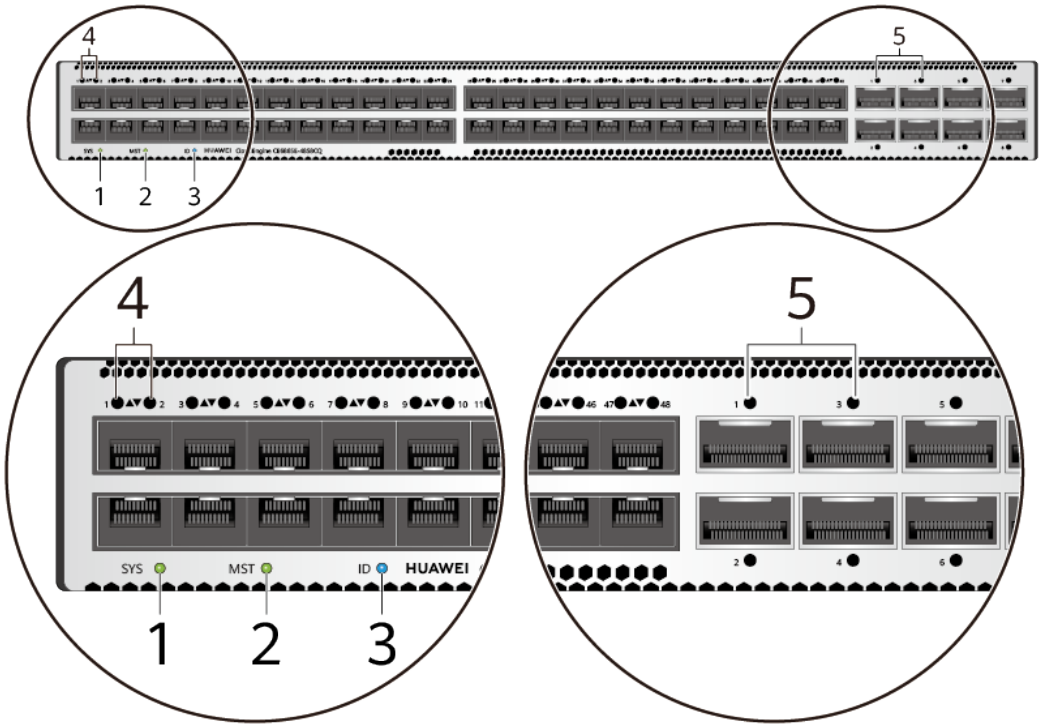
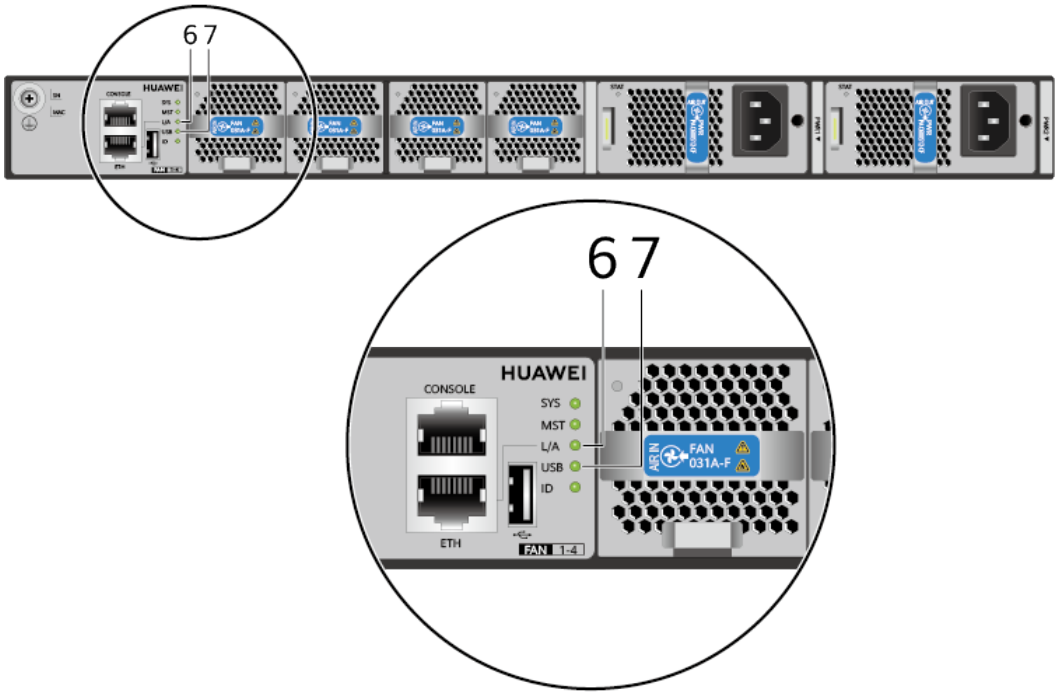


Figure 4-162 Indicators on the CE6865E-48S8CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-148 Indicators on the CE6865E-48S8CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-149 Ports on the CE6865E-48S8CQ

Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical attributes: depending on the module or cable in use • Limitation: A 10GE/25GE SFP28 optical port works at the rate of 25 Gbit/s by default and does not support GE/10GE auto-sensing. You can set the port rate to 10 Gbit/s or 1 Gbit/s using the port mode 10g or port mode ge command, respectively. The 48 10GE/25GE SFP28 optical ports are divided into 12 port groups, with four ports in each group (1-4, 5-8, 9-12, ..., 45-48). • If the rate of any port in a port group is set to 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, all the other ports in this group also work at the rate of 1 Gbit/s, 10	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		Gbit/s, or 25 Gbit/s. • When the ports in a port group work at the rate of 25 Gbit/s, they support only 25GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at the rate of 10 Gbit/s, they support only 10GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at the rate of 1 Gbit/s, they support only GE modules or cables and will go Down if other types of modules or cables are used. • 10GE LRM/80 km linear optical modules are not supported.	**NOTE** 1. A 10GE optical port with a GE copper module installed can only work at 1000 Mbit/s. GE copper modules cannot be installed in ports directly above or below another GE copper module. 2. 10GE optical ports do not support OSXD22N00 and LE2MXSC80FF0. The 1000BASE-X auto-negotiation function is not supported when a GE optical module is installed into a 10GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 3. When working at 25 Gbit/s, the port supports 1 m, 3 m, and 5 m SFP28 high-speed cables. When a non-1 m copper cable is used, the RS-FEC function must be enabled. Otherwise, the port will be in Down (Transceiver type mismatch) state. 4. When a 25GE port is configured to work at 10 Gbit/s using the port mode 10g command, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
		• Standards compliance: IEEE 802.3by • Working mode: full-duplex	
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-163 Front-to-back airflow for port-side exhaust

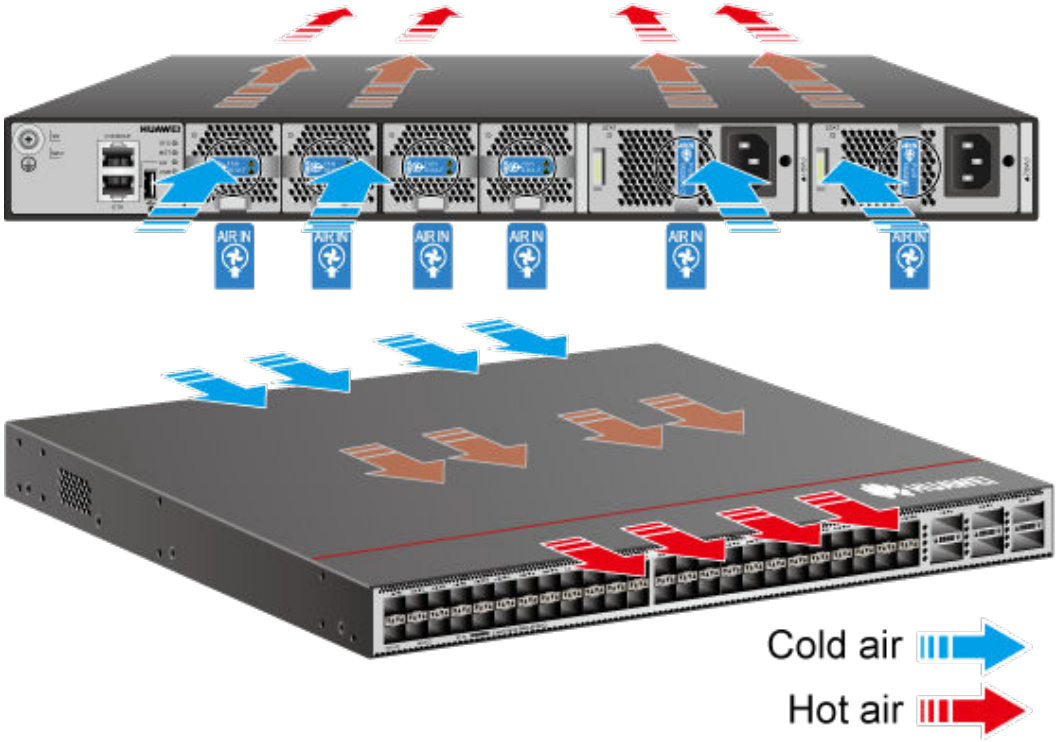
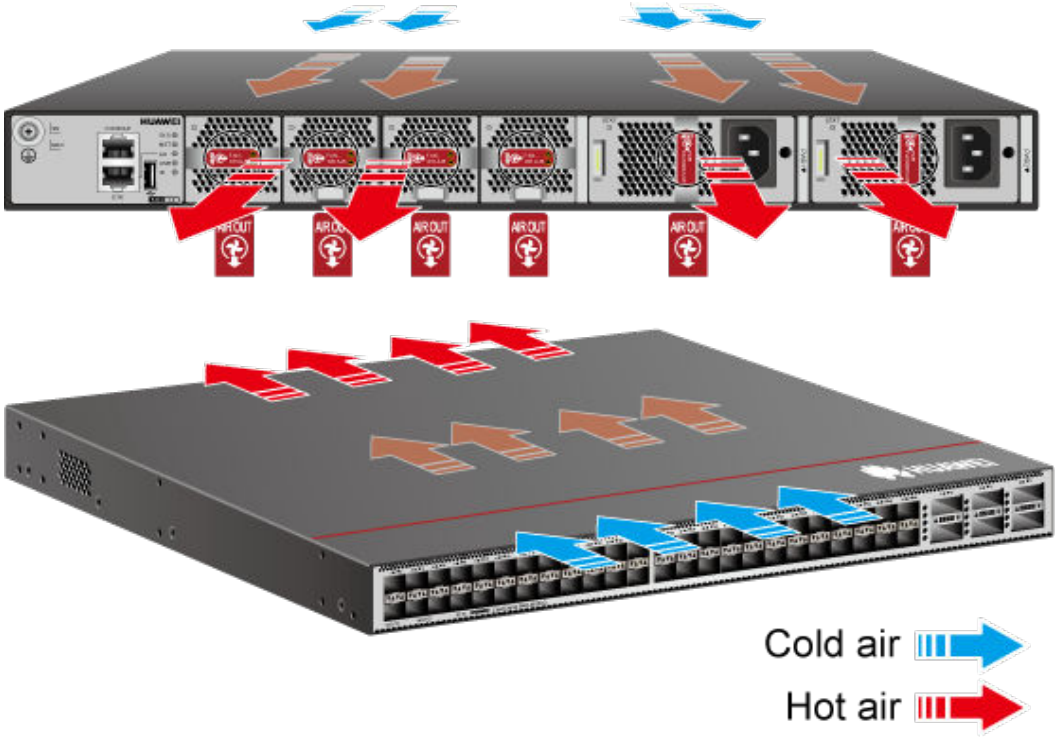


Figure 4-164 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-150 Technical specifications of the CE6865E-48S8CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.58 in.)
Weight without packaging [kg (lb)]	6.2kg (13.67 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.8 kg (19.40 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9.45 kg (20.83 lb)
Weight with packaging (full configuration) [kg (lb)]	11.75 kg (25.9 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*25GE SFP28 **NOTE** 1. A 25GE port works at 25 Gbit/s by default and cannot work at 1 Gbit/s or 10 Gbit/s through auto-sensing, but can be configured to work at 10 Gbit/s or 1 Gbit/s through commands. When a 25GE port is configured to work at 10 Gbit/s or 1 Gbit/s, the rate of the other three ports in the same group also needs to be switched. The rate of a single port cannot be switched independently. 2. 10GE LRM/80 km linear optical modules are not supported. 3. The 1000BASE-X auto-negotiation function is not supported. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down. 4. GE copper modules cannot be installed in ports directly above or below another GE copper module.
Uplink Service interface	8*100GE QSFP28 (Note: Each 100G QSFP28 port can be configured to work at 40 Gbit/s, and can be split into four 10GE or 25GE ports. After split, they cannot be used as GE ports.)
Service port supporting the stack function	25GE optical ports, and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 179 W (50% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 232 W (50% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 610 BTU/hour (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 791 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	133 W
Static heat dissipation [BTU/hour]	453 BTU/hour
Maximum power consumption [W]	378 W
Maximum heat dissipation	1290 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W

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Item	Specification
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999966836
MTBF [year]	36.9 year
MTTR [hour]	1.85 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Front-to-back airflow: 49.8 dB(A) on average (maximum: 53.6 dB(A)) Back-to-front airflow: 47.8 dB(A) on average (maximum: 51.2 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	Front-to-back airflow: 67.6 dB(A) on average (maximum: 73.4 dB(A)) Back-to-front airflow: 68 dB(A) on average (maximum: 75.4 dB(A))
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.13 CE6870-48S6CQ-EI

Version Mapping

Table 4-151 lists the mappings between the CE6870-48S6CQ-EI and software versions.

Table 4-151 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE6800	CE6870	CE6870-48S6CQ-EI	CE6870EI	V200R001C00 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

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CAUTION

The DDR of the CE6870-48S6CQ-EI has been optimized and upgraded since March 1, 2020. The switches that are manufactured on and after March 1, 2020 can only run V200R019C10SPC800 after the corresponding patch is load, as well as running V200R020C10 or later versions. (The year and month when the switches are manufactured can be determined based on the SN.)

The product SN consists of 20 characters.

- The thirteenth character indicates the year of production. A indicates 2010, B indicates 2011, C indicates 2012, D indicates 2013, E indicates 2014, F indicates 2015, G indicates 2016, H indicates 2017, J indicates 2018, K indicates 2019, and L indicates 2020. The letter I is not used. The letters increase with the year.
- The fourteenth character indicates the month of production. 1 indicates January, 2 indicates February, ..., 9 indicates September, A indicates October, B indicates November, and C indicates December.

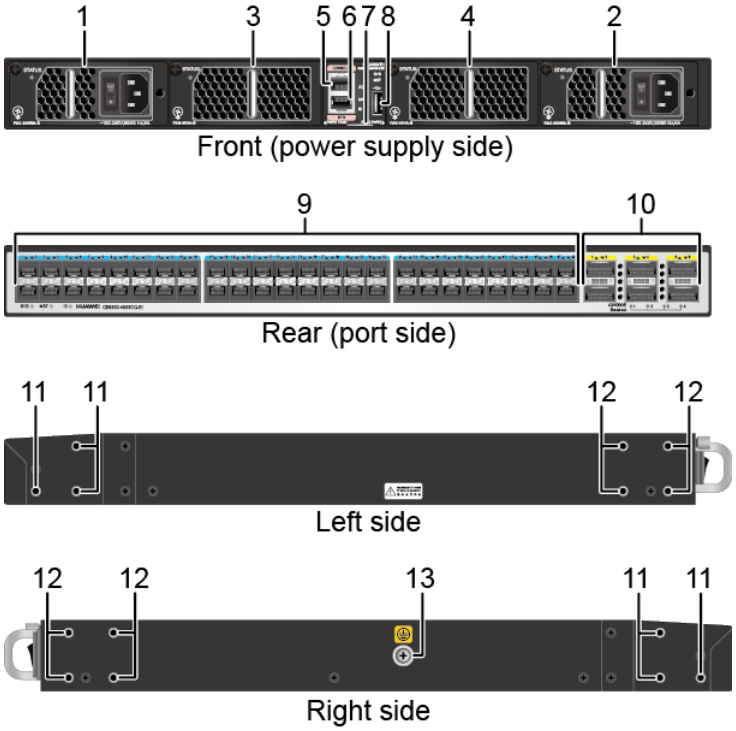
For example, if the SN of a switch is 2102XXXXXX10L3000XXX, the switch is manufactured in March 2020.

Appearance and Structure

NOTE

The figures in this document are for reference only.

Figure 4-165 CE6870-48S6CQ-EI



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1	Power supply slot 1 Applicable power modules: • **5.3 350 W DC Power Module (PDC-350WA)** • **5.5 600 W AC Power Module (PAC-600WA)**	2	Power supply slot 2 Applicable power modules: • **5.3 350 W DC Power Module (PDC-350WA)** • **5.5 600 W AC Power Module (PAC-600WA)**
3	Fan slot 1 Applicable fan modules: • **6.8 FAN-40HA Series Fan Modules**	4	Fan slot 2 Applicable fan modules: • **6.8 FAN-40HA Series Fan Modules**
5	Console port	6	ETH management port (RJ45)
7	Barcode label **NOTE** This label is drawable, and you can pull it outward to view the ESN barcode and MAC address of the switch.	8	USB port

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9	Forty-eight 10GE SFP+ Ethernet optical ports Applicable modules and cables: • **9.7 10GE SFP+ Optical Modules** (OSXD22N00 and LE2MXSC80FF0 not supported) • **9.4 GE eSFP Optical Modules** • **9.5 GE SFP Copper Modules** (works at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s) • **8.9.2 SFP+ to SFP+ AOC Cable** • **8.8.2 SFP+ to SFP+ High-Speed Cable**	10	Six 40GE/100GE QSFP28 Ethernet optical ports **NOTE** A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. Applicable modules and cables: • **40GE QSFP+ Optical Modules** • **9.10 100GE QSFP28 Optical Modules** (QSFP28-100G-4WDM-40 not supported) • **8.9.4 QSFP+ to QSFP+ AOC cable** • **8.8.4 QSFP+ to QSFP+ High-Speed Cable** • **8.9.5 QSFP+ to 4*SFP+ AOC cable** • **8.8.5 QSFP+ to 4*SFP+ High-Speed Cable** • **8.9.6 QSFP28 to QSFP28 AOC Cable** • **8.8.6 QSFP28 to QSFP28 High-Speed Cable** • **8.8.7 QSFP28 to 4*SFP28 High-Speed Cable**
11	Three port-side mounting holes for mounting brackets	12	Four power-supply-side mounting holes for mounting brackets
13	Ground screw	-	-

Slot

- Power supply slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) have two power supply slots, in which power modules can be installed to provide power to the chassis. A chassis can have one or two power modules. Double power modules can provide higher reliability.

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) support double power modules (1+1 backup).

  – When both power modules are working properly, they equally provide power for a chassis.

  – When one power module fails, the other one provides all power required for a chassis.

  All power modules are hot swappable.

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- Fan slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI, CE6863-48S6CQ, CE6881-48S6CQ, CE6820-48S6CQ, CE6863-48S6CQ-K, CE6881-48S6CQ-K, CE6881E-48S6CQ and CE6857-48S6CQ-EI) have two fan slots, in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have two working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Airflow

The cooling systems of the CloudEngine 8800, 7800, 6800, and 5800 series switches have front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used. The airflow direction of the power modules and fan modules required on the CloudEngine 8800, 7800, 6800, and 5800 series switches depends on how the switches are installed in cabinets. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If CloudEngine 8800, 7800, 6800, and 5800 series switches are installed with the power supply side facing the front, you are advised to use fan modules and power modules with front-to-back airflow in the switches.

NOTE

- Front-to-back airflow: The power modules and fan modules using front-to-back airflow are marked  or 

. Air flows into the chassis from the power supply side and flows out from the port side, as shown in **Figure 4-166** (CE5800 as an example).
- Back-to-front airflow: The power modules and fan modules using back-to-front airflow are marked  or 

. Air flows into the chassis from the port side and flows out from the power supply side, as shown in **Figure 4-144** (CE5800 as an example).
- When the power module and fan module use forcible heat dissipation, they must use the same airflow method. For example, if the power module with back-to-front airflow is used, the fan module with back-to-front airflow must be used.

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Figure 4-166 Front-to-back airflow (air flows out from the port side)

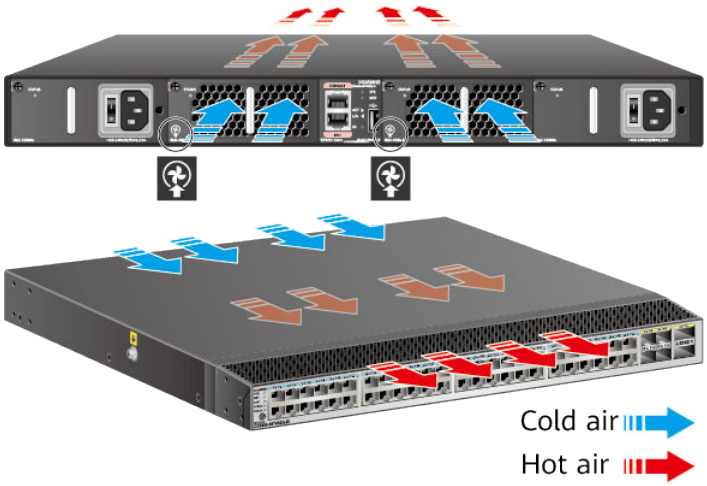
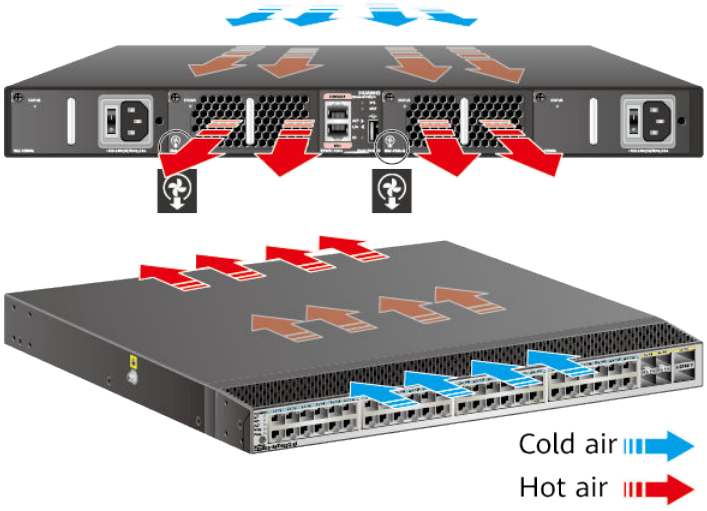


Figure 4-167 Back-to-front airflow (air flows in from the port side)



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Indicators

Figure 4-168 Indicators on the CE6870-48S6CQ-EI rear panel

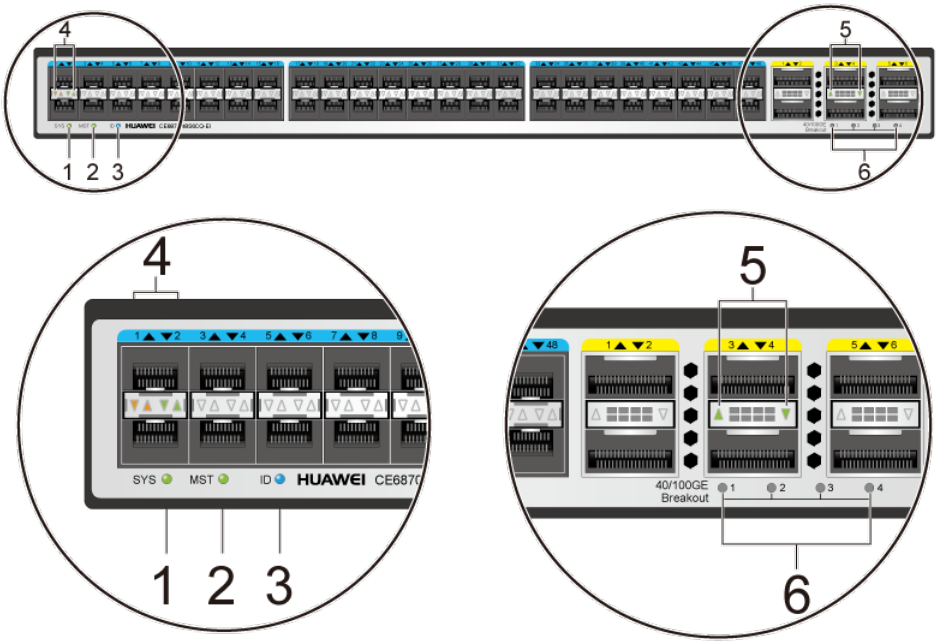
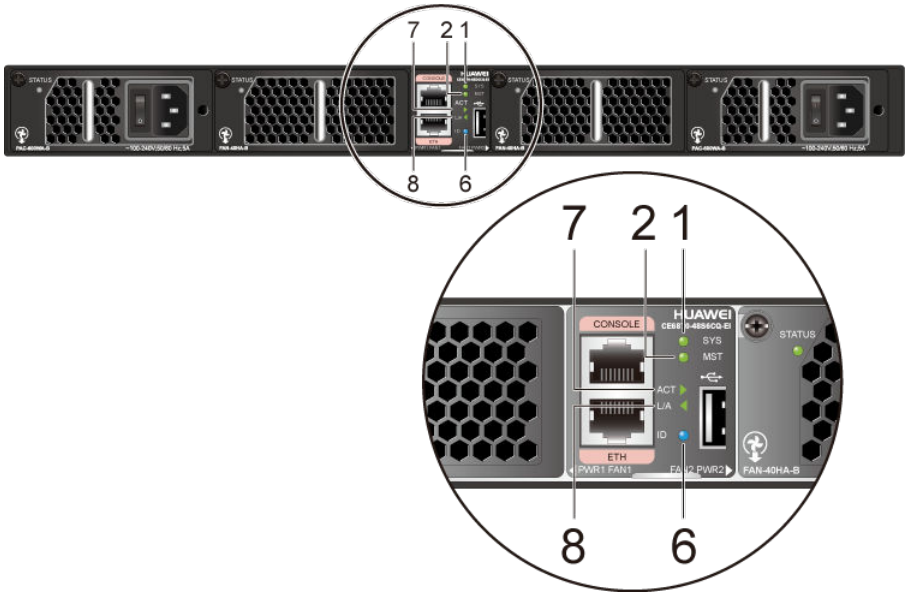


Figure 4-169 Indicators on the CE6870-48S6CQ-EI front panel



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Table 4-152 Indicator description

No.	Indicator	Name	Color	Status	Description
1	SYS	System status indicator	Green	Off	The system is not running.
				Fast blinking	The system is starting.
				Slow blinking	The system is running normally.
			Red	Steady on	• The system fails to start. • At least one power module does not work normally. • At least one fan module does not work normally.
2	MST	Stack master/slave indicator **NOTE** In V200R003C00 and later versions, you can use the **dfs-master led enable** command to enable the stack master/slave indicator to display the DFS group master and backup status. After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Off	The switch is not a stack master.
				Steady on	The switch is a stack master or standalone switch.

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No.	Indicator	Name	Color	Status	Description
3	ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
				Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.
4	-	Service port indicator (10GE optical port) **NOTE** Each 10GE/25GE optical port has two single-color indicators. The one on the left is the ACT indicator (yellow), and the one on the right is the LINK indicator (green). Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
				Steady on	A link is established on the port.
			Yellow	Off	The port is not sending or receiving data.
				Blinking	The port is sending or receiving data.
5	-	Service port indicator (40GE/100GE optical port)	Green	Off	No link has been established on the port or the port has been shut down.
				Steady on	A link is established on the port.
				Blinking	The port is sending or receiving data.

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No.	Indicator	Name	Color	Status	Description
		NOTE Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	When a 40GE/100GE port is configured as four 10GE ports or four 25GE ports, this indicator shows the status of a 10GE/25GE port. The sequence number of the indicated port is identified by indicators 40G/100G Breakout 1/2/3/4 on the lower right corner of the panel. **NOTE** Each 40GE/100GE port has a single-color indicator, which shows the status of the 40GE/100GE port by default.		
6	-	40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE port) **NOTE** Indicators 1, 2, 3, 4 turn on in cyclic order, with each indicator keeping on for 5s.	Green	Off	40GE/100GE ports are working in 40GE or 100GE mode and not split into four 10GE ports or four 25GE ports.

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No.	Indicator	Name	Color	Status	Description
				Steady on	At least one 40GE/100GE port has been split into four 10GE ports or four 25GE ports. When one or more 40GE/100GE ports are split into four 10GE ports or four 25GE ports, these indicators identify the sequence numbers of the 10GE/25GE ports. A port indicator (5 in **Figure 4-168**) shows the status of a 10GE/25GE port converted from the corresponding 40GE/100GE port: • When indicator 1 is on, each port indicator shows the status of the first 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 2 is on, each port indicator shows the status of the second 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 3 is on, each port indicator shows the status of the third 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 4 is on, each port indicator shows the status of the fourth 10GE/25GE port derived from the corresponding 40GE/100GE port.
7	ACT	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
				Steady on	USB-based deployment has been completed.
				Blinking	The system is reading data from a USB flash drive.
			Red	Steady on	USB-based deployment has failed.
8	L/A	ETH management port indicator	Green	Off	No link is established on the port.
				Steady on	A link is established on the port.

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No.	Indicator	Name	Color	Status	Description
				Blinking	The port is sending or receiving data.

Ports

10GE SFP+ Ethernet Optical Port

A 10GE SFP+ Ethernet optical port supports auto-sensing to 1 Gbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. **Table 4-153** describes the attributes of a 10GE SFP+ Ethernet optical port.

Table 4-153 Attributes of a 10GE SFP+ Ethernet optical port

Attribute	Description
Connector type	LC
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ae
Working mode	Supported rate: 1000 Mbit/s and 10 Gbit/s auto-sensing Full-duplex

NOTE

When a 1GE electrical module is installed on a 10GE optical interface, the 10GE optical interface supports the rate of 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s, but does not support half-duplex.

40GE/100GE QSFP28 Optical Port

Table 4-154 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 4-154 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depending on the optical module
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ba
Working mode	Full-duplex

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Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. **Table 4-155** describes the attributes of the console port.

Table 4-155 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

ETH Management Port (RJ45)

The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. **Table 4-156** describes the attributes of the ETH management port (RJ45).

Table 4-156 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-157 lists technical specifications of the CE6870-48S6CQ-EI switch.

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Table 4-157 Technical specifications

Item		Description
Physical specifications		• Dimensions (W x D x H): 442.0 mm x 420.0 mm x 43.6 mm (17.4 in. x 16.5 in. x 1.72 in.) • Weight (with two power modules and two fan modules, calculated based on the heaviest model if multiple models are supported): 8.6 kg (18.96 lb)
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 55 dBA • Front-to-back airflow: < 51 dBA
Power specifications	Power source type	AC/DC
	AC power input	• Rated input voltage range: 100 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	DC power input	• Rated voltage range: -48 V DC to -60 V DC • Maximum voltage range: -38.4 V DC to -72 V DC
	High-voltage DC power input	Not supported
	Rated input current	• 350 W DC power (PDC-350WA series): 11 A (-48 V DC to -60 V DC) • 600 W AC power (PAC-600WA series): 9 A (100 V AC to 240 V AC)
Chassis power consumption	Maximum power consumption	333 W

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Item		Description
	Typical power consumption	159 W (100% throughput, SFP+ cables on 48 ports and QSFP28 cables on 6 ports, double power modules)
Chassis heat dissipation	Maximum heat dissipation	1135 BTU/hr
	Typical heat dissipation	543 BTU/hr (100% throughput, SFP+ cables on 48 ports and QSFP28 cables on 6 ports, double power modules)
Surge protection		Power module: • AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Front-to-back or back-to-front, depending on the fan modules and power modules
Reliability and availability	Power module backup	1+1 backup
	Fan module backup	1+1 backup not supported **NOTE** A CE6800 chassis uses two fan modules, with each fan module containing two fans. The four fans in the chassis work in 3+1 backup mode.
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	54.28 years
	Mean time to repair (MTTR)	1.66 hours
	Availability	0.99999651887
Technical specifications	Processor	1.5 GHz, quad-core
	DRAM Memory	4 GB

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Item		Description
	NOR Flash	16 MB
	NAND Flash	1 GB
Stack	Service port supporting the stack function	10GE optical ports and 100GE optical ports
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-158 provides the ordering information.

Table 4-158 Ordering information

Part Number	Part Model	Part Description
02350SRU	CE6870-48S6CQ-EI	CE6870-48S6CQ-EI Switch (48-Port 10GE SFP+, 6-Port 100GE QSFP28, Without Fan and Power Module)
02350RXD	CE6870-EI-F-B0A	CE6870-48S6CQ-EI Switch (48-Port 10GE SFP+, 6-Port 100GE QSFP28, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
02350RXE	CE6870-EI-B-B0A	CE6870-48S6CQ-EI Switch (48-Port 10GE SFP+, 6-Port 100GE QSFP28, 2*AC Power Module, 2*FAN Box, Port-side Intake)

4.4.14 CE6870-48T6CQ-EI

Version Mapping

Table 4-159 lists the mappings between the CE6870-48T6CQ-EI and software versions.

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Table 4-159 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE6800	CE6870	CE6870-48T6CQ-EI	CE6870EI	V200R002C50 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

CAUTION

The DDR of the CE6870-48T6CQ-EI has been optimized and upgraded since March 1, 2020. The switches that are manufactured on and after March 1, 2020 can only run V200R019C10SPC800 after the corresponding patch is load, as well as running V200R020C10 or later versions. (The year and month when the switches are manufactured can be determined based on the SN.)

The product SN consists of 20 characters.

- The thirteenth character indicates the year of production. A indicates 2010, B indicates 2011, C indicates 2012, D indicates 2013, E indicates 2014, F indicates 2015, G indicates 2016, H indicates 2017, J indicates 2018, K indicates 2019, and L indicates 2020. The letter I is not used. The letters increase with the year.
- The fourteenth character indicates the month of production. 1 indicates January, 2 indicates February, ..., 9 indicates September, A indicates October, B indicates November, and C indicates December.

For example, if the SN of a switch is 2102XXXXXX10L3000XXX, the switch is manufactured in March 2020.

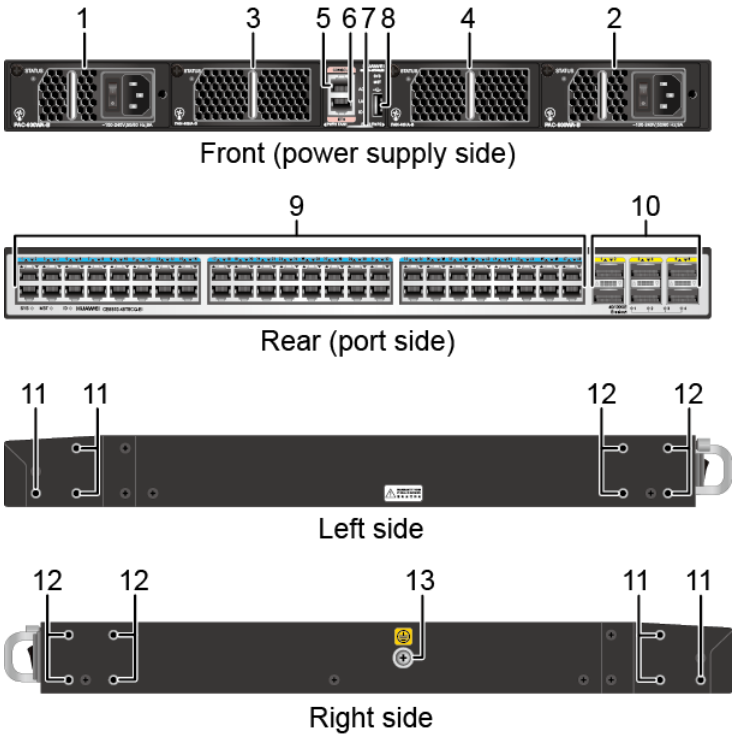
Appearance and Structure

NOTE

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Figure 4-170 CE6870-48T6CQ-EI



1	Power supply slot 1 Applicable power modules: • **5.5 600 W AC Power Module (PAC-600WA)** • **600 W DC Power Module (PDC600S12)**	2	Power supply slot 2 Applicable power modules: • **5.5 600 W AC Power Module (PAC-600WA)** • **600 W DC Power Module (PDC600S12)**
3	Fan slot 1 Applicable fan modules: • **6.8 FAN-40HA Series Fan Modules**	4	Fan slot 2 Applicable fan modules: • **6.8 FAN-40HA Series Fan Modules**
5	Console port	6	ETH management port (RJ45)
7	Barcode label **NOTE** This label is drawable, and you can pull it outward to view the ESN barcode and MAC address of the switch.	8	USB port

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9	Forty-eight 10GBASE-T Ethernet electrical ports	10	Six 40GE/100GE QSFP28 Ethernet optical ports **NOTE** A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. Applicable modules and cables: • **9.9 40GE QSFP+ Optical Modules** • **9.10 100GE QSFP28 Optical Modules** (QSFP28-100G-4WDM-40 not supported) • **8.9.4 QSFP+ to QSFP+ AOC cable** • **8.8.4 QSFP+ to QSFP+ High-Speed Cable** • **8.9.5 QSFP+ to 4*SFP+ AOC cable** • **8.8.5 QSFP+ to 4*SFP+ High-Speed Cable** • **8.9.6 QSFP28 to QSFP28 AOC Cable** • **8.8.6 QSFP28 to QSFP28 High-Speed Cable** • **8.8.7 QSFP28 to 4*SFP28 High-Speed Cable**
11	Three port-side mounting holes for mounting brackets	12	Four power-supply-side mounting holes for mounting brackets
13	Ground screw	-	-

Slot

- Power supply slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) have two power supply slots, in which power modules can be installed to provide power to the chassis. A chassis can have one or two power modules. Double power modules can provide higher reliability.

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) support double power modules (1+1 backup).

  – When both power modules are working properly, they equally provide power for a chassis.

  – When one power module fails, the other one provides all power required for a chassis.

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All power modules are hot swappable.

- Fan slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI, CE6863-48S6CQ, CE6881-48S6CQ, CE6820-48S6CQ, CE6863-48S6CQ-K, CE6881-48S6CQ-K, CE6881E-48S6CQ and CE6857-48S6CQ-EI) have two fan slots, in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have two working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Airflow

The cooling systems of the CloudEngine 8800, 7800, 6800, and 5800 series switches have front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used. The airflow direction of the power modules and fan modules required on the CloudEngine 8800, 7800, 6800, and 5800 series switches depends on how the switches are installed in cabinets. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If CloudEngine 8800, 7800, 6800, and 5800 series switches are installed with the power supply side facing the front, you are advised to use fan modules and power modules with front-to-back airflow in the switches.

NOTE

- Front-to-back airflow: The power modules and fan modules using front-to-back airflow are marked  or 

. Air flows into the chassis from the power supply side and flows out from the port side, as shown in **Figure 4-171** (CE5800 as an example).
- Back-to-front airflow: The power modules and fan modules using back-to-front airflow are marked  or 

. Air flows into the chassis from the port side and flows out from the power supply side, as shown in **Figure 4-144** (CE5800 as an example).
- When the power module and fan module use forcible heat dissipation, they must use the same airflow method. For example, if the power module with back-to-front airflow is used, the fan module with back-to-front airflow must be used.

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Figure 4-171 Front-to-back airflow (air flows out from the port side)

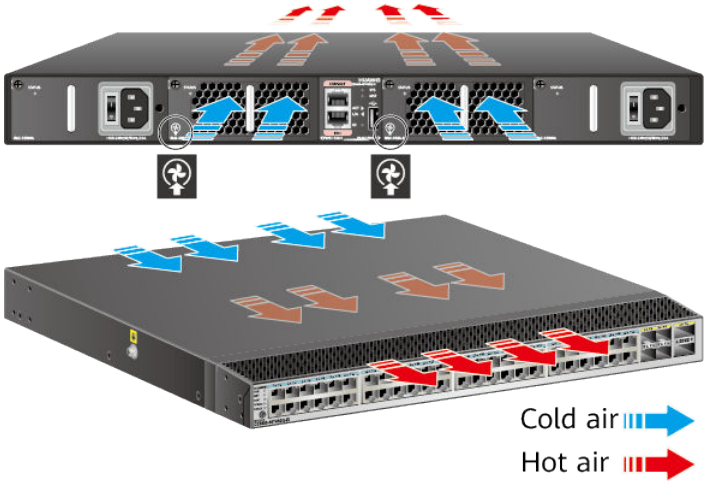
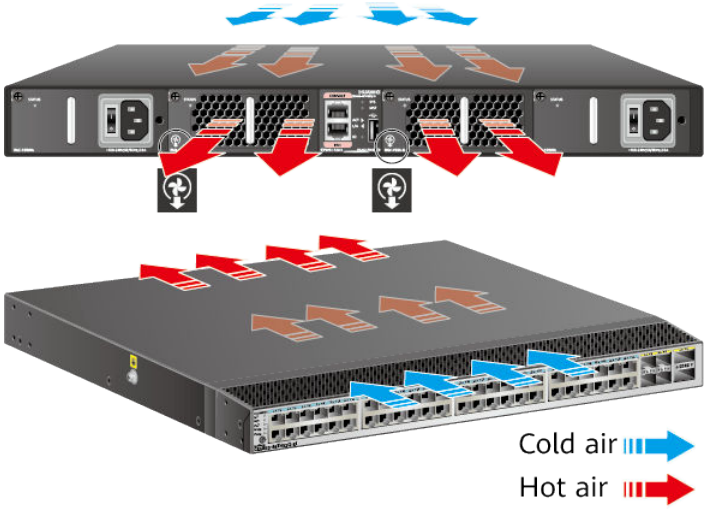


Figure 4-172 Back-to-front airflow (air flows in from the port side)



Indicators

The downlink service port indicators of the CE6870-48T6CQ-EI are 10GE electrical port indicators, and other indicators are the same as those on the CE6870-48S6CQ-EI. The **CE6870-48S6CQ-EI** is used as an example here to describe the indicators.

Ports

10GBASE-T Ethernet Electrical Port

A 10GBASE-T Ethernet electrical port receives and sends service traffic at the rate of 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port can work at the rate of 100 Mbit/s or 1000 Mbit/s through auto-sensing. 10GBASE-T Ethernet electrical ports must use Category 6A shielded Ethernet cables or higher Ethernet cables. **Table 4-160** shows the attributes of a 10GBASE-T Ethernet electrical port.

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Table 4-160 Attributes of a 10GBASE-T Ethernet electrical port

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3an and IEEE802.3az
Applicable cable	Straight-through cable and crossover cable
Working mode	Supported rate: 100/1000 Mbit/s and 10 Gbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

40GE/100GE QSFP28 Optical Port

Table 4-161 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 4-161 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depending on the optical module
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ba
Working mode	Full-duplex

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. Table 4-162 describes the attributes of the console port.

Table 4-162 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

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ETH Management Port (RJ45)

The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. **Table 4-163** describes the attributes of the ETH management port (RJ45).

Table 4-163 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-164 lists technical specifications of the CE6870-48T6CQ-EI switch.

Table 4-164 Technical specifications

Item	Description
Physical specifications	• Dimensions (W x D x H): 442.0 mm x 420.0 mm x 43.6 mm (17.4 in. x 16.5 in. x 1.72 in.) • Weight (with two power modules and two fan modules, calculated based on the heaviest model if multiple models are supported): 9.8 kg (21.61 lb)

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Item		Description
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 56 dBA • Front-to-back airflow: < 57 dBA
Power specifications	Power source type	AC
	AC power input	• Rated input voltage range: 100 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	DC power input	• Rated voltage range: -48 V DC to -60 V DC • Maximum voltage range: -38.4 V DC to -72 V DC
	High-voltage DC power input	Not supported
	Rated input current	• 600 W AC power (PAC-600WA series): 9 A (100 V AC to 240 V AC) • 600 W DC power (PDC600S12 series): 20A (-48 V DC to -60 V DC)
Chassis power consumption	Maximum power consumption	405 W
	Typical power consumption	280 W (100% throughput, 3 m Ethernet cables on 48 ports and QSFP+ cables on 6 ports, double power modules)
Chassis heat dissipation	Maximum heat dissipation	1382 BTU/hr

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Item		Description
	Typical heat dissipation	955 BTU/hr (100% throughput, 3 m Ethernet cables on 48 ports and QSFP+ cables on 6 ports, double power modules)
Surge protection		Power module: • AC: 6 kV in common mode and 6 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Front-to-back or back-to-front, depending on the fan modules and power modules
Reliability	Power module backup	1+1 backup
	Fan module backup	1+1 backup not supported **NOTE** A CE6800 chassis uses two fan modules, with each fan module containing two fans. The four fans in the chassis work in 3+1 backup mode.
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	44.44 years
	Mean time to repair (MTTR)	1.76 hours
	Availability	0.99999548998
Technical specifications	Processor	1.5 GHz, eight-core
	DRAM Memory	4 GB
	NOR Flash	32 MB
	NAND Flash	1 GB
Stack	Service port supporting the stack function	10GE electrical ports and 100GE optical ports

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Item	Description
Certification	• Safety standards compliance • EMC standards compliance • Environmental standards compliance

Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-165 provides the ordering information.

Table 4-165 Ordering information

Part Number	Part Model	Part Description
02351GCL	CE6870-48T6CQ-EI	CE6870-48T6CQ-EI Switch (48-Port 10G RJ45, 6-Port 100GE QSFP28, Without Fan and Power Module)
02351GCJ	CE6870-EI-F-B00	CE6870-48T6CQ-EI Switch (48-Port 10G RJ45, 6-Port 100GE QSFP28, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
02351GCK	CE6870-EI-B-B00	CE6870-48T6CQ-EI Switch (48-Port 10G RJ45, 6-Port 100GE QSFP28, 2*AC Power Module, 2*FAN Box, Port-side Intake)

4.4.15 CE6870-48S6CQ-EI-A

4.4.15.1 CE6870-48S6CQ-EI-A (02354VSH)

Overview

Table 4-166 Basic information about the CE6870-48S6CQ-EI-A

Item	Details
Description	CE6870-48S6CQ-EI-A Switch(48-Port 10GE SFP+,6-Port 100GE QSFP28,Without Fan and Power Module)
Part Number	02354VSH

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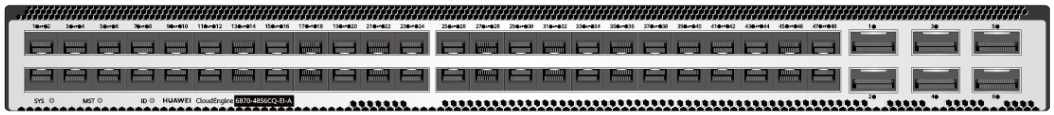
Item	Details
Model	CE6870-48S6CQ-EI-A
First supported version	V200R022C00
Other part numbers	02354VSJ (CE6870-48S6CQ-EI-A Switch(48-Port 10GE SFP+,6-Port 100GE QSFP28,2*AC Power Module, 4*FAN Box,Port-side Intake)) 02354VSK (CE6870-48S6CQ-EI-A Switch(48-Port 10GE SFP+,6-Port 100GE QSFP28,2*AC Power Module, 4*FAN Box,Port-side Exhaust))
Short Name	CE6870EI

Appearance

Figure 4-173 Appearance of the CE6870-48S6CQ-EI-A



Front (power supply side)



Rear (port side)

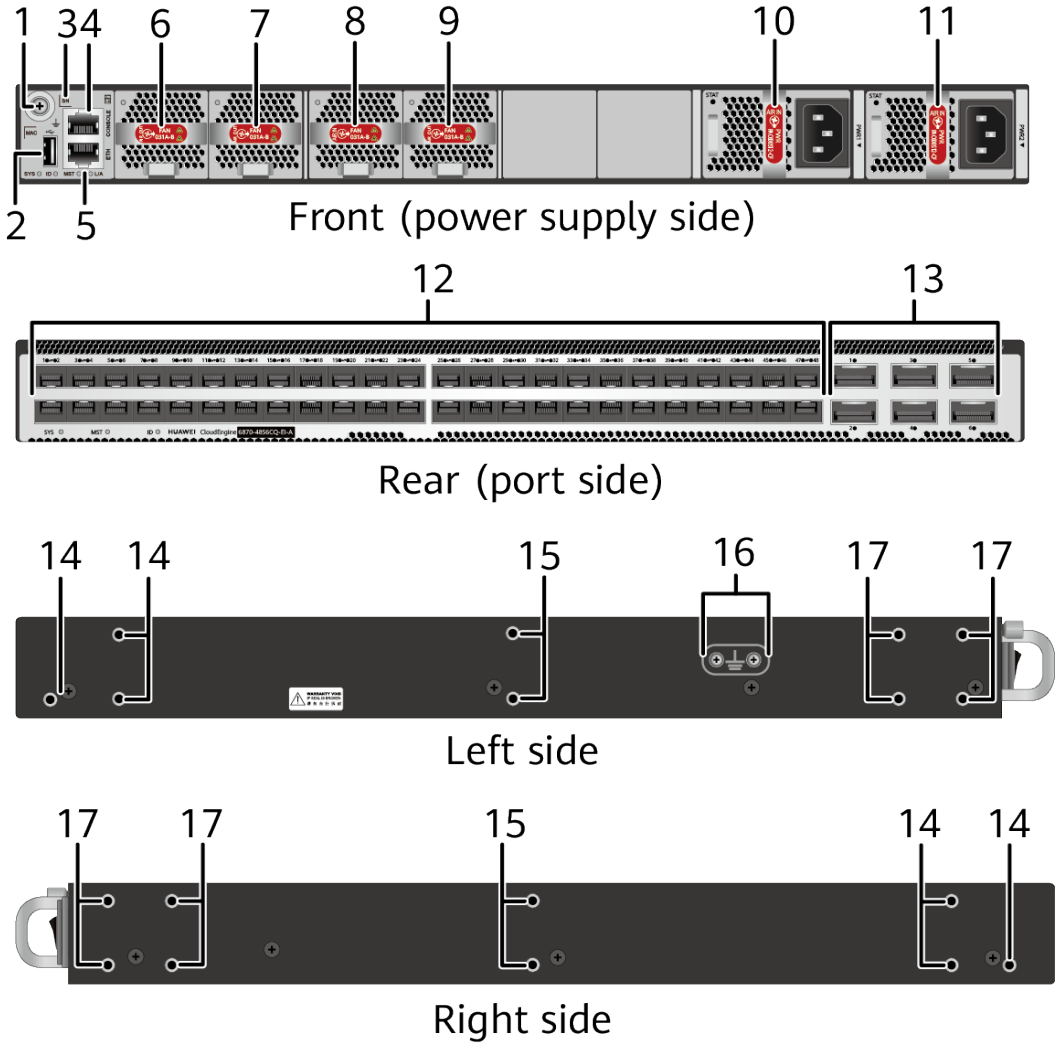
NOTE

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Components

Figure 4-174 Components of the CE6870-48S6CQ-EI-A



1	Ground screw	2	USB port
3	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.	4	Console port
5	ETH management port (RJ45)	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-167 Slots on the CE6870-48S6CQ-EI-A

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	The switch has two power supply slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The switch supports dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	The switch has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. All fan modules are hot swappable.

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Indicators

Figure 4-175 Indicators on the CE6870-48S6CQ-EI-A 1

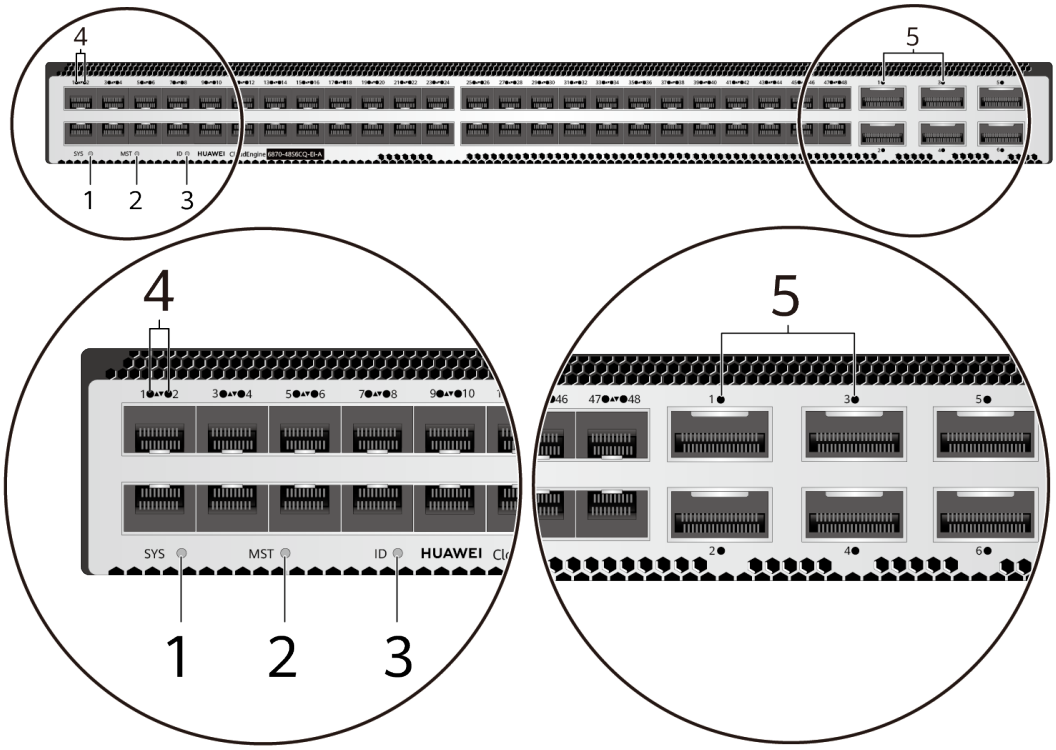
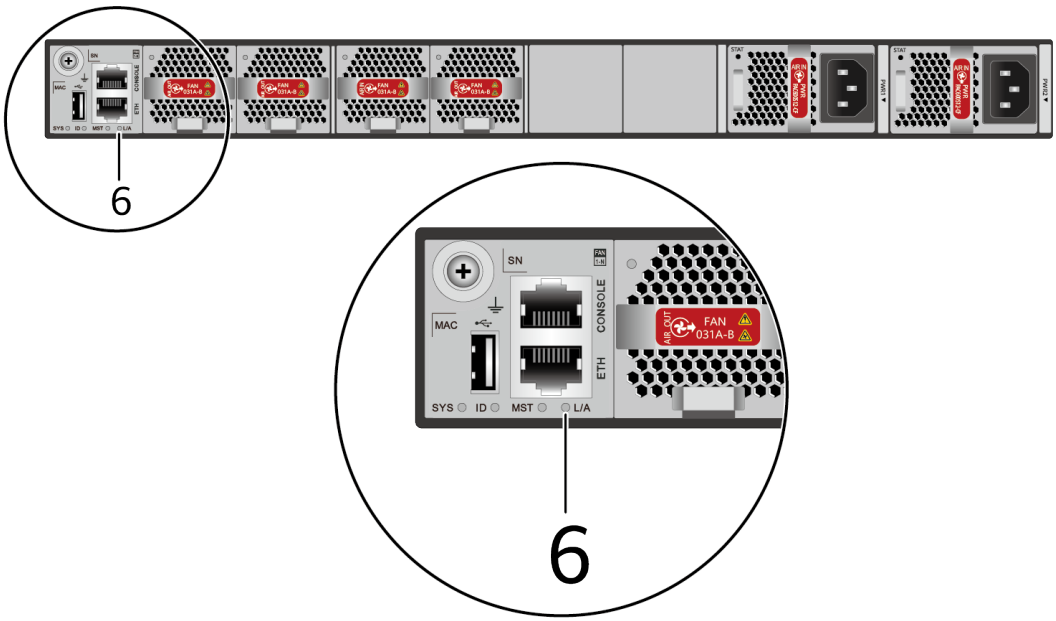


Figure 4-176 Indicators on the CE6870-48S6CQ-EI-A 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	-	-	-	-

Table 4-168 Indicators on the CE6870-48S6CQ-EI-A

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Ports

Table 4-169 Ports on the CE6870-48S6CQ-EI-A

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. 10GE optical ports do not support OSXD22N00 and LE2MXSC80FF0 optical modules. 2. GE copper modules cannot be installed in ports directly above or below another GE copper module. 3. When a 1GE electrical module is installed on a 10GE optical port, the port can work at the rate of 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s, but cannot work in half-duplex mode.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **NOTE** Each 100G QSFP28 port can be configured to work at 40 Gbit/s, and can be split into four 10GE or 25GE ports. After split, they cannot be used as GE ports. Auto-negotiation of 25GE copper cables is not supported.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-177 Front-to-back airflow for port-side exhaust

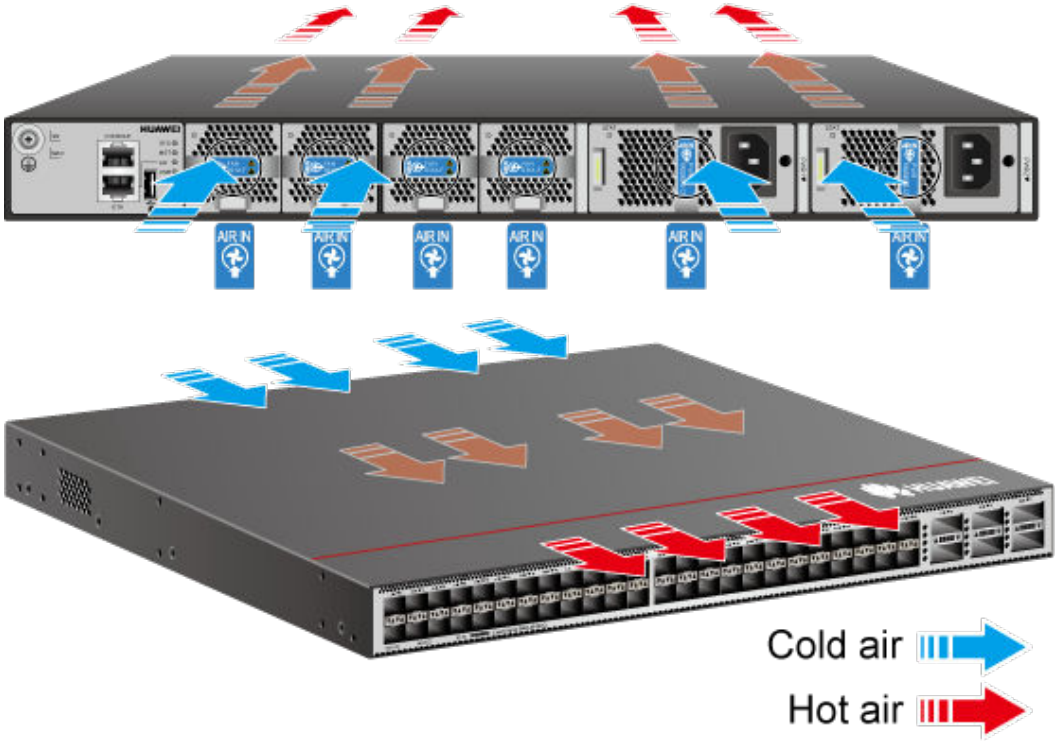
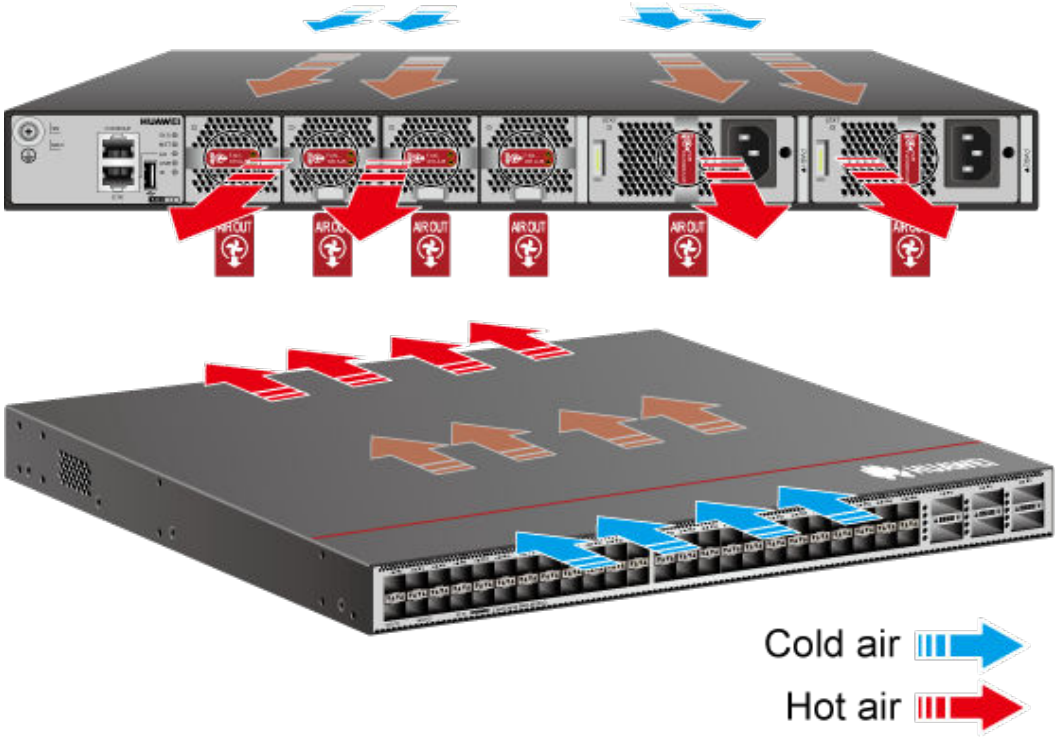


Figure 4-178 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-170 Technical specifications of the CE6870-48S6CQ-EI-A

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	6.2kg (13.67 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.3 kg (18.30 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	9.1 kg (20.06 lb)
Weight with packaging (full configuration) [kg (lb)]	11.1 kg (24.5 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE SFP+ (Such ports can be used as GE SFP optical/electrical ports, and do not support 10GE LRM/80 km linear optical modules. GE copper modules cannot be installed in ports directly above or below another GE copper module.)
Uplink Service interface	6*100GE QSFP28 (Each 100G QSFP28 port can be configured to work at 40 Gbit/s, and can be split into four 10GE or 25GE ports. After split, they cannot be used as GE ports. Auto-negotiation of 25GE copper cables is not supported.)
Service port supporting the stack function	10GE and 100GE optical ports
RTC	Supported
Typical power consumption [W]	142 W (100% traffic load, copper cables on half of ports, normal temperature, dual AC power modules) 159 W (100% traffic load, short-distance optical modules on half of ports, normal temperature, dual AC power modules)
Typical heat dissipation [BTU/hour]	485 BTU/hour (100% traffic load, copper cables on half of ports, normal temperature, dual AC power modules) 543 BTU/hour (100% traffic load, short-distance optical modules on half of ports, normal temperature, dual AC power modules)
Static power consumption [W]	117 W
Static heat dissipation [BTU/hour]	399 BTU/hour

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Item	Specification
Maximum power consumption [W]	209 W (100% traffic load, short-distance optical modules on all ports, normal temperature, dual AC power modules) 323 W (100% traffic load, long-distance optical modules on all ports, 40°C, dual AC power modules)
Maximum heat dissipation	713 BTU/hour (100% traffic load, short-distance optical modules on all ports, normal temperature, dual AC power modules) 1102 BTU/hour (100% traffic load, long-distance optical modules on all ports, 40°C, dual AC power modules)
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1200 W DC power module: –48 V DC to –60 V DC; +48 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1200 W DC power module: -38.4 V DC to -72 V DC; +40 V DC to +57 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1200 W DC power module: 38 A (-48 V DC to -60 V DC); 38 A (+48 V DC)
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1200 W DC power module: 1200 W
Certification	• Compliance with safety standards • Compliance with EMC standards • Compliance with environment and environmental protection standards

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Item	Specification
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front airflow, depending on the selected fan modules and power modules
Availability	0.9999936017
MTBF [year]	34.43 years
MTTR [hour]	1.93 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Port-side air intake: < 50.8 dB(A) Port-side air exhaust: < 50.5 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	Port-side air intake: < 66.8 dB(A) Port-side air exhaust: < 66.7 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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4.4.16 CE6881-48S6CQ

4.4.16.1 CE6881-48S6CQ (02352QGF)

Overview

Table 4-171 Basic information about the CE6881-48S6CQ

Item	Details
Description	CE6881-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, without fan and power modules)
Part Number	02352QGF
Model	CE6881-48S6CQ
First supported version	V200R005C20
Other part numbers	02352QGG (CE6881-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02352QGH (CE6881-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)) 02353KCY (CE6881-48S6CQ discount bundle A (2*CE6881-48S6CQ-B switch [48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake])) 02353KDR (CE6881-48S6CQ discount bundle A (2*CE6881-48S6CQ-F switch [48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust]))
Short Name	CE6881

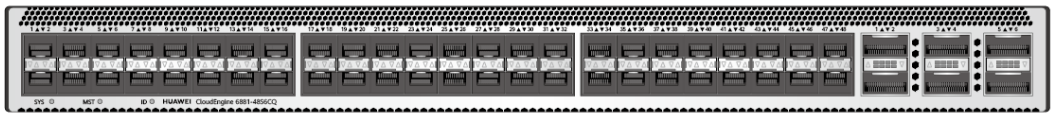
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Appearance

Figure 4-179 Appearance of the CE6881-48S6CQ



Front (power supply side)



Rear (port side)

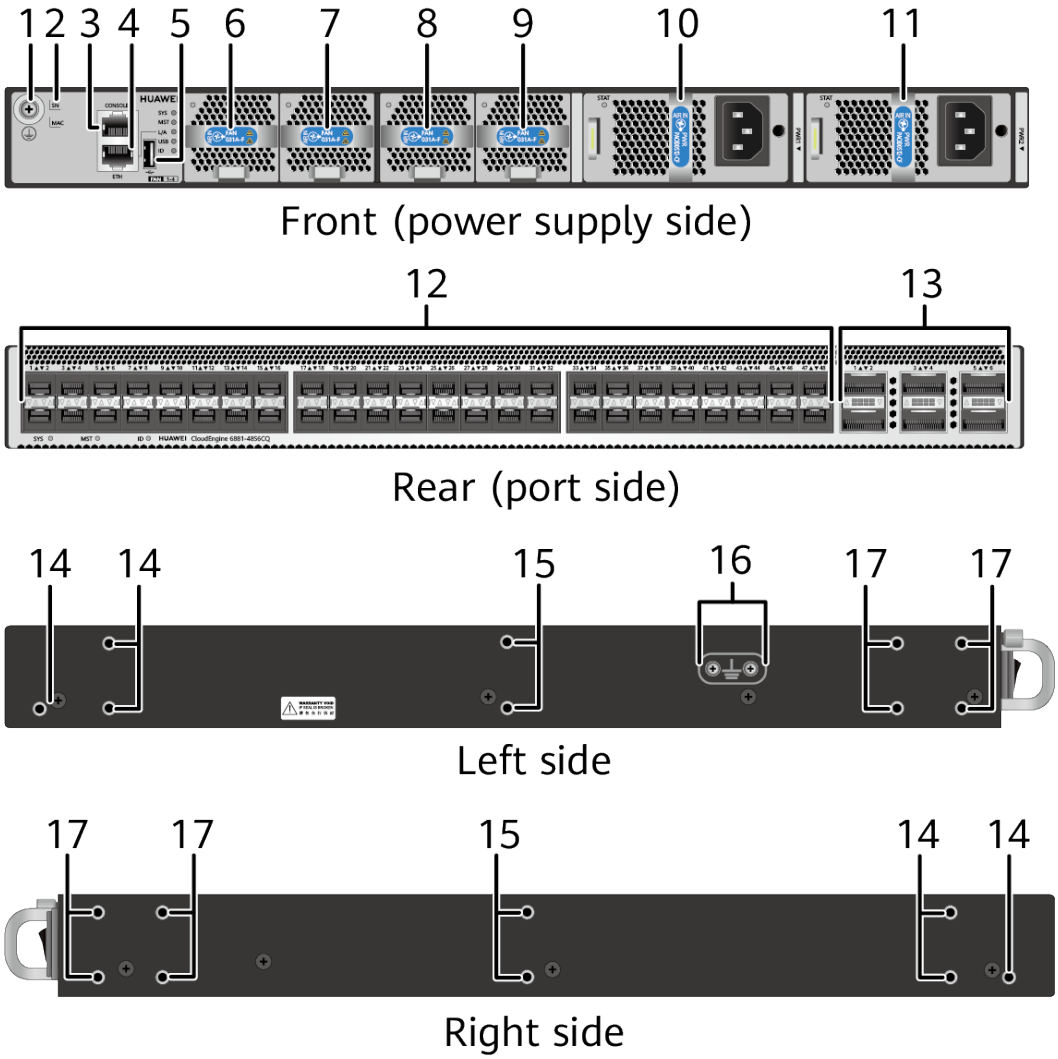
NOTE

The figures in this document are for reference only.

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Components

Figure 4-180 Components of the CE6881-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-172 Slots on the CE6881-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Supply Slots	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-181 Indicators on the CE6881-48S6CQ 1

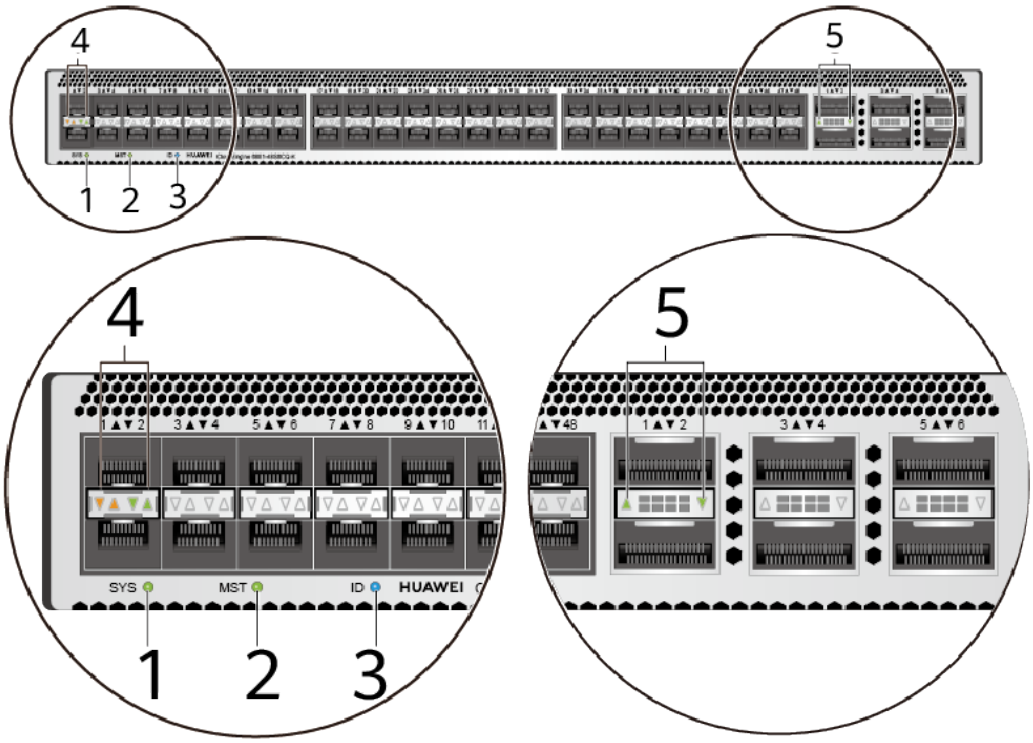
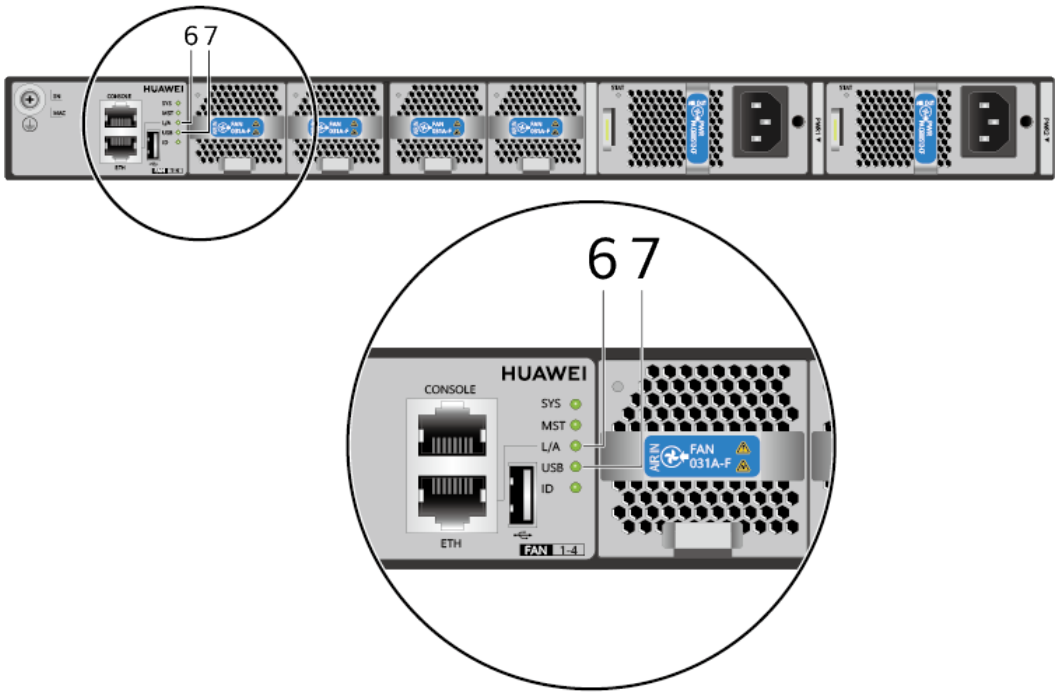


Figure 4-182 Indicators on the CE6881-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-173 Indicators on the CE6881-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power supply is abnormal. • A fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The switch is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE • In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. • After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The switch is a stack master or standalone switch.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	No link is established on the port or the port is disabled.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	No link is established on the port or the port is disabled.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-174 Ports on the CE6881-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category 5 or higher network cables must be used.

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Port	Connector Type	Description	Available Components
USB port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB flash drive that complies with USB 2.0

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-183** (using a CE6866-48S8CQ-P chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-184** (using a CE6866-48S8CQ-P chassis as an example).

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Figure 4-183 Front-to-back airflow for port-side exhaust

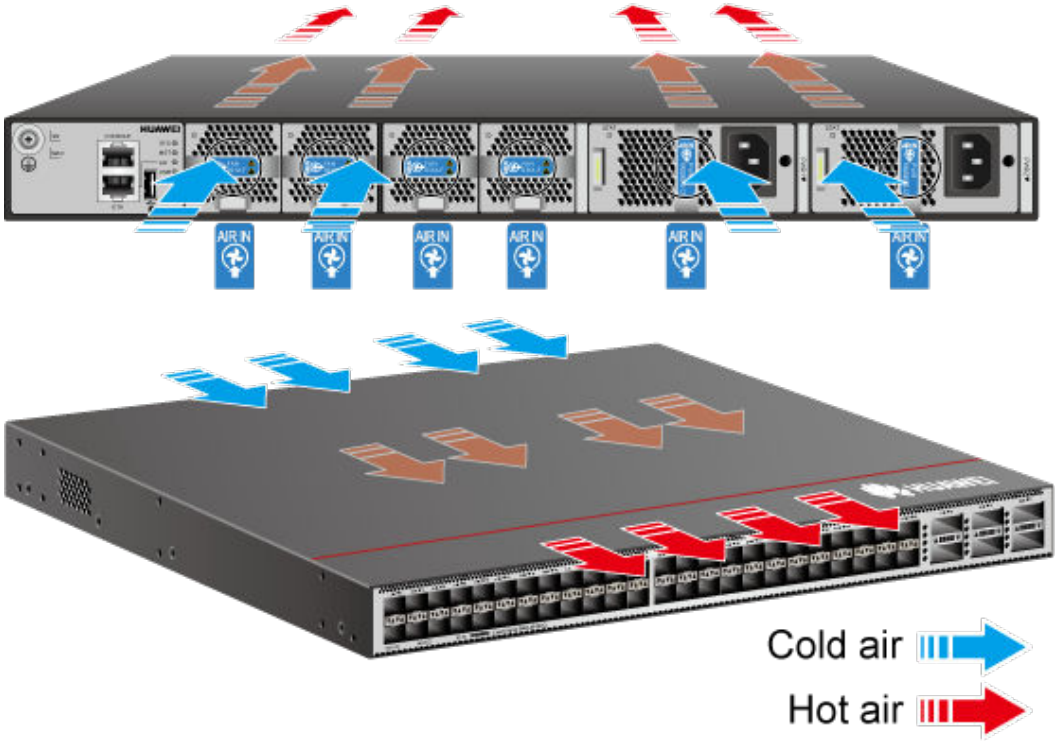
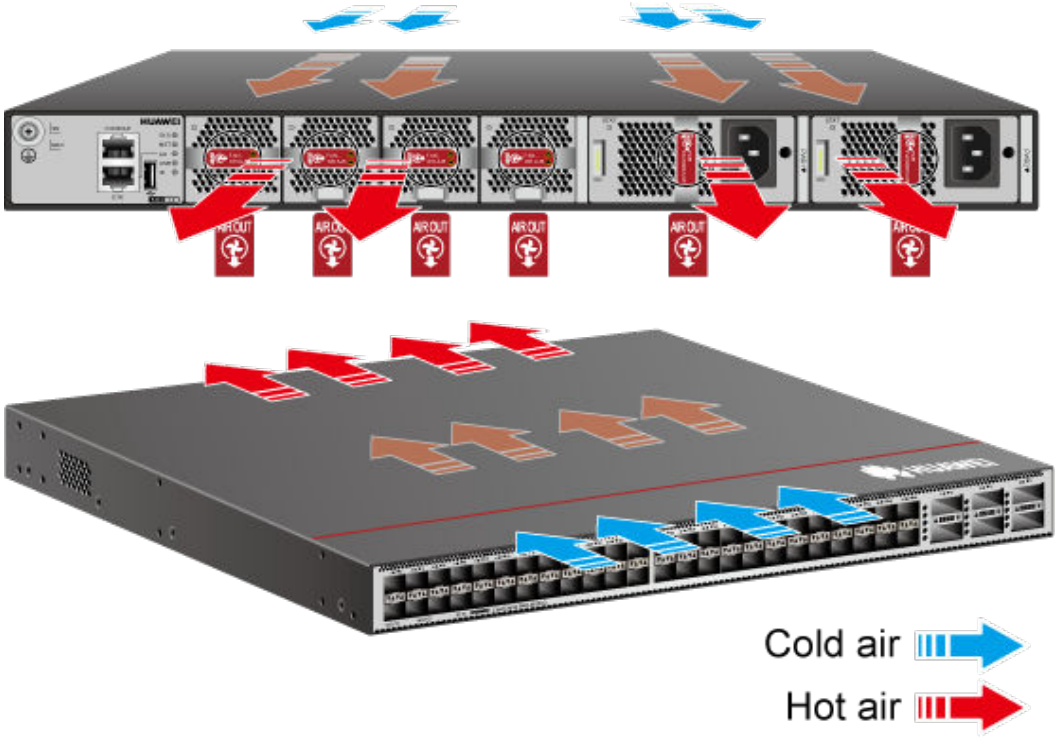


Figure 4-184 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-175 Technical specifications of the CE6881-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.16.2 CE6881-48S6CQ (02352QGF-001)

Overview

Table 4-176 Basic information about the CE6881-48S6CQ

Item	Details
Description	CE6881-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)
Part Number	02352QGF-001
Model	CE6881-48S6CQ
First supported version	V200R020C10
Other part numbers	02352QGG-001 (CE6881-48S6CQ switch, 48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake) 02352QGH-001 (CE6881-48S6CQ switch, 48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)
Supported Patch Version	If the switch runs V200R019C10SPC800, install the patch of V200R019SPH007 or a later version.
Short Name	CE6881

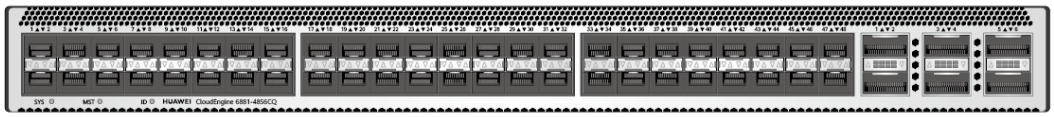
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Appearance

Figure 4-185 Appearance of the CE6881-48S6CQ



Front (power supply side)



Rear (port side)

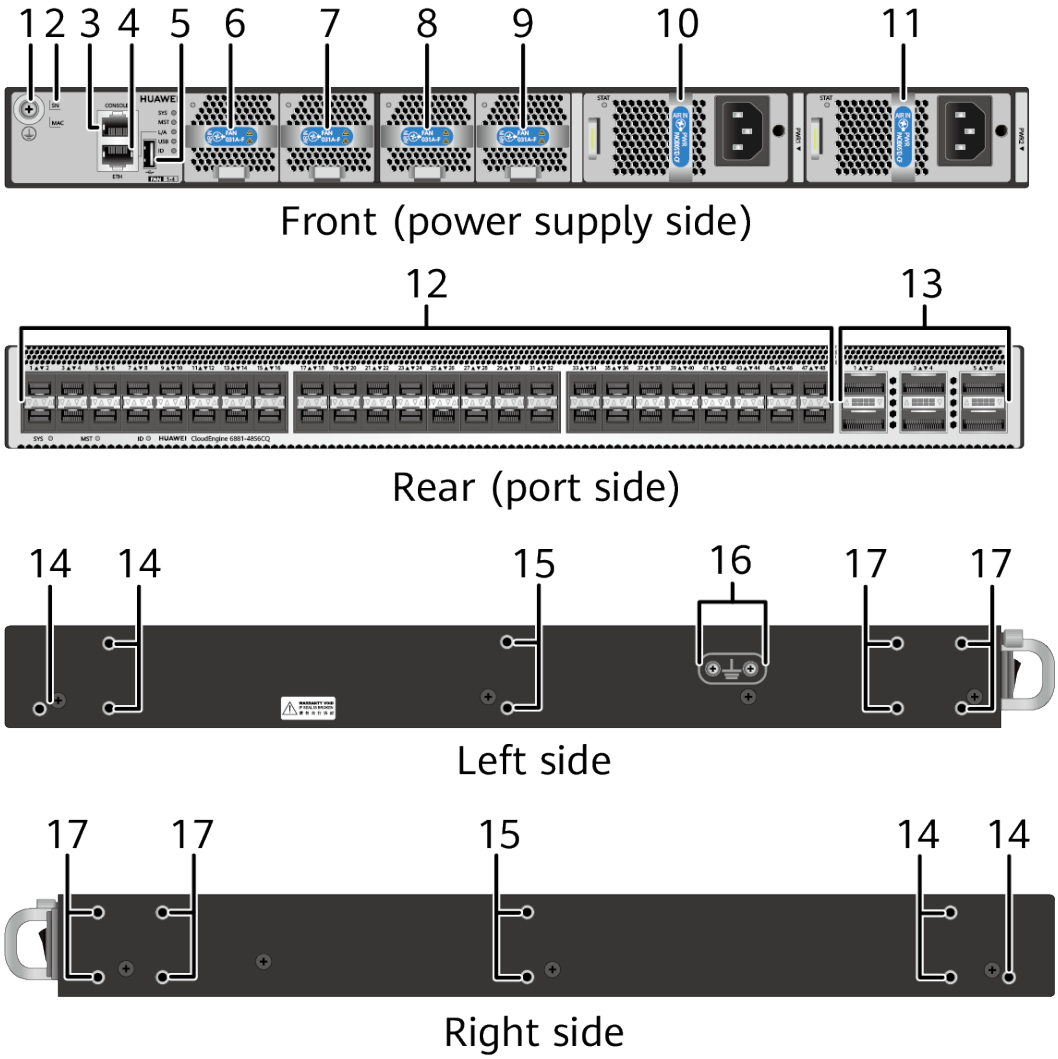
NOTE

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Components

Figure 4-186 Components of the CE6881-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-177 Slots on the CE6881-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power Supply Slots	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan Slots	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-187 Indicators on the CE6881-48S6CQ 1

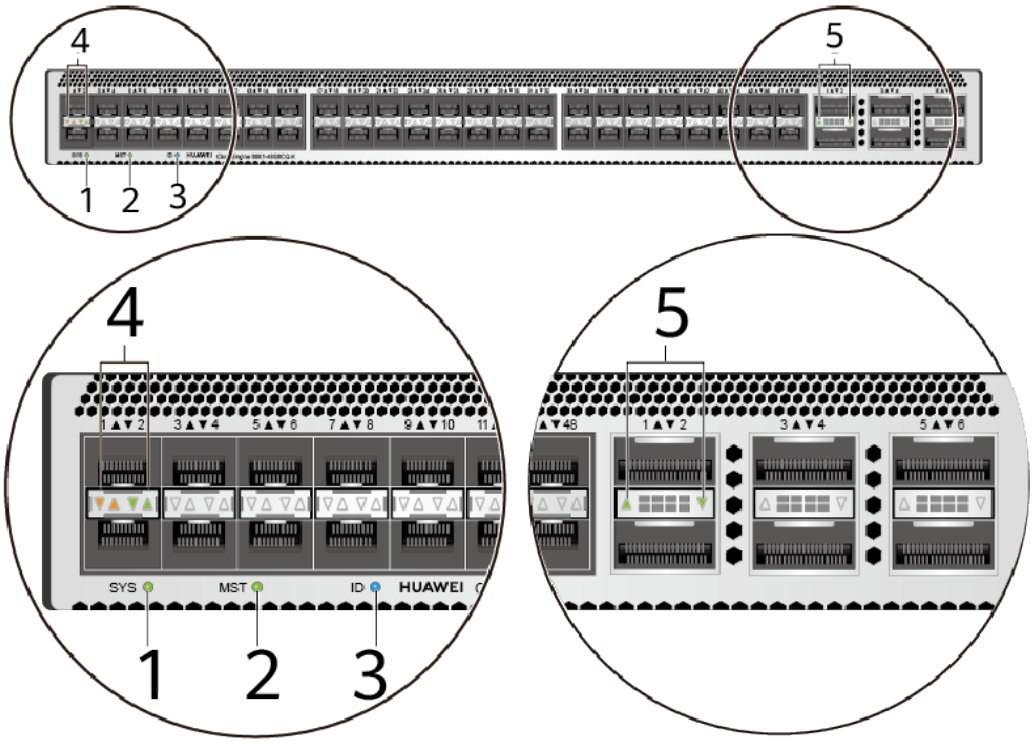
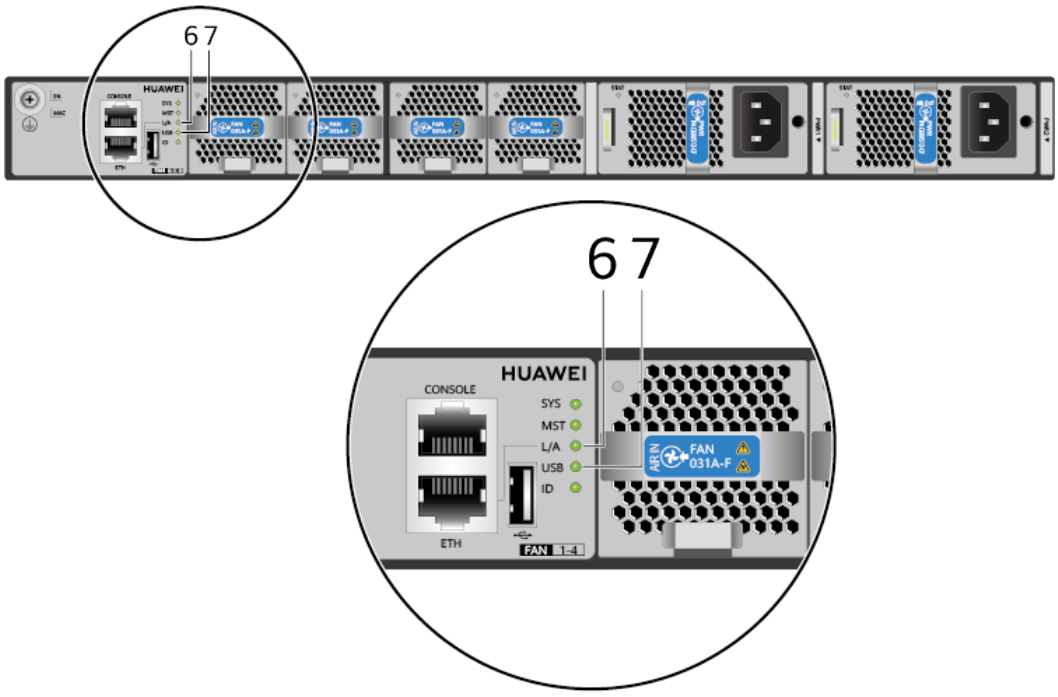


Figure 4-188 Indicators on the CE6881-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-178 Indicators on the CE6881-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power supply is abnormal. • A fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The switch is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE • In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. • After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The switch is a stack master or standalone switch.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	No link is established on the port or the port is disabled.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	No link is established on the port or the port is disabled.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-179 Ports on the CE6881-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 Optical Port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category 5 or higher network cables must be used.

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Port	Connector Type	Description	Available Components
USB port	USB	A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.	USB flash drive that complies with USB 2.0

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-189** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-190** (using a CE6863 chassis as an example).

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Figure 4-189 Front-to-back airflow for port-side exhaust

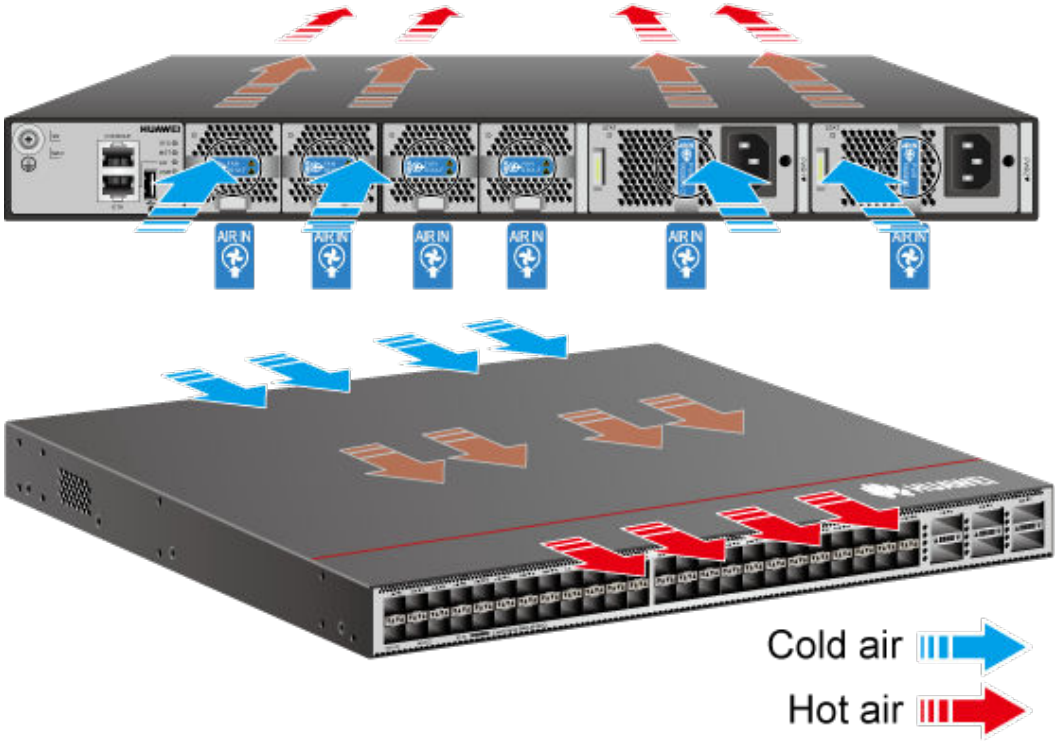
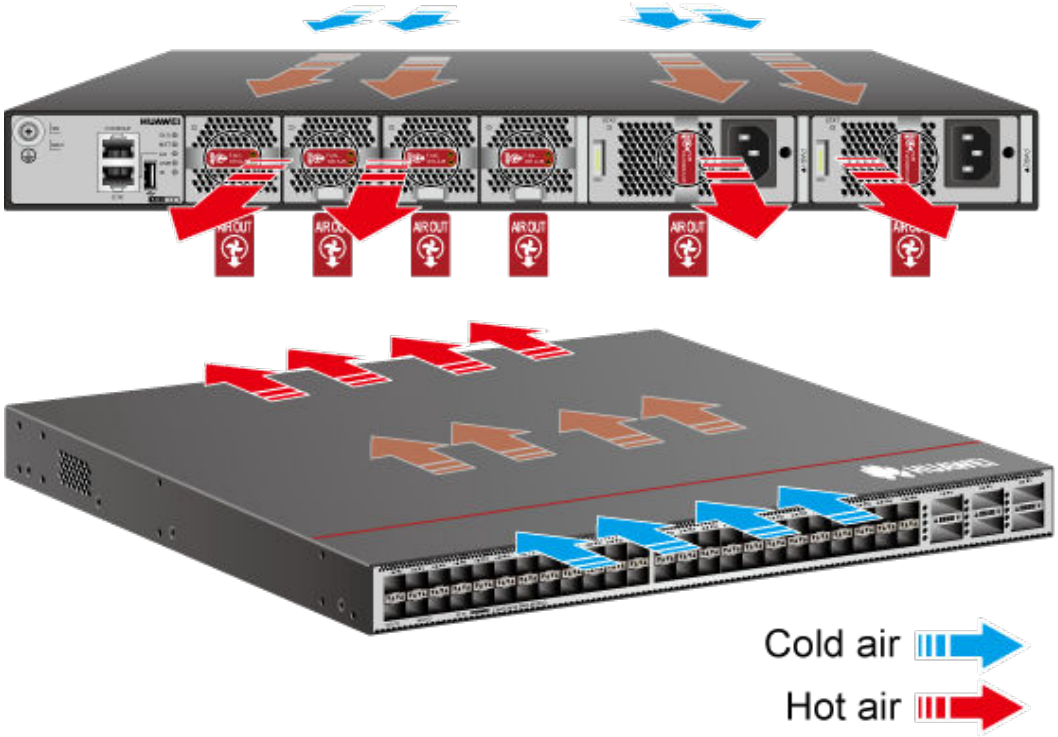


Figure 4-190 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-180 Technical specifications of the CE6881-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, double power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, double power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.16.3 CE6881-48S6CQ (02352QGF-003)

Overview

Table 4-181 Basic information about the CE6881-48S6CQ

Item	Details
Description	CE6881-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, without fan and power modules)
Part Number	02352QGF-003
Model	CE6881-48S6CQ
First supported version	V200R021C10SPC600
Other part numbers	02352QGG-003 (CE6881-48S6CQ switch, 48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake) 02352QGH-003 (CE6881-48S6CQ switch, 48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)
Supported Patch Version	If the switch runs V200R019C10SPC800, install the patch of V200R019SPH030 or a later version. If the switch runs V200R021C00SPC200, install the patch of V200R021HP0101 or a later version.
Short Name	CE6881

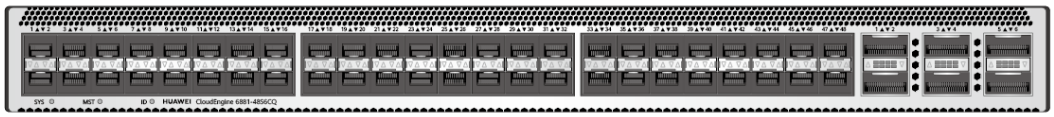
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Appearance

Figure 4-191 Appearance of the CE6881-48S6CQ



Front (power supply side)



Rear (port side)

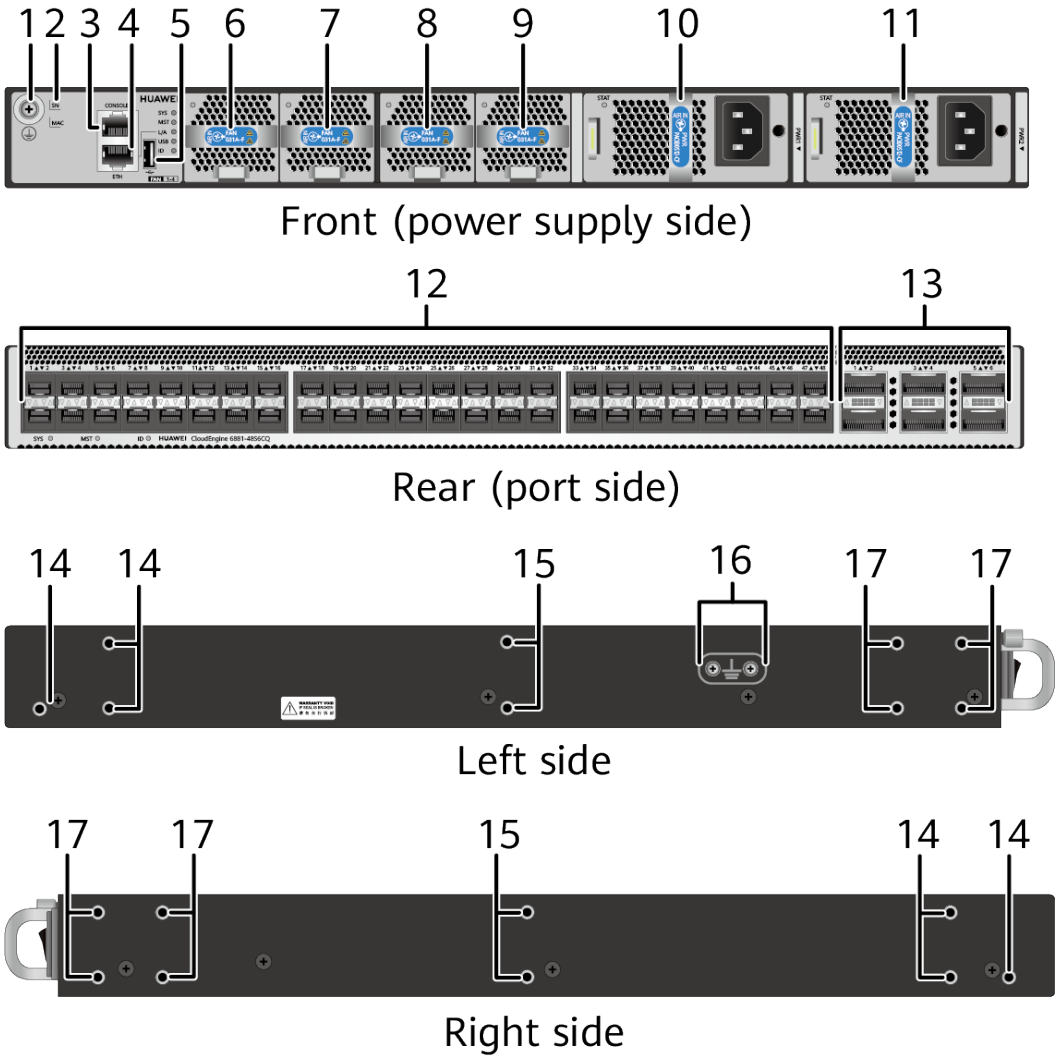
NOTE

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Components

Figure 4-192 Components of the CE6881-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-182 Slots on the CE6881-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-193 Indicators on the CE6881-48S6CQ 1

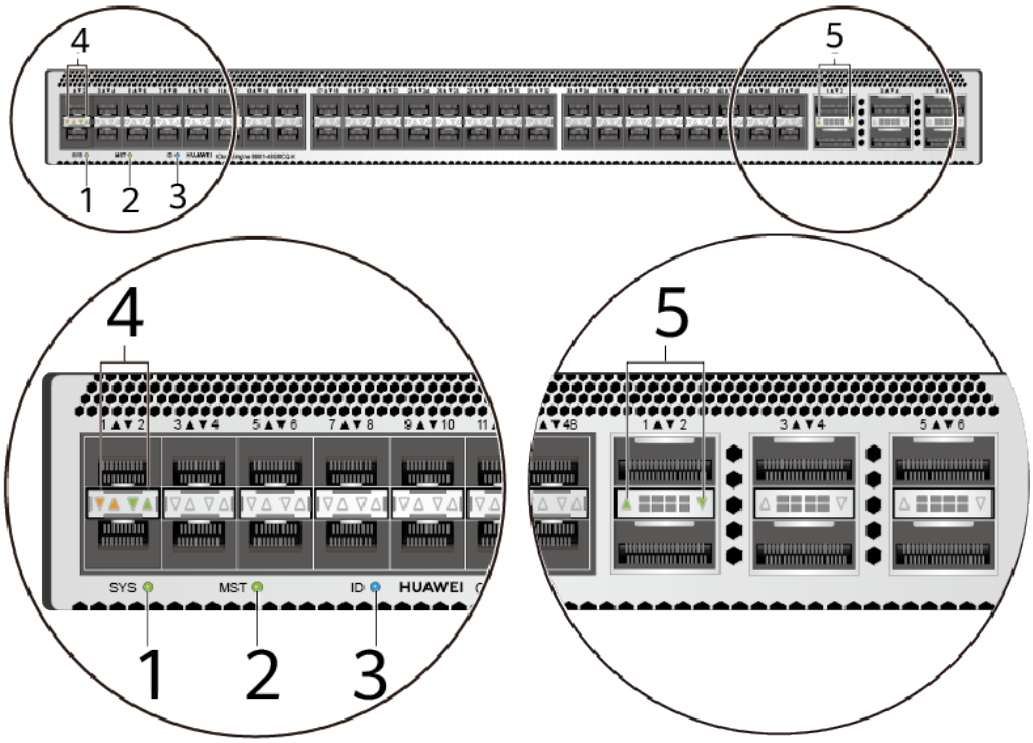
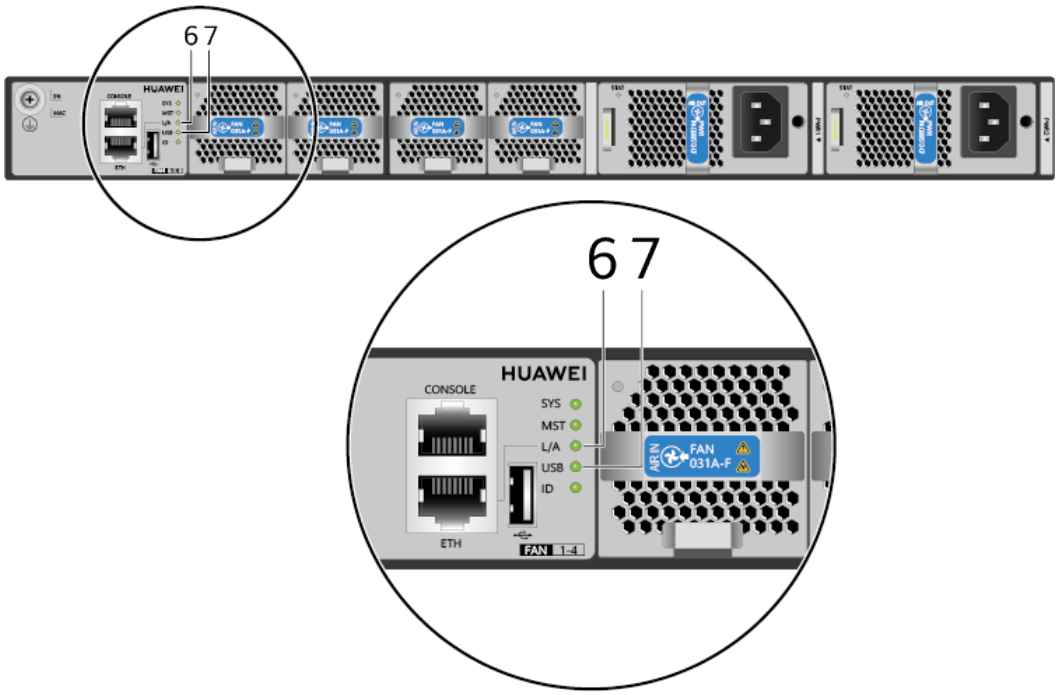


Figure 4-194 Indicators on the CE6881-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-183 Indicators on the CE6881-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-184 Ports on the CE6881-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1) When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2) 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-195** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-196** (using a CE6863 chassis as an example).

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Figure 4-195 Front-to-back airflow for port-side exhaust

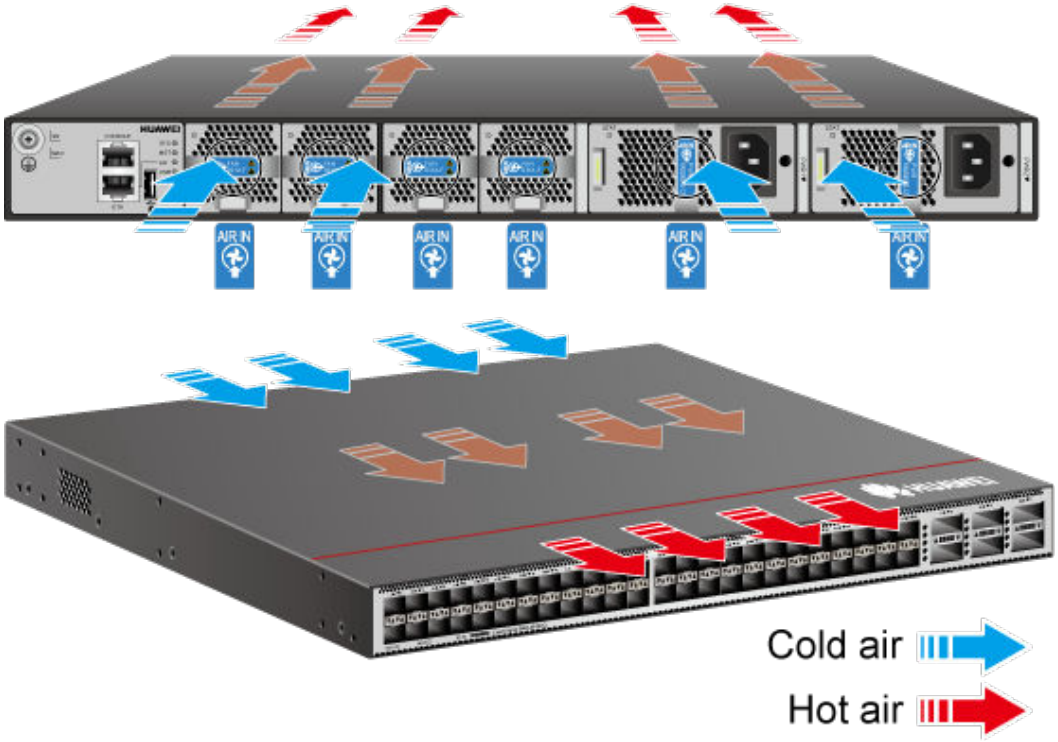
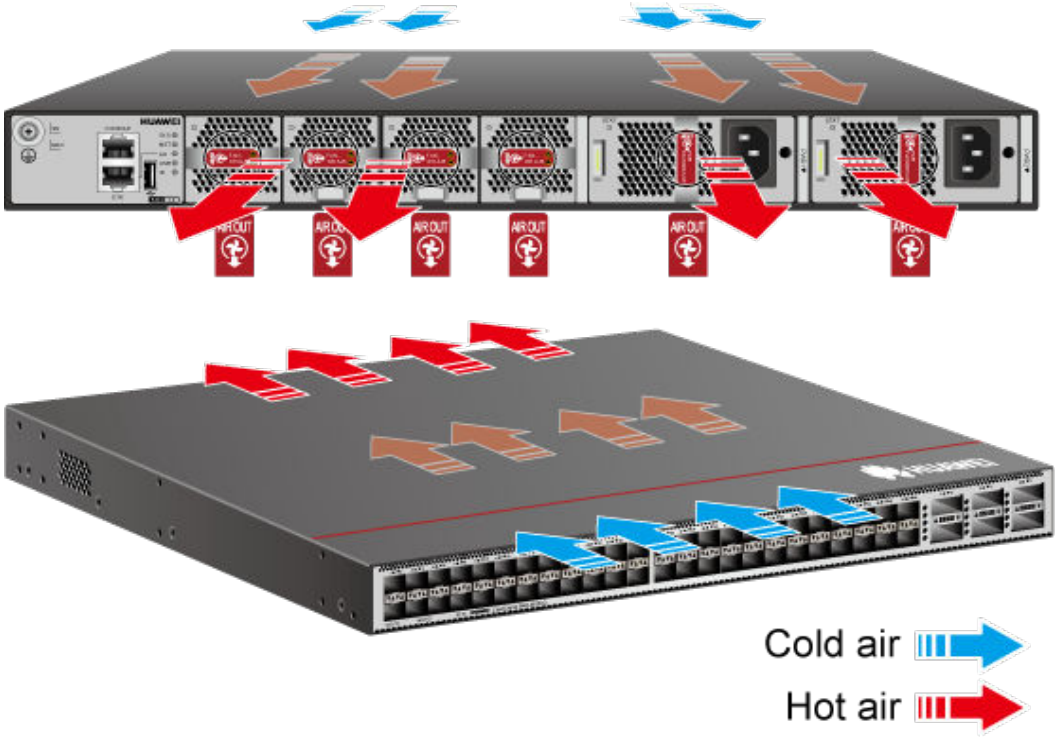


Figure 4-196 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-185 Technical specifications of the CE6881-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC

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Item	Specification
Console port	RJ45
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Compliance with safety standards • Compliance with EMC standards • Compliance with environment and environmental protection standards
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front airflow, depending on the selected fan modules and power modules
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40ºC to +70ºC (-40°F to +158°F)

4.4.16.4 CE6881-48S6CQ (02352QGF-004)

Overview

Table 4-186 Basic information about the CE6881-48S6CQ

Item	Details
Description	CE6881-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, without fan and power modules)
Part Number	02352QGF-004
Model	CE6881-48S6CQ
First supported version	V200R021C10SPC600
Other part numbers	02352QGG-004 (CE6881-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02352QGH-004 (CE6881-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R019C10SPC800, install the patch of V200R019SPH050 or a later version. If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6881

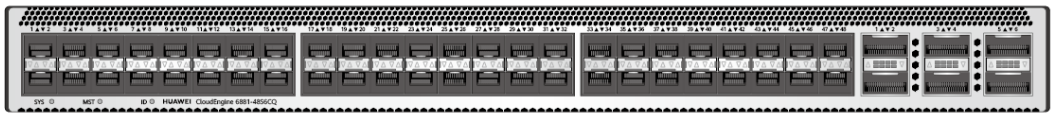
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Appearance

Figure 4-197 Appearance of the CE6881-48S6CQ



Front (power supply side)



Rear (port side)

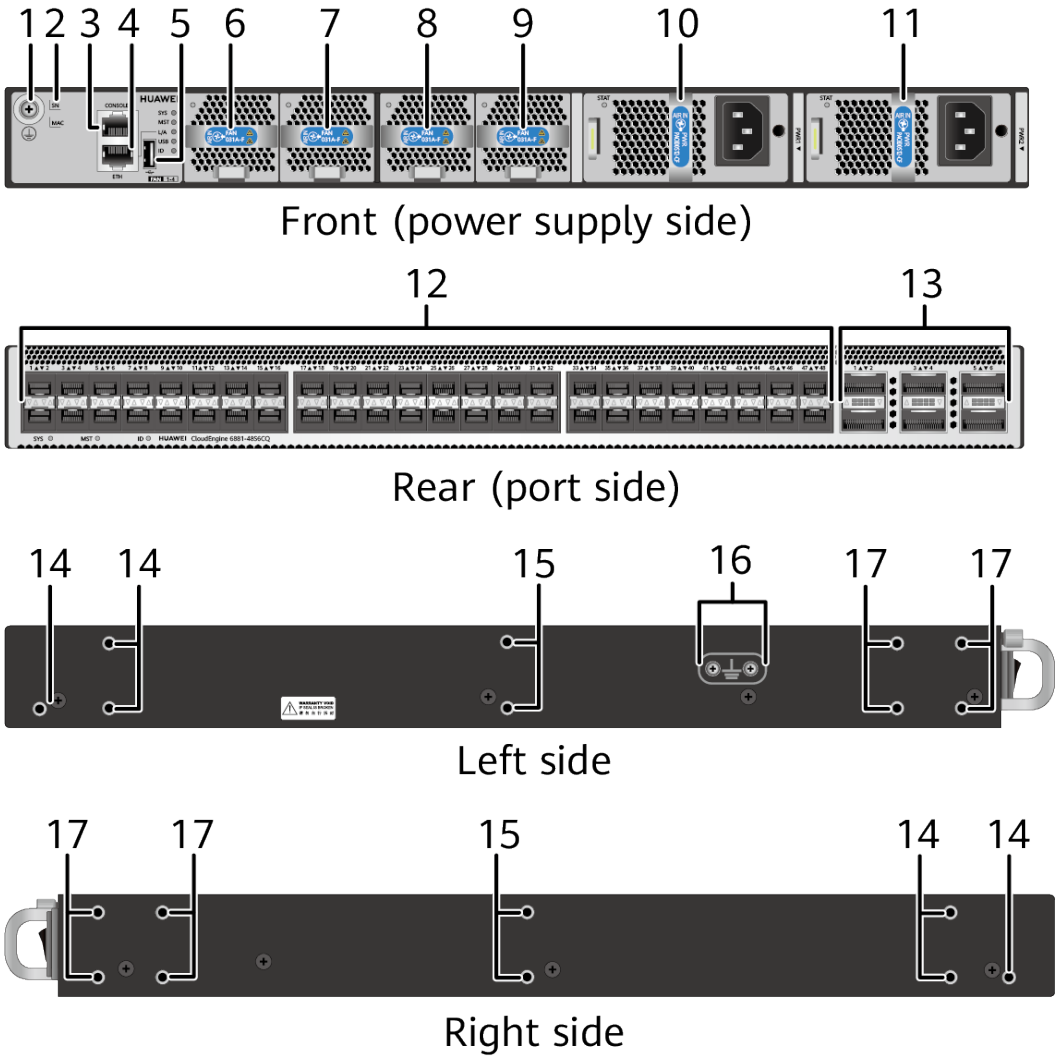
NOTE

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Components

Figure 4-198 Components of the CE6881-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-187 Slots on the CE6881-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-199 Indicators on the CE6881-48S6CQ 1

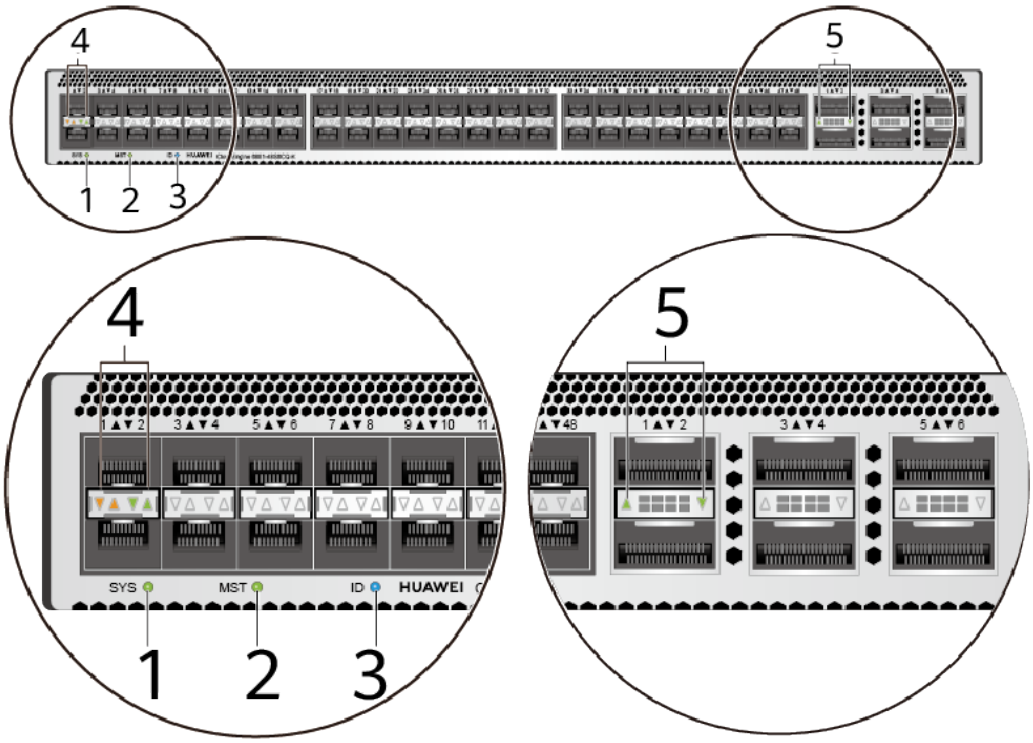
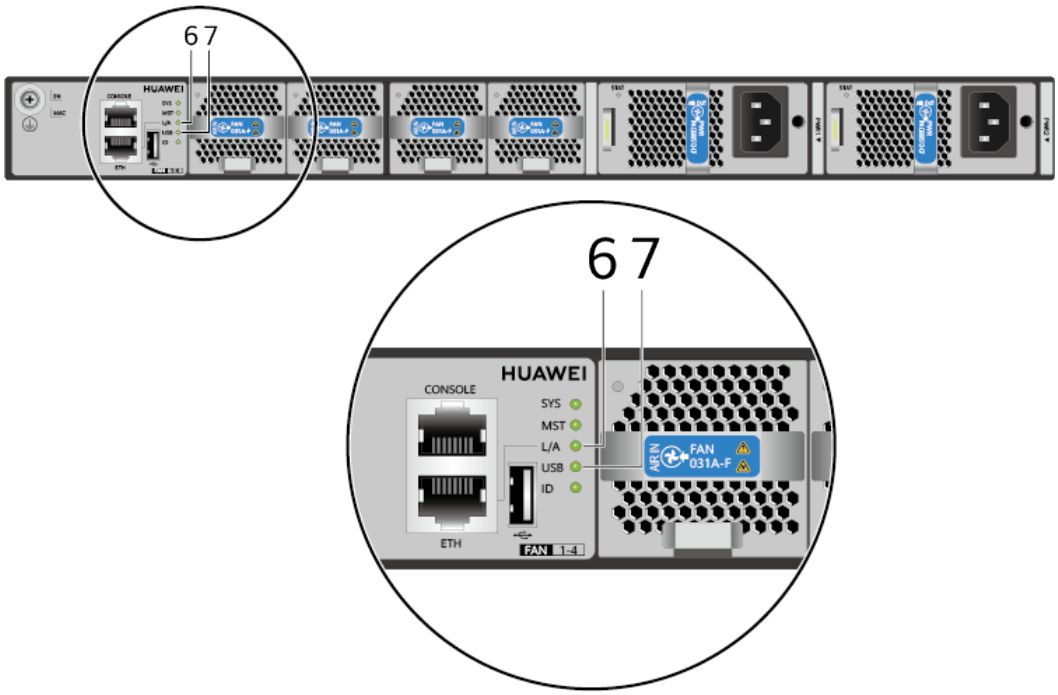


Figure 4-200 Indicators on the CE6881-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-188 Indicators on the CE6881-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-189 Ports on the CE6881-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1) When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2) 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-201 Front-to-back airflow for port-side exhaust

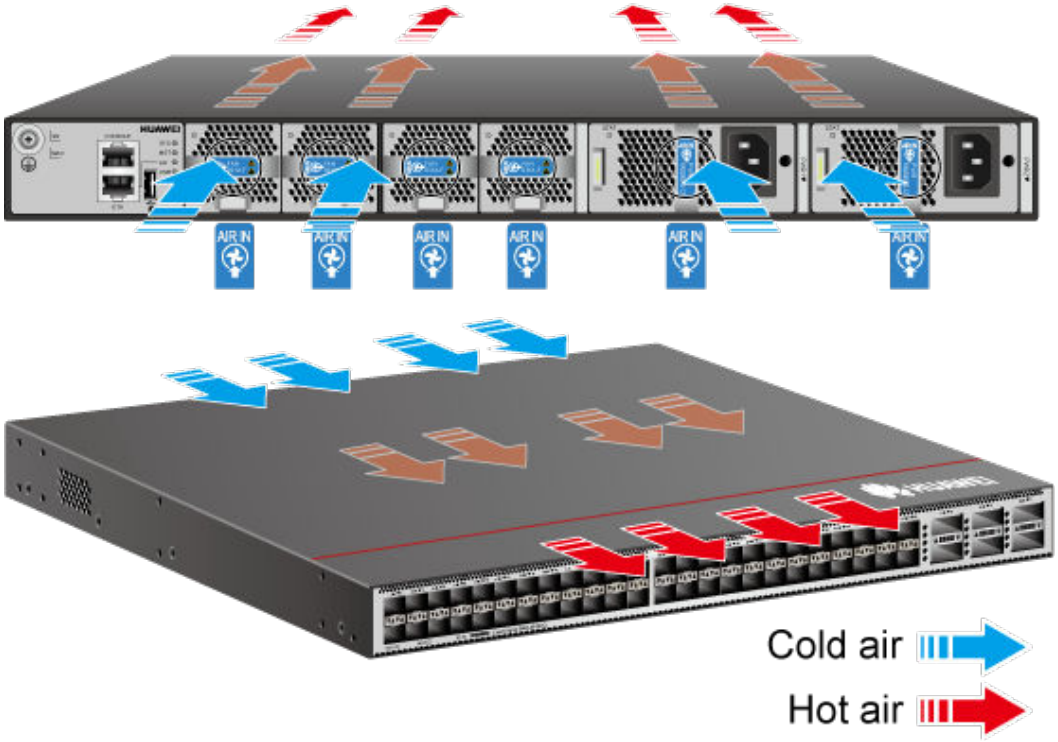
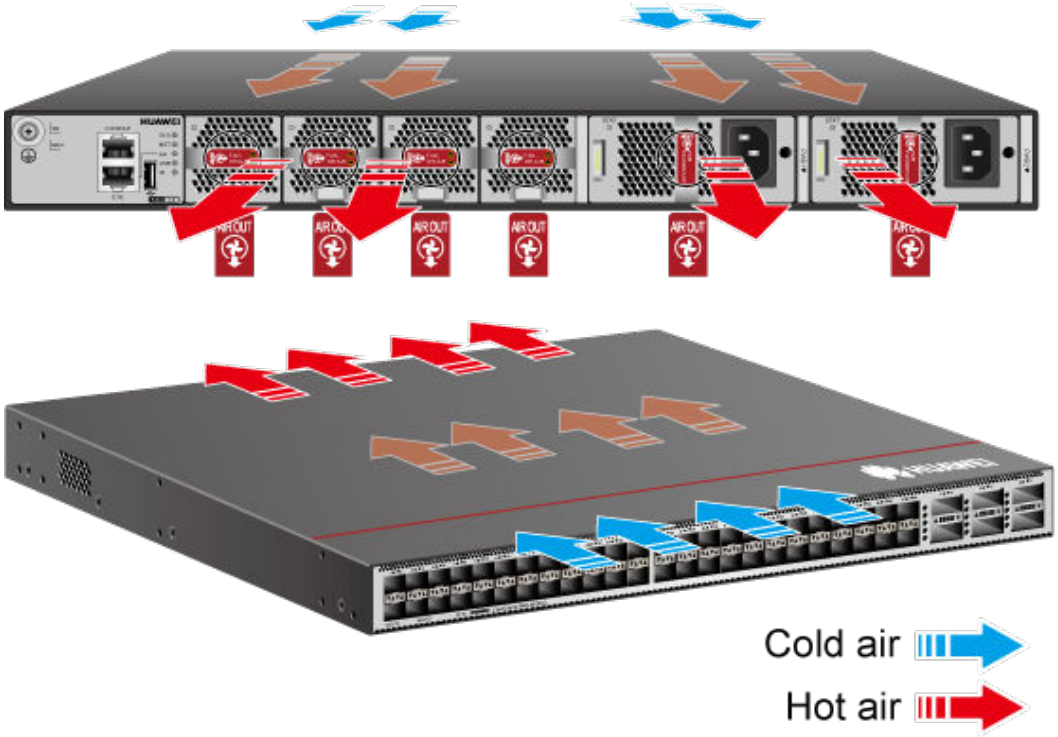


Figure 4-202 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-190 Technical specifications of the CE6881-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC

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Item	Specification
Console port	RJ45
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Compliance with safety standards • Compliance with EMC standards • Compliance with environment and environmental protection standards
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front airflow, depending on the selected fan modules and power modules
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

4.4.16.5 CE6881-48S6CQ (02352QGF-006)

Overview

Table 4-191 Basic information about the CE6881-48S6CQ

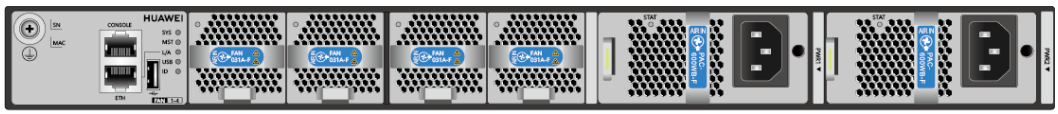
Item	Details
Description	CE6881-48S6CQ switch (48*10G SFP+, 6*100G QSFP28, without fan and power modules)
Part Number	02352QGF-006
Model	CE6881-48S6CQ
First supported version	V200R021C10SPC600

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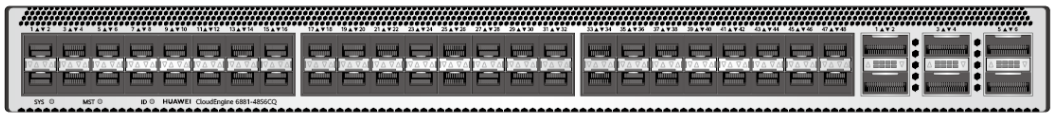
Item	Details
Other part numbers	02352QGG-006 (CE6881-48S6CQ switch, 48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake) 02352QGH-006 (CE6881-48S6CQ switch, 48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust) 02355MCT (CE6881-48S6CQ switch, 48*10G SFP+, 6*100G QSFP28, without fan and power modules) 02355MCU (CE6881-48S6CQ-B switch, 48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake) 02355MCV (CE6881-48S6CQ-F switch, 48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust)
Supported Patch Version	If the switch runs V200R019C10SPC800, install the patch of V200R019SPH050 or a later version. If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6881

Appearance

Figure 4-203 Appearance of the CE6881-48S6CQ



Front (power supply side)



Rear (port side)

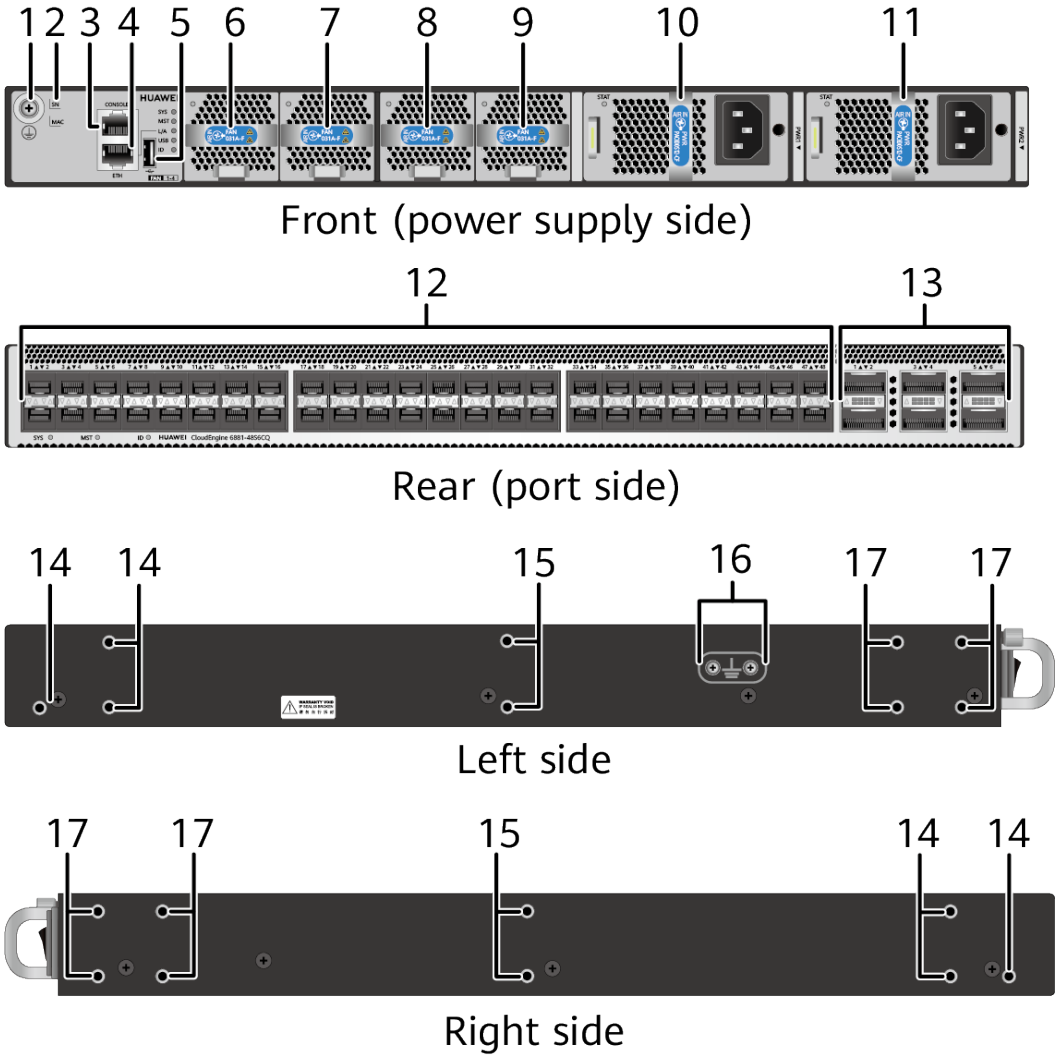
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NOTE

The figures in this document are for reference only.

Components

Figure 4-204 Components of the CE6881-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1

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7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1
11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-192 Slots on the CE6881-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-205 Indicators on the CE6881-48S6CQ 1

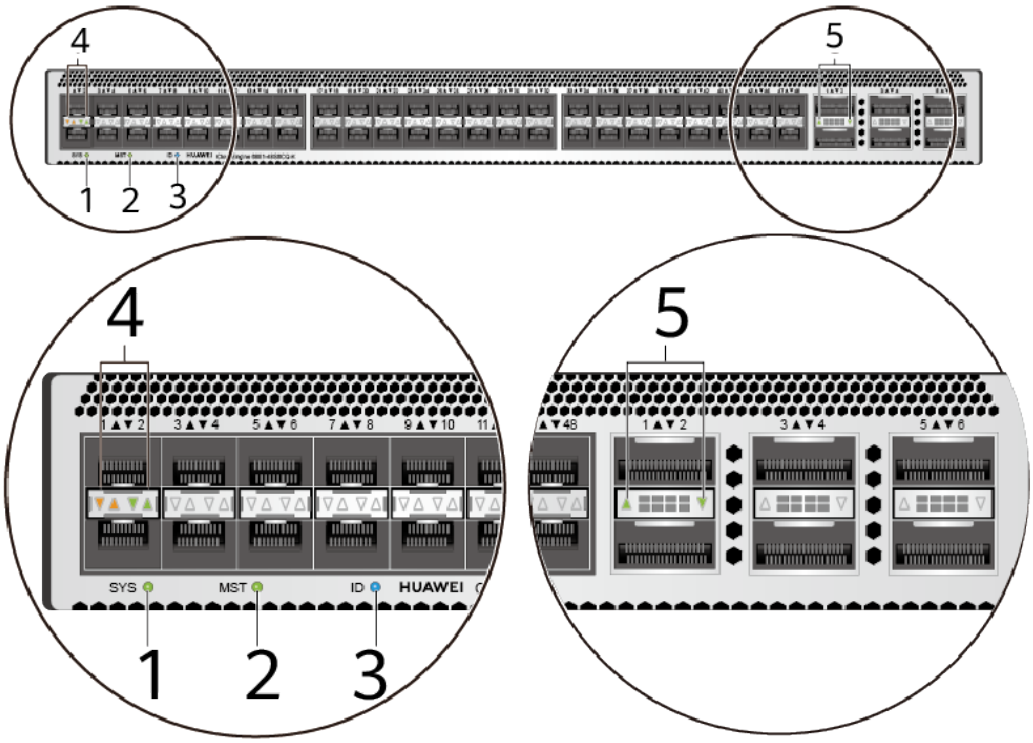
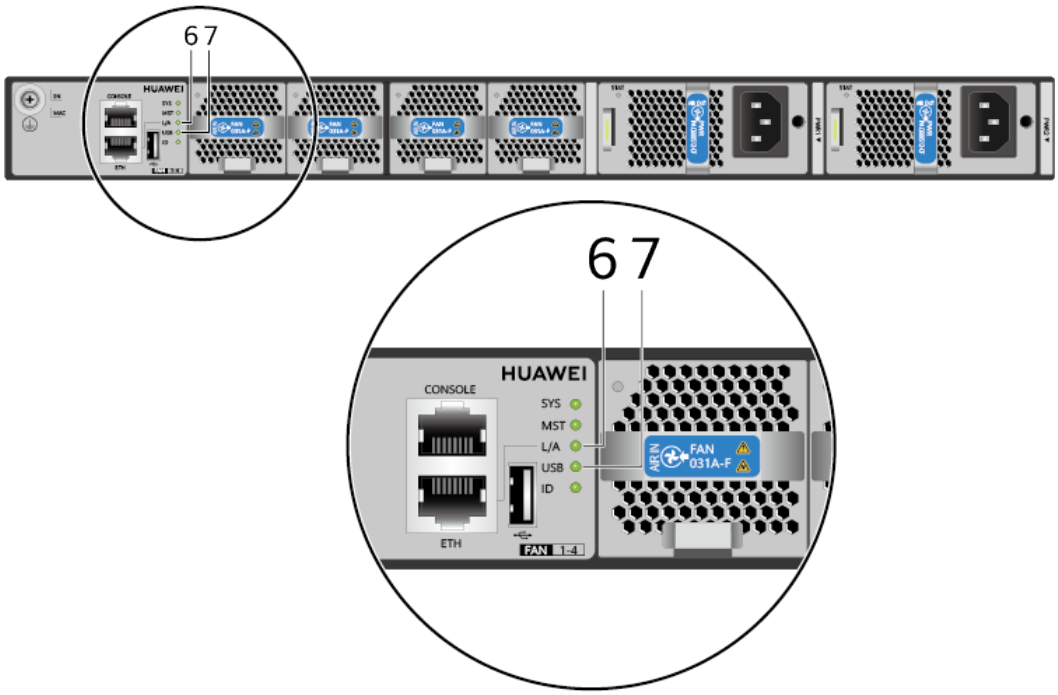


Figure 4-206 Indicators on the CE6881-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-193 Indicators on the CE6881-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-194 Ports on the CE6881-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1) When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2) 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-207 Front-to-back airflow for port-side exhaust

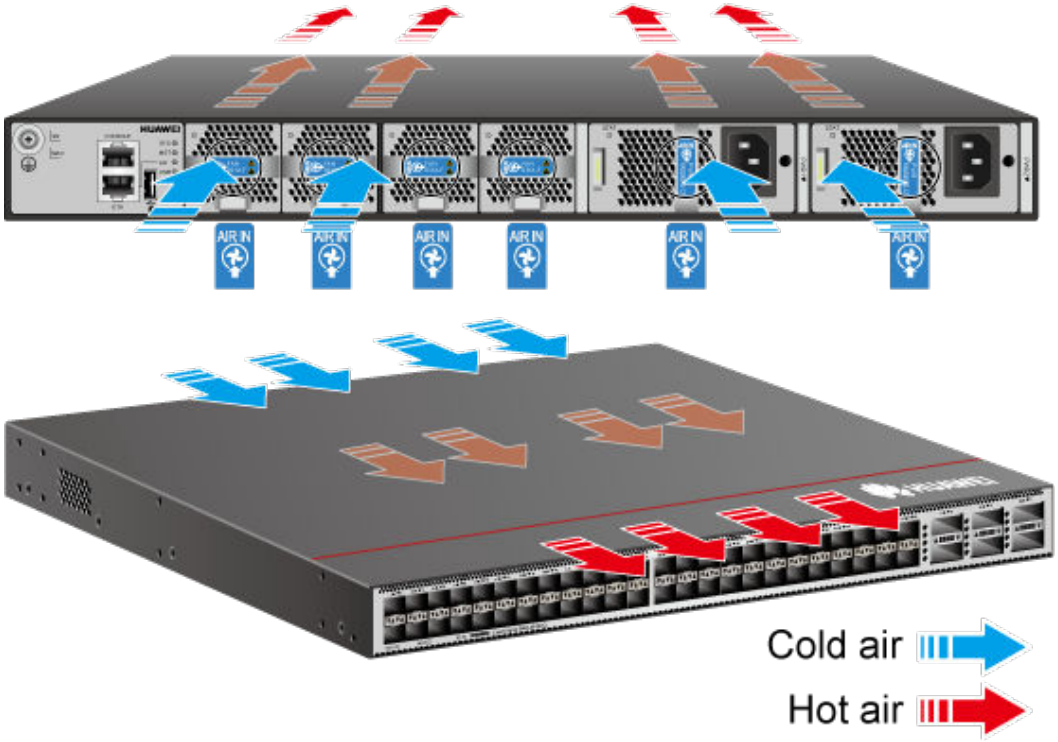
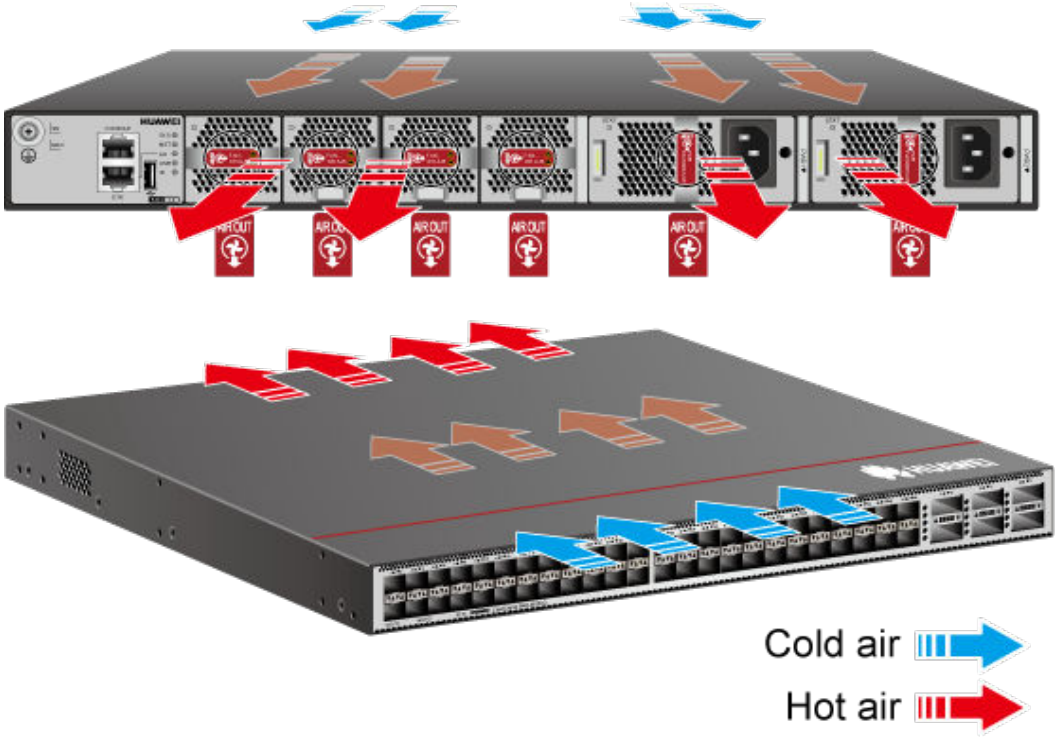


Figure 4-208 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-195 Technical specifications of the CE6881-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC

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Item	Specification
Console port	RJ45
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Compliance with safety standards • Compliance with EMC standards • Compliance with environment and environmental protection standards
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front airflow, depending on the selected fan modules and power modules
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40ºC to +70ºC (-40°F to +158°F)

4.4.16.6 CE6881-48S6CQ (02352QGF-007)

Overview

Table 4-196 Basic information about the CE6881-48S6CQ

Item	Details
Description	CE6881-48S6CQ switch (48*10GE SFP+, 6*100GE QSFP28, without fan and power modules)
Part Number	02352QGF-007
Model	CE6881-48S6CQ
First supported version	V200R021C10SPC600
Supported Patch Version	If the switch runs V200R019C10SPC800, install the patch of V200R019SPH050 or a later version. If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6881

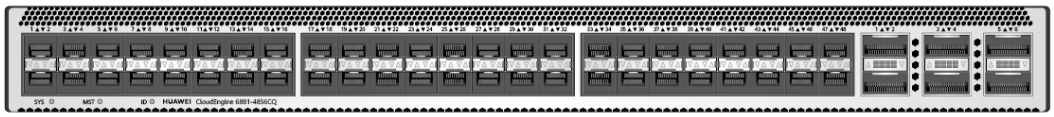
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Appearance

Figure 4-209 Appearance of the CE6881-48S6CQ



Front (power supply side)



Rear (port side)

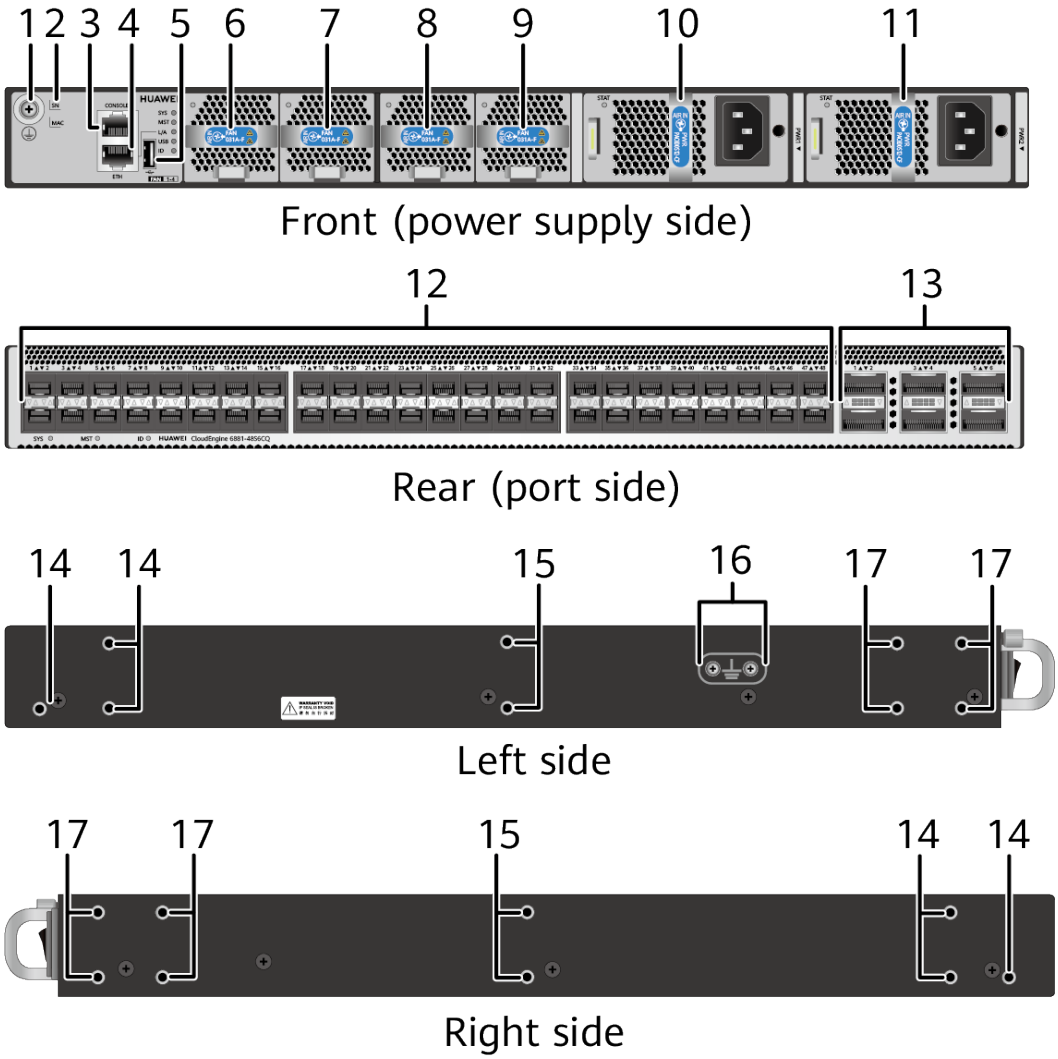
NOTE

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Components

Figure 4-210 Components of the CE6881-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-197 Slots on the CE6881-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-211 Indicators on the CE6881-48S6CQ 1

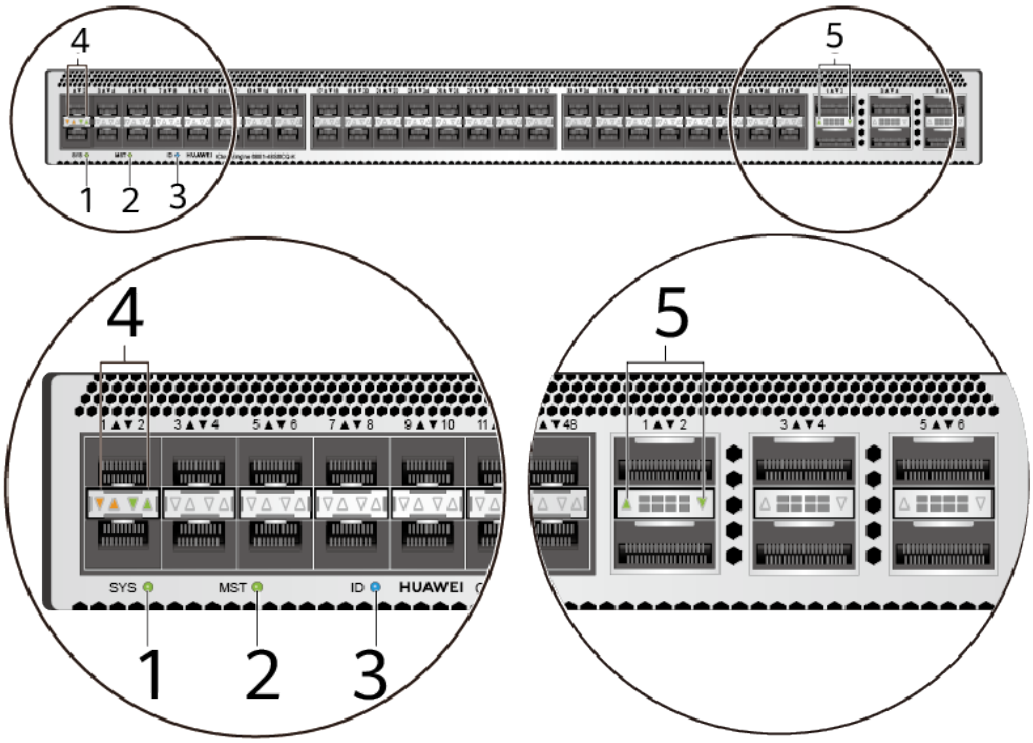
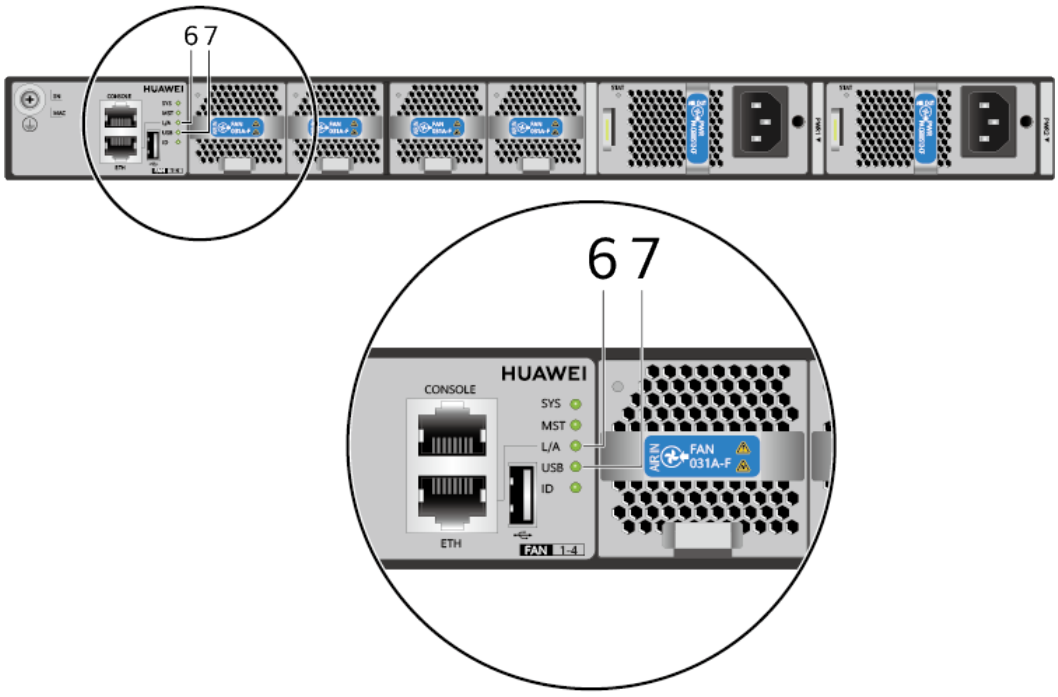


Figure 4-212 Indicators on the CE6881-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-198 Indicators on the CE6881-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-199 Ports on the CE6881-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-213 Front-to-back airflow for port-side exhaust

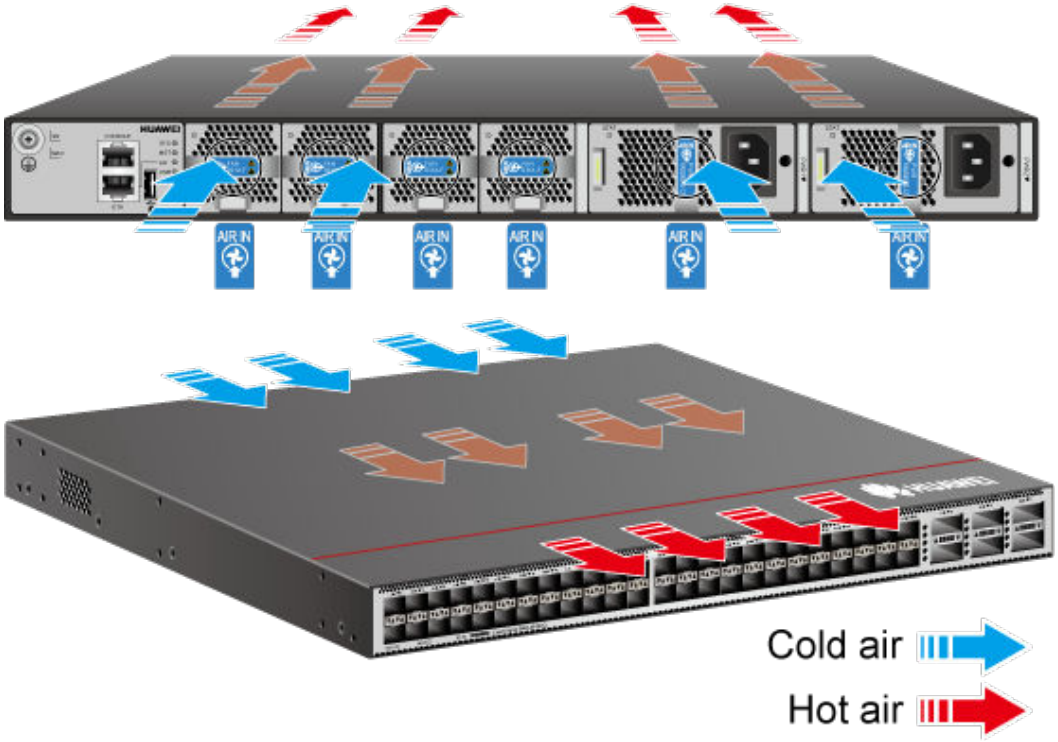
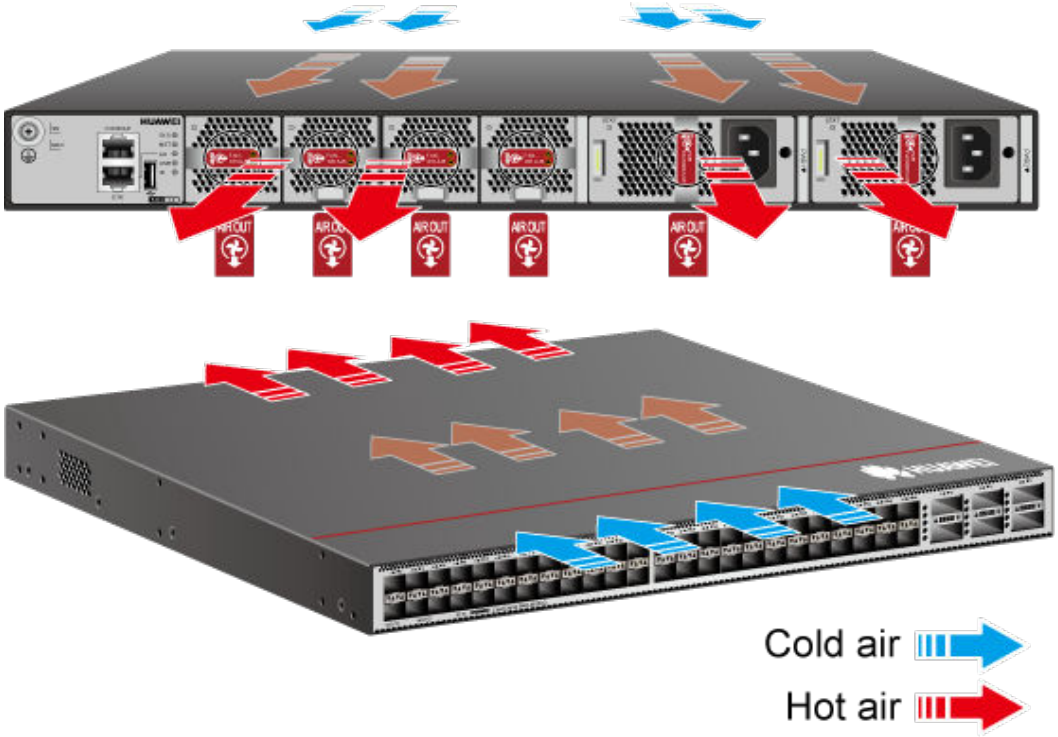


Figure 4-214 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-200 Technical specifications of the CE6881-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.57 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules but excluding optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC

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Item	Specification
Console port	RJ45
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Compliance with safety standards • Compliance with EMC standards • Compliance with environment and environmental protection standards
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front airflow, depending on the selected fan modules and power modules
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40ºC to +70ºC (-40°F to +158°F)

4.4.17 CE6881-48S6CQ-K

4.4.17.1 CE6881-48S6CQ-K (02353JAP)

Overview

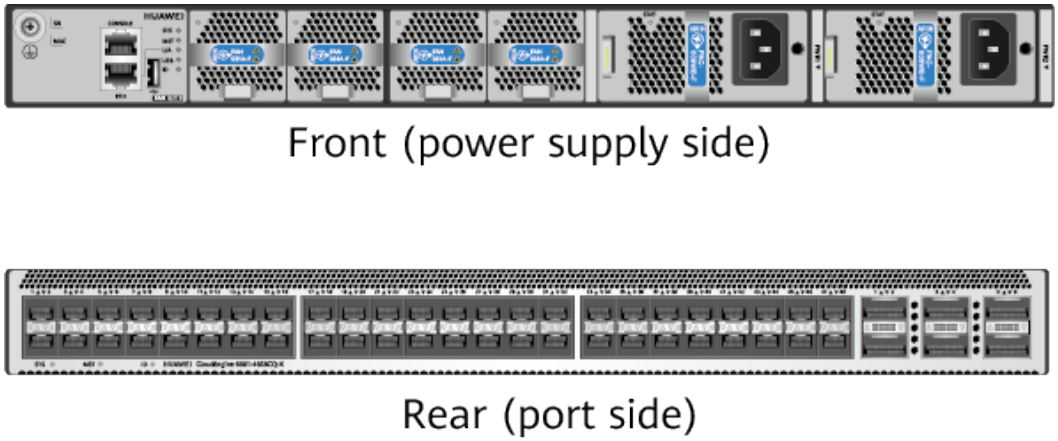
Table 4-201 Basic information about the CE6881-48S6CQ-K

Item	Details
Description	CE6881-48S6CQ-K switch (48*10G SFP+, 6*100G QSFP28, without fan and power modules)
Part Number	02353JAP
Model	CE6881-48S6CQ-K
First supported version	V200R019C10
Other part numbers	02353JAQ (CE6881-48S6CQ-K switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake))
Short Name	CE6881K

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Appearance

Figure 4-215 Appearance of the CE6881-48S6CQ-K



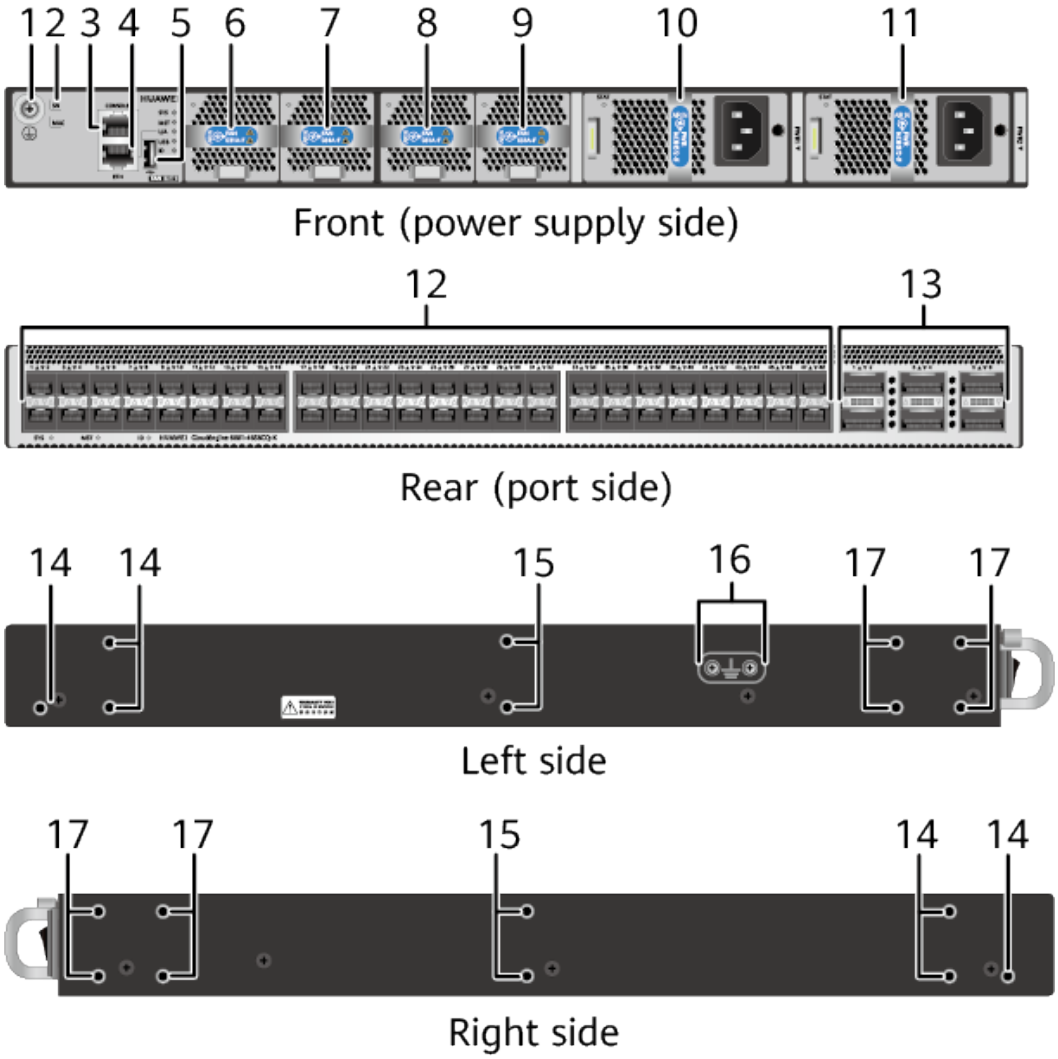
NOTE

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Components

Figure 4-216 Components of the CE6881-48S6CQ-K



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-202 Slots on the CE6881-48S6CQ-K

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-217 Indicators on the CE6881-48S6CQ-K 1

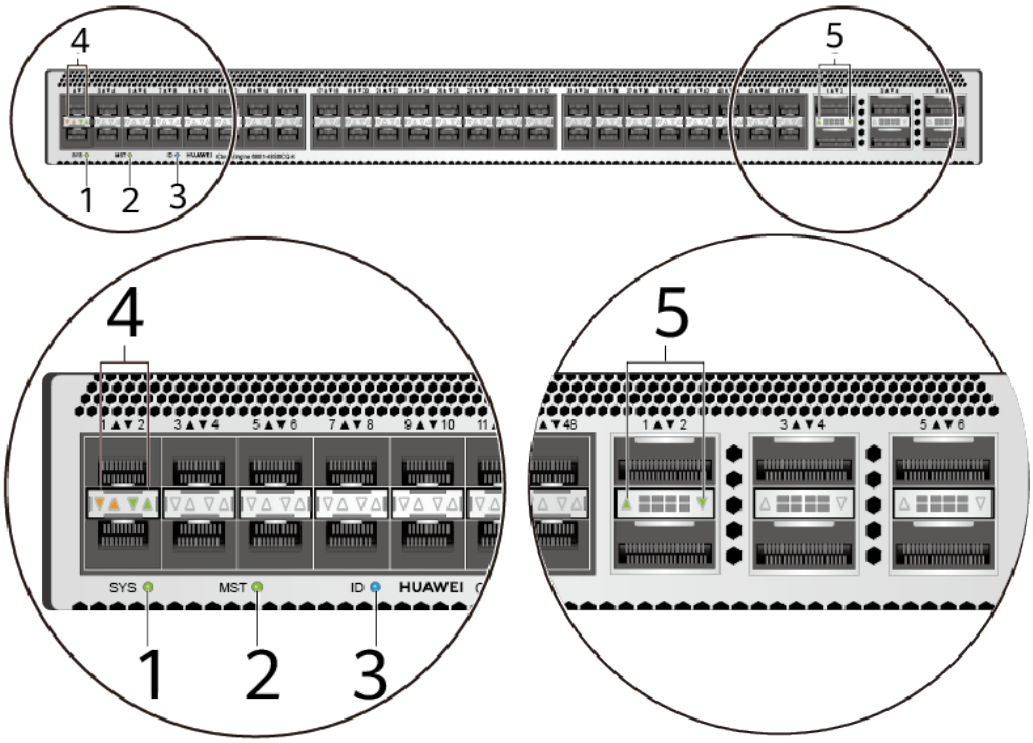
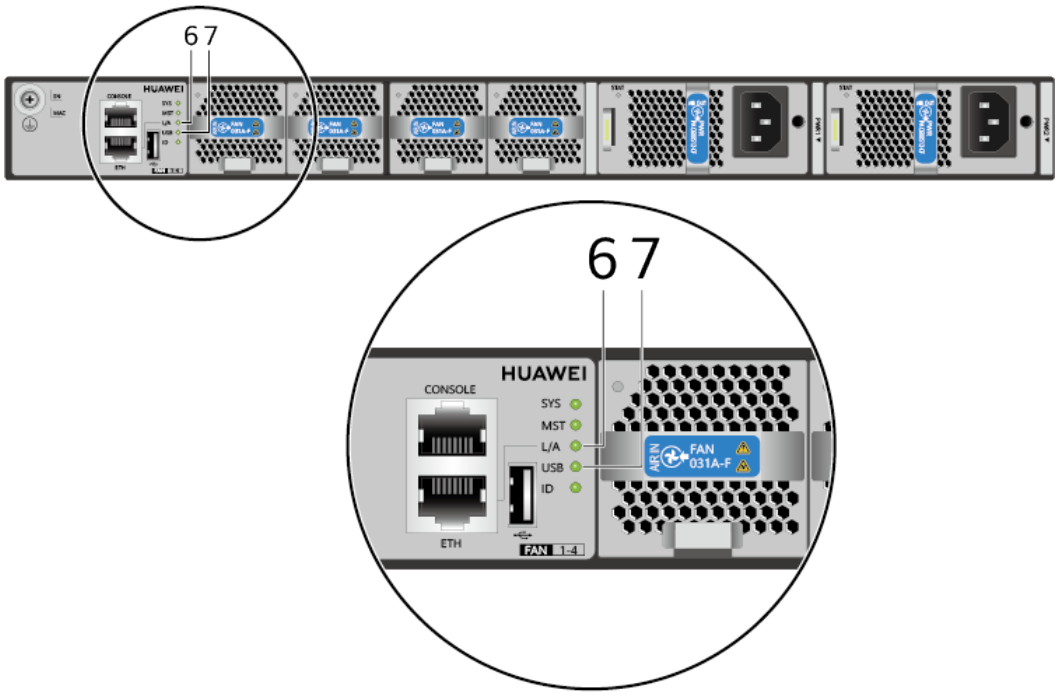


Figure 4-218 Indicators on the CE6881-48S6CQ-K 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-203 Indicators on the CE6881-48S6CQ-K

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-204 Ports on the CE6881-48S6CQ-K

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1) When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2) 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-219** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-220** (using a CE6863 chassis as an example).

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Figure 4-219 Front-to-back airflow for port-side exhaust

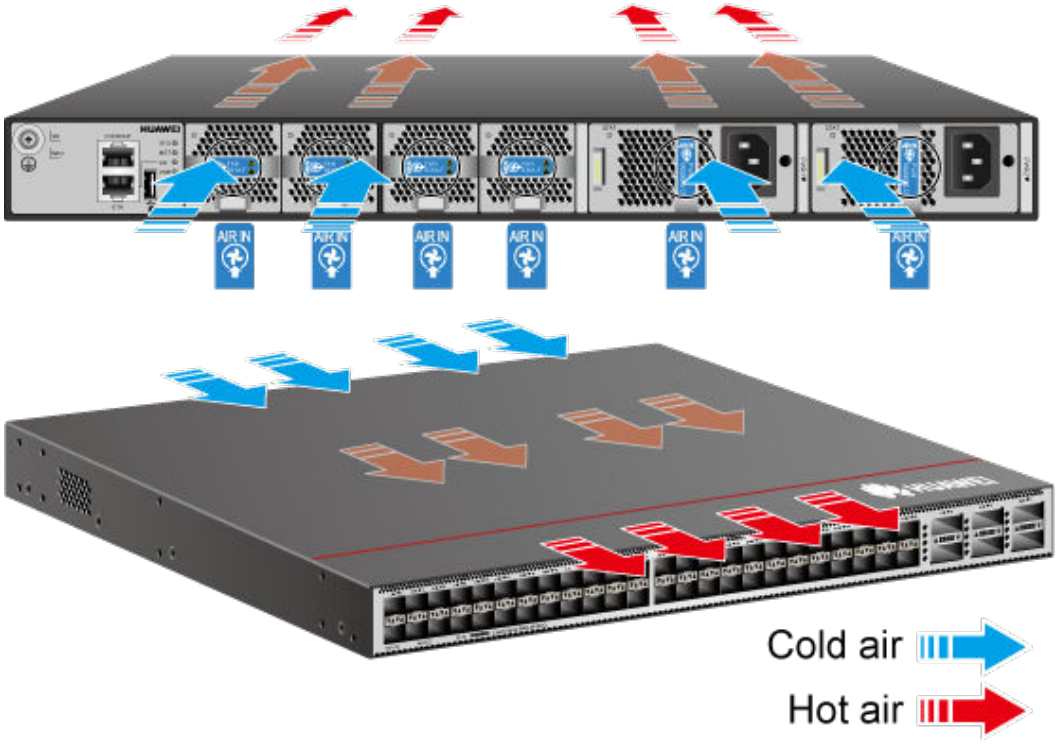
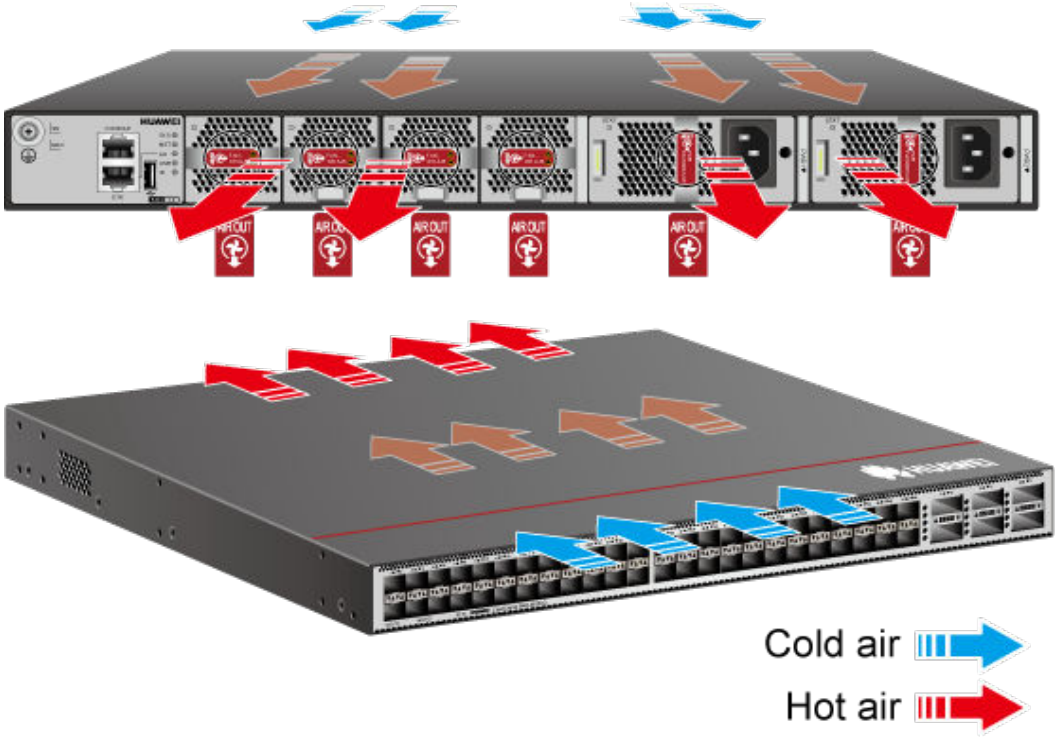


Figure 4-220 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-205 Technical specifications of the CE6881-48S6CQ-K

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.17.2 CE6881-48S6CQ-K (02353JAQ-001)

Overview

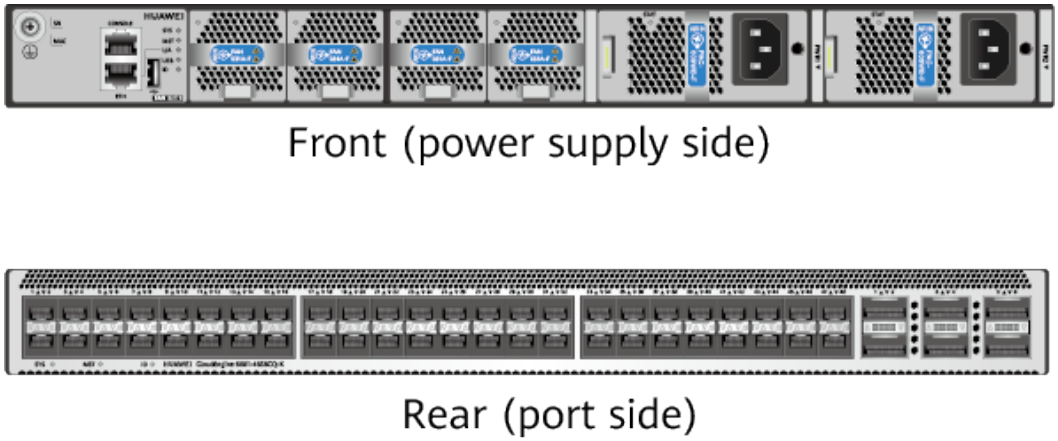
Table 4-206 Basic information about the CE6881-48S6CQ-K

Item	Details
Description	CE6881-48S6CQ-K switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)
Part Number	02353JAQ-001
Model	CE6881-48S6CQ-K
First supported version	V200R020C10
Short Name	CE6881K

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Appearance

Figure 4-221 Appearance of the CE6881-48S6CQ-K



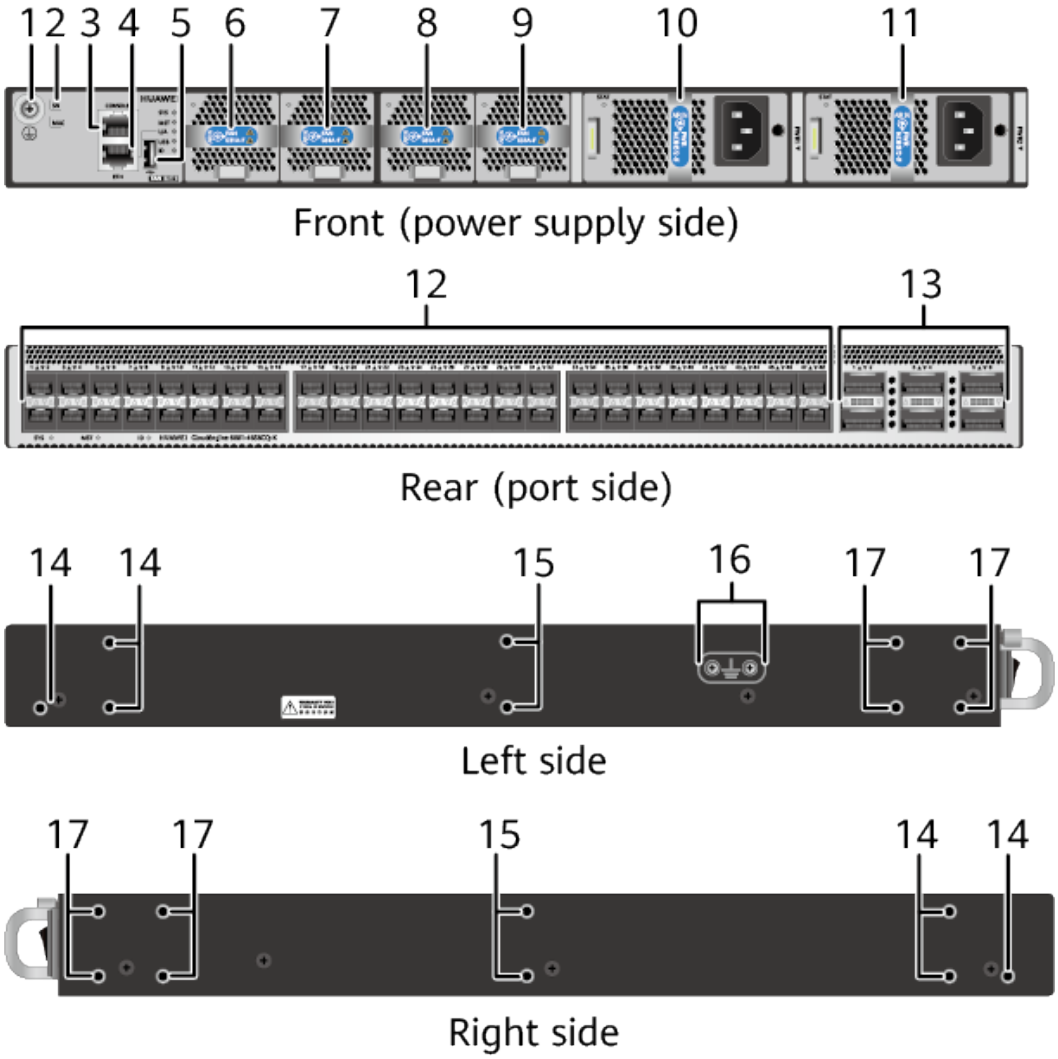
NOTE

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Components

Figure 4-222 Components of the CE6881-48S6CQ-K



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-207 Slots on the CE6881-48S6CQ-K

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-223 Indicators on the CE6881-48S6CQ-K 1

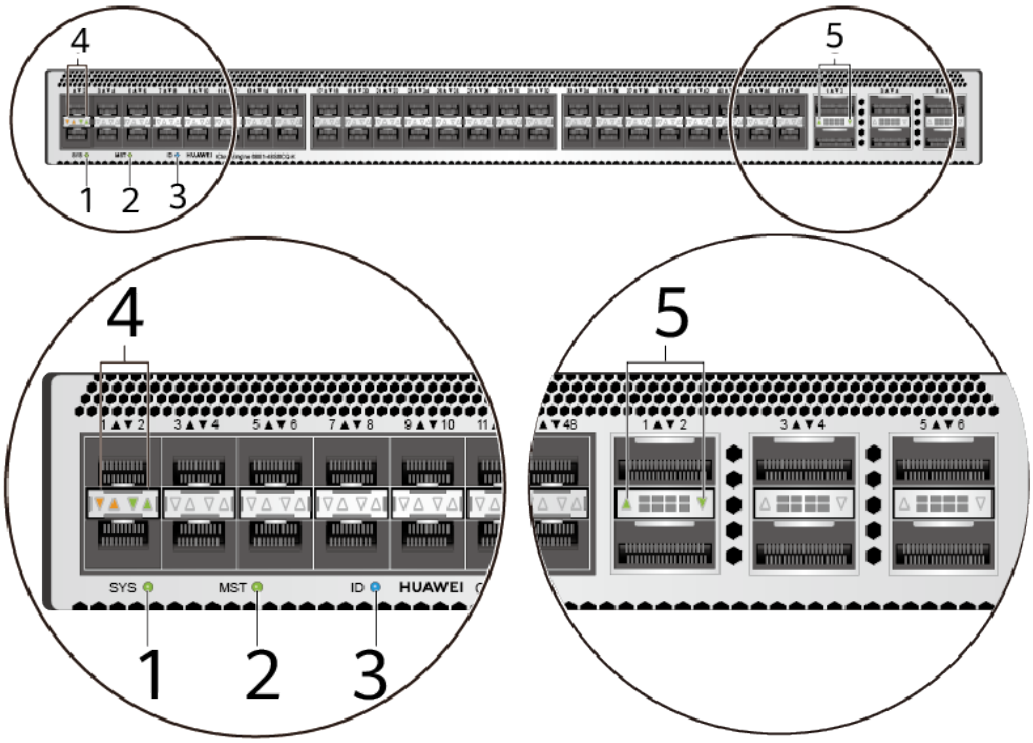
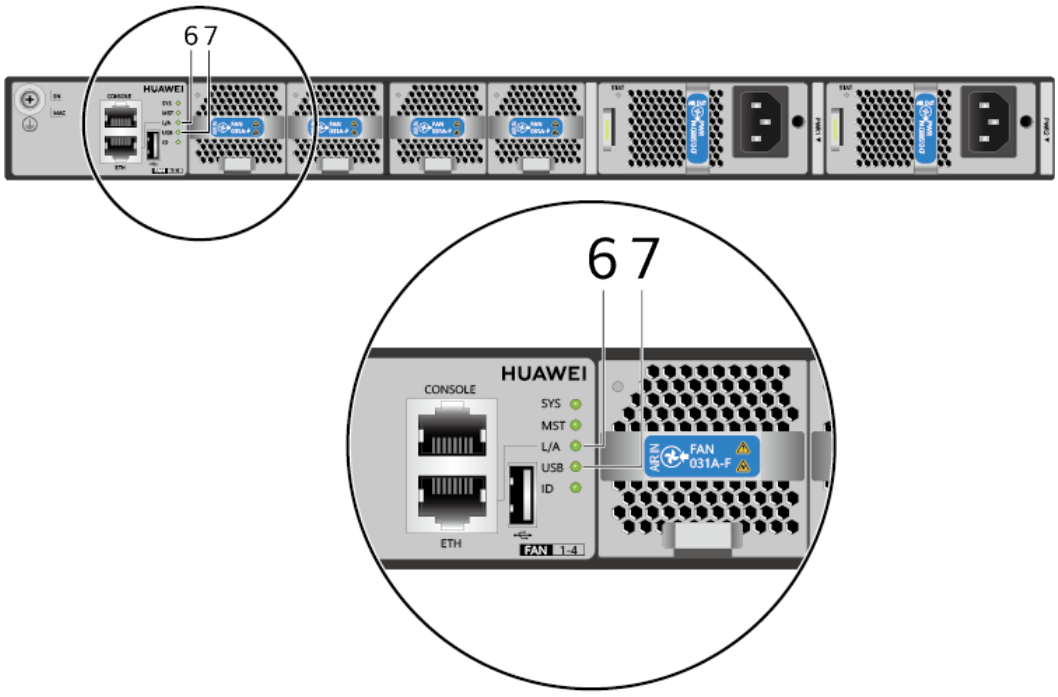


Figure 4-224 Indicators on the CE6881-48S6CQ-K 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-208 Indicators on the CE6881-48S6CQ-K

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-209 Ports on the CE6881-48S6CQ-K

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1) When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2) 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-225** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-226** (using a CE6863 chassis as an example).

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Figure 4-225 Front-to-back airflow for port-side exhaust

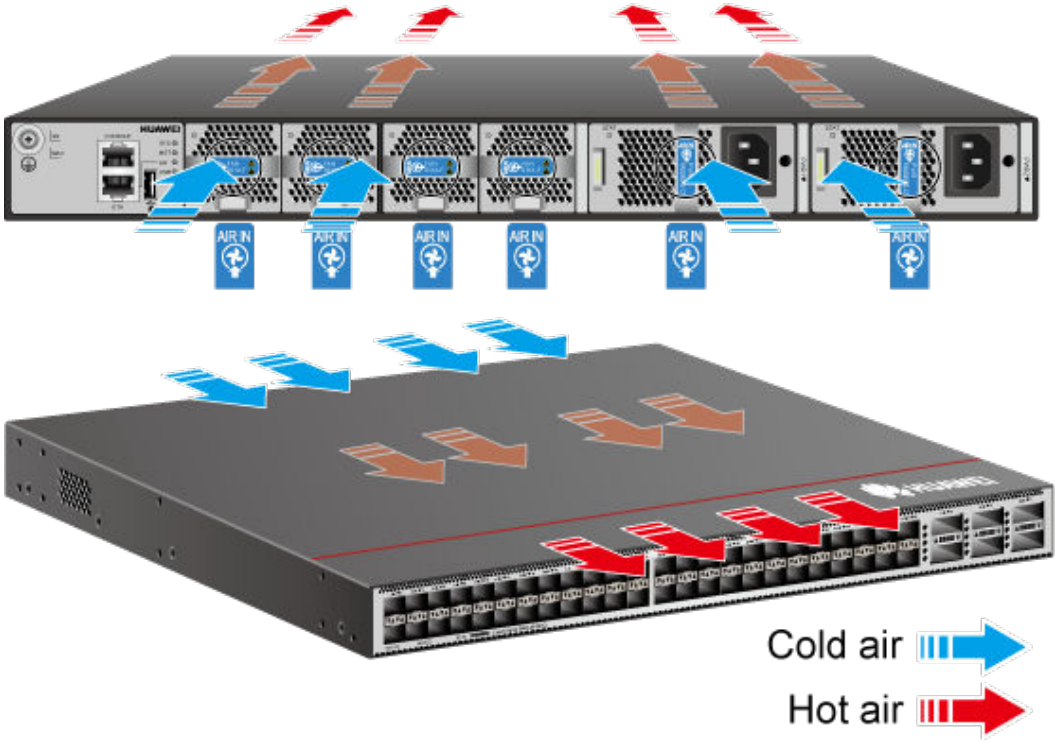
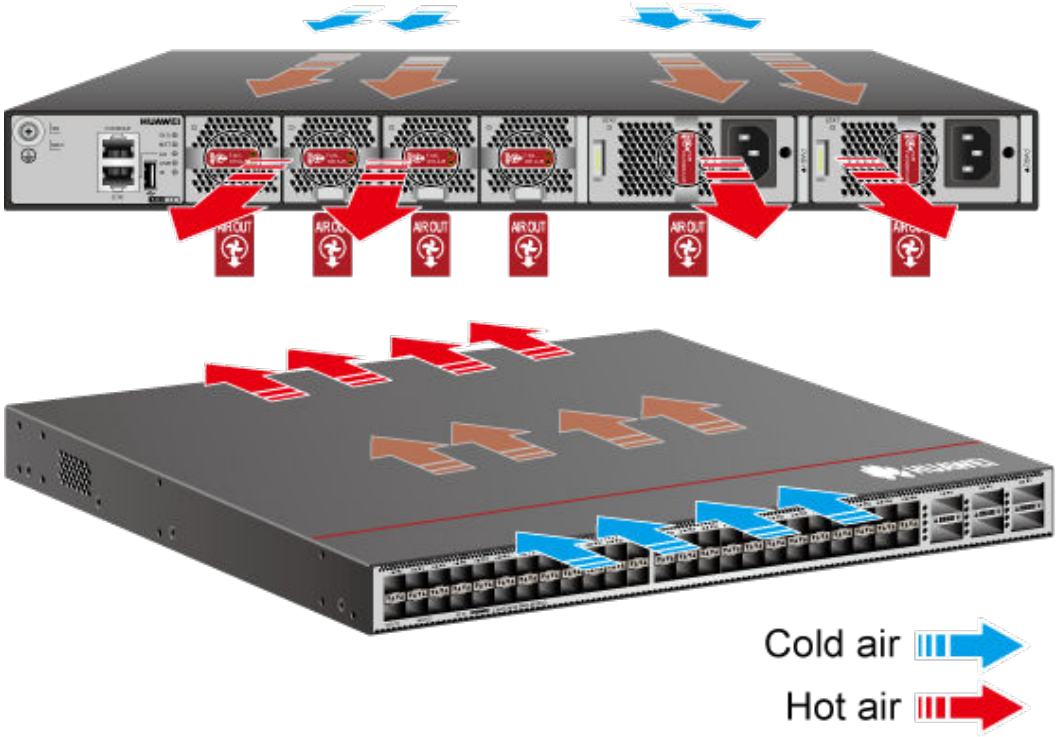


Figure 4-226 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-210 Technical specifications of the CE6881-48S6CQ-K

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.17.3 CE6881-48S6CQ-K (02353JAP-002)

Overview

Table 4-211 Basic information about the CE6881-48S6CQ-K

Item	Details
Description	CE6881-48S6CQ-K switch (48*10G SFP+, 6*100G QSFP28, without fan and power modules)
Part Number	02353JAP-002
Model	CE6881-48S6CQ-K
First supported version	V200R021C10SPC600
Other part numbers	02353JAQ-002 (CE6881-48S6CQ-K switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354TDT-002 (CE6881-48S6CQ-K switch (48*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH020 or a later version.
Short Name	CE6881K

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Appearance

Figure 4-227 Appearance of the CE6881-48S6CQ-K



Front (power supply side)



Rear (port side)

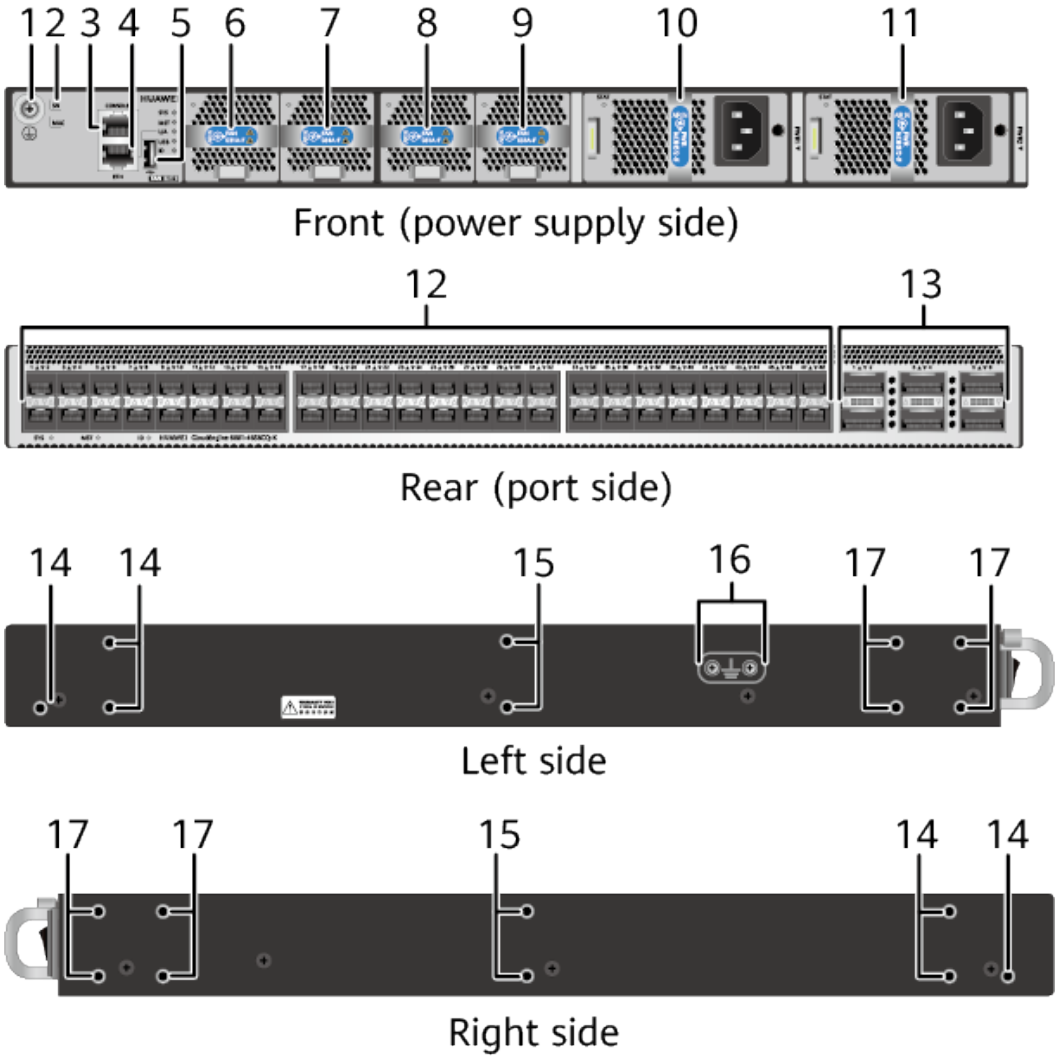
NOTE

The figures in this document are for reference only.

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Components

Figure 4-228 Components of the CE6881-48S6CQ-K



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GE SFP+ Ethernet optical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-212 Slots on the CE6881-48S6CQ-K

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-229 Indicators on the CE6881-48S6CQ-K 1

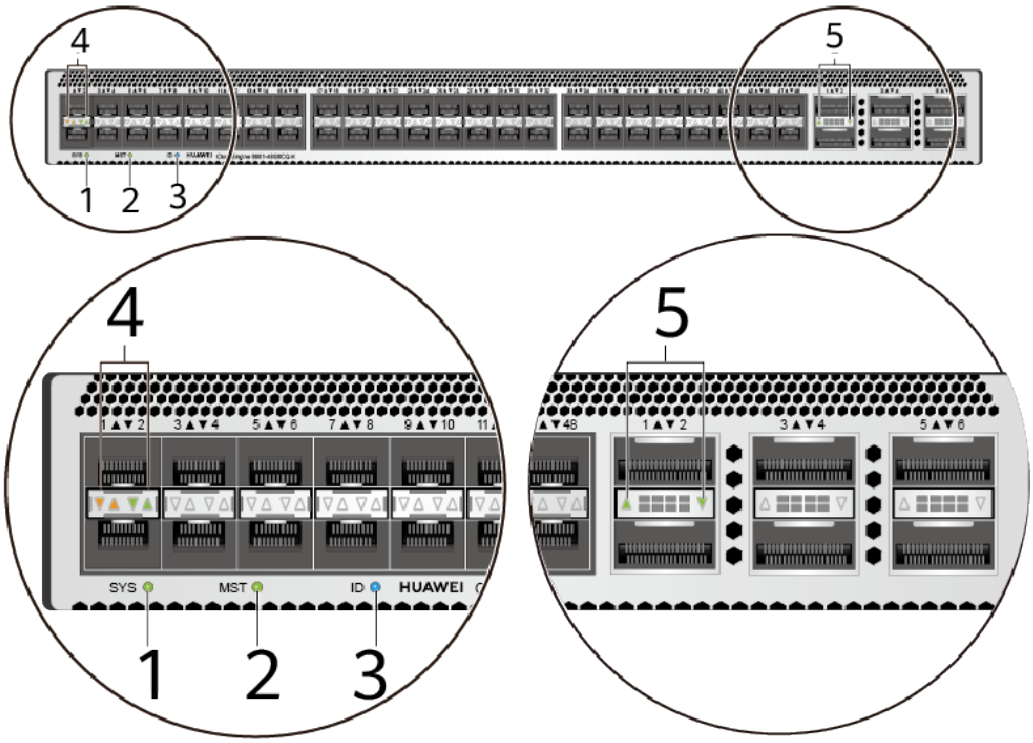
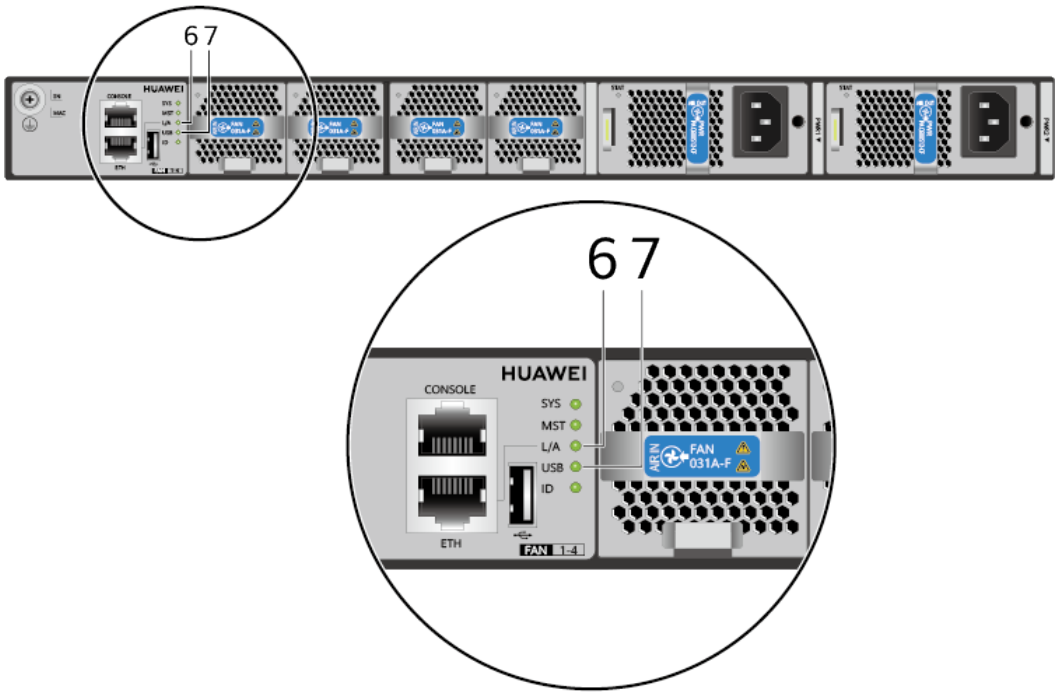


Figure 4-230 Indicators on the CE6881-48S6CQ-K 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-213 Indicators on the CE6881-48S6CQ-K

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GE optical port) **NOTE** • Each 10GE/25GE optical port has two single-color indicators: the ACT indicator (yellow) on the left and the LINK indicator (green) on the right. • Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-214 Ports on the CE6881-48S6CQ-K

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1) When a GE copper module is installed on a 10GE optical port, the port can work only at the rate of 100 Mbit/s or 1000 Mbit/s. 2) 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3) In V200R005C20, 10GE ports numbered from 13 to 16 and from 25 to 28 do not support GE media. If GE media are installed on these ports, the ports will enter the Error-Down state. In V200R019C10 and later versions, GE media can be installed on 10GE ports numbered from 13 to 16 and from 25 to 28. After GE media are installed, you need to run the speed 1000 command to switch the port rate to 1000 Mbit/s so that the ports can go Up. In addition, ports 13 to 16 and ports 25 to 28 are switched together. For example, if a GE medium is installed on port 13 and the speed 1000 command is run, the rate of ports 14, 15, and 16 is changed together.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • In V200R022C00 and earlier versions, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C10 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
		connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**NOTE** 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

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Figure 4-231 Front-to-back airflow for port-side exhaust

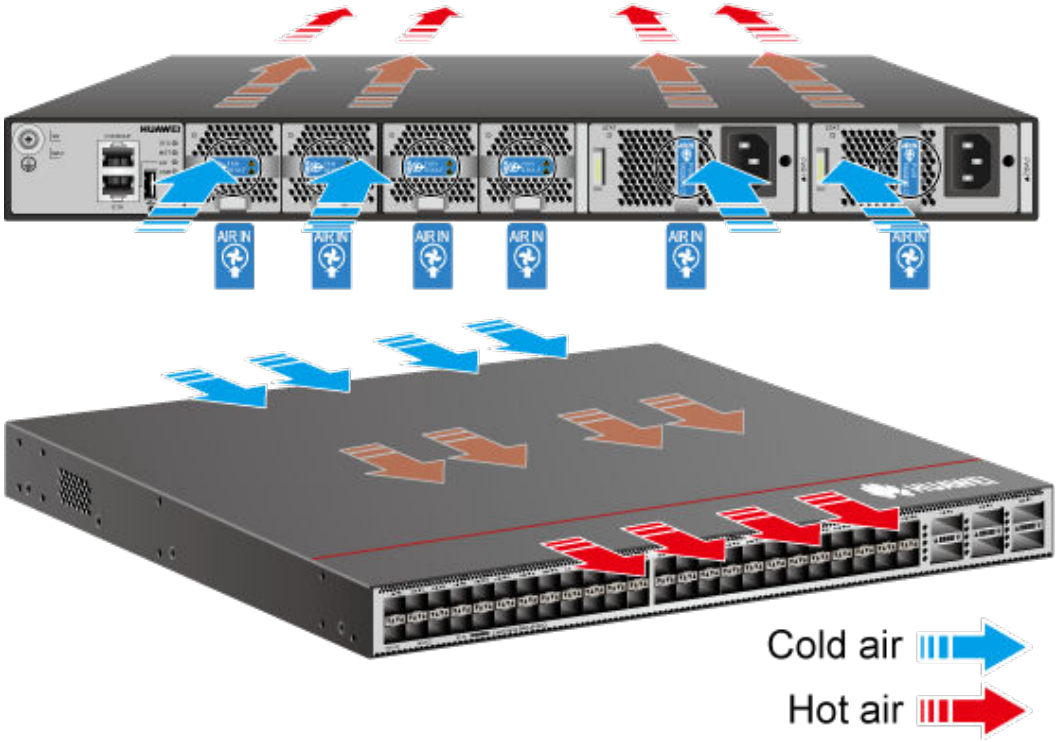
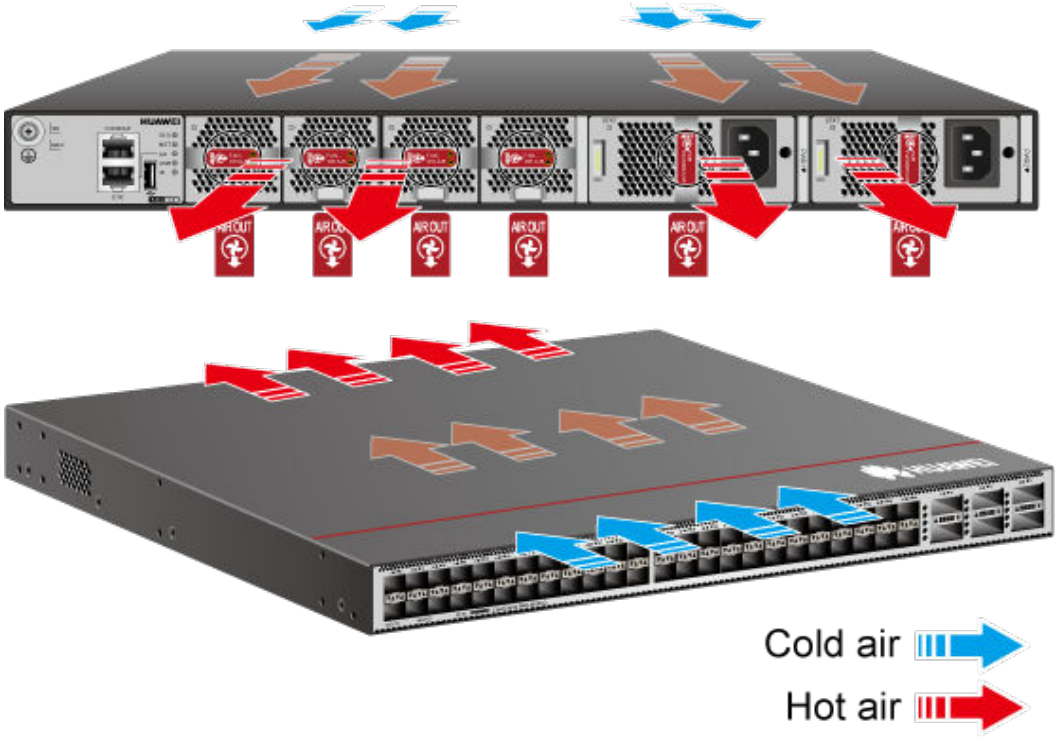


Figure 4-232 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-215 Technical specifications of the CE6881-48S6CQ-K

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (12.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	48*10GE SFP+ **NOTE** 1. 10GE ports can be configured to work at 1 Gbit/s. Ports 13-16 and 25-28 can be configured to work at 10 Gbit/s or 1 Gbit/s using commands, and the speed of other ports can be auto-negotiated based on optical modules. (In V200R005C20, ports 13-16 and 25-28 cannot be configured to work at 1 Gbit/s. In V200R019C10 and later versions, they can be configured to work at 1 Gbit/s.) 2. 10GE LRM/80 km linear optical modules are not supported. 3. 10GE 1 m/3 m/5 m copper cables are supported.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In V200R022C00 and earlier versions, 100GE ports cannot be split. In V200R022C10, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE optical ports and 100GE optical ports
RTC	Supported

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Item	Specification
Typical power consumption [W]	• 194 W (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 240 W (100% throughput, short-distance optical modules on all ports, dual power modules)
Typical heat dissipation [BTU/hour]	• 662 BTU/hour (100% throughput, SFP+ high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) • 819 BTU/hour (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	161 W
Static heat dissipation [BTU/hour]	549 BTU/hour
Maximum power consumption [W]	349 W
Maximum heat dissipation	1191 BTU/hour
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999960856
MTBF [year]	45.9 years
MTTR [hour]	1.57 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 58 dB(A) • Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: < 75 dB(A) • Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.18 CE6881-48T6CQ

4.4.18.1 CE6881-48T6CQ (02353GLB)

Overview

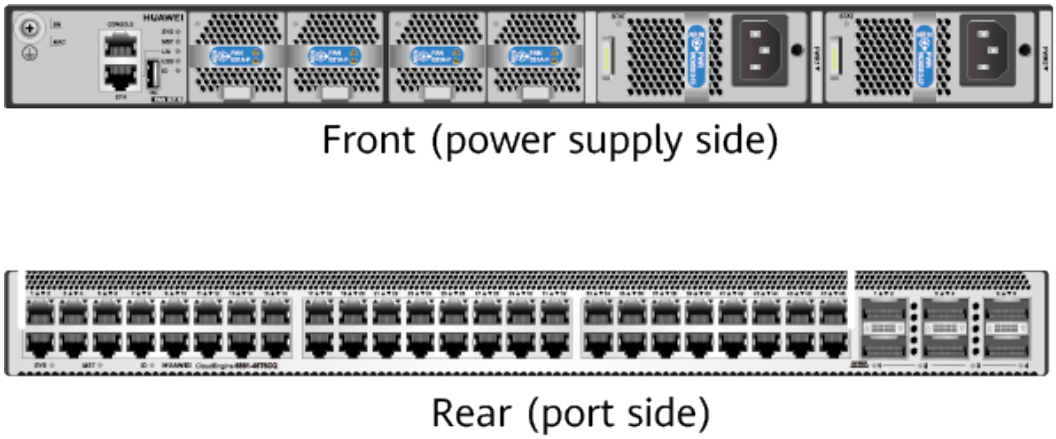
Table 4-216 Basic information about the CE6881-48T6CQ

Item	Details
Description	CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02353GLB
Model	CE6881-48T6CQ
First supported version	V200R020C00
Other part numbers	02353GLC (CE6881-48T6CQ switch(48*10GE RJ45,6*100GE QSFP28,2*AC power modules,4*fan modules,port-side intake)) 02353GLD (CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6881

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Appearance

Figure 4-233 Appearance of the CE6881-48T6CQ



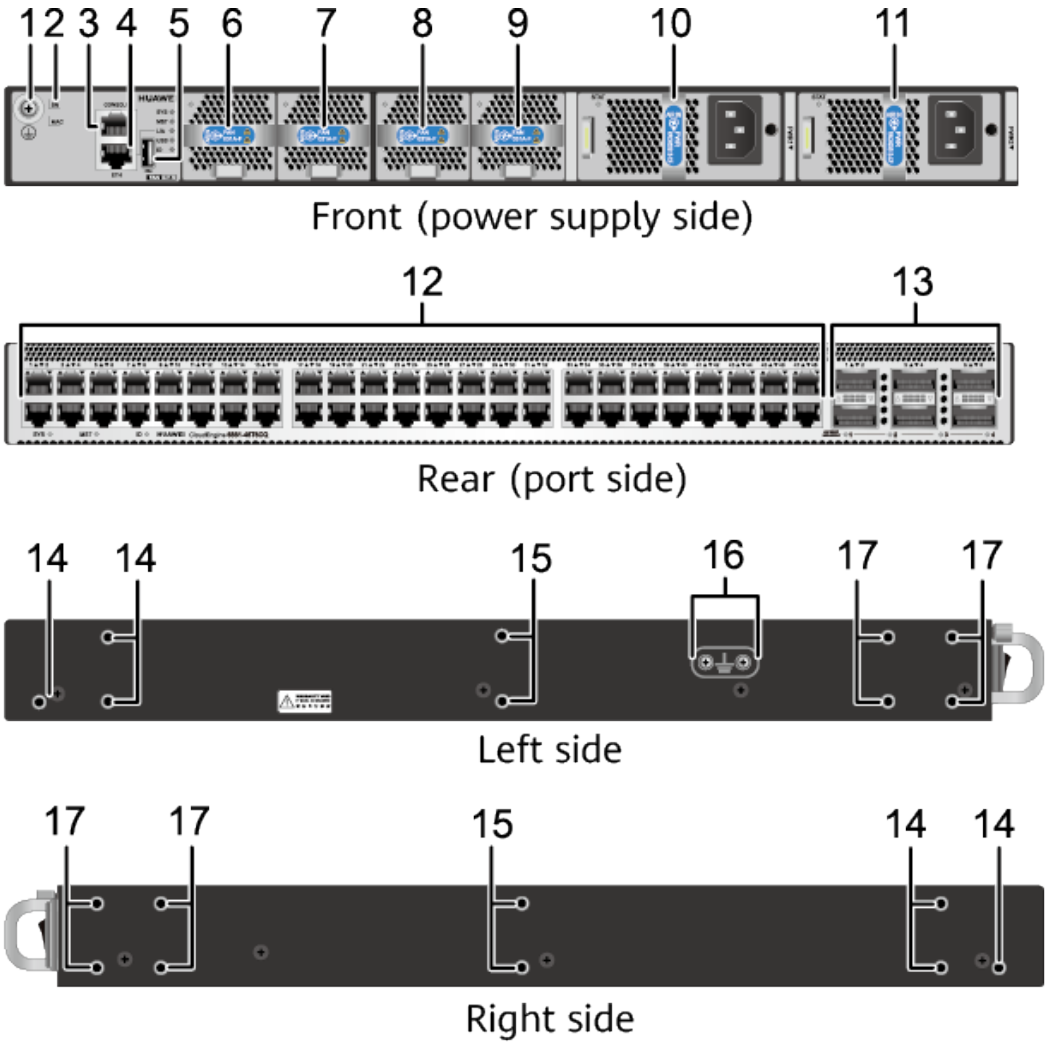
NOTE

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Components

Figure 4-234 Components of the CE6881-48T6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-217 Slots on the CE6881-48T6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-235 Indicators on the CE6881-48T6CQ 1

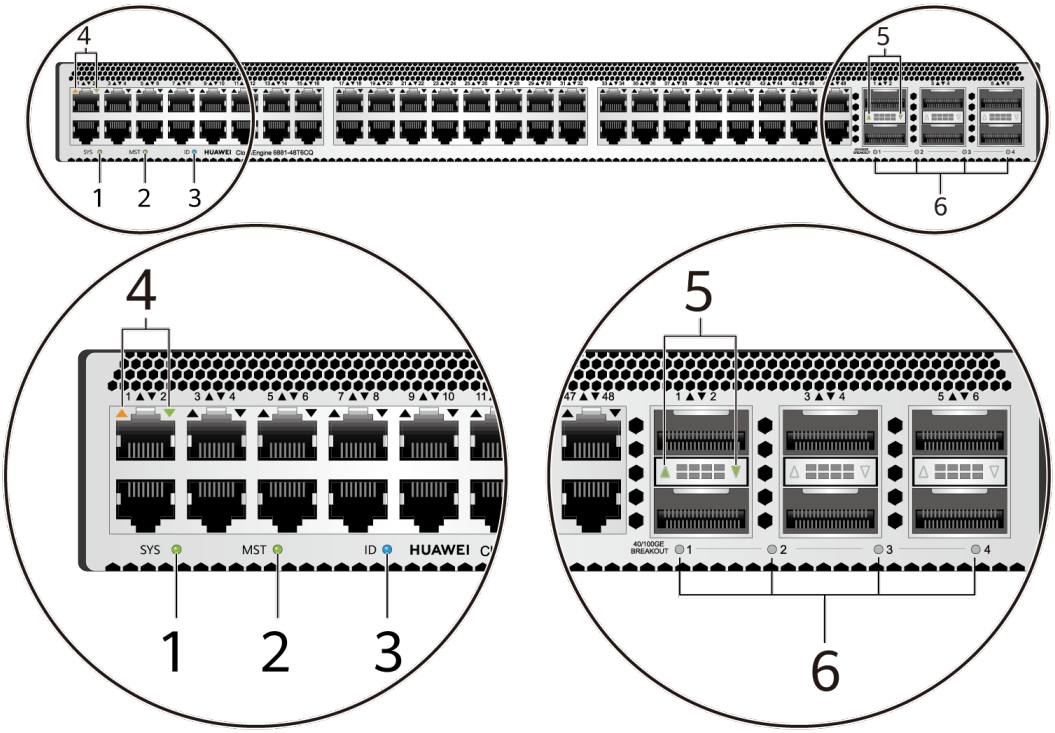
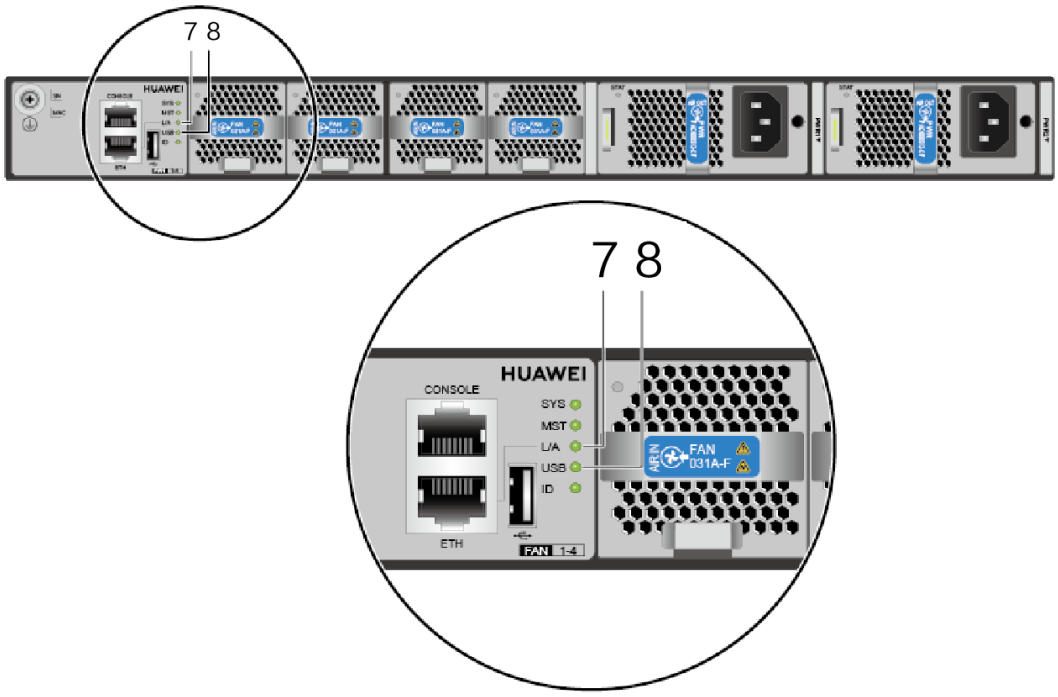


Figure 4-236 Indicators on the CE6881-48T6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T electrical port)	5. Service port indicator (40GE/100GE optical port)
6. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-218 Indicators on the CE6881-48T6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.

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Silkscreen	Name	Color	Status	Description
	NOTE A 40GE/100GE QSFP28 optical port on the CE6881-48T6CQ cannot be split into four 10GE or 25GE ports, and the indicators are off.	Green	Steady on	At least one port works in 10GE/25GE mode and is split into four 10GE/25GE ports.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-219 Ports on the CE6881-48T6CQ

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet electrical port	RJ45	A 10GBASE-T Ethernet electrical port receives and sends service traffic at 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port supports auto-sensing to 100 Mbit/s or 1000 Mbit/s. 10GBASE-T Ethernet electrical ports must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Standards compliance: IEEE 802.3an and IEEE 802.3az • Electrical interface attribute: Both straight-through cables and crossover cables can be used. • Working mode: 100 Mbit/s, 1000 Mbit/s, and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Both straight-through cables and crossover cables can be used.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	LC/MPO	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Standards compliance: IEEE 802.3ba • Optical port attribute: depending on the optical module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. QSFP+ to QSFP+ high-speed cables and QSFP28 to QSFP28 high-speed cables do not support auto-negotiation of copper cables. They can only be used on stack ports and M-LAG peer-link ports. 2. When a QSFP28 high-speed cable is installed on a 100GE port that works at 100 Gbit/s, the port supports 1/3/5 m QSFP28 high-speed cables. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables. 4. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) of a device is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. • Complied standard: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

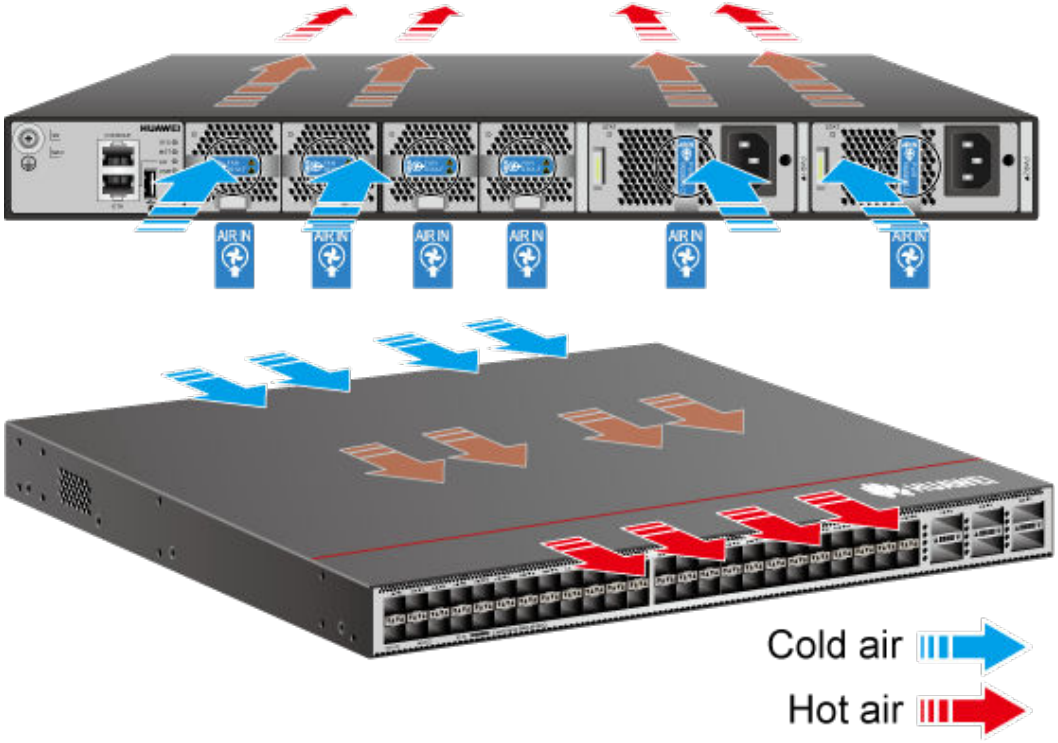
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-237** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

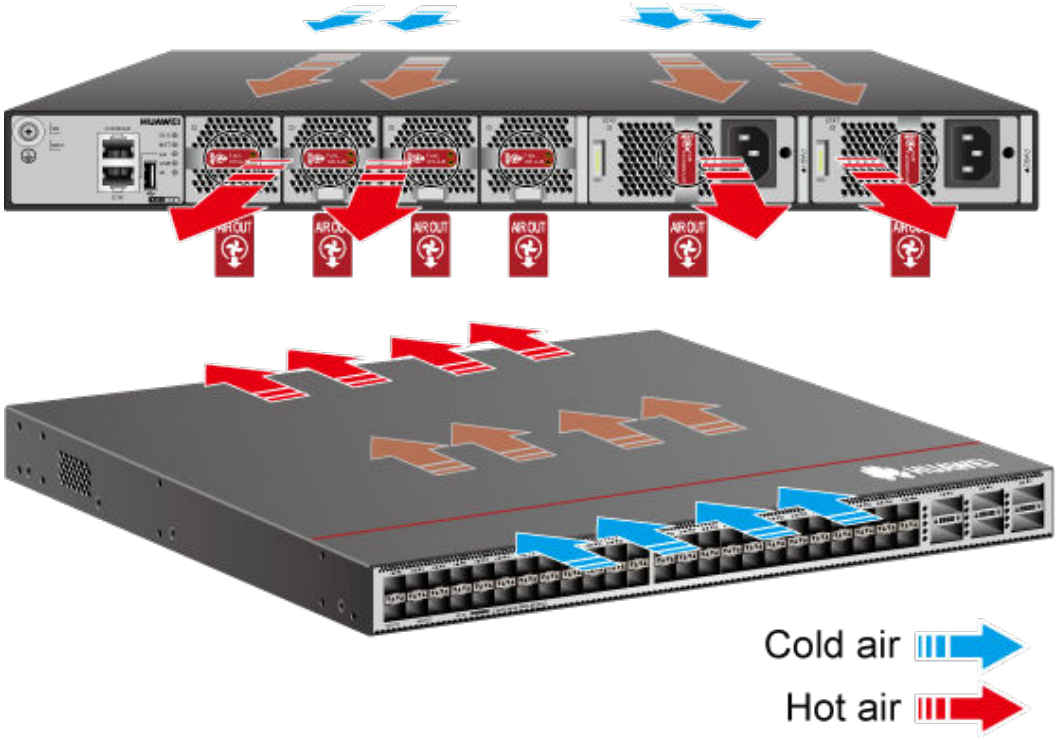
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-238** (using a CE6863 chassis as an example).

Figure 4-237 Front-to-back airflow for port-side exhaust



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Figure 4-238 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-220 Technical specifications of the CE6881-48T6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	6.6 kg (14.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.9 kg (19.6 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	10.4 kg (22.93 lb)
Weight with packaging (full configuration) [kg (lb)]	12.3 kg (27.12 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHZ
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (Only full-duplex is supported)

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Item	Specification
Uplink Service interface	6 x 100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE electrical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 347 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 362 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 1184 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 1235 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	235 W
Static heat dissipation [BTU/hour]	801 BTU/hour
Maximum power consumption [W]	452 W
Maximum heat dissipation	1542
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999953209
MTBF [year]	48.16 years
MTTR [hour]	1.78 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: 49 dB(A) on average (maximum: 52 dB(A)) • Back-to-front airflow: 50 dB(A) on average (maximum: 52 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: 69 dB(A) on average (maximum: 74 dB(A)) • Back-to-front airflow: 67 dB(A) on average (maximum: 73 dB(A))

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Item	Specification
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.18.2 CE6881-48T6CQ (02353GLB-001)

Overview

Table 4-221 Basic information about the CE6881-48T6CQ

Item	Details
Description	CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02353GLB-001
Model	CE6881-48T6CQ
First supported version	V200R021C10SPC600
Other part numbers	02353GLC-001 (CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02353GLD-001 (CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH011 or a later version.

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Item	Details
Short Name	CE6881

Appearance

Figure 4-239 Appearance of the CE6881-48T6CQ



Front (power supply side)



Rear (port side)

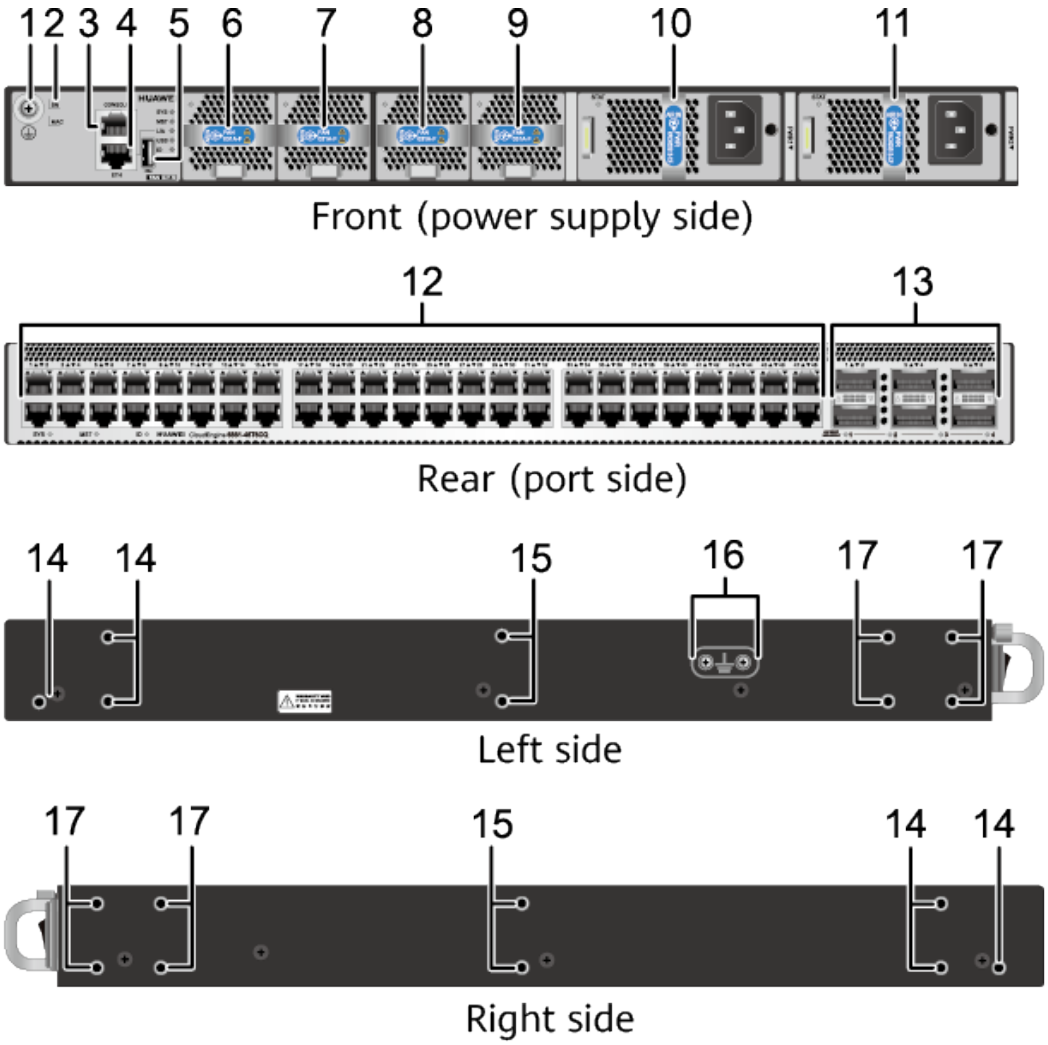
NOTE

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Components

Figure 4-240 Components of the CE6881-48T6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-222 Slots on the CE6881-48T6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-241 Indicators on the CE6881-48T6CQ 1

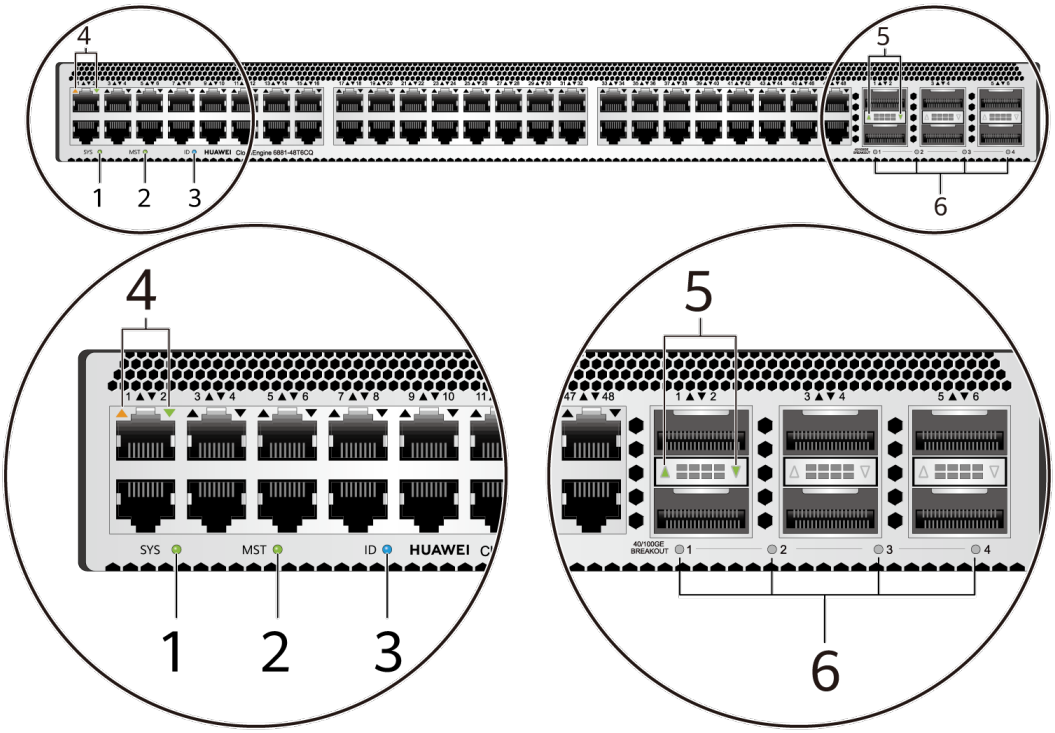
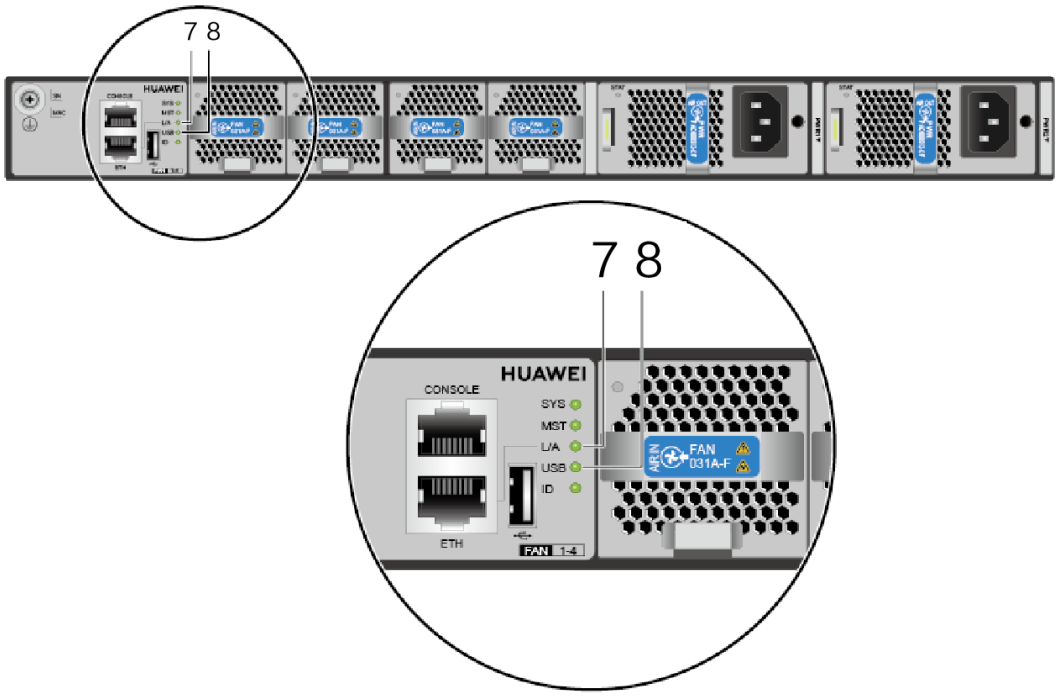


Figure 4-242 Indicators on the CE6881-48T6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T electrical port)	5. Service port indicator (40GE/100GE optical port)
6. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-223 Indicators on the CE6881-48T6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.

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Silkscreen	Name	Color	Status	Description
	NOTE A 40GE/100GE QSFP28 optical port on the CE6881-48T6CQ cannot be split into four 10GE or 25GE ports, and the indicators are off.	Green	Steady on	At least one port works in 10GE/25GE mode and is split into four 10GE/25GE ports.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-224 Ports on the CE6881-48T6CQ

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet electrical port	RJ45	A 10GBASE-T Ethernet electrical port receives and sends service traffic at 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port supports auto-sensing to 100 Mbit/s or 1000 Mbit/s. 10GBASE-T Ethernet electrical ports must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Complied standards: IEEE 802.3an and IEEE 802.3az • Electrical interface attribute: Both straight-through cables and crossover cables can be used. • Working mode: 100 Mbit/s, 1000 Mbit/s, and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Both straight-through cables and crossover cables can be used.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	LC/MPO	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Standards compliance: IEEE 802.3ba • Optical port attribute: depending on the optical module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. QSFP+ to QSFP+ high-speed cables and QSFP28 to QSFP28 high-speed cables do not support auto-negotiation of copper cables. They can only be used on stack ports and M-LAG peer-link ports. 2. When a QSFP28 high-speed cable is installed on a 100GE port that works at 100 Gbit/s, the port supports 1/3/5 m QSFP28 high-speed cables. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables. 4. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) of a device is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. • Complied standard: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

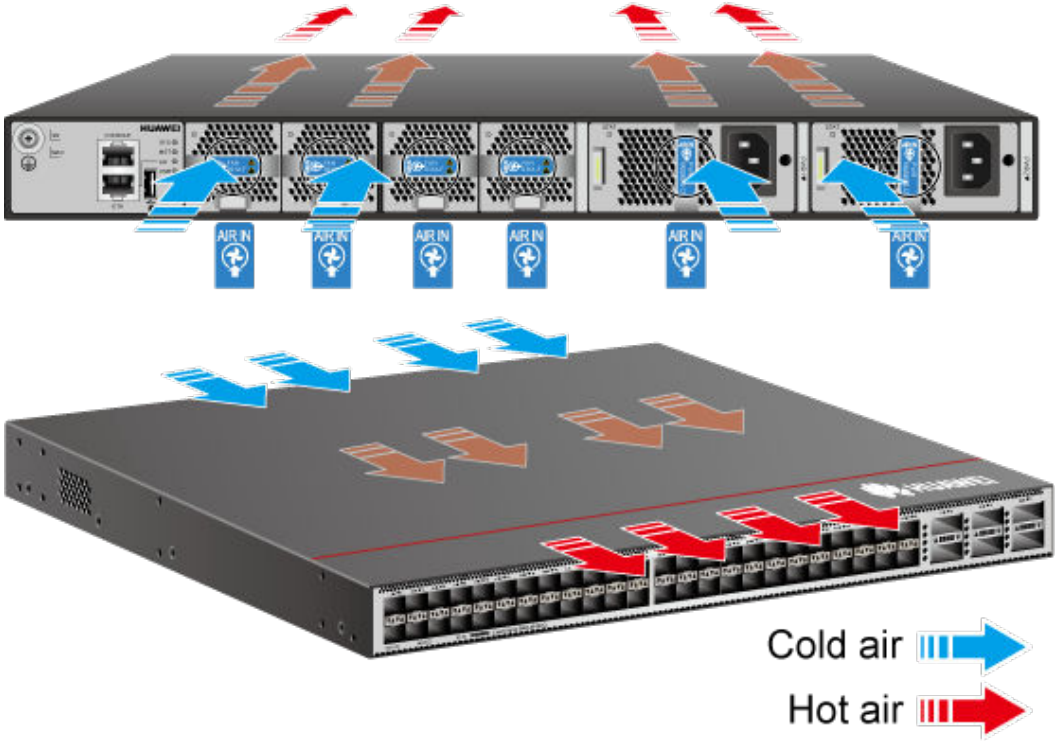
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-243** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

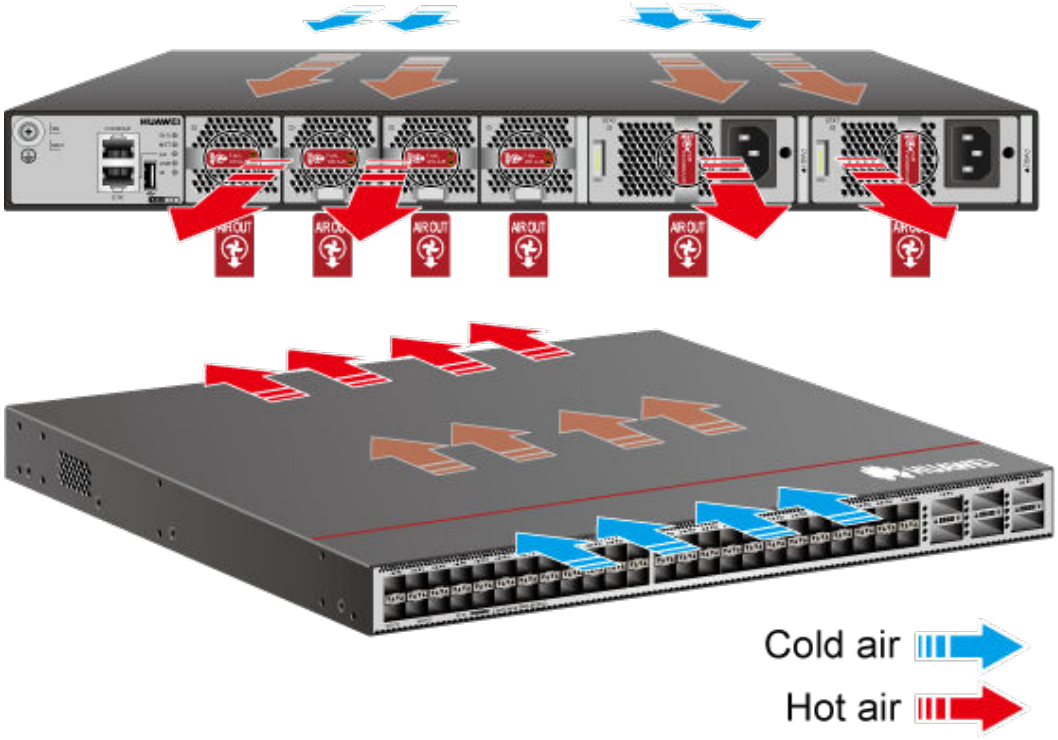
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-244** (using a CE6863 chassis as an example).

Figure 4-243 Front-to-back airflow for port-side exhaust



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Figure 4-244 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-225 Technical specifications of the CE6881-48T6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	6.6 kg (14.55 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.9 kg (19.62 lb) (including AC power modules and fan modules, but not including optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	10.4 kg (22.93 lb)
Weight with packaging (full configuration) [kg (lb)]	12.3 kg (27.12 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (supporting only full-duplex)

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Item	Specification
Uplink Service interface	6 x 100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10G electrical port and 100G optical port
RTC	Supported
Typical power consumption [W]	• 347 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 362 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 1184 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 1235 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	235 W
Static heat dissipation [BTU/hour]	801 BTU/hour
Maximum power consumption [W]	452 W
Maximum heat dissipation	1542
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Compliance with safety standards • Compliance with EMC standards • Compliance with environment and environmental protection standards
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short period of time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999953209
MTBF [year]	48.16 years
MTTR [hour]	1.78 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: 49 dB(A) on average (maximum: 52 dB(A)) • Back-to-front airflow: 50 dB(A) on average (maximum: 52 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: 69 dB(A) on average (maximum: 74 dB(A)) • Back-to-front airflow: 67 dB(A) on average (maximum: 73 dB(A))

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Item	Specification
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.18.3 CE6881-48T6CQ (02353GLB-002)

Overview

Table 4-226 Basic information about the CE6881-48T6CQ

Item	Details
Description	CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02353GLB-002
Model	CE6881-48T6CQ
First supported version	V200R021C10SPC600
Other part numbers	02353GLC-002 (CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02353GLD-002 (CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))

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Item	Details
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH022 or a later version. If the switch runs V200R021C10SPC600, install the patch of V200R021SPH022 or a later version.
Short Name	CE6881

Appearance

Figure 4-245 Appearance of the CE6881-48T6CQ



Front (power supply side)



Rear (port side)

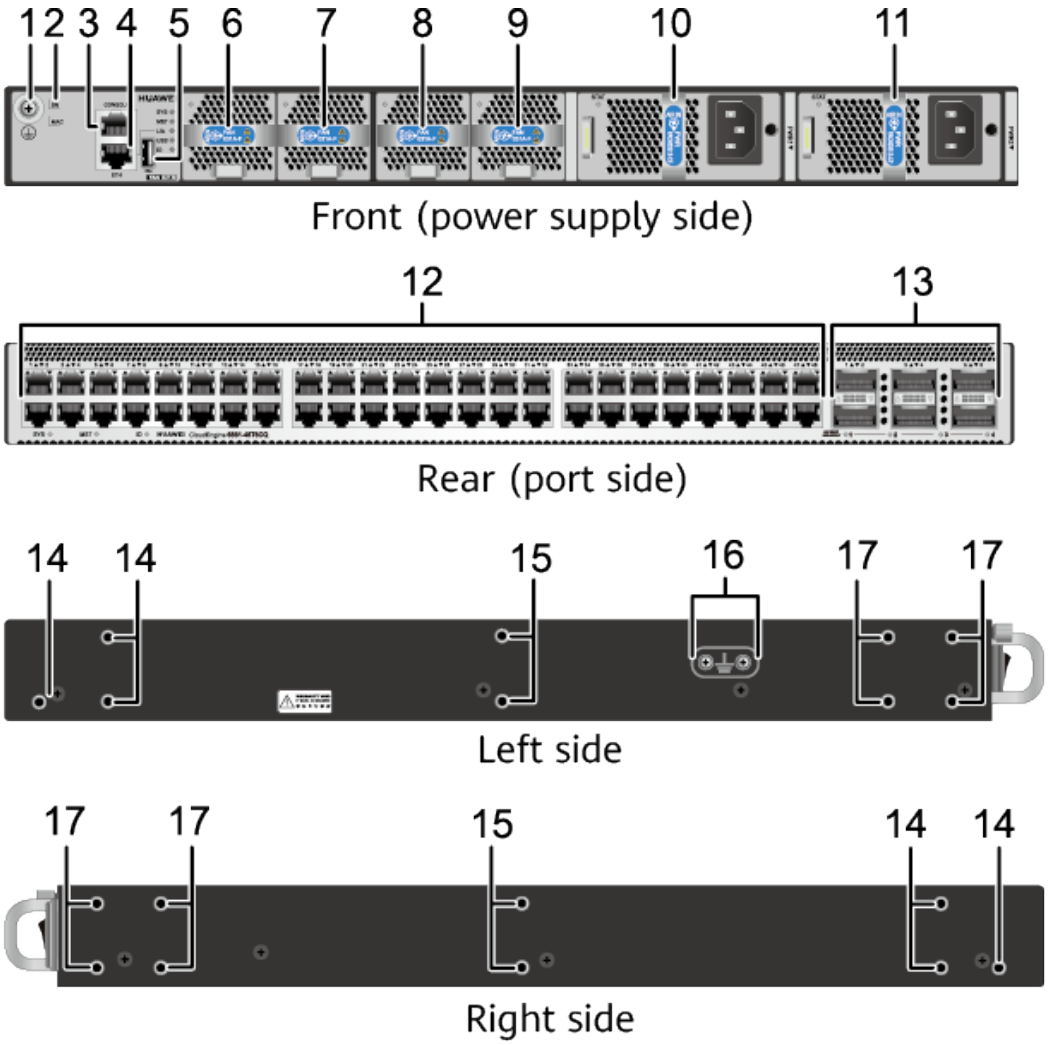
NOTE

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Components

Figure 4-246 Components of the CE6881-48T6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-227 Slots on the CE6881-48T6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-247 Indicators on the CE6881-48T6CQ 1

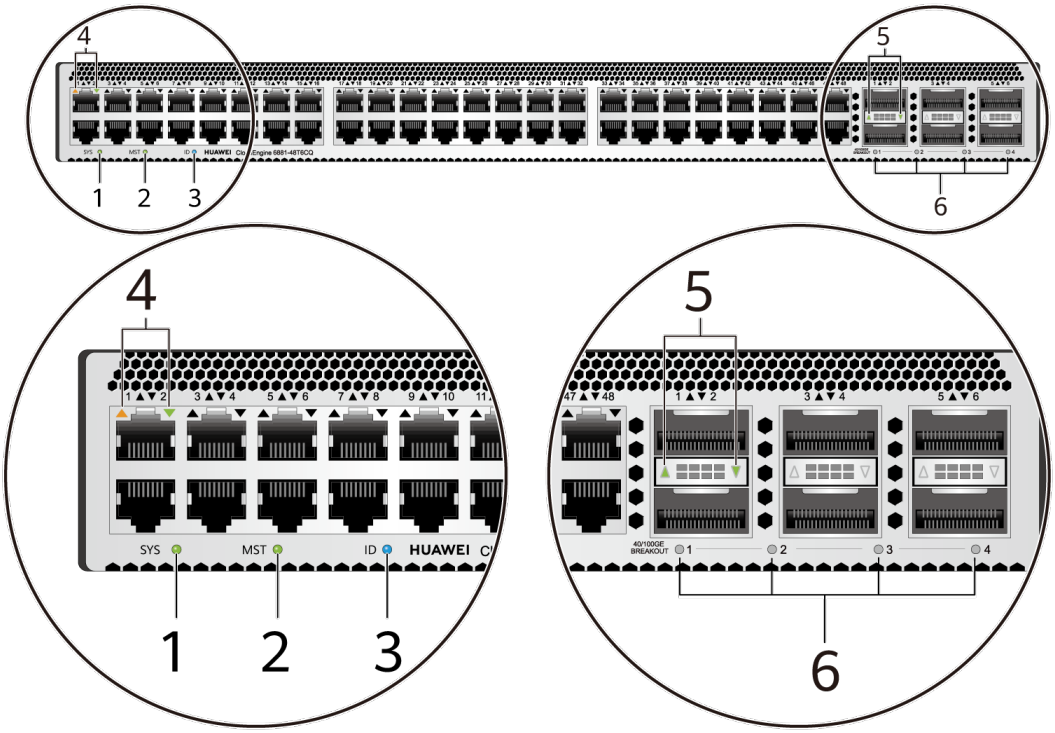
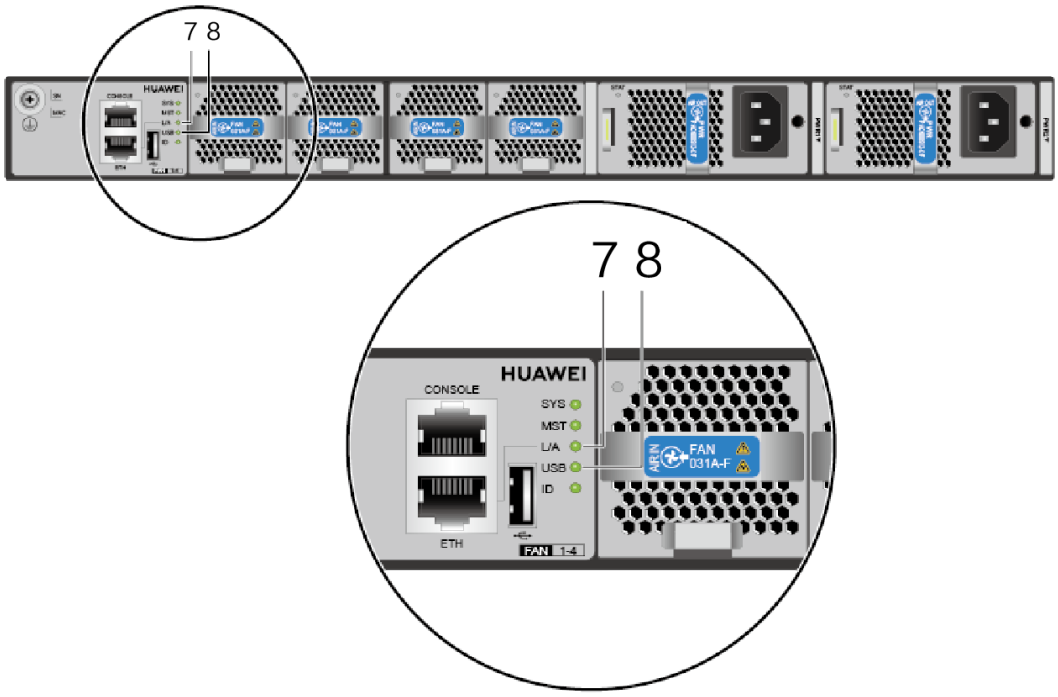


Figure 4-248 Indicators on the CE6881-48T6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T electrical port)	5. Service port indicator (40GE/100GE optical port)
6. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-228 Indicators on the CE6881-48T6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.

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Silkscreen	Name	Color	Status	Description
	NOTE A 40GE/100GE QSFP28 optical port on the CE6881-48T6CQ cannot be split into four 10GE or 25GE ports, and the indicators are off.	Green	Steady on	At least one port works in 10GE/25GE mode and is split into four 10GE/25GE ports.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-229 Ports on the CE6881-48T6CQ

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet electrical port	RJ45	A 10GBASE-T Ethernet electrical port receives and sends service traffic at 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port supports auto-sensing to 100 Mbit/s or 1000 Mbit/s. 10GBASE-T Ethernet electrical ports must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Complied standards: IEEE 802.3an and IEEE 802.3az • Electrical interface attribute: Both straight-through cables and crossover cables can be used. • Working mode: 100 Mbit/s, 1000 Mbit/s, and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Both straight-through cables and crossover cables can be used.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	LC/MPO	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Standards compliance: IEEE 802.3ba • Optical port attribute: depending on the optical module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. QSFP+ to QSFP+ high-speed cables and QSFP28 to QSFP28 high-speed cables do not support auto-negotiation of copper cables. They can only be used on stack ports and M-LAG peer-link ports. 2. When a QSFP28 high-speed cable is installed on a 100GE port that works at 100 Gbit/s, the port supports 1/3/5 m QSFP28 high-speed cables. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables. 4. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) of a device is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. • Complied standard: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

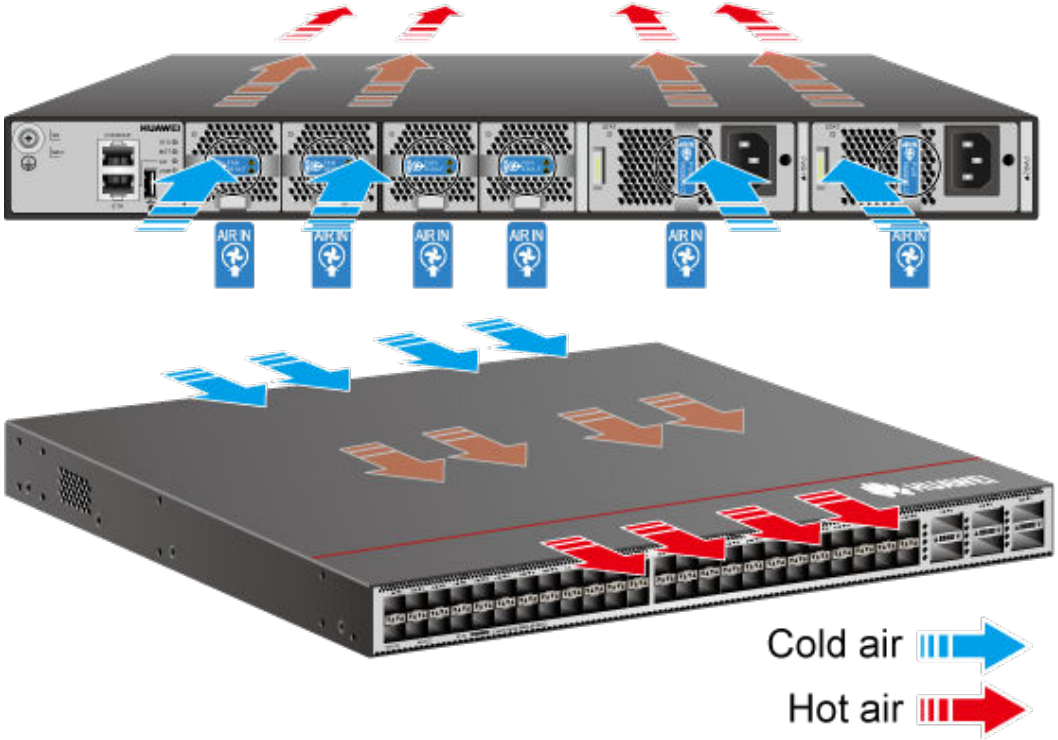
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

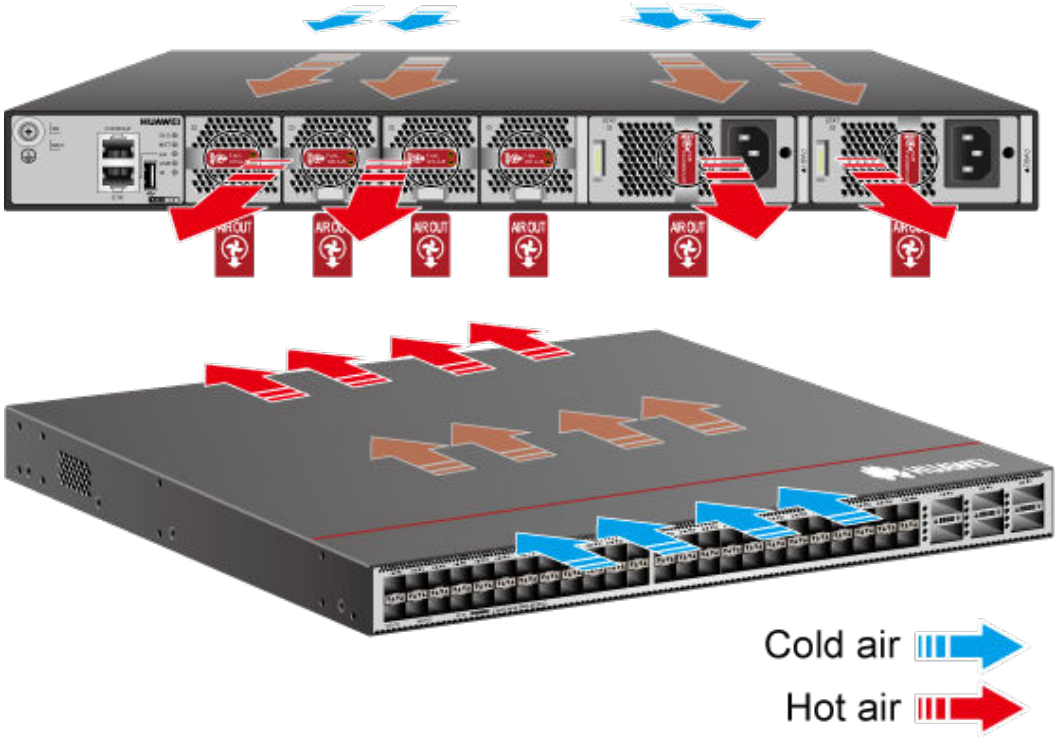
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

Figure 4-249 Front-to-back airflow for port-side exhaust



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Figure 4-250 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-230 Technical specifications of the CE6881-48T6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	6.6 kg (14.55 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.9 kg (19.62 lb) (including AC power modules and fan modules, but not including optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	10.4 kg (22.93 lb)
Weight with packaging (full configuration) [kg (lb)]	12.3 kg (27.12 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (supporting only full-duplex)

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Item	Specification
Uplink Service interface	6 x 100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10G electrical port and 100G optical port
RTC	Supported
Typical power consumption [W]	• 347 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 362 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 1184 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 1235 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	235 W
Static heat dissipation [BTU/hour]	801 BTU/hour
Maximum power consumption [W]	452 W
Maximum heat dissipation	1542
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Compliance with safety standards • Compliance with EMC standards • Compliance with environment and environmental protection standards
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short period of time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999953209
MTBF [year]	48.16 years
MTTR [hour]	1.78 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: 49 dB(A) on average (maximum: 52 dB(A)) • Back-to-front airflow: 50 dB(A) on average (maximum: 52 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: 69 dB(A) on average (maximum: 74 dB(A)) • Back-to-front airflow: 67 dB(A) on average (maximum: 73 dB(A))

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Item	Specification
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

4.4.18.4 CE6881-48T6CQ (02353GLB-004)

Overview

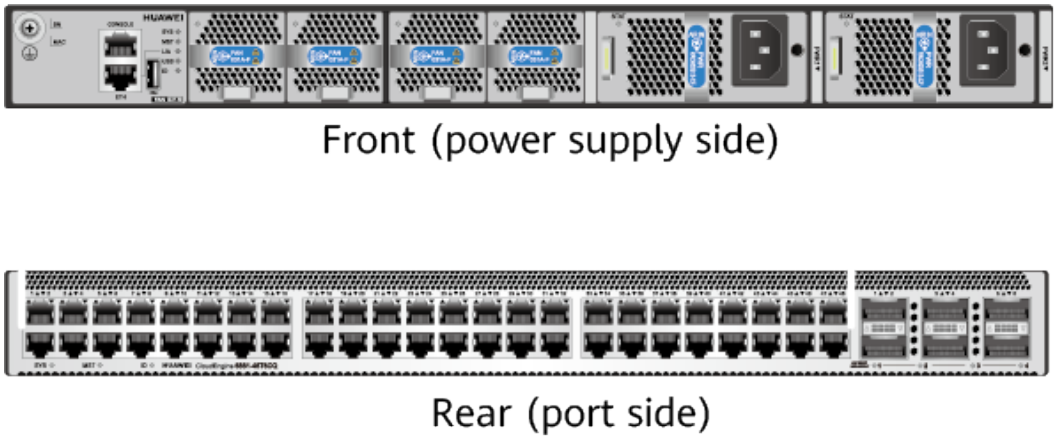
Table 4-231 Basic information about the CE6881-48T6CQ

Item	Details
Description	CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02353GLB-004
Model	CE6881-48T6CQ
First supported version	V200R022C10
Other part numbers	02353GLC-004 (CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02353GLD-004(CE6881-48T6CQ switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))
Short Name	CE6881

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Appearance

Figure 4-251 Appearance of the CE6881-48T6CQ



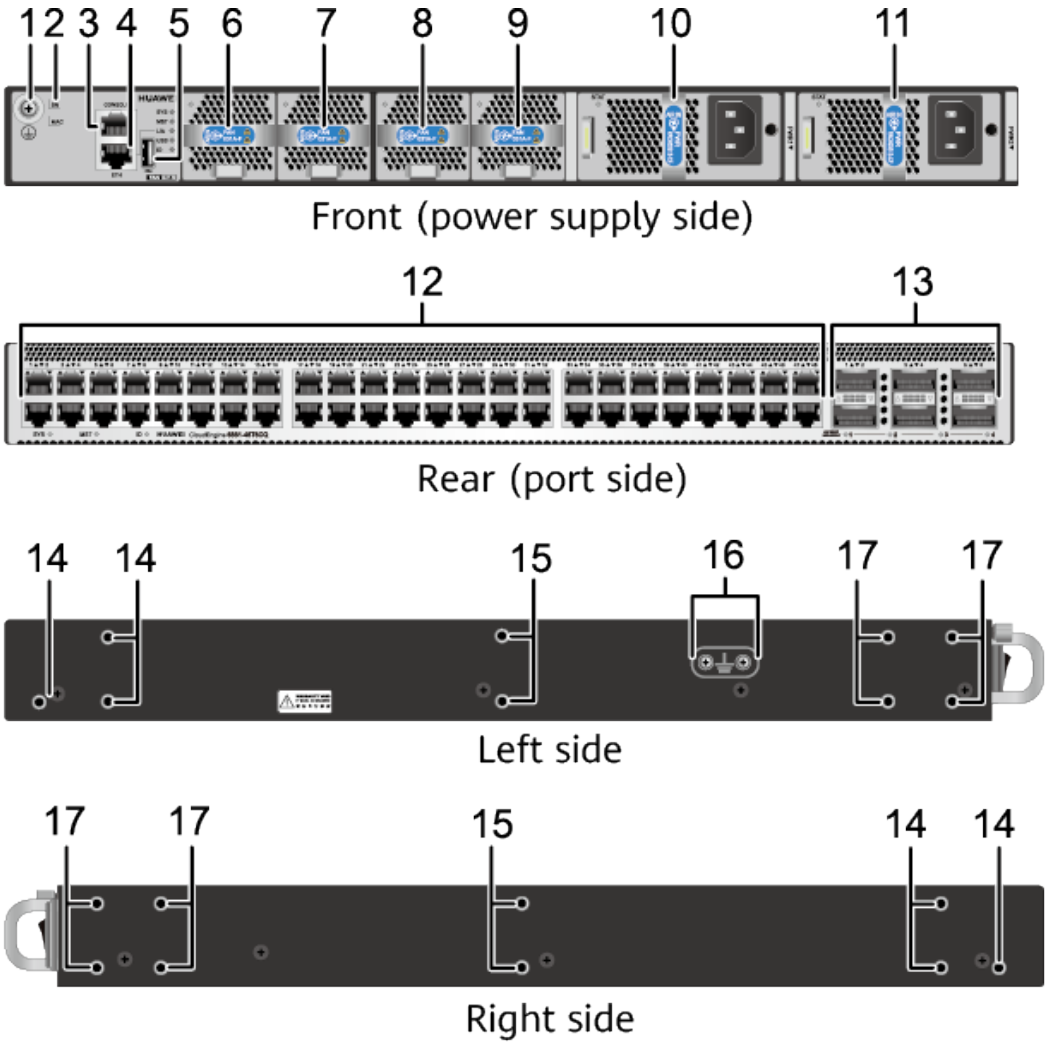
NOTE

The figures in this document are for reference only.

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Components

Figure 4-252 Components of the CE6881-48T6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-232 Slots on the CE6881-48T6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-253 Indicators on the CE6881-48T6CQ 1

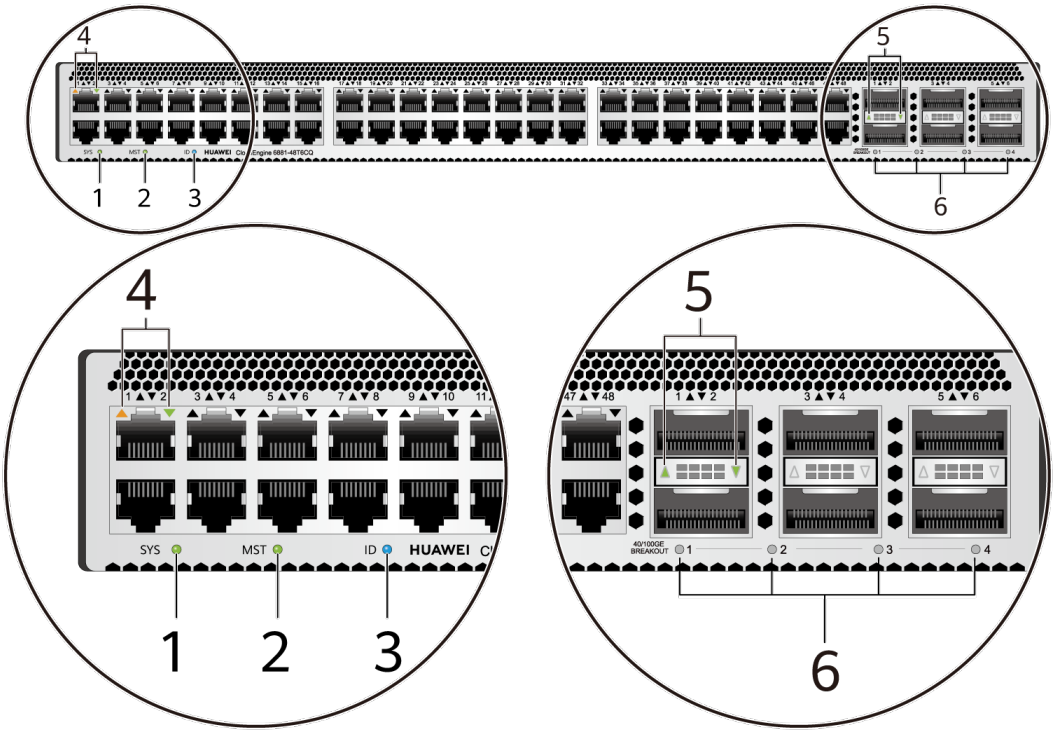
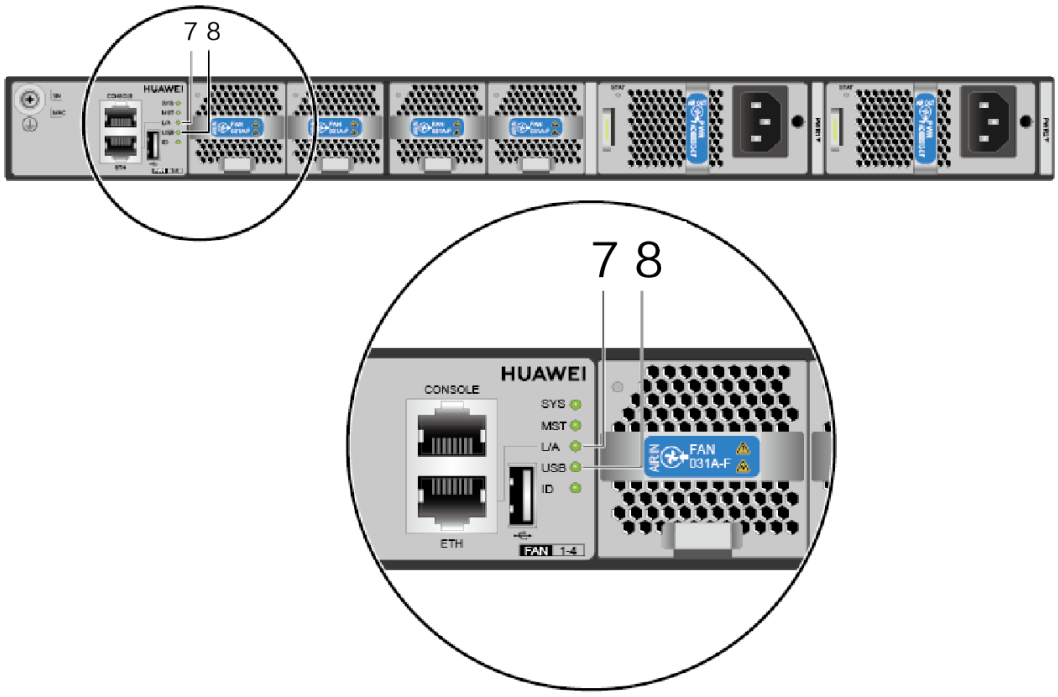


Figure 4-254 Indicators on the CE6881-48T6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T electrical port)	5. Service port indicator (40GE/100GE optical port)
6. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-233 Indicators on the CE6881-48T6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
	NOTE · In V200R003C00 and later versions, you can run the dfs-master led enable command to enable the stack master/slave indicator to display the master/slave state of the DFS group. · After the stack master/slave indicator is enabled, it displays the master/slave state of the DFS group. The stack master/slave indicator of the device with DFS in the master state is steady on, and the stack master/slave indicator of the device with DFS in the slave state is steady off.	Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

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Silkscreen	Name	Color	Status	Description
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.

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Silkscreen	Name	Color	Status	Description
	NOTE A 40GE/100GE QSFP28 optical port on the CE6881-48T6CQ cannot be split into four 10GE or 25GE ports, and the indicators are off.	Green	Steady on	At least one port works in 10GE/25GE mode and is split into four 10GE/25GE ports.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-234 Ports on the CE6881-48T6CQ

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet electrical port	RJ45	A 10GBASE-T Ethernet electrical port receives and sends service traffic at 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port supports auto-sensing to 100 Mbit/s or 1000 Mbit/s. 10GBASE-T Ethernet electrical ports must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Standards compliance: IEEE 802.3an and IEEE 802.3az • Electrical interface attribute: Both straight-through cables and crossover cables can be used. • Working mode: 100 Mbit/s, 1000 Mbit/s, and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Both straight-through cables and crossover cables can be used.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	LC/MPO	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Standards compliance: IEEE 802.3ba • Optical port attribute: depending on the optical module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. QSFP+ to QSFP+ high-speed cables and QSFP28 to QSFP28 high-speed cables do not support auto-negotiation of copper cables. They can only be used on stack ports and M-LAG peer-link ports. 2. When a QSFP28 high-speed cable is installed on a 100GE port that works at 100 Gbit/s, the port supports 1/3/5 m QSFP28 high-speed cables. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables. 4. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) of a device is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. • Complied standard: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

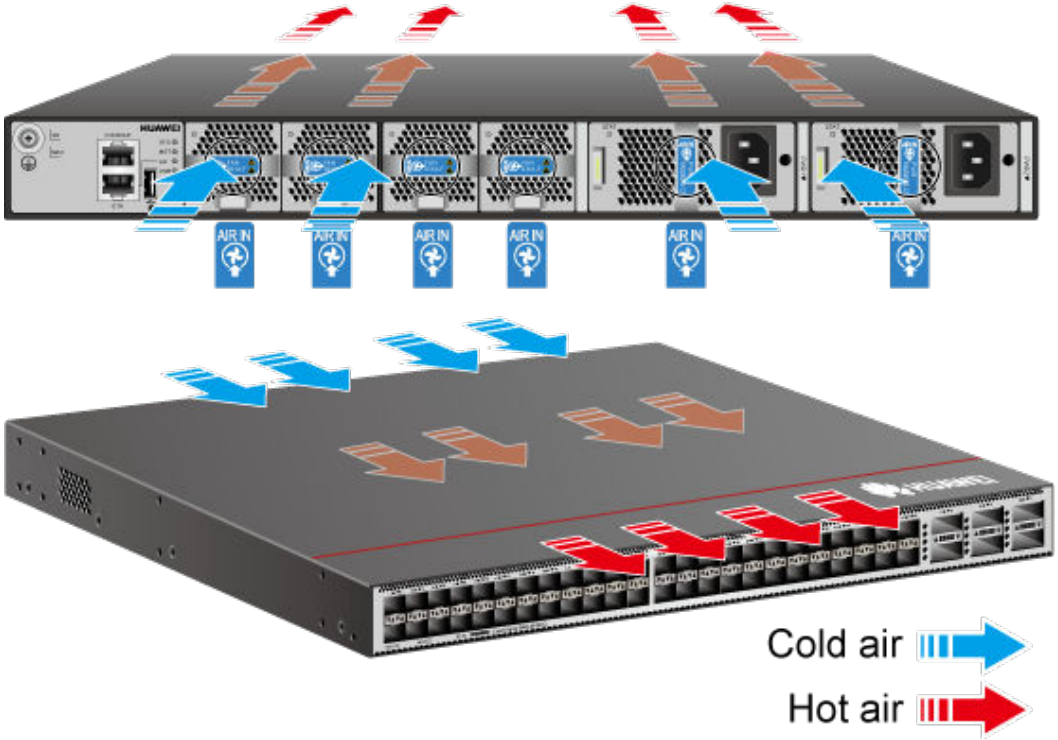
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

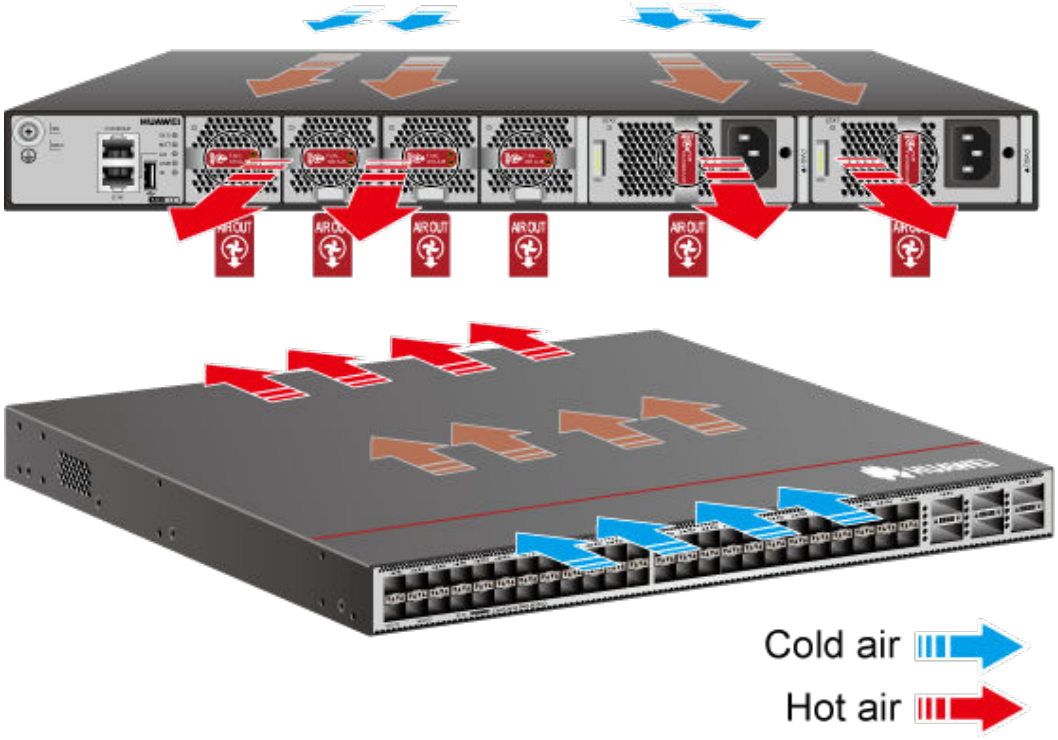
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

Figure 4-255 Front-to-back airflow for port-side exhaust



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Figure 4-256 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-235 Technical specifications of the CE6881-48T6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	6.6 kg (14.55 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.9 kg (19.62 lb) (including AC power modules and fan modules, but not including optical modules. If the device supports multiple models of modules, the heaviest modules are used for the measurement.)
Weight with packaging [kg (lb)]	10.4 kg (22.93 lb)
Weight with packaging (full configuration) [kg (lb)]	12.3 kg (27.12 lb)
Installation Type	Cabinet installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (supporting only full-duplex)

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Item	Specification
Uplink Service interface	6 x 100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10G electrical port and 100G optical port
RTC	Supported
Typical power consumption [W]	• 347 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 362 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 1184 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 1235 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	235 W
Static heat dissipation [BTU/hour]	801 BTU/hour
Maximum power consumption [W]	452 W
Maximum heat dissipation	1542
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Compliance with safety standards • Compliance with EMC standards • Compliance with environment and environmental protection standards
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short period of time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.9999953209
MTBF [year]	48.16 years
MTTR [hour]	1.78 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: 49 dB(A) on average (maximum: 52 dB(A)) • Back-to-front airflow: 50 dB(A) on average (maximum: 52 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: 69 dB(A) on average (maximum: 74 dB(A)) • Back-to-front airflow: 67 dB(A) on average (maximum: 73 dB(A))

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Item	Specification
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.19 CE6881-48T6CQ-K

4.4.19.1 CE6881-48T6CQ-K (02353PCJ)

Overview

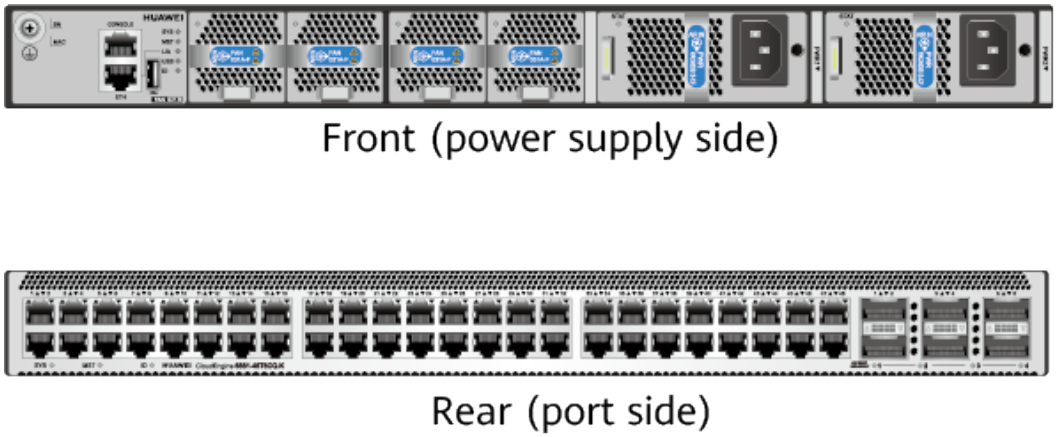
Table 4-236 Basic information about the CE6881-48T6CQ-K

Item	Details
Description	CE6881-48T6CQ-K switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02353PCJ
Model	CE6881-48T6CQ-K
First supported version	V200R020C00
Other part numbers	02353PCK (CE6881-48T6CQ-K switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake))
Short Name	CE6881K

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Appearance

Figure 4-257 Appearance of the CE6881-48T6CQ-K



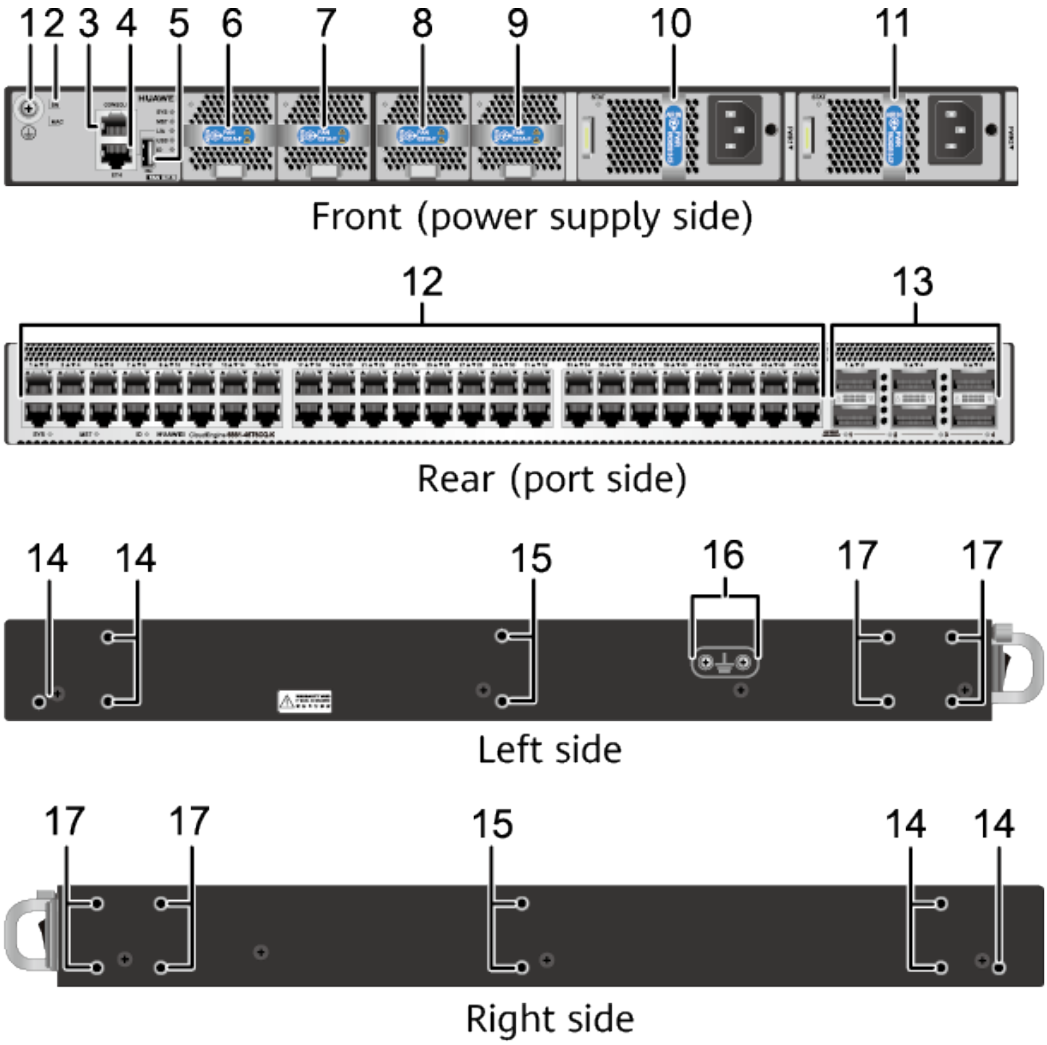
NOTE

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Components

Figure 4-258 Components of the CE6881-48T6CQ-K



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-237 Slots on the CE6881-48T6CQ-K

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-259 Indicators on the CE6881-48T6CQ-K 1

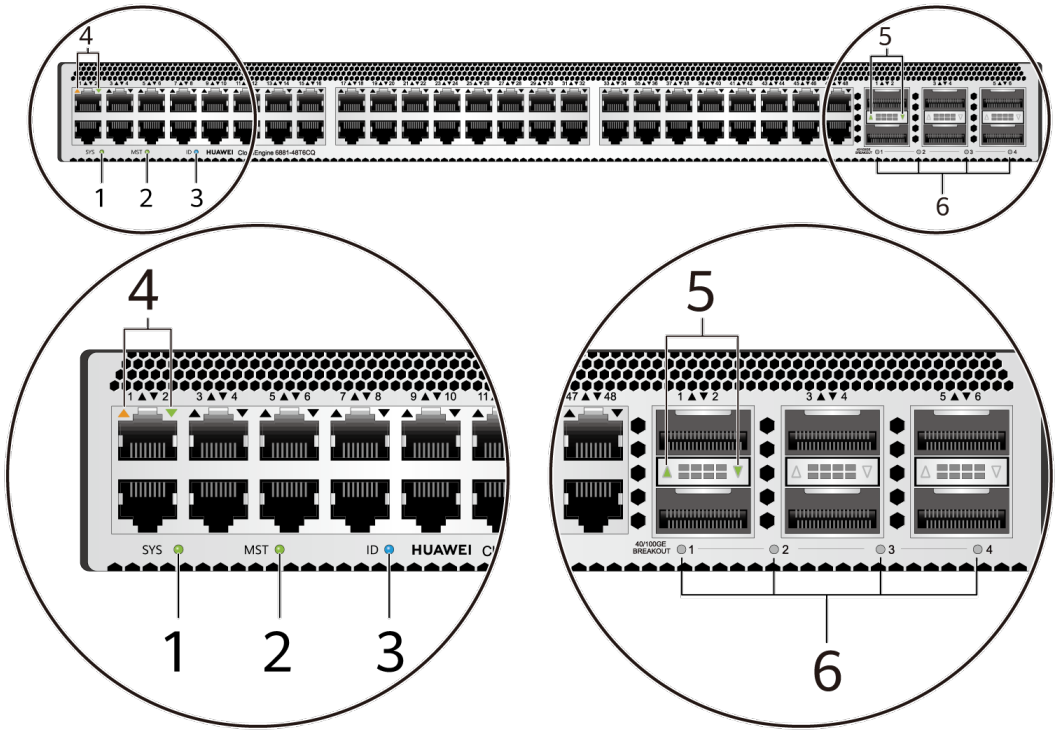
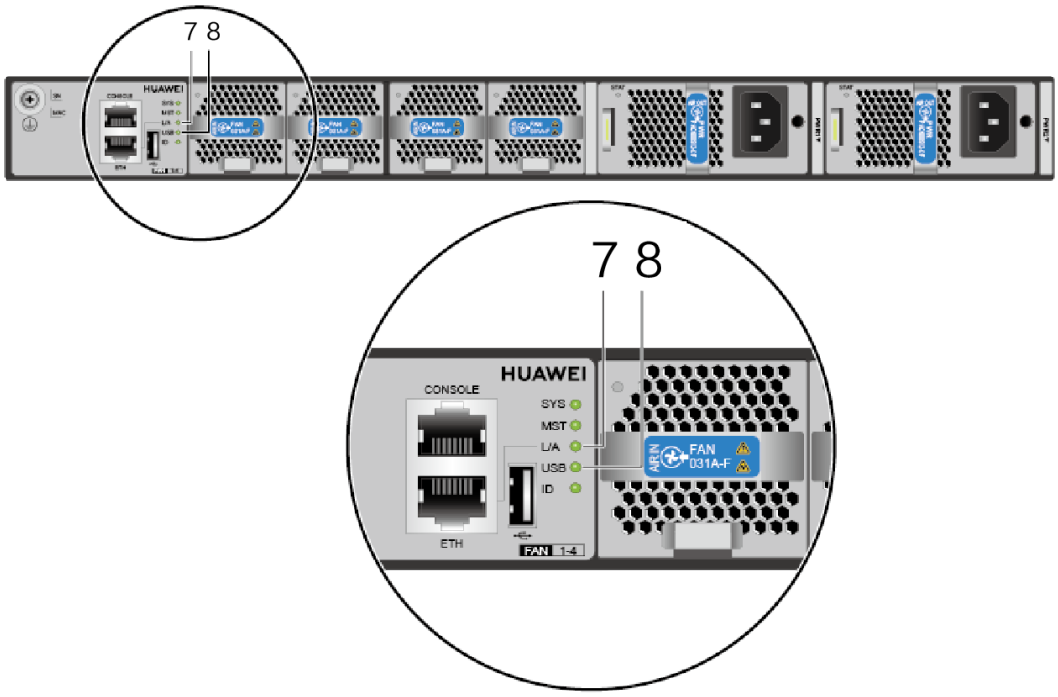


Figure 4-260 Indicators on the CE6881-48T6CQ-K 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T electrical port)	5. Service port indicator (40GE/100GE optical port)
6. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-238 Indicators on the CE6881-48T6CQ-K

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
-	40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.
		Green	Steady on	At least one port works in 10GE/25GE mode and is split into four 10GE/25GE ports.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-239 Ports on the CE6881-48T6CQ-K

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet electrical port	RJ45	A 10GBASE-T Ethernet electrical port receives and sends service traffic at 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port supports auto-sensing to 100 Mbit/s or 1000 Mbit/s. 10GBASE-T Ethernet electrical ports must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Standards compliance: IEEE 802.3an and IEEE 802.3az • Electrical interface attribute: Both straight-through cables and crossover cables can be used. • Working mode: 100 Mbit/s, 1000 Mbit/s, and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Both straight-through cables and crossover cables can be used.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	LC/MPO	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Standards compliance: IEEE 802.3ba • Optical port attribute: depending on the optical module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. QSFP+ to QSFP+ high-speed cables and QSFP28 to QSFP28 high-speed cables do not support auto-negotiation of copper cables. They can only be used on stack ports and M-LAG peer-link ports. 2. When a QSFP28 high-speed cable is installed on a 100GE port that works at 100 Gbit/s, the port supports 1/3/5 m QSFP28 high-speed cables. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables. 4. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) of a device is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. • Complied standard: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

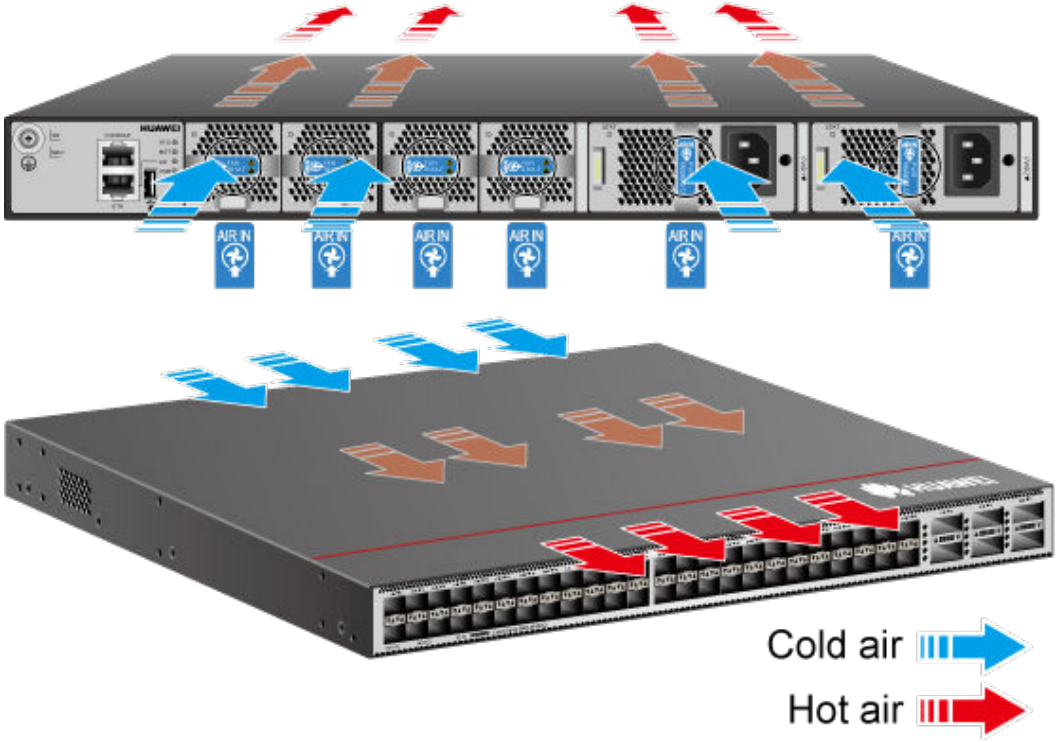
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-261** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

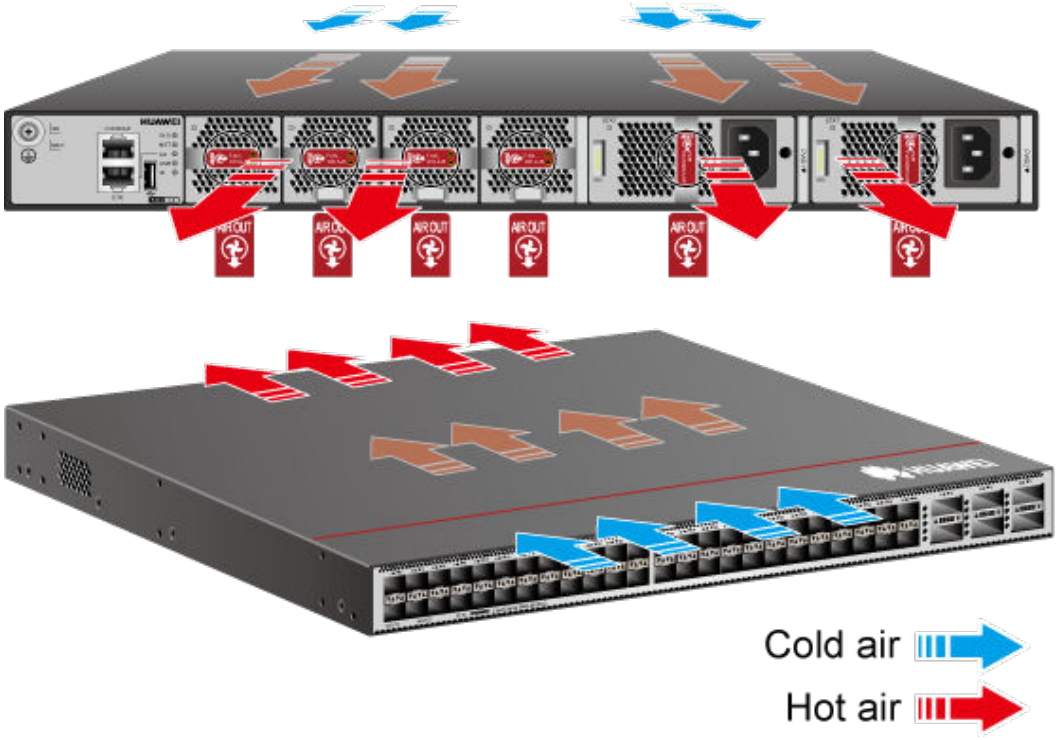
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-262** (using a CE6863 chassis as an example).

Figure 4-261 Front-to-back airflow for port-side exhaust



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Figure 4-262 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-240 Technical specifications of the CE6881-48T6CQ-K

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	6.6 kg (14.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.9 kg (19.6 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	10.4 kg (22.93 lb)
Weight with packaging (full configuration) [kg (lb)]	12.3 kg (27.12 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHZ
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (Only full-duplex is supported)

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Item	Specification
Uplink Service interface	6 x 100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE electrical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 347 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 362 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 1184 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 1235 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports + short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	235 W
Static heat dissipation [BTU/hour]	801 BTU/hour
Maximum power consumption [W]	452 W
Maximum heat dissipation	1542
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999953209
MTBF [year]	48.16 years
MTTR [hour]	1.78 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: 49 dB(A) on average (maximum: 52 dB(A)) • Back-to-front airflow: 50 dB(A) on average (maximum: 52 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: 69 dB(A) on average (maximum: 74 dB(A)) • Back-to-front airflow: 67 dB(A) on average (maximum: 73 dB(A))

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Item	Specification
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.19.2 CE6881-48T6CQ-K (02353PCJ-001)

Overview

Table 4-241 Basic information about the CE6881-48T6CQ-K

Item	Details
Description	CE6881-48T6CQ-K switch (48*10GE RJ45, 6*100GE QSFP28, without fan and power modules)
Part Number	02353PCJ-001
Model	CE6881-48T6CQ-K
First supported version	V200R021C10SPC600
Other part numbers	02353PCK-001 (CE6881-48T6CQ-K switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02354TDU-001 (CE6881-48T6CQ-K switch (48*10GE RJ45, 6*100GE QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))

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Item	Details
Supported Patch Version	If the switch runs V200R021C00SPC200, install the patch of V200R021SPH022 or a later version. If the switch runs V200R021C10SPC600, install the patch of V200R021SPH022 or a later version.
Short Name	CE6881K

Appearance

Figure 4-263 Appearance of the CE6881-48T6CQ-K



Front (power supply side)



Rear (port side)

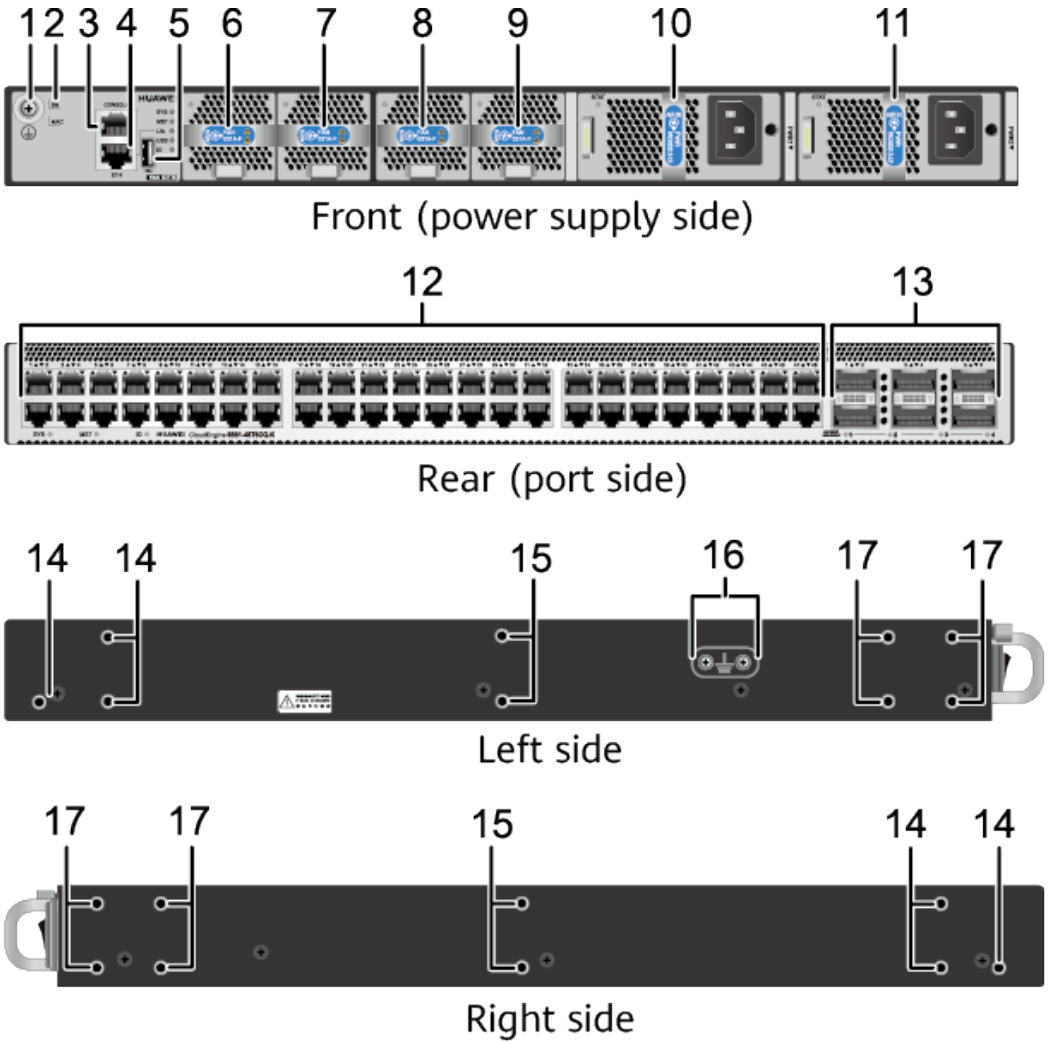
NOTE

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Components

Figure 4-264 Components of the CE6881-48T6CQ-K



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Forty-eight 10GBASE-T Ethernet electrical ports
13	Six 40GE/100GE QSFP28 Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-242 Slots on the CE6881-48T6CQ-K

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	(1) The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. (2) The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. (3) All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	1) To ensure system stability and heat dissipation, each CloudEngine 6800 series switch provides four fan slots, in which pluggable fan modules are installed to cool the chassis. 2) It is recommended that four fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. 3) All fan modules are hot swappable.

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Indicators

Figure 4-265 Indicators on the CE6881-48T6CQ-K 1

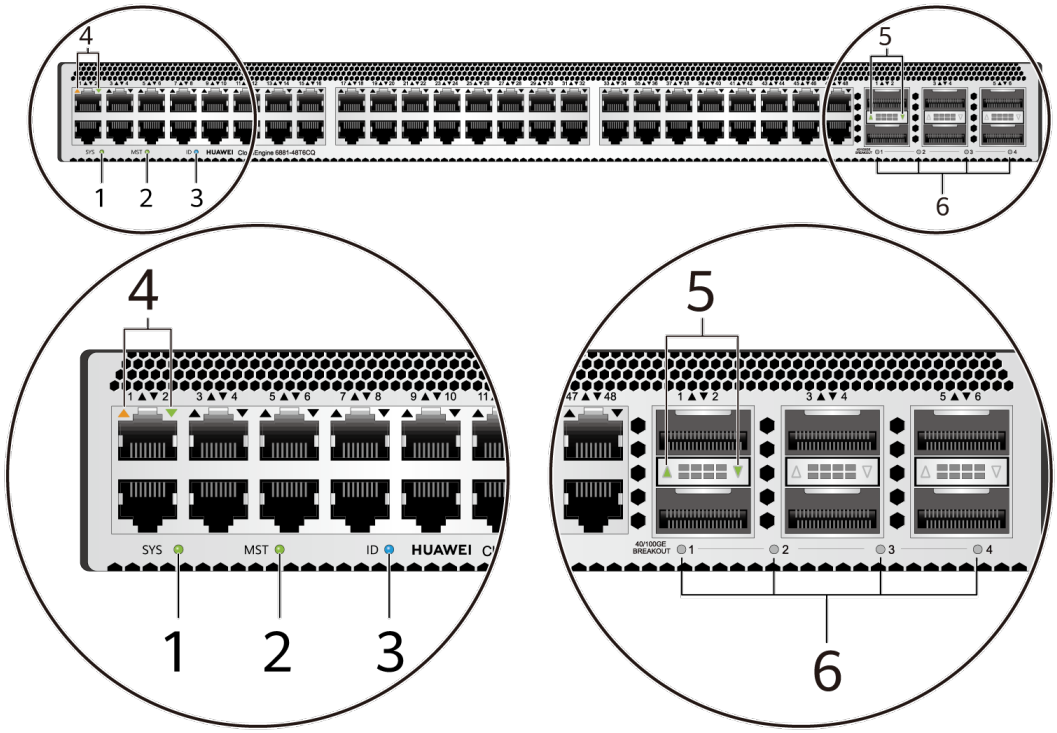
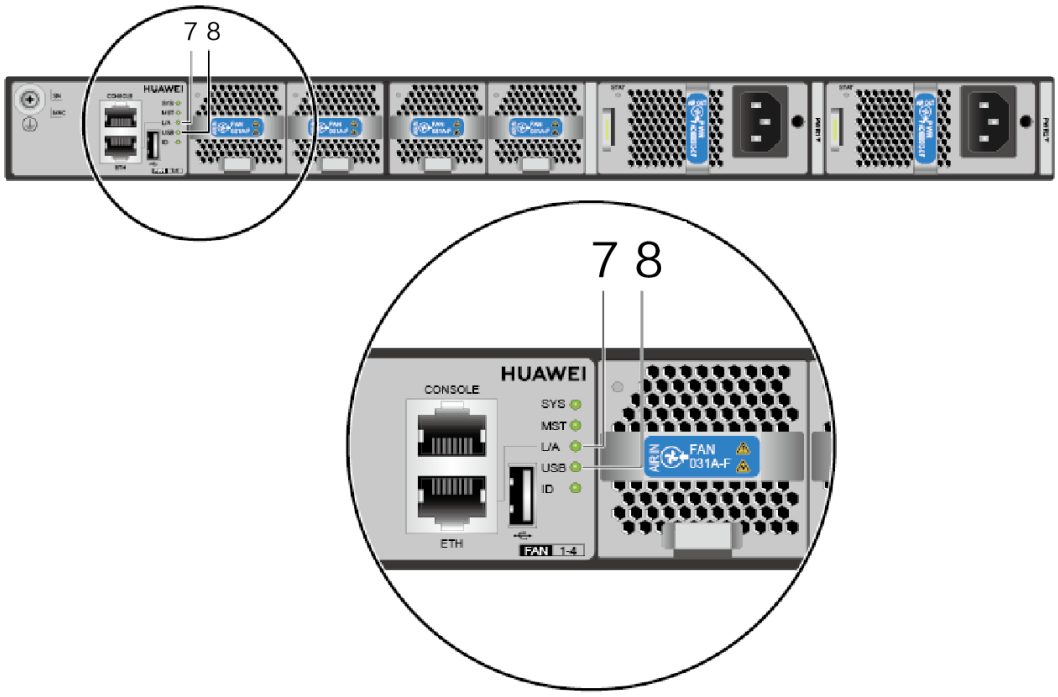


Figure 4-266 Indicators on the CE6881-48T6CQ-K 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GBASE-T electrical port)	5. Service port indicator (40GE/100GE optical port)
6. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-243 Indicators on the CE6881-48T6CQ-K

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/slave indicator	Green	Steady off	The device is not a stack master.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GBASE-T Ethernet electrical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE QSFP28 optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
-	40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE QSFP28 optical port)	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.
		Green	Steady on	At least one port works in 10GE/25GE mode and is split into four 10GE/25GE ports.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-244 Ports on the CE6881-48T6CQ-K

Port	Connector Type	Description	Available Components
10GBASE-T Ethernet electrical port	RJ45	A 10GBASE-T Ethernet electrical port receives and sends service traffic at 100 Mbit/s, 1000 Mbit/s, or 10 Gbit/s. The port supports auto-sensing to 100 Mbit/s or 1000 Mbit/s. 10GBASE-T Ethernet electrical ports must use Category 6A shielded Ethernet cables or higher Ethernet cables. • Complied standards: IEEE 802.3an and IEEE 802.3az • Electrical interface attribute: Both straight-through cables and crossover cables can be used. • Working mode: 100 Mbit/s, 1000 Mbit/s, and 10 Gbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Both straight-through cables and crossover cables can be used.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	LC/MPO	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Standards compliance: IEEE 802.3ba • Optical port attribute: depending on the optical module or cable in use • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. QSFP+ to QSFP+ high-speed cables and QSFP28 to QSFP28 high-speed cables do not support auto-negotiation of copper cables. They can only be used on stack ports and M-LAG peer-link ports. 2. When a QSFP28 high-speed cable is installed on a 100GE port that works at 100 Gbit/s, the port supports 1/3/5 m QSFP28 high-speed cables. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables. 4. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) of a device is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. • Complied standard: IEEE 802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

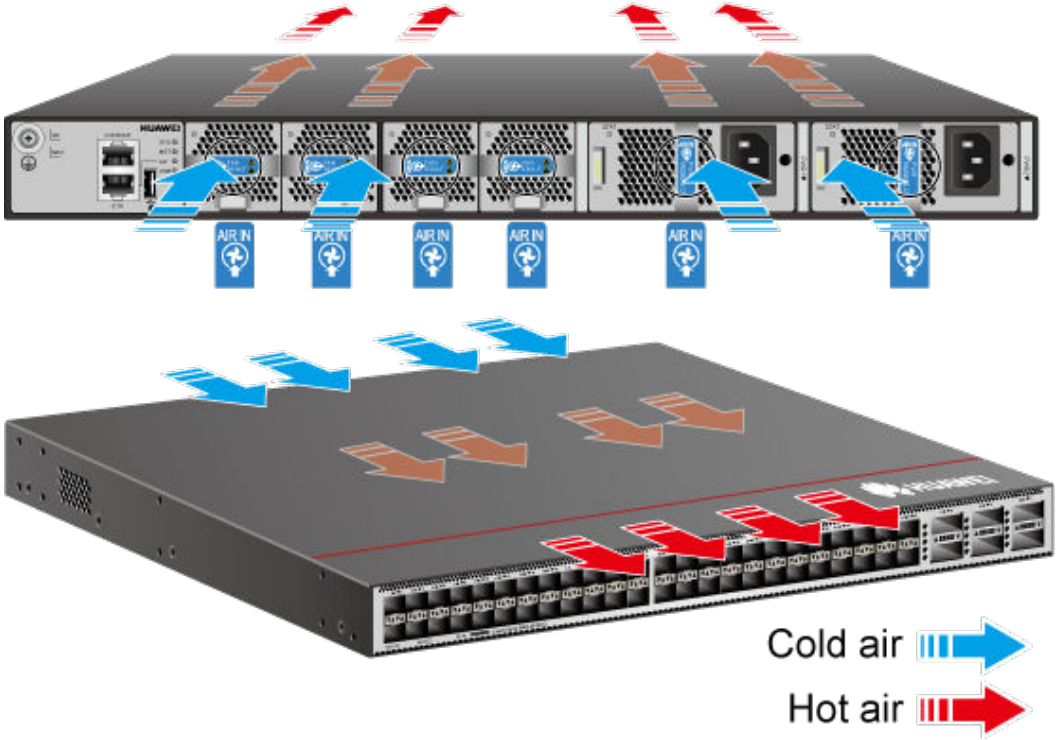
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- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5 Front-to-back airflow for port-side exhaust** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

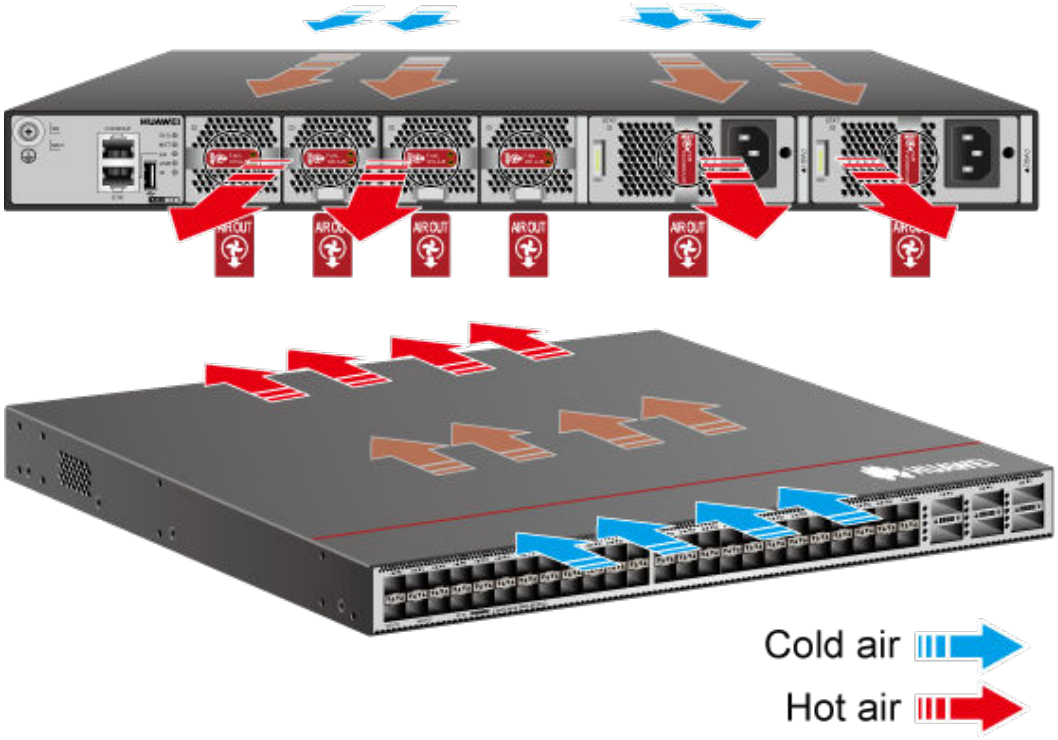
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6 Back-to-front airflow for port-side intake** (using a CE6863 chassis as an example).

Figure 4-267 Front-to-back airflow for port-side exhaust



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Figure 4-268 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-245 Technical specifications of the CE6881-48T6CQ-K

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	6.6 kg (14.6 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.9 kg (19.6 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	10.4 kg (22.93 lb)
Weight with packaging (full configuration) [kg (lb)]	12.3 kg (27.12 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHZ
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	48*10GE RJ45 (Only full-duplex is supported)

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Item	Specification
Uplink Service interface	6 x 100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. In versions earlier than V200R022C00, 100GE ports cannot be split into 4 x 25GE and 4 x 10GE ports. In V200R022C00 and later versions, ports 5 and 6 can be split into 4 x 25GE or 4 x 10GE ports. Other ports cannot be split. 40GE/100GE port 5 supports only static split, and 40GE/100GE port 4 is deleted after split is configured. After split is canceled for 40GE/100GE port 5, 40GE/100GE port 5 can be restored, but 40GE/100GE port 4 can be restored only after the card is restarted. After a port is split, the port cannot be connected using a copper cable. When a copper cable is installed on the port, a message is displayed, indicating that the medium does not match. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE electrical ports and 100GE optical ports
RTC	Supported
Typical power consumption [W]	• 347 W (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 362 W (50% throughput, 3 m Ethernet cables on 48 ports and short-distance optical modules on 6 ports, normal temperature, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	• 1184 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports and QSFP28 high-speed cables on 6 ports, normal temperature, dual power modules) • 1235 BTU/hr (50% throughput, 3 m Ethernet cables on 48 ports + short-distance optical modules on 6 ports, normal temperature, dual power modules)
Static power consumption [W]	235 W
Static heat dissipation [BTU/hour]	801 BTU/hour
Maximum power consumption [W]	452 W
Maximum heat dissipation	1542
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	• AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode • HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999953209
MTBF [year]	48.16 years
MTTR [hour]	1.78 hours
Noise at normal temperature (27°C, sound pressure) [dB(A)]	• Front-to-back airflow: 49 dB(A) on average (maximum: 52 dB(A)) • Back-to-front airflow: 50 dB(A) on average (maximum: 52 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	• Front-to-back airflow: 69 dB(A) on average (maximum: 74 dB(A)) • Back-to-front airflow: 67 dB(A) on average (maximum: 73 dB(A))

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Item	Specification
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	< 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.4.20 CE6881E-48S6CQ (02353LHN)

Overview

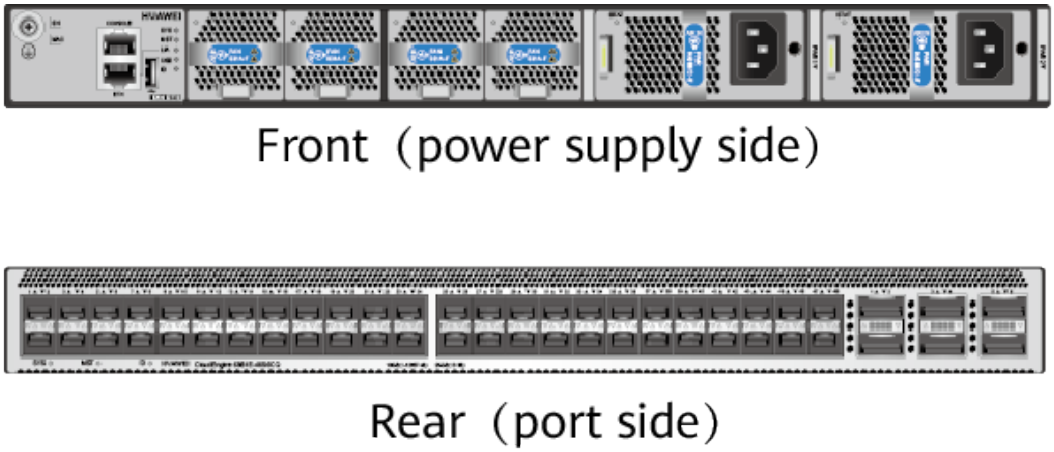
Table 4-246 Basic information about the CE6881E-48S6CQ

Item	Details
Description	CE6881E-48S6CQ switch (24*25G SFP28,24*10G SFP+, 6*100G QSFP28, without fan and power modules)
Part Number	02353LHN
Model	CE6881E-48S6CQ
First supported version	V200R019C10
Other part numbers	02353LHP (CE6881E-48S6CQ switch (24*25G SFP28,24*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side intake)) 02353LHQ (CE6881E-48S6CQ switch (24*25G SFP28,24*10G SFP+, 6*100G QSFP28, 2*AC power modules, 4*fan modules, port-side exhaust))

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Appearance

Figure 4-269 Appearance of the CE6881E-48S6CQ



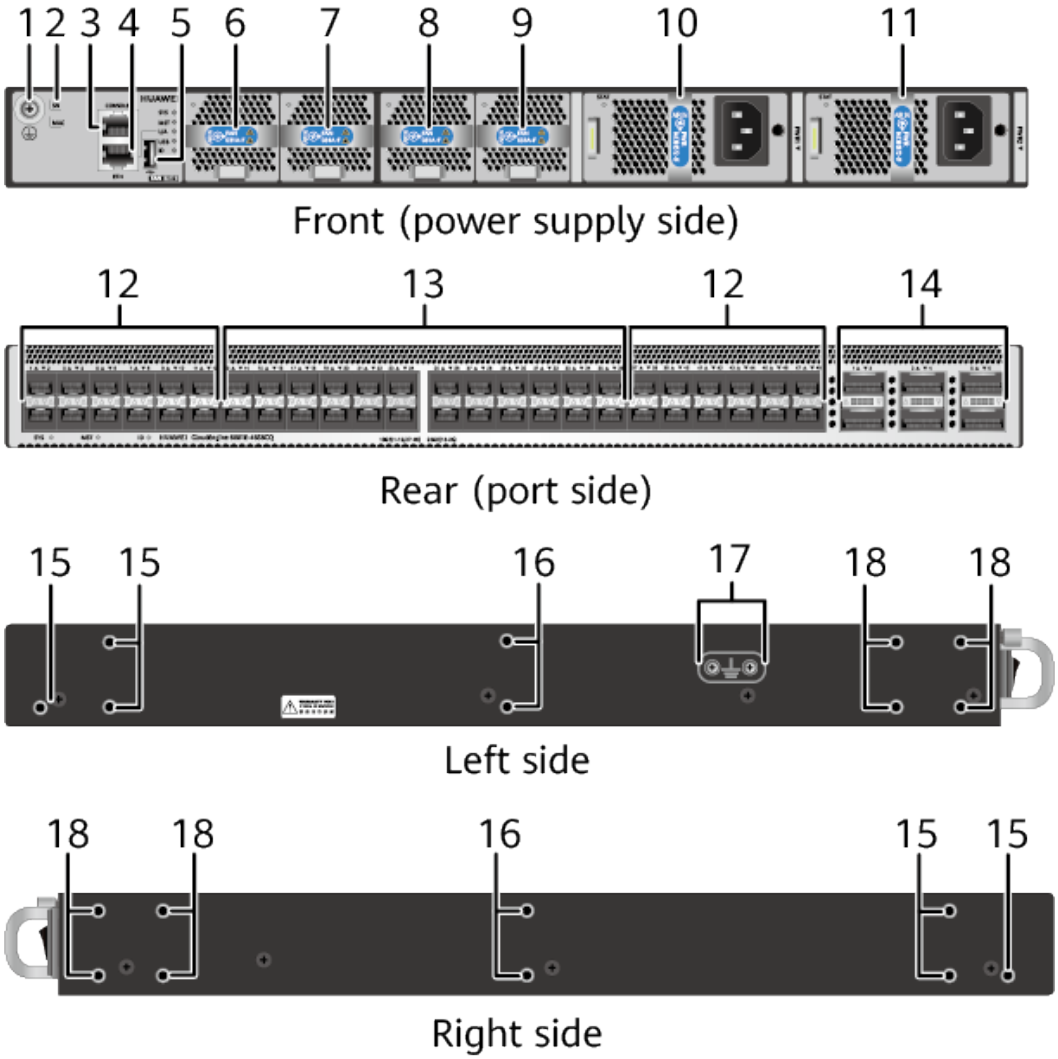
NOTE

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Components

Figure 4-270 Components of the CE6881E-48S6CQ



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	Console port	4	ETH management port (RJ45)
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Twenty-four 10GE SFP+ Ethernet optical ports
13	Twenty-four 10GE/25GE SFP28 Ethernet optical ports	14	Six 40GE/100GE QSFP28 Ethernet optical ports
15	Three port-side mounting holes for mounting brackets	16	Two middle mounting holes for mounting brackets
17	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal	18	Four power-supply-side mounting holes for mounting brackets

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Slot Layout

Table 4-247 Slots on the CE6881E-48S6CQ

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	The CloudEngine 6800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 6800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	• Each of the CloudEngine 6800 series switches has four fan slots in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. • It is recommended that four fan modules be properly installed on the switch to ensure normal switch operating. The switch supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. • All fan modules are hot swappable.

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Indicators

Figure 4-271 Indicators on the CE6881E-48S6CQ 1

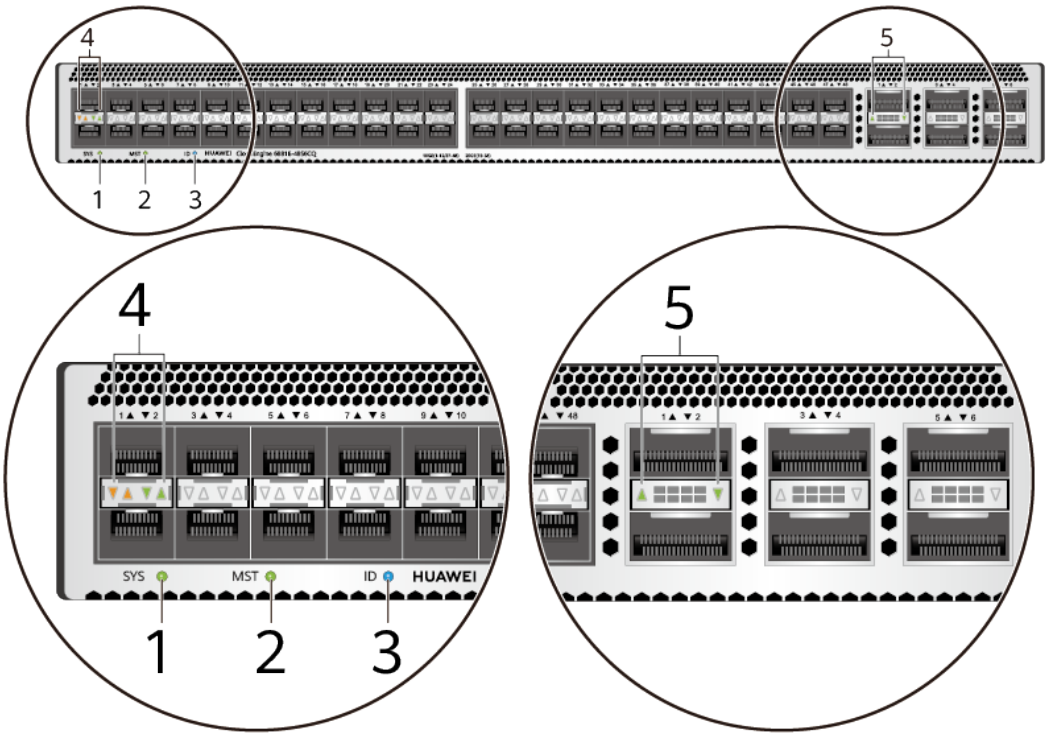
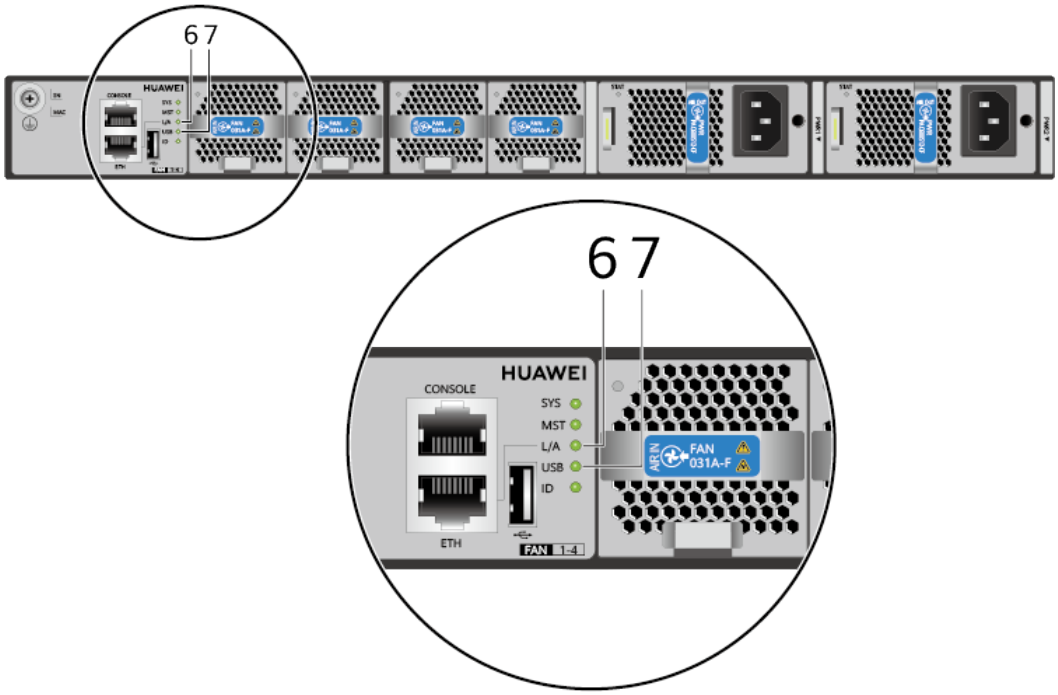


Figure 4-272 Indicators on the CE6881E-48S6CQ 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (10GE/25GE optical port)	5. Service port indicator (40GE/100GE optical port)
6. ETH management port indicator	7. USB-based deployment indicatorc	-	-	-

Table 4-248 Indicators on the CE6881E-48S6CQ

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).

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Silkscreen	Name	Color	Status	Description
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE/25GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Yellow	Steady off	The port is not sending or receiving data.
		Yellow	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-249 Ports on the CE6881E-48S6CQ

Port	Connector Type	Description	Available Components
10GE SFP+ port	LC	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** (1) When a GE copper module is installed on a 10GE optical port, the port can only work at 100 Mbit/s or 1000 Mbit/s. (2) 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules.

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Port	Connector Type	Description	Available Components
10GE/25GE SFP28 optical port	The connector type of the optical fiber depends on the optical module.	• Optical port attribute: depending on the optical module or cable in use • Restrictions: A 10GE/25GE SFP28 optical port works at 25 Gbit/s by default and does not support 1 Gbit/s or 10 Gbit/s auto-sensing. You can run the port mode 10g or port mode ge command to set the port speed to 10 Gbit/s or 1 Gbit/s. The 24 10GE/25GE SFP28 optical ports are divided into 6 port groups, with four ports in each group (13-16, 17-20, 21-24, ..., 33-36). · If any port in a port group is configured to work at 1 Gbit/s, 10 Gbit/s, or 25 Gbit/s, the other three ports in the group work at the same speed. · When four ports in a port group work at 25 Gbit/s, they support only 25GE media and	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **25GE SFP28 optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **SFP28 to SFP28 AOC cable** **SFP28 to SFP28 high-speed cable** **NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. When the port works at 25 Gbit/s, 1 m SFP28 high-speed cables are supported, and auto-negotiation of copper cables is not supported. The SFP28 high-speed cables can only be used on stack ports and M-LAG peer-link ports. 4. When a 25GE port is configured to work at 10 Gbit/s, the port supports 1 m, 3 m, and 5 m 10G SFP+ high-speed cables.

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Port	Connector Type	Description	Available Components
		will go Down if other types of media are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE media and will go Down if other types of media are used. When the ports in a port group work at 1 Gbit/s, they support only GE media and will go Down if other types of media are used. • Complied standard: IEEE 802.3by • Working mode: full-duplex	

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • 40GE/100GE QSFP28 Ethernet optical ports cannot be split. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE 1. Ports to which QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cables are connected cannot be split into 4x25GE and 4x10GE ports. Auto-negotiation of copper cables is not supported. These cables can only be used on stack ports and M-LAG peer-link ports. 2. When a 100GE port has a QSFP28 high-speed cable installed and works at the rate of 100 Gbit/s, 1 m, 3 m, and 5 m QSFP28 high-speed cables are supported. The 100G 3/5 m copper cable supports only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state. 3. If a 100GE port is configured to work at the rate of 40 Gbit/s, the port supports 1 m, 3 m, and 5 m 40G QSFP + high-speed cables.

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure 4-273** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-274** (using a CE6863 chassis as an example).

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Figure 4-273 Front-to-back airflow for port-side exhaust

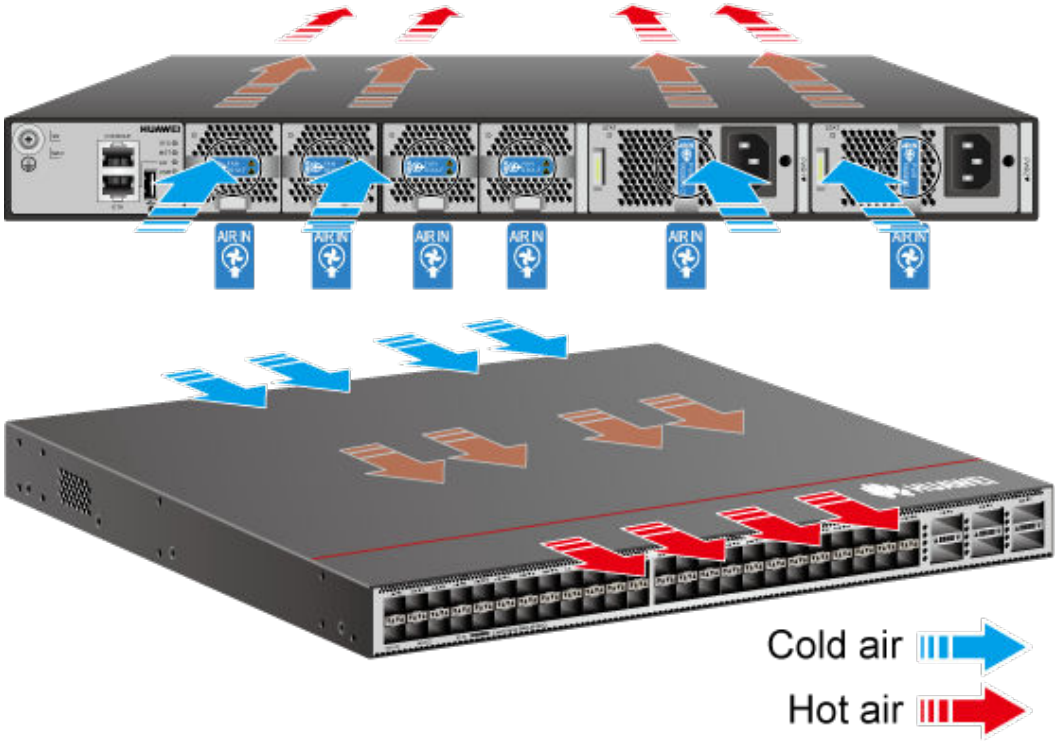
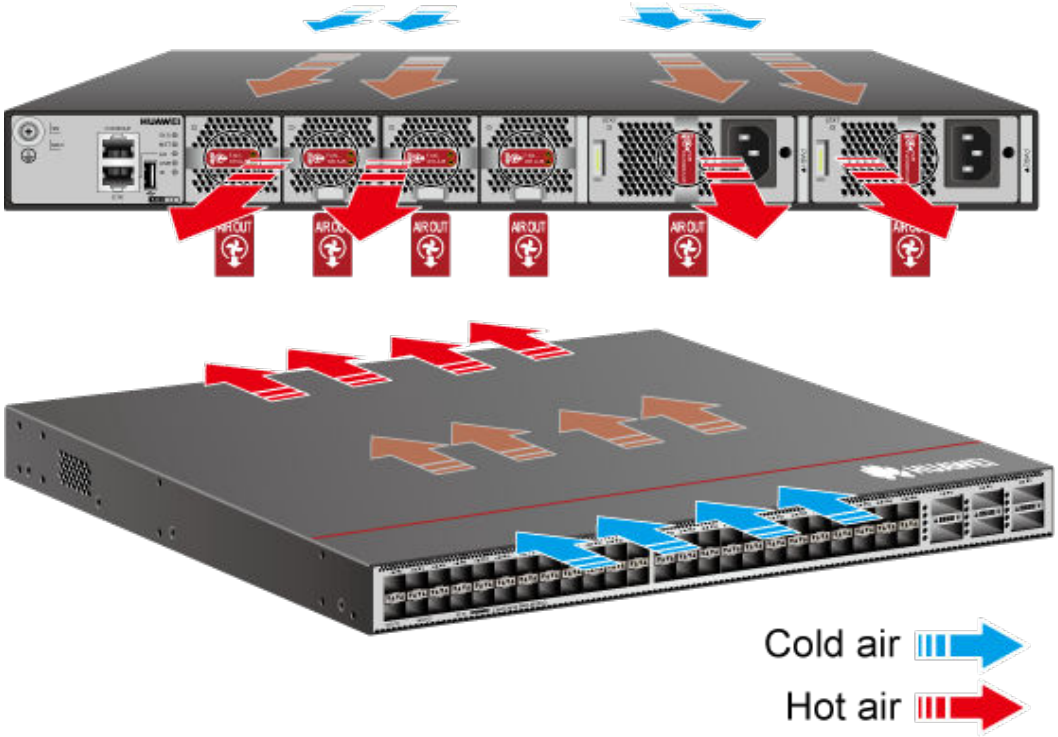


Figure 4-274 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-250 Technical specifications of the CE6881E-48S6CQ

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.56 in.)
Weight without packaging [kg (lb)]	5.7 kg (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	7.8 kg (17.2 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	24 x 10GE SFP+ and 24 x 25GE SFP28 **NOTE** 1. 10GE ports can be configured as GE ports, and the ports can automatically adjust their speeds based on the installed modules. 2. 25GE ports can be configured as 10GE and GE ports. Every four downlink 25GE ports form a group, and their speeds can be set to 10 Gbit/s or 1 Gbit/s using the CLI. 3. 10GE LRM/80 km linear optical modules are not supported. 4. 25GE 1 m copper cables and 10GE 1 m/3 m/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 5. 25GE copper cables can only be used on stack ports and M-LAG peer-link ports.
Uplink Service interface	6*100GE QSFP28 **NOTE** 1. Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. 2. A 100GE QSFP28 port cannot be split into 4 x 25GE or 4 x 10GE ports. 3. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on stack ports and M-LAG peer-link ports. 100G 3/5 m copper cables support only RS FEC. After the non-RS FEC mode is configured, the port enters the error-down state.
Service port supporting the stack function	10GE optical ports, 25GE optical ports, and 100GE optical ports
RTC	Supported
Typical power consumption [W]	203 W (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 252 W (100% throughput, short-distance optical modules on all ports, dual power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	693 BTU/hr (100% throughput, SFP28 high-speed cables on 48 ports and QSFP28 high-speed cables on 6 ports, dual power modules) 860 BTU/hr (100% throughput, short-distance optical modules on all ports, dual power modules)
Static power consumption [W]	165 W
Static heat dissipation [BTU/hour]	563 BTU/hour
Maximum power consumption [W]	363 W
Maximum heat dissipation	1239
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W

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Item	Specification
Maximum output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.9999960856
MTBF [year]	45.9 year
MTTR [hour]	1.57 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Front-to-back airflow: < 58 dB(A) Back-to-front airflow: < 57 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	Front-to-back airflow: < 75 dB(A) Back-to-front airflow: < 74 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.5 CE8800

4.5.1 CE8850-32CQ-EI

Version Mapping

Table 4-251 lists the mappings between the CE8850-32CQ-EI and software versions.

Table 4-251 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE8800	CE8850	CE8850-32CQ-EI	CE8850EI	V200R002C50 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

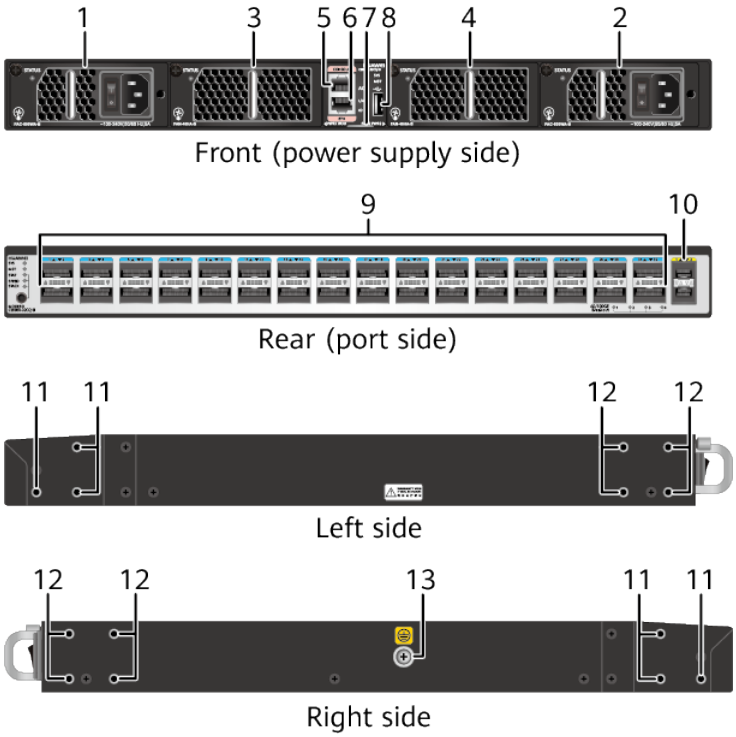
Appearance and Structure

NOTE

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Figure 4-275 CE8850-32CQ-EI



1	Power supply slot 1 Applicable power modules: • **5.5 600 W AC Power Module (PAC-600WA)** • **600 W DC Power Module (PDC600S12)**	2	Power supply slot 2 Applicable power modules: • **5.5 600 W AC Power Module (PAC-600WA)** • **600 W DC Power Module (PDC600S12)**
3	Fan slot 1 Applicable fan modules: • **6.8 FAN-40HA Series Fan Modules**	4	Fan slot 2 Applicable fan modules: • **6.8 FAN-40HA Series Fan Modules**
5	Console port	6	ETH management port (RJ45)
7	Barcode label **NOTE** This label is drawable, and you can pull it outward to view the ESN barcode and MAC address of the switch.	8	USB port

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9	Thirty-two 40GE/100GE QSFP28 Ethernet optical ports **NOTE** A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. Since V200R021C10, ports 100GE1/0/3 to 100GE1/0/30 can be split into two 50GE ports. Ports 100GE1/0/1, 100GE1/0/2, 100GE1/0/31, and 100GE1/0/32 cannot be split into two 50GE ports. Applicable modules and cables: • **40GE QSFP+ Optical Modules** • **9.10 100GE QSFP28 Optical Modules** (QSFP28-100G-4WDM-40 not supported) • **8.9.4 QSFP+ to QSFP+ AOC cable** • **8.8.4 QSFP+ to QSFP+ High-Speed Cable** • **8.9.5 QSFP+ to 4*SFP+ AOC cable** • **8.8.5 QSFP+ to 4*SFP+ High-Speed Cable** • **8.9.6 QSFP28 to QSFP28 AOC Cable** • **8.8.6 QSFP28 to QSFP28 High-Speed Cable** • **8.8.7 QSFP28 to 4*SFP28 High-Speed Cable**	10	Two 10GE SFP+ Ethernet optical ports Applicable modules and cables: • **9.7 10GE SFP+ Optical Modules** (OSXD22N00, LE2MXSC80FF0 and SFP-10G-ZDWT-L not supported) • **9.4 GE eSFP Optical Modules** • **9.5 GE SFP Copper Modules** (works at 10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s) • **8.9.2 SFP+ to SFP+ AOC Cable** • **8.8.2 SFP+ to SFP+ High-Speed Cable**
11	Three port-side mounting holes for mounting brackets	12	Four power-supply-side mounting holes for mounting brackets
13	Ground screw	-	-

Slot

- Power supply slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) have two power supply slots, in which power modules can be installed to provide power to the chassis. A chassis can have one or two power modules. Double power modules can provide higher reliability.

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) support double power modules (1+1 backup).

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  - When both power modules are working properly, they equally provide power for a chassis.
  - When one power module fails, the other one provides all power required for a chassis.

  All power modules are hot swappable.

- Fan slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI, CE6863-48S6CQ, CE6881-48S6CQ, CE6820-48S6CQ, CE6863-48S6CQ-K, CE6881-48S6CQ-K, CE6881E-48S6CQ and CE6857-48S6CQ-EI) have two fan slots, in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have two working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Airflow

The cooling systems of the CloudEngine 8800, 7800, 6800, and 5800 series switches have front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used. The airflow direction of the power modules and fan modules required on the CloudEngine 8800, 7800, 6800, and 5800 series switches depends on how the switches are installed in cabinets. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If CloudEngine 8800, 7800, 6800, and 5800 series switches are installed with the power supply side facing the front, you are advised to use fan modules and power modules with front-to-back airflow in the switches.

NOTE

- Front-to-back airflow: The power modules and fan modules using front-to-back airflow are marked  or 

. Air flows into the chassis from the power supply side and flows out from the port side, as shown in **Figure 4-276** (CE5800 as an example).
- Back-to-front airflow: The power modules and fan modules using back-to-front airflow are marked  or 

. Air flows into the chassis from the port side and flows out from the power supply side, as shown in **Figure 4-144** (CE5800 as an example).
- When the power module and fan module use forcible heat dissipation, they must use the same airflow method. For example, if the power module with back-to-front airflow is used, the fan module with back-to-front airflow must be used.

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Figure 4-276 Front-to-back airflow (air flows out from the port side)

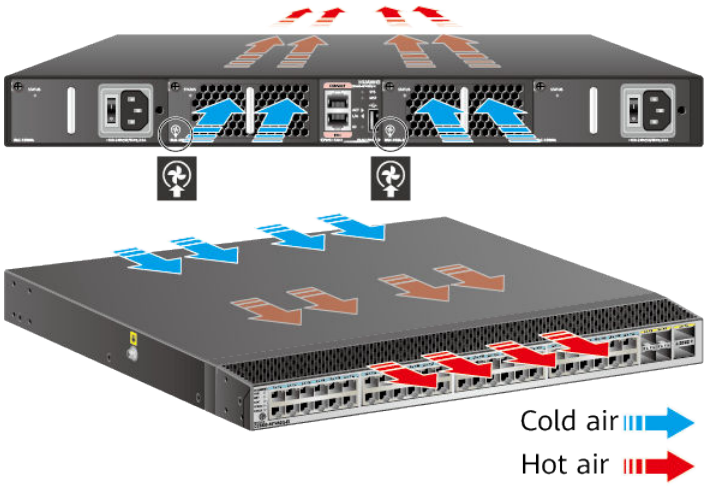
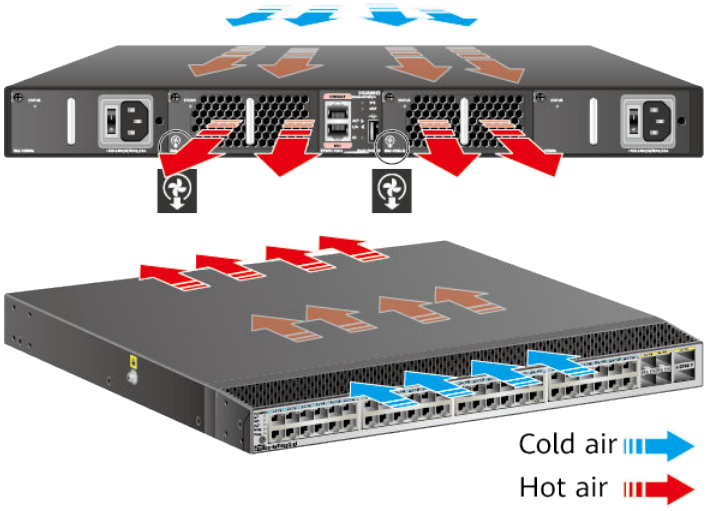


Figure 4-277 Back-to-front airflow (air flows in from the port side)



Indicators

Indicators on the CE8850-32CQ-EI are the same as those on the CE7850-32Q-EI. CE7850-32Q-EI is used as an example.

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Figure 4-278 Indicators on the CE8850-32Q-EI rear panel

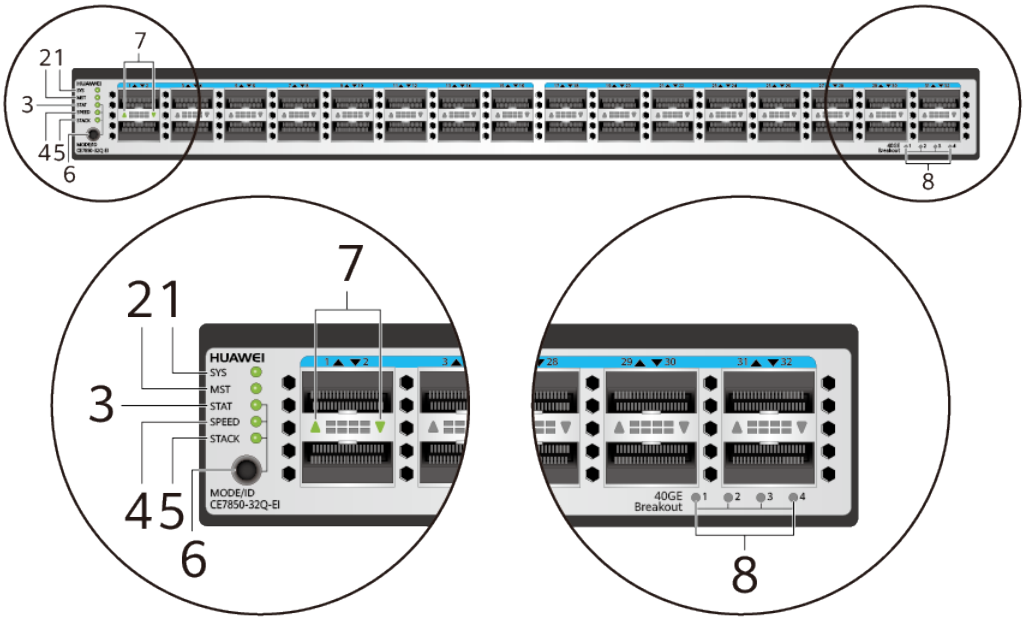
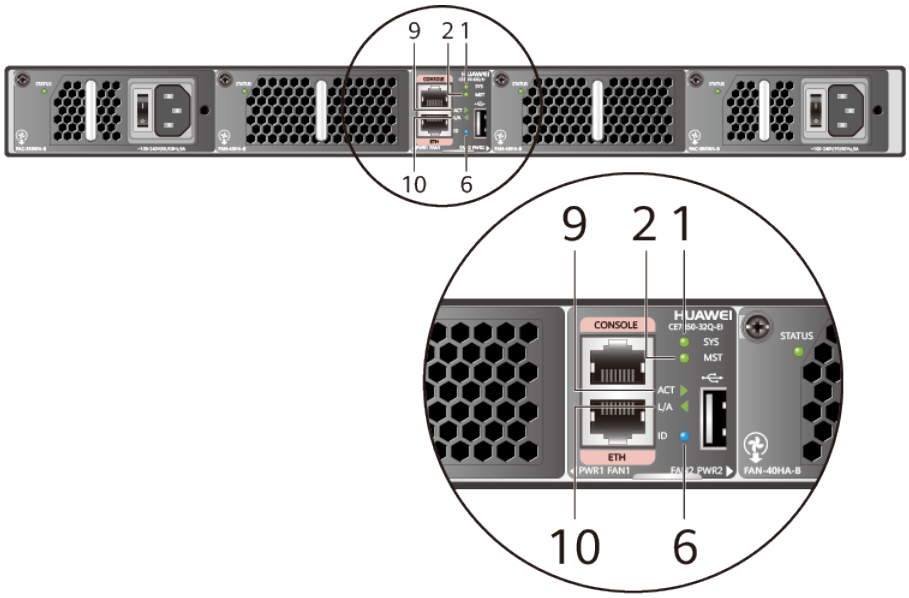


Figure 4-279 Indicators on the CE8850-32Q-EI front panel



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Table 4-252 Indicator description

No.	Indicator	Name	Color	Status	Description
1	SYS	System status indicator	Green	Off	The system is not running.
				Fast blinking	The system is starting.
				Slow blinking	The system is running normally.
			Red	Steady on	• The system fails to start. • At least one power module does not work normally. • At least one fan module does not work normally.
2	MST	Stack master/slave indicator **NOTE** In V200R003C00 and later versions, you can use the **dfs-master led enable** command to enable the stack master/slave indicator to display the DFS group master and backup status. After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Off	The switch is not a stack master.
				Steady on	The switch is a stack master or standalone switch.
			Yellow	Steady on	A master election error or another type of error has occurred in the stack. **NOTE** This indicator state is not supported in V100R005C00 and later versions.
3	STAT	STAT mode indicator	Green	Off	The STAT mode is not selected.

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No.	Indicator	Name	Color	Status	Description
				Steady on	The STAT mode (default mode) is selected, and service port indicators show the link connection states and link activity on ports.
4	SPEED	SPEED mode indicator	Green	Off	The SPEED mode is not selected.
				Steady on	The SPEED mode is selected, and service port indicators show the speed of each port.
5	STACK	STACK mode indicator	Green	Off	The STACK mode is not selected.
				Steady on	The STACK mode is selected, and service port indicators show the stack member ID of the local switch.
6	MODE/ID	Mode switch button and ID indicator **NOTE** The mode switch button on the rear panel is integrated with the ID indicator. There is only an ID indicator and no mode switch button on the front panel.	Mode switch button	-	• When you press the MODE button once, the SPEED indicator turns green and service port indicators show the speed of each port. • When you press the MODE button a second time, the STACK indicator turns green and service port indicators show the stack member ID of the local switch. • When you press the button a third time, the STAT indicator turns green (default mode) and service port indicators show the link connection states and link activity on ports. If you do not press the MODE button within 45 seconds, the service port indicators restore to the default mode. In this case, the STAT indicator is steady green, the SPEED and STACK indicators are off.
			ID indicator: blue	Off	The ID indicator is not used (default state).

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No.	Indicator	Name	Color	Status	Description
				Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.
7	-	Service port indicator (40GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Meanings of service port indicators vary in different modes. For details, see **Table 4-253**. When a 40GE port is configured as four 10GE ports, this indicator shows the status of a 10GE port. The sequence number of the indicated 10GE port is identified by indicators 40GE Breakout 1/2/3/4 on the lower right corner of the panel. **NOTE** Each 40GE port has a single-color indicator, which shows the status of the 40GE port by default. If a 40GE port is not split and is connected to four 10GE ports on a remote device using a one-to-four high-speed cable, the 40GE port cannot go Up and its indicator is off.		
8	-	40GE Breakout 1/2/3/4 (sequence number indicators of 10GE ports converted from a 40GE port) **NOTE** Indicators 1, 2, 3, 4 turn on in cyclic order, with each indicator keeping on for 5s.	Green	Off	40GE ports are not split into four 10GE ports.

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No.	Indicator	Name	Color	Status	Description
				Steady on	At least one 40GE port has been split into four 10GE ports. When one or more 40GE ports are configured as four 10GE ports, these indicators identify the sequence numbers of the 10GE ports. A 40GE port indicator (7 in **Figure 4-278**) shows the status of a 10GE port converted from the 40GE port: • When Breakout indicator 1 is on, each 40GE port indicator shows the status of the first 10GE port converted from the corresponding 40GE port. • When Breakout indicator 2 is on, each 40GE port indicator shows the status of the second 10GE port converted from the corresponding 40GE port. • When Breakout indicator 3 is on, each 40GE port indicator shows the status of the third 10GE port converted from the corresponding 40GE port. • When Breakout indicator 4 is on, each 40GE port indicator shows the status of the fourth 10GE port converted from the corresponding 40GE port. The following is an example: The first 40GE port shown in **Figure 4-278** is split into four 10GE ports, and the second 40GE port is not split. • When Breakout indicator 1 is on, the indicator of 40GE port 1 shows the status of the first 10GE port converted from 40GE port 1, and the indicator of 40GE port 2 still shows the status of 40GE port 2. • When Breakout indicator 2 is on, the indicator of 40GE port 1 shows the status of the second

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No.	Indicator	Name	Color	Status	Description
					10GE port converted from 40GE port 1, and the indicator of 40GE port 2 still shows the status of 40GE port 2.
9	ACT	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
				Steady on	USB-based deployment has been completed.
				Blinking	The system is reading data from a USB flash drive.
			Red	Steady on	USB-based deployment has failed.
10	L/A	ETH management port indicator	Green	Off	No link is established on the port.
				Steady on	A link is established on the port.
				Blinking	The port is sending or receiving data.

Table 4-253 Service port indicators in various modes

Display Mode	Port	Color	Description
STAT	40GE optical port	-	Off: The port is not connected or has been shut down.
		Green	• Steady on: A link is established on the port. • Blinking: The port is sending or receiving data.

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Display Mode	Port	Color	Description
SPEED	40GE optical port	-	Off: The port is not connected or has been shut down.
		Green	• Steady on: The 40GE port has been split into four 10GE ports. • Blinking: The port is working as a 40GE port.
STACK	Green **NOTE** This row describes the states and meanings of port indicators on a switch working in stack mode.		• Off: Port indicators do not show the stack member ID of the switch. • Steady on: If the indicator of a port is steady on, the port number is the stack member ID of the switch. **NOTE** In STACK mode, a 10GE optical port has only its LINK indicator on (green).

Ports

10GE SFP+ Ethernet Optical Port

A 10GE SFP+ Ethernet optical port supports auto-sensing to 1 Gbit/s, and can receive and send services at a rate of 1000 Mbit/s or 10 Gbit/s. **Table 4-254** describes the attributes of a 10GE SFP+ Ethernet optical port.

Table 4-254 Attributes of a 10GE SFP+ Ethernet optical port

Attribute	Description
Connector type	LC

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Attribute	Description
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ae
Working mode	Supported rate: 1000 Mbit/s and 10 Gbit/s auto-sensing Full-duplex

40GE/100GE QSFP28 Optical Port

Table 4-255 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 4-255 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depending on the optical module
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ba
Working mode	Full-duplex

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. Table 4-256 describes the attributes of the console port.

Table 4-256 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

ETH Management Port (RJ45)

The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite

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or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. **Table 4-257** describes the attributes of the ETH management port (RJ45).

Table 4-257 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-258 lists technical specifications of the CE8850-32CQ-EI switch.

Table 4-258 Technical specifications

Item		Description
Physical specifications		• Dimensions (W x D x H): 442.0 mm x 420.0 mm x 43.6 mm (17.4 in. x 16.5 in. x 1.72 in.) • Weight (with two power modules and two fan modules, calculated based on the heaviest model if multiple models are supported): 9.0 kg (19.84 lb)
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing

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Item		Description
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 52 dBA • Front-to-back airflow: < 52 dBA
Power specifications	Power source type	AC
	AC power input	• Rated input voltage range: 100 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	DC power input	• Rated voltage range: -48 V DC to -60 V DC • Maximum voltage range: -38.4 V DC to -72 V DC
	High-voltage DC power input	Not supported
	Rated input current	• 600 W AC power (PAC-600WA series): 9 A (100 V AC to 240 V AC) • 600 W DC power (PDC600S12 series): 20A (-48 V DC to -60 V DC)
Chassis power consumption	Maximum power consumption	453 W
	Typical power consumption	219 W (100% throughput, SFP+ cables on 2 ports and QSFP28 cables on 32 ports, double power modules)
Chassis heat dissipation	Maximum heat dissipation	1544 BTU/hr
	Typical heat dissipation	748 BTU/hr (100% throughput, SFP+ cables on 2 ports and QSFP28 cables on 32 ports, double power modules)
Surge protection		Power module: • AC: 6 kV in common mode and 6 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Front-to-back or back-to-front, depending on the fan modules and power modules

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Item		Description
Reliability	Power module backup	1+1 backup
	Fan module backup	1+1 backup not supported **NOTE** A CE8850EI chassis uses two fan modules, with each fan module containing two fans. The four fans in the chassis work in 3+1 backup mode.
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	45.34 years
	Mean time to repair (MTTR)	1.68 hours
	Availability	0.99999576496
Technical specifications	Processor	1.5 GHz, eight-core
	DRAM Memory	4 GB
	NOR Flash	32 MB
	NAND Flash	1 GB
Stack	Service port supporting the stack function	10GE optical ports and 100GE optical ports
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-259 provides the ordering information.

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Table 4-259 Ordering information

Part Number	Part Model	Part Description
02350SQW	CE8850-32CQ-EI	CE8850-32CQ-EI Switch (32-Port 10GE QSFP28, 2-Port 10GE QSFP+, Without Fan and Power Module)
02350SBC	CE8850-EI-F-B0A	CE8850-32CQ-EI Switch (32-Port 100GE QSFP28, 2-Port 10GE SFP+, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
02350SBD	CE8850-EI-B-B0A	CE8850-32CQ-EI Switch (32-Port 100GE QSFP28, 2-Port 10GE SFP+, 2*AC Power Module, 2*FAN Box, Port-side Intake)

4.5.2 CE8850E-32CQ-EI

4.5.2.1 CE8850E-32CQ-EI (02354LHV)

Overview

Table 4-260 Basic information about the CE8850E-32CQ-EI

Item	Details
Description	CE8850E-32CQ-EI Switch (32*100GE QSFP28,1*10GE SFP+,without fan and power module)
Part Number	02354LHV
Model	CE8850E-32CQ-EI
First supported version	V200R021C10
Other part numbers	02354LHX (CE8850E-32CQ-EI Switch(32*100GE QSFP28,1*10GE SFP+,2*AC power module,4*fan module,port-side intake)) 02354LJA (CE8850E-32CQ-EI Switch(32*100GE QSFP28,1*10GE SFP+,2*AC power module,4*fan module,port-side exhaust))
Short Name	CE8850E-32CQ-EI

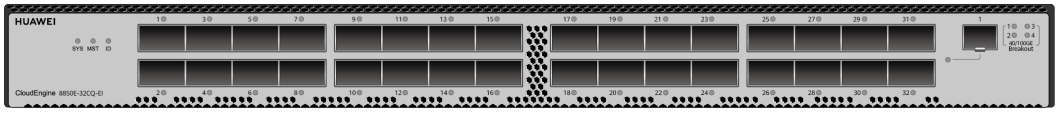
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Appearance

Figure 4-280 Appearance of the CE8850E-32CQ-EI



Front (power supply side)



Rear (port side)

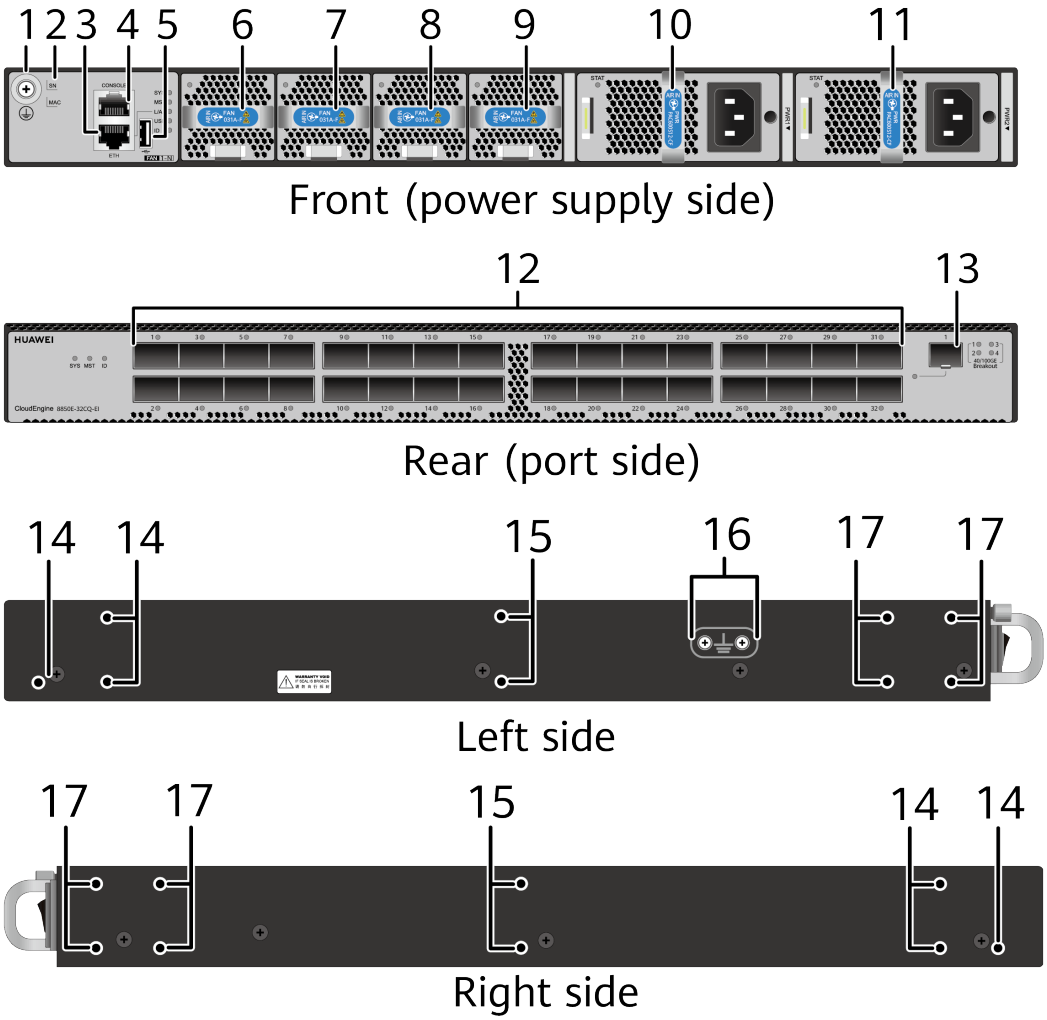
NOTE

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Components

Figure 4-281 Components of the CE8850E-32CQ-EI



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	ETH management port (RJ45)	4	Console port
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Thirty-two 40GE/100GE SFP28 Ethernet optical ports
13	One 10GE SFP+ Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-261 Slots on the CE8850E-32CQ-EI

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CE8850E-32CQ-EI switch has two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 8800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	Each CE8850E-32CQ-EI switch has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. All fan modules are hot swappable.

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Indicators

Figure 4-282 Indicators on the CE8850E-32CQ-EI 1

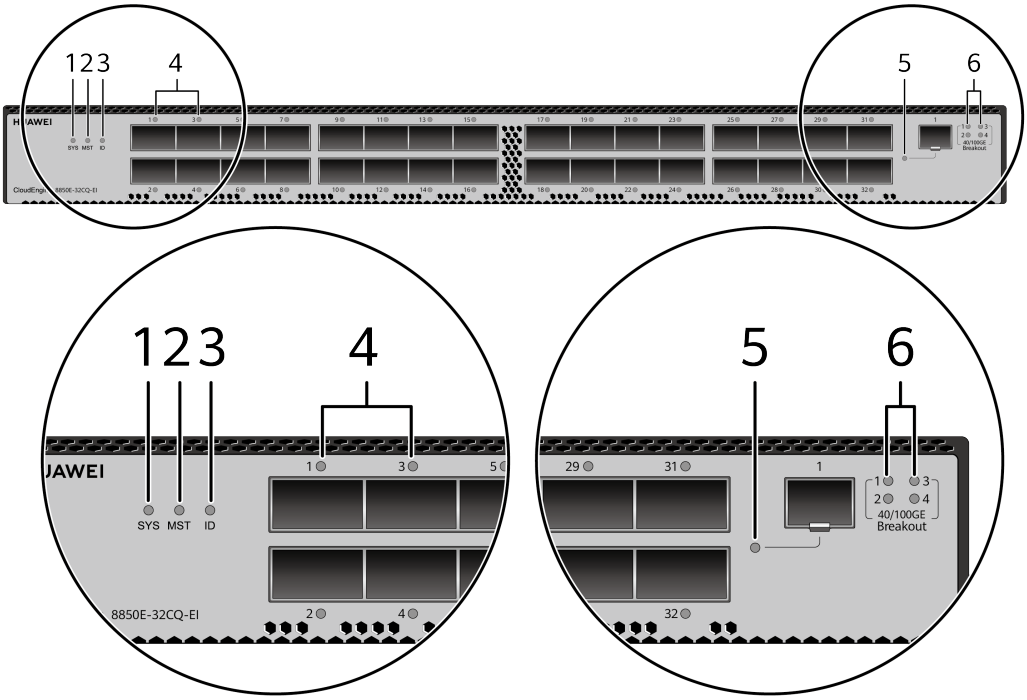
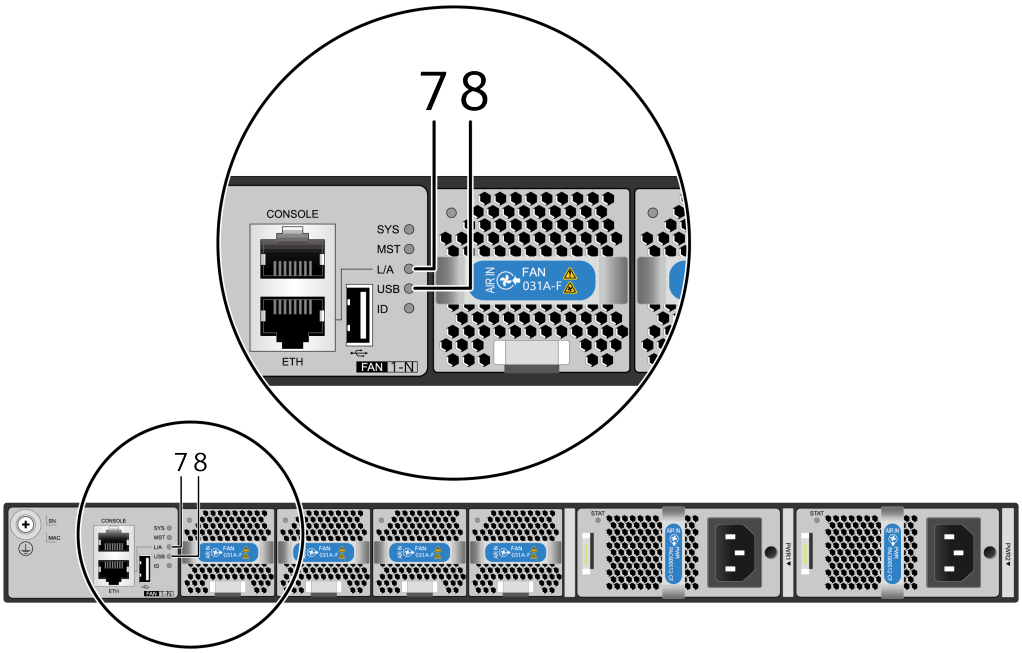


Figure 4-283 Indicators on the CE8850E-32CQ-EI 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (40GE/100GE optical port)	5. Service port indicator (10GE optical port)
6. 40/100GE Breakout 1/2/3/4 (sequence number indicators of 10/25GE ports converted from a 40/100GE port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-262 Indicators on the CE8850E-32CQ-EI

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.

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Silkscreen	Name	Color	Status	Description
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
40G/100G Breakout 1/2/3/4	10GE/25GE mode sequence number indicators of a 40GE/100GE port (40G/100G Breakout 1/2/3/4) (Note: The four sequence number indicators 1, 2, 3, and 4 are on in turn, and each indicator is on for 5s.)	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	At least one port works in 10GE or 25GE mode and is split into four 10GE or 25GE ports. When one or more 40GE/100GE ports are split into four 10GE ports or four 25GE ports, these indicators take effect and work with port indicators to identify the sequence numbers of the 10GE/25GE ports. When indicator 1 is on, each port indicator shows the status of the first 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 2 is on, each port indicator shows the status of the second 10GE/25GE port derived from the corresponding

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Silkscreen	Name	Color	Status	Description
				40GE/100GE port. When indicator 3 is on, each port indicator shows the status of the third 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 4 is on, each port indicator shows the status of the fourth 10GE/25GE port derived from the corresponding 40GE/100GE port.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-263 Ports on the CE8850E-32CQ-EI

Port	Connector Type	Description	Available Components
10GE SFP+ optical port	The connector type of the optical fiber depends on the optical module.	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. If the IOAM function is enabled, the 10G panel port is unavailable. If the IOAM function is disabled, the 10G panel port is available and does not need to be restarted.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	• **40GE QSFP+ optical modules** • **100GE QSFP28 optical modules** • **QSFP+ to QSFP+ AOC cable** • **QSFP+ to QSFP+ AOC cable** • **QSFP+ to 4*SFP+ AOC cable** • **QSFP28 to QSFP28 AOC cable** • **QSFP28 to QSFP28 AOC cable** • **QSFP+ to QSFP+ high-speed cable** • **QSFP+ to QSFP+ high-speed cable** • **QSFP+ to 4*SFP+ high-speed cable** • **QSFP+ to 4*SFP+ high-speed cable** • **QSFP28 to QSFP28 high-speed cable** • **QSFP28 to QSFP28 high-speed cable** • **QSFP28 to 4*SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE Splitting 100GE port 23, using 10GE port 1, and configuring IOAM are mutually exclusive. 100GE port 23 supports only static split, and the device needs to be restarted for the split to take effect. Other ports can be split into four 25GE or 10GE ports, which cannot work at the rate of 1 Gbit/s through auto-sensing.
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	**Console cable**

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power

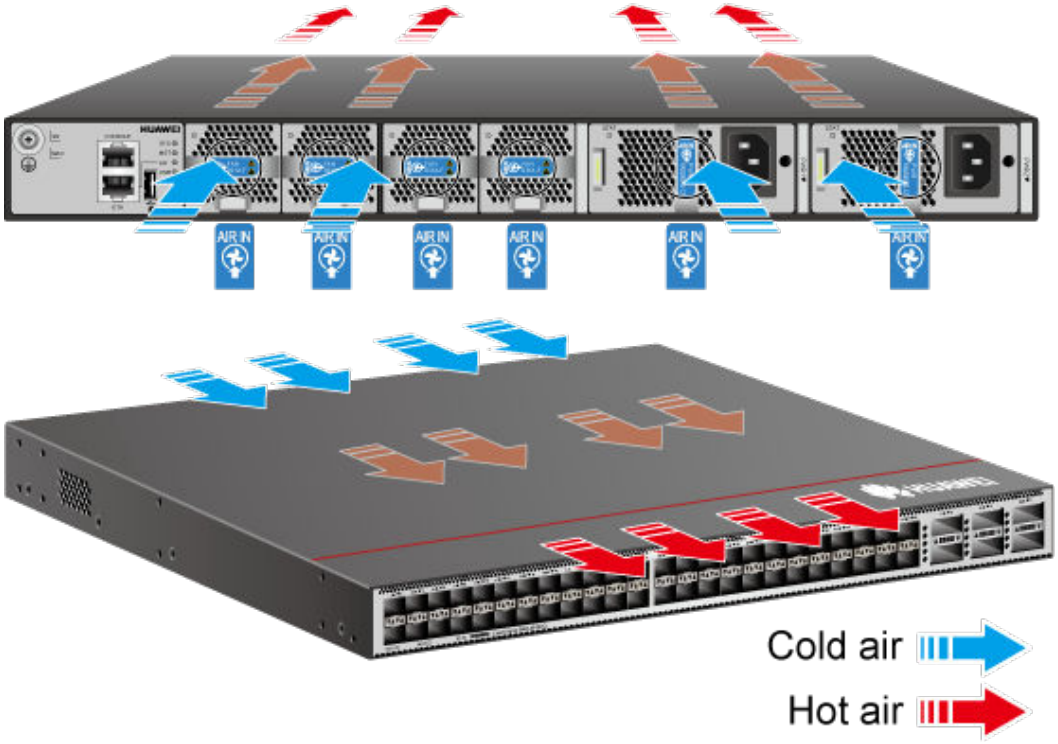
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supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).

- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

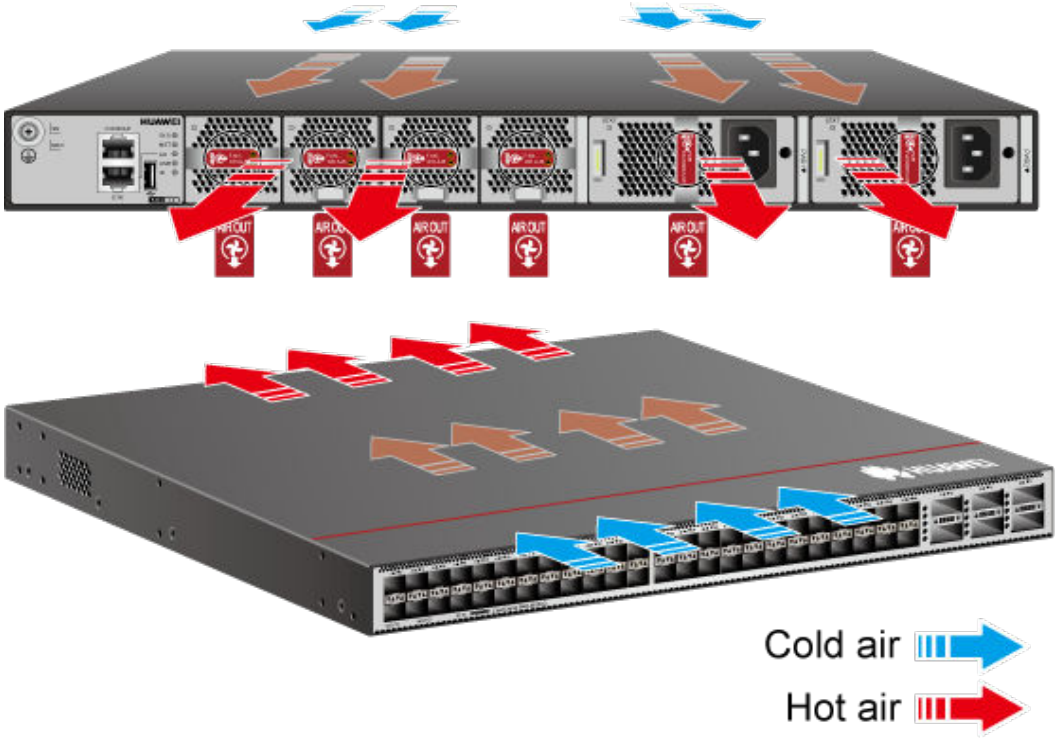
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

Figure 4-284 Front-to-back airflow for port-side exhaust



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Figure 4-285 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-264 Technical specifications of the CE8850E-32CQ-EI

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.9 in. x 25.6 in. x 21.7 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 43.6 mm x 442.0 mm x 446.1 mm (1.72 in. x 17.40 in. x 17.58 in.)
Weight without packaging [kg (lb)]	6.0 kg (13.23 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.6 kg (18.96 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9.3 kg (20.50 lb)
Weight with packaging (full configuration) [kg (lb)]	11.6 kg (25.57 lb)
Installation Type	Cabinet Installation
CPU	4-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	32 x 100GE QSFP28 ports and 1 x 10GE SFP+ port, regardless of the direction (uplink or downlink) **NOTE** 1. 100GE ports except port 23 can be split into 4 x 25GE or 4 x 10GE ports. After the split, they cannot be used as GE ports. 2. Splitting 100GE port 23, using 10GE port 1, and configuring IOAM are mutually exclusive. 100GE port 23 supports only static split, and the device needs to be restarted for the split to take effect. 3. The 10GE SFP+ port can function as a GE SFP optical/electrical port. 4. Supported optical modules: (1) In the case of port-side air intake, 100GE ports support 100G-AOC/SR4/DR/LR4/4WDM optical modules. (2) In the case of port-side air exhaust, 100GE ports support 100G-AOC/SR4/DR/LR4 optical modules.
Service port supporting the stack function	100GE optical port
RTC	Supported
Typical power consumption [W]	203 W (100% traffic load, copper cables on half of ports, normal temperature, dual AC power modules) 244 W (100% traffic load, short-distance optical modules on half of ports, normal temperature, dual AC power modules)
Typical heat dissipation [BTU/hour]	693 BTU/hr (100% traffic load, copper cables on half of ports, normal temperature, dual AC power modules) 833 BTU/hr (100% traffic load, short-distance optical modules on half of ports, normal temperature, dual AC power modules)
Static power consumption [W]	165 W
Static heat dissipation [BTU/hour]	563 BTU/hour

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Item	Specification
Maximum power consumption [W]	339 W (100% traffic load, short-distance optical modules on all ports, normal temperature, dual AC power modules) 450 W (100% traffic load, long-distance optical modules on all ports, 40°C, dual AC power modules)
Maximum heat dissipation	1157 BTU/hour (100% traffic load, short-distance optical modules on all ports, normal temperature, dual AC power modules) 1535 BTU/hour (100% traffic load, long-distance optical modules on all ports, 40°C, dual AC power modules)
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: AC: 100 V AC to 240 V AC, 50/60 Hz; DC: 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A

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Item	Specification
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	The device supports 3+1 backup of fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-back or back-to-front, depending on the fan modules and power modules.
Availability	0.999993932
MTBF [year]	35.88 year
MTTR [hour]	1.89 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Front-to-back airflow: 49.8 dB(A) on average (maximum: 53.6 dB(A)) Back-to-front airflow: 47.8 dB(A) on average (maximum: 51.2 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	Front-to-back airflow: 67.6 dB(A) on average (maximum: 73.4 dB(A)) Back-to-front airflow: 68 dB(A) on average (maximum: 75.4 dB(A))

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Item	Specification
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

4.5.2.2 CE8850E-32CQ-EI (02354LHV-001)

Overview

Table 4-265 Basic information about the CE8850E-32CQ-EI

Item	Details
Description	CE8850E-32CQ-EI Switch (32*100GE QSFP28,1*10GE SFP+,without fan and power module)
Part Number	02354LHV-001
Model	CE8850E-32CQ-EI
First supported version	V200R021C10SPC600

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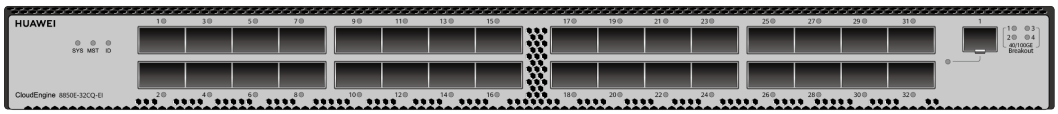
Item	Details
Other part numbers	02354LHX-001 (CE8850E-32CQ-EI Switch (32*100GE QSFP28,1*10GE SFP+,2*AC power module,4*fan module,port-side intake)) 02354LJA-001 (CE8850E-32CQ-EI Switch (32*100GE QSFP28,1*10GE SFP+,2*AC power module,4*fan module,port-side exhaust)) 02355MSH (CE8850E-32CQ-EI Switch (32*100GE QSFP28, 1*10GE SFP+,without fan and power module)) 02355MSJ (CE8850E-32CQ-EI Switch (32*100GE QSFP28, 1*10GE SFP+, 2*AC power module,4*fan module, port-side intake)) 02355MSR (CE8850E-32CQ-EI Switch (32*100GE QSFP28, 1* 10GE SFP+, 2*AC power module,4*fan module, port-side exhaust))
Short Name	CE8850E-32CQ-EI

Appearance

Figure 4-286 Appearance of the CE8850E-32CQ-EI



Front (power supply side)



Rear (port side)

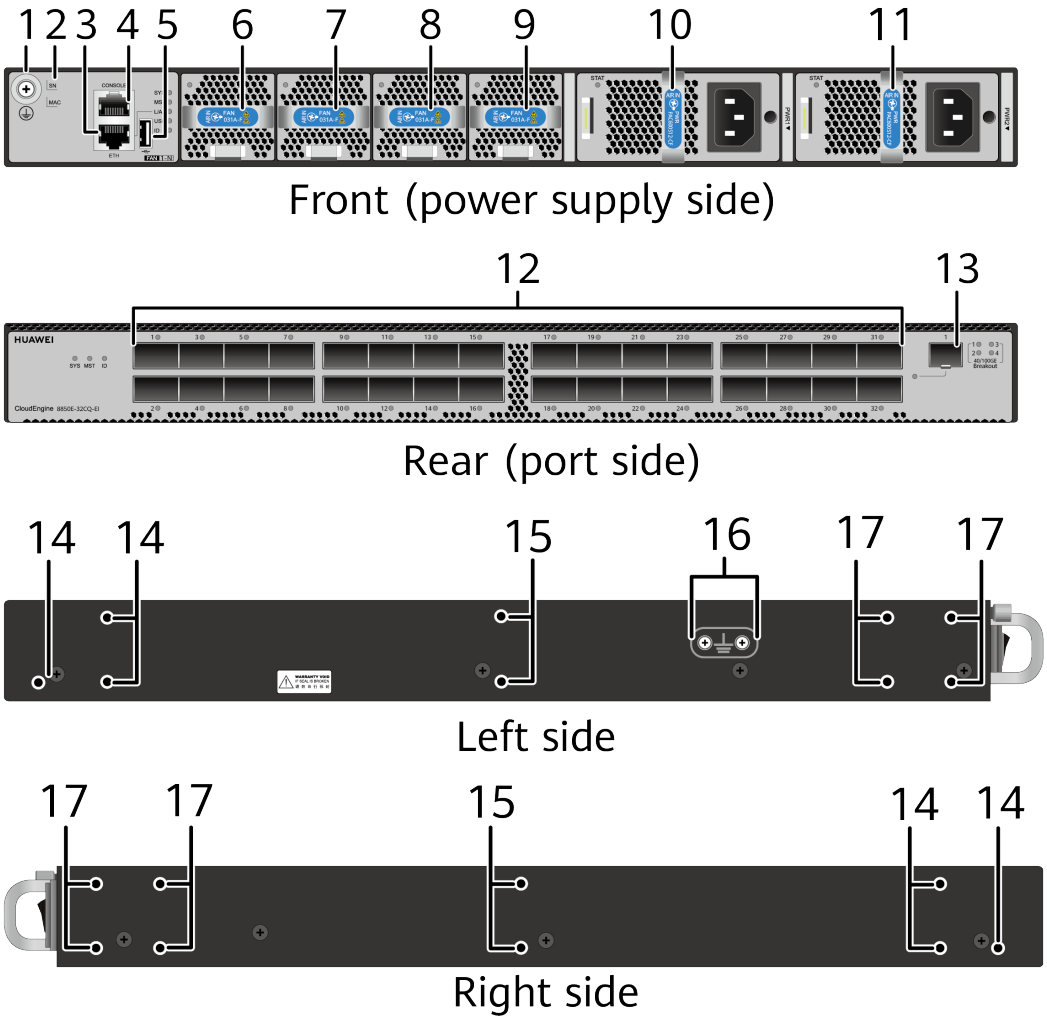
NOTE

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Components

Figure 4-287 Components of the CE8850E-32CQ-EI



1	Ground screw	2	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.
3	ETH management port (RJ45)	4	Console port
5	USB port	6	Fan slot 1
7	Fan slot 2	8	Fan slot 3
9	Fan slot 4	10	Power supply slot 1

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11	Power supply slot 2	12	Thirty-two 40GE/100GE SFP28 Ethernet optical ports
13	One 10GE SFP+ Ethernet optical ports	14	Three port-side mounting holes for mounting brackets
15	Two middle mounting holes for mounting brackets	16	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal
17	Four power-supply-side mounting holes for mounting brackets	-	-

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Slot Layout

Table 4-266 Slots on the CE8850E-32CQ-EI

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	-	Horizontal insertion	The CE8850E-32CQ-EI switch has two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 8800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each power module provides half of the power for the switch. If one power module fails, the other one provides full power for the switch. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	-	Horizontal insertion	Each CE8850E-32CQ-EI switch has four fan slots in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. It is recommended that four fan modules be properly installed on a switch to ensure normal switch operating. The device supports four pluggable fan modules that work in hot standby mode. The system can operate properly for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. All fan modules are hot swappable.

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Indicators

Figure 4-288 Indicators on the CE8850E-32CQ-EI 1

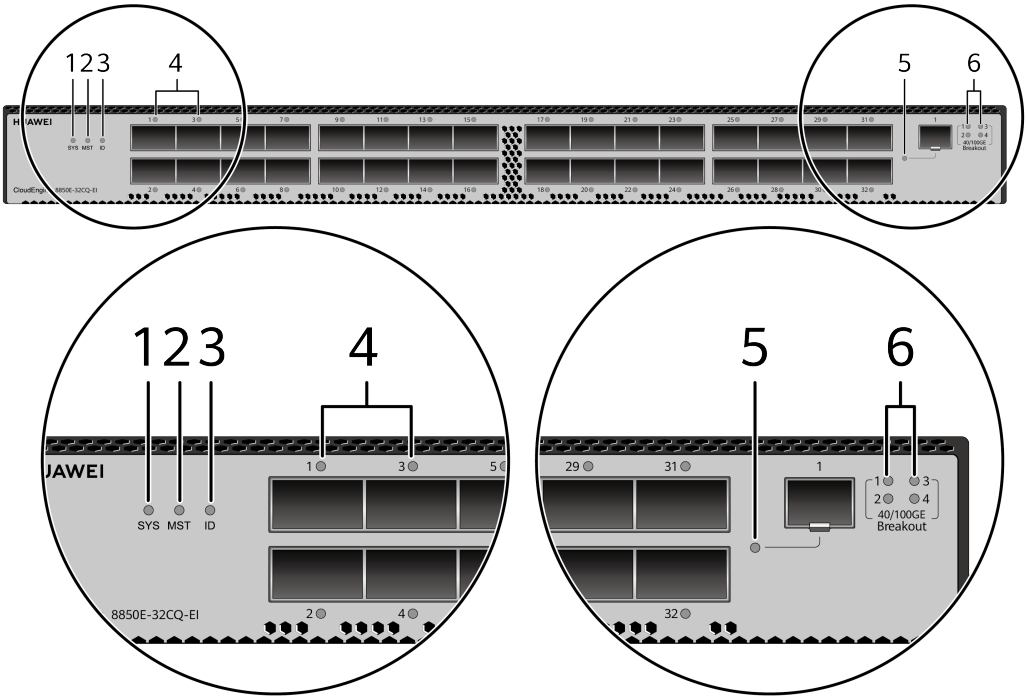
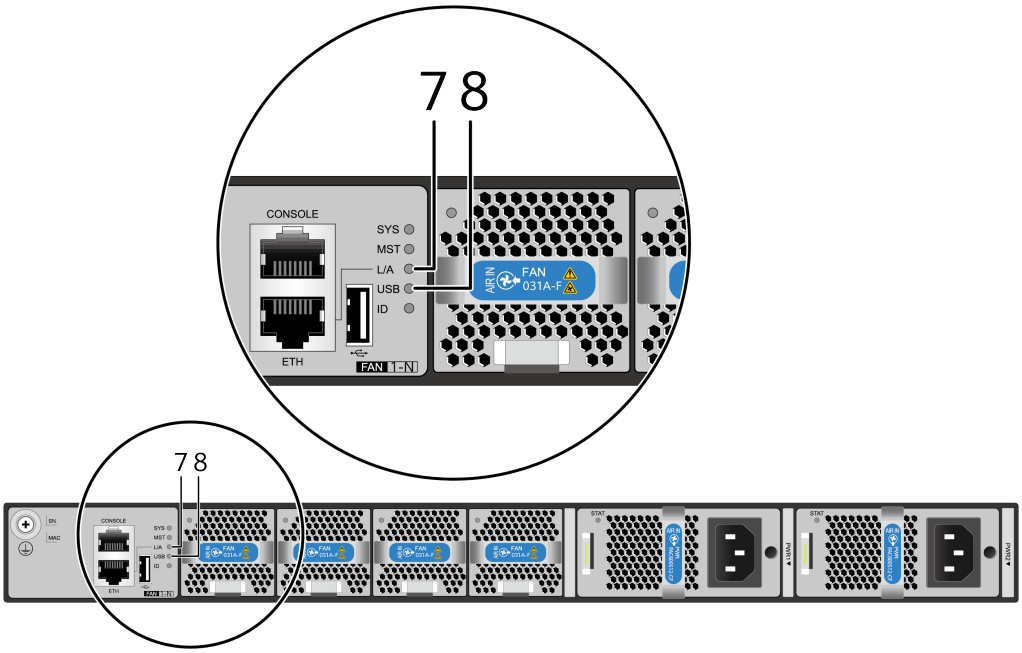


Figure 4-289 Indicators on the CE8850E-32CQ-EI 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. Service port indicator (40GE/100GE optical port)	5. Service port indicator (10GE optical port)
6. 40/100GE Breakout 1/2/3/4 (sequence number indicators of 10/25GE ports converted from a 40/100GE port)	7. ETH management port indicator	8. USB-based deployment indicatorc	-	-

Table 4-267 Indicators on the CE8850E-32CQ-EI

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/ slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.

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Silkscreen	Name	Color	Status	Description
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (10GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
-	Service port indicator (40GE/100GE optical port)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
40G/100G Breakout 1/2/3/4	10GE/25GE mode sequence number indicators of a 40GE/100GE port (40G/100G Breakout 1/2/3/4) (Note: The four sequence number indicators 1, 2, 3, and 4 are on in turn, and each indicator is on for 5s.)	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.

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Silkscreen	Name	Color	Status	Description
		Green	Steady on	At least one port works in 10GE or 25GE mode and is split into four 10GE or 25GE ports. When one or more 40GE/100GE ports are split into four 10GE ports or four 25GE ports, these indicators take effect and work with port indicators to identify the sequence numbers of the 10GE/25GE ports. When indicator 1 is on, each port indicator shows the status of the first 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 2 is on, each port indicator shows the status of the second 10GE/25GE port derived from the corresponding

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Silkscreen	Name	Color	Status	Description
				40GE/100GE port. When indicator 3 is on, each port indicator shows the status of the third 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 4 is on, each port indicator shows the status of the fourth 10GE/25GE port derived from the corresponding 40GE/100GE port.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.

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Silkscreen	Name	Color	Status	Description
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-268 Ports on the CE8850E-32CQ-EI

Port	Connector Type	Description	Available Components
10GE SFP+ optical port	The connector type of the optical fiber depends on the optical module.	A 10GE SFP+ Ethernet optical port can work at 1000 Mbit/s through auto-sensing, and can send and receive service data at 1000 Mbit/s or 10 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE802.3ae • Working mode: 1000 Mbit/s and 10 Gbit/s auto-sensing, full-duplex	**GE eSFP optical modules** **GE SFP copper modules** **10GE SFP+ optical modules** **SFP+ to SFP+ AOC cable** **SFP+ to SFP+ high-speed cable** **NOTE** 1. When a GE copper module is installed on a 10GE optical port, the port can only work at 1000 Mbit/s. 2. 10GE optical ports do not support OSXD22N00 or LE2MXSC80FF0 optical modules. 3. If the IOAM function is enabled, the 10G panel port is unavailable. If the IOAM function is disabled, the 10G panel port is available and does not need to be restarted.

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Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attribute: depending on the optical module or cable in use • Complied standard: IEEE 802.3ba • Working mode: full-duplex	• **40GE QSFP+ optical modules** • **100GE QSFP28 optical modules** • **QSFP+ to QSFP+ AOC cable** • **QSFP+ to QSFP+ AOC cable** • **QSFP+ to 4*SFP+ AOC cable** • **QSFP28 to QSFP28 AOC cable** • **QSFP28 to QSFP28 AOC cable** • **QSFP+ to QSFP+ high-speed cable** • **QSFP+ to QSFP+ high-speed cable** • **QSFP+ to 4*SFP+ high-speed cable** • **QSFP+ to 4*SFP+ high-speed cable** • **QSFP28 to QSFP28 high-speed cable** • **QSFP28 to QSFP28 high-speed cable** • **QSFP28 to 4*SFP28 high-speed cable**

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Port	Connector Type	Description	Available Components
			NOTE Splitting 100GE port 23, using 10GE port 1, and configuring IOAM are mutually exclusive. 100GE port 23 supports only static split, and the device needs to be restarted for the split to take effect. Other ports can be split into four 25GE or 10GE ports, which cannot work at the rate of 1 Gbit/s through auto-sensing.
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	**Console cable**

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Port	Connector Type	Description	Available Components
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power

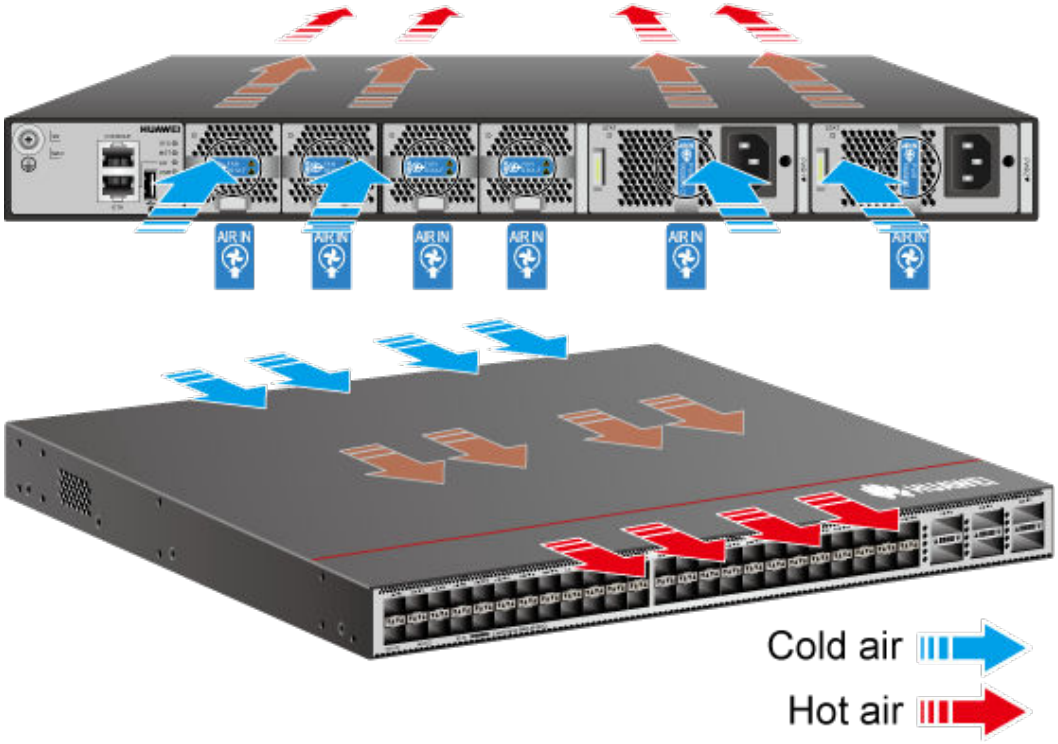
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supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).

- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

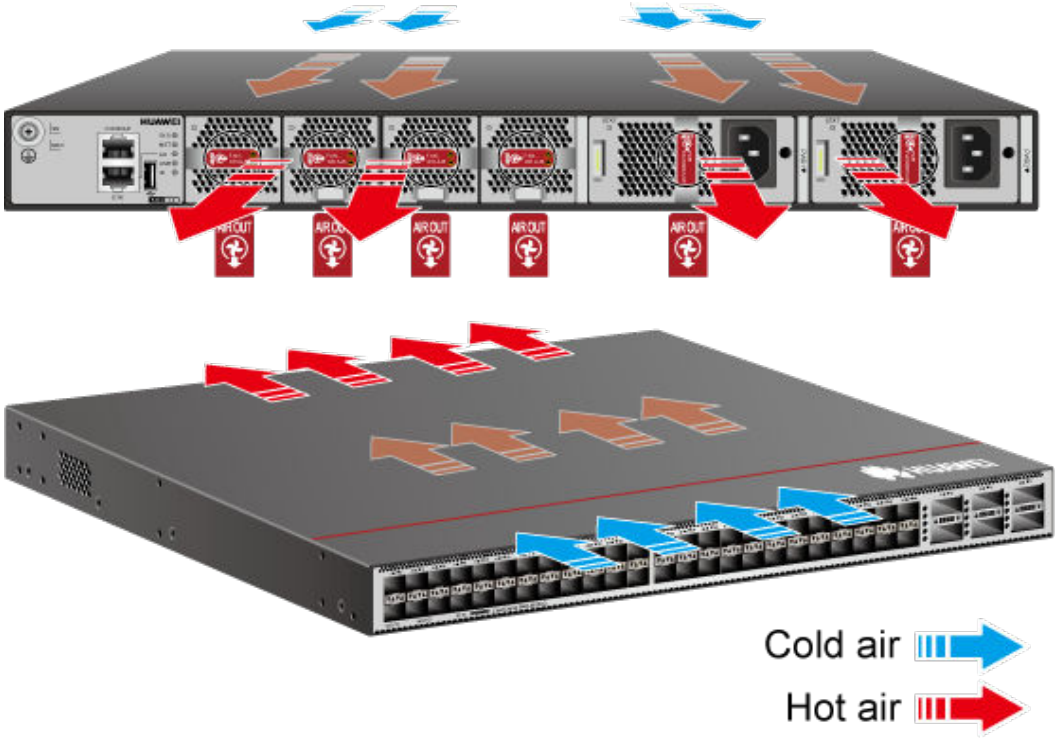
. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

Figure 4-290 Front-to-back airflow for port-side exhaust



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Figure 4-291 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-269 Technical specifications of the CE8850E-32CQ-EI

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	175 mm x 650 mm x 550 mm (6.89 in. x 25.59 in. x 21.65 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	Basic dimensions (excluding the parts protruding from the body): 43.6 mm x 442.0 mm x 420.0 mm (1.72 in. x 17.40 in. x 16.54 in.) Maximum dimensions (the depth is the maximum distance from the protruding port on the front panel to the module handle on the rear panel): 43.6 mm x 442.0 mm x 446.5 mm (1.72 in. x 17.40 in. x 17.58 in.)
Weight without packaging [kg (lb)]	6.0 kg (13.23 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	8.6 kg (18.96 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	9.3 kg (20.50 lb)
Weight with packaging (full configuration) [kg (lb)]	11.6 kg (25.57 lb)
Installation Type	Cabinet installation
CPU	Quad-core, 1.4 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	32 x 100GE QSFP28 ports and 1 x 10GE SFP+ port, regardless of the direction (uplink or downlink) **NOTE** 1. 100GE ports except port 23 can be split into 4 x 25GE or 4 x 10GE ports. After the split, they cannot be used as GE ports. 2. Splitting 100GE port 23, using 10GE port 1, and configuring IOAM are mutually exclusive. 100GE port 23 supports only static split, and the device needs to be restarted for the split to take effect. 3. The 10GE SFP+ port can function as a GE SFP optical/electrical port. 4. Supported optical modules: (1) In the case of port-side air intake, 100GE ports support 100G-AOC/SR4/DR/LR4/4WDM optical modules. (2) In the case of port-side air exhaust, 100GE ports support 100G-AOC/SR4/DR/LR4 optical modules.
Service port supporting the stack function	100GE optical port
RTC	Supported
Typical power consumption [W]	203 W (100% traffic load, copper cables on half of ports, normal temperature, dual AC power modules) 244 W (100% traffic load, short-distance optical modules on half of ports, normal temperature, dual AC power modules)
Typical heat dissipation [BTU/hour]	693 BTU/hr (100% traffic load, copper cables on half of ports, normal temperature, dual AC power modules) 833 BTU/hr (100% traffic load, short-distance optical modules on half of ports, normal temperature, dual AC power modules)
Static power consumption [W]	165 W
Static heat dissipation [BTU/hour]	563 BTU/hour

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Item	Specification
Maximum power consumption [W]	339 W (100% traffic load, short-distance optical modules on all ports, normal temperature, dual AC power modules) 450 W (100% traffic load, long-distance optical modules on all ports, 40°C, dual AC power modules)
Maximum heat dissipation	1157 BTU/hour (100% traffic load, short-distance optical modules on all ports, normal temperature, dual AC power modules) 1535 BTU/hour (100% traffic load, long-distance optical modules on all ports, 40°C, dual AC power modules)
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 600 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1000 W DC power module: –48 V DC to –60 V DC • 1200 W high-voltage DC power module: 240 V DC to 380 V DC
Input voltage range [V]	• 600 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1000 W DC power module: –38.4 V DC to –72 V DC • 1200 W high-voltage DC power module: 190 V DC to 400 V DC
Maximum input current [A]	• 600 W AC&240 V DC power module: 8 A (100 V AC to 240 V AC); 4 A (240 V DC) • 1000 W DC power module: 30 A (–48 V DC to –60 V DC) • 1200 W high-voltage DC power module: 8 A
Rated output power [W]	• 600 W AC&240 V DC power module: 600 W • 1000 W DC power module: 1000 W • 1200 W high-voltage DC power module: 1200 W

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Item	Specification
Certification	· Complies with safety standards. · Complies with EMC standards. · Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.999993932
MTBF [year]	35.88 year
MTTR [hour]	1.89 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Front-to-back airflow: 49.8 dB(A) on average (maximum: 53.6 dB(A)) Back-to-front airflow: 47.8 dB(A) on average (maximum: 51.2 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	Front-to-back airflow: 67.6 dB(A) on average (maximum: 73.4 dB(A)) Back-to-front airflow: 68 dB(A) on average (maximum: 75.4 dB(A))
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing

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Item	Specification
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

4.5.3 CE8850-64CQ-EI

4.5.3.1 CE8850-64CQ-EI (02351RFF)

Version Mapping

Table 4-270 lists the mappings between the CE8850-64CQ-EI and software versions.

Table 4-270 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE8800	CE8850	CE8850-64CQ-EI	CE8850EI	V200R005C00 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

Appearance and Structure

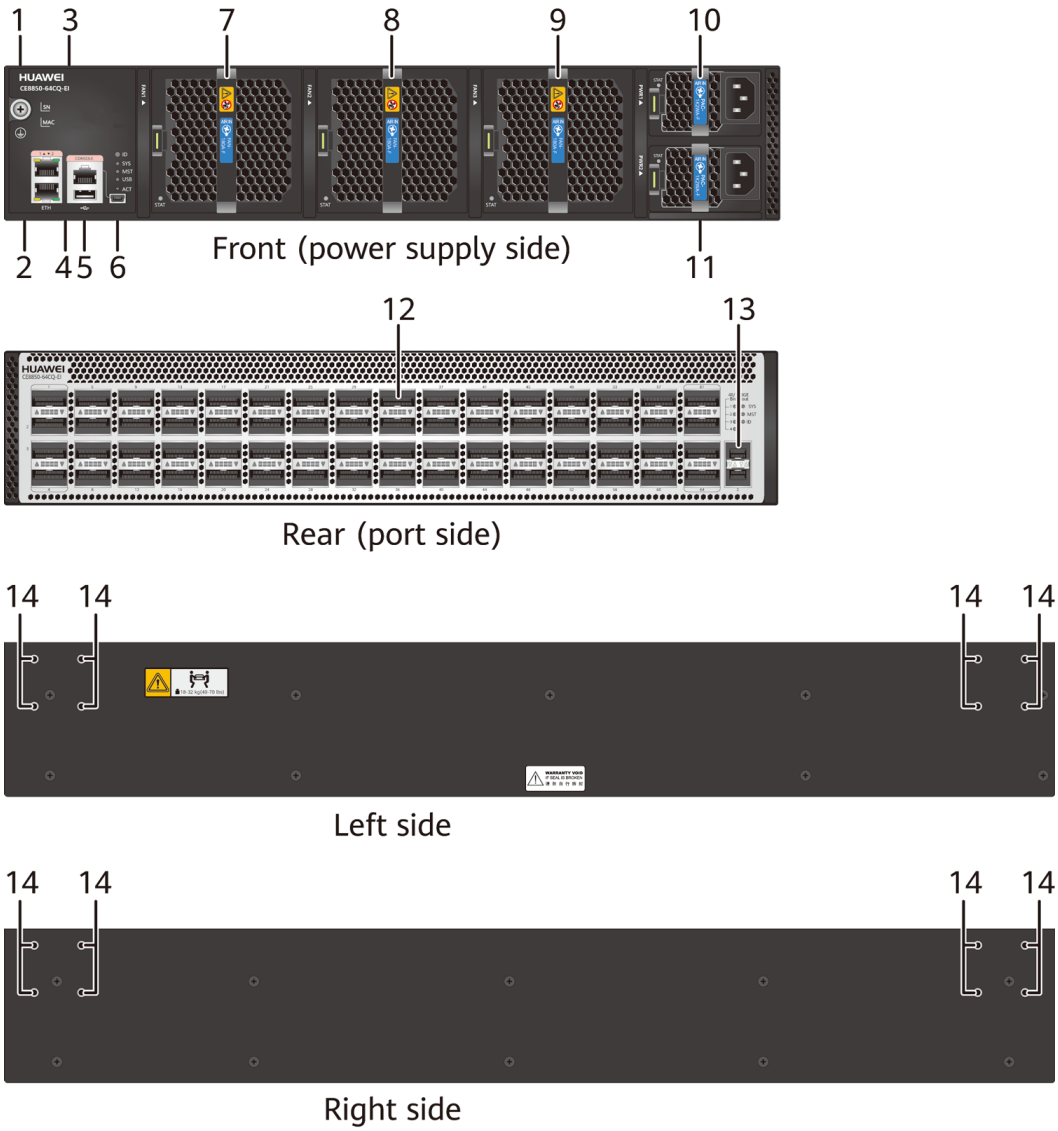
NOTE

The appearances of devices and modules are subject to actually delivered products. The figures in this document are for reference only.

Appearance of the CE8850-64CQ-EI

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Figure 4-292 CE8850-64CQ-EI



1	Ground screw	2	Two ETH management ports (RJ45)
3	ESN and MAC address label	4	Console port
5	USB port	6	Mini USB port
7	Fan slot 1 Applicable fan modules: • **6.10 FAN-180A Series Fan Modules**	8	Fan slot 2 Applicable fan modules: • **6.10 FAN-180A Series Fan Modules**

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9	Fan slot 3 Applicable fan modules: • **6.10 FAN-180A Series Fan Modules**	10	Power supply slot 1 Applicable power modules: • **5.15 1200 W AC&240 V DC Power Module (PAC-1K2WA)** • **5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)** • **5.26 1200 W DC Power Module (PDC-1K2WA)** **NOTE** If two 1200 W AC&240 V DC power modules are installed on the CE8850-64CQ-EI and 110 V AC power input is provided to the power modules, you are advised to perform the following operations: 1. Use an external power source that provides 110 V input with double live wires. In this case, each power module provides 1200 W of rated output power and the power modules work in 1+1 redundancy mode. 2. If the external power source provides 110 V input with a single live wire, each power module provides 800 W of rated output power. In this case, two power modules must be configured. They power the switch at the same time and do not work in redundancy mode.

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11	Power supply slot 2 Applicable power modules: • **5.15 1200 W AC&240 V DC Power Module (PAC-1K2WA)** • **5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)** • **5.26 1200 W DC Power Module (PDC-1K2WA)** **NOTE** If two 1200 W AC&240 V DC power modules are installed on the CE8850-64CQ-EI and 110 V AC power input is provided to the power modules, you are advised to perform the following operations: 1. Use an external power source that provides 110 V input with double live wires. In this case, each power module provides 1200 W of rated output power and the power modules work in 1+1 redundancy mode. 2. If the external power source provides 110 V input with a single live wire, each power module provides 800 W of rated output power. In this case, two power modules must be configured. They power the switch at the same time and do not work in redundancy mode.	12	Sixty-four 40GE/100GE QSFP28 Ethernet optical ports **NOTE** • A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. • In V200R020C10 and later versions, a 100GE interfaces can be split into two 50GE interfaces. The interface supports only QSFP28-100G-SR4 optical modules. Applicable modules and cables: • **9.9 40GE QSFP+ Optical Modules** • **100GE QSFP28 Optical Modules** • **QSFP+ to QSFP+ AOC cable** • **QSFP+ to 4*SFP+ AOC cable** • **8.8.5 QSFP+ to 4*SFP+ High-Speed Cable** • **8.8.4 QSFP+ to QSFP+ High-Speed Cable** • **8.9.6 QSFP28 to QSFP28 AOC Cable** • **8.8.6 QSFP28 to QSFP28 High-Speed Cable** • **8.8.7 QSFP28 to 4*SFP28 High-Speed Cable**
13	Two 10GE SFP+ Ethernet optical ports These two ports are reserved for future function expansion and cannot be used currently.	14	Mounting holes for mounting brackets

Slot

- Power supply slot

  The CE8850-64CQ-EI has two power supply slots, in which power modules can be installed to provide power to the chassis. A chassis can have one or two power modules. Double power modules can provide higher reliability.

  The CE8850-64CQ-EI supports double power modules (1+1 backup).

  – When both power modules are working properly, they equally provide power for a chassis.

  – When one power module fails, the other one provides all power required for a chassis.

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All power modules are hot swappable.

- Fan slot

  The CE8850-64CQ-EI has three fan slots, in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have three working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Airflow

The cooling systems of the CloudEngine 8800, 7800, 6800, and 5800 series switches have front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used. The airflow direction of the power modules and fan modules required on the CloudEngine 8800, 7800, 6800, and 5800 series switches depends on how the switches are installed in cabinets. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If CloudEngine 8800, 7800, 6800, and 5800 series switches are installed with the power supply side facing the front, you are advised to use fan modules and power modules with front-to-back airflow in the switches.

NOTE

- Front-to-back airflow: The power modules and fan modules using front-to-back airflow are marked  or 

. Air flows into the chassis from the power supply side and flows out from the port side, as shown in **Figure 4-293** (CE5800 as an example).
- Back-to-front airflow: The power modules and fan modules using back-to-front airflow are marked  or 

. Air flows into the chassis from the port side and flows out from the power supply side, as shown in **Figure 4-144** (CE5800 as an example).
- When the power module and fan module use forcible heat dissipation, they must use the same airflow method. For example, if the power module with back-to-front airflow is used, the fan module with back-to-front airflow must be used.

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Figure 4-293 Front-to-back airflow (air flows out from the port side)

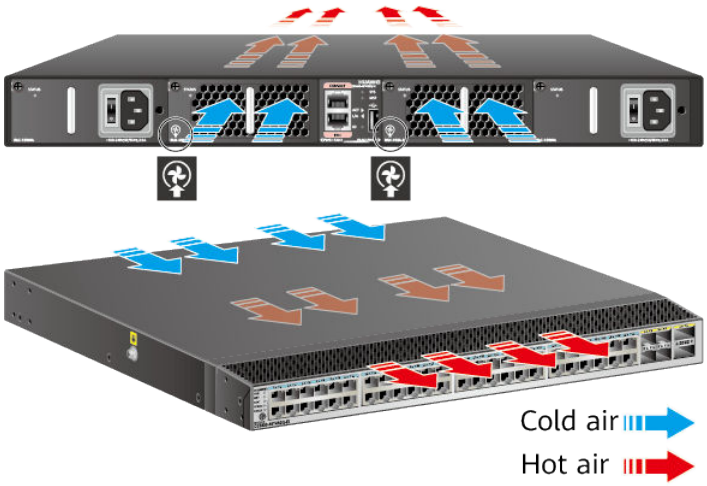
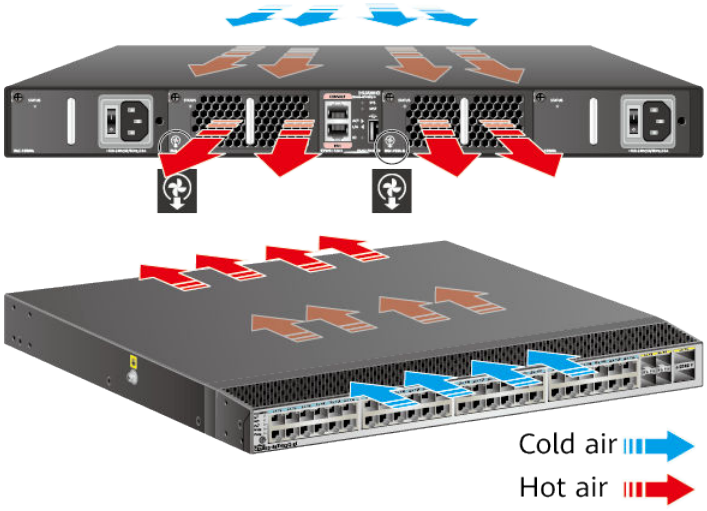


Figure 4-294 Back-to-front airflow (air flows in from the port side)



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Indicators

Figure 4-295 Indicators on the CE8850-64CQ-EI rear panel

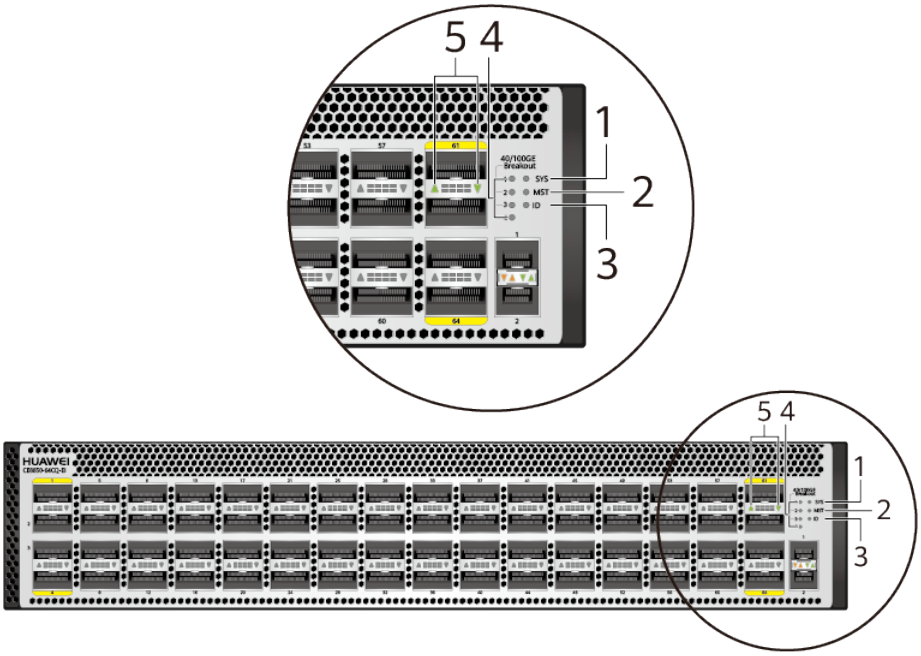
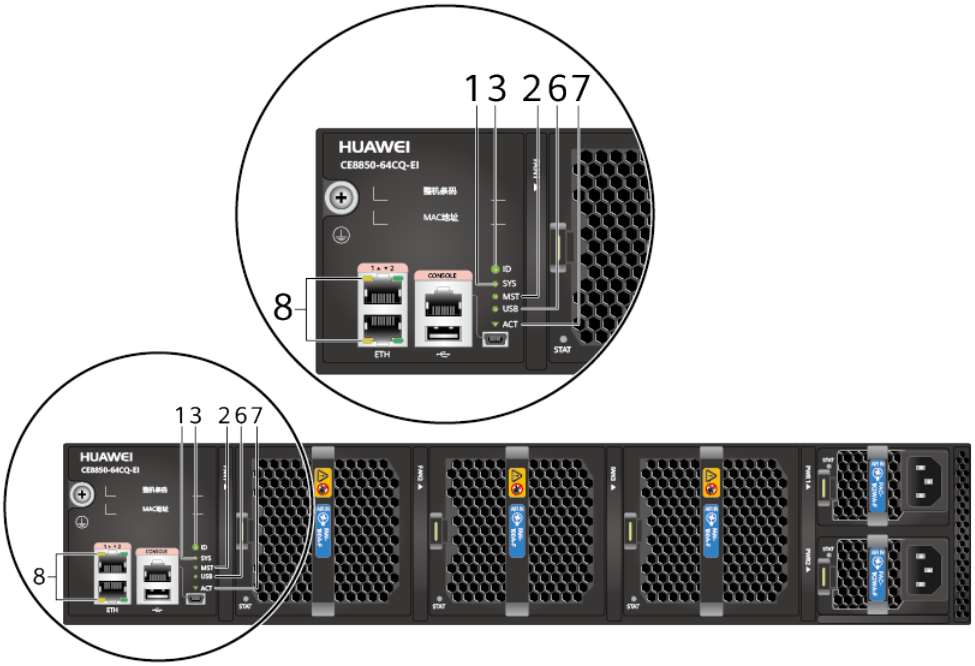


Figure 4-296 Indicators on the CE8850-64CQ-EI front panel



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Table 4-271 Indicator description

No.	Indicator	Name	Color	Status	Description
1	SYS	System status indicator	Green	Off	The system is not running.
				Fast blinking	The system is starting.
				Slow blinking	The system is running normally.
			Red	Steady on	• The system fails to start. • At least one power module does not work normally. • At least one fan module does not work normally.
2	MST	Stack master/slave indicator **NOTE** In V200R003C00 and later versions, you can use the **dfs-master led enable** command to enable the stack master/slave indicator to display the DFS group master and backup status. After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.	Green	Off	The switch is not a stack master.
				Steady on	The switch is a stack master or standalone switch.

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No.	Indicator	Name	Color	Status	Description
3	ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
				Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.
4	-	40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE port) **NOTE** Indicators 1, 2, 3, 4 turn on in cyclic order, with each indicator keeping on for 5s.	Green	Off	40GE/100GE ports are working in 40GE or 100GE mode and not split into four 10GE ports or four 25GE ports.
				Steady on	At least one 40GE/100GE port has been split into four 10GE ports or four 25GE ports. When one or more 40GE/100GE ports are split into four 10GE ports or four 25GE ports, these indicators identify the sequence numbers of the 10GE/25GE ports. A port indicator (5 in **Figure 4-295**) shows the status of a 10GE/25GE port converted from the corresponding 40GE/100GE port: • When indicator 1 is on, each port indicator shows the status of the first 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 2 is on, each port indicator shows the status of the second 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 3 is on, each port indicator shows the status of the third 10GE/25GE port derived from the corresponding 40GE/100GE port. • When indicator 4 is on, each port indicator shows the status of the fourth 10GE/25GE port derived from the corresponding 40GE/100GE port.

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No.	Indicator	Name	Color	Status	Description
5	-	Service port indicator (40GE/100GE optical port) **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link has been established on the port or the port has been shut down.
				Steady on	A link is established on the port.
				Blinking	The port is sending or receiving data.
6	USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
				Steady on	USB-based deployment has been completed.
				Blinking	The system is reading data from a USB flash drive.
			Red	Steady on	USB-based deployment has failed.
7	ACT	Mini USB port indicator	Green	Off	The Mini USB port is inactive, and the console port can be used.
				Steady on	The Mini USB port is active, and the console port cannot be used.
8	-	ETH management port indicator	Green	Off	No link is established on the port.
				Steady on	A link is established on the port.
			Yellow	Blinking	The port is sending or receiving data.

Ports

40GE/100GE QSFP28 Optical Port

Table 4-272 describes the attributes of a 40GE/100GE QSFP28 optical port.

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Table 4-272 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depending on the optical module
Optical attributes	Depending on the module or cable in use
Standards compliance	IEEE802.3ba
Working mode	Full-duplex

10GE SFP+ Optical Port

The two 10GE SFP+ optical ports are reserved for future function expansion and cannot be used currently.

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. **Table 4-273** describes the attributes of the console port.

Table 4-273 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

NOTE

- The console port and Mini USB port share one internal serial port. You can use the console port or Mini USB port as the serial port according to your needs. When the Mini USB is activated, the console port cannot be used.
- When both the console port and Mini-USB port have a cable connected, the Mini-USB port is used.

Mini USB Port

The Mini USB port can connect to a configuration terminal for onsite configuration of the system, but the configuration terminal must have a USB serial port driver installed. The Mini USB port is used as the serial port once a link is established on the port.

ETH Management Port (RJ45)

The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite

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or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. **Table 4-274** describes the attributes of the ETH management port (RJ45).

Table 4-274 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

The CE8850-64CQ-EI switch has two ETH management ports (RJ45). Pay attention to the following when using the two management ports:

- The two ports cannot be used together, and you must choose one of them to use.
- Before start of a CE8850-64CQ-EI switch, you can select interface 1 or interface 2 in the BIOS menu. Interface 1 is the default choice. For details, see "Modify parameters" in the *Basic Configuration Guide - BIOS Menu*.
- After registration of the switch succeeds:
  - If both the management ports have a cable connected and are in Up state, port 1 acts as the primary management port and port 2 becomes the backup automatically. The management interface number displayed on the command line interface is MEth0/0/0, regardless of which port is used.
  - If cables are connected to the two ETH management ports after successful registration of the switch, the port that is connected first is used as the primary management port.
  - If port 1 fails, the system switches management traffic to port 2 automatically. When port 1 recovers, management traffic cannot be switched back to port 1, unless port 2 fails or the switch restarts. You can observe indicators on the ETH management ports to determine which port is used currently. (The Link indicator of the ETH management port used is steady green. If data is being transmitted on this port, its ACT indicator is blinking yellow. The indicators of the backup port are off.)

Specifications

Table 4-275 lists technical specifications of the CE8850-64CQ-EI switch.

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Table 4-275 Technical specifications

Item		Description
Physical specifications		• Dimensions (H x W x D): 88.1 mm x 442.0 mm x 600.0 mm (3.47 in. x 17.4 in. x 23.6 in.) • Weight (with two power modules and three fan modules, calculated based on the heaviest model if multiple models are supported): 22.2 kg
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 64 dBA • Front-to-back airflow: < 64 dBA
Power specifications	Power source type	AC/DC/high-voltage DC
	AC power input	• Rated input voltage range: 100 V AC to 130 V AC/200 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	DC power input	• Rated voltage range: -48 V DC to -60 V DC • Maximum voltage range: -38.4 V DC to -72 V DC
	High-voltage DC power input	• Rated voltage of 240 V high-voltage DC power input: 240 V DC • Maximum voltage range of 240 V high-voltage DC power input: 188 V DC to 290 V DC • Rated voltage range of 380 V high-voltage DC power input: 240 V DC to 380 V DC • Maximum voltage range of 380 V high-voltage DC power input: 188 V DC to 400 V DC

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Item		Description
	Rated input current	• 1200 W AC&240 V DC power module (PAC-1K2WA series): 10 A (100 V AC to 130 V AC)/8 A (200 V AC to 240 V AC)/8 A (240 V DC) • 1200 W high-voltage DC power module (PHD-1K2WA series): 8 A (240 V DC to 380 V DC) • 1200 W DC power (PDC-1K2WA series): 38 A (-48 V DC to -60 V DC)
Chassis power consumption	Maximum power consumption	965W
	Typical power consumption	375 W (100% throughput, QSFP28 cables on 64 ports, double power modules)
Chassis heat dissipation	Maximum heat dissipation	3293BTU/hr
	Typical heat dissipation	1280 BTU/hr (100% throughput, QSFP28 cables on 64 ports, double power modules)
Surge protection		Power module: • AC: 4 kV in common mode and 2.5 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Front-to-back or back-to-front, depending on the fan modules and power modules
Reliability and availability	Power module backup	1+1 backup

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Item		Description
	Fan module backup	The device supports 2+1 backup of fan modules. The system can operate normally for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately. **NOTE** A CE8850EI chassis uses three fan modules, with each fan module containing one fan. The three fans in the chassis work in 2+1 backup mode.
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	35.98
	Mean time to repair (MTTR)	1.68
	Availability	0.999997043
Technical specifications	Processor	1.5 GHz, eight-core
	DRAM Memory	4GB
	NOR Flash	32MB
	NAND Flash	2GB
Stack	Service port supporting the stack function	100GE optical ports
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To

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obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-276 provides the ordering information.

Table 4-276 Ordering information

Part Number	Part Model	Part Description
02351RFF	CE8850-64CQ-EI	CE8850-64CQ-EI Switch (64-Port 100GE QSFP28, 2-Port 10GE SFP+, Without Fan and Power Modules)
02351RFJ	CE8850-EI-F-B0B	CE8850-64CQ-EI Switch (64-Port 100GE QSFP28, 2-Port 10GE SFP+, 2*AC Power Module, 3*FAN Box, Port-side Exhaust)
02351RFH	CE8850-EI-B-B0B	CE8850-64CQ-EI Switch (64-Port 100GE QSFP28, 2-Port 10GE SFP+, 2*AC Power Module, 3*FAN Box, Port-side Intake)

4.5.3.2 CE8850-64CQ-EI (02351RFF-001)

Overview

Table 4-277 Basic information about the CE8850-64CQ-EI

Item	Details
Description	CE8850-64CQ-EI Switch (64-Port 100GE QSFP28,Without Fan and Power Module)
Part Number	02351RFF-001
Model	CE8850-64CQ-EI
First supported version	V200R021C10SPC600
Other part numbers	02351RFH-001 (CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,2*AC Power Module,3*FAN Box,Port-side Intake)) 02351RFJ-001 (CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,2*AC Power Module,3*FAN Box,Port-side Exhaust))
Short Name	CE8850EI

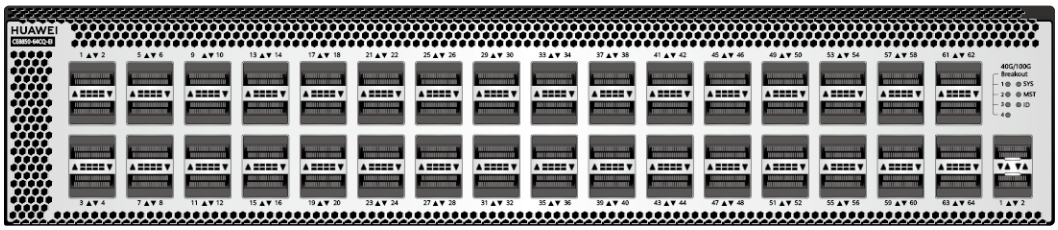
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Appearance

Figure 4-297 Appearance of the CE8850-64CQ-EI



Front (power supply side)



Rear (port side)

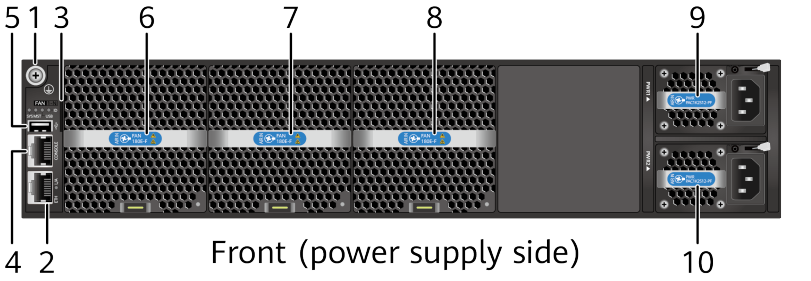
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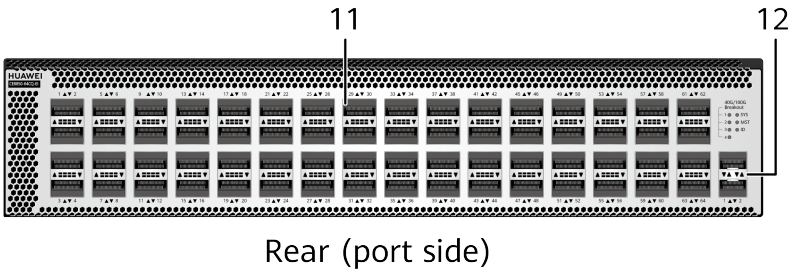
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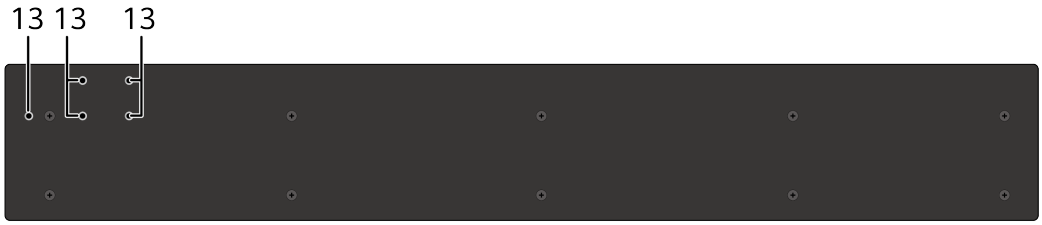
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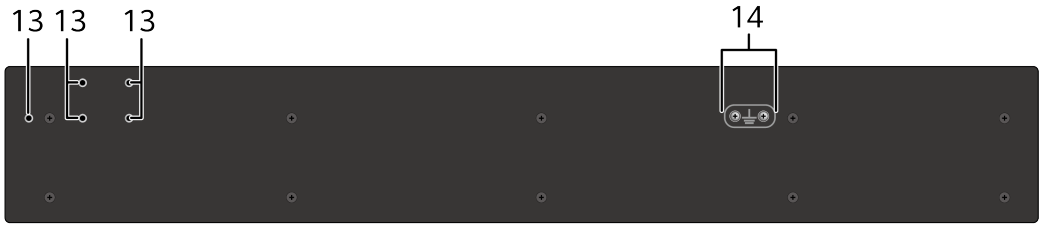
Components

Figure 4-298 Components of the CE8850-64CQ-EI









1	Ground screw	2	ETH management port (RJ45)
3	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.	4	Console port

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5	USB port	6	Fan slot 1 Applicable fan modules: **FAN-180E-B Fan Module** **FAN-180E-F Fan Module**
7	Fan slot 2 Applicable fan modules: **FAN-180E-B Fan Module** **FAN-180E-F Fan Module**	8	Fan slot 3 Applicable fan modules: **FAN-180E-B Fan Module** **FAN-180E-F Fan Module**
9	Power supply slot 1 Applicable power modules: **1200W AC&240V DC Power Module (Back to Front,Power panel side exhaust)** **1200W AC&240V DC Power Module (Front to Back,Power panel side intake)** **1200W DC Power Module (Back to Front,Power panel side exhaust)** **1200W DC Power Module (Front to Back ,Power panel side intake)**	10	Power supply slot 2 Applicable power modules: **1200W AC&240V DC Power Module (Back to Front,Power panel side exhaust)** **1200W AC&240V DC Power Module (Front to Back,Power panel side intake)** **1200W DC Power Module (Back to Front,Power panel side exhaust)** **1200W DC Power Module (Front to Back ,Power panel side intake)**
11	Sixty-four 40GE/100GE QSFP28 Ethernet optical ports	12	Two 10GE SFP+ Ethernet optical ports These two ports are reserved for future function expansion and cannot be used currently.
13	Mounting holes for mounting brackets	14	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal

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Slot Layout

Table 4-278 Slots on the CE8850-64CQ-EI

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slot	PWR1, PWR2	Horizontal insertion	The CloudEngine 8800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 8800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each provides half of the power for the switch. When one power module fails, the other one provides all power required for the chassis. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slot	FAN1 to FAN3	Horizontal insertion	Each CloudEngine 8800 series switch provides three fan slots, in which pluggable fan modules can be installed to cool the chassis, ensuring system stability and heat dissipation. When a switch is working properly, it is recommended that three fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. All fan modules are hot swappable.

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Indicators

Figure 4-299 Indicators on the CE8850-64CQ-EI 1

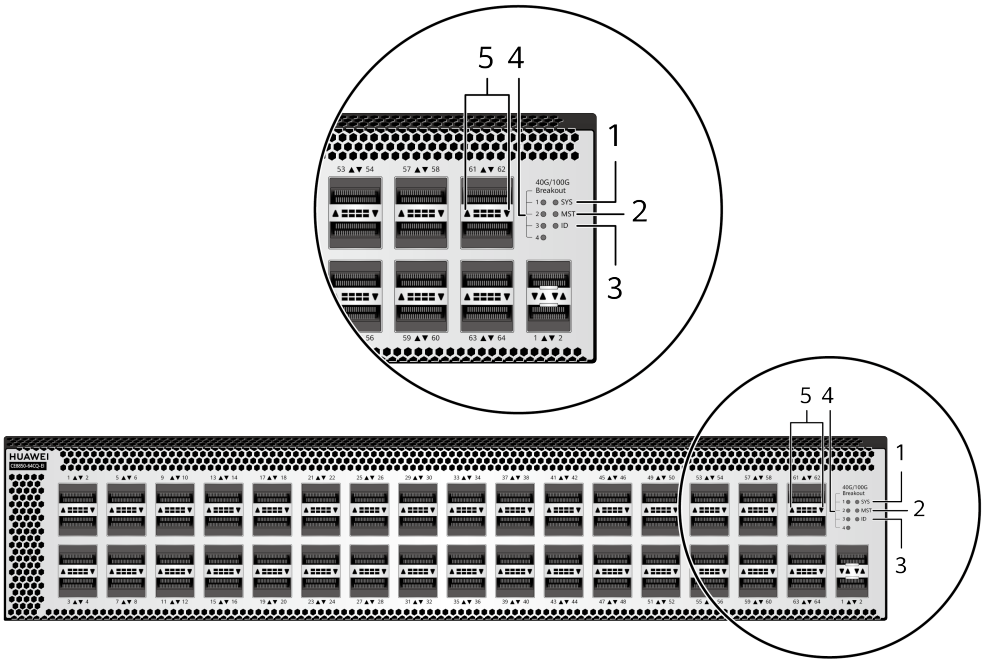
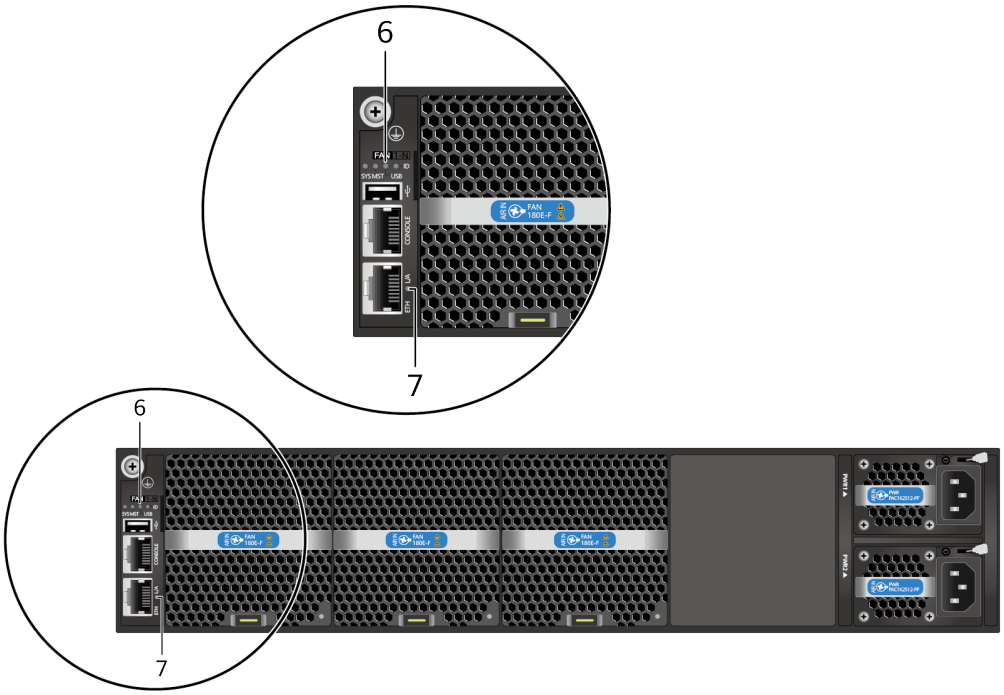


Figure 4-300 Indicators on the CE8850-64CQ-EI 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE port)	5. Service port indicator (40GE/100GE optical port)
6. USB-based deployment indicatorc	7.ETH management port indicator	-	-	-

Table 4-279 Indicators on the CE8850-64CQ-EI

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.

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Silkscreen	Name	Color	Status	Description
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (40GE/100GE optical port) (Note: Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
40G/100G Breakout 1/2/3/4	10GE/25GE mode sequence number indicators of a 40GE/100GE port (40G/100G Breakout 1/2/3/4) (Note: The four sequence number indicators 1, 2, 3, and 4 are on in turn, and each	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.

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Silkscreen	Name	Color	Status	Description
	indicator is on for 5s.)	Green	Steady on	At least one port works in 10GE or 25GE mode and is split into four 10GE or 25GE ports. When one or more 40GE/100GE ports are split into four 10GE ports or four 25GE ports, these indicators take effect and work with port indicators to identify the sequence numbers of the 10GE/25GE ports. Observe the port indicator marked with 5 in the diagram of indicators on the CE8850-64CQ-EI panel. When indicator 1 is on, each port indicator shows the status of the first 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 2 is on, each port

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Silkscreen	Name	Color	Status	Description
				indicator shows the status of the second 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 3 is on, each port indicator shows the status of the third 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 4 is on, each port indicator shows the status of the fourth 10GE/25GE port derived from the corresponding 40GE/100GE port.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-280 Ports on the CE8850-64CQ-EI

Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attributes: depending on the module or cable in use • Standards compliance: IEEE 802.3ba • Working mode: full-duplex **NOTE** 1. A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. 2. A 100GE port can be split into two 50GE ports. This function is available only to QSFP28-100G-SR4 optical modules.	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to 4*SFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to 4*SFP+ high-speed cable** **QSFP+ to 4*SFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to 4*SFP28 high-speed cable**
10GE SFP+ optical port	The connector type of the optical fiber depends on the optical module.	Two 10GE SFP+ optical ports are unavailable and reserved for future function expansion.	-

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-301 Front-to-back airflow for port-side exhaust

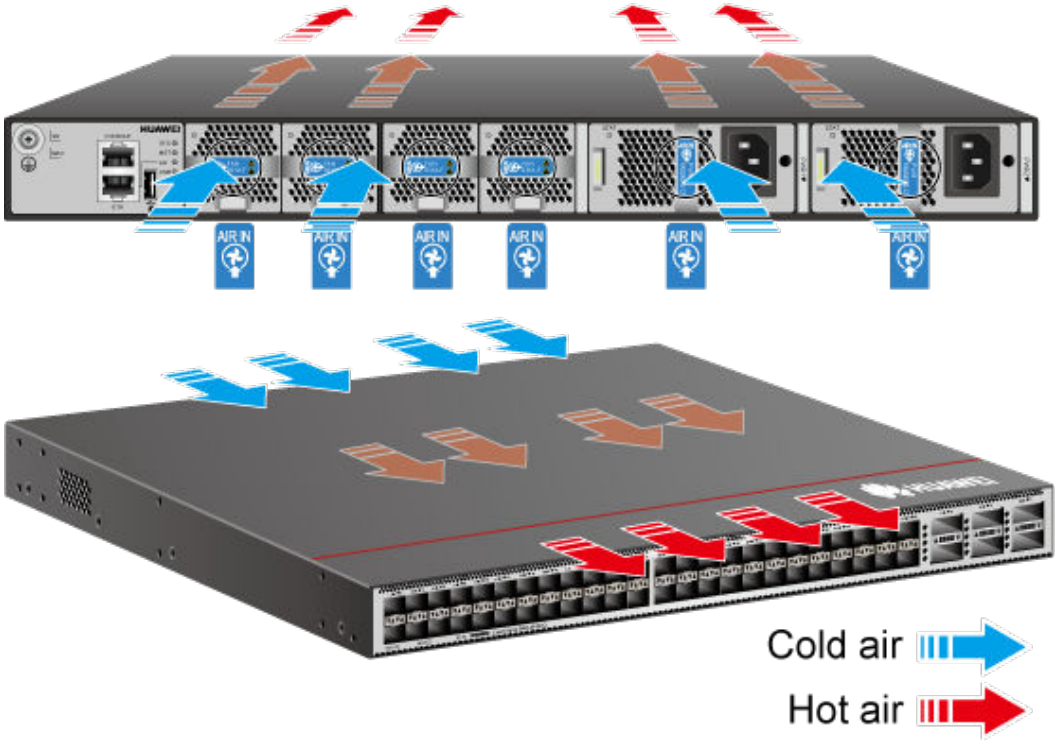
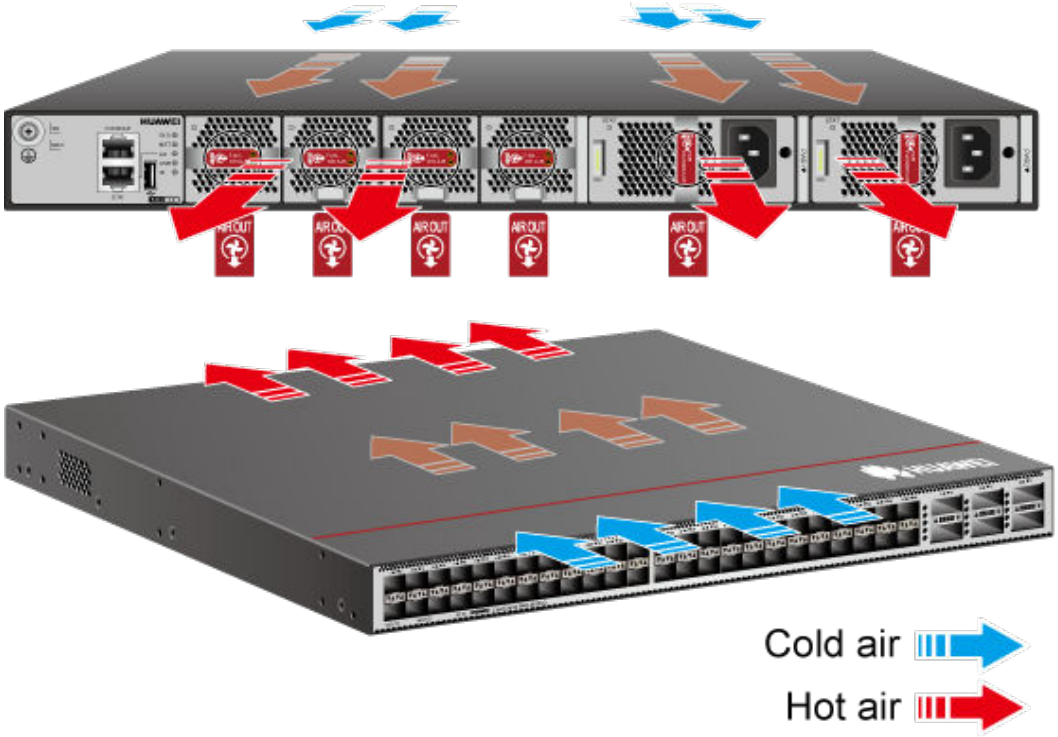


Figure 4-302 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-281 Technical specifications of the CE8850-64CQ-EI

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	280 mm x 875 mm x 665 mm (11.02 in. x 34.45 in. x 26.18 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 86.1 mm x 442.0 mm x 600.0 mm (3.39 in. x 17.40 in. x 23.62 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 86.1 mm x 442.0 mm x 633.9 mm (3.39 in. x 17.40 in. x 24.96 in.)
Weight without packaging [kg (lb)]	12 kg (26.46 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	16.4 kg (36.16 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	22.3 kg (49.16 lb)
Weight with packaging (full configuration) [kg (lb)]	26.7 kg (58.86 lb)
Installation Type	Cabinet installation
CPU	8-core, 1.5 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	64*40GE/100GE QSFP28 Ethernet optical ports (Note: A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. A 100GE port can be split into two 50GE ports. This function is available only to QSFP28-100G-SR4 optical modules.)
Uplink Service interface	2 x 10GE SFP+ Ethernet optical ports (Note: This port is unavailable currently and is reserved for future function expansion.)
Service port supporting the stack function	100GE optical port
RTC	Supported
Typical power consumption [W]	376 W (100% traffic load, QSFP28 high-speed cables on 32 ports, normal temperature, dual AC power modules) 455 W (100% traffic load, QSFP28 short-distance optical modules on 32 ports, normal temperature, dual AC power modules)
Typical heat dissipation [BTU/hour]	1283 BTU/hr (100% traffic load, QSFP28 high-speed cables on 32 ports, normal temperature, dual AC power modules) 1553 BTU/hr (100% traffic load, QSFP28 short-distance optical modules on 32 ports, normal temperature, dual AC power modules)
Static power consumption [W]	302 W
Static heat dissipation [BTU/hour]	1031 BTU/hour
Maximum power consumption [W]	629 W (100% traffic load, QSFP28 short-distance optical modules on 64 ports, normal temperature, dual AC power modules) 965 W (100% traffic load, QSFP28 long-distance optical modules on 64 ports, 40°C, dual AC power modules)

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Item	Specification
Maximum heat dissipation	2147 BTU/hour (100% traffic load, QSFP28 short-distance optical modules on 64 ports, normal temperature, dual AC power modules) 3293 BTU/hour (100% traffic load, QSFP28 long-distance optical modules on 64 ports, 40°C, dual AC power modules)
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 1200 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1200 W DC power module: –48 V DC to –60 V DC; +48 V DC
Input voltage range [V]	• 1200 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1200 W DC power module: -38.4 V DC to -72 V DC; +38.4 V DC to +72 V DC
Maximum input current [A]	• 1200 W AC&240 V DC power module: 10 A (100 V AC to 130 V AC); 8 A (200 V AC to 240 V AC); 8 A (240 V DC) • 1200 W DC power module: 38 A (–48 V DC to –60 V DC); 38 A (+48 V DC)
Rated output power [W]	• 1200 W AC&240 V DC power module: 1200 W • 1200 W DC power module: 1200 W
Certification	· Compliance with safety standards · Compliance with EMC standards · Compliance with environment and environmental protection standards
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	3
Redundant fans	The device supports 2+1 backup of fan modules that work in hot standby mode. The system can operate normally for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.999992477
MTBF [year]	20.71 year
MTTR [hour]	1.85 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Front-to-back airflow: 61.5 dB(A) on average (maximum: 65.9 dB(A)) Back-to-front airflow: 61.3 dB(A) on average (maximum: 66.5 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	Front-to-back airflow: 82.5 dB(A) on average (maximum: 87.4 dB(A)) Back-to-front airflow: 79.7 dB(A) on average (maximum: 85.6 dB(A))
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

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4.5.3.3 CE8850-64CQ-EI (02351RFF-004)

Overview

Table 4-282 Basic information about the CE8850-64CQ-EI

Item	Details
Description	CE8850-64CQ-EI Switch (64-Port 100GE QSFP28,Without Fan and Power Module)
Part Number	02351RFF-004
Model	CE8850-64CQ-EI
First supported version	V200R022C10
Other part numbers	02351RFH-004 (CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,2*AC Power Module,3*FAN Box,Port-side Intake)) 02351RFJ-004 (CE8850-64CQ-EI Switch(64-Port 100GE QSFP28,2*AC Power Module,3*FAN Box,Port-side Exhaust))
Short Name	CE8850EI

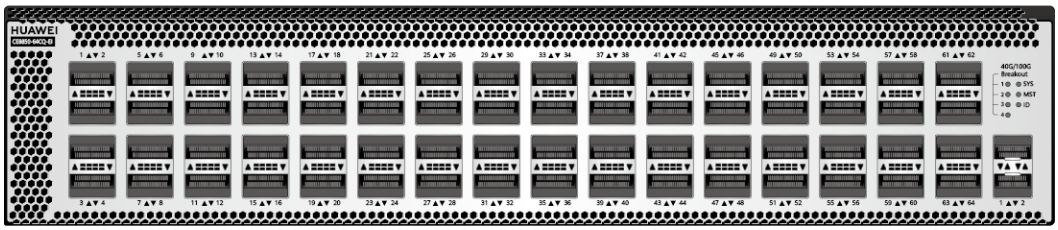
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Appearance

Figure 4-303 Appearance of the CE8850-64CQ-EI



Front (power supply side)



Rear (port side)

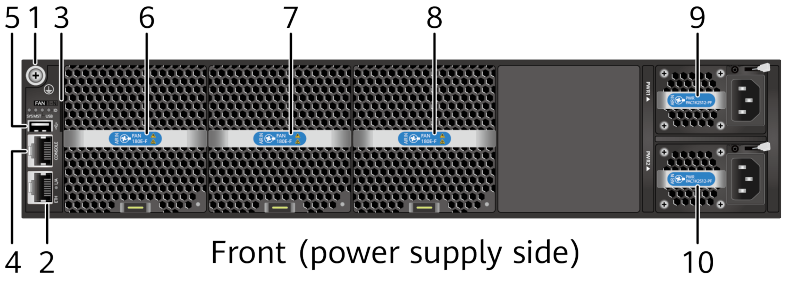
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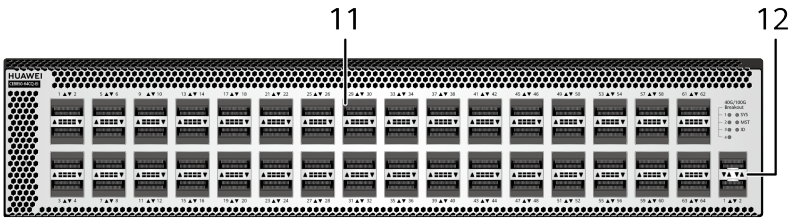
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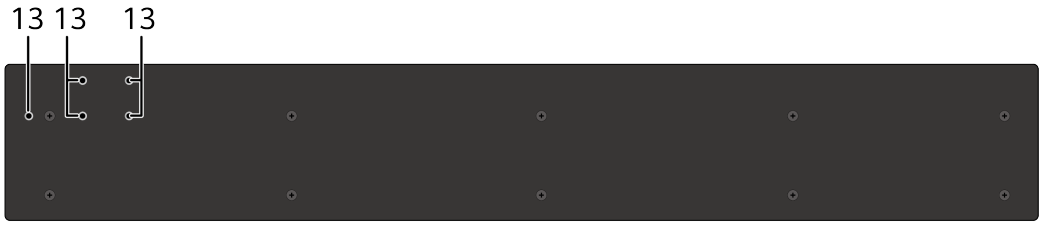
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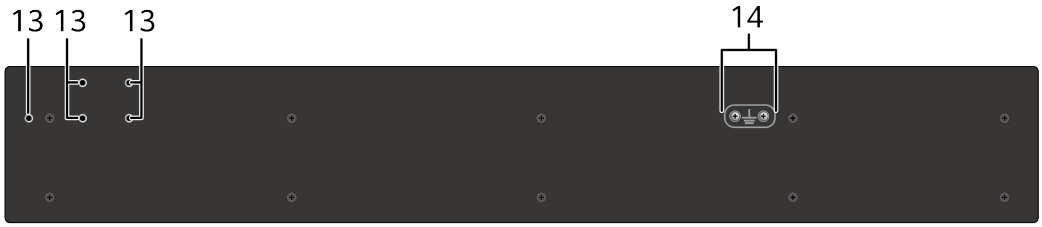
Components

Figure 4-304 Components of the CE8850-64CQ-EI









1	Ground screw	2	ETH management port (RJ45)
3	Equipment serial number (ESN) **NOTE** You can scan the code to view the ESN and MAC address of the switch.	4	Console port

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5	USB port	6	Fan slot 1
7	Fan slot 2 Applicable fan modules: **FAN-180E-B Fan Module** **FAN-180E-F Fan Module**	8	Fan slot 3 Applicable fan modules: **FAN-180E-B Fan Module** **FAN-180E-F Fan Module**
9	Power supply slot 1 Applicable power modules: **1200W AC&240V DC Power Module (Back to Front,Power panel side exhaust)** **1200W AC&240V DC Power Module (Front to Back,Power panel side intake)** **1200W DC Power Module (Back to Front,Power panel side exhaust)** **1200W DC Power Module (Front to Back ,Power panel side intake)**	10	Power supply slot 2 Applicable power modules: **1200W AC&240V DC Power Module (Back to Front,Power panel side exhaust)** **1200W AC&240V DC Power Module (Front to Back,Power panel side intake)** **1200W DC Power Module (Back to Front,Power panel side exhaust)** **1200W DC Power Module (Front to Back ,Power panel side intake)**
11	Sixty-four 40GE/100GE QSFP28 Ethernet optical ports	12	Two 10GE SFP+ Ethernet optical ports These two ports are reserved for future function expansion and cannot be used currently.
13	Mounting holes for mounting brackets	14	Equipotential bonding Ground screws for a ground cable with a two-hole OT terminal

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Slot Layout

Table 4-283 Slots on the CE8850-64CQ-EI

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	PWR1, PWR2	Horizontal insertion	The CloudEngine 8800 series switches have two power module slots, in which pluggable power modules can be installed. A chassis can use one or two power modules. In particular, dual power modules provide higher reliability. The CloudEngine 8800 series switches support dual power modules working in 1+1 backup mode. When both power modules are working properly, each provides half of the power for the switch. When one power module fails, the other one provides all power required for the chassis. All power modules are hot swappable.

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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	FAN1 to FAN3	Horizontal insertion	Each CloudEngine 8800 series switch provides three fan slots, in which pluggable fan modules can be installed to cool the chassis, ensuring system stability and heat dissipation. When a switch is working properly, it is recommended that three fan modules work at the same time. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately. All fan modules are hot swappable.

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Indicators

Figure 4-305 Indicators on the CE8850-64CQ-EI 1

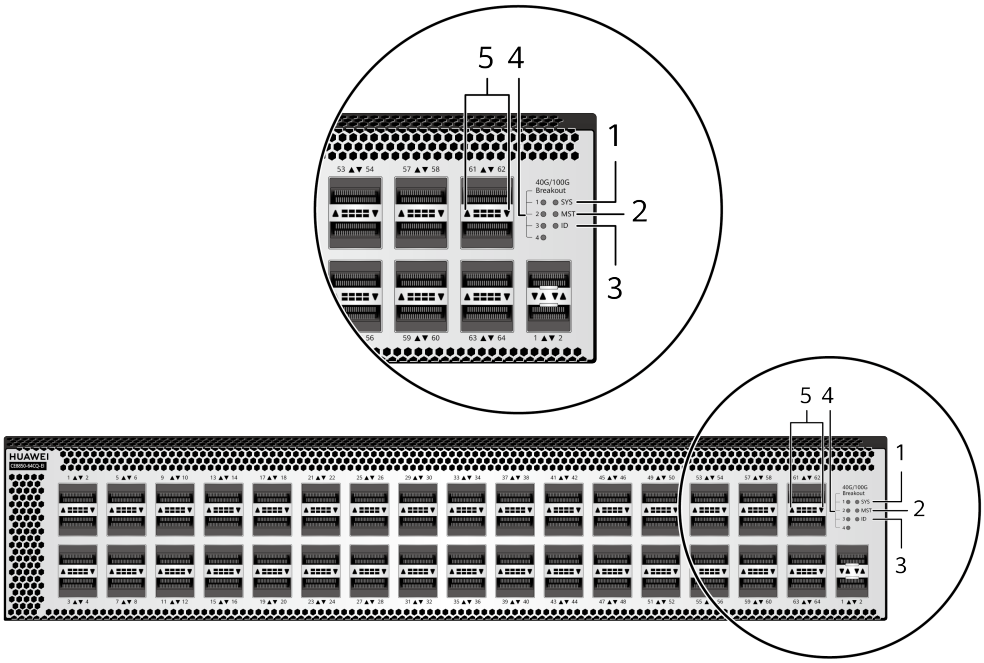
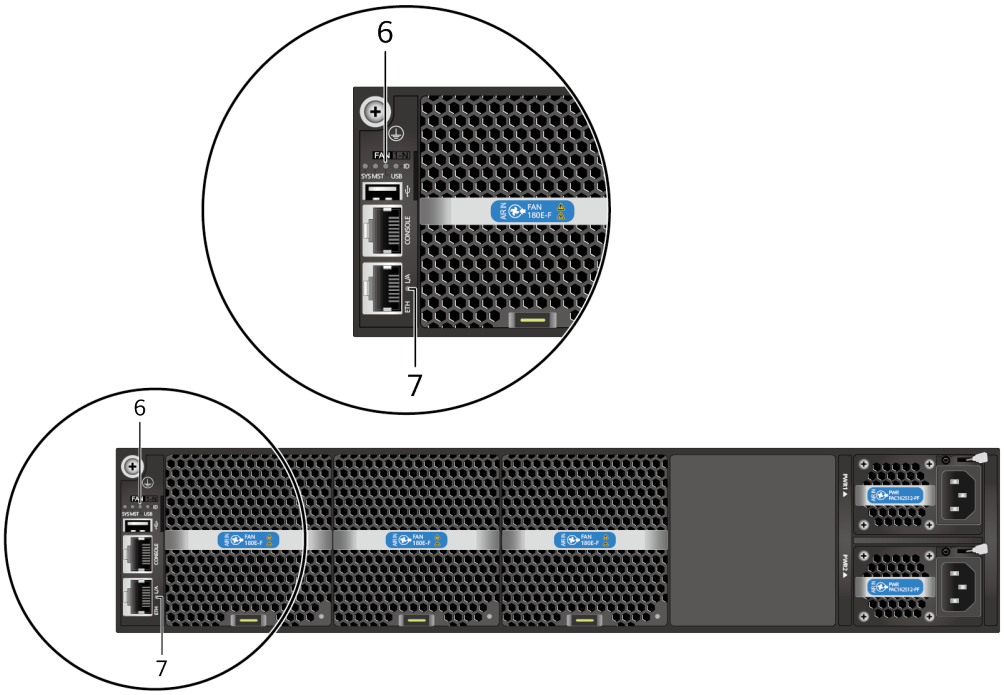


Figure 4-306 Indicators on the CE8850-64CQ-EI 2



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1. System status indicator	2. Stack master/slave indicator	3. ID indicator	4. 40G/100G Breakout 1/2/3/4 (sequence number indicators of 10GE/25GE ports converted from a 40GE/100GE port)	5. Service port indicator (40GE/100GE optical port)
6. USB-based deployment indicatorc	7.ETH management port indicator	-	-	-

Table 4-284 Indicators on the CE8850-64CQ-EI

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.
		Red	Steady on	The system fails to start. At least one power module does not work normally. At least one fan module does not work normally.
MST	Stack master/slave indicator	Green	Steady off	The device is not a stack master.
		Green	Steady on	The device is a stack master or standalone device.

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Silkscreen	Name	Color	Status	Description
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.
-	Service port indicator (40GE/100GE optical port) (Note: Arrowheads show the positions of ports. A down arrowhead indicates a bottom-row port, and an up arrowhead indicates a top-row port.)	Green	Steady off	The port is not connected or has been shut down.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is sending or receiving data.
40G/100G Breakout 1/2/3/4	10GE/25GE mode sequence number indicators of a 40GE/100GE port (40G/100G Breakout 1/2/3/4) (Note: The four sequence number indicators 1, 2, 3, and 4 are on in turn, and each	Green	Steady off	40GE/100GE ports work in 40GE or 100GE mode and are not split into four 10GE or 25GE ports.

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Silkscreen	Name	Color	Status	Description
	indicator is on for 5s.)	Green	Steady on	At least one port works in 10GE or 25GE mode and is split into four 10GE or 25GE ports. When one or more 40GE/100GE ports are split into four 10GE ports or four 25GE ports, these indicators take effect and work with port indicators to identify the sequence numbers of the 10GE/25GE ports. Observe the port indicator marked with 5 in the diagram of indicators on the CE8850-64CQ-EI panel. When indicator 1 is on, each port indicator shows the status of the first 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 2 is on, each port

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Silkscreen	Name	Color	Status	Description
				indicator shows the status of the second 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 3 is on, each port indicator shows the status of the third 10GE/25GE port derived from the corresponding 40GE/100GE port. When indicator 4 is on, each port indicator shows the status of the fourth 10GE/25GE port derived from the corresponding 40GE/100GE port.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Green	Blinking	The port is sending or receiving data.

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Silkscreen	Name	Color	Status	Description
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.
		Red	Steady on	USB-based deployment fails.

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Ports

Table 4-285 Ports on the CE8850-64CQ-EI

Port	Connector Type	Description	Available Components
40GE/100GE QSFP28 optical port	The connector type of the optical fiber depends on the optical module.	A 40GE/100GE QSFP28 Ethernet optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. • Optical port attributes: depending on the module or cable in use • Standards compliance: IEEE 802.3ba • Working mode: full-duplex **NOTE** 1. A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. 2. A 100GE port can be split into two 50GE ports. This function is available only to QSFP28-100G-SR4 optical modules.	**40GE QSFP+ optical modules** **100GE QSFP28 optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to 4*SFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to 4*SFP+ high-speed cable** **QSFP+ to 4*SFP+ high-speed cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to 4*SFP28 high-speed cable**
10GE SFP+ optical port	The connector type of the optical fiber depends on the optical module.	Two 10GE SFP+ optical ports are unavailable and reserved for future function expansion.	-

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Port	Connector Type	Description	Available Components
Console port	RJ45	The console port is connected to a console for on-site configuration. • Complied standard: RS232 • Working mode: duplex universal asynchronous receiver/ transmitter (UART) • Baud rate: 9600 bit/s to 115200 bit/s. The default value is 9600 bit/s.	Console cable
ETH management port	RJ45	The ETH management port (RJ45) is used to connect the device to a configuration terminal or network management workstation to configure the device locally or remotely. • Complied standard: IEEE802.3ab • Working mode: 10/100/1000 Mbit/s auto-sensing, full-duplex • Maximum transmission distance: 100 m	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	Supports USB 2.0 flash drives.

Heat Dissipation System

The cooling system of the CloudEngine 6800 series switches uses front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used.

- Front-to-back airflow: Power modules and fan modules with front-to-back airflow are identified by 

. Air flows into the chassis from the power supply side and is exhausted from the port side, as shown in **Figure5** (using a CE6863 chassis as an example).
- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure6** (using a CE6863 chassis as an example).

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Figure 4-307 Front-to-back airflow for port-side exhaust

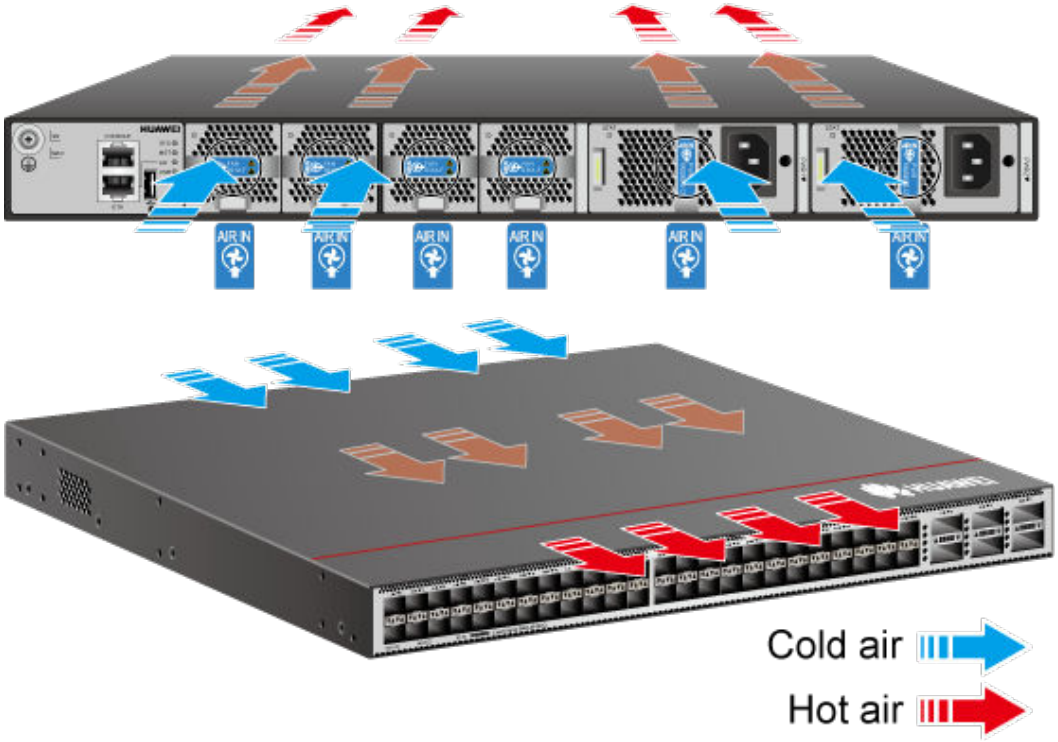
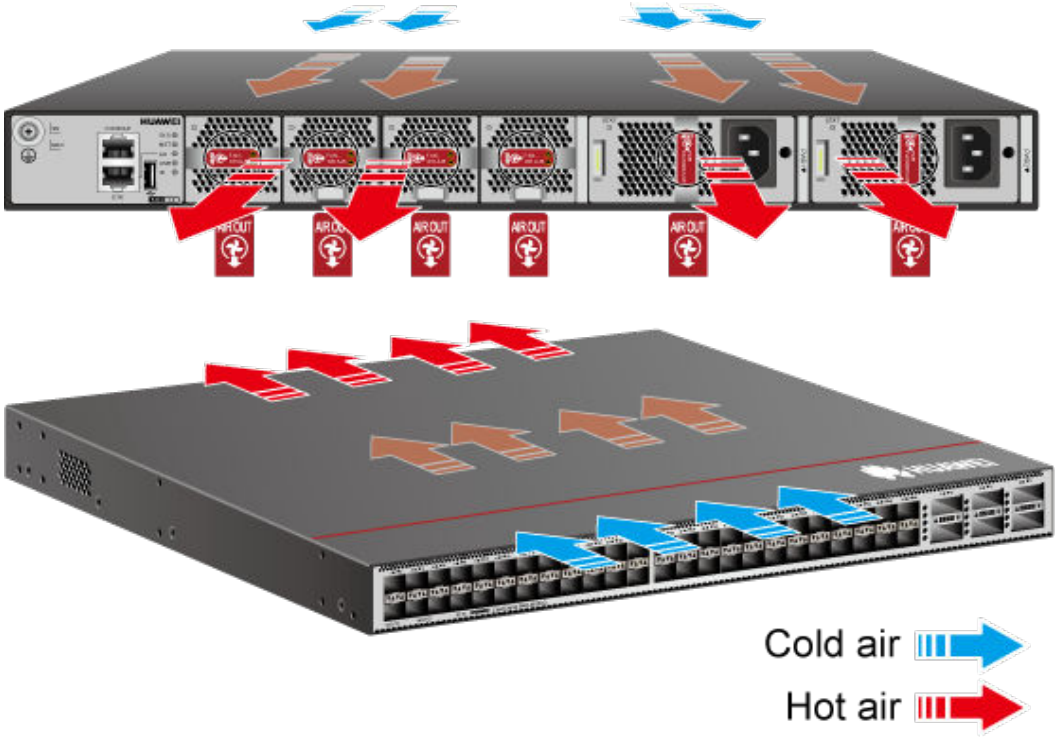


Figure 4-308 Back-to-front airflow for port-side intake



The airflow direction of the power modules and fan modules required on the CloudEngine 6800 series switches depends on how the device is installed in a cabinet. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the power supply

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side facing the front and the port side facing the back, the switch needs to adopt fan modules and power modules with front-to-back airflow.

NOTE

Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

Technical Specifications

Table 4-286 Technical specifications of the CE8850-64CQ-EI

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	280 mm x 875 mm x 665 mm (11.02 in. x 34.45 in. x 26.18 in.)
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 86.1 mm x 442.0 mm x 600.0 mm (3.39 in. x 17.40 in. x 23.62 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 86.1 mm x 442.0 mm x 633.9 mm (3.39 in. x 17.40 in. x 24.96 in.)
Weight without packaging [kg (lb)]	12 kg (26.46 lb) (excluding optical modules, power modules, and fan modules)
Weight without packaging (full configuration) [kg (lb)]	16.4 kg (36.16 lb) (including AC power modules and fan modules, excluding optical modules, calculated based on the heaviest model if multiple models are supported)
Weight with packaging [kg (lb)]	22.3 kg (49.16 lb)
Weight with packaging (full configuration) [kg (lb)]	26.7 kg (58.86 lb)
Installation Type	Cabinet installation
CPU	8-core, 1.5 GHz
Memory	DRAM: 4 GB
NOR Flash	64 MB
NAND Flash	4 GB
USB	Supported

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Item	Specification
Power supply mode	• AC • DC • HVDC
Console port	RJ45
Downlink Service interface	64*40GE/100GE QSFP28 Ethernet optical ports (Note: A QSFP28 Ethernet optical port can be split into four 10GE or 25GE ports. A 100GE port can be split into two 50GE ports. This function is available only to QSFP28-100G-SR4 optical modules.)
Uplink Service interface	2 x 10GE SFP+ Ethernet optical ports (Note: This port is unavailable currently and is reserved for future function expansion.)
Service port supporting the stack function	100GE optical port
RTC	Supported
Typical power consumption [W]	376 W (100% traffic load, QSFP28 high-speed cables on 32 ports, normal temperature, dual AC power modules) 455 W (100% traffic load, QSFP28 short-distance optical modules on 32 ports, normal temperature, dual AC power modules)
Typical heat dissipation [BTU/hour]	1283 BTU/hr (100% traffic load, QSFP28 high-speed cables on 32 ports, normal temperature, dual AC power modules) 1553 BTU/hr (100% traffic load, QSFP28 short-distance optical modules on 32 ports, normal temperature, dual AC power modules)
Static power consumption [W]	302 W
Static heat dissipation [BTU/hour]	1031 BTU/hour
Maximum power consumption [W]	629 W (100% traffic load, QSFP28 short-distance optical modules on 64 ports, normal temperature, dual AC power modules) 965 W (100% traffic load, QSFP28 long-distance optical modules on 64 ports, 40°C, dual AC power modules)

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Item	Specification
Maximum heat dissipation	2147 BTU/hour (100% traffic load, QSFP28 short-distance optical modules on 64 ports, normal temperature, dual AC power modules) 3293 BTU/hour (100% traffic load, QSFP28 long-distance optical modules on 64 ports, 40°C, dual AC power modules)
Number of power modules	2
Redundant power supply	1+1 backup
Rated input voltage [V]	• 1200 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1200 W DC power module: –48 V DC to –60 V DC; +48 V DC
Input voltage range [V]	• 1200 W AC&240 V DC power module: 90 V AC to 290 V AC, 45 Hz to 65 Hz; 190 V DC to 290 V DC • 1200 W DC power module: -38.4 V DC to -72 V DC; +38.4 V DC to +72 V DC
Maximum input current [A]	• 1200 W AC&240 V DC power module: 10 A (100 V AC to 130 V AC); 8 A (200 V AC to 240 V AC); 8 A (240 V DC) • 1200 W DC power module: 38 A (–48 V DC to –60 V DC); 38 A (+48 V DC)
Rated output power [W]	• 1200 W AC&240 V DC power module: 1200 W • 1200 W DC power module: 1200 W
Certification	· Compliance with safety standards · Compliance with EMC standards · Compliance with environment and environmental protection standards
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode

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Item	Specification
Types of fans	Pluggable
Number of fans	3
Redundant fans	The device supports 2+1 backup of fan modules that work in hot standby mode. The system can operate normally for a short time after a single fan module fails. You are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling
Airflow direction	Front-to-rear or rear-to-front, depending on the selected fan modules and power modules
Availability	0.999992477
MTBF [year]	20.71 year
MTTR [hour]	1.85 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Front-to-back airflow: 61.5 dB(A) on average (maximum: 65.9 dB(A)) Back-to-front airflow: 61.3 dB(A) on average (maximum: 66.5 dB(A))
Noise at high temperature (40°C, sound pressure) [dB(A)]	Front-to-back airflow: 82.5 dB(A) on average (maximum: 87.4 dB(A)) Back-to-front airflow: 79.7 dB(A) on average (maximum: 85.6 dB(A))
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, noncondensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% RH to 95% RH, noncondensing
Storage temperature [°C (°F)]	–40°C to +70°C (–40°F to +158°F)

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4.5.4 CE8861-4C-EI

Version Mapping

Table 4-287 lists the mappings between the CE8861-4C-EI and software versions.

Table 4-287 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE8800	CE8861	CE8861-4C-EI	CE8861EI	V200R005C10 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

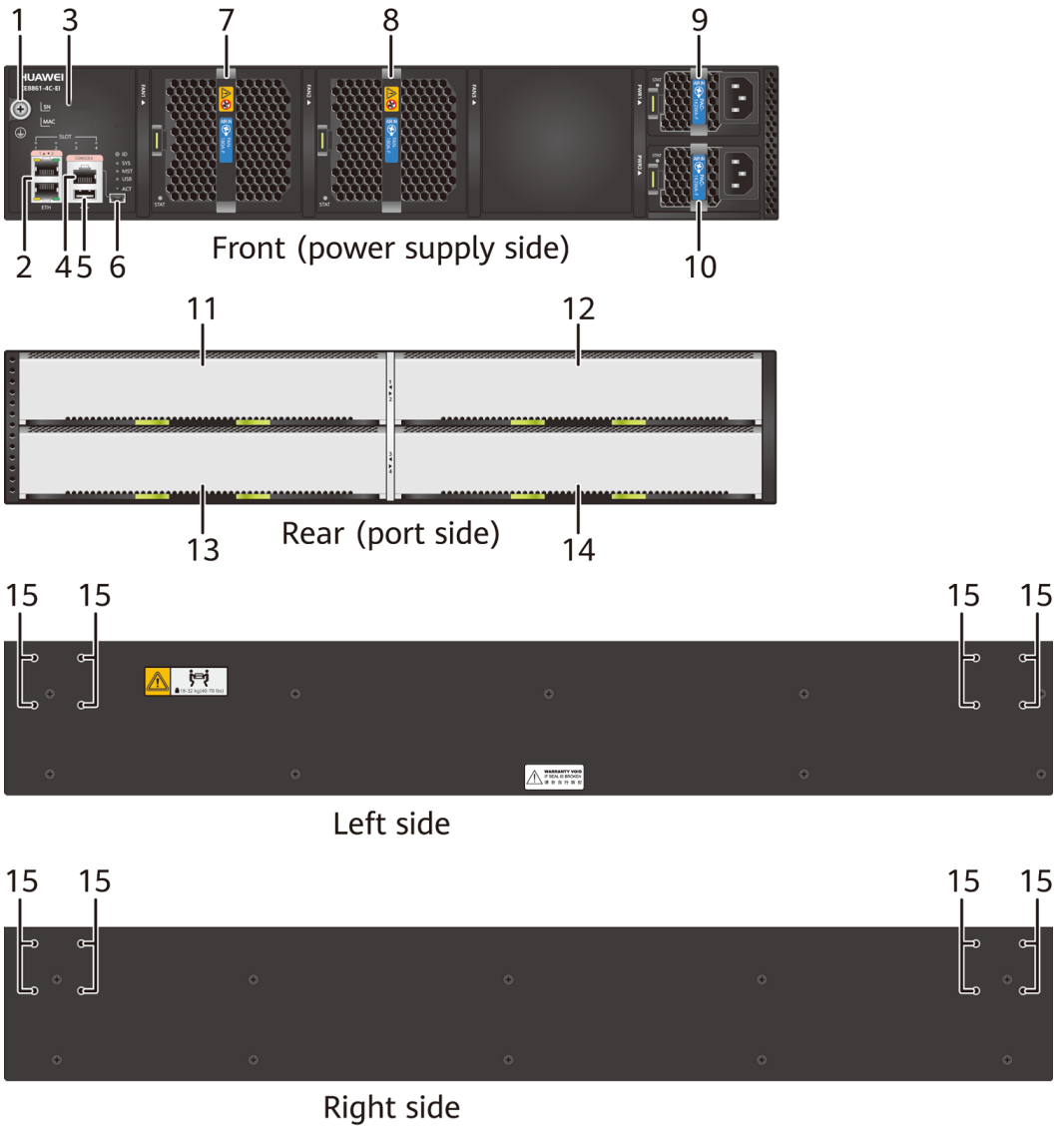
Appearance and Structure

NOTE

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Figure 4-309 CE8861-4C-EI



1	Ground screw	2	Two ETH management ports (RJ45)
3	ESN and MAC address label	4	Console port
5	USB port	6	Mini USB port
7	Fan slot 1 Applicable fan modules: • **6.10 FAN-180A Series Fan Modules**	8	Fan slot 2 Applicable fan modules: • **6.10 FAN-180A Series Fan Modules**

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9	Power supply slot 1 Applicable power modules: • **5.15 1200 W AC&240 V DC Power Module (PAC-1K2WA)** • **5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)** • **5.26 1200 W DC Power Module (PDC-1K2WA)**	10	Power supply slot 2 Applicable power modules: • **5.15 1200 W AC&240 V DC Power Module (PAC-1K2WA)** • **5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)** • **5.26 1200 W DC Power Module (PDC-1K2WA)**
11	Extended card slot 1 Applicable cards: • **CE88-D8CQ** • **CE88-D16Q** • **CE88-D24T2CQ** • **CE88-D24S2CQ** • **CE88-D24S2CQ-U**	12	Extended card slot 2 Applicable cards: • **CE88-D8CQ** • **CE88-D16Q** • **CE88-D24T2CQ** • **CE88-D24S2CQ** • **CE88-D24S2CQ-U**
13	Extended card slot 3 Applicable cards: • **CE88-D8CQ** • **CE88-D16Q** • **CE88-D24T2CQ** • **CE88-D24S2CQ** • **CE88-D24S2CQ-U**	14	Extended card slot 4 Applicable cards: • **CE88-D8CQ** • **CE88-D16Q** • **CE88-D24T2CQ** • **CE88-D24S2CQ** • **CE88-D24S2CQ-U**
15	Mounting holes for mounting brackets	-	-

Slot

- Power supply slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) have two power supply slots, in which power modules can be installed to provide power to the chassis. A chassis can have one or two power modules. Double power modules can provide higher reliability.

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) support double power modules (1+1 backup).

  – When both power modules are working properly, they equally provide power for a chassis.

  – When one power module fails, the other one provides all power required for a chassis.

  All power modules are hot swappable.

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- Fan slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI, CE6863-48S6CQ, CE6881-48S6CQ, CE6820-48S6CQ, CE6863-48S6CQ-K, CE6881-48S6CQ-K, CE6881E-48S6CQ and CE6857-48S6CQ-EI) have two fan slots, in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have two working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Airflow

The cooling systems of the CloudEngine 8800, 7800, 6800, and 5800 series switches have front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used. The airflow direction of the power modules and fan modules required on the CloudEngine 8800, 7800, 6800, and 5800 series switches depends on how the switches are installed in cabinets. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If CloudEngine 8800, 7800, 6800, and 5800 series switches are installed with the power supply side facing the front, you are advised to use fan modules and power modules with front-to-back airflow in the switches.

NOTE

- Front-to-back airflow: The power modules and fan modules using front-to-back airflow are marked  or 

. Air flows into the chassis from the power supply side and flows out from the port side, as shown in **Figure 4-310** (CE5800 as an example).
- Back-to-front airflow: The power modules and fan modules using back-to-front airflow are marked  or 

. Air flows into the chassis from the port side and flows out from the power supply side, as shown in **Figure 4-144** (CE5800 as an example).
- When the power module and fan module use forcible heat dissipation, they must use the same airflow method. For example, if the power module with back-to-front airflow is used, the fan module with back-to-front airflow must be used.

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Figure 4-310 Front-to-back airflow (air flows out from the port side)

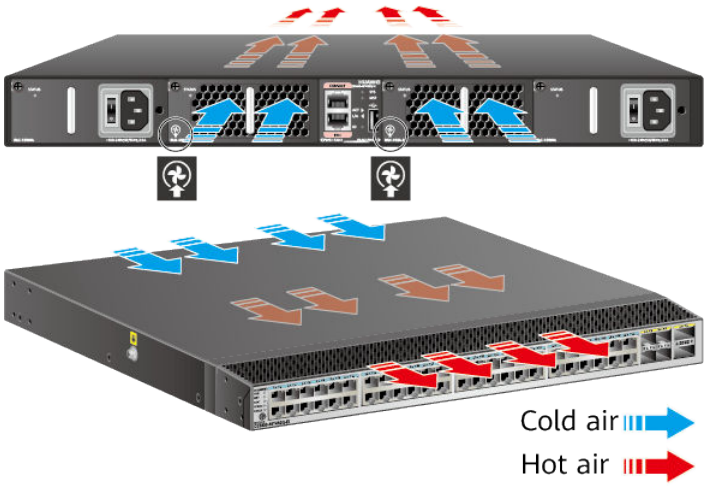
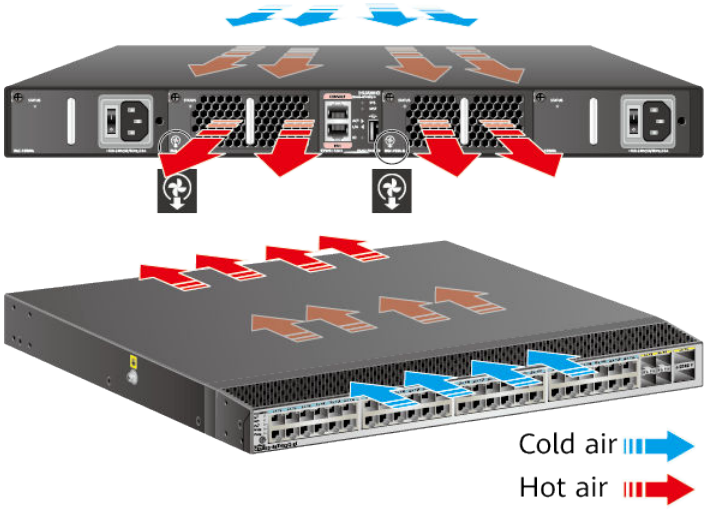


Figure 4-311 Back-to-front airflow (air flows in from the port side)

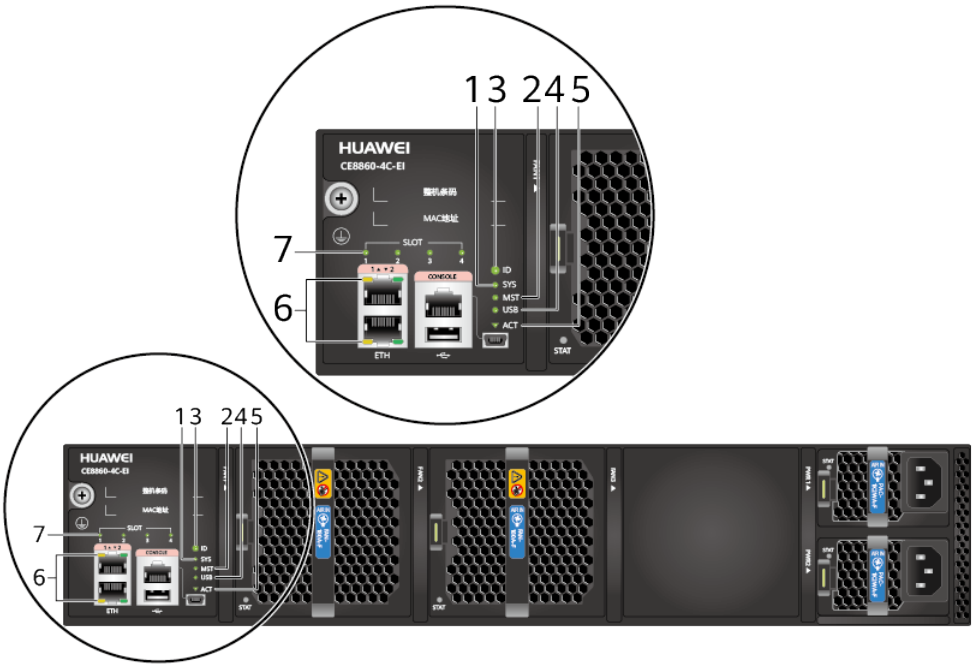


Indicators

Indicators on the CE8861-4C-EI are the same as those on the CE8860-4C-EI. CE8860-4C-EI is used as an example.

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Figure 4-312 Indicators on the CE8861-4C-EI front panel



NOTE

The CE8861-4C-EI has four card slots at the rear of the chassis and has no indicators on the rear panel. For details about indicators on extended cards, see the indicator description for the specific cards.

Table 4-288 Indicator description

No.	Indicator	Name	Color	Status	Description
1	SYS	System status indicator	Green	Off	The system is not running.
				Fast blinking	The system is starting.
				Slow blinking	The system is running normally.
			Red	Steady on	• The system fails to start. • At least one power module does not work normally. • At least one fan module does not work normally.
2	MST	Stack master/ slave indicator	Green	Off	The switch is not a stack master.

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No.	Indicator	Name	Color	Status	Description
		NOTE In V200R003C00 and later versions, you can use the **dfs-master led enable** command to enable the stack master/slave indicator to display the DFS group master and backup status. After the stack master/slave indicator is enabled to display the DFS group master and backup status, the stack master/slave indicator on the DFS master device is steady on and that on the DFS backup device is off.		Steady on	The switch is a stack master or standalone switch.
3	ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
				Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.
4	USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
				Steady on	USB-based deployment has been completed.
				Blinking	The system is reading data from a USB flash drive.
			Red	Steady on	USB-based deployment has failed.

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No.	Indicator	Name	Color	Status	Description
5	ACT	Mini USB port indicator	Green	Off	The Mini USB port is inactive, and the console port can be used.
				Off	The Mini USB port is active, and the console port cannot be used.
6	-	ETH management port indicator	Green	Off	No link is established on the port.
				Steady on	A link is established on the port.
			Yellow	Blinking	The port is sending or receiving data.
7	SLOT	Card status indicators **NOTE** Indicators 1, 2, 3, 4 show the status of cards in slots 1, 2, 3, 4, respectively.	Green	Off	No card is present in the slot, a card is present but is not powered on, or the system is not running.
				Slow blinking	The card is running normally.
				Fast blinking	The card is powering on or resetting.
			Red	Steady on	A fault that affects services has occurred on the card. The fault cannot be rectified automatically and requires manual intervention.

Ports

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. **Table 4-289** describes the attributes of the console port.

Table 4-289 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)

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Attribute	Description
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

NOTE

- The console port and Mini USB port share one internal serial port. You can use the console port or Mini USB port as the serial port according to your needs. When the Mini USB is activated, the console port cannot be used.
- When both the console port and Mini-USB port have a cable connected, the Mini-USB port is used.

Mini USB Port

The Mini USB port can connect to a configuration terminal for onsite configuration of the system, but the configuration terminal must have a USB serial port driver installed. The Mini USB port is used as the serial port once a link is established on the port.

ETH Management Port (RJ45)

The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. **Table 4-290** describes the attributes of the ETH management port (RJ45).

Table 4-290 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

The CE8861EI switches have two ETH management ports (RJ45). Pay attention to the following when using the two management ports:

- The two ports cannot be used together, and you must choose one of them to use.
- Before start of a CE8861EI switch, you can select interface 1 or interface 2 in the BIOS menu. Interface 1 is the default choice. For details, see "Modify parameters" in the *Basic Configuration Guide - BIOS Menu*.

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- After registration of the switch succeeds:
  - If both the management ports have a cable connected and are in Up state, port 1 acts as the primary management port and port 2 becomes the backup automatically. The management interface number displayed on the command line interface is MEth0/0/0, regardless of which port is used.
  - If cables are connected to the two ETH management ports after successful registration of the switch, the port that is connected first is used as the primary management port.
  - If port 1 fails, the system switches management traffic to port 2 automatically. When port 1 recovers, management traffic cannot be switched back to port 1, unless port 2 fails or the switch restarts. You can observe indicators on the ETH management ports to determine which port is used currently. (The Link indicator of the ETH management port used is steady green. If data is being transmitted on this port, its ACT indicator is blinking yellow. The indicators of the backup port are off.)

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-291 lists technical specifications of the CE8861-4C-EI switch.

Table 4-291 Technical specifications

Item		Description
Physical specifications		• Dimensions (W x D x H): 442.0 mm x 600.0 mm x 88.1 mm (17.4 in. x 23.6 in. x 3.47 in.) • Weight (with two power modules and two fan modules, calculated based on the heaviest model if multiple models are supported): 21.3 kg
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)

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Item		Description
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 58 dBA • Front-to-back airflow: < 56 dBA
Power specifications	Power source type	AC/DC/high-voltage DC
	AC power input	• Rated input voltage range: 100 V AC to 130 V AC/200 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	DC power input	• Rated voltage range: -48 V DC to -60 V DC • Maximum voltage range: -38.4 V DC to -72 V DC
	High-voltage DC power input	• Rated voltage of 240 V high-voltage DC power input: 240 V DC • Maximum voltage range of 240 V high-voltage DC power input: 188 V DC to 290 V DC • Rated voltage range of 380 V high-voltage DC power input: 240 V DC to 380 V DC • Maximum voltage range of 380 V high-voltage DC power input: 188 V DC to 400 V DC
	Rated input current	• 1200 W AC&240 V DC power module (PAC-1K2WA series): 10 A (100 V AC to 130 V AC)/8 A (200 V AC to 240 V AC)/8 A (240 V DC) • 1200 W high-voltage DC power module (PHD-1K2WA series): 8 A (240 V DC to 380 V DC) • 1200 W DC power (PDC-1K2WA series): 38 A (-48 V DC to -60 V DC)
Chassis power consumption	Maximum power consumption	• Fully configured with four CE88-D8CQ cards: 658 W • Fully configured with four CE88-D16Q cards: 620 W • Fully configured with four CE88-D24T2CQ cards: 747 W • Fully configured with four CE88-D24S2CQ cards: 674 W • Fully configured with four CE88-D24S2CQ-U cards: 795 W

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Item		Description
	Typical power consumption	• Fully configured with four CE88-D8CQ cards: 398 W (100% throughput, QSFP28 cables on 32 ports, double power modules) • Fully configured with four CE88-D16Q cards: 383 W (100% throughput, QSFP+ cables on 64 ports, double power modules) • Fully configured with four CE88-D24T2CQ cards: 532 W (100% throughput, 3 m Ethernet cables on 96 ports and QSFP28 cables on 8 ports, double power modules) • Fully configured with four CE88-D24S2CQ cards: 437 W (100% throughput, SFP28 cables on 96 ports and QSFP28 cables on 8 ports, double power modules) • Fully configured with four CE88-D24S2CQ-U cards: 525 W (100% throughput, SFP28 cables on 96 ports and QSFP28 cables on 8 ports, double power modules)
Chassis heat dissipation	Maximum heat dissipation	• Fully configured with four CE88-D8CQ cards: 2245 BTU/hr • Fully configured with four CE88-D16Q cards: 2116 BTU/hr • Fully configured with four CE88-D24T2CQ cards: 2549 BTU/hr • Fully configured with four CE88-D24S2CQ cards: 2300 BTU/hr • Fully configured with four CE88-D24S2CQ-U cards: 2713 BTU/hr

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Item		Description
	Typical heat dissipation	• Fully configured with four CE88-D8CQ cards: 1358 BTU/hr (100% throughput, QSFP28 cables on 32 ports, double power modules) • Fully configured with four CE88-D16Q cards: 1307 BTU/hr (100% throughput, QSFP+ cables on 64 ports, double power modules) • Fully configured with four CE88-D24T2CQ cards: 1815 BTU/hr (100% throughput, 3 m Ethernet cables on 96 ports and QSFP28 cables on 8 ports, double power modules) • Fully configured with four CE88-D24S2CQ cards: 1491 BTU/hr (100% throughput, SFP28 cables on 96 ports and QSFP28 cables on 8 ports, double power modules) • Fully configured with four CE88-D24S2CQ-U cards: 1791 BTU/hr (100% throughput, SFP28 cables on 96 ports and QSFP28 cables on 8 ports, double power modules)
Surge protection		Power module: • AC: 4 kV in common mode and 2.5 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Front-to-back or back-to-front, which is determined by features of fan modules and power modules
Reliability and availability	Power module backup	1+1 backup
	Fan module backup	Two fan modules, working in 1+1 backup mode when the temperature is below 35°C
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	36.02 years
	Mean time to repair (MTTR)	1.87 hours

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Item		Description
	Availability	0.9999940608
Technical specifications	Processor	1.5 GHz, eight-core
	DRAM Memory	4 GB
	NOR Flash	32 MB
	NAND Flash	2 GB
Stack	Service port supporting the stack function	See the description of ports on each card.
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-292 provides the ordering information.

Table 4-292 Ordering information

Part Number	Part Model	Part Description
02351SGW	CE8861-4C-EI	CE8861-4C-EI Mainframe (With 4 Subcard Slots, Without FAN Box and Power Module)
02351SHA	CE8861-4C-EI-F	CE8861-4C-EI Mainframe (With 4 Subcard Slots, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)
02351SGY	CE8861-4C-EI-B	CE8861-4C-EI Mainframe (With 4 Subcard Slots, 2*AC Power Module, 2*FAN Box, Port-side Intake)

4.5.5 CE8868-4C-EI

Version Mapping

Table 4-293 lists the mappings between the CE8868-4C-EI and software versions.

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Table 4-293 Version mapping

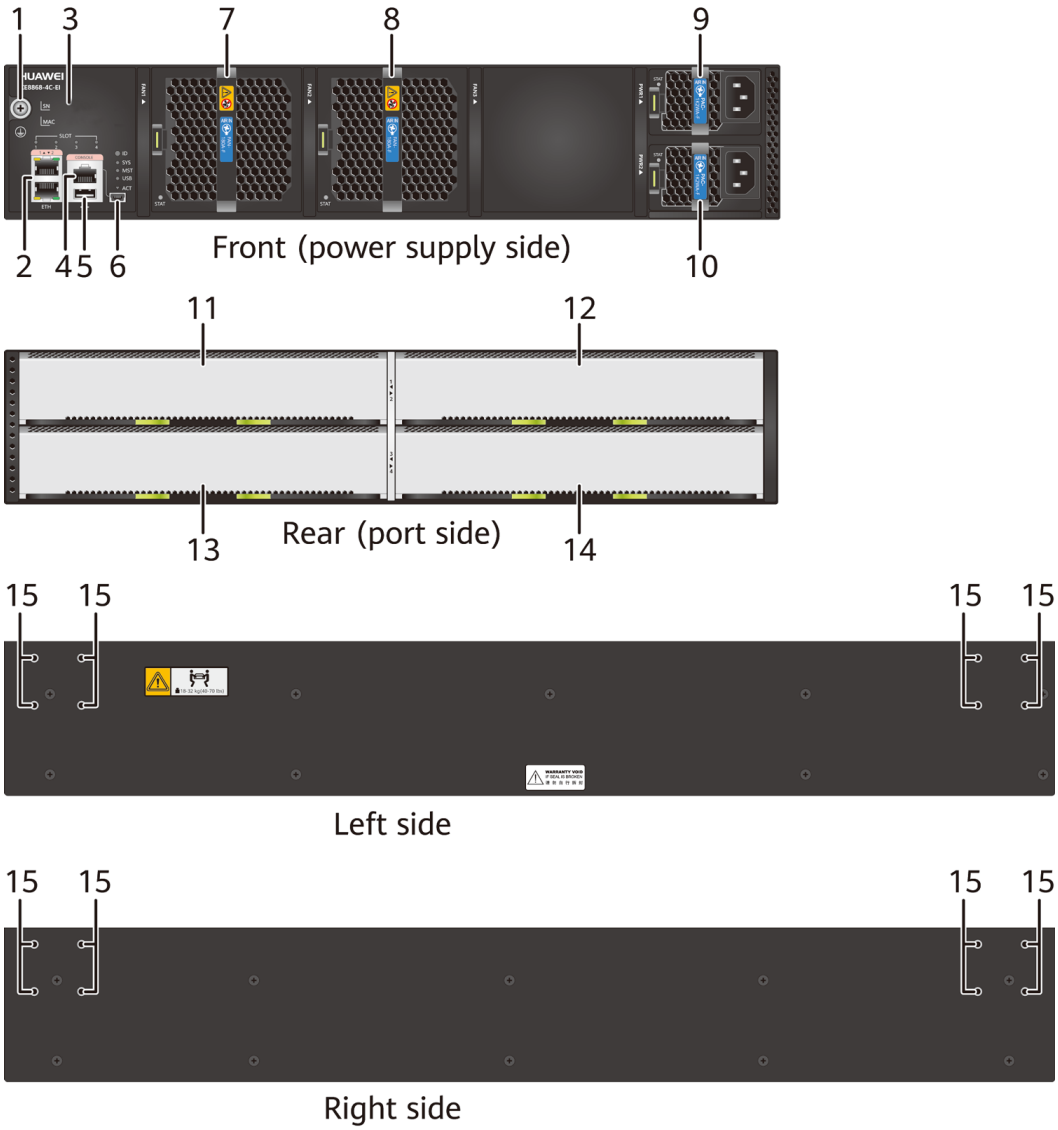
Device Series	Sub-series	Device Model	Short Name	Supported Version
CE8800	CE8868	CE8868-4C-EI	CE8868EI	V200R005C10 to V200R022C10 **NOTE** This model is not supported in V200R005C20 and V200R020C00.

Appearance and Structure

NOTE

The figures in this document are for reference only.

Figure 4-313 CE8868-4C-EI



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1	Ground screw	2	Two ETH management ports (RJ45)
3	ESN and MAC address label	4	Console port
5	USB port	6	Mini USB port
7	Fan slot 1 Applicable fan modules: • **6.10 FAN-180A Series Fan Modules**	8	Fan slot 2 Applicable fan modules: • **6.10 FAN-180A Series Fan Modules**
9	Power supply slot 1 Applicable power modules: • **5.15 1200 W AC&240 V DC Power Module (PAC-1K2WA)** • **5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)** • **5.26 1200 W DC Power Module (PDC-1K2WA)**	10	Power supply slot 2 Applicable power modules: • **5.15 1200 W AC&240 V DC Power Module (PAC-1K2WA)** • **5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)** • **5.26 1200 W DC Power Module (PDC-1K2WA)**
11	Extended card slot 1 Applicable cards: • **CE88-D8CQ** • **CE88-D16Q** • **CE88-D24T2CQ** • **CE88-D24S2CQ**	12	Extended card slot 2 Applicable cards: • **CE88-D8CQ** • **CE88-D16Q** • **CE88-D24T2CQ** • **CE88-D24S2CQ**
13	Extended card slot 3 Applicable cards: • **CE88-D8CQ** • **CE88-D16Q** • **CE88-D24T2CQ** • **CE88-D24S2CQ**	14	Extended card slot 4 Applicable cards: • **CE88-D8CQ** • **CE88-D16Q** • **CE88-D24T2CQ** • **CE88-D24S2CQ**
15	Mounting holes for mounting brackets	-	-

Slot

- Power supply slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) have two power supply slots, in which power modules can

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be installed to provide power to the chassis. A chassis can have one or two power modules. Double power modules can provide higher reliability.

The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI) support double power modules (1+1 backup).

- When both power modules are working properly, they equally provide power for a chassis.
- When one power module fails, the other one provides all power required for a chassis.

All power modules are hot swappable.

- Fan slot

  The CloudEngine 8800, 7800, 6800, and 5800 series switches (except the CE8850-64CQ-EI, CE6863-48S6CQ, CE6881-48S6CQ, CE6820-48S6CQ, CE6863-48S6CQ-K, CE6881-48S6CQ-K, CE6881E-48S6CQ and CE6857-48S6CQ-EI) have two fan slots, in which fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have two working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Airflow

The cooling systems of the CloudEngine 8800, 7800, 6800, and 5800 series switches have front-to-back or back-to-front airflow depending on the airflow direction of the power modules and fan modules used. The airflow direction of the power modules and fan modules required on the CloudEngine 8800, 7800, 6800, and 5800 series switches depends on how the switches are installed in cabinets. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If CloudEngine 8800, 7800, 6800, and 5800 series switches are installed with the power supply side facing the front, you are advised to use fan modules and power modules with front-to-back airflow in the switches.

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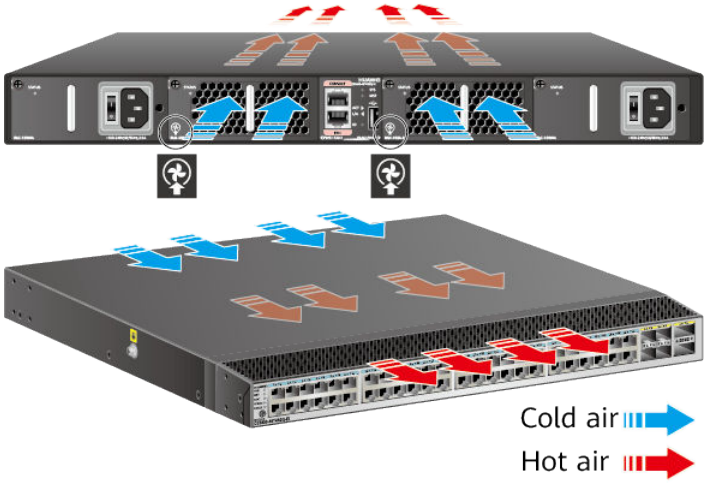
NOTE

- Front-to-back airflow: The power modules and fan modules using front-to-back airflow are marked  or 

. Air flows into the chassis from the power supply side and flows out from the port side, as shown in **Figure 4-314** (CE5800 as an example).
- Back-to-front airflow: The power modules and fan modules using back-to-front airflow are marked  or 

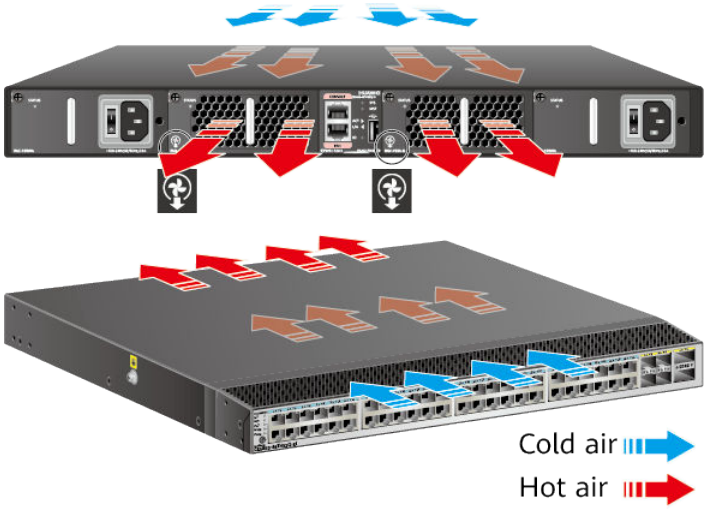
. Air flows into the chassis from the port side and flows out from the power supply side, as shown in **Figure 4-144** (CE5800 as an example).
- When the power module and fan module use forcible heat dissipation, they must use the same airflow method. For example, if the power module with back-to-front airflow is used, the fan module with back-to-front airflow must be used.

Figure 4-314 Front-to-back airflow (air flows out from the port side)



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Figure 4-315 Back-to-front airflow (air flows in from the port side)



Indicators

Indicators on the CE8868-4C-EI are the same as those on the CE8861-4C-EI. The **CE8861-4C-EI** is used as an example here to describe the indicators.

Ports

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. **Table 4-294** describes the attributes of the console port.

Table 4-294 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

NOTE

- The console port and Mini USB port share one internal serial port. You can use the console port or Mini USB port as the serial port according to your needs. When the Mini USB is activated, the console port cannot be used.
- When both the console port and Mini-USB port have a cable connected, the Mini-USB port is used.

Mini USB Port

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The Mini USB port can connect to a configuration terminal for onsite configuration of the system, but the configuration terminal must have a USB serial port driver installed. The Mini USB port is used as the serial port once a link is established on the port.

ETH Management Port (RJ45)

The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. **Table 4-295** describes the attributes of the ETH management port (RJ45).

Table 4-295 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

The CE8868EI switches have two ETH management ports (RJ45). Pay attention to the following when using the two management ports:

- The two ports cannot be used together, and you must choose one of them to use.
- Before start of a CE8868EI switch, you can select interface 1 or interface 2 in the BIOS menu. Interface 1 is the default choice. For details, see "Modify parameters" in the *Basic Configuration Guide - BIOS Menu*.
- After registration of the switch succeeds:
  - If both the management ports have a cable connected and are in Up state, port 1 acts as the primary management port and port 2 becomes the backup automatically. The management interface number displayed on the command line interface is MEth0/0/0, regardless of which port is used.
  - If cables are connected to the two ETH management ports after successful registration of the switch, the port that is connected first is used as the primary management port.
  - If port 1 fails, the system switches management traffic to port 2 automatically. When port 1 recovers, management traffic cannot be switched back to port 1, unless port 2 fails or the switch restarts. You can observe indicators on the ETH management ports to determine which port is used currently. (The Link indicator of the ETH management port

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used is steady green. If data is being transmitted on this port, its ACT indicator is blinking yellow. The indicators of the backup port are off.)

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-296 lists technical specifications of the CE8868-4C-EI switch.

Table 4-296 Technical specifications

Item		Description
Physical specifications		• Dimensions (W x D x H): 442.0 mm x 600.0 mm x 88.1 mm (17.4 in. x 23.6 in. x 3.47 in.) • Weight (with two power modules and two fan modules, calculated based on the heaviest model if multiple models are supported): 21.3 kg
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	• Back-to-front airflow: < 58 dBA • Front-to-back airflow: < 56 dBA
Power specifications	Power source type	AC/DC/high-voltage DC
	AC power input	• Rated input voltage range: 100 V AC to 130 V AC/200 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 47 Hz to 63 Hz
	DC power input	• Rated voltage range: -48 V DC to -60 V DC • Maximum voltage range: -38.4 V DC to -72 V DC

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Item		Description
	High-voltage DC power input	• Rated voltage of 240 V high-voltage DC power input: 240 V DC • Maximum voltage range of 240 V high-voltage DC power input: 188 V DC to 290 V DC • Rated voltage range of 380 V high-voltage DC power input: 240 V DC to 380 V DC • Maximum voltage range of 380 V high-voltage DC power input: 188 V DC to 400 V DC
	Rated input current	• 1200 W AC&240 V DC power module (PAC-1K2WA series): 10 A (100 V AC to 130 V AC)/8 A (200 V AC to 240 V AC)/8 A (240 V DC) • 1200 W high-voltage DC power module (PHD-1K2WA series): 8 A (240 V DC to 380 V DC) • 1200 W DC power (PDC-1K2WA series): 38 A (-48 V DC to -60 V DC)
Chassis power consumption	Maximum power consumption	• Fully configured with four CE88-D8CQ cards: 658 W • Fully configured with four CE88-D16Q cards: 620 W • Fully configured with four CE88-D24T2CQ cards: 747 W • Fully configured with four CE88-D24S2CQ cards: 674 W
	Typical power consumption	• Fully configured with four CE88-D8CQ cards: 398 W (100% throughput, QSFP28 cables on 32 ports, double power modules) • Fully configured with four CE88-D16Q cards: 383 W (100% throughput, QSFP+ cables on 64 ports, double power modules) • Fully configured with four CE88-D24T2CQ cards: 532 W (100% throughput, 3 m Ethernet cables on 96 ports and QSFP28 cables on 8 ports, double power modules) • Fully configured with four CE88-D24S2CQ cards: 437 W (100% throughput, SFP28 cables on 96 ports and QSFP28 cables on 8 ports, double power modules)

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Item		Description
Chassis heat dissipation	Maximum heat dissipation	• Fully configured with four CE88-D8CQ cards: 2245 BTU/hr • Fully configured with four CE88-D16Q cards: 2116 BTU/hr • Fully configured with four CE88-D24T2CQ cards: 2549 BTU/hr • Fully configured with four CE88-D24S2CQ cards: 2300 BTU/hr
	Typical heat dissipation	• Fully configured with four CE88-D8CQ cards: 1358 BTU/hr (100% throughput, QSFP28 cables on 32 ports, double power modules) • Fully configured with four CE88-D16Q cards: 1307 BTU/hr (100% throughput, QSFP+ cables on 64 ports, double power modules) • Fully configured with four CE88-D24T2CQ cards: 1815 BTU/hr (100% throughput, 3 m Ethernet cables on 96 ports and QSFP28 cables on 8 ports, double power modules) • Fully configured with four CE88-D24S2CQ cards: 1491 BTU/hr (100% throughput, SFP28 cables on 96 ports and QSFP28 cables on 8 ports, double power modules)
Surge protection		Power module: • AC: 4 kV in common mode and 2.5 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Front-to-back or back-to-front, which is determined by features of fan modules and power modules
Reliability and availability	Power module backup	1+1 backup
	Fan module backup	Two fan modules, working in 1+1 backup mode when the temperature is below 35°C
	Hot swap	Supported by all power modules and fan modules

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Item		Description
	Mean time between failures (MTBF)	36.02 years
	Mean time to repair (MTTR)	1.87 hours
	Availability	0.9999940608
Technical specifications	Processor	1.5 GHz, eight-core
	DRAM Memory	4 GB
	NOR Flash	32 MB
	NAND Flash	2 GB
Stack	Service port supporting the stack function	See the description of ports on each card.
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

Table 4-297 provides the ordering information.

Table 4-297 Ordering information

Part Number	Part Model	Part Description
02352CHJ	CE8868-4C-EI	CE8868-4C-EI Mainframe (With 4 Subcard Slots, Without FAN Box and Power Module)
02352CHN	CE8868-4C-EI-F	CE8868-4C-EI Mainframe (With 4 Subcard Slots, 2*AC Power Module, 2*FAN Box, Port-side Exhaust)

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Part Number	Part Model	Part Description
02352CHM	CE8868-4C-EI-B	CE8868-4C-EI Mainframe (With 4 Subcard Slots, 2*AC Power Module, 2*FAN Box, Port-side Intake)

4.6 CE9800

4.6.1 CE9860-4C-EI

Version Mapping

Table 4-298 lists the mappings between the CE9860-4C-EI and software versions.

Table 4-298 Version mapping

Device Series	Sub-series	Device Model	Short Name	Supported Version
CE9800	CE9860	CE9860-4C-EI	CE9860EI	V200R020C00 and later versions

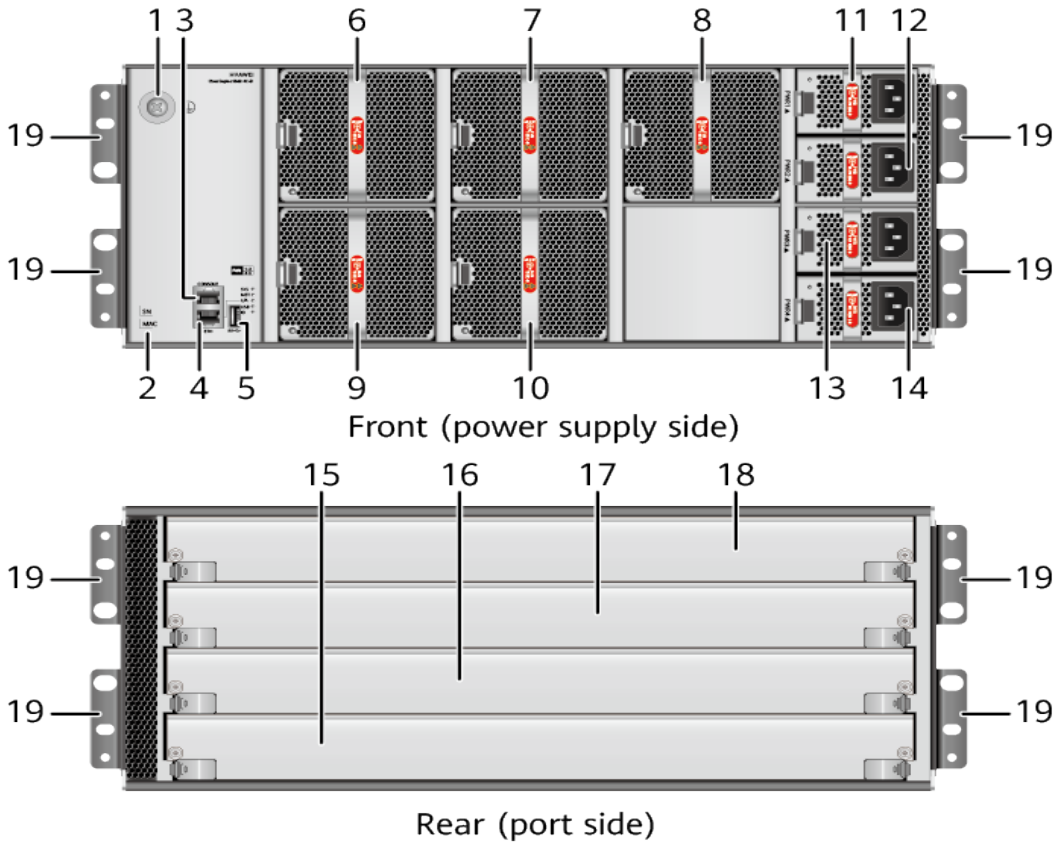
Appearance and Structure

NOTE

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Figure 4-316 CE9860-4C-EI



1	Ground screw	2	SN and MAC address label
3	Console port	4	ETH management port (RJ45)
5	USB 2.0 port	6	Fan slot 1 Applicable fan modules: • **FAN-180C series fan modules**
7	Fan slot 2 Applicable fan modules: • **FAN-180C series fan modules**	8	Fan slot 3 Applicable fan modules: • **FAN-180C series fan modules**
9	Fan slot 4 Applicable fan modules: • **FAN-180C series fan modules**	10	Fan slot 5 Applicable fan modules: • **FAN-180C series fan modules**

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11	Power supply slot 1 Applicable power modules: • **1200 W AC&240 V DC power module** • **1200 W power module** • **1200 W DC Power Module**	12	Power supply slot 2 Applicable power modules: • **1200 W AC&240 V DC power module** • **1200 W power module** • **1200 W DC Power Module**
13	Power supply slot 3 Applicable power modules: • **1200 W AC&240 V DC power module** • **1200 W power module** • **1200 W DC Power Module**	14	Power supply slot 4 Applicable power modules: • **1200 W AC&240 V DC power module** • **1200 W power module** • **1200 W DC Power Module**
15	Card slot 1 Applicable cards: • **CE98-D32CQ** • **CE98-D8DQ**	16	Card slot 2 Applicable cards: • **CE98-D32CQ** • **CE98-D8DQ**
17	Card slot 3 Applicable cards: • **CE98-D32CQ** • **CE98-D8DQ**	18	Card slot 4 Applicable cards: • **CE98-D32CQ** • **CE98-D8DQ**
19	Mounting brackets **NOTE** Cable management frames can be installed on the mounting brackets to route cables on the cards installed in the corresponding slots.	-	-

Slot Description

- Power Supply Slots

  Each CloudEngine 9800 series switch has four power supply slots, in which pluggable power modules can be installed to provide power to the chassis. Install at least two power modules. Four power modules can provide higher reliability. If only two power modules are used, do not upgrade, downgrade, or replace them.

  CloudEngine 9800 series switches support four power modules working in 2+2 backup mode.

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NOTE

If 1200 W AC&240 V DC power modules (PAC1K2S12) are installed on the switch and 110 V AC power input is provided to the power modules:

1. Use an external power source that provides 110 V input with double live wires. In this case, each power module provides 1200 W of rated output power and the power modules work in 2+2 backup mode.
2. If the external power source provides 110 V input with a single live wire, each power module provides 800 W of rated output power. In this case, the power modules cannot work in 2+2 backup mode.

- Fan Slots

  Each CloudEngine 9800 series switch has five fan slots, in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have five working fan modules to ensure normal operating.

  All fan modules are hot swappable.

Heat Dissipation System

CloudEngine 9800 series switches use back-to-front airflow. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the port side facing the front and the power supply side facing the back, the switch needs to adopt fan modules and power modules with back-to-front airflow.

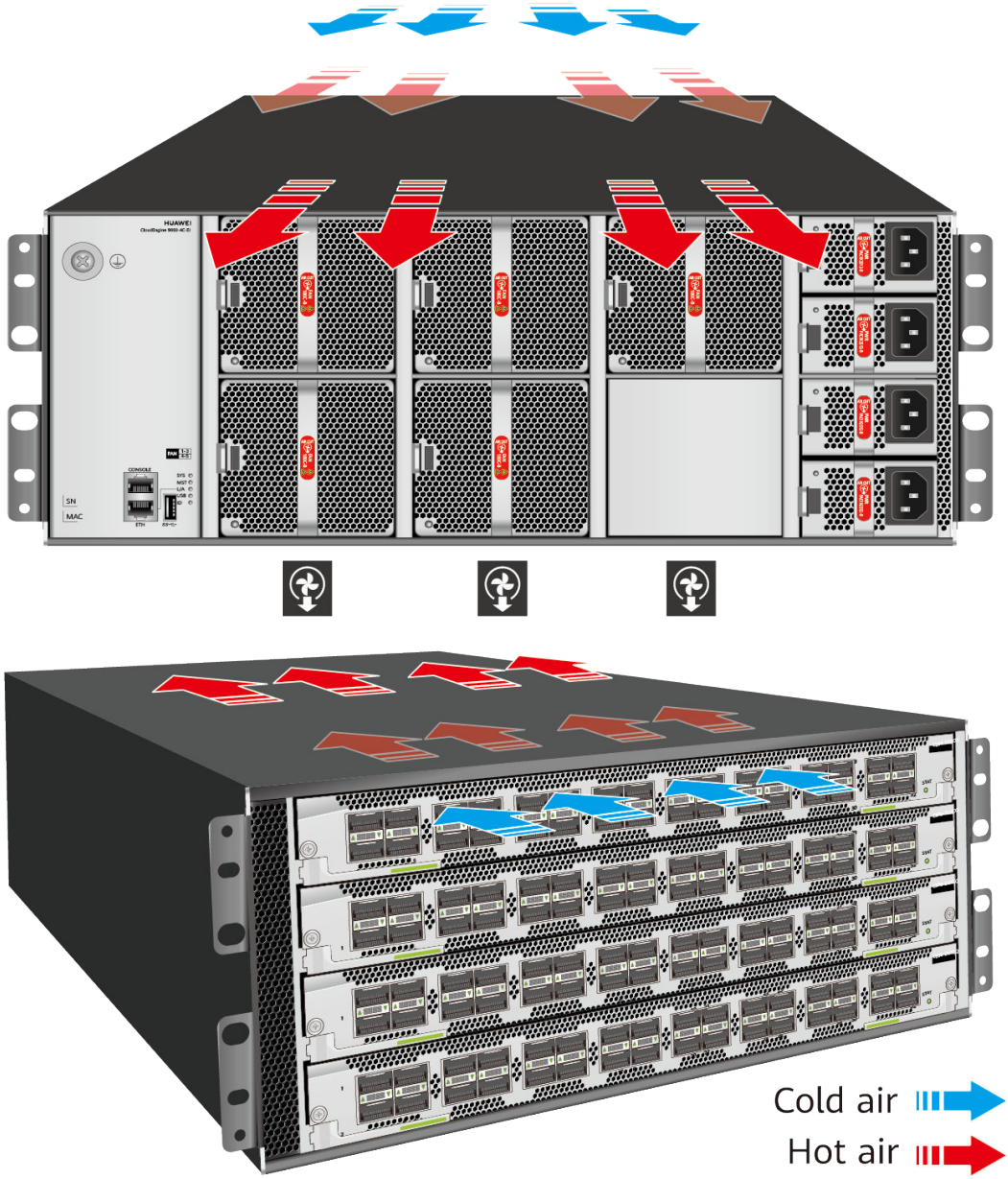
NOTE

- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by  or 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-317** (using a CE5800 chassis as an example).
- Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

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Figure 4-317 Back-to-front airflow for port-side intake



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Indicators

Figure 4-318 Indicators on the CE9860-4C-EI front panel

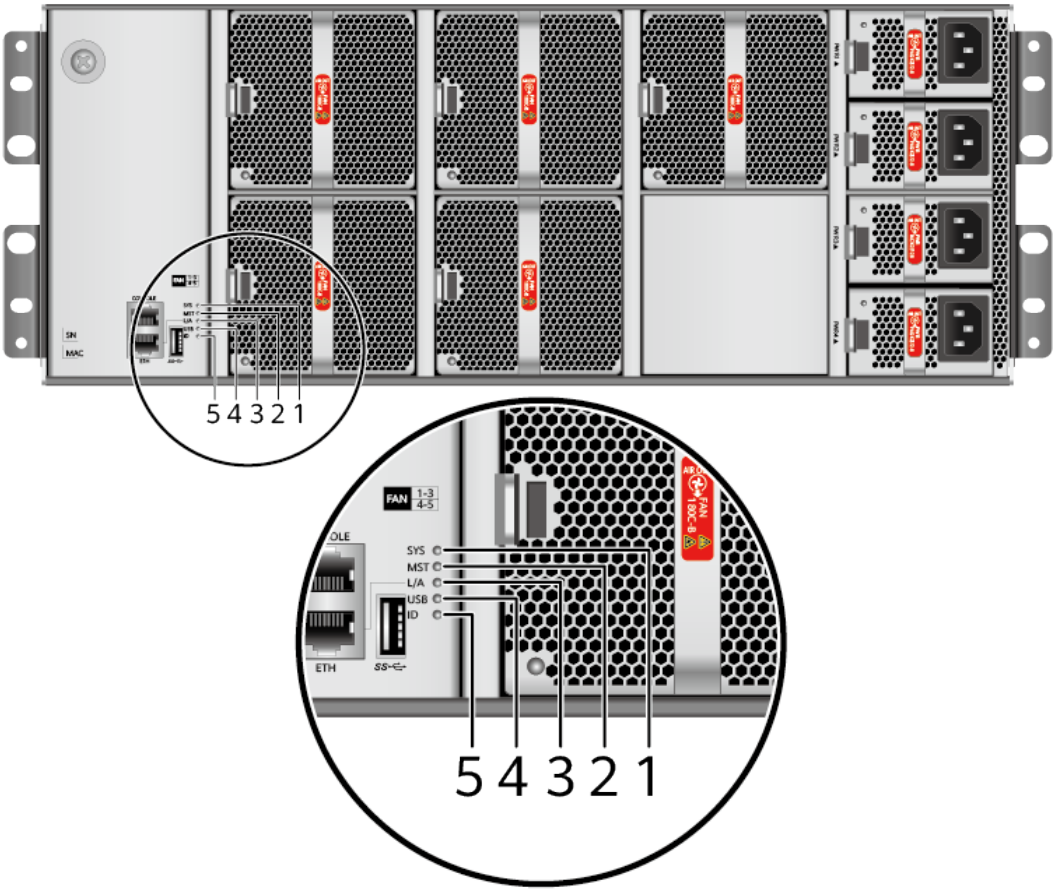


Table 4-299 Indicator description

No.	Indicator	Name	Color	Status	Description
1	SYS	System status indicator	Green	Off	The system is not running.
				Fast blinking	The system is starting.
				Slow blinking	The system is running normally.

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No.	Indicator	Name	Color	Status	Description
			Red	Steady on	• The system fails to start. • At least one power module does not work normally. • At least one fan module does not work normally.
2	MST	Stack master/slave indicator	-	Steady on	The CE9860-4C-EI does not support the stacking function. Therefore, this indicator is invalid.
3	L/A	ETH management port indicator	Green	Off	No link is established on the port.
				Steady on	A link is established on the port.
				Blinking	The port is sending or receiving data.
4	USB	USB-based deployment indicator	Green	Off	USB-based deployment is disabled (default state).
				Steady on	USB-based deployment has been completed.
				Blinking	The system is reading data from a USB flash drive.
			Red	Steady on	USB-based deployment has failed.
5	ID	ID indicator	Blue	Off	The ID indicator is not used (default state).
				Steady on	The indicator identifies the switch to maintain. The ID indicator can be turned on or off remotely to help field engineers find the switch to maintain.

Ports

Console Port

The console port is connected to a console for onsite configuration. The port must use a **console cable**. **Table 4-300** describes the attributes of the console port.

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Table 4-300 Attributes of the console port

Attribute	Description
Connector type	RJ45
Standards compliance	RS232
Working mode	Duplex Universal Asynchronous Receiver/Transmitter (UART)
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

ETH Management Port (RJ45)

The ETH management port (RJ45) of a switch is connected to the network port of a configuration terminal or network management workstation to set up the onsite or remote configuration environment. The ETH management port (RJ45) uses a Category 5 or higher category cable. **Table 4-301** describes the attributes of the ETH management port (RJ45).

Table 4-301 Attributes of the ETH management port (RJ45)

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab
Working mode	Supported rate: 10/100/1000 Mbit/s auto-sensing Full-duplex
Maximum transmission distance	100 m

USB Port

A USB flash drive can be connected to the USB port for log backup, system software backup and uploading, or USB-based deployment.

Specifications

Table 4-302 lists technical specifications of the CE9860-4C-EI switch.

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Table 4-302 Technical specifications

Item		Description
Physical specifications		• Dimensions (H x W x D): 175.0 mm x 442.0 mm x 765.0 mm (6.9 in. x 17.4 in. x 30.1 in.) • Weight (with four power modules and five fan modules, calculated based on the heaviest model if multiple models are supported): 46.2 kg (101.85 lb)
Environment parameters	Temperature	• Operating temperature: 0°C to 40°C (32°F to 104°F) at altitude of 0-1800 m (0-5906 ft.) **NOTE** When the altitude is 1800-5000 m (5096-16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.). • Storage temperature: -40°C to +70°C (-40°F to +158°F)
	Relative humidity	5% RH to 95% RH, noncondensing
	Altitude	< 5000 m (16404 ft.)
	Noise (sound pressure, 27°C)	Back-to-front airflow: < 66 dBA
Power specifications	Power source type	AC/High-voltage DC
	AC power input	• Rated input voltage range: 100 V AC to 240 V AC, 50/60 Hz • Maximum input voltage range: 90 V AC to 290 V AC, 45 Hz to 65 Hz
	High-voltage DC power input	• Rated voltage of 240 V high-voltage DC power input: 240 V DC • Maximum voltage range of 240 V high-voltage DC power input: 190 V DC to 290 V DC
	Rated input current	• 1200 W AC&240 V DC power module (PAC1K2S12 series): 10 A (100 V AC to 130 V AC)/8 A (200 V AC to 240 V AC)/8 A (240 V DC)
Chassis power consumption	Maximum power consumption	Configured with four CE98-D32CQ cards: 1627 W (70% of the full fan speed at an ambient temperature of 40°C) Configured with four CE98-D8DQ cards: 1717 W (full fan speed at an ambient temperature of 40°C)

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Item		Description
	Typical power consumption	Fully configured with four CE98-D32CQ cards: 1231 W (50% throughput, short-distance QSFP28 optical modules on 64 ports and long-distance QSFP28 optical modules on another 64 ports, two power modules) Configured with four CE98-D8DQ cards: 1289 W (50% throughput, short-distance QSFPDD optical modules on 32 ports, two power modules)
	Static power consumption	Configured with four CE98-D32CQ cards: 377 W Configured with four CE98-D8DQ cards: 548 W
Chassis heat dissipation	Maximum heat dissipation	Configured with four CE98-D32CQ cards: 5553 BTU/hour (70% of the full fan speed at an ambient temperature of 40°C) Configured with four CE98-D8DQ cards: 5861 BTU/hour (full fan speed at an ambient temperature of 40°C)
	Typical heat dissipation	Fully configured with four CE98-D32CQ cards: 4202 BTU/hr (50% throughput, 64-port short-distance QSFP28 optical module and 64-port long-distance QSFP28 optical module, double power modules) Configured with four CE98-D8DQ cards: 4400 BTU/hr (50% throughput, short-distance QSFPDD optical modules on 32 ports, two power modules)
	Static heat dissipation	Configured with four CE98-D32CQ cards: 1505 BTU/hour Configured with four CE98-D8DQ cards: 1871 BTU/hour
Surge protection		PAC1K2S12-B series power module: • AC: 4 kV in common mode and 2.5 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode PAC1K2S12-CB series power module: • AC: 6 kV in common mode and 6 kV in differential mode • DC: 4 kV in common mode and 2 kV in differential mode
Heat dissipation	Heat dissipation mode	Air cooling
	Airflow	Back-to-front airflow: Air flows into the chassis from the port side and flows out from the power supply side.

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Item		Description
Reliability and availability	Power module backup	2+2 backup
	Fan module backup	Five fan modules, working in 4+1 backup mode when the temperature is below 35°C
	Hot swap	Supported by all power modules and fan modules
	Mean time between failures (MTBF)	21.91 years
	Mean time to repair (MTTR)	3.43 hours
	Availability	0.9999934738
Technical specifications	Processor	2.2 GHz, 8-thread, four-core
	DRAM memory	16 GB
	NOR Flash	Two 32 MB flash memories
	SSD Flash	64 GB
Stack	Service port supporting the stacking function	Not supported
Certification		• Safety standards compliance • EMC standards compliance • Environmental standards compliance

Ordering Information

Ordering information is subject to change without notice in the case of product upgrades. Ordering information provided in this manual is for reference only. To obtain latest ordering information, contact Huawei switch distributors or local Huawei representative office.

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Table 4-303 provides the ordering information.

Table 4-303 Ordering information

Part Number	Part Model	Part Description
02352HQC	CE9860-4C-EI	CE9860-4C-EI mainframe (4*subcard slots, without fan and power modules)
02352HQD	CE9860-4C-EI-B	CE9860-4C-EI mainframe (4*subcard slots, 4*AC power modules, 5*fan modules, port-side intake)

4.6.2 CE9860-4C-EI-A (02355FEA)

Overview

Table 4-304 Basic information about the CE9860-4C-EI-A

Item	Details
Description	CE9860-4C-EI-A mainframe (4*subcard slots, without fan and power modules)
Part Number	02355FEA
Model	CE9860-4C-EI-A
First supported version	V200R022C10
Other part numbers	02355FEB (CE9860-4C-EI-A mainframe (4*subcard slots, 4*AC power modules, 4*fan modules, port-side intake)) 02355FUM (CE9860-4C-EI-A mainframe (4*subcard slots, 4*AC power modules, 4*fan modules, 4*32 Port 100GE QSFP28 Interface card, port-side intake)) 02355MRU (CE9860-4C-EI-A mainframe (4*subcard slots, without fan and power modules)) 02355MRV (CE9860-4C-EI-A mainframe (4*subcard slots, 4*AC power modules, 4*fan modules, port-side intake)) 02355MRW (CE9860-4C-EI-A mainframe (4*subcard slots, 4*AC power modules, 4*fan modules, 4*32 Port 100GE QSFP28 Interface card, port-side intake))

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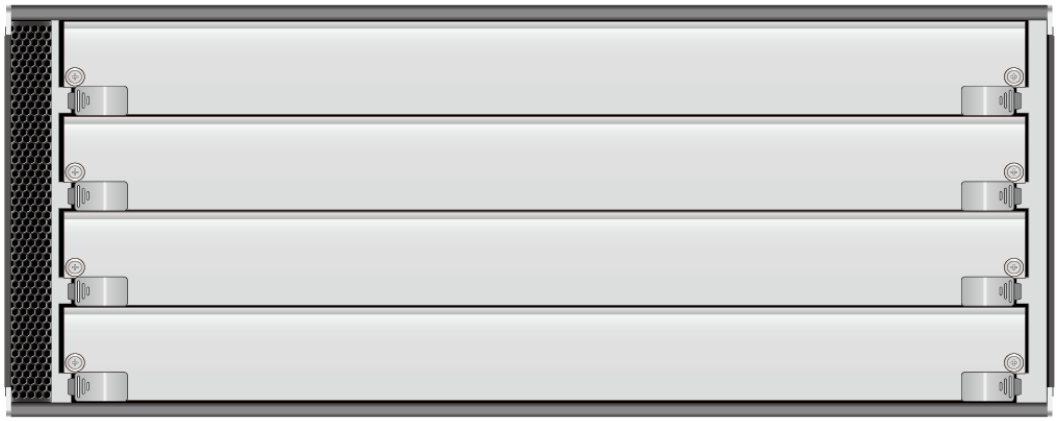
Item	Details
Short Name	CE9860EI

Appearance

Figure 4-319 Appearance of the CE9860-4C-EI-A



Front (power supply side)



Rear (port side)

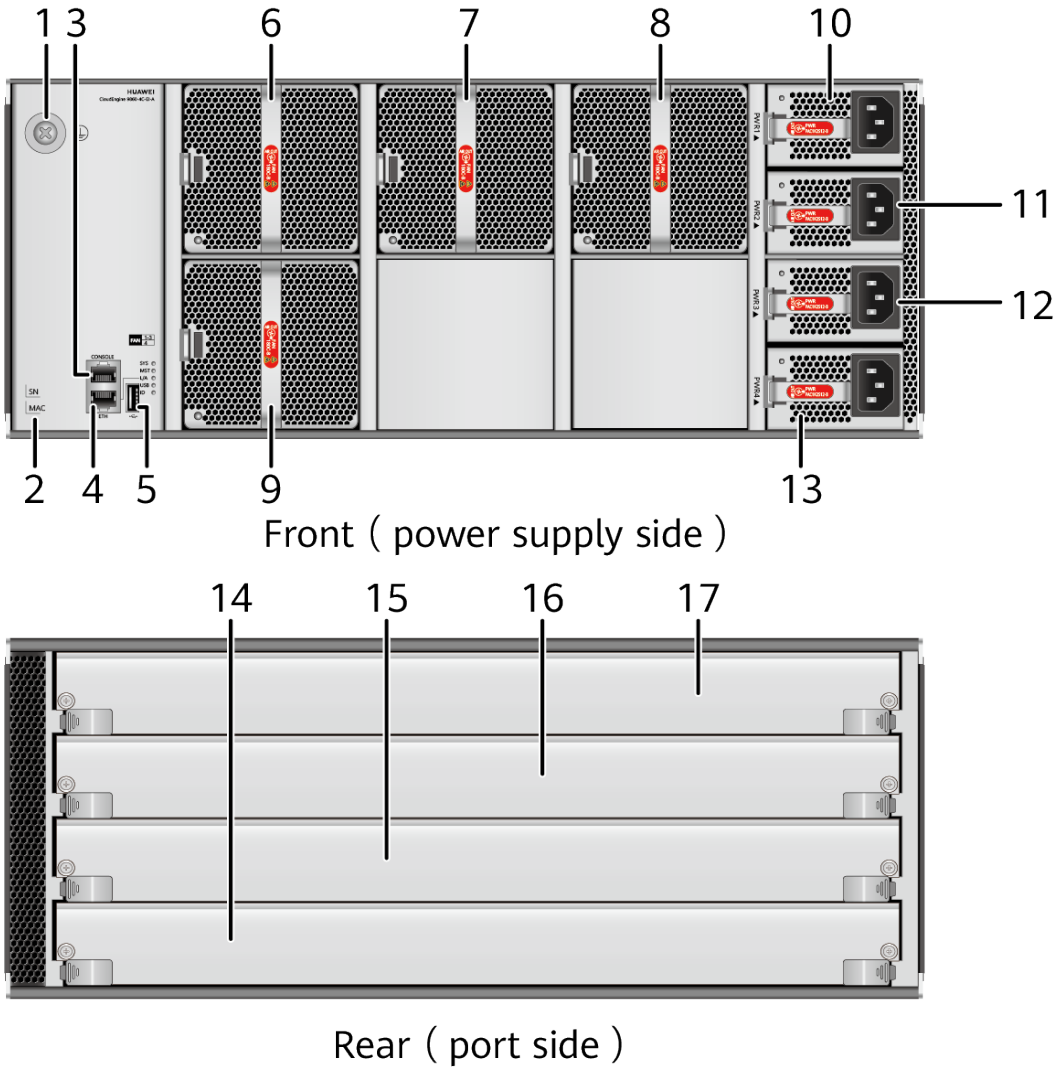
NOTE

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Components

Figure 4-320 Components of the CE9860-4C-EI-A



1	Ground screw	2	SN and MAC address label
3	Console port	4	ETH management port (RJ45)
5	USB 2.0 port	6	Fan slot 1 Applicable fan modules: • **FAN-180C series fan modules**
7	Fan slot 2 Applicable fan modules: • **FAN-180C series fan modules**	8	Fan slot 3 Applicable fan modules: • **FAN-180C series fan modules**

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9	Fan slot 4 Applicable fan modules: • **FAN-180C series fan modules**	10	Power supply slot 1 Applicable power modules: • **1200 W AC&240 V DC power module** • **1200 W DC Power Module**
11	Power supply slot 2 Applicable power modules: • **1200 W AC&240 V DC power module** • **1200 W DC Power Module**	12	Power supply slot 3 Applicable power modules: • **1200 W AC&240 V DC power module** • **1200 W DC Power Module**
13	Power supply slot 4 Applicable power modules: • **1200 W AC&240 V DC power module** • **1200 W DC Power Module**	14	Card slot 1 Applicable cards: • **CE98-D32CQ** • **CE98-D8DQ** • **CE98-D32CQ-A**
15	Card slot 2 Applicable cards: • **CE98-D32CQ** • **CE98-D8DQ**	16	Card slot 3 Applicable cards: • **CE98-D32CQ** • **CE98-D8DQ**
17	Card slot 4 Applicable cards: • **CE98-D32CQ** • **CE98-D8DQ**	18	-

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Slot Layout

Table 4-305 Slots on the CE9860-4C-EI-A

Slot Type	Slot ID	Slot Direction	Remarks
Power supply slots	-	Horizontal insertion	• Each CloudEngine 9860-4C-EI-A switch has four power supply slots, in which pluggable power modules can be installed to provide power to the chassis. Install at least two power modules. Four power modules can provide higher reliability. If only two power modules are used, do not upgrade, downgrade, or replace them. • CloudEngine 9860-4C-EI-A switches support four power modules working in 2+2 backup mode.

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Slot Type	Slot ID	Slot Direction	Remarks
			NOTE If 1200 W AC&240 V DC power modules (PAC1K2S12) are installed on the switch and 110 V AC power input is provided to the power modules: ● Use an external power source that provides 110 V input with double live wires. In this case, each power module provides 1200 W of rated output power and the power modules work in 2+2 backup mode. ● If the external power source provides 110 V input with a single live wire, each power module provides 800 W of rated output power. In this case, the power modules cannot work in 2+2 backup mode.

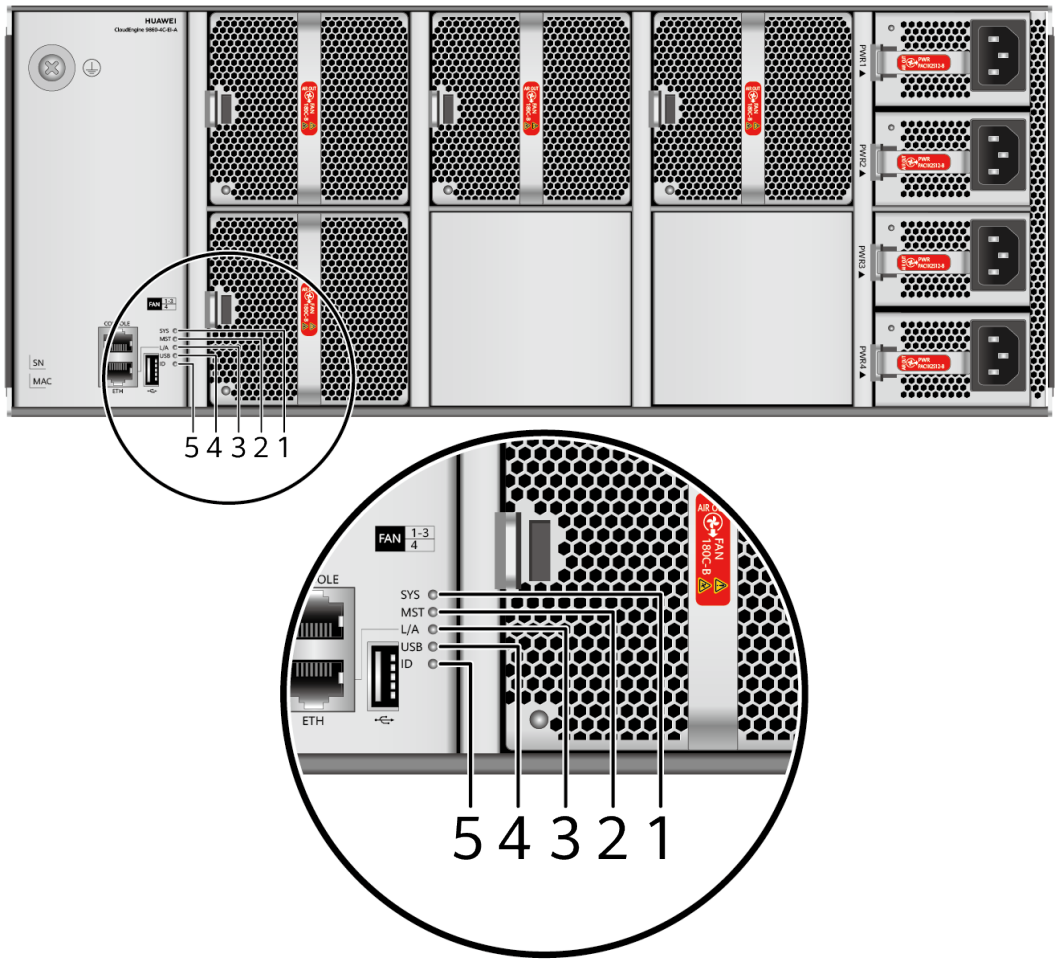
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Slot Type	Slot ID	Slot Direction	Remarks
Fan slots	-	Horizontal insertion	• Each CloudEngine 9860-4C-EI-A switch has four fan slots, in which pluggable fan modules can be installed to cool the chassis, ensuring efficient heat dissipation and system stability. A chassis must have four working fan modules to ensure normal operating. • All fan modules are hot swappable.

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Indicators

Figure 4-321 Indicators on the CE9860-4C-EI-A



1. System status indicator	2. Stack master/slave indicator	3. ETH management port indicator	4. USB-based deployment indicator	5. ID indicator

Table 4-306 Indicators on the CE9860-4C-EI-A

Silkscreen	Name	Color	Status	Description
SYS	System status indicator	Green	Steady off	The system is not running.
		Green	Fast blinking	The system is starting.
		Green	Slow blinking	The system is running normally.

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Silkscreen	Name	Color	Status	Description
		Red	Steady on	• An exception occurs during device startup. • The power module is abnormal. • The fan module is abnormal.
MST	Stack master/ slave indicator	Green	Steady on	The CloudEngine 9860-4C-EI does not support the stack function. Therefore, this indicator is invalid.
L/A	Management port indicator	Green	Steady off	No link is established on the port.
		Green	Steady on	A link is established on the port.
		Yellow	Blinking	The port is sending or receiving data.
USB	USB-based deployment indicator	Green	Steady off	USB-based deployment is disabled (default state).
		Green	Steady on	USB-based deployment has been completed.
		Green	Blinking	The system is reading data from a USB flash drive.

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Silkscreen	Name	Color	Status	Description
		Red	Steady on	USB-based deployment fails.
ID	ID indicator	Blue	Steady off	The ID indicator is disabled (default status).
		Blue	Steady on	The ID indicator can be turned on or off remotely to help field engineers find the device to maintain.

Ports

Table 4-307 Ports on the CE9860-4C-EI-A

Port	Connector Type	Description	Available Components
Console port	RJ45	Connects to the console for onsite configuration.	Console cable
ETH management port	RJ45	You can connect a switch to a configuration terminal or network management workstation through the ETH management port to configure the switch locally or remotely.	Category-5 or higher category Ethernet cable

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Port	Connector Type	Description	Available Components
USB port	USB	The USB port can have a USB flash drive connected to back up and upload logs and system software, and supports USB-based deployment.	USB flash drive

Heat Dissipation System

CloudEngine 9800 series switches use back-to-front airflow. Typically, cabinets in a data center have cold air flowing in from the front and hot air exhausted from the back. If a switch is installed with the port side facing the front and the power supply side facing the back, the switch needs to adopt fan modules and power modules with back-to-front airflow.

NOTE

- Back-to-front airflow: Power modules and fan modules with back-to-front airflow are identified by  or 

. Air flows into the chassis from the port side and is exhausted from the power supply side, as shown in **Figure 4-322** (using a CE5800 chassis as an example).
- Power modules and fan modules using forced air cooling on a switch must have the same airflow direction. If a switch adopts power modules with back-to-front airflow, the switch must use fan modules with back-to-front airflow as well.

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Figure 4-322 Back-to-front airflow for port-side intake



Technical Specifications

Table 4-308 Technical specifications of the CE9860-4C-EI-A

Item	Specification
Dimensions with packaging (H x W x D) [mm (in.)]	370 mm x 635 mm x 1025 mm (14.57 in. x 25 in. x 40.35 in.)

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Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	• Basic dimensions (excluding the parts protruding from the body): 175 mm x 442 mm x 765 mm (6.89 in. x 17.4 in. x 30.12 in.) • Maximum dimensions (the depth is the distance from ports on the front panel to the parts protruding from the rear panel): 175 mm x 442 mm x 817.5 mm (6.89 in. x 17.4 in. x 32.19 in.)
Weight without packaging [kg (lb)]	26.9 kg (59.30 lb) (excluding fan modules, power modules, and cards)
Weight without packaging (full configuration) [kg (lb)]	43.2 kg (95.24 lb) (with four power modules, four fan modules, and four cards) 33.04 kg (72.84 lb) (with four power modules and four fan modules)
Weight with packaging [kg (lb)]	51.9 kg (114.42 lb) (excluding fan modules, power modules, and cards)
Weight with packaging (full configuration) [kg (lb)]	68.2 kg (150.36 lb) (with four power modules, four fan modules, and four cards) 58.04 kg (127.96 lb) (with four power modules and four fan modules)
Installation Type	Cabinet installation
CPU	16-core, 2 GHz
Memory	DRAM: 16 GB
NOR Flash	64 MB x 2
SSD Flash	8 GB
USB	Supported
Power supply mode	• AC • DC • HVDC
Console port	RJ45

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Item	Specification
Downlink Service interface	The device does not have fixed ports and provides four card slots. Currently, the device supports the following cards: CE98-D32CQ-A: 32 x 100GE QSFP28 (Each 100GE QSFP28 port can be configured to work at 40 Gbit/s. A 100GE QSFP28 port cannot be split into 4x25GE and 4x10GE ports. 100GE and 40GE 1/3/5 m copper cables are supported, but auto-negotiation of copper cables is not supported. 100GE and 40GE copper cables can only be used on M-LAG peer-link ports.) CE98-D8DQ: 8 x 400GE QSFP-DD (In V200R021C00, such ports can only work at 400 Gbit/s, cannot be used as 200GE, 100GE, or 40GE ports, and cannot be split. Auto-negotiation of 400GE copper cables is not supported and such cables can be used only for peer-link. In V200R021C10, such a 400GE port can be dynamically split into two 200GE ports. Currently, only 2*200GE 5 m AOCs and 2.5 m copper cables are supported. By default, negotiation is disabled and cannot be enabled for copper cables. If an unsupported module is inserted into such a port, the system displays a message indicating a medium mismatch.)
Service port supporting the stack function	Not supported
RTC	Supported
Typical power consumption [W]	Configured with four CE98-D32CQ-A cards: 1291 W (50% throughput, short-distance QSFP28 optical modules on 64 ports and long-distance QSFP28 optical modules on 64 ports, double power modules) Configured with four CE98-D8DQ cards: 953 W (50% throughput, short-distance QSFPDD optical modules on 32 ports, double power modules)

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Item	Specification
Typical heat dissipation [BTU/hour]	Configured with four CE98-D32CQ-A cards: 4205 BTU/hr (50% throughput, short-distance QSFP28 optical modules on 64 ports and long-distance QSFP28 optical modules on 64 ports, double power modules) Configured with four CE98-D8DQ cards: 3252 BTU/hr (50% throughput, short-distance QSFPDD optical modules on 32 ports, double power modules)
Static power consumption [W]	Configured with four CE98-D32CQ-A cards: 900 W Configured with four CE98-D8DQ cards: 621 W
Static heat dissipation [BTU/hour]	Configured with four CE98-D32CQ-A cards: 3071 BTU/hour Configured with four CE98-D8DQ cards: 2119 BTU/hour
Maximum power consumption [W]	Configured with four CE98-D32CQ-A cards: 2253 W (when the ambient temperature is 40°C (104 °F), the fan speed is 100% of the full speed.) Configured with four CE98-D8DQ cards: 1677 W (when the ambient temperature is 40°C (104 °F), the fan speed is 100% of the full speed.)
Maximum heat dissipation	Configured with four CE98-D32CQ-A cards: 7688 BTU/hour (when the ambient temperature is 40°C (104 °F), the fan speed is 100% of the full speed.) Configured with four CE98-D8DQ cards: 5722 BTU/hour (when the ambient temperature is 40°C (104 °F), the fan speed is 100% of the full speed.)
Number of power modules	4
Redundant power supply	2+2 backup

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Item	Specification
Rated input voltage [V]	• 1200 W AC&240 V DC power module: 100 V AC to 240 V AC, 50/60 Hz; 240 V DC • 1200 W DC power module: –48 V DC: –48 V DC to –60 V DC; +48 V DC: +40 V DC to +57 V DC
Input voltage range [V]	• 1200 W AC&240 V DC power module: AC: 90 V AC to 290 V AC, 45 Hz to 65 Hz; DC: 190 V DC to 290 V DC • 1200 W DC power module: -48 V DC: -38.4 V DC to -72 V DC; +48 V DC: +38.4 V DC to +60 V DC
Maximum input current [A]	• 1200 W AC&240 V DC power module: 10 A (100 V AC to 130 V AC); 8 A (200 V AC to 240 V AC); 8 A (240 V DC) • 1200 W DC power module: 38 A (–48 V DC to –60 V DC); 38 A (+48 V DC)
Rated output power [W]	• 1200 W AC&240 V DC power module: 1200 W • 1200 W DC power module: 1200 W
Certification	• Complies with safety standards. • Complies with EMC standards. • Complies with environmental protection standards.
Power supply surge protection [kV]	AC: 6 kV in common mode and 6 kV in differential mode DC: 4 kV in common mode and 2 kV in differential mode HVDC: 4 kV in common mode and 2 kV in differential mode
Types of fans	Pluggable
Number of fans	4
Redundant fans	Supports 3+1 backup. Fan modules work in hot backup mode. If a fan module fails, the system can still work properly for a short period of time. However, you are advised to replace the faulty fan module immediately.
Heat dissipation mode	Air cooling

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Item	Specification
Airflow direction	Back-to-front airflow: Air flows into the chassis from the port side and flows out from the power supply side.
Availability	0.999997861
MTBF [year]	42.79 year
MTTR [hour]	1.73 hour
Noise at normal temperature (27°C, sound pressure) [dB(A)]	Back-to-front airflow: < 66 dB(A)
Noise at high temperature (40°C, sound pressure) [dB(A)]	Back-to-front airflow: < 81 dB(A)
Long-term operating altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Long-term operating relative humidity [RH]	5% RH to 95% RH, non-condensing
Long-term operating temperature [°C (°F)]	0°C to 40°C (32°F to 104°F) at an altitude of 0–1800 m (0–5906 ft.) **NOTE** When the altitude is 1800–5000 m (5096–16404 ft.), the highest operating temperature reduces by 1°C (1.8°F) every time the altitude increases by 220 m (722 ft.).
Storage altitude [m (ft.)]	≤ 5000 m (16404 ft.)
Storage relative humidity [RH]	5% to 95% RH, non-condensing
Storage temperature [°C (°F)]	-40°C to +70°C (-40°F to +158°F)

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5 Power Module

NOTICE

- Power modules in a chassis must have the same power and same heat dissipation mode.
- A switch must use the power modules it supports. Using unsupported power modules may bring unknown risks to the switch.
- When two power modules work in 1+1 backup mode, you can hot swap one of them.
- If only one power module is installed, install a filler panel in the vacant power module slot.
- Before powering off a switch, turn off both power modules.

5.1 150 W AC Power Module (PAC150S12-R)
5.2 180 W DC Power Module (PDC180S12-CR)
5.3 350 W DC Power Module (PDC-350WA)
5.4 350 W DC Power Module (PDC350S12)
5.5 600 W AC Power Module (PAC-600WA)
5.6 600 W AC Power Module (PAC-600WD)
5.7 600 W AC Power Module (PAC600S12)
5.8 600 W AC Power Module (PAC600S12-D)
5.9 600 W AC Power Module (PAC600S12-E)
5.10 600 W AC&240 V DC Power Module
5.11 600 W AC&240 V DC Power Module (PAC600S12)
5.12 600 W High-Voltage DC Power Module
5.13 600 W DC Power Module (PDC600S12)
5.14 1000 W DC Power Module (PDC1000S12)

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5.15 1200 W AC&240 V DC Power Module (PAC-1K2WA)

5.16 1200 W Power Module (PAC1K2S12-B)

5.17 1200 W AC&240 V DC Power Module (PAC1K2S12-C)

5.18 PAC1K2S12-CB (1200W AC&240V DC Power Module (Back to Front,Power panel side air-out))

5.19 PAC1K2S12-CF (1200W AC&240V DC Power Module (Front to Back,Power panel side intake))

5.20 PAC1K2S12-PB (1200W AC&240V DC Power Module (Back to Front,Power panel side exhaust))

5.21 PAC1K2S12-PF (1200W AC&240V DC Power Module (Front to Back,Power panel side intake))

5.22 PAC600S12-PB (600W AC Power Module(Back to Front, Power panel side exhaust))

5.23 PAC600S12-PF (600W AC Power Module(Front to Back, Power panel side intake))

5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)

5.25 1200 W High-Voltage DC Power Module (PHD1K2S12-DB)

5.26 1200 W DC Power Module (PDC-1K2WA)

5.27 1200 W DC Power Module (PDC1K2S12-D)

5.28 PDC1K2S12-PB (1200W DC Power Module (Front to Back ,Power panel side intake))

5.29 PDC1K2S12-CE (1200W DC Power Module (Back to Front,Power panel side exhaust))

5.1 150 W AC Power Module (PAC150S12-R)

Version Mapping

Table 5-1 describes the mapping between switch models and the PAC150S12-R.

Table 5-1 Version mapping

Switch Model	PAC-150WA
CE5855E-48T4S2Q	Supported in V200R020C10 version and later versions
CE5855F-48T4S2Q	Supported in V200R021C00 and later versions
Other models	Not supported

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Appearance

Figure 5-1 shows the appearance of the PAC150S12-R.

Figure 5-1 PAC150S12-R



Function

Table 5-2 describes the functions of the PAC150S12-R.

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Table 5-2 Functions of the PAC150S12-R

Function		Description
Input protection	Input undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module supplies power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap		Supported

NOTE

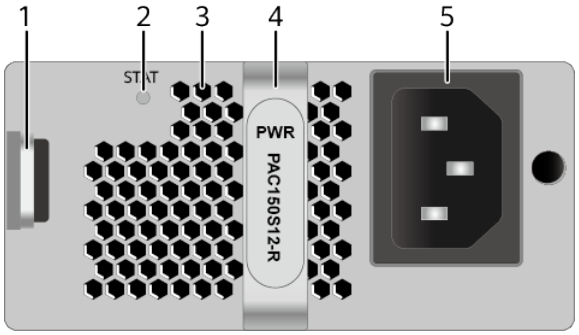
When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-2 shows the panel of the PAC150S12-R.

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Figure 5-2 PAC150S12-R panel



1. Lock	2. Indicator	3. Air vent	4. Handle
5. AC power socket	-	-	-

Table 5-3 describes the indicator on the PAC150S12-R panel.

Table 5-3 Indicator description

Indicator	Color	Description
STATUS: power indicator	Green	• Off: The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, undervoltage or overtemperature). • Steady on: The power module is working normally. • Blinking: The output power is out of range, for example, overvoltage, overcurrent, or short circuit occurs.

Specifications

Table 5-4 lists technical specifications of the PAC150S12-R.

Table 5-4 Technical specifications

Item	PAC150S12-R
Dimensions (H x W x D)	40 mm x 90 mm x 215 mm (1.6 in. x 3.5 in. x 8.5 in.)
Weight	0.8 kg (1.76 lb)
Rated input voltage range	100 V AC to 240 V AC, 50/60 Hz

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Item	PAC150S12-R
Maximum input voltage range	90 V AC to 264 V AC, 47 Hz to 63 Hz
Maximum input current	3 A
Maximum output current	12.5 A
Rated output voltage	12 V
Rated output power	150 W
Part number	02312DUY

5.2 180 W DC Power Module (PDC180S12-CR)

Version Mapping

Table 5-5 describes the mapping between switch models and the PDC180S12-CR.

Table 5-5 Version mapping

Switch Model	PAC-150WA
CE5855E-48T4S2Q	Supported in V200R020C10 version and later versions
CE5855F-48T4S2Q	Supported in V200R021C00 and later versions
Other models	Not supported

Appearance

Figure 5-3 shows the appearance of the PDC180S12-CR.

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Figure 5-3 PDC180S12-CR



Function

Table 5-6 describes the functions of the PDC180S12-CR.

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Table 5-6 Functions of the PDC180S12-CR

Function		Description
Input protection	Input undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module supplies power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Hot swap		Supported

NOTE

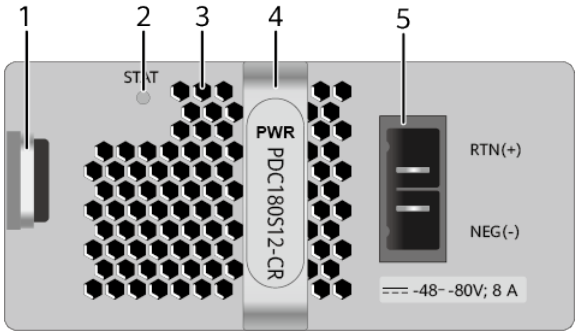
When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-4 shows the panel of the PDC180S12-CR.

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Figure 5-4 PDC180S12-CR panel



1. Lock	2. Indicator	3. Air vent	4. Handle
5. DC power socket	-	-	-

Table 5-7 describes the indicator on the PDC180S12-CR panel.

Table 5-7 Indicator description

Indicator	Color	Description
STATUS: power indicator	Green	• Off: The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, undervoltage or overtemperature). • Steady on: The power module is working normally. • Blinking: The output power is out of range, for example, overvoltage, overcurrent, or short circuit occurs.

Specifications

Table 5-8 lists technical specifications of the PDC180S12-CR.

Table 5-8 Technical specifications

Item	PDC180S12-CR
Dimensions (H x W x D)	40 mm x 90 mm x 215 mm (1.6 in. x 3.5 in. x 8.5 in.)
Weight	0.62 kg (1.37 lb)
Rated input voltage range	-48 V DC to -60 V DC

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Item	PDC180S12-CR
Maximum input voltage range	-38.4 V DC to -72 V DC
Maximum input current	6 A
Maximum output current	15 A
Rated output voltage	12 V
Rated output power	180 W
Part number	02312VRE

5.3 350 W DC Power Module (PDC-350WA)

Version Mapping

350 W DC power modules include PDC-350WA-B (B: back-to-front airflow, air exhaust on power module panel) and PDC-350WA-F (F: front-to-back airflow, air intake on power module panel).

Table 5-9 describes the mapping between switch models and 350 W DC power modules.

Table 5-9 Version mapping

Switch Model	PDC-350WA-B	PDC-350WA-F
CE6870-48S6CQ-EI	Supported in V200R001C00 version and later versions	Supported in V200R001C00 version and later versions
CE6865-48S8CQ-EI	Supported in V200R005C00 version and later versions	Supported in V200R005C00 version and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-5 shows the appearance of a PDC-350WA-B power module, and Figure 5-6 shows the appearance of a PDC-350WA-F power module.

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Figure 5-5 PDC-350WA-B power module



Figure 5-6 PDC-350WA-F power module



Function

PDC-350WA-B and PDC-350WA-F power modules use different airflow designs but have the same functions. **Table 5-10** describes the functions of a 350 W DC power module.

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Table 5-10 Functions of a 350 W DC power module

Function		Description
Input protection	Input undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module supplies power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PDC-350WA-B: back-to-front airflow • PDC-350WA-F: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-7 and **Figure 5-8** show the panel of a 350 W DC power module.

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Figure 5-7 Panel of a PDC-350WA-B DC power module

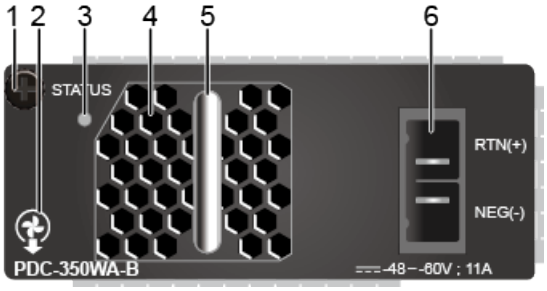
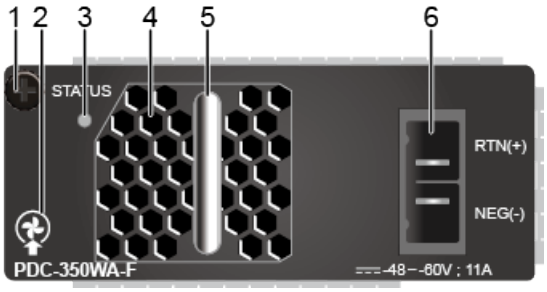


Figure 5-8 Panel of a PDC-350WA-F DC power module



1. Captive screw	2. Airflow flag • : back-to-front airflow • : front-to-back airflow	3. Indicator	4. Fan air vent
5. Handle	6. DC power socket	-	-

Table 5-11 describes the indicator on the 350 W DC power module panel.

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Table 5-11 Indicator description

Indicator	Color	Status	Description
STATUS: power indicator	Green	Off	The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, overvoltage, overcurrent, short-circuit, or overtemperature).
		Steady on	The power module is working normally.

Specifications

Table 5-12 lists technical specifications of 350 W DC power modules.

Table 5-12 Technical specifications

Item	PDC-350WA-B	PDC-350WA-F
Dimensions (W x D x H)	100 mm x 205 mm x 40 mm (3.9 in. x 8.1 in. x 1.6 in.)	
Weight	0.72 kg (1.59 lb)	
Rated input voltage	-48 V DC to -60 V DC	
Maximum input voltage	-38.4 V DC to -72 V DC	
Rated input current	11 A	
Rated output current	29.17 A	
Rated output voltage	12 V	
Rated output power	350 W	
Part Number	02310PQN	02310PQP

5.4 350 W DC Power Module (PDC350S12)

Version Mapping

350 W DC Power Modules are classified into two types depending on the airflow designs: PDC350S12-CB (back-to-front airflow, air exhaust on power module panel) and PDC350S12-CF (F: front-to-back airflow, air intake on power module panel).

Table 5-13 describes the mapping between switch models and 350 W DC Power Modules.

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Table 5-13 Version mapping

Switch Model	PDC350S12-CB	PDC350S12-CF
CE6857-48S6CQ-EI	Supported in V200R005C10 and later versions	Supported in V200R005C10 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-9 shows the appearance of a PDC350S12-CB power module, and Figure 5-10 shows the appearance of a PDC350S12-CF power module.

Figure 5-9 PDC350S12-CB power module



Figure 5-10 PDC350S12-CF power module



Function

PDC350S12-CB and PDC350S12-CF power modules use different airflow designs but have the same functions. Table 5-14 describes the functions of them.

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Table 5-14 Functions of 350 W DC Power Modules

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PDC350S12-CB: back-to-front airflow • PDC350S12-CF: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower the ambient temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-11 and **Figure 5-12** show the panels of 350 W DC power modules.

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Figure 5-11 PDC350S12-CB panel

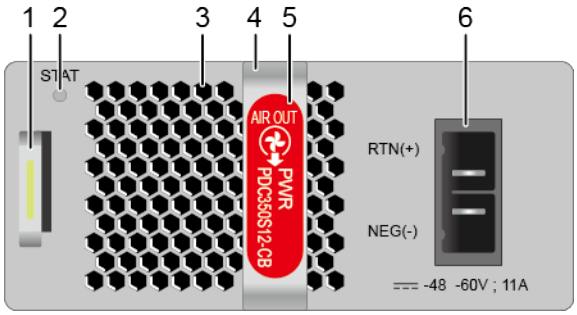
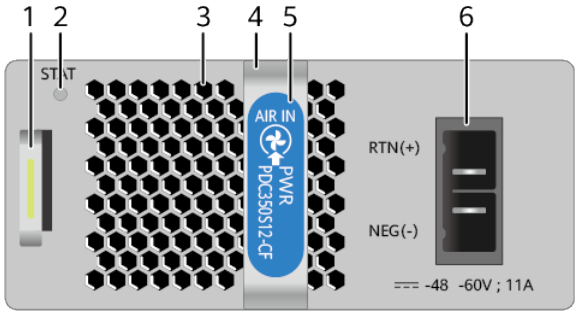


Figure 5-12 PDC350S12-CF panel



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 350 W DC power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.
5. Airflow flag • : back-to-front airflow • : front-to-back airflow	6. Power socket	-	-

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Table 5-15 describes the indicator on the 350 W DC power module panel.

Table 5-15 Indicator description

Indicator	Color	Status	Description
STATUS: power indicator	Green	Off	The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, overvoltage, overcurrent, short-circuit, or overtemperature).
		Steady on	The power module is working normally.

Specifications

Table 5-16 lists technical specifications of 350 W DC power modules.

Table 5-16 Technical specifications

Item	PDC350S12-CB	PDC350S12-CF
Dimensions (W x D x H)	99.0 mm x 215.0 mm x 39.8 mm (3.5 in. x 8.5 in. x 1.6 in.)	
Weight	0.9 kg (1.98 lb)	
Rated input voltage	-48 V DC to -60 V DC	
Maximum input voltage	—38.4 V DC to —72 V DC	
Rated input current	11 A	
Rated output current	29.17 A	
Rated output voltage	12 V	
Rated output power	350 W	
Part Number	02312GCH	02312EKC

5.5 600 W AC Power Module (PAC-600WA)

Version Mapping

600 W AC power modules include PAC-600WA-B (B: back-to-front airflow, air exhaust on power module panel) and PAC-600WA-F (F: front-to-back airflow, air intake on power module panel).

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Table 5-17 describes the mapping between switch models and 600 W AC power modules.

Table 5-17 Version mapping

Switch Model	PAC-600WA-B	PAC-600WA-F
CE6870-48S6CQ-EI	Supported in V200R001C00 version and later versions	Supported in V200R001C00 version and later versions
CE6870-48T6CQ-EI CE8850-32CQ-EI	Supported in V200R002C50 version and later versions	Supported in V200R002C50 version and later versions
CE6865-48S8CQ-EI	Supported in V200R005C00 version and later versions	Supported in V200R005C00 version and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-13 shows the appearance of a PAC-600WA-B power module, and Figure 5-14 shows the appearance of a PAC-600WA-F power module.

Figure 5-13 PAC-600WA-B power module



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Figure 5-14 PAC-600WA-F power module



Function

PAC-600WA-B and PAC-600WA-F power modules use different airflow designs but have the same functions. **Table 5-18** describes the functions of a 600 W AC power module.

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Table 5-18 Functions of a 600 W AC power module

Function		Description
Input protection	Input undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module supplies power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PAC-600WA-B: back-to-front airflow • PAC-600WA-F: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower the temperature of the power module. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-15 and **Figure 5-16** show the panels of 600 W AC power modules.

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Figure 5-15 PAC-600WA-B panel

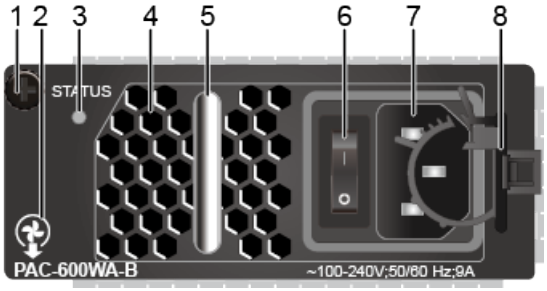
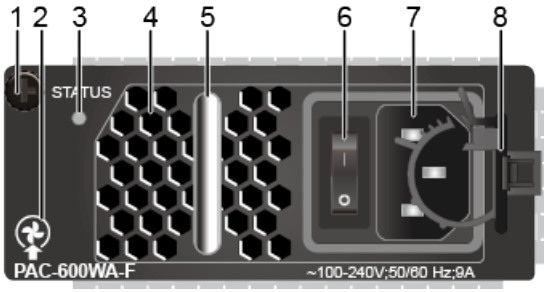


Figure 5-16 PAC-600WA-F panel



1. Captive screw	2. Ventilation channel flag • : back-to-front airflow • : front-to-back airflow	3. Indicator	4. Fan air vent
5. Handle	6. Power switch	7. AC power socket	8. AC terminal locking latch

Table 5-19 describes the indicator on the 600 W AC power module panel.

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Table 5-19 Indicator description

Indicator	Color	Status	Description
STATUS: power indicator	Green	Off	The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, overvoltage, overcurrent, short-circuit, or overtemperature).
		Steady on	The power module is working normally.

Specifications

Table 5-20 lists technical specifications of 600 W AC power modules.

Table 5-20 Technical specifications of 600 W AC power modules

Item	PAC-600WA-B	PAC-600WA-F
Dimensions (W x D x H)	100 mm x 205 mm x 40 mm (3.9 in. x 8.1 in. x 1.6 in.)	
Weight	1 kg (2.20 lb)	
Rated input voltage	100 V AC-240 V AC, 50/60 Hz	
Maximum input voltage	90 V AC-290 V AC, 47 Hz-63 Hz	
Rated input current	9 A	
Rated output current	50 A	
Rated output voltage	12 V	
Rated output power	600 W	
Part Number	02310PMH	02310PMJ

5.6 600 W AC Power Module (PAC-600WD)

Version Mapping

600 W AC power modules include PAC-600WD-B (B: back-to-front airflow, air exhaust on power module panel) and PAC-600WD-F (F: front-to-back airflow, air intake on power module panel).

Table 5-21 describes the mapping between switch models and 600 W AC power modules.

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Table 5-21 Version mapping

Switch Model	PAC-600WD-B	PAC-600WD-F
CE6870-48S6CQ-EI CE6870-48T6CQ-EI	• Supported by V200R005SPH029 and later patches in V200R005C10SPC800, and V200R019SPH009 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH029 and later patches in V200R005C10SPC800, and V200R019SPH009 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
CE6865-48S8CQ-EI	• Supported by V200R005SPH029 and later patches in V200R005C10SPC800, and V200R019SPH009 and later patches in V200R019C10SPC800, and V200R019SPH009 and later patches in V200R019C10SPC900. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH029 and later patches in V200R005C10SPC800, and V200R019SPH009 and later patches in V200R019C10SPC800, and V200R019SPH009 and later patches in V200R019C10SPC900. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-17 shows the appearance of a PAC-600WD-B power module, and **Figure 5-18** shows the appearance of a PAC-600WD-F power module.

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Figure 5-17 PAC-600WD-B power module



Figure 5-18 PAC-600WD-F power module



Function

PAC-600WD-B and PAC-600WD-F power modules use different airflow designs but have the same functions. **Table 5-22** describes the functions of a 600 W AC power module.

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Table 5-22 Functions of a 600 W AC power module

Function		Description
Input protection	Input undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module supplies power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PAC-600WD-B: back-to-front airflow • PAC-600WD-F: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower the temperature of the power module. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-19 and **Figure 5-20** show the panels of 600 W AC power modules.

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Figure 5-19 PAC-600WD-B panel

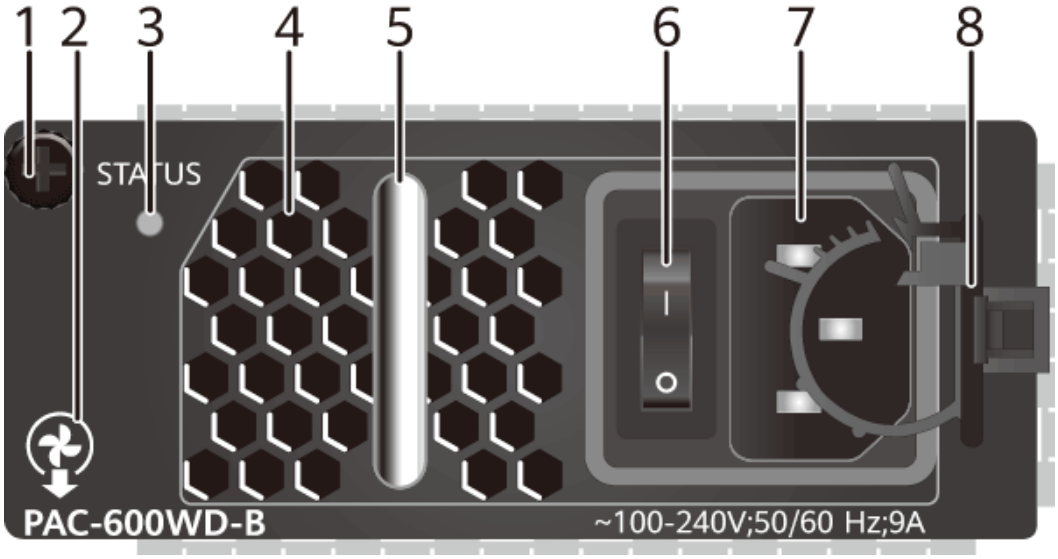
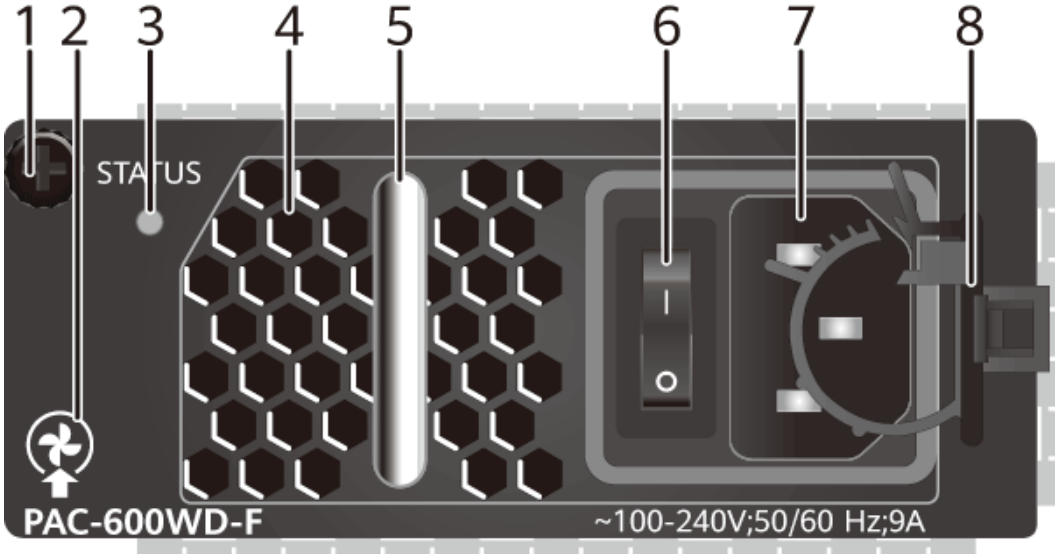


Figure 5-20 PAC-600WD-F panel



1. Captive screw	2. Ventilation channel flag • : back-to-front airflow • : front-to-back airflow	3. Indicator	4. Fan air vent

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5. Handle	6. Power switch	7. AC power socket	8. AC terminal locking latch

Table 5-23 describes the indicator on the 600 W AC power module panel.

Table 5-23 Indicator description

Indicator	Color	Status	Description
STATUS: power indicator	Green	Off	The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, overvoltage, overcurrent, short-circuit, or overtemperature).
		Steady on	The power module is working normally.

Specifications

Table 5-24 lists technical specifications of 600 W AC power modules.

Table 5-24 Technical specifications

Item	PAC-600WD-B	PAC-600WD-F
Dimensions without packaging (H x W x D) [mm (in.)]	90.0mm x 205mm x 40mm (3.5 in. x 8.1 in. x 1.6 in.)	
Weight without packaging [kg (lb)]	0.9 kg (1.98 lb)	
Rated input voltage [V]	100V AC to 240V AC, 50/60Hz	
Maximum Input voltage [V]	AC: 90V AC to 290V AC, 45Hz to 65Hz HVDC: 192V DC to 288V DC	
Rated input current [A]	9A (100V AC to 240V AC)	
Rated output voltage [V]	12V	
Rated output current [A]	50A	
Rated output power [W]	600W	
Hot swapping	Supported	
Part Number	02131743	02131742

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5.7 600 W AC Power Module (PAC600S12)

Version Mapping

600 W AC power modules include PAC600S12-B (B: back-to-front airflow, air exhaust on power module panel) and PAC600S12-F (F: front-to-back airflow, air intake on power module panel).

Table 5-25 describes the mapping between switch models and 600 W AC power modules.

Table 5-25 Version mapping

Switch Model	PAC600S12-B	PAC600S12-F
CE6857-48S6CQ-EI	Supported in V200R005C10 version and later versions	Supported in V200R005C10 version and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-21 shows the appearance of a PAC600S12-B power module, and Figure 5-22 shows the appearance of a PAC600S12-F power module.

Figure 5-21 PAC600S12-B power module



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Figure 5-22 PAC600S12-F power module



Function

PAC600S12-B and PAC600S12-F power modules use different airflow designs but have the same functions. **Table 5-26** describes the functions of a 600 W AC power module.

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Table 5-26 Functions of a 600 W AC power module

Function		Description
Input protection	Input undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module supplies power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PAC600S12-B: back-to-front airflow • PAC600S12-F: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower the temperature of the power module. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-23 and **Figure 5-24** show the panels of 600 W AC power modules.

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Figure 5-23 PAC600S12-B panel

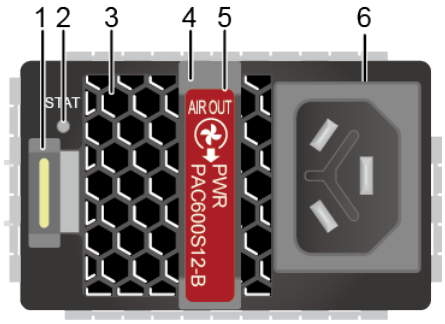
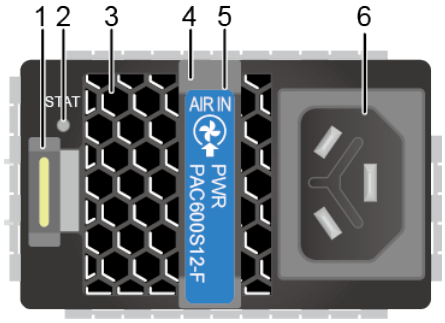


Figure 5-24 PAC600S12-F panel



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 600 W AC power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.

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5. Airflow flag •  : back-to-front airflow •  : front-to-back airflow	6. Power socket	-	-

Table 5-27 describes the indicator on the 600 W AC power module panel.

Table 5-27 Indicator description

Indicator	Color	Status	Description
STATUS: power indicator	Green	Off	The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, overvoltage, overcurrent, short-circuit, or overtemperature).
		Steady on	The power module is working normally.

Specifications

Table 5-28 lists technical specifications of 600 W AC power modules.

Table 5-28 Technical specifications of 600 W AC power modules

Item	PAC600S12-B	PAC600S12-F
Dimensions (W x D x H)	90 mm x 215 mm x 39.8 mm (3.5 in. x 8.5 in. x 1.6 in.)	
Weight	0.9 kg (1.98 lb)	
Rated input voltage	100 V AC-240 V AC, 50/60 Hz	
Maximum input voltage	90 V AC-290 V AC, 47 Hz-63 Hz	

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Item	PAC600S12-B	PAC600S12-F
Rated input current	9 A	
Rated output current	50 A	
Rated output voltage	12 V	
Rated output power	600 W	
Part Number	02312DUP	02312EJQ

5.8 600 W AC Power Module (PAC600S12-D)

Version Mapping

600 W AC power modules include PAC600S12-DB (B: back-to-front airflow, air exhaust on power module panel) and PAC600S12-DF (F: front-to-back airflow, air intake on power module panel).

Table 5-29 describes the mapping between switch models and 600 W AC Power Module.

Table 5-29 Version mapping

Switch Model	PAC600S12-DB	PAC600S12-DF
CE6820-48S6CQ	• Supported by V200R019SPH007 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R019SPH007 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
CE6863-48S6CQ CE6863-48S6CQ-K	• Supported by V200R019SPH007 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R019SPH007 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions

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Switch Model	PAC600S12-DB	PAC600S12-DF
CE6881-48S6CQ CE6881-48S6CQ-K CE6881E-48S6CQ	• Supported by V200R019SPH007 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R019SPH007 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
CE6881-48T6CQ CE6881-48T6CQ-K	• Supported by V200R020SPH005 and later patches in V200R020C00SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R020SPH005 and later patches in V200R020C00SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
CE6857E-48S6CQ CE6857E-48T6CQ	• Supported in V200R020C10SPC600 and later versions	• Supported in V200R020C10SPC600 and later versions
CE6857F-48S6CQ CE6857F-48T6CQ CE6863E-48S6CQ CE6865E-48S8CQ	• Supported in V200R021C00SPC200 and later versions	• Supported in V200R021C00SPC200 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-25 shows the appearance of the PAC600S12-DB power module, and **Figure 5-26** shows the appearance of the PAC600S12-DF power module.

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Figure 5-25 PAC600S12-DB power module



Figure 5-26 PAC600S12-DF power module



Function

PAC600S12-DB and PAC600S12-DF power modules use different airflow designs but have the same functions. **Table 5-30** describes the functions of them.

Table 5-30 Functions of a 600 W AC power module

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.

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Function		Description
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PAC600S12-DB: back-to-front airflow • PAC600S12-DF: front-to-back airflow
Hot swap		Supported

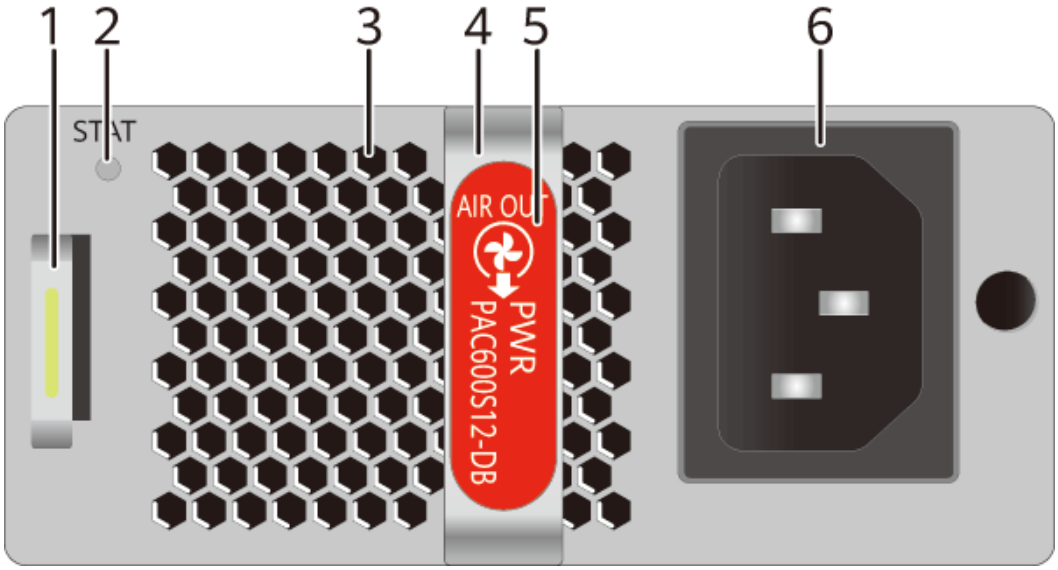
NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

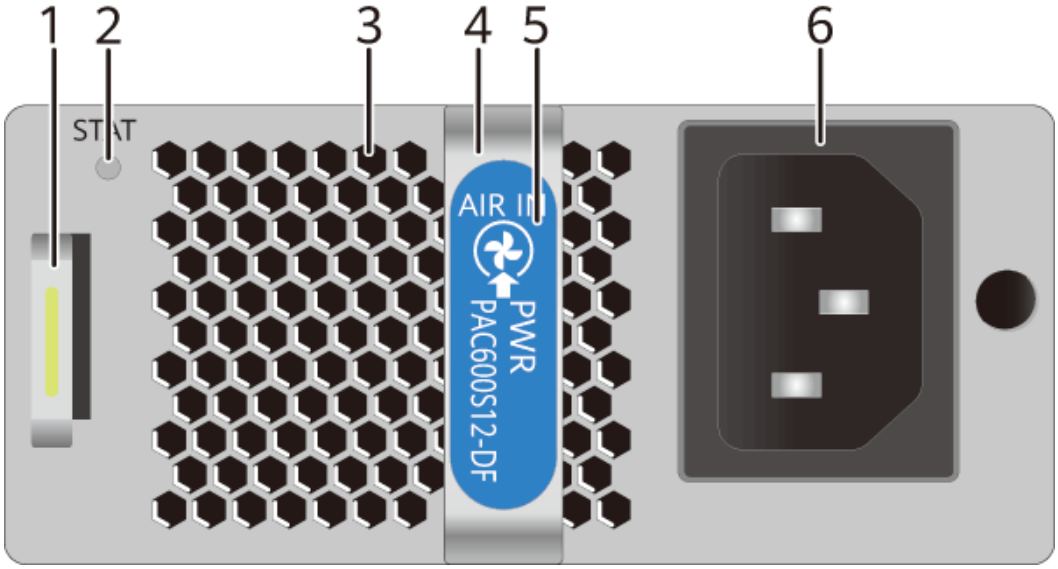
Figure 5-27 and Figure 5-28 show the panels of 600 W AC power modules.

Figure 5-27 Panel of the PAC600S12-DB power module



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Figure 5-28 Panel of the PAC600S12-DF power module



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.
5. Airflow flag • : back-to-front airflow • : front-to-back airflow	6. Power socket	-	-

Table 5-31 describes the indicator on the panel of a 600 W AC power module.

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Table 5-31 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Steady off	The power input is abnormal (for example, no input or undervoltage), or the power output is abnormal (for example, overvoltage or undervoltage).
		Steady on	The power module is working properly.
		Blinking	The power output is abnormal (for example, overcurrent or short circuit).

Specifications

Table 5-32 lists technical specifications of 600 W AC power modules.

Table 5-32 Technical specifications

Item	PAC600S12-DB	PAC600S12-DF
Dimensions without packaging (H x W x D) [mm (in.)]	90.0mm x 205mm x 40mm (3.5 in. x 8.1 in. x 1.6 in.)	
Weight without packaging [kg (lb)]	0.95 kg (2.09 lb)	
Rated input voltage [V]	100V AC to 240V AC, 50/60Hz 240V DC	
Maximum Input voltage [V]	AC: 90V AC to 290V AC, 45Hz to 65Hz HVDC: 190V DC to 290V DC	
Rated input current [A]	• 8A (100V AC to 240V AC) • 4A (240V DC)	
Rated output voltage [V]	12V	
Rated output current [A]	50A	
Rated output power [W]	600W	
Hot swapping	Supported	
Part Number	02131740	02131741

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5.9 600 W AC Power Module (PAC600S12-E)

Version Mapping

600 W AC power modules include PAC600S12-EB (B: back-to-front airflow, air exhaust on power module panel) and PAC600S12-EF (F: front-to-back airflow, air intake on power module panel).

Table 5-33 describes the mapping between switch models and 600 W AC Power Module.

Table 5-33 Version mapping

Switch Model	PAC600S12-EB	PAC600S12-EF
CE6820-48S6CQ	• Supported by V200R019HP0015 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions	• Supported by V200R019HP0015 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions
CE6881-48S6CQ CE6881-48S6CQ-K	• Supported by V200R019HP0015 and later patches in V200R019C10SPC800, and V200R020SPH008 and later patches in V200R020C10SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions	• Supported by V200R019HP0015 and later patches in V200R019C10SPC800, and V200R020SPH008 and later patches in V200R020C10SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions
CE6881E-48S6CQ	• Supported by V200R019SPH017 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions	• Supported by V200R019SPH017 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions

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Switch Model	PAC600S12-EB	PAC600S12-EF
CE6881-48T6CQ CE6881-48T6CQ-K	• Supported by V200R020SPH015 and later patches in V200R020C10SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions	• Supported by V200R020SPH015 and later patches in V200R020C10SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions
CE6863-48S6CQ CE6863-48S6CQ-K	• Supported by V200R019HP0015 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions	• Supported by V200R019HP0015 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions
CE6857E-48S6CQ	• Supported by V200R020SPH015 and later patches in V200R020C10SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions	• Supported by V200R020SPH015 and later patches in V200R020C10SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions
CE6857E-48T6CQ	• Supported by V200R020SPH008 and later patches in V200R020C10SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions	• Supported by V200R020SPH008 and later patches in V200R020C10SPC600. You are advised to load the latest patch corresponding to the target version • Supported in V200R021C00SPC200 and later versions

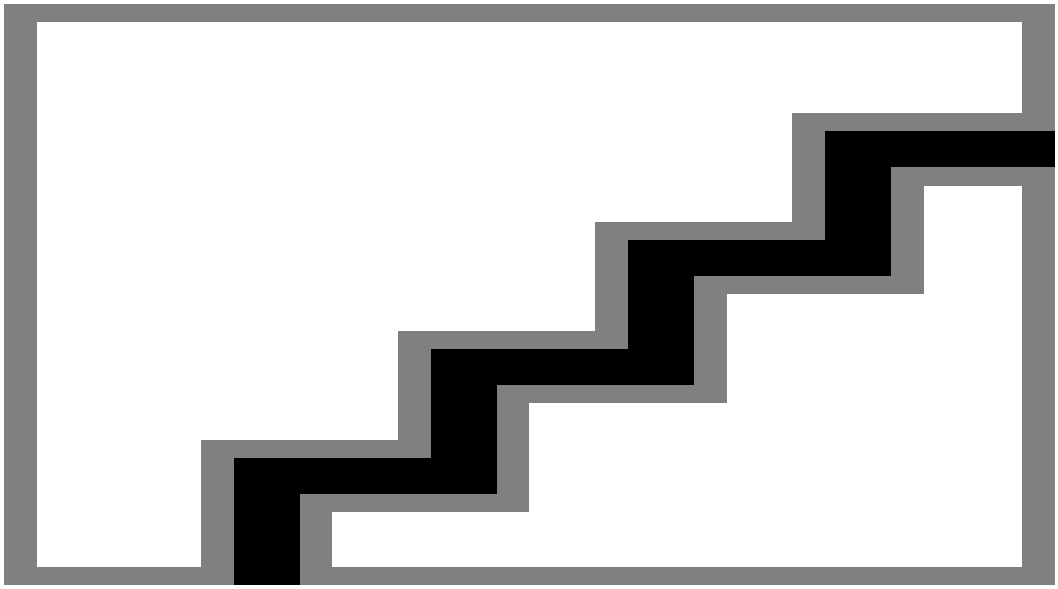
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Switch Model	PAC600S12-EB	PAC600S12-EF
CE6857F-48S6CQ CE6857F-48T6CQ CE6863E-48S6CQ CE6865E-48S8CQ	Supported in V200R021C00SPC200 and later versions	Supported in V200R021C00SPC200 and later versions
CE8850E-32CQ-EI	Supported in V200R021C10 and later versions	Supported in V200R021C10 and later versions
Other models	Not supported	Not supported

Appearance

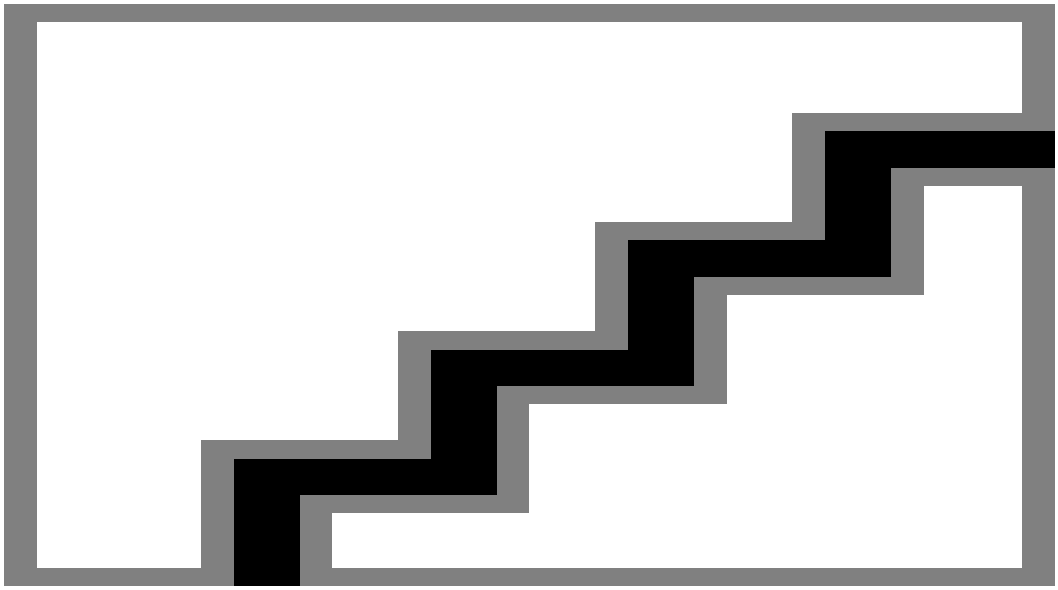
Figure 5-29 shows the appearance of the PAC600S12-EB power module, and Figure 5-30 shows the appearance of the PAC600S12-EF power module.

Figure 5-29 PAC600S12-EB power module



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Figure 5-30 PAC600S12-EF power module



Function

PAC600S12-EB and PAC600S12-EF power modules use different airflow designs but have the same functions. **Table 5-34** describes the functions of them.

Table 5-34 Functions of a 600 W AC power module

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	• PAC600S12-EB: back-to-front airflow • PAC600S12-EF: front-to-back airflow
Hot swap	Supported

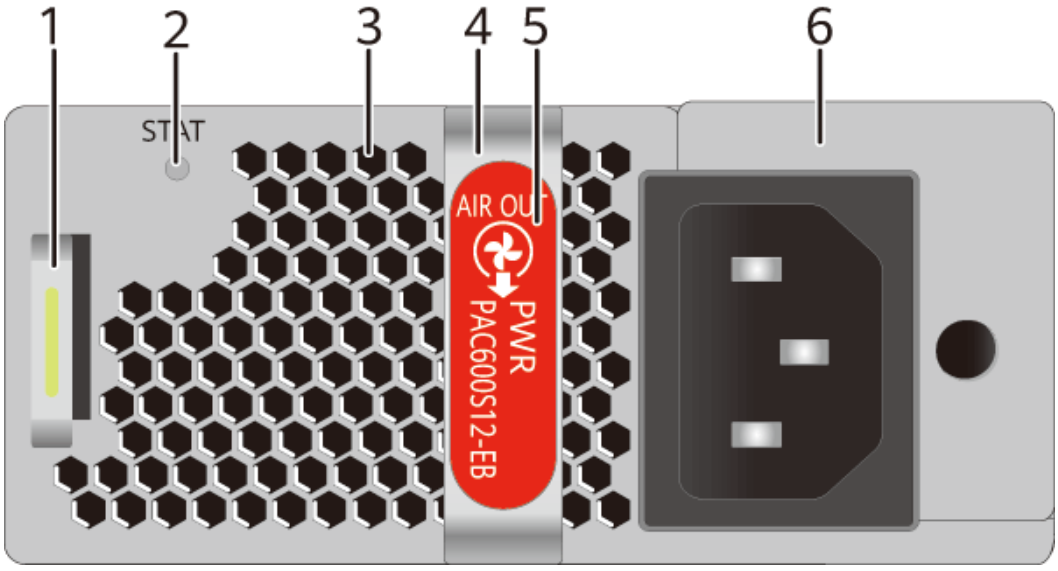
NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

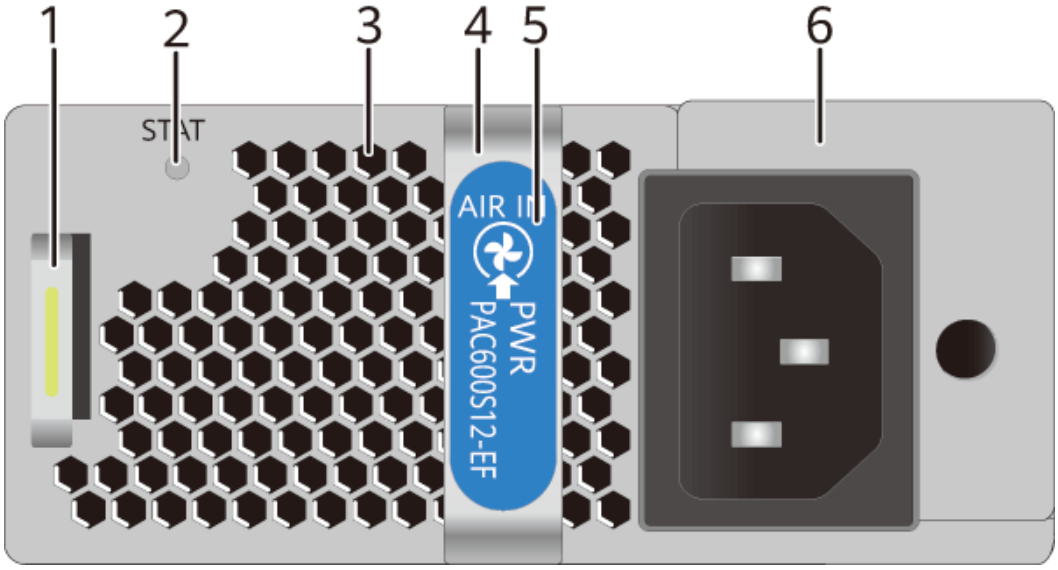
Figure 5-31 and Figure 5-32 show the panels of 600 W AC power modules.

Figure 5-31 Panel of the PAC600S12-EB power module



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Figure 5-32 Panel of the PAC600S12-EF power module



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.
5. Airflow flag • : back-to-front airflow • : front-to-back airflow	6. Power socket	-	-

Table 5-35 describes the indicator on the panel of a 600 W AC power module.

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Table 5-35 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Steady off	The power input is abnormal (for example, no input or undervoltage), or the power output is abnormal (for example, overvoltage or undervoltage).
		Steady on	The power module is working properly.
		Blinking	The power output is abnormal (for example, overcurrent or short circuit).

Specifications

Table 5-36 lists technical specifications of 600 W AC power modules.

Table 5-36 Technical specifications

Item	PAC600S12-EB	PAC600S12-EF
Dimensions without packaging (H x W x D) [mm (in.)]	90.0mm x 205mm x 40mm (3.5 in. x 8.1 in. x 1.6 in.)	
Weight without packaging [kg (lb)]	0.985 kg (2.17 lb)	
Rated input voltage [V]	100V AC to 240V AC, 50/60Hz 240V DC	
Maximum Input voltage [V]	AC: 90V AC to 290V AC, 45Hz to 65Hz HVDC: 190V DC to 290V DC	
Rated input current [A]	• 8A (100V AC to 240V AC) • 4A (240V DC)	
Rated output voltage [V]	12V	
Rated output current [A]	50A	
Rated output power [W]	600W	
Hot swapping	Supported	
Part Number	02312FFU-002	02313RMT

5.10 600 W AC&240 V DC Power Module

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Version Mapping

600 W AC&240 V DC power modules can receive AC inputs or 240 V high-voltage inputs. They are classified into two types depending on the airflow designs: PAC-600WB-B (back-to-front airflow, air exhaust on power module panel) and PAC-600WB-F (F: front-to-back airflow, air intake on power module panel).

Table 5-37 describes the mapping between switch models and 600 W AC&240 V DC power modules.

Table 5-37 Version mapping

Switch Model	PAC-600WB-B	PAC-600WB-F
CE6856-48T6Q-HI	Supported in V200R002C50 and later versions	Supported in V200R002C50 and later versions

Appearance

Figure 5-33 shows the appearance of a PAC-600WB-B power module, and Figure 5-34 shows the appearance of a PAC-600WB-F power module.

Figure 5-33 PAC-600WB-B power module



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Figure 5-34 PAC-600WB-F power module



Function

PAC-600WB-B and PAC-600WB-F power modules use different airflow designs but have the same functions. **Table 5-38** describes the functions of them.

Table 5-38 Functions of a 600 W AC&240 V DC power module

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	• PAC-600WB-B: back-to-front airflow • PAC-600WB-F: front-to-back airflow
Hot swap	Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower the ambient temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-35 and Figure 5-36 show the panels of 600 W AC&240 V DC power modules.

Figure 5-35 PAC-600WB-B panel

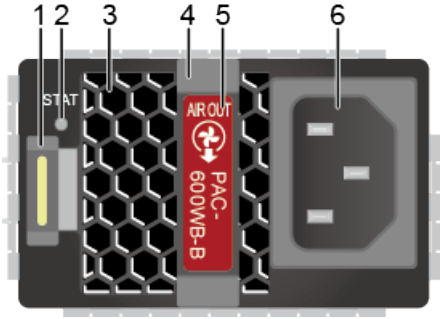
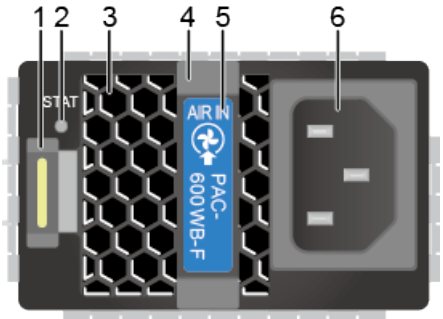


Figure 5-36 PAC-600WB-F panel



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1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 600 W AC&240 V DC power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.
5. Airflow flag •  : back-to-front airflow •  : front-to-back airflow	6. Power socket	-	-

Table 5-39 describes the indicator on a 600 W AC&240 V DC power module.

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Table 5-39 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Off	The power module receives no power input.
		Steady on	The power module is working normally.
		Blinking	The power module is in loading or standby state, or the power cable has been connected but the power module is not installed in the switch.
	Red	Steady on	• Fans of the power module fail. • The power module is in overtemperature protection state. • The power input is abnormal (input undervoltage or input overvoltage). • The power output is abnormal (output overcurrent, output short-circuit, or output overvoltage).

Specifications

Table 5-40 lists technical specifications of 600 W AC&240 V DC power modules.

Table 5-40 Technical specifications

Item	PAC-600WB-B	PAC-600WB-F
Dimensions (W x D x H)	66.0 mm x 340.0 mm x 39.6 mm (2.6 in. x 13.4 in. x 1.6 in.)	
Weight	1.5 kg (3.31 lb)	
Rated AC input voltage range	100-240 V AC, 50/60 Hz	
Maximum AC input voltage range	90-290 V AC, 47-63 Hz	
Rated voltage range of 240 V high-voltage DC power input	240 V DC	
Maximum voltage range of 240 V high-voltage DC power input	188-290 V DC	
Rated input current	• 8 A (100 V AC to 240 V AC) • 4 A (240 V DC)	

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Item	PAC-600WB-B	PAC-600WB-F
Rated output current	50 A	
Rated output voltage	12 V	
Rated output power	600 W	
Part Number	02310YQN	02310YQP

5.11 600 W AC&240 V DC Power Module (PAC600S12)

Version Mapping

600 W AC&240 V DC power modules can receive AC inputs or 240 V high-voltage DC inputs. They are classified into two types depending on the airflow designs: PAC600S12-CB (B: back-to-front airflow, air exhaust on power module panel) and PAC600S12-CF (F: front-to-back airflow, air intake on power module panel).

Table 5-41 describes the mapping between switch models and 600 W AC&240 V DC power modules.

Table 5-41 Version mapping

Switch Model	PAC600S12-CB	PAC600S12-CF
CE6863-48S6CQ CE6881-48S6CQ CE6820-48S6CQ	Supported in V200R005C20 and later versions	Supported in V200R005C20 and later versions
CE6881-48S6CQ-K CE6863-48S6CQ-K CE6881E-48S6CQ	Supported in V200R019C10 and later versions	Supported in V200R019C10 and later versions
CE6881-48T6CQ CE6881-48T6CQ-K CE5881-48T6CQ	Supported in V200R020C00 and later versions	Supported in V200R020C00 and later versions

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Switch Model	PAC600S12-CB	PAC600S12-CF
CE6857E-48S6CQ CE6857E-48T6CQ	Supported in V200R020C10 and later versions	Supported in V200R020C10 and later versions
CE6857F-48S6CQ CE6857F-48T6CQ CE6863E-48S6CQ CE6865E-48S8CQ	Supported in V200R021C00 and later versions	Supported in V200R021C00 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-37 shows the appearance of the PAC600S12-CB power module, and Figure 5-38 shows the appearance of the PAC600S12-CF power module.

Figure 5-37 PAC600S12-CB power module



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Figure 5-38 PAC600S12-CF power module



Function

PAC600S12-CB and PAC600S12-CF power modules use different airflow designs but have the same functions. **Table 5-42** describes the functions of them.

Table 5-42 Functions of a 600 W AC&240 V DC power module

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	• PAC600S12-CB: back-to-front airflow • PAC600S12-CF: front-to-back airflow
Hot swap	Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-39 and Figure 5-40 show the panels of 600 W AC&240 V DC power modules.

Figure 5-39 Panel of the PAC600S12-CB power module

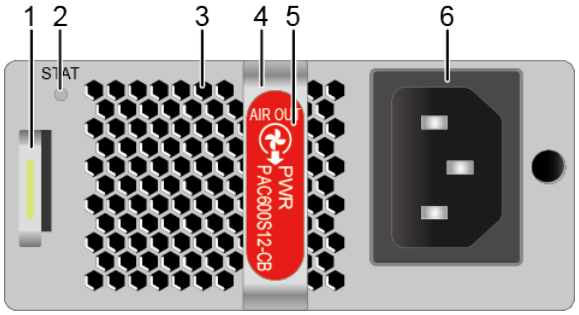
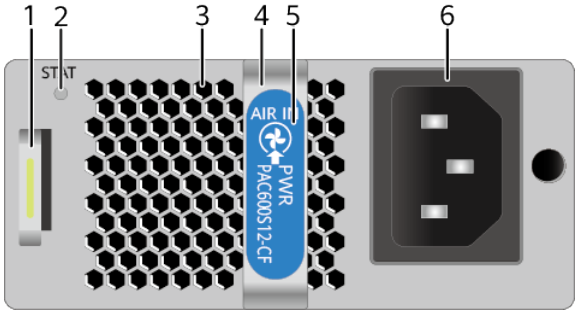


Figure 5-40 Panel of the PAC600S12-CF power module



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1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.
5. Airflow flag •  : back-to-front airflow •  : front-to-back airflow	6. Power socket	-	-

Table 5-43 describes the indicator on the panel of a 600 W AC&240 V DC power module.

Table 5-43 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Steady off	The power input is abnormal (for example, no input or undervoltage), or the power output is abnormal (for example, overvoltage or undervoltage).
		Steady on	The power module is working properly.
		Blinking	The power output is abnormal (for example, overcurrent or short circuit).

Specifications

Table 5-44 lists technical specifications of 600 W AC&240 V DC power modules.

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Table 5-44 Technical specifications

Item	PAC600S12-CB	PAC600S12-CF
Dimensions (H x W x D)	39.6 mm x 90.0 mm x 214.5 mm (1.56 in. x 3.54 in. x 8.44 in.)	
Weight	0.94 kg (2.07 lb)	
Rated AC input voltage range	100 V AC to 240 V AC, 50 Hz/60 Hz	
Maximum AC input voltage range	90 V AC to 290 V AC, 47 Hz to 63 Hz	
Rated voltage range of 240 V high-voltage DC power input	240 V DC	
Maximum voltage range of 240 V high-voltage DC power input	190 V DC to 290 V DC	
Rated input current	• 8 A (100 V AC to 240 V AC) • 4 A (240 V DC)	
Rated output current	50 A	
Rated output voltage	12 V	
Rated output power	600 W	
Part Number	02312FFU	02312KNA

5.12 600 W High-Voltage DC Power Module

Version Mapping

600 W high-voltage DC power modules are classified into two types depending on the airflow designs: PHD-600WA-B (back-to-front airflow, air exhaust on power module panel) and PHD-600WA-F (F: front-to-back airflow, air intake on power module panel).

Table 5-45 describes the mapping between switch models and 600 W high-voltage DC power modules.

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Table 5-45 Version mapping

Switch Model	PHD-600WA-B	PHD-600WA-F
CE6856-48T6Q-HI	Supported in V200R002C50 and later versions	Supported in V200R002C50 and later versions

Appearance

Figure 5-41 shows the appearance of a PHD-600WA-B power module, and Figure 5-42 shows the appearance of a PHD-600WA-F power module.

Figure 5-41 PHD-600WA-B power module



Figure 5-42 PHD-600WA-F power module



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Function

PHD-600WA-B and PHD-600WA-F power modules use different airflow designs but have the same functions. **Table 5-46** describes the functions of them.

Table 5-46 Functions of 600 W high-voltage DC power modules

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PHD-600WA-B: back-to-front airflow • PHD-600WA-F: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower the ambient temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

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Panel

Figure 5-43 and Figure 5-44 show the panels of 600 W high-voltage DC power modules.

Figure 5-43 PHD-600WA-B panel

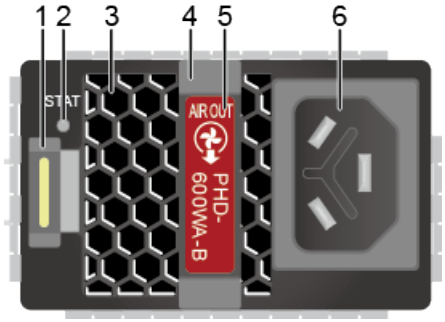
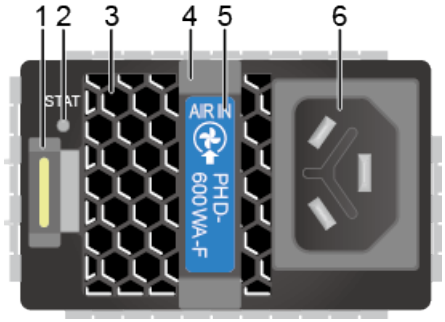


Figure 5-44 PHD-600WA-F panel



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 600 W high-voltage DC power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.

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5. Airflow flag •  : back-to-front airflow •  : front-to-back airflow	6. Power socket	-	-

Table 5-47 describes the indicator on a 600 W high-voltage DC power module panel.

Table 5-47 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Off	The power module receives no power input.
		Steady on	The power module is working normally.
		Blinking	The power module is in loading or standby state, or the power cable has been connected but the power module is not installed in the switch.
	Red	Steady on	• Fans of the power module fail. • The power module is in overtemperature protection state. • The power input is abnormal (input undervoltage or input overvoltage). • The power output is abnormal (output overcurrent, output short-circuit, or output overvoltage).

Specifications

Table 5-48 lists technical specifications of 600 W high-voltage DC power modules.

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NOTE

The PHD-600WA series are no longer sold since August 10, 2018.

Table 5-48 Technical specifications

Item	PHD-600WA-B	PHD-600WA-F
Dimensions (W x D x H)	66.0 mm x 340.0 mm x 39.6 mm (2.6 in. x 13.4 in. x 1.6 in.)	
Weight	1.5 kg (3.31 lb)	
Rated voltage range of 380 V high-voltage DC power input	240 V DC to 380 V DC	
Maximum voltage range of 380 V high-voltage DC power input	188 V DC to 400 V DC	
Rated input current	4 A	
Rated output current	50 A	
Rated output voltage	12 V	
Rated output power	600 W	
Part Number	02310YQQ	02310YQR

5.13 600 W DC Power Module (PDC600S12)

Version Mapping

600 W DC power modules include PDC600S12-CB (B: back-to-front airflow, air exhaust on power module panel) and PDC600S12-CF (F: front-to-back airflow, air intake on power module panel).

Table 5-49 describes the mapping between switch models and 600 W DC Power Modules.

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Table 5-49 Version mapping

Switch Model	PDC600S12-CB	PDC600S12-CF
CE6865-48S8CQ-EI CE6870-48T6CQ-EI CE8850-32CQ-EI	Supported in V200R019C00 and later versions	Supported in V200R019C00 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-45 shows the appearance of a PDC600S12-CB power module, and **Figure 5-46** shows the appearance of a PDC600S12-CF power module.

Figure 5-45 PDC600S12-CB power module



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Figure 5-46 PDC600S12-CF power module



Function

PDC600S12-CB and PDC600S12-CF power modules use different airflow designs but have the same functions. **Table 5-50** describes the functions of them.

Table 5-50 Functions of 600 W DC Power Modules

Function		Description
Input protection	Input undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module supplies power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.

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Function	Description
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	• PDC600S12-CB: back-to-front airflow • PDC600S12-CF: front-to-back airflow
Hot swap	Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-47 and Figure 5-48 show the panels of 600 W DC power modules.

Figure 5-47 Panel of a PDC600S12-CB DC power module

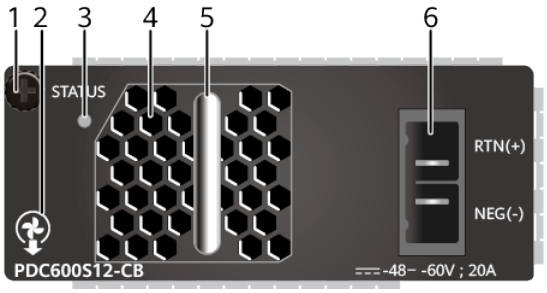
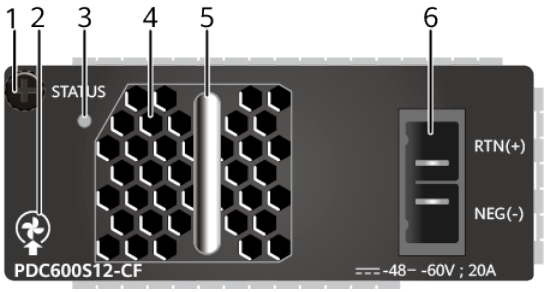


Figure 5-48 Panel of a PDC600S12-CF DC power module



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1. Captive screw	2. Airflow flag • : back-to-front airflow • : front-to-back airflow	3. Indicator	4. Fan air vent
5. Handle	6. DC power socket	-	-

Table 5-51 describes the indicator on the 600 W DC power module panel.

Table 5-51 Indicator description

Indicator	Color	Status	Description
STATUS: power indicator	Green	Off	The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, overvoltage, overcurrent, short-circuit, or overtemperature).
		Steady on	The power module is working normally.

Specifications

Table 5-52 lists technical specifications of 600 W DC power modules.

Table 5-52 Technical specifications

Item	PDC600S12-CB	PDC600S12-CF
Dimensions (W x D x H)	100 mm x 205 mm x 40 mm (3.9 in. x 8.1 in. x 1.6 in.)	
Weight	0.73 kg (1.61 lb)	
Rated input voltage	-48 V DC to -60 V DC	
Maximum input voltage	-38.4 V DC to -72 V DC	
Rated input current	20 A	
Rated output current	50 A	
Rated output voltage	12 V	

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Item	PDC600S12-CB	PDC600S12-CF
Rated output power	600 W	
Part Number	02312GJU	02312GJV

5.14 1000 W DC Power Module (PDC1000S12)

Version Mapping

1000 W DC power modules are classified into two types depending on the airflow designs: PDC1000S12-DB (B: back-to-front airflow, air exhaust on power module panel) and PDC1000S12-DF (F: front-to-back airflow, air intake on power module panel).

Table 5-53 describes the mapping between switch models and 1000 W DC power modules.

Table 5-53 Version mapping

Switch Model	PDC1000S12-DB	PDC1000S12-DF
CE6863-48S6CQ CE6881-48S6CQ CE6820-48S6CQ	Supported in V200R005C20 and later versions	Supported in V200R005C20 and later versions
CE6881-48S6CQ-K CE6863-48S6CQ-K CE6881E-48S6CQ	Supported in V200R019C10 and later versions	Supported in V200R019C10 and later versions
CE6881-48T6CQ CE6881-48T6CQ-K	Supported in V200R020C00 and later versions	Supported in V200R020C00 and later versions
CE6857E-48S6CQ CE6857E-48T6CQ	Supported in V200R020C10 and later versions	Supported in V200R020C10 and later versions

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Switch Model	PDC1000S12-DB	PDC1000S12-DF
CE6857F-48S6CQ CE6857F-48T6CQ CE6863E-48S6CQ CE6865E-48S8CQ	Supported in V200R021C00 and later versions	Supported in V200R021C00 and later versions
CE8850E-32CQ-EI	Supported in V200R021C10 and later versions	Supported in V200R021C10 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-49 shows the appearance of the PDC1000S12-DB power module, and Figure 5-50 shows the appearance of the PDC1000S12-DF power module.

Figure 5-49 PDC1000S12-DB power module



Figure 5-50 PDC1000S12-DF power module



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Function

PDC1000S12-DB and PDC1000S12-DF power modules use different airflow designs but have the same functions. **Table 5-54** describes the functions of them.

Table 5-54 Functions of 1000 W DC power modules

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PDC1000S12-DB: back-to-front airflow • PDC1000S12-DF: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

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Panel

Figure 5-51 and Figure 5-52 show the panels of 1000 W DC power modules.

Figure 5-51 Panel of the PDC1000S12-DB power module

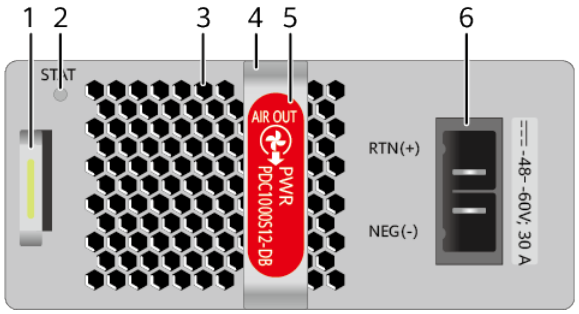
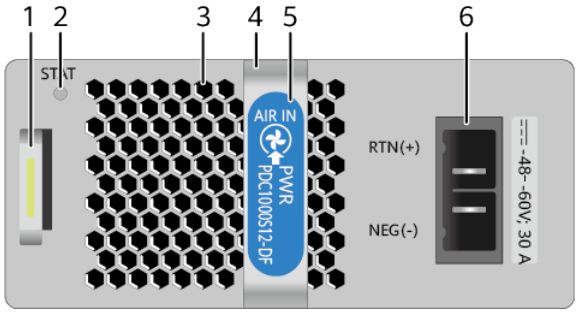


Figure 5-52 Panel of the PDC1000S12-DF power module



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.

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5. Airflow flag •  : back-to-front airflow •  : front-to-back airflow	6. Power socket	-	-

Table 5-55 describes the indicator on the panel of a 1000 W DC power module.

Table 5-55 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Steady off	The power input is abnormal (for example, no input, overvoltage, or undervoltage), or the power module is in overtemperature protection state.
		Steady on	The power module is working properly.
		Blinking	The system software of the switch is being upgraded or downgraded, or the power output is abnormal (for example, overcurrent, short circuit, or overvoltage).

Specifications

Table 5-56 lists technical specifications of 1000 W DC power modules.

Table 5-56 Technical specifications

Item	PDC1000S12-DB	PDC1000S12-DF
Dimensions (H x W x D)	39.6 mm x 90.0 mm x 214.5 mm (1.56 in. x 3.54 in. x 8.44 in.)	
Weight	0.86 kg (1.90 lb)	

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Item	PDC1000S12-DB	PDC1000S12-DF
Rated input voltage	-48 V DC to -60 V DC	
Maximum input voltage	-38.4 V DC to -72 V DC	
Rated input current	30 A	
Rated output current	83.3 A	
Rated output voltage	12 V	
Rated output power	1000 W	
Environment specifications	• Operating temperature of PDC1000S12-DB: -25°C to +55°C (-13°F to +131°F) • Operating temperature of PDC1000S12-DF: -25°C to +45°C (-13°F to +113°F) • Operating relative humidity: 5% RH to 95% RH (noncondensing) • Storage temperature: -40°C to +70°C (-40°F to +158°F) • Storage relative humidity: 5% RH to 95% RH (noncondensing)	
Part Number	02312QJK	02312QJL

5.15 1200 W AC&240 V DC Power Module (PAC-1K2WA)

Version Mapping

1200 W AC&240 V DC power modules can receive AC inputs or 240 V high-voltage inputs. They are classified into two types depending on the airflow designs: PAC-1K2WA-B (B: back-to-front airflow, air exhaust on power module panel) and PAC-1K2WA-F (F: front-to-back airflow, air intake on power module panel).

Table 5-57 describes the mapping between switch models and 1200 W AC&240 V DC power modules.

Table 5-57 Version mapping

Switch Model	PAC-1K2WA-B	PAC-1K2WA-F
CE8850-64CQ-EI	Supported in V200R005C00 and later versions	Supported in V200R005C00 and later versions

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Switch Model	PAC-1K2WA-B	PAC-1K2WA-F
CE8861-4C-EI CE8868-4C-EI	Supported in V200R005C10 and later versions	Supported in V200R005C10 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-53 shows the appearance of a PAC-1K2WA-B power module, and Figure 5-54 shows the appearance of a PAC-1K2WA-F power module.

Figure 5-53 PAC-1K2WA-B power module



Figure 5-54 PAC-1K2WA-F power module



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Function

PAC-1K2WA-B and PAC-1K2WA-F use different airflow designs but have the same functions. **Table 5-58** describes the functions of them.

Table 5-58 Functions of a 1200 W AC&240 V DC power module

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PAC-1K2WA-B: back-to-front airflow • PAC-1K2WA-F: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

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Panel

Figure 5-55 and Figure 5-56 show the panels of 1200 W AC&240 V DC power modules.

Figure 5-55 PAC-1K2WA-B panel

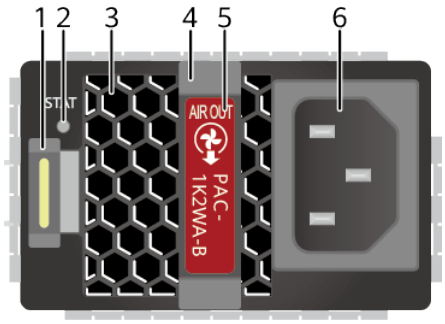
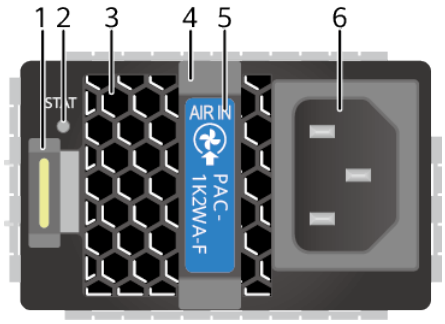


Figure 5-56 PAC-1K2WA-F panel



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 1200 W AC&240 V DC power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.

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5. Airflow flag •  : back-to-front airflow •  : front-to-back airflow	6. Power socket	-	-

Table 5-59 describes the indicator on a 1200 W AC&240 V DC power module.

Table 5-59 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Off	The power module receives no power input.
		Steady on	The power module is working normally.
		Blinking	The power module is in loading or standby state, or the power cable has been connected but the power module is not installed in the switch.
	Red	Steady on	• Fans of the power module fail. • The power module is in overtemperature protection state. • The power input is abnormal (input undervoltage or input overvoltage). • The power output is abnormal (output overcurrent, output short-circuit, or output overvoltage).

Specifications

Table 5-60 lists technical specifications of 1200 W AC&240 V DC power modules.

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Table 5-60 Technical specifications

Item	PAC-1K2WA-B	PAC-1K2WA-F
Dimensions (W x D x H)	66.0 mm x 340.0 mm x 39.6 mm	
Weight	1.5 kg	
Rated AC input voltage range	100-130 V AC, 50/60 Hz and 200-240 V AC, 50/60 Hz	
Maximum AC input voltage range	90-290 V AC, 47-63 Hz	
Rated voltage range of 240 V high-voltage DC power input:	240 V DC	
Maximum voltage range of 240 V high-voltage DC power input:	188-290 V DC	
Rated input current	• 10 A (100-130 V AC) • 8 A (200-240 V AC) • 8 A (240 V DC)	
Rated output current	• 67 A (100-130 V AC) • 100 A (200-240 V AC) • 100 A (240 V DC)	
Rated output voltage	12 V	
Rated output power	• 800 W (100-130V AC) • 1200 W (200-240V AC) • 1200 W (240 V DC)	
Part number	02311GLM	02311GLL

5.16 1200 W Power Module (PAC1K2S12-B)

Version Mapping

1200 W power modules can receive AC inputs or 240 V high-voltage inputs. Only the PAC1K2S12-B (B: back-to-front airflow, air exhaust on power module panel) 1200 W power module is available.

Table 5-61 describes the mapping between switch models and 1200 W power modules.

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Table 5-61 Version mapping

Switch Model	PAC1K2S12-B
CE9860-4C-EI	Supported in V200R020C00 and later versions
Other models	Not supported

Appearance

Figure 5-57 shows the appearance of a PAC1K2S12-B power module.

Figure 5-57 PAC1K2S12-B power module



Function

Table 5-62 describes the functions of PAC1K2S12-B.

Table 5-62 Functions of a 1200 W power module

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.

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Function		Description
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		PAC1K2S12-B: back-to-front airflow
Hot swap		Supported

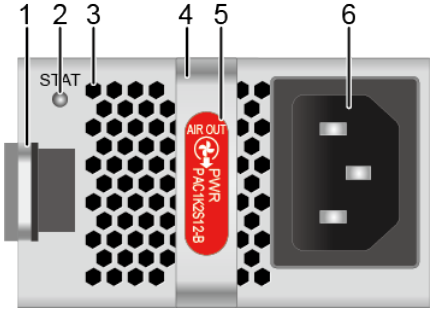
NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-58 shows the panel of a 1200 W power module.

Figure 5-58 PAC1K2S12-B panel



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1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 1200 W AC&240 V DC power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.
5. Airflow flag  : back-to-front airflow	6. Power socket	-	-

Table 5-63 describes the indicator on a 1200 W power module.

Table 5-63 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Off	The power module receives no power input.
		Steady on	The power module is working normally.
		Blinking	The power module is in loading or standby state, or the power cable has been connected but the power module is not installed in the switch.
	Red	Steady on	• Fans of the power module fail. • The power module is in overtemperature protection state. • The power input is abnormal (input undervoltage or input overvoltage). • The power output is abnormal (output overcurrent, output short-circuit, or output overvoltage).

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Specifications

Table 5-64 lists technical specifications of 1200 W power modules.

Table 5-64 Technical specifications

Item	PAC1K2S12-B
Dimensions (W x D x H)	66.0 mm x 374.0 mm x 39.6 mm (2.6 in. x 14.7 in. x 1.6 in.)
Weight	1.5 kg (3.31 lb)
Rated AC input voltage range	• 100-130 V AC, 50/60 Hz • 200-240 V AC, 50/60 Hz
Maximum AC input voltage range	90-290 V AC, 47-63 Hz
Rated voltage range of 240 V high-voltage DC power input:	240 V DC
Maximum voltage range of 240 V high-voltage DC power input:	188-290 V DC
Rated input current	• 10 A (100-130 V AC) • 8 A (200-240 V AC) • 8 A (240 V DC)
Rated output current	• 67 A (100-130 V AC) • 100 A (200-240 V AC) • 100 A (240 V DC)
Rated output voltage	12 V DC
Rated output power	• 800 W (100-130V AC) • 1200 W (200-240V AC) • 1200 W (240 V DC)
Part number	02312DUM

5.17 1200 W AC&240 V DC Power Module (PAC1K2S12-C)

Version Mapping

1200 W AC&240 V DC power modules can receive AC inputs or 240 V high-voltage inputs. 1200 W AC&240 V DC power modules include PAC1K2S12-CB (B: back-to-front airflow, air exhaust on power module panel) and PAC1K2S12-CF (F: front-to-back airflow, air intake on power module panel).

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Table 5-65 describes the mapping between switch models and 1200 W AC&240 V DC power modules.

Table 5-65 Version mapping

Switch Model	PAC1K2S12-CB	PAC1K2S12-CF
CE9860-4C-EI	Supported in V200R020C00 and later versions	Not supported
CE8868-4C-EI	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
CE8861-4C-EI	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
CE8850-64CQ-EI	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions

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Switch Model	PAC1K2S12-CB	PAC1K2S12-CF
CE6856-48T6Q-HI	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-59 shows the appearance of a PAC1K2S12-CB power module, and Figure 5-60 shows the appearance of a PAC1K2S12-CF power module.

Figure 5-59 PAC1K2S12-CB power module



Figure 5-60 PAC1K2S12-CF power module



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Function

Table 5-66 describes the functions of PAC1K2S12-C.

Table 5-66 Functions of a 1200 W AC&240 V DC power module

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PAC1K2S12-CB: back-to-front airflow • PAC1K2S12-CF: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

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Panel

Figure 5-61 and Figure 5-62 show the panels of a 1200 W AC&240 V DC power module.

Figure 5-61 PAC1K2S12-CB panel

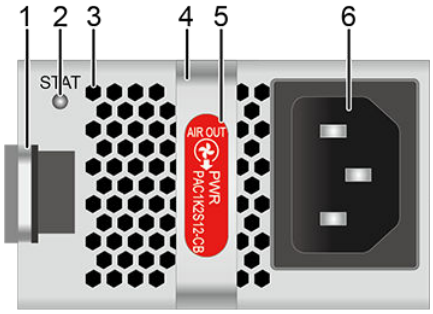
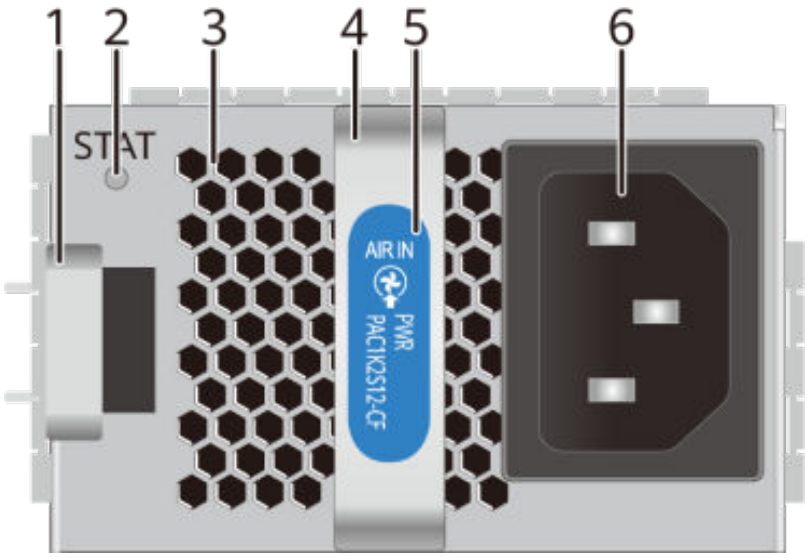


Figure 5-62 PAC1K2S12-CF panel



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 1200 W AC&240 V DC power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.

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5. Airflow flag • : back-to-front airflow • : front-to-back airflow	6. Power socket	-	-

Table 5-67 describes the indicator on a 1200 W AC&240 V DC power module.

Table 5-67 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Off	The power module receives no power input.
		Steady on	The power module is working normally.
		Blinking	The power module is in loading or standby state, or the power cable has been connected but the power module is not installed in the switch.
	Red	Steady on	• Fans of the power module fail. • The power module is in overtemperature protection state. • The power input is abnormal (input undervoltage or input overvoltage). • The power output is abnormal (output overcurrent, output short-circuit, or output overvoltage).

Table 5-68 Ports on a 1200 W AC&240 V DC power module

Port	Description
C13	C13 power socket

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Specifications

Table 5-69 lists technical specifications of 1200 W AC&240 V DC power modules.

Table 5-69 Technical specifications

Item	PAC1K2S12-CB	PAC1K2S12-CF
Dimensions without packaging (H x W x D)	39.6 mm x 374.0 mm x 66.0 mm (1.6 in. x 14.7 in. x 2.6 in.)	
Weight without packaging	1.5 kg (3.31 lb)	
Rated input voltage [V]	100-130 V AC, 50/60 Hz 200-240 V AC, 50/60 Hz 240 V DC	
Maximum Input voltage [V]	AC: 90-290 V AC, 47-63 Hz HVDC: 188-290 V DC	
Rated input current [A]	10 A (100-130 V AC); 8 A (200-240 V AC); 8 A (240 V DC)	
Rated output voltage [V]	12 V	
Rated output current [A]	67 A (100-130 V AC); 100 A (200-240 V AC); 100 A (240 V DC)	
Rated output power [W]	800 W (100-130V AC); 1200 W (200-240V AC); 1200 W (240 V DC)	
Hot swapping	Supported	
Part number	02312VLE	02312VLF

5.18 PAC1K2S12-CB (1200W AC&240V DC Power Module (Back to Front,Power panel side air-out))

Overview

Table 5-70 Basic information about the PAC1K2S12-CB

Item	Details
Description	1200W AC&240V DC Power Module (Back to Front,Power panel side air-out)
Part Number	02312VLE

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Item	Details
Model	PAC1K2S12-CB
Remarks	When a power module enters overtemperature protection state, take measures to lower the ambient temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Appearance

Figure 5-63 Appearance of the PAC1K2S12-CB



Version Mapping

Table 5-71 Mappings between PAC1K2S12-CB and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8851-32CQ8DQ-K (02353PJQ)	V300R020C00	-
CloudEngine 8800	CE8851-32CQ8DQ-P (02353EGP)	V300R020C00	-
CloudEngine 8800	CE8850-SAN (02354FPQ)	V300R020C10SPC200	-
CloudEngine 8800	CE8850-HAM (02354WBD)	V300R022C00	-

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Product	Product Model	First Supported Version	Limitations
CloudEngine 9800	CE9860-4C-EI (02352HQC)	V200R020C00	-
CloudEngine 9800	CE9860-4C-EI (02352HQD)	V200R020C00	-

Panel

Figure 5-64 Panel of the PAC1K2S12-CB

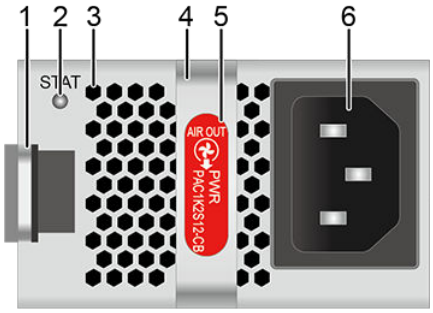


Table 5-72 Indicators on the PAC1K2S12-CB

Silkscreen	Name	Color	Status	Description
STAT	Running status indicator	Green	Off	The power module receives no power input.
		Green	Steady on	The power module is working normally.
		Green	Blinking	The power module is in loading or standby state, or the power cable has been connected but the power module is not installed in the switch.

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Silkscreen	Name	Color	Status	Description
		Red	Steady on	Fans of the power module fail. The power module is in overtemperature protection state. The power input is abnormal (input undervoltage or input overvoltage). The power output is abnormal (output overcurrent, output short-circuit, or output overvoltage).

Table 5-73 Ports on the PAC1K2S12-CB

Port	Description
Power cable port	C13 power socket

Functions and Features

Table 5-74 Functions and features of the PAC1K2S12-CB

Functions and Features	Description
Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.

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Functions and Features	Description
Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	back-to-front airflow

Technical Specifications

Table 5-75 Technical specifications of the PAC1K2S12-CB

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	39.6 mm x 374.0 mm x 66.0 mm (1.6 in. x 14.7 in. x 2.6 in.)
Weight without packaging [kg (lb)]	1.5 kg (3.31 lb)
Number of inputs	1
Number of outputs	1

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Item	Specification
Rated input voltage [V]	100 V AC to 130 V AC; 50/60Hz 200 V AC to 240 V AC; 50/60Hz 240 V DC
Maximum Input voltage [V]	AC: 90–290 V AC; 47–63 Hz High-voltage DC: 190 V DC to 290 V DC
Rated input current [A]	10 A (100-130 V AC); 8 A (200-240 V AC); 8 A (240 V DC)
Rated output voltage [V]	12 V
Rated output current [A]	67 A (100-130 V AC); 100 A (200-240 V AC); 100 A (240 V DC)
Rated output power [W]	• 800 W (100 V AC to 130 V AC) • 1200 W (200 V AC to 240 V AC) • 1200 W (240 V DC)
Hot swapping	Supported

5.19 PAC1K2S12-CF (1200W AC&240V DC Power Module (Front to Back,Power panel side intake))

Overview

Table 5-76 Basic information about the PAC1K2S12-CF

Item	Details
Description	1200W AC&240V DC Power Module (Front to Back,Power panel side intake)
Part Number	02312VLF
Model	PAC1K2S12-CF
Remarks	When a power module enters overtemperature protection state, take measures to lower the ambient temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

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Appearance

Figure 5-65 Appearance of the PAC1K2S12-CF



Version Mapping

Table 5-77 Mappings between PAC1K2S12-CF and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8851-32CQ8DQ-K (02353PJQ)	V300R020C00	-
CloudEngine 8800	CE8851-32CQ8DQ-P (02353EGP)	V300R020C00	-
CloudEngine 8800	CE8850-SAN (02354FPQ)	V300R020C10SPC200	-
CloudEngine 8800	CE8850-HAM (02354WBD)	V300R022C00	-

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Panel

Figure 5-66 Panel of the PAC1K2S12-CF

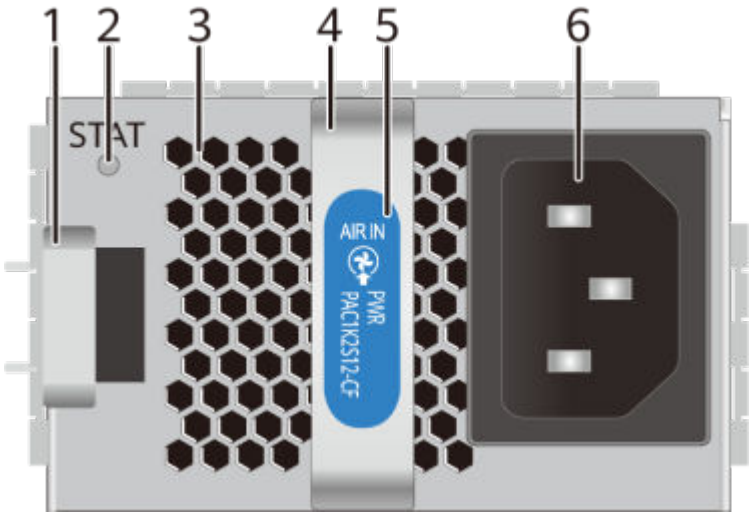


Table 5-78 Indicators on the PAC1K2S12-CF

Silkscreen	Name	Color	Status	Description
STAT	Running status indicator	Green	Off	The power module receives no power input.
		Green	Steady on	The power module is working normally.
		Green	Blinking	The power module is in loading or standby state, or the power cable has been connected but the power module is not installed in the switch.

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Silkscreen	Name	Color	Status	Description
		Red	Steady on	Fans of the power module fail. The power module is in overtemperature protection state. The power input is abnormal (input undervoltage or input overvoltage). The power output is abnormal (output overcurrent, output short-circuit, or output overvoltage).

Table 5-79 Ports on the PAC1K2S12-CF

Port	Description
Power cable port	C13 power socket

Functions and Features

Table 5-80 Functions and features of the PAC1K2S12-CF

Functions and Features	Description
Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.

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Functions and Features	Description
Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	Front-to-back airflow

Technical Specifications

Table 5-81 Technical specifications of the PAC1K2S12-CF

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	39.6 mm x 66.0 mm x 374.0 mm (1.6 in. x 2.6 in. x 14.7 in.)
Weight without packaging [kg (lb)]	1.5 kg (3.31 lb)
Number of inputs	1
Number of outputs	1

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Item	Specification
Rated input voltage [V]	100 V AC to 130 V AC; 50/60Hz 200 V AC to 240 V AC; 50/60Hz 240 V DC
Maximum Input voltage [V]	AC: 90–290 V AC; 47–63 Hz High-voltage DC: 188 V DC to 290 V DC
Rated input current [A]	10 A (100-130 V AC); 8 A (200-240 V AC); 8 A (240 V DC)
Rated output voltage [V]	12 V
Rated output current [A]	67 A (100-130 V AC); 100 A (200-240 V AC); 100 A (240 V DC)
Rated output power [W]	• 800 W (100 V AC to 130 V AC) • 1200 W (200 V AC to 240 V AC) • 1200 W (240 V DC)
Hot swapping	Supported

5.20 PAC1K2S12-PB (1200W AC&240V DC Power Module (Back to Front,Power panel side exhaust))

Overview

Table 5-82 Basic information about the PAC1K2S12-PB

Item	Details
Description	1200W AC&240V DC Power Module (Back to Front,Power panel side exhaust)
Part Number	02313NYX
Model	PAC1K2S12-PB
Remarks	When a power module enters overtemperature protection state, take measures to lower the temperature of the chassis. The power module can automatically resume power supply when the temperature falls within the normal range.

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Appearance

Figure 5-67 Appearance of the PAC1K2S12-PB



Version Mapping

Table 5-83 Mappings between PAC1K2S12-PB and product models

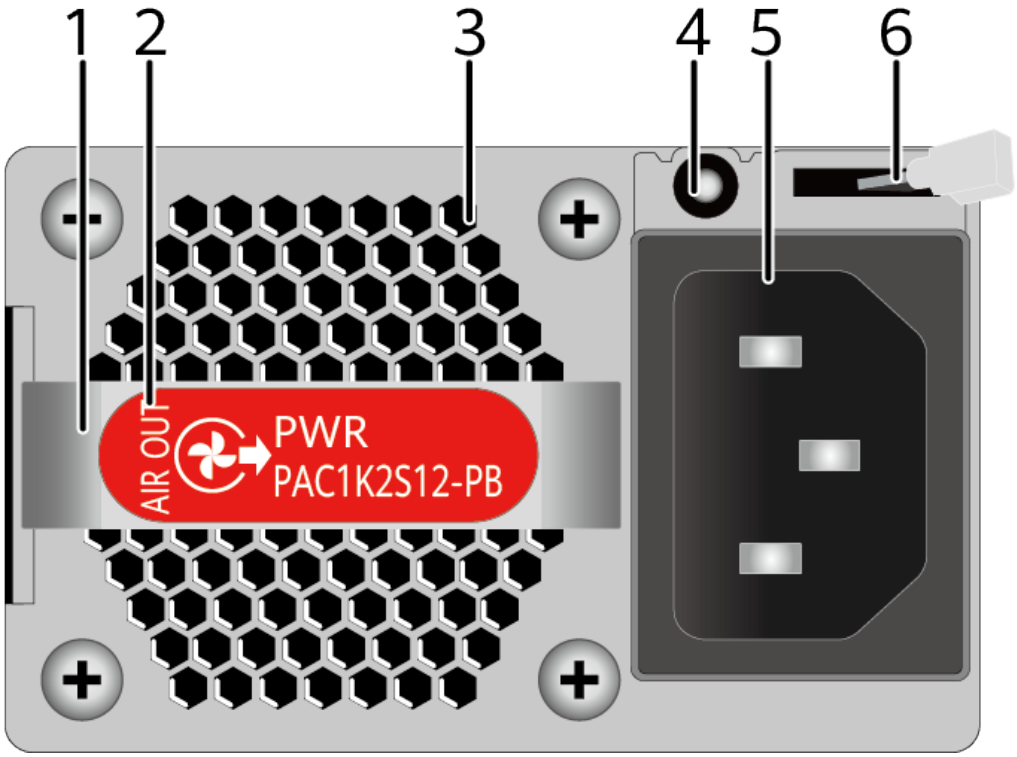
Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-004)	V200R022C00	-

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Product	Product Model	First Supported Version	Limitations
CloudEngine 9800	CE9860-4C-EI-A (02355FEA)	V200R022C10	-

Panel

Figure 5-68 Panel of the PAC1K2S12-PB



1. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to strap the power cable to the handle.	2. Airflow flag • : back-to-front airflow • : front-to-back airflow	3. Air vent	4. Indicator

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5. Power socket	6. Lock	-	-

Table 5-84 Indicators on the PAC1K2S12-PB

Silkscreen	Name	Color	Status	Description
STAT	Running status indicator	Green	Steady off	The power input is abnormal (for example, no input or undervoltage), or the power output is abnormal (for example, overvoltage or undervoltage).
		Green	Steady on	The power module is working properly.
		Green	Blinking (4 Hz)	Online loading

Table 5-85 Ports on the PAC1K2S12-PB

Port	Description
Power cable port	C13 power cable port

Functions and Features

Table 5-86 Functions and features of the PAC1K2S12-PB

Functions and Features	Description
Input overvoltage protection and undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.

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Functions and Features	Description
Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	Back-to-front airflow

NOTE

When a power module enters the overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when its temperature returns to within the normal range.

Technical Specifications

Table 5-87 Technical specifications of the PAC1K2S12-PB

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	39.6 mm x 66.0 mm x 215 mm (1.56 in. x 2.60 in. x 8.46 in.)

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Item	Specification
Weight without packaging [kg (lb)]	0.844 kg (lb)
Number of inputs	1
Number of outputs	1
Rated input voltage [V]	200 V AC to 240 V AC; 50/60 Hz 100 V AC to 130 V AC; 50/60 Hz 240 V DC
Maximum Input voltage [V]	AC: 90–290 V AC; 45–65 Hz High-voltage DC: 190 V DC to 290 V DC
Rated input current [A]	8 A (200 V AC to 240 V AC); 10 A (100 V AC to 130 V AC); 8 A (240 V DC)
Rated output voltage [V]	12 V
Rated output current [A]	100A
Rated output power [W]	1200 W
Hot swapping	Supported

5.21 PAC1K2S12-PF (1200W AC&240V DC Power Module (Front to Back,Power panel side intake))

Overview

Table 5-88 Basic information about the PAC1K2S12-PF

Item	Details
Description	1200W AC&240V DC Power Module (Front to Back,Power panel side intake)
Part Number	02313PAA
Model	PAC1K2S12-PF
Remarks	When a power module enters overtemperature protection state, take measures to lower the temperature of the chassis. The power module can automatically resume power supply when the temperature falls within the normal range.

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Appearance

Figure 5-69 Appearance of the PAC1K2S12-PF



Version Mapping

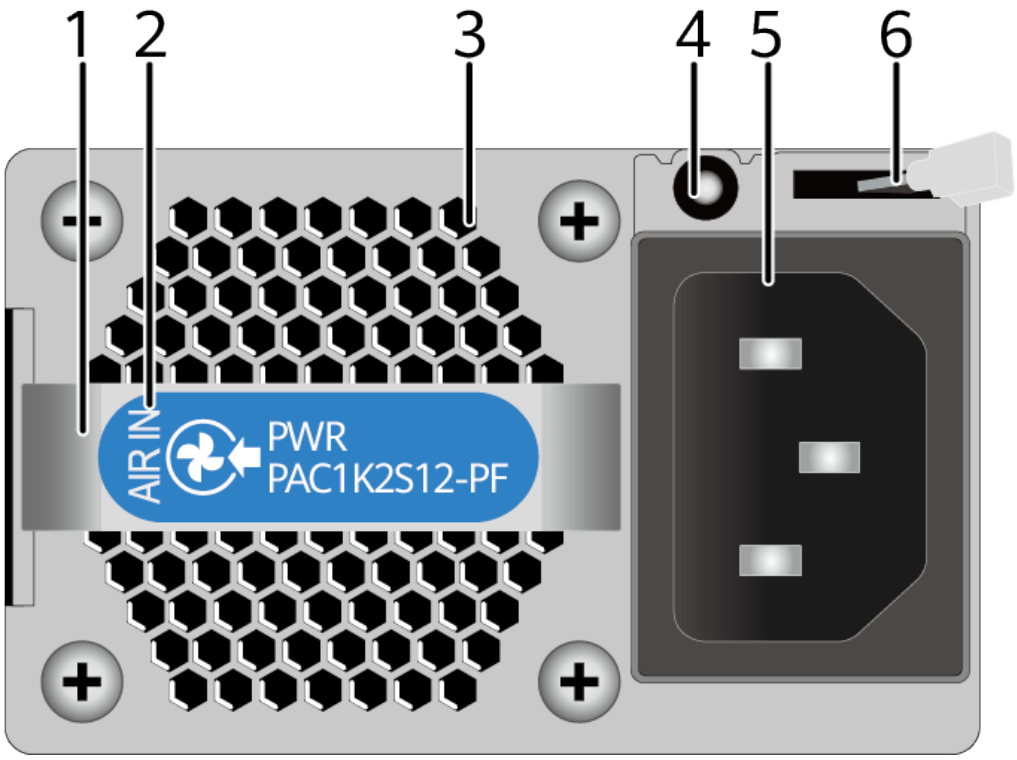
Table 5-89 Mappings between PAC1K2S12-PF and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-004)	V200R022C00	-

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Panel

Figure 5-70 Panel of the PAC1K2S12-PF



1. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to strap the power cable to the handle.	2. Airflow flag • : back-to-front airflow • : front-to-back airflow	3. Air vent	4. Indicator
5. Power socket	6. Lock	-	-

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Table 5-90 Indicators on the PAC1K2S12-PF

Silkscreen	Name	Color	Status	Description
STAT	Running status indicator	Green	Steady off	The power input is abnormal (for example, no input or undervoltage), or the power output is abnormal (for example, overvoltage or undervoltage).
		Green	Steady on	The power module is working properly.
		Green	Blinking (4 Hz)	Online loading

Table 5-91 Ports on the PAC1K2S12-PF

Port	Description
Power cable port	C13 power cable port

Functions and Features

Table 5-92 Functions and features of the PAC1K2S12-PF

Functions and Features	Description
Input overvoltage protection and undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Functions and Features	Description
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	Back-to-front airflow

NOTE

When a power module enters the overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when its temperature returns to within the normal range.

Technical Specifications

Table 5-93 Technical specifications of the PAC1K2S12-PF

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	39.6 mm x 66.0 mm x 215 mm (1.56 in. x 2.60 in. x 8.46 in.)
Weight without packaging [kg (lb)]	0.844 kg (lb)
Number of inputs	1
Number of outputs	1

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Item	Specification
Rated input voltage [V]	200 V AC to 240 V AC; 50/60 Hz 100 V AC to 130 V AC; 50/60 Hz 240 V DC
Maximum Input voltage [V]	AC: 90–290 V AC; 45–65 Hz High-voltage DC: 190 V DC to 290 V DC
Rated input current [A]	8 A (200 V AC to 240 V AC); 10 A (100 V AC to 130 V AC); 8 A (240 V DC)
Rated output voltage [V]	12 V
Rated output current [A]	100A
Rated output power [W]	1200 W
Hot swapping	Supported

5.22 PAC600S12-PB (600W AC Power Module(Back to Front, Power panel side exhaust))

Overview

Table 5-94 Basic information about the PAC600S12-PB

Item	Details
Description	600W AC Power Module(Back to Front, Power panel side exhaust)
Part Number	02313BUS
Model	PAC600S12-PB
Remarks	When a power module enters overtemperature protection state, take measures to lower the temperature of the chassis. The power module can automatically resume power supply when the temperature falls within the normal range.

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Appearance

Figure 5-71 Appearance of the PAC600S12-PB



Version Mapping

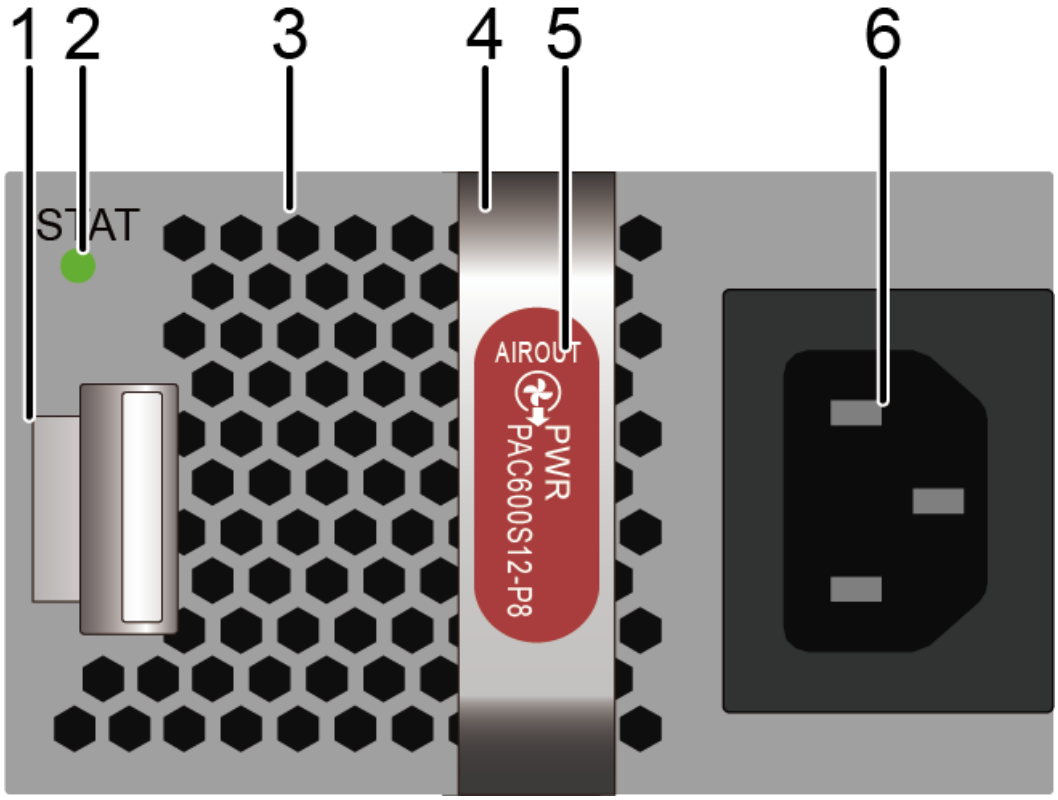
Table 5-95 Mappings between PAC600S12-PB and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSK)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSJ)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSH)	V200R022C00	-

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Panel

Figure 5-72 Panel of the PAC600S12-PB



1. Lock	2. Indicator	3. Air vent	4. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to strap the power cable to the handle.
5. Airflow flag • : back-to-front airflow • : front-to-back airflow	6. Power socket	-	-

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Table 5-96 Indicators on the PAC600S12-PB

Silkscreen	Name	Color	Status	Description
STAT	Power indicator	Green	Steady off	The input is abnormal (no power input or input undervoltage), or the output is abnormal (overvoltage or undervoltage).
		Green	Steady on	The power module is working properly.
		Green	Blinking (4 Hz)	Online loading

Table 5-97 Ports on the PAC600S12-PB

Port	Description
Power cable port	C13 power cable port

Functions and Features

Table 5-98 Functions and features of the PAC600S12-PB

Functions and Features	Description
Input overvoltage protection and undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Functions and Features	Description
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	Back-to-front airflow

NOTE

When a power module enters the overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when its temperature returns to within the normal range.

Technical Specifications

Table 5-99 Technical specifications of the PAC600S12-PB

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	39.6 mm x 66 mm x 215 mm (1.56 in. x 2.6 in. x 8.46 in.)
Weight without packaging [kg (lb)]	1 kg (2.20 lb)
Number of inputs	1
Number of outputs	1

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Item	Specification
Rated input voltage [V]	100 V AC to 240 V AC, 50 Hz/60 Hz 240 V DC
Maximum Input voltage [V]	AC: 90–290 V AC; 45–65 Hz High-voltage DC: 190 V DC to 290 V DC
Rated input current [A]	8 A (100 V AC to 240 V AC); 4 A (240 V DC)
Rated output voltage [V]	12 V
Rated output current [A]	50A
Rated output power [W]	600W
Hot swapping	Supported

5.23 PAC600S12-PF (600W AC Power Module(Front to Back, Power panel side intake))

Overview

Table 5-100 Basic information about the PAC600S12-PF

Item	Details
Description	600W AC Power Module(Front to Back, Power panel side intake)
Part Number	02313BUW
Model	PAC600S12-PF
Remarks	When a power module enters overtemperature protection state, take measures to lower the temperature of the chassis. The power module can automatically resume power supply when the temperature falls within the normal range.

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Appearance

Figure 5-73 Appearance of the PAC600S12-PF



Version Mapping

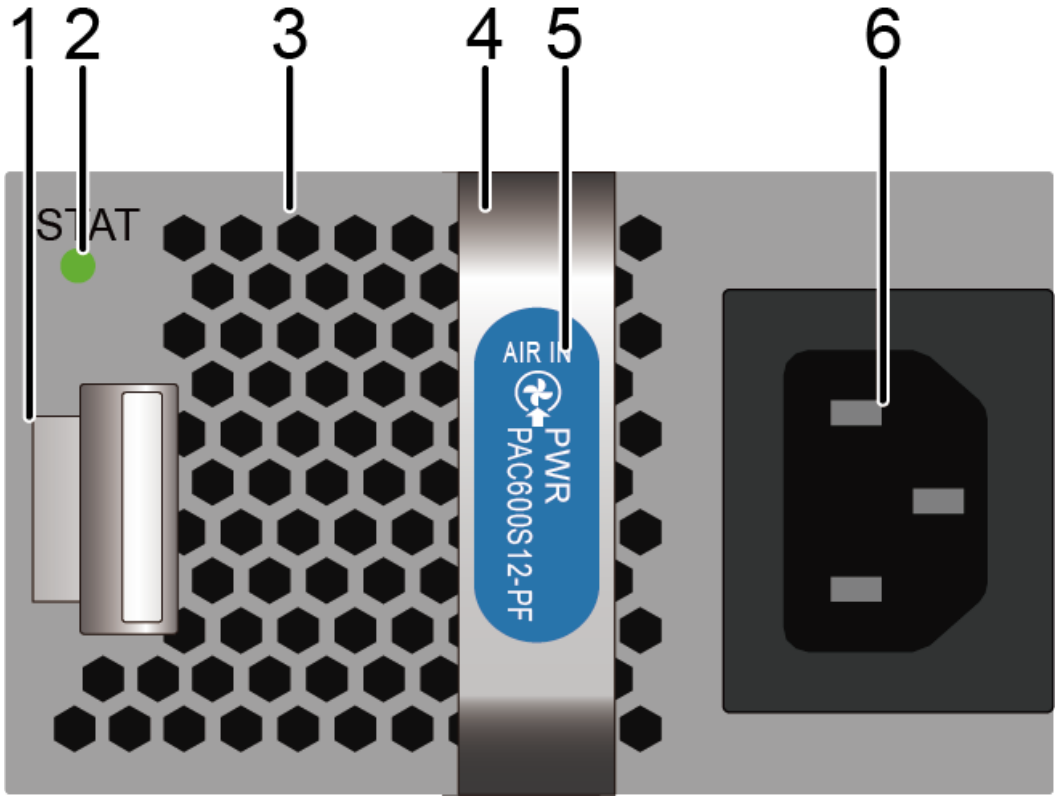
Table 5-101 Mappings between PAC600S12-PF and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSK)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSJ)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSH)	V200R022C00	-

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Panel

Figure 5-74 Panel of the PAC600S12-PF



1. Lock	2. Indicator	3. Air vent	4. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to strap the power cable to the handle.
5. Airflow flag • : back-to-front airflow • : front-to-back airflow	6. Power socket	-	-

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Table 5-102 Indicators on the PAC600S12-PF

Silkscreen	Name	Color	Status	Description
STAT	Power indicator	Green	Steady off	The input is abnormal (no power input or input undervoltage), or the output is abnormal (overvoltage or undervoltage).
		Green	Steady on	The power module is working properly.
		Green	Blinking (4 Hz)	Online loading

Table 5-103 Ports on the PAC600S12-PF

Port	Description
Power cable port	C13 power cable port

Functions and Features

Table 5-104 Functions and features of the PAC600S12-PF

Functions and Features	Description
Input overvoltage protection and undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Functions and Features	Description
Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	Front-to-back airflow

NOTE

When a power module enters the overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when its temperature returns to within the normal range.

Technical Specifications

Table 5-105 Technical specifications of the PAC600S12-PF

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	39.6 mm x 66 mm x 215 mm (1.56 in. x 2.6 in. x 8.46 in.)
Weight without packaging [kg (lb)]	1 kg (2.20 lb)
Weight with packaging [kg (lb)]	1 kg (2.20 lb)
Number of inputs	1

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Item	Specification
Rated input voltage [V]	100 V AC to 240 V AC, 50 Hz/60 Hz 240 V DC
Maximum Input voltage [V]	AC: 90–290 V AC; 45–65 Hz High-voltage DC: 190 V DC to 290 V DC
Rated input current [A]	8 A (100 V AC to 240 V AC) ; 4 A (240 V DC)
Rated output voltage [V]	12 V
Rated output current [A]	50A
Rated output power [W]	600W
Hot swapping	Supported

5.24 1200 W High-voltage DC Power Module (PHD-1K2WA)

Version Mapping

1200 W high-voltage DC power modules are classified into two types depending on the airflow designs: PHD-1K2WA-B (back-to-front airflow, air exhaust on power module panel) and PHD-1K2WA-F (F: front-to-back airflow, air intake on power module panel).

Table 5-106 describes the mapping between switch models and 1200 W high-voltage DC power modules.

Table 5-106 Version mapping

Switch Model	PHD-1K2WA-B	PHD-1K2WA-F
CE8850-64CQ-EI	Supported in V200R005C00 and later versions	Supported in V200R005C00 and later versions
CE6856-48T6Q-HI	Supported in V200R005C00 and later versions	Supported in V200R005C00 and later versions
CE8861-4C-EI CE8868-4C-EI	Supported in V200R005C10 and later versions	Supported in V200R005C10 and later versions

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Switch Model	PHD-1K2WA-B	PHD-1K2WA-F
Other models	Not supported	Not supported

Appearance

Figure 5-75 shows the appearance of a PHD-1K2WA-B power module, and Figure 5-76 shows the appearance of a PHD-1K2WA-F power module.

Figure 5-75 PHD-1K2WA-B power module



Figure 5-76 PHD-1K2WA-F power module



Function

PHD-1K2WA-B and PHD-1K2WA-F use different airflow designs but have the same functions. Table 5-107 describes the functions of them.

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Table 5-107 Functions of 1200 W high-voltage DC power modules

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power adapter stops supplying power intermittently. When the output voltage restores to the normal range, the power adapter automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PHD-1K2WA-B: back-to-front airflow • PHD-1K2WA-F: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-77 and **Figure 5-78** show the panels of 1200 W high-voltage DC power modules.

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Figure 5-77 PHD-1K2WA-B panel

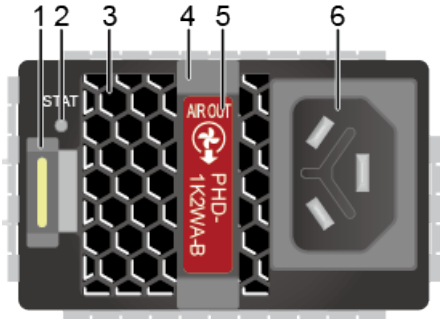
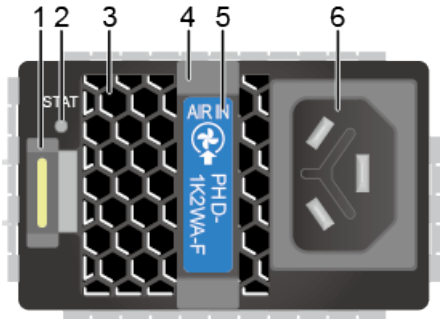


Figure 5-78 PHD-1K2WA-F panel



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 1200 W high-voltage power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.

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5. Airflow flag •  : back-to-front airflow •  : front-to-back airflow	6. Power socket	-	-

Table 5-108 describes the indicator on a 1200 W high-voltage DC power module.

Table 5-108 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Off	The power module receives no power input.
		Steady on	The power module is working normally.
		Blinking	The power module is in loading or standby state, or the power cable has been connected but the power module is not installed in the switch.
	Red	Steady on	• Fans of the power module fail. • The power module is in overtemperature protection state. • The power input is abnormal (input undervoltage or input overvoltage). • The power output is abnormal (output overcurrent, output short-circuit, or output overvoltage).

Specifications

Table 5-109 lists technical specifications of 1200 W high-voltage DC power modules.

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Table 5-109 Technical specifications

Item	PHD-1K2WA-B	PHD-1K2WA-F
Dimensions (W x D x H)	66.0 mm x 340.0 mm x 39.6 mm (2.6 in. x 13.4 in. x 1.6 in.)	
Weight	1.5 kg (3.31 lb)	
Rated voltage range of 380 V high-voltage DC power input:	240-380 V DC	
Maximum voltage range of 380 V high-voltage DC power input:	188-400 V DC	
Rated input current	8 A	
Rated output current	100 A	
Rated output voltage	12 V	
Rated output power	1200 W	
Part number	02311GLP	02311GLN

5.25 1200 W High-Voltage DC Power Module (PHD1K2S12-DB)

Version Mapping

Only the PHD1K2S12-DB (B: back-to-front airflow, air exhaust on power module panel) 1200 W high-voltage DC power module is available.

Table 5-110 describes the mapping between switch models and the 1200 W high-voltage DC power module.

Table 5-110 Version mapping

Switch Model	PHD1K2S12-DB
CE6863-48S6CQ CE6881-48S6CQ CE6820-48S6CQ CE6881-48S6CQ-K CE6863-48S6CQ-K CE6881E-48S6CQ	Supported in V200R019C10 and later versions

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Switch Model	PHD1K2S12-DB
CE6881-48T6CQ CE6881-48T6CQ-K CE5881-48T6CQ	Supported in V200R020C00 and later versions
CE5855E-48T4S2Q CE6857E-48S6CQ CE6857E-48T6CQ	Supported in V200R020C10 and later versions
CE6857F-48S6CQ CE6857F-48T6CQ CE6863E-48S6CQ CE6865E-48S8CQ CE5855F-48T4S2Q	Supported in V200R021C00 and later versions
CE8850E-32CQ-EI	Supported in V200R021C10 and later versions
Other models	Not supported

Appearance

Figure 5-79 shows the appearance of the PHD1K2S12-DB power module.

Figure 5-79 PHD1K2S12-DB power module



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Function

Table 5-111 describes the functions of the PHD1K2S12-DB power module.

Table 5-111 Functions of the 1200 W high-voltage DC power module

Function		Description
Input protection	Input overvoltage protection and undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		PHD1K2S12-DB: back-to-front airflow
Hot swap		Supported

NOTE

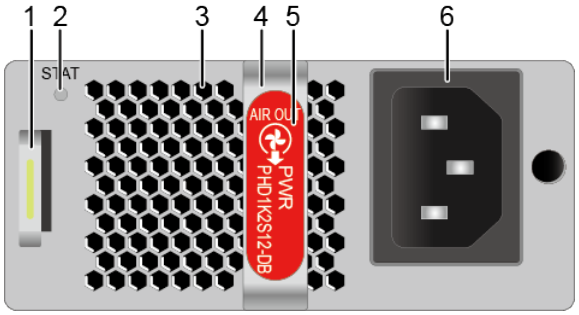
When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-80 shows the panel of the PHD1K2S12-DB power module.

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Figure 5-80 Panel of the PHD1K2S12-DB power module



1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.
5. Airflow flag  : back-to-front airflow	6. Power socket	-	-

Table 5-112 describes the indicator on the panel of the 1200 W high-voltage DC power module.

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Table 5-112 Indicator description

Indicator	Color	Status	Description
STAT: running status indicator	Green	Steady off	The power input is abnormal (for example, no input, overvoltage, or undervoltage), or the power module is in overtemperature protection state.
		Steady on	The power module is working properly.
		Blinking	The system software of the switch is being upgraded or downgraded, or the power output is abnormal (for example, overcurrent, short circuit, or overvoltage).

Specifications

Table 5-113 lists technical specifications of 1200 W high-voltage DC power modules.

Table 5-113 Technical specifications

Item	PHD1K2S12-DB
Dimensions (H x W x D)	39.6 mm x 90.0 mm x 215.0 mm (1.56 in. x 3.54 in. x 8.46 in.)
Weight	1.5 kg (3.31 lb)
Rated voltage range of 380 V high-voltage DC power input	240-380 V DC
Maximum voltage range of 380 V high-voltage DC power input	190 V DC to 400 V DC
Rated input current	8 A
Rated output current	100 A
Rated output voltage	12 V
Rated output power	1200 W

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Item	PHD1K2S12-DB
Environment specifications	• Operating temperature: -25°C to +55°C (-13°F to 131°F) • Operating relative humidity: 5% RH to 95% RH (noncondensing) • Storage temperature: -40°C to +70°C (-40°F to +158°F) • Storage relative humidity: 5% RH to 95% RH (noncondensing)
Part number	02270183

5.26 1200 W DC Power Module (PDC-1K2WA)

Version Mapping

1200 W DC power modules include PDC-1K2WA-B (B: back-to-front airflow, air exhaust on power module panel) and PDC-1K2WA-F (F: front-to-back airflow, air intake on power module panel).

Table 5-114 describes the mapping between switch models and 1200 W DC power modules.

Table 5-114 Version mapping

Switch Model	PDC-1K2WA-B	PDC-1K2WA-F
CE6856-48T6Q-HI	Supported in V200R003C00 version and later versions	Supported in V200R003C00 version and later versions
CE8850-64CQ-EI	Supported in V200R005C00 version and later versions	Supported in V200R005C00 version and later versions
CE8861-4C-EI CE8868-4C-EI	Supported in V200R005C10 version and later versions	Supported in V200R005C10 version and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-81 shows the appearance of a PDC-1K2WA-B power module, and Figure 5-82 shows the appearance of a PDC-1K2WA-F power module.

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Figure 5-81 PDC-1K2WA-B power module



Figure 5-82 PDC-1K2WA-F power module



Function

PDC-1K2WA-B and PDC-1K2WA-F power modules use different airflow designs but have the same functions. **Table 5-115** describes the functions of a 1200 W DC power module.

Table 5-115 Functions of a 1200 W DC power module

Function		Description
Input protection	Input undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.

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Function		Description
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.
Output protection	Output overvoltage protection	In this protection state, the power module supplies power intermittently. When the output voltage restores to the normal range, the power module automatically resumes power supply.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		• PDC-1K2WA-B: back-to-front airflow • PDC-1K2WA-F: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Panel

Figure 5-83 and **Figure 5-84** show the panel of a 1200 W DC power module.

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Figure 5-83 Panel of a PDC-1K2WA-B DC power module

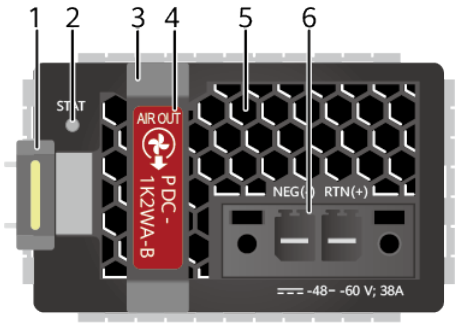
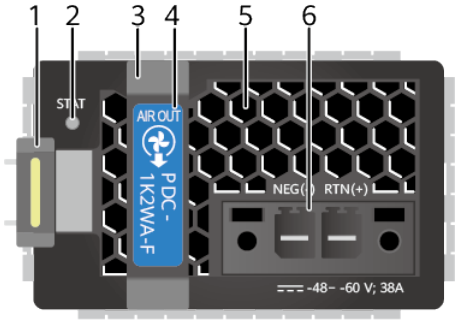


Figure 5-84 Panel of a PDC-1K2WA-F DC power module



1. Lock	2. Indicator	3. Handle	4. Airflow flag • : back-to-front airflow • : front-to-back airflow
5. Fan air vent	6. DC power socket	-	-

Table 5-116 describes the indicator on a 1200 W DC power module.

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Table 5-116 Indicator description

Indicator	Color	Status	Description
STATUS: power indicator	Green	Off	The power input is abnormal (for example, no input, overvoltage, or undervoltage) or the power output is abnormal (for example, overvoltage, overcurrent, short-circuit, or overtemperature).
		Steady on	The power module is working normally.

Specifications

Table 5-117 lists technical specifications of 1200 W DC power modules.

Table 5-117 Technical specifications

Item	PDC-1K2WA-B	PDC-1K2WA-F
Dimensions (W x D x H)	66.0 mm x 350.0 mm x 39.6 mm (2.6 in. x 13.8 in. x 1.6 in.)	
Weight	1.5 kg (3.31 lb)	
Rated input voltage	-48 V DC to -60 V DC	
Maximum input voltage	-38.4 V DC to -72 V DC	
Rated input current	38 A	
Rated output current	100 A	
Rated output voltage	12 V	
Rated output power	1200 W	
Part Number	02311VRP	02311VRN

5.27 1200 W DC Power Module (PDC1K2S12-D)

Version Mapping

1200 W DC power modules include PDC1K2S12-DB (B: back-to-front airflow, air exhaust on power module panel) and PDC1K2S12-DF (F: front-to-back airflow, air intake on power module panel).

Table 5-118 describes the mapping between switch models and 1200 W DC power modules.

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Table 5-118 Version mapping

Switch Model	PDC1K2S12-DB	PDC1K2S12-DF
CE9860-4C-EI	Supported in V200R021C00 and later versions	Not supported
CE8868-4C-EI	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
CE8861-4C-EI	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
CE8850-64CQ-EI	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800, and V200R019SPH010 and later patches in V200R019C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions

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Switch Model	PDC1K2S12-DB	PDC1K2S12-DF
CE6856-48T6 Q-HI	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions	• Supported by V200R005SPH027 and later patches in V200R005C10SPC800. You are advised to load the latest patch corresponding to the target version • Supported in V200R020C10SPC600 and later versions
Other models	Not supported	Not supported

Appearance

Figure 5-85 shows the appearance of a PDC1K2S12-DB power module, and Figure 5-86 shows the appearance of a PDC1K2S12-DF power module.

Figure 5-85 PDC1K2S12-DB power module



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Figure 5-86 PDC1K2S12-DF power module



Function

Table 5-119 describes the functions of PDC1K2S12-D.

Table 5-119 Functions of a 1200 W DC power module

Function		Description
Input protection	Input undervoltage protection	In either of the two protection states, the power module stops supplying power. When the input voltage restores to the normal range, the power module automatically resumes power supply.
	Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current restores to the normal range.

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Function		Description
Output protection	Output overvoltage protection	In this protection state, the power module stops supplying power. When the system recovers from output overvoltage, the power module automatically resumes power supply. The power module is deadlocked when output overvoltage occurs for at least three times within 5 minutes. To unlock the power module, perform one of the following: ● Enable the MPU to deliver the 0x03 command to the power module through PMBus to remove the overvoltage. ● Enable the MPU to deliver the 0x01 command specified with the 0x00 parameter to the power module through PMBus to restart the power module. ● Disconnect power input to trigger fast power failure detection. Remain the power input disconnected for 200 ms.
	Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within the normal range, the power module automatically resumes power supply.
	Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the output short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection		When the temperature of a power module exceeds a specified upper threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation		● PDC1K2S12-DB: back-to-front airflow ● PDC1K2S12-DF: front-to-back airflow
Hot swap		Supported

NOTE

When a power module enters overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

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Panel

Figure 5-87 and **Figure 5-88** show the panels of a 1200 W DC power module.

Figure 5-87 Panel of a PDC1K2S12-DB DC power module

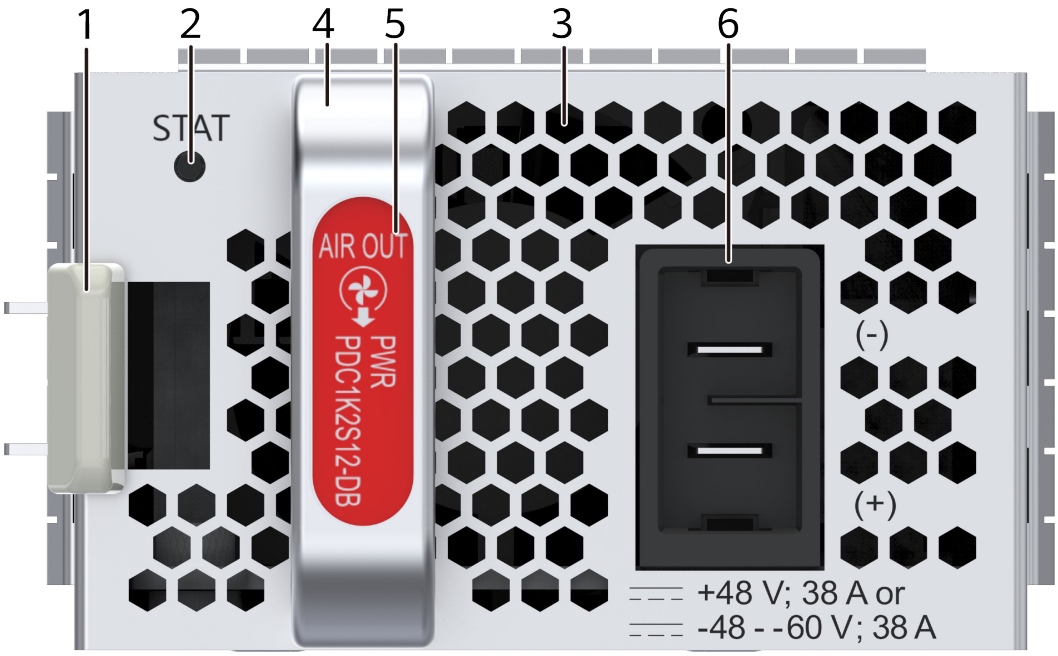
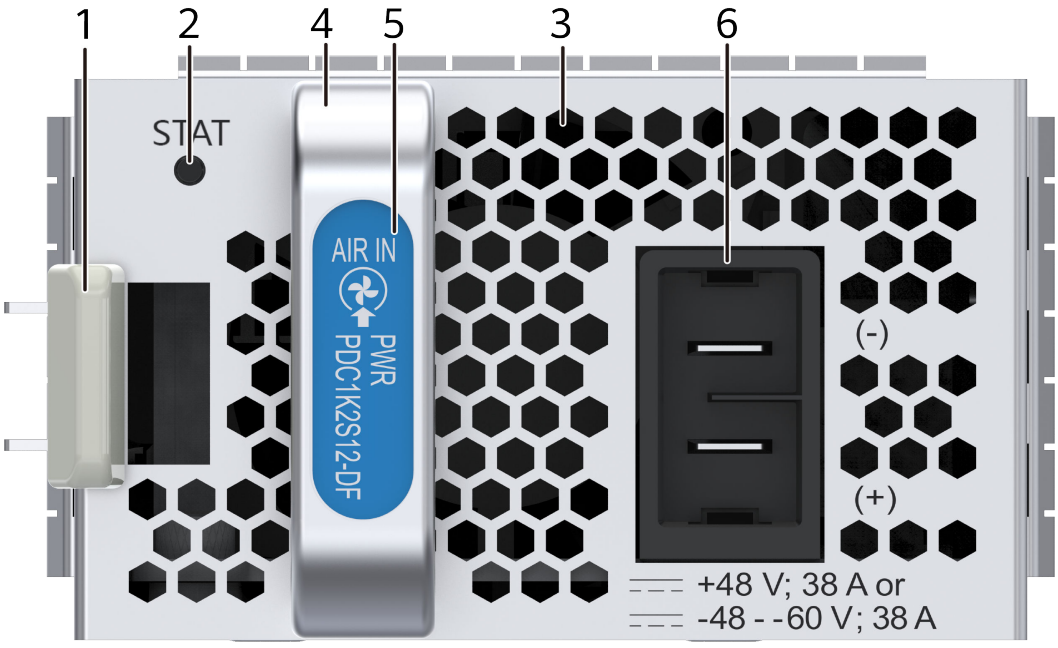


Figure 5-88 Panel of a PDC1K2S12-DF DC power module



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1. Lock	2. Indicator	3. Fan air vent	4. Handle **NOTE** Each 1200 W DC power module is delivered with a velcro strap on the handle. This velcro strap is used to bundle the power cable to the handle.
5. Airflow flag • : back-to-front airflow • : front-to-back airflow	6. DC power socket	-	-

Table 5-120 describes the indicator on a 1200 W DC power module.

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Table 5-120 Indicator description

Indicator	Color	Status	Description
STATUS: power indicator	Green	Steady on	The power module is working normally.
		Blinking at 4 Hz	Online loading
		Blinking at 1 Hz	The power module is powered on but not inserted into the system.
	Red	Steady on	Fan faults, power overtemperature protection, power input overcurrent protection, power input short-circuit protection, power output overvoltage protection, and power input undervoltage protection
	–	Off	There is no power input, the auxiliary power source does not work, and the device starts to supply power to the power source.

Specifications

Table 5-121 lists technical specifications of 1200 W DC power modules.

Table 5-121 Technical specifications

Item	PDC1K2S12-DB	PDC1K2S12-DF
Dimensions without packaging (H x W x D)	39.6 mm x 66.0 mm x 350 mm (1.6 in. x 2.6 in. x 13.8 in.)	
Weight without packaging	1.17 kg (2.58 lb)	
Rated input voltage	–48 V DC to –60 V DC	
Maximum Input voltage	–38.4 V DC to –72 V DC	
Maximum input current	38 A	
Rated output voltage	12 V	
Rated output current	100 A	
Rated output power	1200 W	
Hot swapping	Supported	
Part number	02313EAR	02313EAQ

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5.28 PDC1K2S12-PB (1200W DC Power Module (Front to Back ,Power panel side intake))

Overview

Table 5-122 Basic information about the PDC1K2S12-PB

Item	Details
Description	1200W DC Power Module (Front to Back ,Power panel side intake)
Part Number	02270206
Model	PDC1K2S12-PB
Remarks	When a power module enters overtemperature protection state, take measures to lower the ambient temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

Appearance

Figure 5-89 Appearance of the PDC1K2S12-PB



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Version Mapping

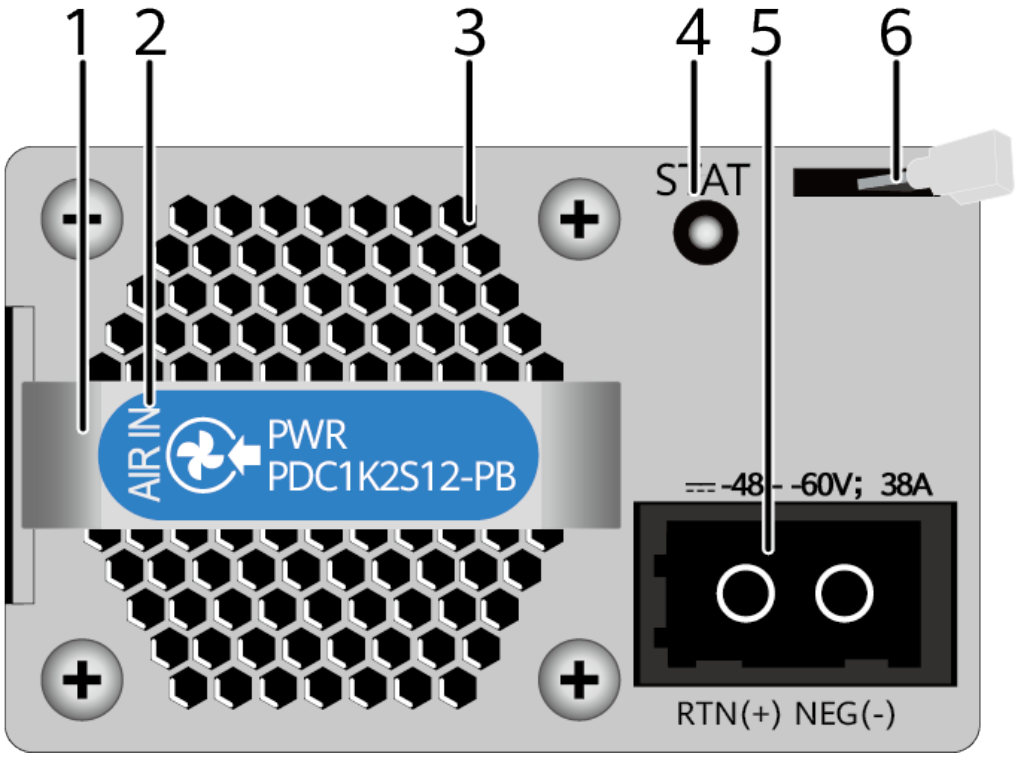
Table 5-123 Mappings between PDC1K2S12-PB and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-004)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSK)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSJ)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSH)	V200R022C00	-

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Panel

Figure 5-90 Panel of the PDC1K2S12-PB



1. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to strap the power cable to the handle.	2. Airflow flag • AIR OUT: back-to-front airflow • AIR IN: front-to-back airflow	3. Air vent	4. Indicator
5. Power socket	6. Lock	-	-

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Table 5-124 Indicators on the PDC1K2S12-PB

Silkscreen	Name	Color	Status	Description
STAT	Running status indicator	Green	Steady off	The power input is abnormal (for example, no input, overvoltage, or undervoltage), or the power is overtemperature.
		Green	Steady on	The power module is working properly.
		Green	Blinking (4 Hz)	Online loading.

Table 5-125 Ports on the PDC1K2S12-PB

Port	Description
NEG(-)	–48V/–60V terminal block
RTN(+)	BGND terminal block

Functions and Features

Table 5-126 Functions and features of the PDC1K2S12-PB

Functions and Features	Description
Input overvoltage protection and undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage becomes normal, the power module automatically resumes power supply.
Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current becomes normal.

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Functions and Features	Description
Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	back-to-front airflow

NOTE

When a power module enters the overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when its temperature returns to within the normal range.

Technical Specifications

Table 5-127 Technical specifications of the PDC1K2S12-PB

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	39.6 mm x 66.0 mm x 215 mm (1.56 in. x 2.60 in. x 8.46 in.)
Weight without packaging [kg (lb)]	0.87 kg (1.92 lb)
Weight with packaging [kg (lb)]	1.79 kg (3.95 lb)
Number of inputs	1
Number of outputs	1

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Item	Specification
Rated input voltage [V]	-48 V DC to -60 V DC +48 V DC
Maximum Input voltage [V]	-38.4 V DC to -72 V DC +38.4 V DC to +72 V DC
Rated input current [A]	38A
Rated output voltage [V]	12 V
Rated output current [A]	100A
Rated output power [W]	1200 W
Hot swapping	Supported

5.29 PDC1K2S12-CE (1200W DC Power Module (Back to Front,Power panel side exhaust))

Overview

Table 5-128 Basic information about the PDC1K2S12-CE

Item	Details
Description	1200W DC Power Module (Back to Front,Power panel side exhaust)
Part Number	02270205
Model	PDC1K2S12-CE
Remarks	When a power module enters overtemperature protection state, take measures to lower the ambient temperature. The power module can automatically resume power supply when the temperature falls within the normal range.

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Appearance

Figure 5-91 Appearance of the PDC1K2S12-CE



Version Mapping

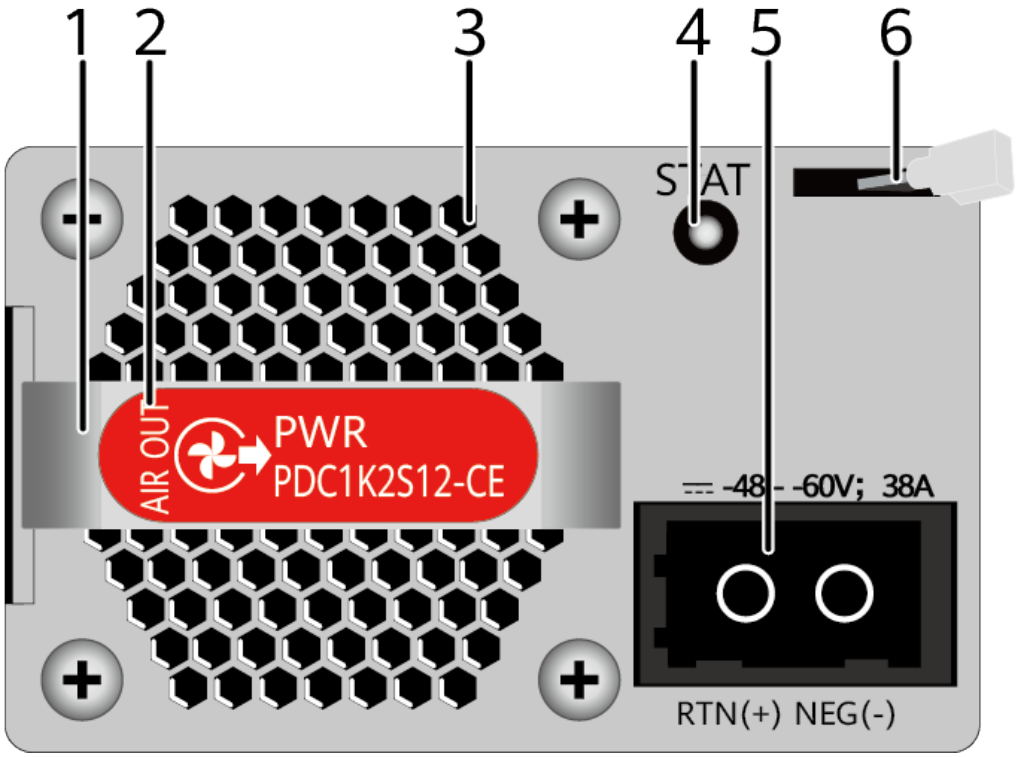
Table 5-129 Mappings between PDC1K2S12-CE and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-004)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSK)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSJ)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSH)	V200R022C00	-

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Panel

Figure 5-92 Panel of the PDC1K2S12-CE



1. Handle **NOTE** Each power module is delivered with a velcro strap on the handle. This velcro strap is used to strap the power cable to the handle.	2. Airflow flag • AIR OUT: back-to-front airflow • AIR IN: front-to-back airflow	3. Air vent	4. Indicator
5. Power socket	6. Lock	-	-

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Table 5-130 Indicators on the PDC1K2S12-CE

Silkscreen	Name	Color	Status	Description
STAT	Running status indicator	Green	Steady off	The power input is abnormal (for example, no input, overvoltage, or undervoltage), or the power is overtemperature.
		Green	Steady on	The power module is working properly.
		Green	Blinking (4 Hz)	Online loading.

Table 5-131 Ports on the PDC1K2S12-CE

Port	Description
NEG(-)	–48V/–60V terminal block
RTN(+)	BGND terminal block

Functions and Features

Table 5-132 Functions and features of the PDC1K2S12-CE

Functions and Features	Description
Input overvoltage protection and undervoltage protection	In this protection state, the power module stops supplying power. When the input voltage becomes normal, the power module automatically resumes power supply.
Input overcurrent protection	In this protection state, the power module stops supplying power and cannot automatically resume power supply when the input current becomes normal.

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Functions and Features	Description
Output overvoltage protection	In this protection state, the power module stops supplying power intermittently. When the system recovers from output overvoltage, the power module automatically resumes power supply.
Output overcurrent protection	In this protection state, the power module supplies power intermittently. When the output current is limited within a range, the power module automatically resumes power supply.
Output short-circuit protection	In this protection state, the power module supplies power intermittently. When the short circuit is removed, the power module automatically resumes power supply.
Overtemperature protection	When the temperature of the power module exceeds a specified threshold, the power module stops supplying power. When the temperature falls into the normal range, the power module automatically resumes power supply.
Heat dissipation	back-to-front airflow

NOTE

When a power module enters the overtemperature protection state, take measures to lower its temperature. The power module can automatically resume power supply when its temperature returns to within the normal range.

Technical Specifications

Table 5-133 Technical specifications of the PDC1K2S12-CE

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	39.6 mm x 66.0 mm x 215 mm (1.56 in. x 2.60 in. x 8.46 in.)
Weight without packaging [kg (lb)]	0.87 kg (1.92 lb)
Weight with packaging [kg (lb)]	1.79 kg (3.95 lb)
Number of inputs	1
Number of outputs	1

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Item	Specification
Rated input voltage [V]	-48 V DC to -60 V DC +48 V DC
Maximum Input voltage [V]	-38.4 V DC to -72 V DC +38.4 V DC to +72 V DC
Rated input current [A]	38 A
Rated output voltage [V]	12 V
Rated output current [A]	100A
Rated output power [W]	1200 W
Hot swapping	Supported

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6 Fan Module

NOTICE

- A switch must use fan modules with the same airflow direction.
- A switch must use fan modules of the same series.
- Fan modules support 3+1 backup. If a fan module needs to be replaced, complete the replacement within 3 minutes.

6.1 FAN-023A Series Fan Modules
6.2 FAN-031A Series Fan Modules
6.3 FAN-180C Series Fan Modules
6.4 FAN-023B-B (FAN-023B-B Fan Module)
6.5 FAN-023B-F (FAN-023B-F Fan Module)
6.6 FAN-031B-B (FAN-031B-B Fan Module)
6.7 FAN-031B-F (FAN-031B-F Fan Module)
6.8 FAN-40HA Series Fan Modules
6.9 FAN-060A Series Fan Modules
6.10 FAN-180A Series Fan Modules
6.11 FAN-180E-B (FAN-180E-B Fan Module)
6.12 FAN-180E-F (FAN-180E-F Fan Module)

6.1 FAN-023A Series Fan Modules

Version Mapping

The FAN-023A series fan modules are classified into two types depending on the airflow designs: FAN-023A-B (B: back-to-front airflow, air exhaust on fan module panel) and FAN-023A-F (F: front-to-back airflow, air intake on fan module panel).

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Table 6-1 describes the mapping between switch models and FAN-023A series fan modules.

Table 6-1 Version mapping

Switch Model	FAN-023A-B	FAN-023A-F
CE5855E-48T 4S2Q	Supported in V200R020C10 and later versions	Supported in V200R020C10 and later versions
CE5855F-48T 4S2Q	Supported in V200R021C00 and later versions	Supported in V200R021C00 and later versions
Other models	Not supported	Not supported

Appearance

Figure 6-1 shows the appearance of the FAN-023A-B fan module, and Figure 6-2 shows the appearance of the FAN-023A-F fan module.

NOTE

Each FAN-023A fan module contains only one fan and is hot swappable.

Figure 6-1 FAN-023A-B fan module



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Figure 6-2 FAN-023A-F fan module



Function

A FAN-023A-B fan module has one only fan and is hot swappable, and a fan FAN-023A-B and FAN-023A-F fan modules use different airflow designs but have the same functions. **Table 6-2** describes the functions of them.

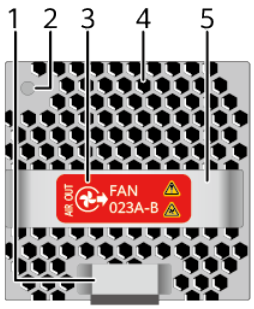
Table 6-2 Functions of a FAN-023A fan module

Function	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	• FAN-023A-B: back-to-front airflow • FAN-023A-F: front-to-back airflow

Panel

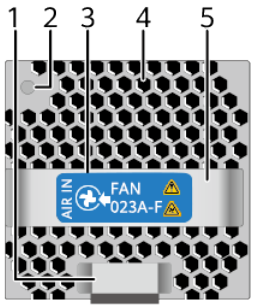
Figure 6-3 and **Figure 6-4** show the panels of FAN-031A series fan modules.

Figure 6-3 FAN-023A-B panel



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Figure 6-4 FAN-023A-F panel



1. Lock	2. Indicator	3: Airflow flag	4. Fan air vent	5. Handle
		•  : back-to-front airflow •  : front-to-back airflow		

Table 6-3 describes the indicator on a FAN-023A fan module.

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Table 6-3 Indicator description

Indicator	Color	Description
STAT: running status indicator	-	Off: The fan module is not running.
	Green	• Slow blinking: The fan module is working properly and communicating normally with the system. • Fast blinking: The fan module is working properly but has not established communication with the system.
	Red	• Steady on: The fan module has a hardware fault and must be replaced. • Blinking: An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include short circuits, fan blades blocked, and fault of the fan module.

Specifications

Table 6-4 lists technical specifications of FAN-023A series fan modules.

Table 6-4 Technical specifications

Item	FAN-023A-B	FAN-023A-F
Dimensions (H x W x D)	40.0 mm x 40.0 mm x 100.3 mm (1.57 in. x 1.57 in. x 3.95 in.)	
Number of fans	1	
Weight	0.1 kg (0.22 lb)	
Maximum power consumption	7.2 W	
Maximum fan speed	18500±10% revolutions per minute (RPM)	
Maximum wind rate	23 cubic feet per minute (CFM)	
Part number	02312DKW	02313EYA

6.2 FAN-031A Series Fan Modules

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Version Mapping

The FAN-031A series fan modules are classified into two types depending on the airflow designs: FAN-031A-B (B: back-to-front airflow, air exhaust on fan module panel) and FAN-031A-F (F: front-to-back airflow, air intake on fan module panel).

Table 6-5 describes the mapping between switch models and FAN-031A series fan modules.

Table 6-5 Version mapping

Switch Model	FAN-031A-B	FAN-031A-F
CE6857-48S6CQ-EI	Supported in V200R005C10 and later versions	Supported in V200R005C10 and later versions
CE6881-48S6CQ CE6863-48S6CQ CE6820-48S6CQ	Supported in V200R005C20 and later versions	Supported in V200R005C20 and later versions
CE6881-48S6CQ-K CE6863-48S6CQ-K CE6881E-48S6CQ	Supported in V200R019C10 and later versions	Supported in V200R019C10 and later versions
CE6881-48T6CQ CE6881-48T6CQ-K CE5881-48T6CQ	Supported in V200R020C00 and later versions	Supported in V200R020C00 and later versions
CE6857E-48S6CQ CE6857E-48T6CQ	Supported in V200R020C10 and later versions	Supported in V200R020C10 and later versions
CE6857F-48S6CQ CE6857F-48T6CQ CE6863E-48S6CQ CE6865E-48S8CQ	Supported in V200R021C00 and later versions	Supported in V200R021C00 and later versions

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Switch Model	FAN-031A-B	FAN-031A-F
CE8850E-32CQ-EI	Supported in V200R021C10 and later versions	Supported in V200R021C10 and later versions
CE6870-48S6CQ-EI-A	Supported in V200R022C00 and later versions	Supported in V200R022C00 and later versions
Other models	Not supported	Not supported

Appearance

Figure 6-5 shows the appearance of the FAN-031A-B fan module, and Figure 6-6 shows the appearance of the FAN-031A-F fan module.

NOTE

Each FAN-031A fan module contains only one fan.

Figure 6-5 FAN-031A-B fan module



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Figure 6-6 FAN-031A-F fan module



Function

A FAN-031A fan module consists of a fan tray, and a fan. FAN-031A-B and FAN-031A-F fan modules use different airflow designs but have the same functions. **Table 6-6** describes the functions of them.

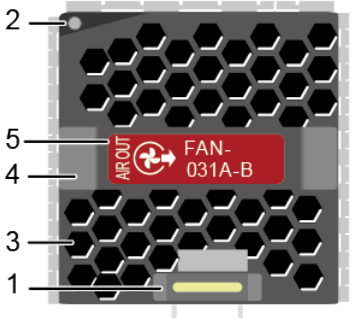
Table 6-6 Functions of a FAN-031A fan module

Function	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	• FAN-031A-B: back-to-front airflow • FAN-031A-F: front-to-back airflow

Panel

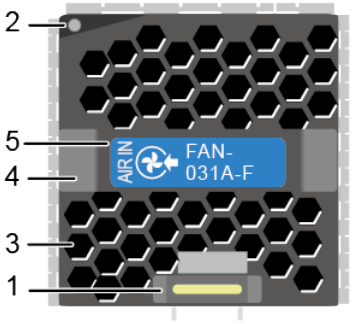
Figure 6-7 and **Figure 6-8** show the panels of FAN-031A series fan modules.

Figure 6-7 FAN-031A-B panel



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Figure 6-8 FAN-031A-F panel



1. Lock	2. Indicator	3. Fan air vent
4. Handle	5. Airflow flag • : back-to-front airflow • : front-to-back airflow	-

Table 6-7 describes the indicator on a FAN-031A fan module.

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Table 6-7 Indicator description

Indicator	Color	Description
STAT: running status indicator	-	Off: The fan module is not running.
	Green	• Slow blinking: The fan module is working properly and communicating normally with the system. • Fast blinking: The fan module is working properly but has not established communication with the system.
	Red	• Steady on: The fan module has a hardware fault and must be replaced. • Blinking: An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include short circuits, fan blades blocked, and fault of the fan module.

Specifications

Table 6-8 lists technical specifications of FAN-031A series fan modules.

Table 6-8 Technical specifications

Item	FAN-031A-B	FAN-031A-F
Dimensions (H x W x D)	40.0 mm x 40.0 mm x 100.3 mm (1.57 in. x 1.57 in. x 3.95 in.)	
Number of fans	1	
Weight	0.1 kg (0.22 lb)	
Maximum power consumption	21.6 W	
Maximum fan speed	26950±10% revolutions per minute (RPM)	
Maximum wind rate	31 cubic feet per minute (CFM)	
Part number	02352CAB	02352CAA

6.3 FAN-180C Series Fan Modules

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Version Mapping

The FAN-180C series fan modules are classified into two types depending on the airflow designs: FAN-180C-B (B: back-to-front airflow, air exhaust on fan module panel) and FAN-180A-F (F: front-to-back airflow, air intake on fan module panel).

Table 6-9 describes the mapping between switch models and FAN-180C series fan modules.

Table 6-9 Version mapping

Switch Model	FAN-180C-B
CE9860-4C-EI	Supported in V200R020C00 and later versions
Other models	Not supported

Appearance

Figure 6-9 shows the appearance of a FAN-180C-B fan module.

NOTE

The FAN-180C adopts a single-fan design, which includes one counter-rotating fan with two fan blades.

Figure 6-9 FAN-180C-B fan module



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Function

A FAN-180C fan module consists of a fan tray, a fan, and a fan monitoring unit. Table 6-10 describes the functions of FAN-180C-B.

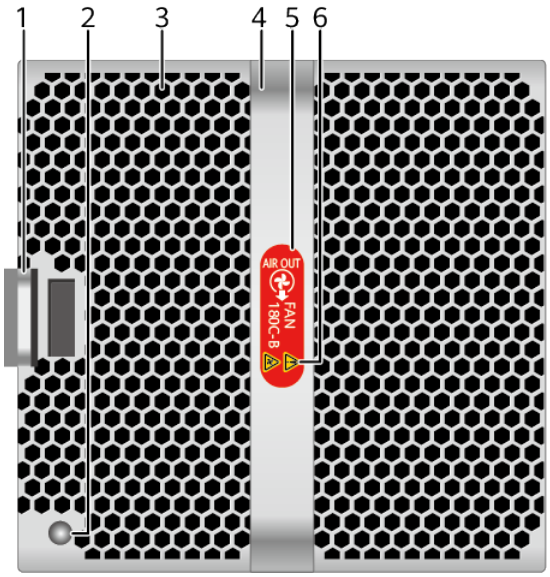
Table 6-10 Functions of a FAN-180C fan module

Function	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	FAN-180C-B: back-to-front airflow

Panel

Figure 6-10 shows the panels of FAN-180C series fan module.

Figure 6-10 FAN-180C-B panel



1. Lock	2. Indicator	3. Fan air vent

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4. Handle	5. Airflow flag  : back-to-front airflow	6. Warning label **CAUTION** When you remove a running fan module from a switch, its fans will continue running. Do not touch the running fans.

Table 6-11 describes the indicator on a FAN-180C fan module.

Table 6-11 Indicator description

Indicator	Color	Description
STAT: running status indicator	-	Off: The fan module is not running.
	Green	Blinking: The fan module is working properly.
	Red	• Steady on: The fan module has a hardware fault and must be replaced. • Blinking: An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include short circuits, fan blades blocked, and fault of the fan module.

Specifications

Table 6-12 lists technical specifications of FAN-180C series fan modules.

Table 6-12 Technical specifications

Item	FAN-180C-B
Dimensions (W x D x H)	85.0 mm x 169.5 mm x 82.1 mm (3.35 in. x 6.67 in. x 3.23 in.)
Fans	One counter-rotating fan, which has a pair of blades
Weight	0.917 kg (2.02 lb)
Maximum power consumption	86 W
Maximum fan speed	12000 revolutions per minute (RPM)
Maximum wind rate	180 cubic feet per minute (CFM)

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Item	FAN-180C-B
Part number	02352HPS

6.4 FAN-023B-B (FAN-023B-B Fan Module)

Overview

Table 6-13 Basic information about the FAN-023B-B

Item	Details
Description	FAN-023B-B Fan Module
Part Number	03033XPY
Model	FAN-023B-B

Appearance

Figure 6-11 Appearance of the FAN-023B-B



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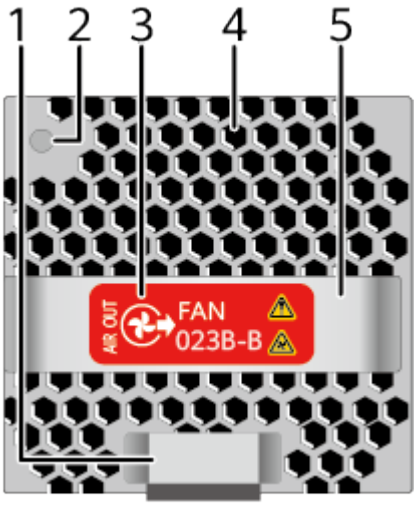
Version Mapping

Table 6-14 Mappings between FAN-023B-B and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 5800	CE5855F-48T4S2Q (02354HPQ)	V200R021C00	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPQ-001)	V200R021C10SPC600	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPR-001)	V200R021C10SPC600	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPS)	V200R021C00	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPR)	V200R021C00	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPS-001)	V200R021C10SPC600	-

Panel

Figure 6-12 Panel of the FAN-023B-B



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1. Lock	2. Indicator	3. Airflow flag • : back-to-front airflow • : front-to-back airflow
4. Fan air vent	5. Handle	-

Table 6-15 Indicators on the FAN-023B-B

Silkscreen	Name	Color	Status	Description
-	Running status indicator	-	Off	The fan module is not running.
		Green	Slow Blinking	The fan module is working properly and communicating normally with the system.
		Green	Fast Blinking	The fan module is working properly but has not established communication with the system.
		Red	Steady on	The fan module has a hardware fault and must be replaced.

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Silkscreen	Name	Color	Status	Description
		Red	Slow Blinking	An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include errors of dual in-line package (DIP) switches, short circuits, fan blades blocked, and fault of the fan module.

Functions and Features

Table 6-16 Functions and features of the FAN-023B-B

Functions and Features	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	Back-to-front airflow
Electronic tagging	Supported

Technical Specifications

Table 6-17 Technical specifications of the FAN-023B-B

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	40 mm x 40 mm x 100.3 mm (1.57 in. x 1.57 in. x 3.95 in.)
Weight without packaging [kg (lb)]	0.1 kg (lb)
Number of fans	1

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Item	Specification
Maximum power consumption [W]	8.64 W
Operating voltage range [V]	7 V to 15 V
Maximum fan speed [RPM]	18500±10%
Maximum airflow [CFM]	23 CFM
Airflow direction	FAN panel side exhaust

6.5 FAN-023B-F (FAN-023B-F Fan Module)

Overview

Table 6-18 Basic information about the FAN-023B-F

Item	Details
Description	FAN-023B-F Fan Module
Part Number	03033XQD
Model	FAN-023B-F

Appearance

Figure 6-13 Appearance of the FAN-023B-F



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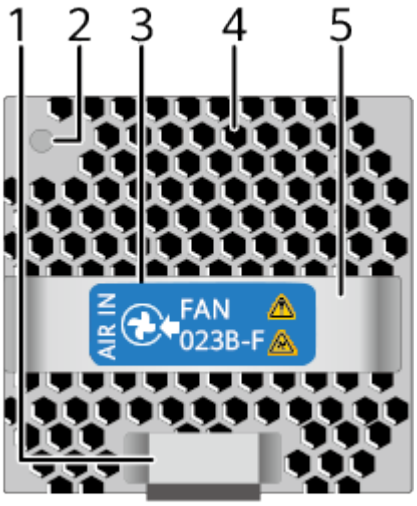
Version Mapping

Table 6-19 Mappings between FAN-023B-F and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 5800	CE5855F-48T4S2Q (02354HPQ)	V200R021C00	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPQ-001)	V200R021C10SPC600	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPR-001)	V200R021C10SPC600	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPS)	V200R021C00	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPR)	V200R021C00	-
CloudEngine 5800	CE5855F-48T4S2Q (02354HPS-001)	V200R021C10SPC600	-

Panel

Figure 6-14 Panel of the FAN-023B-F



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1. Lock	2. Indicator	3. Airflow flag • : back-to-front airflow • : front-to-back airflow
4. Fan air vent	5. Handle	-

Table 6-20 Indicators on the FAN-023B-F

Silkscreen	Name	Color	Status	Description
-	Running status indicator	-	Off	The fan module is not running.
		Green	Slow Blinking	The fan module is working properly and communicating normally with the system.
		Green	Fast Blinking	The fan module is working properly but has not established communication with the system.
		Red	Steady on	The fan module has a hardware fault and must be replaced.

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Silkscreen	Name	Color	Status	Description
		Red	Slow Blinking	An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include errors of dual in-line package (DIP) switches, short circuits, fan blades blocked, and fault of the fan module.

Functions and Features

Table 6-21 Functions and features of the FAN-023B-F

Functions and Features	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	Front-to-back airflow
Electronic tagging	Supported

Technical Specifications

Table 6-22 Technical specifications of the FAN-023B-F

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	40 mm x 40 mm x 100.3 mm (1.57 in. x 1.57 in. x 3.95 in.)
Weight without packaging [kg (lb)]	0.1 kg (lb)
Number of fans	1

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Item	Specification
Maximum power consumption [W]	8.64 W
Operating voltage range [V]	7 V to 15 V
Maximum fan speed [RPM]	18500±10%
Maximum airflow [CFM]	23 CFM
Airflow direction	FAN panel side intake

6.6 FAN-031B-B (FAN-031B-B Fan Module)

Overview

Table 6-23 Basic information about the FAN-031B-B

Item	Details
Description	FAN-031B-B Fan Module
Part Number	03033XQF
Model	FAN-031B-B

Appearance

Figure 6-15 Appearance of the FAN-031B-B



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Version Mapping

Table 6-24 Mappings between FAN-031B-B and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850E-32CQ-EI (02354LHV)	V200R021C10	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LHV-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LJA-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LHX-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LJA)	V200R021C10	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LHX)	V200R021C10	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPT)	V200R021C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPX)	V200R021C00	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPW)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPT-003)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCT-002)	V200R021C10SPC600	-
CloudEngine 6800	CE6857E-48S6CQ (02353VWU-001)	V200R022C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPX-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPW-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCT-004)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPX-002)	V200R021C10SPC600	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPT-006)	V200R021C10SPC600	-

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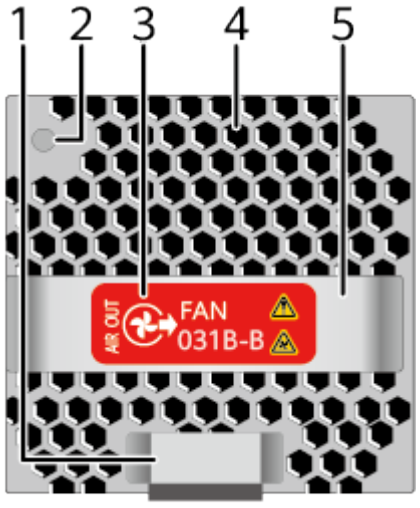
Product	Product Model	First Supported Version	Limitations
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSK)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSJ)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSH)	V200R022C00	-
CloudEngine 6800	CE6857E-48S6CQ (02353VWX-001)	V200R022C00	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCW-004)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCX-004)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCX-002)	V200R021C10SPC600	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPV)	V200R021C00	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPV-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPY-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPU-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6857E-48S6CQ (02353VWW-001)	V200R022C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HQA-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPV-003)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCW-002)	V200R021C10SPC600	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPN)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPN-003)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPU)	V200R021C00	-

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Product	Product Model	First Supported Version	Limitations
CloudEngine 6800	CE6857F-48T6CQ (02354HPV)	V200R021C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPY)	V200R021C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HQA)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPV-001)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPN-001)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPT-001)	V200R021C00	-

Panel

Figure 6-16 Panel of the FAN-031B-B



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1. Lock	2. Indicator	3. Airflow flag • : back-to-front airflow • : front-to-back airflow
4. Fan air vent	5. Handle	-

Table 6-25 Indicators on the FAN-031B-B

Silkscreen	Name	Color	Status	Description
-	Running status indicator	-	Off	The fan module is not running.
		Green	Slow Blinking	The fan module is working properly and communicating normally with the system.
		Green	Fast Blinking	The fan module is working properly but has not established communication with the system.
		Red	Steady on	The fan module has a hardware fault and must be replaced.

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Silkscreen	Name	Color	Status	Description
		Red	Fast Blinking	An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include errors of dual in-line package (DIP) switches, short circuits, fan blades blocked, and fault of the fan module.

Functions and Features

Table 6-26 Functions and features of the FAN-031B-B

Functions and Features	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	back-to-front airflow
Electronic tagging	Supported

Technical Specifications

Table 6-27 Technical specifications of the FAN-031B-B

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	40.0mm x 100.3mm x 40.0mm (1.57 in. x 3.95 in. x 1.57 in.)
Weight without packaging [kg (lb)]	0.1 kg (0.22 lb)

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Item	Specification
Number of fans	One counter-rotating fan, which has a pair of blades
Maximum power consumption [W]	21.6 W
Maximum fan speed [RPM]	24500±10%
Maximum airflow [CFM]	31 CFM
Airflow direction	FAN panel side exhaust

6.7 FAN-031B-F (FAN-031B-F Fan Module)

Overview

Table 6-28 Basic information about the FAN-031B-F

Item	Details
Description	FAN-031B-F Fan Module
Part Number	03033XQE
Model	FAN-031B-F

Appearance

Figure 6-17 Appearance of the FAN-031B-F



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Version Mapping

Table 6-29 Mappings between FAN-031B-F and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850E-32CQ-EI (02354LHV)	V200R021C10	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LHV-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LJA-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LHX-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LJA)	V200R021C10	-
CloudEngine 8800	CE8850E-32CQ-EI (02354LHX)	V200R021C10	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPT)	V200R021C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPX)	V200R021C00	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPW)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPT-003)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCT-002)	V200R021C10SPC600	-
CloudEngine 6800	CE6857E-48S6CQ (02353VWU-001)	V200R022C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPX-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPW-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCT-004)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPX-002)	V200R021C10SPC600	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPT-006)	V200R021C10SPC600	-

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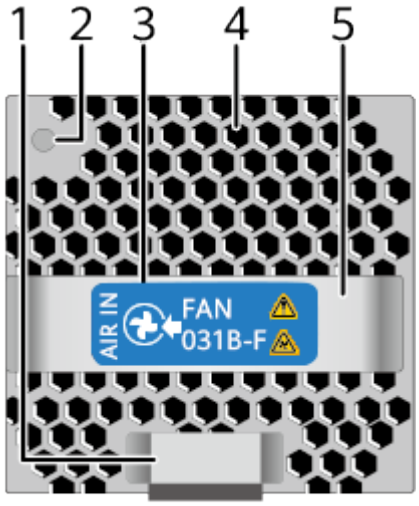
Product	Product Model	First Supported Version	Limitations
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSK)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSJ)	V200R022C00	-
CloudEngine 6800	CE6870-48S6CQ-EI-A (02354VSH)	V200R022C00	-
CloudEngine 6800	CE6857E-48S6CQ (02353VWX-001)	V200R022C00	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCW-004)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCX-004)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCX-002)	V200R021C10SPC600	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPV)	V200R021C00	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPV-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPY-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPU-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6857E-48S6CQ (02353VWW-001)	V200R022C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HQA-001)	V200R021C10SPC600	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPV-003)	V200R021C10SPC600	-
CloudEngine 6800	CE6863E-48S6CQ (02354GCW-002)	V200R021C10SPC600	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPN)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPN-003)	V200R021C10SPC600	-
CloudEngine 6800	CE6857F-48T6CQ (02354HPU)	V200R021C00	-

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Product	Product Model	First Supported Version	Limitations
CloudEngine 6800	CE6857F-48T6CQ (02354HPV)	V200R021C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HPY)	V200R021C00	-
CloudEngine 6800	CE6857F-48S6CQ (02354HQA)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPV-001)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPN-001)	V200R021C00	-
CloudEngine 6800	CE6865E-48S8CQ (02354CPT-001)	V200R021C00	-

Panel

Figure 6-18 Panel of the FAN-031B-F



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1. Lock	2. Indicator	3. Airflow flag • : back-to-front airflow • : front-to-back airflow
4. Fan air vent	5. Handle	-

Table 6-30 Indicators on the FAN-031B-F

Silkscreen	Name	Color	Status	Description
-	Running status indicator	-	Off	The fan module is not running.
		Green	Slow Blinking	The fan module is working properly and communicating normally with the system.
		Green	Fast Blinking	The fan module is working properly but has not established communication with the system.
		Red	Steady on	The fan module has a hardware fault and must be replaced.

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Silkscreen	Name	Color	Status	Description
		Red	Fast Blinking	An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include errors of dual in-line package (DIP) switches, short circuits, fan blades blocked, and fault of the fan module.

Functions and Features

Table 6-31 Functions and features of the FAN-031B-F

Functions and Features	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	front-to-back airflow
Electronic tagging	Supported

Technical Specifications

Table 6-32 Technical specifications of the FAN-031B-F

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	40.1 mm x 40.0 mm x 100.3 mm (1.58 in. x 1.57 in. x 3.95 in.)
Weight without packaging [kg (lb)]	0.1 kg (0.22 lb)

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Item	Specification
Number of fans	One counter-rotating fan, which has a pair of blades
Maximum power consumption [W]	21.6 W
Maximum fan speed [RPM]	24500±10%
Maximum airflow [CFM]	31 CFM
Airflow direction	FAN panel side intake

6.8 FAN-40HA Series Fan Modules

Version Mapping

The FAN-40HA series fan modules are classified into two types depending on the airflow designs: FAN-40HA-B (B: back-to-front airflow, air exhaust on fan module panel) and FAN-40HA-F (F: front-to-back airflow, air intake on fan module panel).

Table 6-33 lists the mapping between switch models and FAN-40HA series fan modules.

Table 6-33 Version mapping

Switch Model	FAN-40HA-B	FAN-40HA-F
CE6870-48S6CQ-EI	Supported in V200R001C00 version and later versions	Supported in V200R001C00 version and later versions
CE6870-48T6CQ-EI CE8850-32CQ-EI	Supported in V200R002C50 version and later versions	Supported in V200R002C50 version and later versions
CE6865-48S8CQ-EI	Supported in V200R005C00 version and later versions	Supported in V200R005C00 version and later versions
Other models	Not supported	Not supported

Appearance

Figure 6-19 shows the appearance of a FAN-40HA-B fan module, and Figure 6-20 shows the appearance of a FAN-40HA-F fan module.

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NOTE

A FAN-40HA fan module consists of two counter-rotating fans, and each fan has a pair of blades.

Figure 6-19 FAN-40HA-B



Figure 6-20 FAN-40HA-F



Function

A FAN-40HA fan module consists of a fan frame, two counter-rotating fans, and a fan control unit. FAN-40HA-B and FAN-40HA-F fan modules use different airflow designs but have the same functions. **Table 6-34** describes the functions of them.

Table 6-34 Functions of a FAN-40HA fan module

Function	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of fans based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	• FAN-40HA-B: back-to-front airflow • FAN-40HA-F: front-to-back airflow

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Panel

Figure 6-21 and Figure 6-22 show the panels of the FAN-40HA fan modules.

Figure 6-21 FAN-40HA-B panel

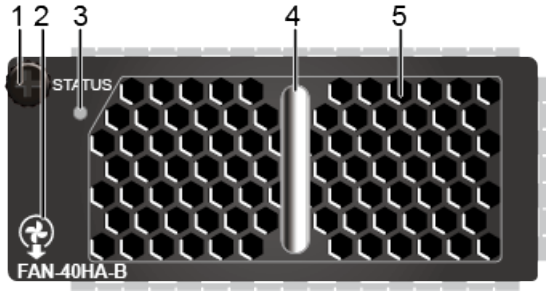
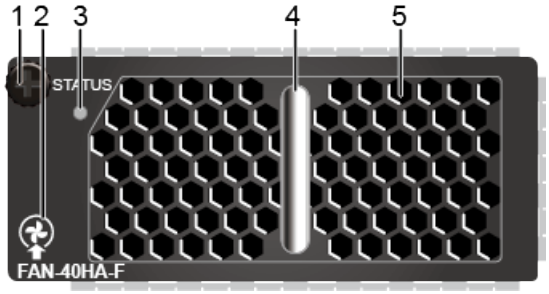


Figure 6-22 FAN-40HA-F panel



1. Captive screw	2. Airflow flag • : back-to-front airflow • : front-to-back airflow	3. Indicator
4. Handle	5. Fan air vent	-

Table 6-35 describes the indicator on the panels of the FAN-40HA fan modules.

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Table 6-35 Indicator description

Indicator	Color	Description
STATUS: fan indicator	-	Off: The fan module is not running.
	Green	• Slow blinking: The fan module is working properly and communicating normally with the system. • Fast blinking: The fan module is working properly but has not established communication with the system.
	Red	• Steady on: The fan module has a hardware fault and must be replaced. • Blinking: An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include errors of dual in-line package (DIP) switches, short circuits, fan blades blocked, and fault of the fan module.

Specifications

Table 6-36 lists technical specifications of the FAN-40HA fan modules.

Table 6-36 Technical specifications

Item	FAN-40HA-B	FAN-40HA-F
Dimensions (W x D x H)	94.5 mm x 183.1 mm x 39.8 mm (3.72 in. x 7.21 in. x 1.57 in.)	
Number of fans	Two counter-rotating fans, each of which has a pair of blades	
Weight	0.415 kg (0.91 lb)	
Maximum power consumption	40 W	
Maximum fan speed	19000±10% revolutions per minute (RPM)	
Maximum wind rate	64 cubic feet per minute (CFM)	
Part Number	02359097	02359096

6.9 FAN-060A Series Fan Modules

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Version Mapping

The FAN-060A series fan modules are classified into two types depending on the airflow designs: FAN-060A-B (B: back-to-front airflow, air exhaust on fan module panel) and FAN-060A-F (F: front-to-back airflow, air intake on fan module panel).

Table 6-37 describes the mapping between device models and FAN-060A series fan modules.

Table 6-37 Version mapping

Switch Model	FAN-060A-B	FAN-060A-F
CE6856-48T6Q-HI	Supported in V200R002C50 and later versions.	Supported in V200R002C50 and later versions.

Appearance

Figure 6-23 shows the appearance of a FAN-060A-B fan module, and Figure 6-24 shows the appearance of a FAN-060A-F fan module.

NOTE

Each FAN-060A fan module has two counter-rotating fans, and each fan has a pair of blades.

Figure 6-23 FAN-060A-B fan module



Figure 6-24 FAN-060A-F fan module



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Function

A FAN-060A fan module consists of a fan tray, two counter-rotating fans, and a fan monitoring unit. FAN-060A-B and FAN-060A-F fan modules use different airflow designs but have the same functions. **Table 6-38** describes the functions of them.

Table 6-38 Functions of a FAN-060A fan module

Function	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of fans based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	• FAN-060A-B: back-to-front airflow • FAN-060A-F: front-to-back airflow

Panel

Figure 6-25 and **Figure 6-26** show the panels of FAN-060A series fan modules.

Figure 6-25 FAN-060A-B panel

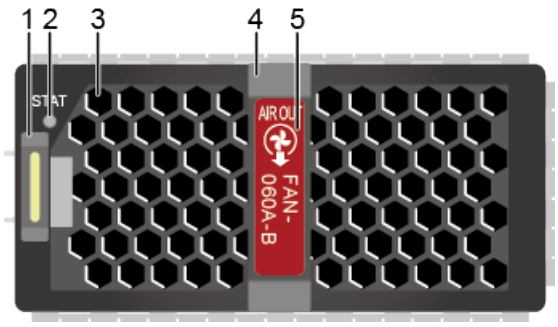
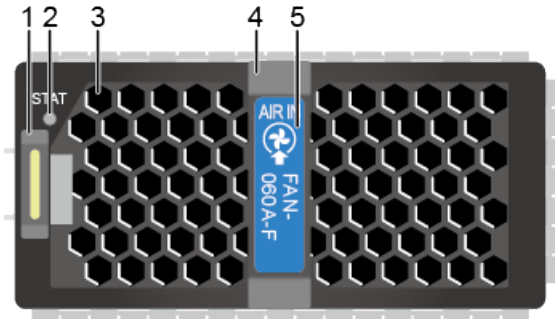


Figure 6-26 FAN-060A-F panel



1. Lock	2. Indicator	3. Fan air vent

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4. Handle	5. Airflow flag • : back-to-front airflow • : front-to-back airflow	-

Table 6-39 describes the indicator on a FAN-060A fan module.

Table 6-39 Indicator description

Indicator	Color	Description
STAT: running status indicator	-	Off: The fan module is not running.
	Green	• Slow blinking: The fan module is working properly and communicating normally with the system. • Fast blinking: The fan module is working properly but has not established communication with the system.
	Red	• Steady on: The fan module has a hardware fault and must be replaced. • Blinking: An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include short circuits, fan blades blocked, and fault of the fan module.

Specifications

Table 6-40 lists technical specifications of the FAN-060A series fan modules.

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Table 6-40 Technical specifications

Item	FAN-060A-B	FAN-060A-F
Dimensions (W x D x H)	86.0 mm x 198.3 mm x 40.0 mm (3.4 in. x 7.8 in. x 1.6 in.)	
Number of fans	Two counter-rotating fans, each of which has a pair of blades	
Weight	0.478 kg (1.05 lb)	
Maximum power consumption	40 W	
Maximum fan speed	19000±10% revolutions per minute (RPM)	
Maximum wind rate	64 cubic feet per minute (CFM)	
Part Number	02359310	02359308

6.10 FAN-180A Series Fan Modules

Version Mapping

The FAN-180A series fan modules are classified into two types depending on the airflow designs: FAN-180A-B (B: back-to-front airflow, air exhaust on fan module panel) and FAN-180A-F (F: front-to-back airflow, air intake on fan module panel).

Table 6-41 describes the mapping between switch models and FAN-180A series fan modules.

Table 6-41 Version mapping

Switch Model	FAN-180A-B	FAN-180A-F
CE8850-64CQ-EI	Supported in V200R005C00 and later versions	Supported in V200R005C00 and later versions
CE8861-4C-EI CE8868-4C-EI	Supported in V200R005C10 and later versions	Supported in V200R005C10 and later versions
Other models	Not supported	Not supported

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Appearance

Figure 6-27 shows the appearance of a FAN-180A-B fan module, and Figure 6-28 shows the appearance of a FAN-180A-F fan module.

NOTE

Each FAN-180A fan module has one counter-rotating fan, which has a pair of blades.

Figure 6-27 FAN-180A-B fan module



Figure 6-28 FAN-180A-F fan module



Function

A FAN-180A fan module consists of a fan tray, a fan, and a fan monitoring unit. FAN-180A-B and FAN-180A-F fan modules use different airflow designs but have the same functions. Table 6-42 describes the functions of them.

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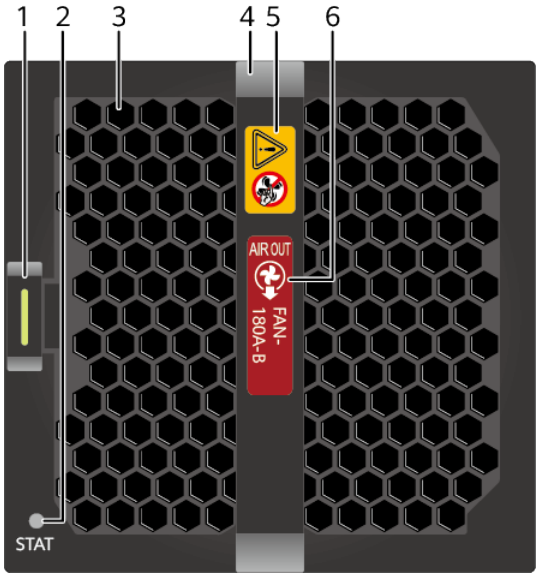
Table 6-42 Functions of a FAN-180A fan module

Function	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swap	Supported
Heat dissipation	• FAN-180A-B: back-to-front airflow • FAN-180A-F: front-to-back airflow

Panel

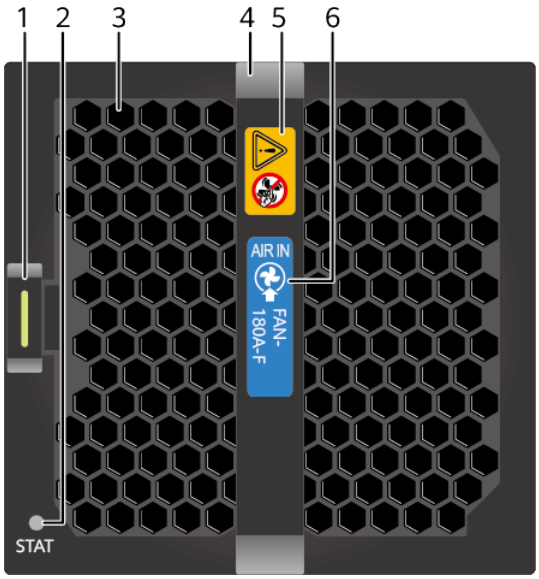
Figure 6-29 and Figure 6-30 show the panels of FAN-180A series fan modules.

Figure 6-29 FAN-180A-B panel



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Figure 6-30 FAN-180A-F panel



1. Lock	2. Indicator	3. Fan air vent
4. Handle	5. Warning label **CAUTION** When you remove a running fan module from a switch, its fans will continue running. Do not touch the running fans.	6. Airflow flag • : back-to-front airflow • : front-to-back airflow

Table 6-43 describes the indicator on a FAN-180A fan module.

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Table 6-43 Indicator description

Indicator	Color	Description
STAT: running status indicator	-	Off: The fan module is not running.
	Green	Blinking: The fan module is working properly.
	Red	• Steady on: The fan module has a hardware fault and must be replaced. • Blinking: An alarm has been generated, and you need to handle it accordingly. Common causes of this alarm include short circuits, fan blades blocked, and fault of the fan module.

Specifications

Table 6-44 lists technical specifications of FAN-180A series fan modules.

Table 6-44 Technical specifications

Item	FAN-180A-B	FAN-180A-F
Dimensions (W x D x H)	85.4 mm x 178.8 mm x 82.5 mm (3.36 in. x 7.04 in. x 3.25 in.)	
Fans	One counter-rotating fan, which has a pair of blades	
Weight	0.887 kg (1.96 lb)	
Maximum power consumption	86 W	
Maximum fan speed	12000 revolutions per minute (RPM)	
Maximum wind rate	180 cubic feet per minute (CFM)	
Part number	02350KJA	02350KHY

6.11 FAN-180E-B (FAN-180E-B Fan Module)

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Overview

Table 6-45 Basic information about the FAN-180E-B

Item	Details
Description	FAN-180E-B Fan Module
Part Number	02354KXY
Model	FAN-180E-B

Appearance

Figure 6-31 Appearance of the FAN-180E-B



Version Mapping

Table 6-46 Mappings between FAN-180E-B and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850-64CQ-EI (02351RFF)	V200R021C10SPC600	-

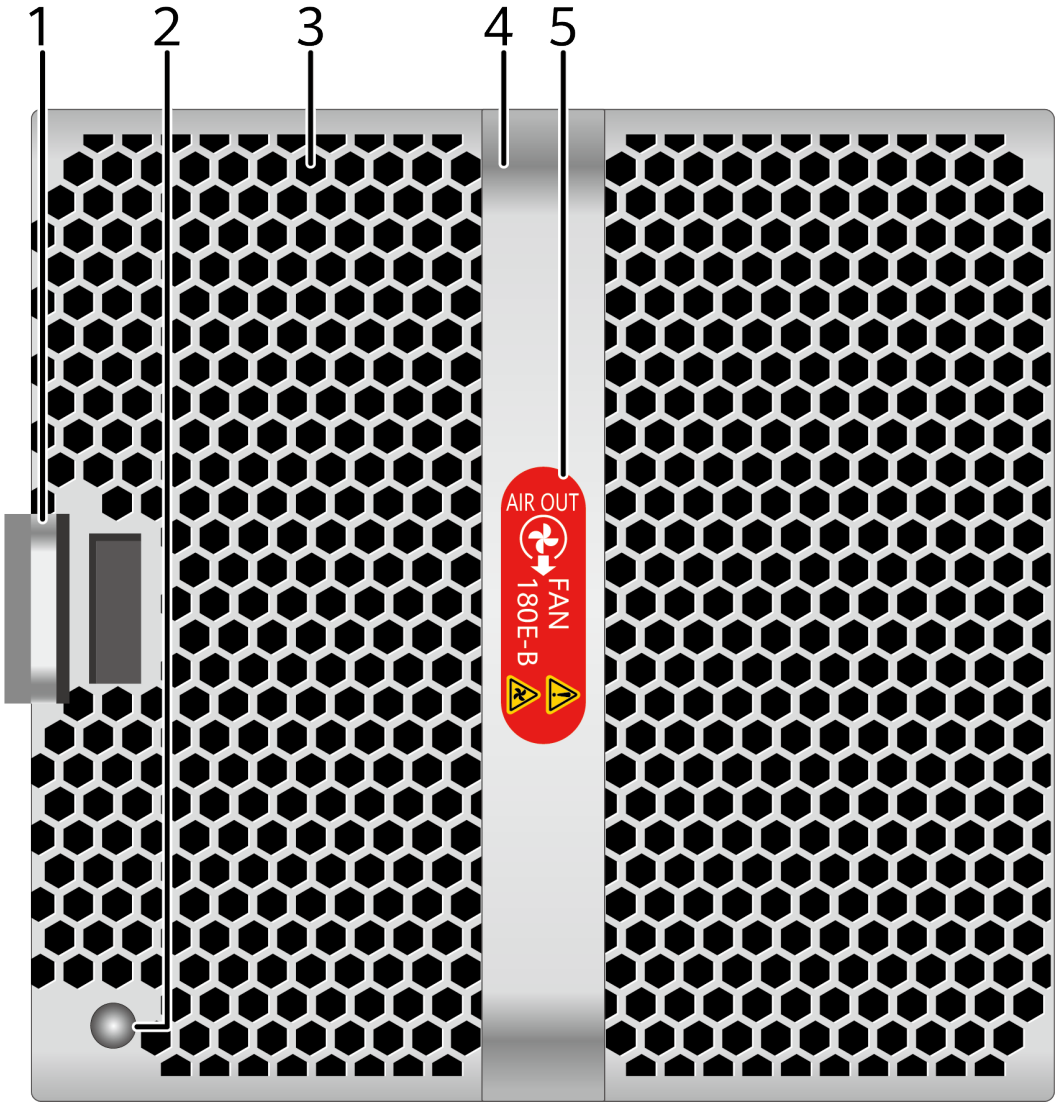
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Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-004)	V200R022C00	-

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Panel

Figure 6-32 Panel of the FAN-180E-B



1. Lock	2. Indicator	3. Fan air vent

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4. Handle	5. Airflow flag • : back-to-front airflow • : front-to-back airflow	-

Table 6-47 Indicators on the FAN-180E-B

Silkscreen	Name	Color	Status	Description
-	Fan running indicator	-	Steady off	The fan module is not running.
		Green	Blinking	The fan module is working properly.
		Red	Steady on	The fan module is faulty and needs to be replaced.
		Red	Blinking	An alarm is generated and needs to be handled accordingly. Common causes of this alarm include short circuit, fan blade blocking, and fan module fault.

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Functions and Features

Table 6-48 Functions and features of the FAN-180E-B

Functions and Features	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swapping	Supported
Heat dissipation	Back-to-front airflow
Electronic tagging	Supported. The device reads and loads electronic labels of the fan modules through I2C buses.

Technical Specifications

Table 6-49 Technical specifications of the FAN-180E-B

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	82.0 mm x 82.0 mm x 169.3 mm (3.23 in. x 3.23 in. x 6.67 in.)
Dimensions with packaging (H x W x D) [mm (in.)]	130.0 mm x 170.0 mm x 390.0 mm (5.12 in. x 6.69 in. x 15.35 in.)
Weight without packaging [kg (lb)]	0.846 kg (1.87 lb)
Weight with packaging [kg (lb)]	1.246 kg (2.75 lb)
Number of fans	Two counter-rotating fans with each containing two fan blades
Typical power consumption	75
Maximum power consumption [W]	86 W
Operating voltage range [V]	7 V to 15 V
Maximum fan speed [RPM]	13200RPM (Front), 11340RPM (Rear)
Maximum airflow [CFM]	180 CFM
Maximum noise level [dB(A)]	80 dB(A)
Maximum wind pressure [Pa]	1050 Pa
Airflow direction	Back-to-front airflow

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6.12 FAN-180E-F (FAN-180E-F Fan Module)

Overview

Table 6-50 Basic information about the FAN-180E-F

Item	Details
Description	FAN-180E-F Fan Module
Part Number	02354LKY
Model	FAN-180E-F

Appearance

Figure 6-33 Appearance of the FAN-180E-F



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Version Mapping

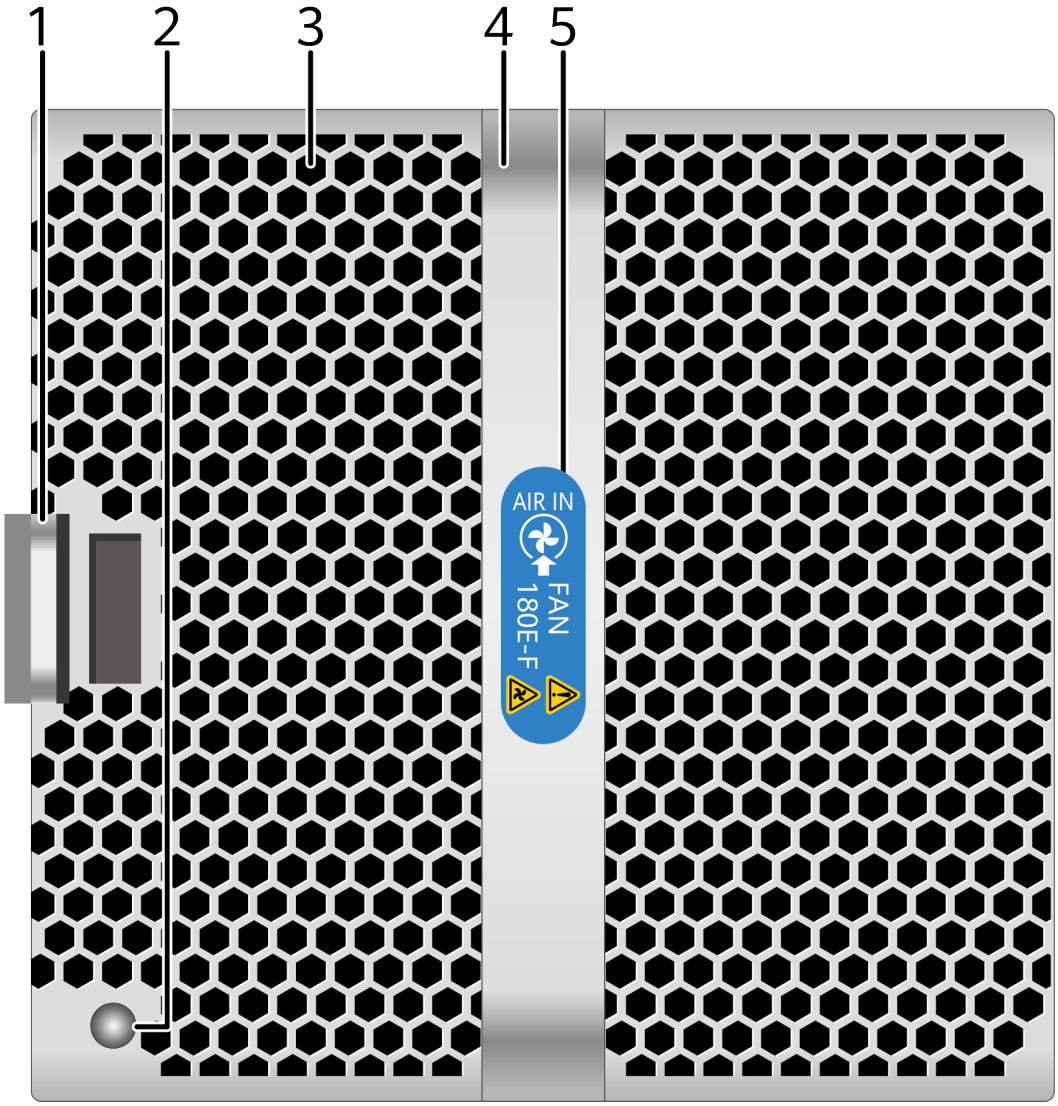
Table 6-51 Mappings between FAN-180E-F and product models

Product	Product Model	First Supported Version	Limitations
CloudEngine 8800	CE8850-64CQ-EI (02351RFF)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFF-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-001)	V200R021C10SPC600	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFH-004)	V200R022C00	-
CloudEngine 8800	CE8850-64CQ-EI (02351RFJ-004)	V200R022C00	-

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Panel

Figure 6-34 Panel of the FAN-180E-F



1. Lock	2. Indicator	3. Fan air vent

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4. Handle	5. Airflow flag • : back-to-front airflow • : front-to-back airflow	-

Table 6-52 Indicators on the FAN-180E-F

Silkscreen	Name	Color	Status	Description
-	Fan running indicator	-	Steady off	The fan module is not running.
		Green	Blinking	The fan module is working properly.
		Red	Steady on	The fan module is faulty and needs to be replaced.
		Red	Blinking	An alarm is generated and needs to be handled accordingly. Common causes of this alarm include short circuit, fan blade blocking, and fan module fault.

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Functions and Features

Table 6-53 Functions and features of the FAN-180E-F

Functions and Features	Description
Automatic fan speed adjustment	After the fan module communicates normally with the switch, the switch controls the speed of the fan based on temperature of the chassis.
Hot swapping	Supported
Heat dissipation	Front-to-back
Electronic tagging	Supported. The device reads and loads electronic labels of the fan modules through I2C buses.

Technical Specifications

Table 6-54 Technical specifications of the FAN-180E-F

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	82.0 mm x 82.0 mm x 169.3 mm (3.23 in. x 3.23 in. x 6.67 in.)
Dimensions with packaging (H x W x D) [mm (in.)]	130.0 mm x 170.0 mm x 390.0 mm (5.12 in. x 6.69 in. x 15.35 in.)
Weight without packaging [kg (lb)]	0.846 kg (1.87 lb)
Weight with packaging [kg (lb)]	1.246 kg (2.75 lb)
Number of fans	Two counter-rotating fans with each containing two fan blades
Typical power consumption	75
Maximum power consumption [W]	86 W
Operating voltage range [V]	7 V to 15 V
Maximum fan speed [RPM]	13200RPM (Front), 11340RPM (Rear)
Maximum airflow [CFM]	180 CFM
Maximum noise level [dB(A)]	80 dB(A)
Maximum wind pressure [Pa]	1050 Pa
Airflow direction	Front-to-back airflow

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7 Cards

7.1 Card Classification

7.2 Card Naming Conventions

7.3 CE88-D8CQ (8-Port 40GE/100GE Interface Card (QSFP28))

7.4 CE88-D16Q (16-Port 40GE Interface Card (QSFP+))

7.5 CE88-D24T2CQ (24-Port GE/10GBASE-T (RJ45) and 2-Port 40GE/100GE (QSFP28) Interface Card)

7.6 CE88-D24S2CQ (24-Port 10GE/25GE (SFP28) and 2-Port 40GE/100GE (QSFP28) Interface Card)

7.7 CE88-D24S2CQ-U (24-Port 25GE/16G FC (SFP28) and 2-Port 40GE/100GE (QSFP28) Interface Card)

7.8 CE98-D8DQ (8 Port 400GE QSFP-DD Interface Card)

7.9 CE98-D32CQ (32-Port 40GE/100GE (QSFP28) Interface Card)

7.10 CE98-D32CQ-A (32 Port 100GE QSFP28 Interface Card)

7.1 Card Classification

NOTE

This document describes all the cards supported by the CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. The cards that can be supplied will be specified in the product change notices (PCNs). For details, contact the product manager of Huawei local office.

Among the CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches, only CE9860EI, CE8868EI, CE8861EI, and CE8860EI support pluggable cards, as listed in **Table 7-1**.

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Table 7-1 Cards supported by the CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches

Card Name	Description	Hot Swap
CE88-D8CQ	8-port 40GE/100GE interface card (QSFP28)	Supported
CE88-D16Q	16-port 40GE interface card (QSFP+)	
CE88-D24T2CQ	24-port GE/10GBASE-T (RJ45) and 2-port 40GE/100GE (QSFP28) interface card	
CE88-D24S2CQ	24-port 10GE/25GE (SFP28) and 2-port 40GE/100GE (QSFP28) interface card	
CE88-D24S2CQ-U	24-port 25GE/16G FC (SFP28) and 2-port 40GE/100GE (QSFP28) interface card	
CE98-D8DQ	8-port 400GE (QSFP-DD) interface card	Supported
CE98-D32CQ	32-port 40GE/100GE (QSFP28) interface card	Supported

7.2 Card Naming Conventions

Figure 7-1 shows the CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches naming conventions.

Figure 7-1 CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches naming conventions

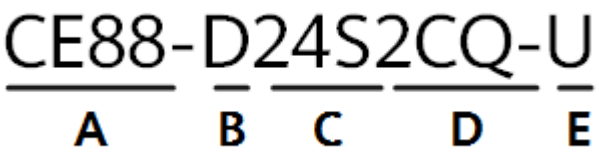


Table 7-2 describes the CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches naming conventions.

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Table 7-2 CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches naming conventions

Field	Description
A	**CE88**: cards for CE8861EI/CE8868EI **CE98**: cards for CE9860EI
B	Cards for top of rack (ToR) switches
C	Number and type of downlink interfaces: • **T**: GE/10GBase-T electrical interfaces • **S**: 10GE SFP+/25GE SFP28 optical interfaces • **Q**: QSFP+ optical interfaces • **CQ**: QSFP28 optical interfaces
D	Number and type of uplink interfaces: • **T**: GE/10GBase-T electrical interfaces • **S**: 10GE SFP+/25GE SFP28 optical interfaces • **Q**: QSFP+ optical interfaces • **CQ**: QSFP28 optical interfaces • **DQ**: QSFP-DD optical interfaces **NOTE** This field will not be included in a card's name if the uplink and downlink interfaces on the card are the same type.
E	Special function flag. This flag is not present if the card does not provide special functions. **U**: The card supports FC ports. **A**: The continuous version.

7.3 CE88-D8CQ (8-Port 40GE/100GE Interface Card (QSFP28))

Version Mapping

Table 7-3 describes the mapping between the CE88-D8CQ card, switch models, and software versions.

Table 7-3 Version mapping

Switch Model	CE88-D8CQ
CE6800, and CE5800 series switches and the CE8850EI	Not supported

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Switch Model	CE88-D8CQ
CE8861-4C-EI CE8868-4C-EI	Supported in V200R005C10 and later versions **NOTE** • The registration and interface usage of the CE88-D8CQ subcards on the CE8868EI are controlled by licenses. By default, the CE88-D8CQ subcards on the CE8868EI are not enabled. To use these subcards on the CE8868EI, apply for and purchase the license from the equipment supplier. • For the CE8868EI, after the above license is loaded, you need to run the **active card-license** command to enable the corresponding license in the specified subcard slot. The CE8868EI has four subcard slots. You can purchase licenses based on the number of required subcard slots.

Card Overview

The CE88-D8CQ card can be install in any slot of the CE8861-4C-EI, or CE8868-4C-EI chassis.

Figure 7-2 shows the appearance of the CE88-D8CQ card.

Figure 7-2 CE88-D8CQ card



Functions and Features

Table 7-4 describes functions and features of the CE88-D8CQ card.

Table 7-4 Functions and features

Function and Feature	Item
Basic function	Provides data packet processing and traffic management on eight 40GE/100GE QSFP28 optical ports.

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Function and Feature	Item
Port split	Each QSFP28 optical port can be split into four 25GE ports or four 10GE ports. Such 25GE or 10GE ports cannot work at 1 Gbit/s. With the port split function, each card can provide up to 32 25GE or 10GE optical ports. **NOTE** All the QSFP28 ports are independent, and each can be configured as four 10GE or 25GE ports.
Hot swap	Supported
Service port stacking	Ports on the card can be used as stack ports.

Indicators and Ports

Figure 7-3 shows indicators on the CE88-D8CQ panel.

Figure 7-3 Indicators on the CE88-D8CQ panel

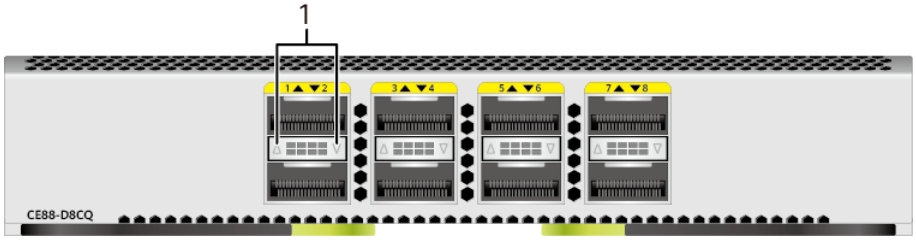


Table 7-5 describes indicators on the CE88-D8CQ panel.

Table 7-5 Indicator description

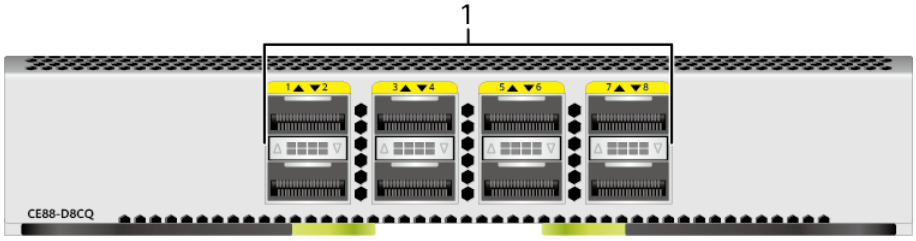
Number	Indicator	Color	Status	Description
1	One single-color indicator for each interface	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.

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Number	Indicator	Color	Status	Description
	NOTE Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.		Blinking	The port is transmitting or receiving data.

Figure 7-4 shows the ports on the CE88-D8CQ card.

Figure 7-4 Ports on the CE88-D8CQ card



1. Eight 40GE/100GE QSFP28 optical ports

40GE/100GE QSFP28 optical port

Table 7-6 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 7-6 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depends on the optical module used.
Optical attributes	Depends on the QSFP+ or QSFP28 optical module used. See **40GE QSFP+ Optical Modules** or **100GE QSFP28 Optical Modules**.

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Attribute	Description
Applicable cables	When the port works in 100GE mode, it can use: • QSFP28 optical module and MPO-MPO or LC-LC optical fiber (QSFP28-100G-4WDM-40 not supported) • QSFP28 to QSFP28 high-speed cable • QSFP28 to QSFP28 AOC cable
	When the port works in 40GE mode, it can use: • QSFP+ optical module and MPO-MPO or LC-LC optical fiber • QSFP+ to QSFP+ high-speed cable • QSFP+ to QSFP+ AOC cable
	When the port works in 4*25GE mode, it can use: • QSFP28 optical module and MPO-4*DLC or MPO-8*FC optical fiber (QSFP28-100G-4WDM-40 not supported) • QSFP28 to 4*SFP28 high-speed cable **NOTE** When a QSFP28-100G-SR4 optical module is installed on the port, the port cannot be connected to a port with an SFP-25G-SR optical module. When a QSFP28 to 4*SFP28 high-speed cable is installed on the port: • If auto-negotiation is disabled on the remote port, the local port supports only the QSFP-4SFP25G-CU1M or QSFP-4SFP25G-CU3M-N high-speed cable. • If auto-negotiation is disabled and Base-R FEC is enabled on the remote port, the local port supports only the QSFP-4SFP25G-CU3M high-speed cable.
	When the port works in 4*10GE mode, it can use: • QSFP+ optical module and MPO-4*DLC or MPO-8*FC optical fiber • QSFP+ to 4*SFP+ high-speed cable • QSFP+ to 4*SFP+ AOC cable

Specifications

Table 7-7 lists technical specifications of the CE88-D8CQ card.

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Table 7-7 Technical specifications

Item	Description
Physical specifications	• Dimensions (W x D x H): 210.0 mm x 205.2 mm x 41.8 mm (8.3 in. x 8.1 in. x 1.6 in.) • Weight: 1.3 kg (2.87 lb) • Typical power consumption: 33 W • Maximum power consumption: 71 W • Typical heat dissipation: 113 BTU/hr • Maximum heat dissipation: 242 BTU/hr
Environment parameters	• Operating temperature: 0°C to 40°C (32°F to 104°F) • Relative humidity: 5% RH to 95% RH • Storage temperature: -40°C to +70°C (-40°F to +158°F)

Ordering Information

Table 7-8 provides the ordering information.

Table 7-8 Ordering information

Part Number	Card Model	Card Description
03023CRS	CE88-D8CQ	8-port 40GE/ 100GE interface card (QSFP28)

7.4 CE88-D16Q (16-Port 40GE Interface Card (QSFP+))

Version Mapping

Table 7-9 describes the mapping between the CE88-D16Q card, switch models, and software versions.

Table 7-9 Version mapping

Switch Model	CE88-D16Q
CE6800, and CE5800 series switches and the CE8850EI	Not supported

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Switch Model	CE88-D16Q
CE8861-4C-EI CE8868-4C-EI	Supported in V200R005C10 and later versions **NOTE** • The registration and interface usage of the CE88-D16Q subcards on the CE8868EI are controlled by licenses. By default, the CE88-D8CQ and CE88-D16Q subcards on the CE8868EI are not enabled. To use these subcards on the CE8868EI, apply for and purchase the license from the equipment supplier. • For the CE8868EI, after the above license is loaded, you need to run the **active card-license** command to enable the corresponding license in the specified subcard slot. The CE8868EI has four subcard slots. You can purchase licenses based on the number of required subcard slots.

Card Overview

The CE88-D16Q card can be install in any slot of the CE8861-4C-EI, or CE8868-4C-EI chassis.

Figure 7-5 shows the appearance of the CE88-D16Q card.

Figure 7-5 CE88-D16Q card



Functions and Features

Table 7-10 describes functions and features of the CE88-D16Q card.

Table 7-10 Functions and features

Function and Feature	Description
Basic function	Provides data packet processing and traffic management on 16 40GE QSFP+ optical ports.

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Function and Feature	Description
Port split	• Each QSFP+ optical port can be split into two 10GE ports. The two 10GE cannot work at 1 Gbit/s. With the port split function, each card can provide up to 32 10GE optical ports. **NOTE** All the 40GE QSFP+ optical ports are independent, and each can be configured as two 10GE ports. For CE8861EI and CE8868EI, the two 40GE interfaces must be split simultaneously so that converted 10GE interfaces can work properly.
Hot swap	Supported
Service port stacking	Ports on the card can be used as stack ports.

Indicators and Ports

Figure 7-6 shows indicators on the CE88-D16Q panel.

Figure 7-6 Indicators on the CE88-D16Q panel

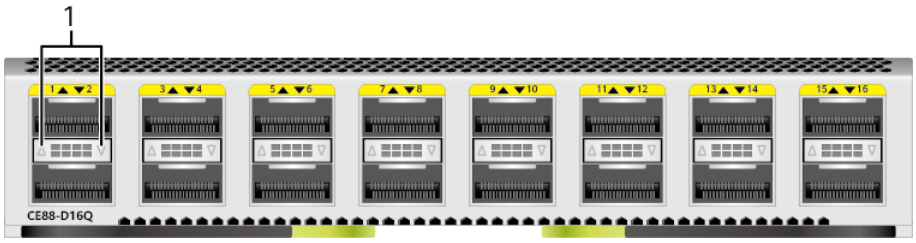


Table 7-11 describes indicators on the CE88-D16Q panel.

Table 7-11 Indicator description

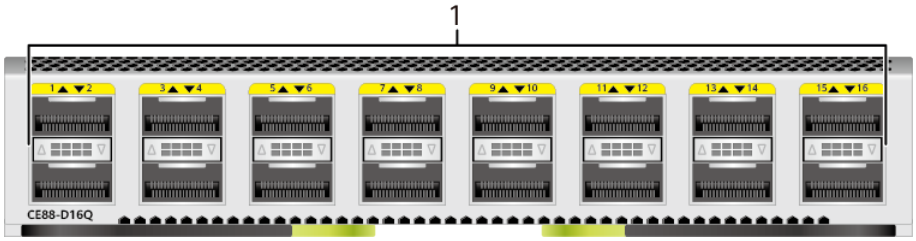
Number	Indicator	Color	Status	Description
1	One single-color indicator for each interface	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.

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Number	Indicator	Color	Status	Description
	NOTE Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.		Blinking	The port is transmitting or receiving data.

Figure 7-7 shows the ports on the CE88-D16Q card.

Figure 7-7 Ports on the CE88-D16Q card



1. Sixteen 40GE QSFP+ optical ports

40GE QSFP+ optical port

Table 7-12 describes the attributes of a 40GE QSFP+ optical port.

Table 7-12 Attributes of a 40GE QSFP+ optical port

Attribute	Description
Connector type	Depends on the optical module used.
Optical attributes	Depends on the QSFP+ optical module used. See **40GE QSFP+ Optical Modules**.

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Attribute	Description
Applicable cables	When the port works in 40GE mode, it can use: • QSFP+ optical module and MPO-MPO or LC-LC optical fiber • QSFP+ to QSFP+ high-speed cable • QSFP+ to QSFP+ AOC cable
	When the port works in 2*10GE mode, it can use: • QSFP+ optical module and MPO-4*DLC or MPO-8*FC optical fiber (Among the four pairs of DLC or FC fibers, only the two pairs marked 1 and 2 can be used to connect to remote interfaces.) • QSFP+ to 4*SFP+ high-speed cable (Among the four SFP+ wires, only the two marked A and B can be used to connect to remote interfaces.) • QSFP+ to 4*SFP+ AOC cable (Among the four SFP+ wires, only the two marked 1 and 2 can be used to connect to remote interfaces.)

Specifications

Table 7-13 lists technical specifications of the CE88-D16Q card.

Table 7-13 Technical specifications

Item	Description
Physical specifications	• Dimensions (W x D x H): 210.0 mm x 205.2 mm x 41.8 mm (8.3 in. x 8.1 in. x 1.6 in.) • Weight: 1.3 kg (2.87 lb) • Typical power consumption: 27 W • Maximum power consumption: 58 W • Typical heat dissipation: 92 BTU/hr • Maximum heat dissipation: 198 BTU/hr
Environment parameters	• Operating temperature: 0°C to 40°C (32°F to 104°F) • Relative humidity: 5% RH to 95% RH • Storage temperature: -40°C to +70°C (-40°F to +158°F)

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Ordering Information

Table 7-14 provides the ordering information.

Table 7-14 Ordering information

Part Number	Card Model	Card Description
03023CRR	CE88-D16Q	16-port 40GE interface card (QSFP+)

7.5 CE88-D24T2CQ (24-Port GE/10GBASE-T (RJ45) and 2-Port 40GE/100GE (QSFP28) Interface Card)

Version Mapping

Table 7-15 describes the mapping between the CE88-D24T2CQ card, switch models, and software versions.

Table 7-15 Version mapping

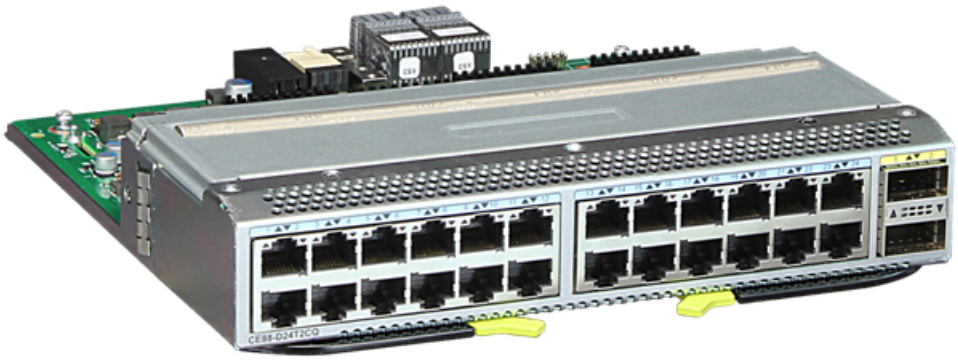
Switch Model	CE88-D24T2CQ
CE6800, and CE5800 series switches and the CE8850EI	Not supported
CE8861-4C-EI CE8868-4C-EI	Supported in V200R005C10 and later versions

Card Overview

The CE88-D24T2CQ card can be install in any slot of the CE8861-4C-EI, or CE8868-4C-EI chassis.

Figure 7-8 shows the appearance of the CE88-D24T2CQ card.

Figure 7-8 CE88-D24T2CQ card



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Functions and Features

Table 7-16 describes functions and features of the CE88-D24T2CQ card.

Table 7-16 Functions and features

Function and Feature	Description
Basic function	Provides data packet processing and traffic management on 24 GE/10GBASE-T RJ45 electrical ports and 2 40GE/100GE QSFP28 optical ports.
Port split	Each QSFP28 optical port can be split into four 25GE ports or four 10GE ports. Such 25GE or 10GE ports cannot work at 1 Gbit/s. **NOTE** The two QSFP28 ports are independent, and each can be configured as four 10GE or 25GE ports.
Hot swap	Supported
Service port stacking	Ports on the card can be used as stack ports.

Indicators and Ports

Figure 7-9 shows indicators on the CE88-D24T2CQ panel.

Figure 7-9 Indicators on the CE88-D24T2CQ panel

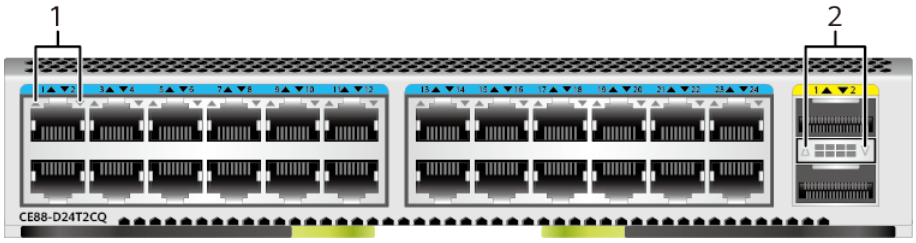


Table 7-17 describes indicators on the CE88-D24T2CQ panel.

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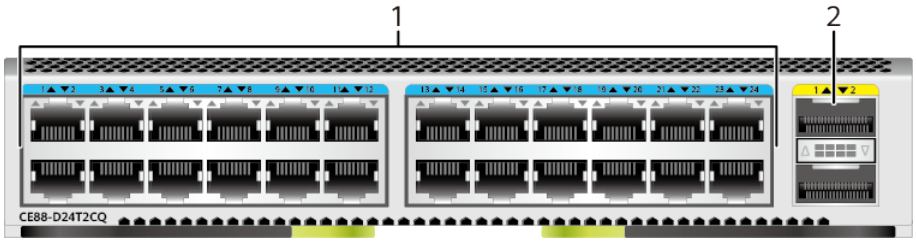
Table 7-17 Indicator description

Number	Indicator	Color	Status	Description
1	RJ45 electrical ports: one single-color indicator for each port **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.
			Blinking	The port is transmitting or receiving data.
2	QSFP28 optical ports: one single-color indicator for each port **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.
			Blinking	The port is transmitting or receiving data.

Figure 7-10 shows the ports on the CE88-D24T2CQ card.

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Figure 7-10 Ports on the CE88-D24T2CQ card



1. Twenty-four GE/10GBASE-T RJ45 electrical ports	2. Two 40GE/100GE QSFP28 optical ports

GE/10GBASE-T RJ45 electrical port

The 24 GE/10GBASE-T RJ45 electrical ports on the CE88-D24T2CQ card can only transmit services at 1000 Mbit/s or 10 Gbit/s and cannot work at 100 Mbit/s. The ports must use Category 6A shielded twisted pair (STP) cables. **Table 7-18** describes attributes of a GE/10GBASE-T RJ45 electrical port.

Table 7-18 Attributes of a GE/10GBASE-T RJ45 electrical port

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3an, IEEE802.3az
Applicable cables	Straight-through cable and crossover cable
Working Mode	1000 Mbit/s or 10 Gbit/s Full-duplex
Maximum transmission distance	100 m

40GE/100GE QSFP28 optical port

Table 7-19 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 7-19 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depends on the optical module used.

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Attribute	Description
Optical attributes	Depends on the QSFP+ or QSFP28 optical module used. See **40GE QSFP+ Optical Modules** or **100GE QSFP28 Optical Modules**.
Applicable cables	When the port works in 100GE mode, it can use: • QSFP28 optical module and MPO-MPO or LC-LC optical fiber (QSFP28-100G-4WDM-40 not supported) • QSFP28 to QSFP28 high-speed cable • QSFP28 to QSFP28 AOC cable
	When the port works in 40GE mode, it can use: • QSFP+ optical module and MPO-MPO or LC-LC optical fiber • QSFP+ to QSFP+ high-speed cable • QSFP+ to QSFP+ AOC cable
	When the port works in 4*25GE mode, it can use: • QSFP28 optical module and MPO-4*DLC or MPO-8*FC optical fiber (QSFP28-100G-4WDM-40 not supported) • QSFP28 to 4*SFP28 high-speed cable **NOTE** When a QSFP28-100G-SR4 optical module is installed on the port, the port cannot be connected to a port with an SFP-25G-SR optical module. When a QSFP28 to 4*SFP28 high-speed cable is installed on the port: • If auto-negotiation is disabled on the remote port, the local port supports only the QSFP-4SFP25G-CU1M or QSFP-4SFP25G-CU3M-N high-speed cable. • If auto-negotiation is disabled and Base-R FEC is enabled on the remote port, the local port supports only the QSFP-4SFP25G-CU3M high-speed cable.
	When the port works in 4*10GE mode, it can use: • QSFP+ optical module and MPO-4*DLC or MPO-8*FC optical fiber • QSFP+ to 4*SFP+ high-speed cable • QSFP+ to 4*SFP+ AOC cable

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Specifications

Table 7-20 lists technical specifications of the CE88-D24T2CQ card.

Table 7-20 Technical specifications

Item	Description
Physical specifications	• Dimensions (W x D x H): 210.0 mm x 205.2 mm x 41.8 mm (8.3 in. x 8.1 in. x 1.6 in.) • Weight: 1.3 kg (2.87 lb) • Typical power consumption: 72 W • Maximum power consumption: 109 W • Typical heat dissipation: 246 BTU/hr • Maximum heat dissipation: 372 BTU/hr
Environment parameters	• Operating temperature: 0°C to 40°C (32°F to 104°F) • Relative humidity: 5% RH to 95% RH • Storage temperature: -40°C to +70°C (-40°F to +158°F)

Ordering Information

Table 7-21 provides the ordering information.

Table 7-21 Ordering information

Part Number	Card Model	Card Description
03023CRP	CE88-D24T2CQ	24-port GE/ 10GBASE-T (RJ45) and 2-port 40GE/ 100GE (QSFP28) interface card

7.6 CE88-D24S2CQ (24-Port 10GE/25GE (SFP28) and 2-Port 40GE/100GE (QSFP28) Interface Card)

Version Mapping

Table 7-22 describes the mapping between the CE88-D24S2CQ card, switch models, and software versions.

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Table 7-22 Version mapping

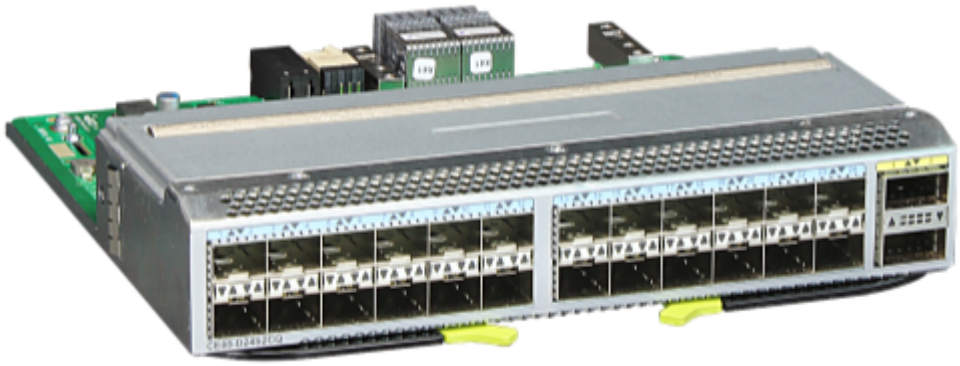
Switch Model	CE88-D24S2CQ
CE6800, and CE5800 series switches and the CE8850EI	Not supported
CE8861-4C-EI CE8868-4C-EI	Supported in V200R005C10 and later versions **NOTE** • By default, the 25GE interfaces on the CE88-D24S2CQ subcard of the CE8868EI work at the rate of 10 Gbit/s. After the license is loaded, you can run the **undo port mode 10g** command to set the interface to work at the rate of 25 Gbit/s. To use the 25GE interfaces on these subcards of the CE8868EI, apply for and purchase the license from the equipment supplier. • For the CE8868EI, after the above license is loaded, you need to run the **active card-license** command to enable the corresponding license in the specified subcard slot. The CE8868EI has four subcard slots. You can purchase licenses based on the number of required subcard slots.

Card Overview

The CE88-D24S2CQ card can be install in any slot of the CE8861-4C-EI, or CE8868-4C-EI chassis.

Figure 7-11 shows the appearance of the CE88-D24S2CQ card.

Figure 7-11 CE88-D24S2CQ card



Functions and Features

Table 7-23 describes functions and features of the CE88-D24S2CQ card.

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Table 7-23 Functions and features

Function and Feature	Description
Basic function	Provides data packet processing and traffic management on 24 10GE/25GE SFP28 optical ports and 2 40GE/100GE QSFP28 optical ports.
Port split	Each QSFP28 optical port can be split into four 25GE ports or four 10GE ports. Such 25GE or 10GE ports cannot work at 1 Gbit/s.
Hot swap	Supported
Service port stacking	Ports on the card can be used as stack ports. **NOTE** SFP28 ports that have GE copper modules, GE optical modules, 10GE optical modules, 10GE high-speed cables, or 10GE AOC cables installed cannot be used for stack connections.

Indicators and Ports

Figure 7-12 shows indicators on the CE88-D24S2CQ panel.

Figure 7-12 Indicators on the CE88-D24S2CQ panel

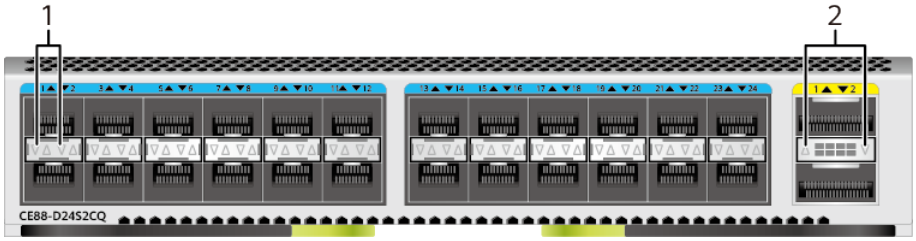


Table 7-24 describes indicators on the CE88-D24S2CQ panel.

Table 7-24 Indicator description

Number	Indicator	Color	Status	Description
1	SFP28 optical ports: two single-color indicators	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.

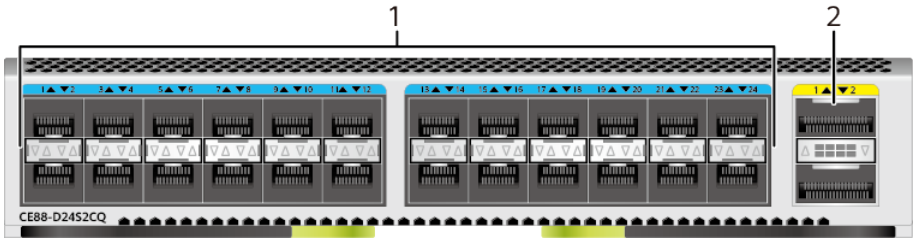
Copyright © Huawei Technologies Co., Ltd.

Number	Indicator	Color	Status	Description
	for each port • Steady green: LINK indicator • Blinking yellow: ACT indicator **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Yellow	Off	The port is not transmitting or receiving data.
			Blinking	The port is transmitting or receiving data.
2	QSFP28 optical ports: one single-color indicator for each port **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.
			Blinking	The port is transmitting or receiving data.

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Figure 7-13 shows the ports on the CE88-D24S2CQ card.

Figure 7-13 Ports on the CE88-D24S2CQ card



1. Twenty-four 10GE/25GE SFP28 optical ports	2. Two 40GE/100GE QSFP28 optical ports

10GE/25GE SFP28 optical port

Table 7-25 describes attributes of a 10GE/25GE SFP28 optical port.

Table 7-25 Attributes of a 10GE/25GE SFP28 optical port

Attribute	Description
Connector type	Depends on the optical module used.
Optical attributes	Depends on the optical module used.

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Attribute	Description
Port use constraints	The 24 10GE/25GE SFP28 optical ports on the CE88-D24S2CQ card of CE8868EI work at 10 Gbit/s by default. You can set the port speed to 1 Gbit/s using the **port mode ge** command. After the corresponding license is loaded, you can run the **undo port mode 10g** command to set the interface to work at the rate of 25 Gbit/s. In addition to CE8868EI, the 24 10GE/25GE SFP28 optical ports of a CE88-D24S2CQ card work at 25 Gbit/s by default. You can set the port speed to 10 Gbit/s or 1 Gbit/s using the **port mode 10g** or **port mode ge** command. The 24 10GE/25GE SFP28 optical ports are divided into 6 port groups, with four ports in each group (1-4, 5-8, 9-12...21-24). ● If the speed of any port in a port group is set to 1 Gbit/s, 10G bit/s, or 25G bit/s, all the other ports in this group also work at 1 Gbit/s, 10G bit/s, or 25G bit/s. ● When the ports in a port group work at 25 Gbit/s, they support only 25GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE or 25GE variable-rate modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at 1 Gbit/s, they support only GE modules or cables and will go Down if other types of modules or cables are used. ● If the switch is running a version earlier than V200R002C50, the ports in a port group must use the same type of transmission medium (copper or fiber). This constraint does not apply to V200R002C50 and later versions. ● The 1000base-X auto-negotiation function is not supported when a GE optical module is installed into a 25GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.

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Attribute	Description
Applicable cables	When the port works in GE or 10GE mode, it can use: • 10GE optical module (OSXD22N00, LE2MXSC80FF0 and SFP-10G-ZDWT-L not supported) • GE optical module (supported from V200R005C00 version) • GE cooper module (supported from V200R005C00 version and only works at 1000 Mbit/s) • SFP+ to SFP+ high-speed cable • SFP+ to SFP+ AOC cable
	When the port works in 25GE mode, it can use: • SFP-25G-SR optical module • SFP28 to SFP28 AOC cable • SFP28 to SFP28 high-speed cable (1m or 3m) **NOTE** The port supports the SFP28 to SFP28 AOC cable only when FEC is disabled on the remote port. When an SFP28 to SFP28 high-speed cable is installed on the port: • If auto-negotiation is disabled on the remote port, the local port supports only the SFP-25G-CU1M or SFP-25G-CU3M-N high-speed cable. • If auto-negotiation is disabled and Base-R FEC is enabled on the remote port, the local port supports only the SFP-25G-CU3M high-speed cable.

40GE/100GE QSFP28 optical port

Table 7-26 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 7-26 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depends on the optical module used.
Optical attributes	Depends on the QSFP+ or QSFP28 optical module used. See **40GE QSFP+ Optical Modules** or **100GE QSFP28 Optical Modules**.

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Attribute	Description
Applicable cables	When the port works in 100GE mode, it can use: • QSFP28 optical module and MPO-MPO or LC-LC optical fiber (QSFP28-100G-4WDM-40 not supported) • QSFP28 to QSFP28 high-speed cable • QSFP28 to QSFP28 AOC cable
	When the port works in 40GE mode, it can use: • QSFP+ optical module and MPO-MPO or LC-LC optical fiber • QSFP+ to QSFP+ high-speed cable • QSFP+ to QSFP+ AOC cable
	When the port works in 4*25GE mode, it can use: • QSFP28 optical module and MPO-4*DLC or MPO-8*FC optical fiber (QSFP28-100G-4WDM-40 not supported) • QSFP28 to 4*SFP28 high-speed cable **NOTE** When a QSFP28-100G-SR4 optical module is installed on the port, the port cannot be connected to a port with an SFP-25G-SR optical module. When a QSFP28 to 4*SFP28 high-speed cable is installed on the port: • If auto-negotiation is disabled on the remote port, the local port supports only the QSFP-4SFP25G-CU1M or QSFP-4SFP25G-CU3M-N high-speed cable. • If auto-negotiation is disabled and Base-R FEC is enabled on the remote port, the local port supports only the QSFP-4SFP25G-CU3M high-speed cable.
	When the port works in 4*10GE mode, it can use: • QSFP+ optical module and MPO-4*DLC or MPO-8*FC optical fiber • QSFP+ to 4*SFP+ high-speed cable • QSFP+ to 4*SFP+ AOC cable

Specifications

Table 7-27 lists technical specifications of the CE88-D24S2CQ card.

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Table 7-27 Technical specifications

Item	Description
Physical specifications	• Dimensions (W x D x H): 210.0 mm x 205.2 mm x 41.8 mm (8.3 in. x 8.1 in. x 1.6 in.) • Weight: 1.4 kg (3.09 lb) • Typical power consumption: 43 W • Maximum power consumption: 71 W • Typical heat dissipation: 147 BTU/hr • Maximum heat dissipation: 243 BTU/hr
Environment parameters	• Operating temperature: 0°C to 40°C (32°F to 104°F) • Relative humidity: 5% RH to 95% RH • Storage temperature: -40°C to +70°C (-40°F to +158°F)

Ordering Information

Table 7-28 provides the ordering information.

Table 7-28 Ordering information

Part Number	Card Model	Card Description
03023CRM	CE88-D24S2CQ	24-port 10GE/25GE (SFP28) and 2-port 40GE/100GE (QSFP28) interface card

7.7 CE88-D24S2CQ-U (24-Port 25GE/16G FC (SFP28) and 2-Port 40GE/100GE (QSFP28) Interface Card)

Version Mapping

Table 7-29 describes the mapping between the CE88-D24S2CQ-U card, switch models, and software versions.

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Table 7-29 Version mapping

Switch Model	CE88-D24S2CQ-U
CE6800, and CE5800 series switches, CE8850EI, and the CE8868-4C-EI	Not supported
CE8861-4C-EI	Supported in V200R005C10 and later version

Card Overview

The CE88-D24S2CQ-U card can be install in any slot of the or CE8861-4C-EI chassis.

Figure 7-14 shows the appearance of the CE88-D24S2CQ-U card.

Figure 7-14 CE88-D24S2CQ-U card



Functions and Features

Table 7-30 describes functions and features of the CE88-D24S2CQ-U card.

Table 7-30 Functions and features

Function and Feature	Description
Basic function	Provides data packet processing and traffic management on 24 25GE/10GE SFP28 optical ports and two 40GE/100GE QSFP28 optical ports. The 24 25GE/10GE SFP28 optical ports can be configured as 24 FC interfaces (supporting rates of 4 Gbit/s, 8 Gbit/s, and 16 Gbit/s).

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Function and Feature	Description
Port split	Each QSFP28 optical port can be split into four 25GE ports or four 10GE ports. Such 25GE or 10GE ports cannot work at 1 Gbit/s.
Hot swap	Supported
Service port stacking	Ports on the card can be used as stack ports. **NOTE** 24 25GE/16G FC optical ports cannot be used for stack connections.

Indicators and Ports

Figure 7-15 shows indicators on the CE88-D24S2CQ-U panel.

Figure 7-15 Indicators on the CE88-D24S2CQ-U panel

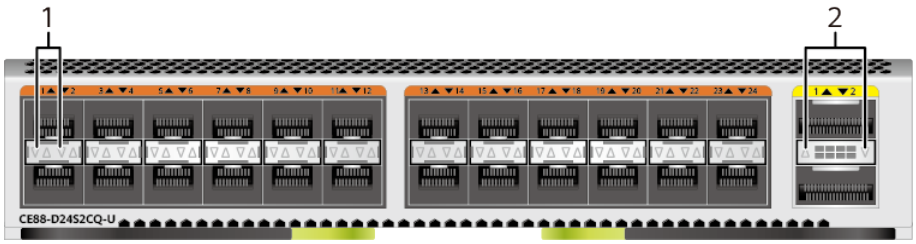


Table 7-31 describes indicators on the CE88-D24S2CQ-U panel.

Table 7-31 Indicator description

Number	Indicator	Color	Status	Description
1	SFP28 optical ports: two single-color indicators for each port • Steady green: LINK indicator	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.
		Yellow	Off	The port is not transmitting or receiving data.

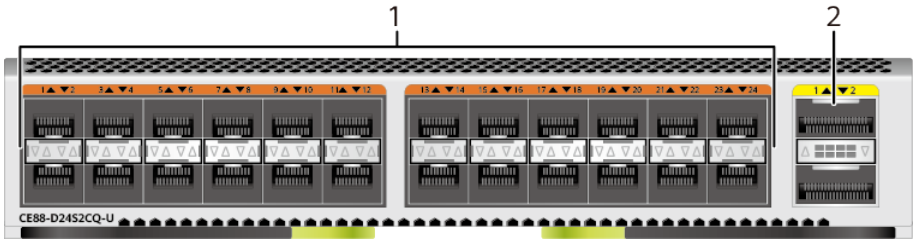
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Number	Indicator	Color	Status	Description
	• Blinking yellow: ACT indicator **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.		Blinking	The port is transmitting or receiving data.
2	QSFP28 optical ports: one single-color indicator for each port **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.
			Blinking	The port is transmitting or receiving data.

Figure 7-16 shows the ports on the CE88-D24S2CQ-U card.

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Figure 7-16 Ports on the CE88-D24S2CQ-U card



1. 24 25GE/16G FC (SFP28) optical ports	2. Two 40GE/100GE QSFP28 optical ports

25GE/16G FC (SFP28) optical port

25GE/16G FC (SFP28) optical ports cannot work at 100 Mbit/s. **Table 7-32** describes attributes of a 25GE/16G FC (SFP28) optical port.

Table 7-32 Attributes of a 25GE/16G FC (SFP28) optical port

Attribute	Description
Connector type	Depending on the optical module used.
Optical attributes	Depending on the optical module used.

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Attribute	Description
Port use constraints	The 24 25GE/16G FC (SFP28) optical ports of the CE88-D24S2CQ-U work at 25 Gbit/s by default and do not support GE/10GE auto-sensing. You can set the port speed to 10 Gbit/s or 1 Gbit/s using the **port mode 10g** or **port mode ge** command. The 24 25GE/16G FC (SFP28) optical ports are divided into six port groups, each of which contains four ports (1-4, 5-8, 9-12...21-24). ● If the speed of any port in a port group is set to 1 Gbit/s, 10G bit/s, or 25G bit/s, all the other ports in this group also work at 1 Gbit/s, 10G bit/s, or 25G bit/s. ● When the ports in a port group work at 25 Gbit/s, they support only 25GE modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at 10 Gbit/s, they support only 10GE or 25GE variable-rate modules or cables and will go Down if other types of modules or cables are used. When the ports in a port group work at 1 Gbit/s, they support only GE modules or cables and will go Down if other types of modules or cables are used. ● The maximum rate supported by a 16GE FC optical port is 14 Gbit/s. ● The 1000base-X auto-negotiation function is not supported when a GE optical module is installed into a 25GE optical interface. To connect the two interfaces at both ends of a link, disable the auto-negotiation function of the peer interface. After the connection, in some port failure scenarios, the interface on one end may be Up and the interface on the other end may be Down.

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Attribute	Description
Applicable cables	When the port works in 10GE mode, it can use: • 10GE optical module (OSXD22N00, LE2MXSC80FF0 and SFP-10G-ZDWT-L not supported) • GE cooper module (supported from V200R005C100 version and only works at 1000 Mbit/s) • GE optical module (supported from V200R005C100 version) • SFP+ to SFP+ high-speed cable • SFP+ to SFP+ AOC cable
	When the port works in 25GE mode, it can use: • SFP-25G-SR optical module • SFP28 to SFP28 AOC cable • SFP28 to SFP28 high-speed cable (1m, 3m, or 5m)
	When the port is configured as an FC port, it can use: • 4G/8G/16G SFP optical module and LC optical fiber

40GE/100GE QSFP28 optical port

Table 7-33 describes the attributes of a 40GE/100GE QSFP28 optical port.

Table 7-33 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depends on the optical module used.
Optical attributes	Depends on the QSFP+ or QSFP28 optical module used. See **40GE QSFP+ Optical Modules** or **100GE QSFP28 Optical Modules**.

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Attribute	Description
Applicable cables	When the port works in 100GE mode, it can use: • QSFP28 optical module and MPO-MPO or LC-LC optical fiber (QSFP28-100G-4WDM-40 not supported) • QSFP28 to QSFP28 high-speed cable • QSFP28 to QSFP28 AOC cable
	When the port works in 40GE mode, it can use: • QSFP+ optical module and MPO-MPO or LC-LC optical fiber • QSFP+ to QSFP+ high-speed cable • QSFP+ to QSFP+ AOC cable
	When the port works in 4*25GE mode, it can use: • QSFP28 optical module and MPO-4*DLC or MPO-8*FC optical fiber (QSFP28-100G-4WDM-40 not supported) • QSFP28 to 4*SFP28 high-speed cable **NOTE** When a QSFP28-100G-SR4 optical module is installed on the port, the port cannot be connected to a port with an SFP-25G-SR optical module. When a QSFP28 to 4*SFP28 high-speed cable is installed on the port: • If auto-negotiation is disabled on the remote port, the local port supports only the QSFP-4SFP25G-CU1M or QSFP-4SFP25G-CU3M-N high-speed cable. • If auto-negotiation is disabled and Base-R FEC is enabled on the remote port, the local port supports only the QSFP-4SFP25G-CU3M high-speed cable.
	When the port works in 4*10GE mode, it can use: • QSFP+ optical module and MPO-4*DLC or MPO-8*FC optical fiber • QSFP+ to 4*SFP+ high-speed cable • QSFP+ to 4*SFP+ AOC cable

Specifications

Table 7-34 lists technical specifications of the CE88-D24S2CQ-U card.

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Table 7-34 Technical specifications

Item	Description
Physical specifications	• Dimensions (W x D x H): 210.0 mm x 205.2 mm x 41.8 mm (8.3 in. x 8.1 in. x 1.6 in.) • Weight: 1.4 kg (3.09 lb) • Typical power consumption: 43 W • Maximum power consumption: 71 W • Typical heat dissipation: 147 BTU/hr • Maximum heat dissipation: 243 BTU/hr
Environment parameters	• Operating temperature: 0°C to 40°C (32°F to 104°F) • Relative humidity: 5% RH to 95% RH • Storage temperature: -40°C to +70°C (-40°F to +158°F)

Ordering Information

Table 7-35 provides the ordering information.

Table 7-35 Ordering information

Part Number	Card Model	Card Description
03024GEG	CE88-D24S2CQ-U	24-port 25GE/16G FC (SFP28) and 2-port 40GE/100GE (QSFP28) interface card

7.8 CE98-D8DQ (8 Port 400GE QSFP-DD Interface Card)

Overview

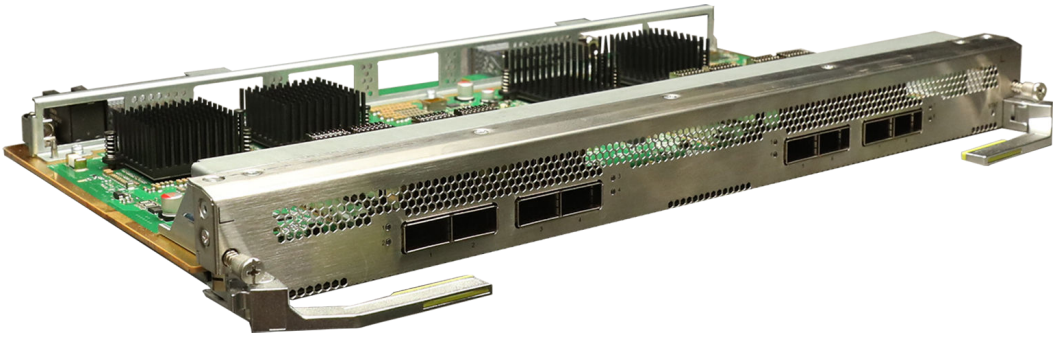
Table 7-36 Basic information about the CE98-D8DQ

Item	Details
Description	8 Port 400GE QSFP-DD Interface Card
Part Number	03029GFF
Model	CE98-D8DQ
Silkscreen	CE98-D8DQ

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Appearance

Figure 7-17 Appearance of the CE98-D8DQ



Version Mapping

Table 7-37 Mappings between CE98-D8DQ and product

Product	First Supported Version	Last Supported Version	Unsupported Version	Unsupported Model
CloudEngine 9800	• CE9860-4C-EI-A: V200R022C10 • CE9860-4C-EI: V200R021C00	-	-	-

Indicators

Figure 7-18 Indicators on the CE98-D8DQ



1. Port status indicator	2. Running status indicator	-	-

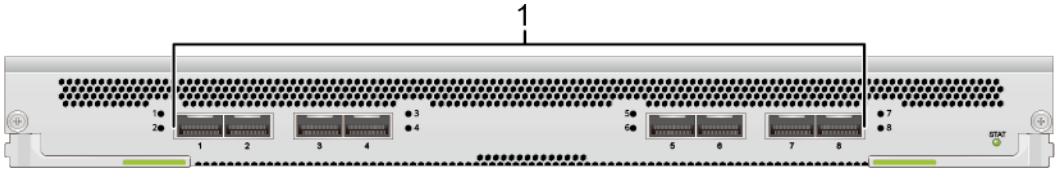
Copyright © Huawei Technologies Co., Ltd.

Table 7-38 Indicators on the CE98-D8DQ

Silkscreen	Name	Color	Status	Description
-	QSFP-DD optical ports: One single-color indicator for each port	Green	Off	No link is established on the port.
		Green	Steady on	A link has been established on the port.
		Green	Blinking	The port is transmitting or receiving data.
STAT	Running status indicator	Green	Steady on	The card has been powered on but the system software is not running.
		Green	Slow blinking	The card is running properly.
		Green	Fast blinking	The card is loading the system software or is resetting.
		Red	Steady on	A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Ports

Figure 7-19 Ports on the CE98-D8DQ



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1. Eight 400GE QSFP-DD optical ports

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Table 7-39 Ports on the CE98-D8DQ

Port	Connector Type	Description	Available Components
8 x 400GE QSFP-DD optical ports	QSFP-DD	A 400GE QSFP28 Ethernet optical port sends and receives service data at 400 Gbit/s. (In V200R021C00, ports can only work at 400 Gbit/s and cannot be used as 200GE, 100GE, and 40GE ports. Also, they cannot be split into 4 x 100GE, 2 x 200GE, 2 x 100GE, 2 x 40GE, 8 x 50GE, 8 x 25GE, 8 x 10GE, 4 x 50GE, 4 x 25GE, or 4 x 10GE. Auto-negotiation of 400GE copper cables is not supported, and these cables can be used only for peer-link. In V200R021C10, a 400GE port can work at 400 Gbit/s and can be dynamically split into two 200GE ports. Currently, only 2*200G AOCs and 2.5 m copper cables can be used. By default, negotiation is disabled and cannot be enabled for copper cables. If an unsupported module is inserted into a port, a message is	• **QSFP-DD to QSFP-DD AOC cable** • **QSFP-DD to QSFP-DD high-speed cable** • **QSFP-DD to 2*QSFP56 AOC cable** • **QSFP-DD to 2*QSFP56 high-speed cable**

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Port	Connector Type	Description	Available Components
		displayed, indicating that the medium does not match.)	

Functions and Features

Table 7-40 Functions and features of the CE98-D8DQ

Functions and Features	Description
Basic function	Provides data packet processing and traffic management on 8 400GE QSFP-DD optical ports.
Port split	In V200R021C00, ports can only work at 400 Gbit/s and cannot be used as 200GE, 100GE, and 40GE ports. Also, they cannot be split into 4 x 100GE, 2 x 200GE, 2 x 100GE, 2 x 40GE, 8 x 50GE, 8 x 25GE, 8 x 10GE, 4 x 50GE, 4 x 25GE, or 4 x 10GE. Auto-negotiation of 400GE copper cables is not supported, and these cables can be used only for peer-link. In V200R021C10, a 400GE port can work at 400 Gbit/s and can be dynamically split into two 200GE ports. Currently, only 2*200G AOCs and 2.5 m copper cables can be used. By default, negotiation is disabled and cannot be enabled for copper cables. If an unsupported module is inserted into a port, a message is displayed, indicating that the medium does not match.
Hot swap	Supported
Service port stacking	Not supported

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Technical Specifications

Table 7-41 Technical specifications of the CE98-D8DQ

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	40.1 mm x 410.8 mm x 265.6 mm (16.2 in. x 10.5 in. x 1.6 in.)
Weight without packaging [kg (lb)]	2.5 kg (5.51 lb)
Weight with packaging [kg (lb)]	3.8 kg (8.38 lb)
Typical power consumption [W]	198 W
Typical heat dissipation [BTU/hour]	676 BTU/hour
Static power consumption [W]	87 W
Static heat dissipation [BTU/hour]	297 BTU/hour
Maximum power consumption [W]	238 W
Maximum heat dissipation [BTU/hour]	812 BTU/hour

7.9 CE98-D32CQ (32-Port 40GE/100GE (QSFP28) Interface Card)

Version Mapping

Table 7-42 describes the mapping between the CE98-D32CQ card, switch models, and software versions.

Table 7-42 Version mapping

Switch Model	CE98-D32CQ
CE9860-4C-EI	Supported in V200R020C00 and later versions
Other models	Not supported

Card Overview

The CE98-D32CQ card can be install in any slot of the CE9860-4C-EI chassis.

Figure 7-20 shows the appearance of the CE98-D32CQ card.

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Figure 7-20 CE98-D32CQ card



Functions and Features

Table 7-43 describes functions and features of the CE98-D32CQ card.

Table 7-43 Functions and features

Function and Feature	Description
Basic function	Provides data packet processing and traffic management on 32 40GE/100GE QSFP28 optical ports.
Port split	Not supported
Hot swap	Supported
Service port stacking	Not supported

Indicators and Ports

Figure 7-21 shows indicators on the CE98-D32CQ panel.

Figure 7-21 Indicators on the CE98-D32CQ panel



Table 7-44 describes indicators on the CE98-D32CQ panel.

Table 7-44 Indicator description

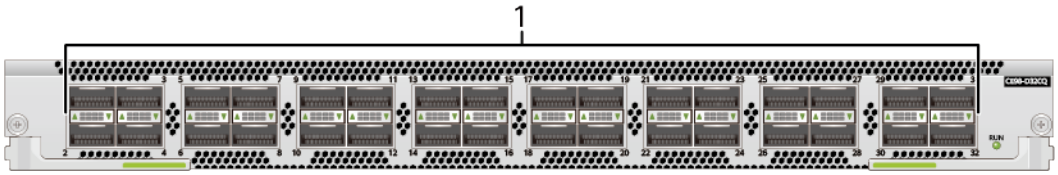
Number	Indicator	Color	Status	Description
1	QSFP28 optical ports: one single-color indicator	Green	Off	No link is established on the port.
			Steady on	A link has been established on the port.

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Number	Indicator	Color	Status	Description
	for each port **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.		Blinking	The port is transmitting or receiving data.
2	STAT (running status indicator)	Green	Steady on	The card has been powered on but the system software is not running.
			Slow blinking	The card is running properly.
			Fast blinking	The card is loading the system software or is resetting.
		Red	Steady on	A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

Figure 7-22 shows the ports on the CE98-D32CQ card.

Figure 7-22 Ports on the CE98-D32CQ card



1. Thirty-two 40GE/100GE QSFP28 optical ports

40GE/100GE QSFP28 optical port

Table 7-45 describes the attributes of a 40GE/100GE QSFP28 optical port.

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Table 7-45 Attributes of a 40GE/100GE QSFP28 optical port

Attribute	Description
Connector type	Depends on the optical module used.
Optical attributes	Depends on the QSFP+ or QSFP28 optical module used. See **40GE QSFP+ Optical Modules** or **100GE QSFP28 Optical Modules**.
Applicable cables	When the port works in 100GE mode, it can use: • QSFP28 optical module and MPO-MPO or LC-LC optical fiber • QSFP28 to QSFP28 high-speed cable • QSFP28 to QSFP28 AOC cable
	When the port works in 40GE mode, it can use: • QSFP+ optical module and MPO-MPO or LC-LC optical fiber • QSFP+ to QSFP+ high-speed cable • QSFP+ to QSFP+ AOC cable

Specifications

Table 7-46 lists technical specifications of the CE98-D32CQ card.

Table 7-46 Technical specifications

Item	Description
Physical specifications	• Dimensions (W x D x H): 410.8 mm x 265.6 mm x 40.1 mm (16.2 in. x 10.5 in. x 1.6 in.) • Weight: 2.5 kg (5.51 lb) • Typical power consumption: 242 W • Maximum power consumption: 284 W • Typical heat dissipation: 277 BTU/hr • Maximum heat dissipation: 714 BTU/hr
Environment parameters	• Operating temperature: 0°C to 40°C (32°F to 104°F) • Relative humidity: 5% RH to 95% RH • Storage temperature: -40°C to +70°C (-40°F to +158°F)

Ordering Information

Table 7-47 provides the ordering information.

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Table 7-47 Ordering information

Part Number	Card Model	Card Description
03025SNX	CE98-D32CQ	32-port 40GE/ 100GE (QSFP28) interface card

7.10 CE98-D32CQ-A (32 Port 100GE QSFP28 Interface Card)

Overview

Table 7-48 Basic information about the CE98-D32CQ-A

Item	Details
Description	32 Port 100GE QSFP28 Interface Card
Part Number	0302034067
Model	CE98-D32CQ-A
Silkscreen	CE98-D32CQ-A

Appearance

Figure 7-23 Appearance of the CE98-D32CQ-A



Version Mapping

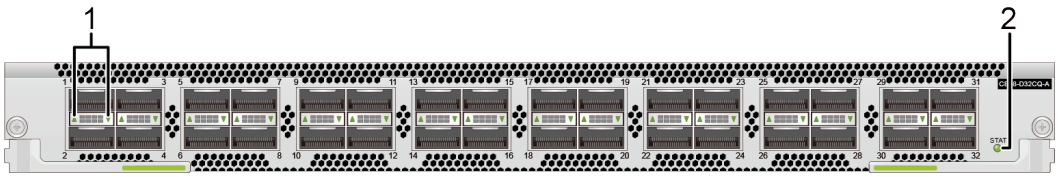
Table 7-49 Mappings between CE98-D32CQ-A and product

Product	First Supported Version	Last Supported Version	Unsupported Version	Unsupported Model
CloudEngine 9800	V200R022C10	-	-	CE9860-4C-EI

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Indicators

Figure 7-24 Indicators on the CE98-D32CQ-A



1. Port status indicator	2. Running status indicator	-	-

Table 7-50 Indicators on the CE98-D32CQ-A

Silkscreen	Name	Color	Status	Description
-	QSFP28 optical port: one single-color indicator for each port **NOTE** Arrowheads show the positions of ports. A down arrowhead indicates a port at the bottom, and an up arrowhead indicates a port at the top.	Green	Off	No link is established on the port.
-	Stack status indicator (Note: In V200R003C00 and later versions, you can use dfs-master led enable command to enable the stack status	Green	Steady on	A link has been established on the port.

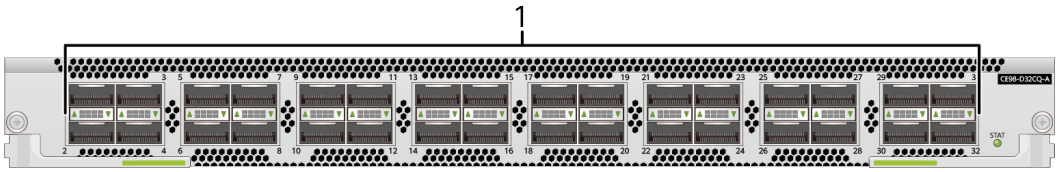
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Silkscreen	Name	Color	Status	Description
	indicator to display the DFS group master and backup status. After the stack status indicator is enabled to display the DFS group master and backup status, the stack status indicator on the DFS master device is steady on and that on the DFS backup device is off.)	Green	Blinking	The port is transmitting or receiving data.
STAT	Running status indicator	Green	Steady on	The card has been powered on but the system software is not running.
		Green	Slow blinking	The card is running properly.
		Green	Fast blinking	The card is loading the system software or is resetting.
		Red	Steady on	A fault that affects services has occurred. The fault cannot be rectified automatically and requires manual intervention.

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Ports

Figure 7-25 Ports on the CE98-D32CQ-A



1. Thirty-two 40GE/100GE QSFP28 optical ports

Table 7-51 Ports on the CE98-D32CQ-A

Port	Connector Type	Description	Available Components
Thirty-two 40GE/100GE QSFP28 optical ports	QSFP28	A 40GE/100GE QSFP28 optical port sends and receives service traffic at 40 Gbit/s or 100 Gbit/s. A 40GE/100GE QSFP28 optical port cannot be split.	**100GE QSFP28 optical modules** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 AOC cable** **QSFP28 to QSFP28 high-speed cable** **QSFP28 to QSFP28 high-speed cable** **40GE QSFP+ optical modules** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ AOC cable** **QSFP+ to QSFP+ high-speed cable** **QSFP+ to QSFP+ high-speed cable**

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Functions and Features

Table 7-52 Functions and features of the CE98-D32CQ-A

Functions and Features	Description
Basic function	Provides data packet processing and traffic management on 32 40GE/ 100GE QSFP28 optical ports.
Port split	Not supported
Hot swap	Supported
Service port stacking	Not supported

Technical Specifications

Table 7-53 Technical specifications of the CE98-D32CQ-A

Item	Specification
Dimensions without packaging (H x W x D) [mm (in.)]	40.1 mm x 410.8 mm x 265.6 mm (16.2 in. x 10.5 in. x 1.6 in.)
Weight without packaging [kg (lb)]	2.5 kg (5.51 lb)
Typical power consumption [W]	204 W
Typical heat dissipation [BTU/hour]	696 BTU/hour
Static power consumption [W]	22 W
Static heat dissipation [BTU/hour]	75 BTU/hour
Maximum power consumption [W]	233 W
Maximum heat dissipation [BTU/hour]	795 BTU/hour

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8 Cables

8.1 AC Power Cable
8.2 DC Power Cable
8.3 380 V High-Voltage DC Power Cable
8.4 Ground Cable
8.5 Console Cable
8.6 Ethernet Cable
8.7 Fiber Jumper
8.8 High-Speed Cable
8.9 AOC Cable

8.1 AC Power Cable

Types of AC Power Cables

NOTE

The AC power cables delivered must comply with the standards used in the delivery destination. This section uses the AC power cables complying with China's national standards as an example.

AC power cables are classified into two types: C13 straight female to PI straight male AC power cable and C13 straight female to C14 straight male AC power cable.

Appearance and Structure

Figure 8-1 shows the appearance of a C13 straight female to PI straight male AC power cable.

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Figure 8-1 C13 straight female to PI straight male AC power cable



Figure 8-2 shows the appearance of a C13 straight female to C14 straight male AC power cable.

Figure 8-2 C13 straight female to C14 straight male AC power cable



Connection

An AC power cable is connected to the AC power module of the device:

- The C13 straight female connector is connected to the power socket of a power module.
- The PI straight male or C14 straight male connector is connected to a power source.

When a 600 W AC&240 V DC power module or 1200 W AC&240 V DC power module uses 240 V high-voltage power input, it must be connected to the power supply device using a C13 straight female to C14 straight male AC power cable. This power cable is connected as follows:

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- The C13 straight female connector is connected to the power socket of the 600 W AC&240 V DC power module or 1200 W AC&240 V DC power module.
- The C14 straight male connector is connected to a high-voltage DC PDU. If a high-voltage DC power distribution box is used, make OT or cord end terminals for the cable. Cut the C14 straight male connector off and crimp OT or cord end terminals on the bare wires. Connect the blue wire to a positive terminal on the DC power distribution box, the brown wire to a negative terminal, and the yellow-green wire to a protection ground. If the switch fails to be powered on after you connect the power cable, swap the wires on the positive and negative terminals.

8.2 DC Power Cable

Appearance and Structure

DC power cables consist of the power cable for a 350 W/600 W DC power module, the power cable for a 1000 W DC power module, and the power cable for a 1200 W DC power module.

Figure 8-3 shows the appearance of the power cable for a 350 W/600 W DC power module.

Figure 8-3 Appearance of the power cable for a 350 W/600 W DC power module

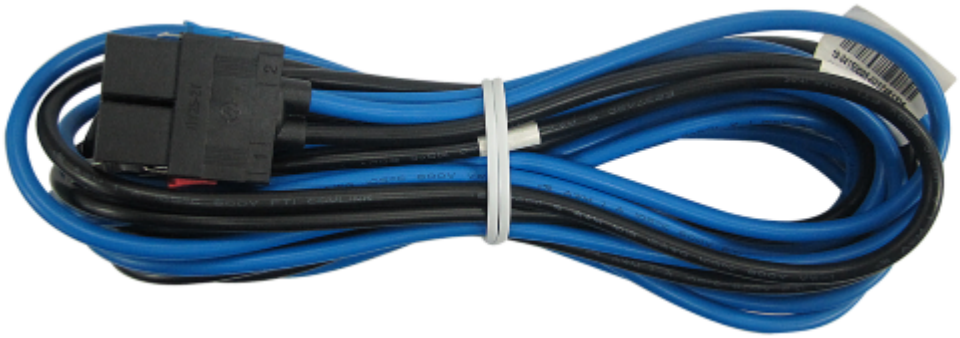
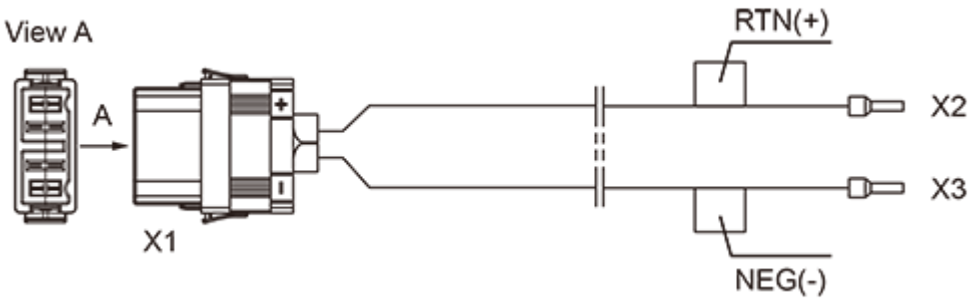


Figure 8-4 shows the structure of the power cable for a 350 W/600 W DC power module.

Figure 8-4 Structure of the power cable for a 350 W/600 W DC power module



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Figure 8-5 shows the appearance of the power cable for a 1000 W/1200 W DC power module.

Figure 8-5 Appearance of the power cable for a 1000 W/1200 W DC power module

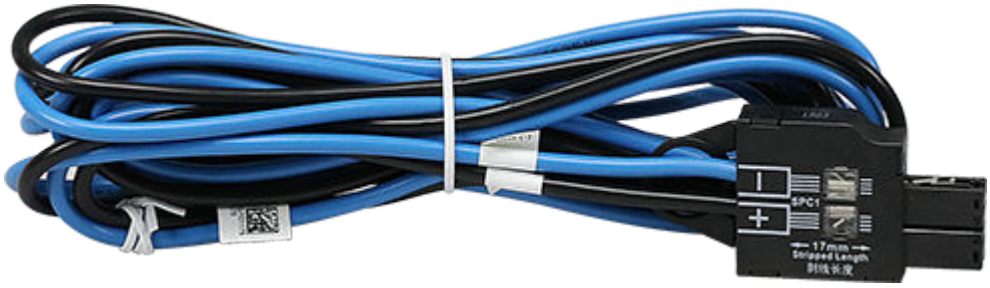


Figure 8-6 shows the structure of the power cable for a 1000 W/1200 W DC power module.

Figure 8-6 Structure of the power cable for a 1000 W/1200 W DC power module

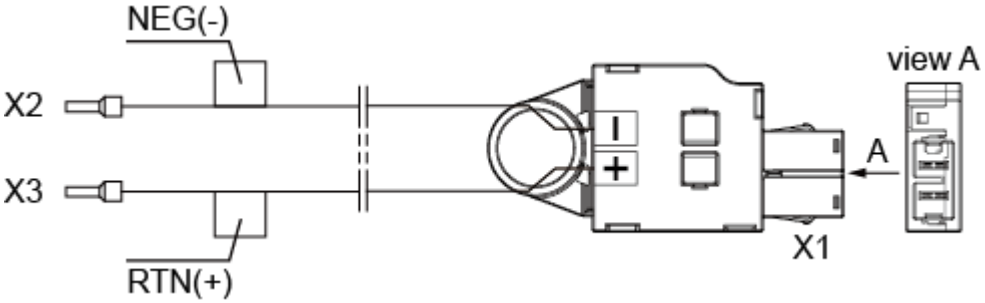


Figure 8-7 and Figure 8-8 shows the appearance of the power cable for a 1200 W DC power module.

Figure 8-7 Appearance of the power cable for a 1200 W DC power module (cord end terminal)



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Figure 8-8 Appearance of the power cable for a 1200 W DC power module (nylon insulation terminal)



Figure 8-9 and **Figure 8-10** shows the structure of the power cable for a 1200 W DC power module.

Figure 8-9 Structure of the power cable for a 1200 W DC power module (cord end terminal)

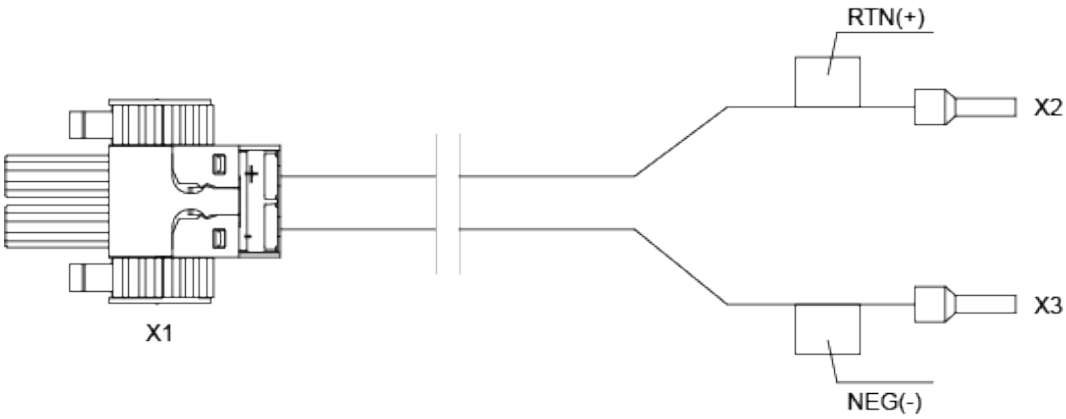
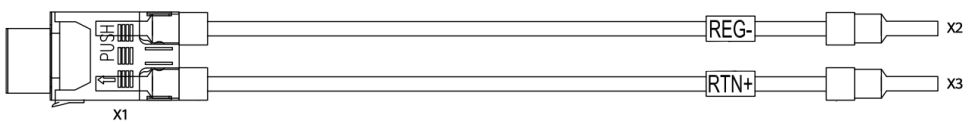


Figure 8-10 Structure of the power cable for a 1200 W DC power module (nylon insulation terminal)



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Pin Assignments

Table 8-1 lists the pin assignments of the power cable for a 350 W/600 W DC power module.

Table 8-1 Pin assignments of the power cable for a 350 W/600 W DC power module

X1	X2	X3	Length	Conductor Cross-Sectional Area
2 female	Cord end terminal 4^2 grey	Cord end terminal 4^2 grey	3 m	3.332 mm^2 (12AWG)

Table 8-2 lists the pin assignments of the power cable for a 1000 W DC power module.

Table 8-2 Pin assignments of the power cable for a 1000 W DC power module

X1	X2	X3	Length	Conductor Cross-Sectional Area
2 female	Cord end terminal 4^2 grey	Cord end terminal 4^2 grey	3 m	4 mm^2 (14AWG)

Table 8-3 and Table 8-4 lists the pin assignments of the power cable for a 1200 W DC power module.

Table 8-3 Pin assignments of the power cable for a 1200 W DC power module (cord end terminal)

X1	X2	X3	Length	Conductor Cross-Sectional Area
2 female	Cord end terminal 6^2 black	Cord end terminal 6^2 black	3 m	6 mm^2 (10AWG)

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Table 8-4 Pin assignments of the power cable for a 1200 W DC power module (nylon insulation terminal)

X1	X2	X3	Length	Conductor Cross-Sectional Area
2 female	nylon insulation terminal	nylon insulation terminal	3 m	5.26 mm^2 (10AWG)

Connection

A DC power cable connects to the DC power module of the device:

- X1 connector connects to the input port on the DC power module.
- X2/X3 terminal connects to an external power module.

8.3 380 V High-Voltage DC Power Cable

Appearance and Structure

Figure 8-11 shows the appearance of a 380 V high-voltage DC power cable.

Figure 8-11 380 V high-voltage DC power cable (high-voltage DC straight female connector to bare wires)



Connection

A 380 V high-voltage DC power cable has a high-voltage DC straight female connector at one end and bare wires at the other end, and is used to connect a

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600 W high-voltage DC power module or 1200 W high-voltage DC power module to a power supply device:

- The high-voltage DC straight female connector is connected to the power socket of the 600 W high-voltage DC power module or 1200 W high-voltage DC power module.
- The bare wires are connected to a 380 V high-voltage DC power distribution frame or power distribution box. Crimp OT or cord end terminals on the bare wires, and then connect the blue wire to a negative terminal, the brown wire to a positive terminal, and the yellow-green wire to a protection ground. If the switch fails to be powered on after you connect the power cable, swap the wires on the positive and negative terminals.

8.4 Ground Cable

Appearance and Structure

NOTE

Different types of ground cables have similar appearance, except for the cross-sectional area, size of the cable lugs, and cable length. The following figure is for reference.

Figure 8-12 shows the appearance of a ground cable.

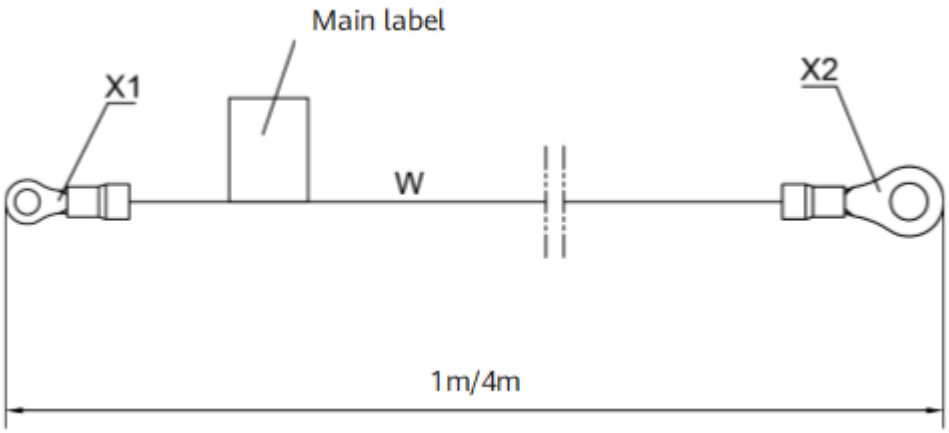
Figure 8-12 Ground cable appearance



Figure 8-13 shows the structure of a ground cable.

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Figure 8-13 Ground cable structure



Pin Assignments

Table 8-5 lists the pin assignments of a ground cable.

Table 8-5 Pin assignments

X1	X2	Wire Color	Conductor Cross-Sectional Area	Length
OT6-4	OT6-6	Green-yellow	4 mm^2	1 m or 4 m **NOTE** The default ground cable delivered with a switch is 1 m long. You can also order a 4 m ground cable for a switch based on your installation environment.

Connection

A ground cable grounds a device to protect it from lightning and electromagnetic interference. A ground cable is connected to a chassis in the following way:

- The OT6-4 naked crimping connector connects to the ground point on the chassis.
- The OT6-6 naked crimping connector connects to the ground point on the cabinet.

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8.5 Console Cable

Appearance and Structure

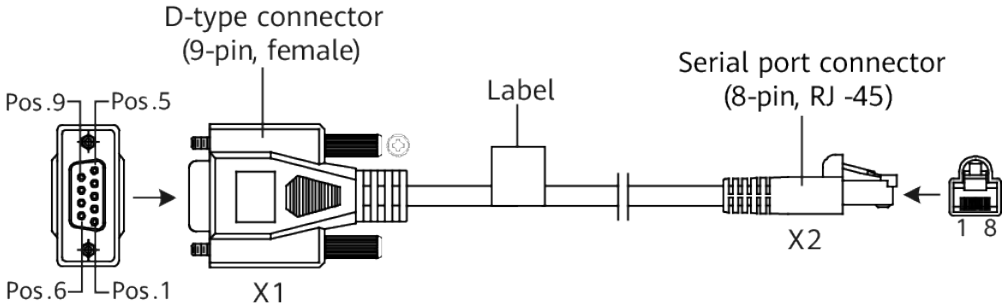
Figure 8-14 shows the appearance of a console cable.

Figure 8-14 Console cable appearance



Figure 8-15 shows the structure of a console cable.

Figure 8-15 Console cable structure



Pin Assignments

Table 8-6 lists the pin assignments of console cable connectors.

Table 8-6 Pin assignments

Connector	X1 (DB-9)	X2 (RJ45)
Pin assignment	2	3
	3	6
	5	5

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Connection

A console cable connects the console port of a device to the serial port of an operation terminal, enabling users to commission or locally maintain the device.

A console cable connects a device and a console as follows:

- The 8-pin RJ45 connector is connected to the console port of the device.
- The DB-9 female connector is connected to a maintenance terminal, such as a computer.

8.6 Ethernet Cable

Types of Ethernet Cables

Ethernet cables are classified into straight-through cables and crossover cables.

- Straight-through cable: The pin assignments of RJ45 connectors at both ends are shown in **Table 8-7**.
- Crossover cable: The pin assignments of RJ45 connectors at both ends are shown in **Table 8-8**.

Appearance and Structure

NOTE

- Straight-through cables and crossover cables are standard unshielded twisted pairs that use RJ45 connectors.
- A straight-through cable and a crossover cable have the same appearance.

Figure 8-16 and **Figure 8-17** show the appearance of an Ethernet cable.

Figure 8-16 Ethernet cable appearance (1)



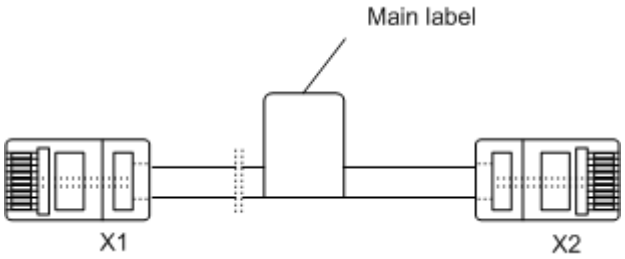
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Figure 8-17 Ethernet cable appearance (2)



Figure 8-18 shows the structure of an Ethernet cable.

Figure 8-18 Ethernet cable structure



Pin Assignments

Table 8-7 lists the pin assignments of a straight-through cable.

Table 8-7 Pin assignments of a straight-through cable

X1 Pin	Wire Color	X2 Pin
1	White and orange	1
2	Orange	2
3	White and green	3
4	Blue	4
5	White and blue	5

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X1 Pin	Wire Color	X2 Pin
6	Green	6
7	White and brown	7
8	Brown	8

Table 8-8 lists the pin assignments of a crossover cable.

Table 8-8 Pin assignments of a crossover cable

X1 Pin	Wire Color	X2 Pin
1	White and orange	3
2	Orange	6
3	White and green	1
4	Blue	4
5	White and blue	5
6	Green	2
7	White and brown	7
8	Brown	8

NOTE

To achieve the best electrical transmission performance, ensure that the wires connected to pins 1 and 2 and to pins 3 and 6 are twisted pairs.

Connection

Ethernet cables connect network devices to each other to enable the devices to communicate or to allow local maintenance and remote access.

- A straight-through cable connects a terminal (such as a PC or switch) to a network device.
- A crossover cable connects two terminals (such as PCs and switches).

Supported Cabling Types for 10GBASE-T

Table 8-9 describes the supported cabling types for a 10GBASE-T Ethernet electrical port.

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Table 8-9 Supported cabling types for 10GBASE-T

Item	Category 7 STP	Category 6A STP	Category 6A F/UTP	Category 6A U/UTP	Category 6 STP	Category 6 UTP
Cable Description	Category 7 shielded twisted pair (STP)	Category 6A shielded twisted pair	Category 6A foiled/ unshielded twisted pair (Cat6A F/UTP)	Not supported	Not supported	Not supported
Type	Class F	Class Ea	Class Ea			
Maximum transmission distance	100 m	100 m	100 m			
Cabling system bandwidth	600 MHz **NOTE** The cabling system exceeds the requirements for IEEE 10GBASE-T performance.	500 MHz **NOTE** The cabling system exceeds the requirements for IEEE 10GBASE-T performance.				

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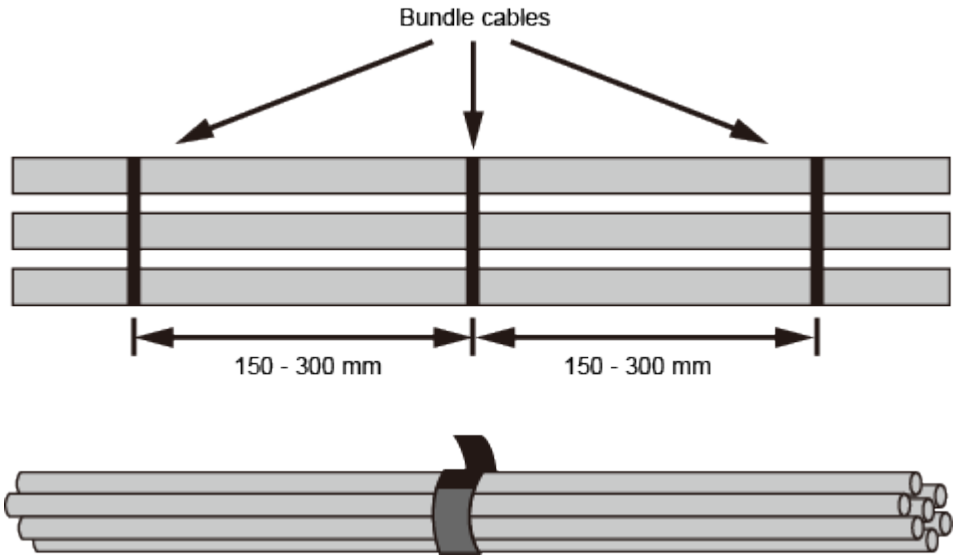
NOTE

- In a new built equipment room, Category 6A shielded twisted pairs or Category 7 twisted pairs are recommended. These cables can avoid alien crosstalk while having no special installation requirements. In addition, they can be used with other types of cables.
- If Category 6A foiled/unshielded twisted pairs are used in an equipment room and the cabling systems can meet requirements of TSB-155, follow these rules route these cables:
  - Separate these cables with other types of cables. If they must be routed in the same cable trough with other types of cables, separated them from other cables using a metal plate.
  - Separate cables as much as possible at the outlet and keep the cables parallel with each other. Most alien crosstalk appears within 20 m away from the outlet. To reduce alien crosstalk, do not bundle cables in the first 5 m to 20 m.
  - If cables need to be bundled, bundle cables with cable ties placed every 150 mm to 300 mm. See **Table 8-10**. Bundle cables loosely, as shown in **Figure 8-19**.
  - You are advised to add no more than 12 cables in a bundle. A bundle cannot have more than 24 cables.
- Strong interference may trigger the fast retrain function on 10GBASE-T Ethernet electrical ports, and a large number of bit errors occur for about 30 ms. To avoid this problem, keep the switch away from interference sources or take adequate interference shielding measures.

Table 8-10 Intervals between cable ties

Diameter of an Ethernet Cable Bundle (mm)	Interval Between Cable Ties (mm)
< 10	150
10-30	200
> 30	300

Figure 8-19 Method to bundle cables



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8.7 Fiber Jumper

8.7.1 Overview of Fiber Jumpers

A fiber jumper is a length of fiber cabling fitted with an optical fiber connector at each end. A fiber jumper connects an optical module to a fiber terminal box.

Appearance

Figure 8-20 shows the appearance of an LC single-mode fiber jumper.

Figure 8-20 Appearance of an LC single-mode fiber jumper

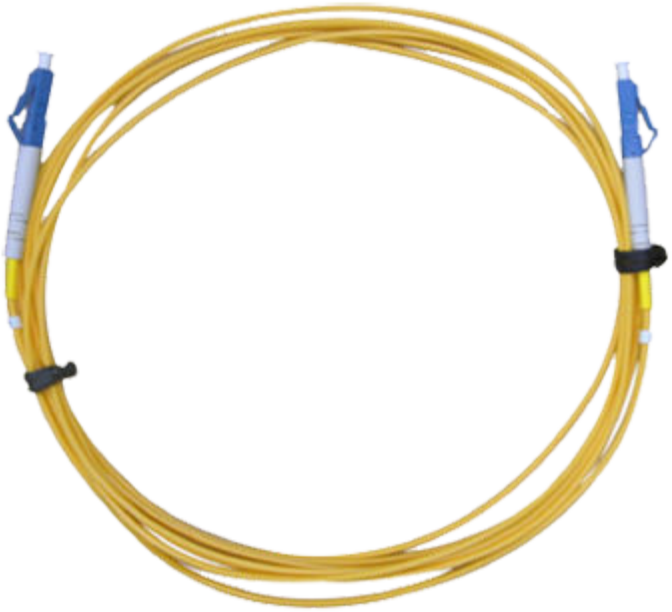


Figure 8-21 shows the appearance of an LC multimode fiber jumper.

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Figure 8-21 Appearance of an LC multimode fiber jumper



Figure 8-22 shows the appearance of an MPO-MPO single-mode fiber jumper.

Figure 8-22 Appearance of an MPO-MPO single-mode fiber jumper



Figure 8-23 shows the appearance of an 8-core or 12-core MPO-MPO multimode fiber jumper.

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Figure 8-23 Appearance of an 8-core or 12-core MPO-MPO multimode fiber jumper



Figure 8-24 shows the appearance of a 16-core MPO-MPO multimode fiber jumper.

Figure 8-24 Appearance of a 16-core MPO-MPO multimode fiber jumper

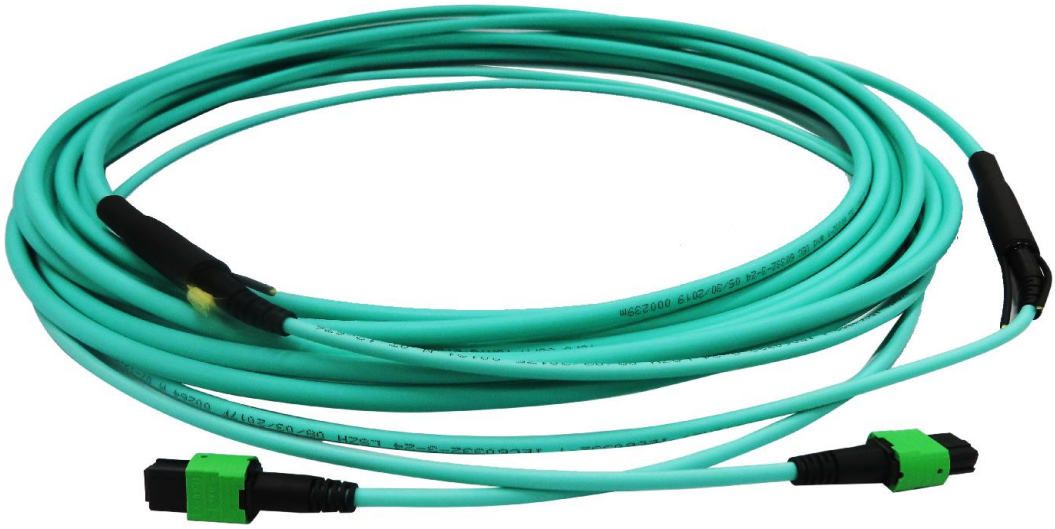


Figure 8-25 shows the appearance of an MPO-4*DLC fiber jumper.

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Figure 8-25 Appearance of an MPO-4*DLC fiber jumper



Pin Definition

NOTE

If the pin assignment sequence of connector X1 is the same as that of connector X2, the connection type is A. If the pin assignment sequence of connector X1 is reverse to that of connector X2, the connection type is B.

- Pin assignments of an 8-core MPO-MPO fiber jumper

Figure 8-26 Structure of an 8-core MPO-MPO fiber jumper

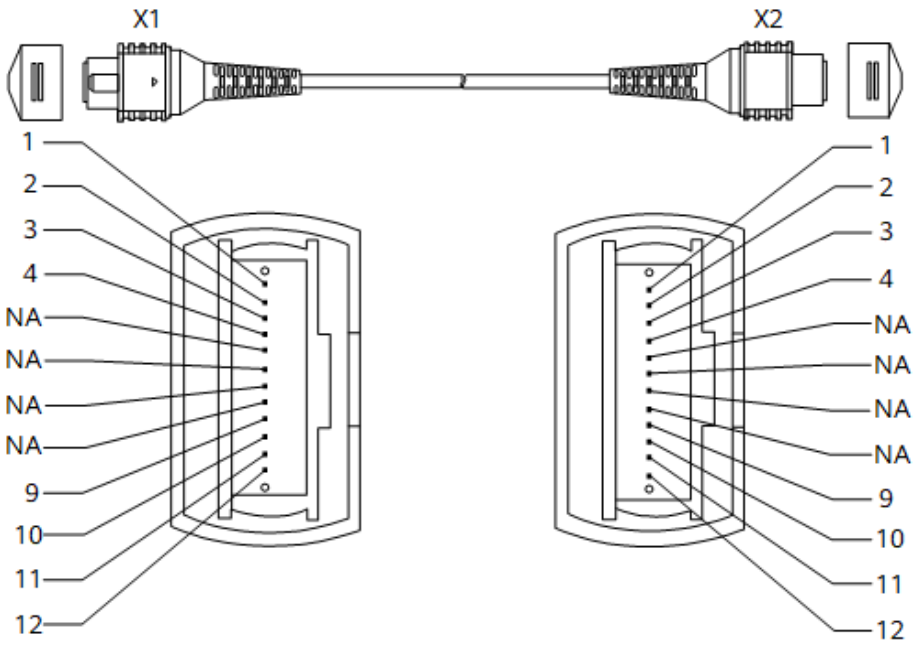


Table 8-11 Pin assignments of an 8-core MPO-MPO fiber jumper

X1 Pin	X2 Pin
1	12

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X1 Pin	X2 Pin
2	11
3	10
4	9
9	4
10	3
11	2
12	1

- Pin assignments of a 12-core MPO-MPO fiber jumper

  Figure 8-27 Structure of a 12-core MPO-MPO fiber jumper

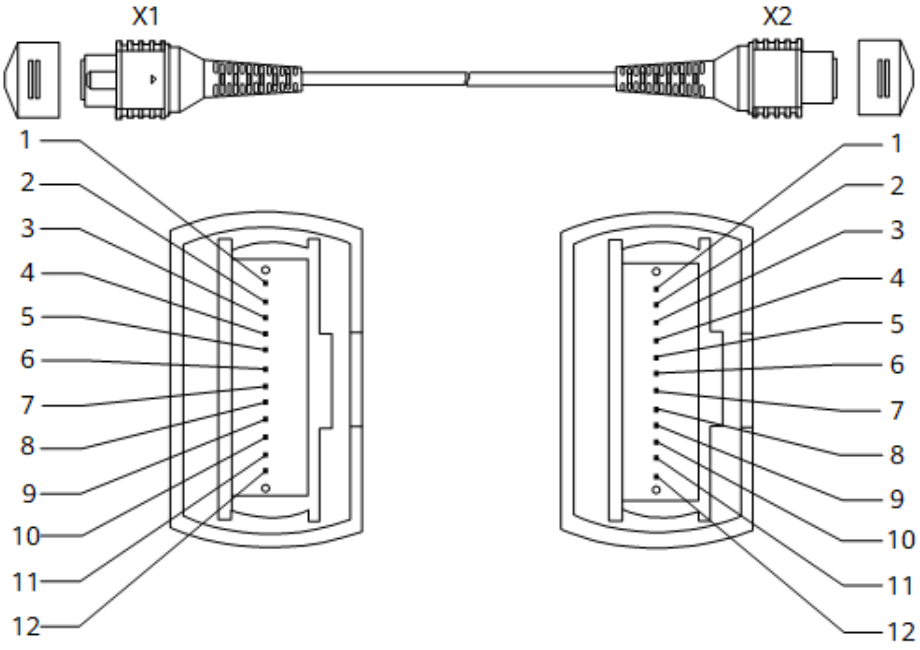


Table 8-12 Pin assignments of a 12-core MPO-MPO fiber jumper

X1 Pin	X2 Pin
1	12
2	11
3	10
4	9
5	8

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X1 Pin	X2 Pin
6	7
7	6
8	5
9	4
10	3
11	2
12	1

- Pin assignments of an MPO-4*DLC fiber jumper

  Figure 8-28 Structure of an MPO-4*DLC fiber jumper

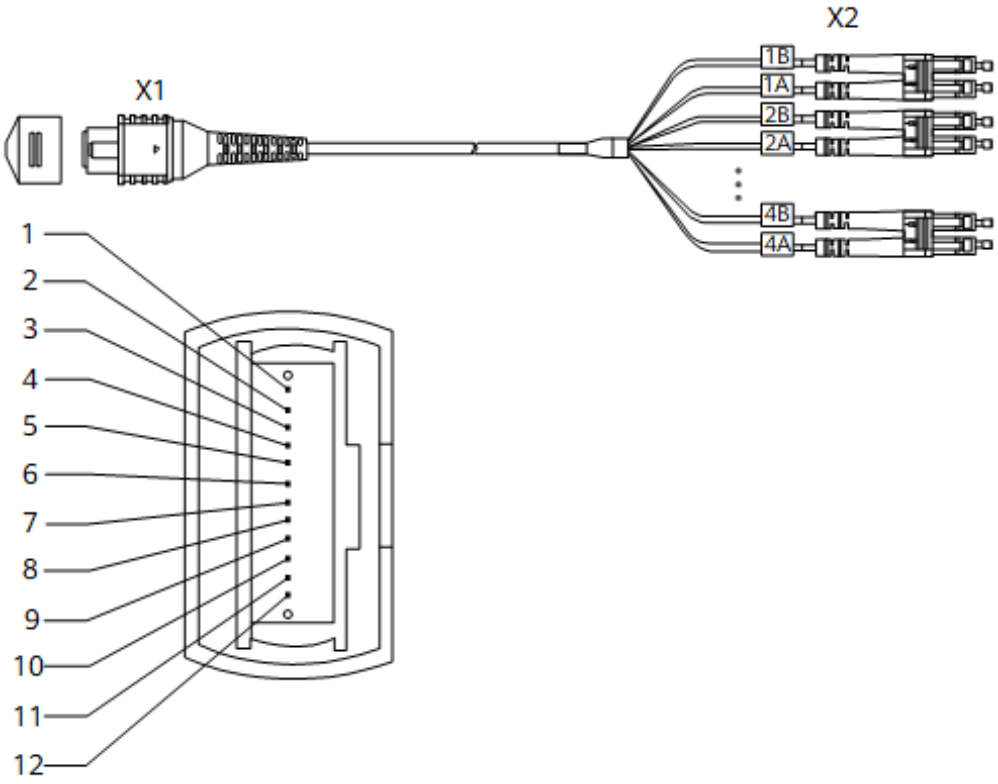


Table 8-13 Pin assignments of an MPO-4*DLC fiber jumper

X1 Pin	X2 Pin
1	1B
2	2B

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X1 Pin	X2 Pin
3	3B
4	4B
9	4A
10	3A
11	2A
12	1A

Selection of Fiber Jumpers

1. Determine the length of fiber jumpers based on the onsite cabling distance.
2. Determine the fiber jumper type based on the optical module type.
   - Use a multimode fiber jumper for a multimode optical module.
   - Use a single-mode fiber jumper for a single-mode optical module.
3. Determine the optical fiber connector type based on the port type.

   Ensure that the optical fiber connector at each end of a fiber jumper is of the same type as the port to which it will be connected.

8.7.2 Optical Fiber

Optical Fiber Type

Optical fibers are classified into single-mode optical fibers and multimode optical fibers. ITU-T G.652 and G.655 have defined two types of single-mode optical fibers. According to the latest cabling infrastructure of ISO/IEC 11801, multimode optical fibers are classified into four categories: OM1, OM2, OM3, and OM4. **Table 8-14** and **Table 8-15** list the characteristics and application scenarios of single-mode optical fibers and multimode optical fibers, respectively.

Table 8-14 Types and characteristics of single-mode optical fibers

Type	Diameter	Color	Characteristics	Modal Bandwidth	Application Scenario
G.652	9 μm	Typically yellow (as shown in Appearance of an LC single-mode fiber jumper)	Transmit laser in a single mode with a specified wavelength.	-	Single-mode optical fibers support a wide band and large transmission capacity, and are

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Type	Diameter	Color	Characteristics	Modal Bandwidth	Application Scenario
G.655					used for long-distance transmission.

Table 8-15 Types and characteristics of multimode optical fibers

Type	Diameter	Color	Characteristics	Minimum Effective Modal Bandwidth (850nm)	Minimum Overfilled Launch Modal Bandwidth (1300nm)	Application Scenario	
OM1	62.5/125 µm	Typically orange (as shown in Appearance of an LC multimode fiber jumper)	Deliver high light gathering ability and bending resistance.	200 MHz*km	500 MHz*km	**NOTE** OM1 and OM2 deliver shorter transmission distances and poorer performance, and therefore are gradually replaced by OM3 and OM4.	Transmit laser in multiple modes with a specified wavelength. Model dispersion may occur during transmission over multimode fibers. Multimode optical fibers have a small capacity and their
OM2	50/125 µm	Typically orange (as shown in Appearance of an LC multimode fiber jumper)	Compared with OM1, OM2 provides higher bandwidth because it significantly reduces modal dispersion.	500 MHz*km			

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Type	Diameter	Color	Characteristics	Minimum Effective Modal Bandwidth (850nm)	Minimum Overfilled Launch Modal Bandwidth (1300nm)	Application Scenario	
OM3	50/125 μm	Typically light green (as shown in Appearance of an 8-core or 12-core MPO-MPO multimode fiber jumper)	OM3 provides longer transmission distances than OM1 and OM2.	2000 MHz*km		**NOTE** Typically, OM3 and OM4 are used for 25GE or higher optical modules.	performance is inferior to that of single-mode optical fibers, making them suitable to short-distance transmission.
OM4	50/125 μm	Typically light green (as shown in Appearance of an 8-core or 12-core MPO-MPO multimode fiber jumper)	OM4 is a laser optimized optical fiber. Compared with OM3, OM4 provides higher model bandwidth.	4700 MHz*km			

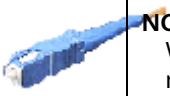
8.7.3 Optical Fiber Connector

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Optical Fiber Connector Type

Optical fiber connectors are used to connect optical fibers. **Table 8-16** lists common optical fiber connectors.

Table 8-16 Common optical fiber connectors

Connector Type	Optical Fiber Connector			
Square connector	SC/PC optical fiber connector 	LC/PC optical fiber connector  **NOTICE** When connecting or removing an LC optical fiber connector, align the connector with the optical port and do not rotate the optical fiber. Pay attention to the following points: • To connect an optical fiber, align the optical fiber connector with the optical port and gently insert the optical fiber into the port. • To remove an optical fiber, press the clip on the connector, push the connector inward slightly, and pull the optical fiber out.	MTRJ/PC optical fiber connector 	MPO optical fiber connector  • Before removing an MPO optical fiber connector, pull out the shell of the middle part of the connector. • If an MPO optical fiber connector cannot be completely inserted into an optical port, do not force it into the port. Instead, turn the connector over and smoothly insert it into the optical port again.
Round connector	FC optical fiber connector 	ST/PC optical fiber connector 	-	-

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Ceramic Ferrule Endface

According to the return loss, ceramic ferrule endfaces of optical fiber connectors are classified into physical contact (PC), ultra physical contact (UPC), and angled physical contact (APC), as shown in **Figure 8-29**.

Figure 8-29 Polishing styles of ceramic ferrule endfaces

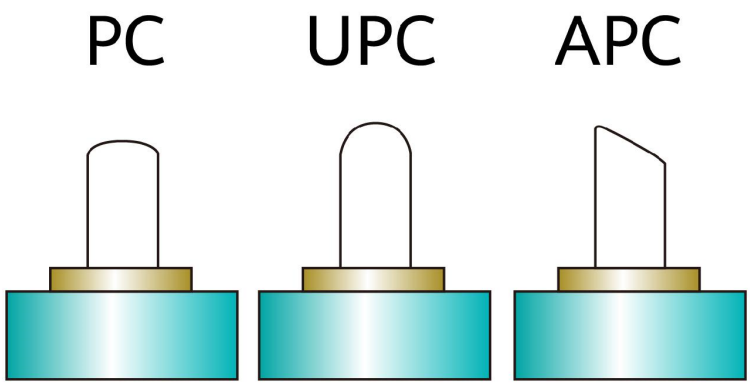


Table 8-17 Polishing styles of ceramic ferrule endfaces

Polishing Style	Return Loss	Characteristics	Application Scenario
PC	–35 dB	Flat	Scenarios with low requirements on return loss
UPC	–50 dB	Slightly curved	Scenarios with high requirements on return loss
APC	–60 dB	8-degree angled	

NOTICE

In principle, optical fiber connectors with different ceramic ferrule endfaces cannot be connected. Generally, connecting a PC connector with a UPC connector will not cause permanent physical damage to these connectors. However, connecting an APC connector with a PC connector will damage the connectors' ferrule endfaces. This is because the structures of the APC and PC connectors are completely different. To connect them together, use a PC/APC fiber jumper. This, however, will adversely affect the transmission performance.

Ceramic ferrule endface requirements

Different types of optical fibers have diverse requirements on the connectors' ceramic ferrule endfaces. **Figure 8-30** lists these requirements.

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Figure 8-30 Ceramic ferrule endfaces

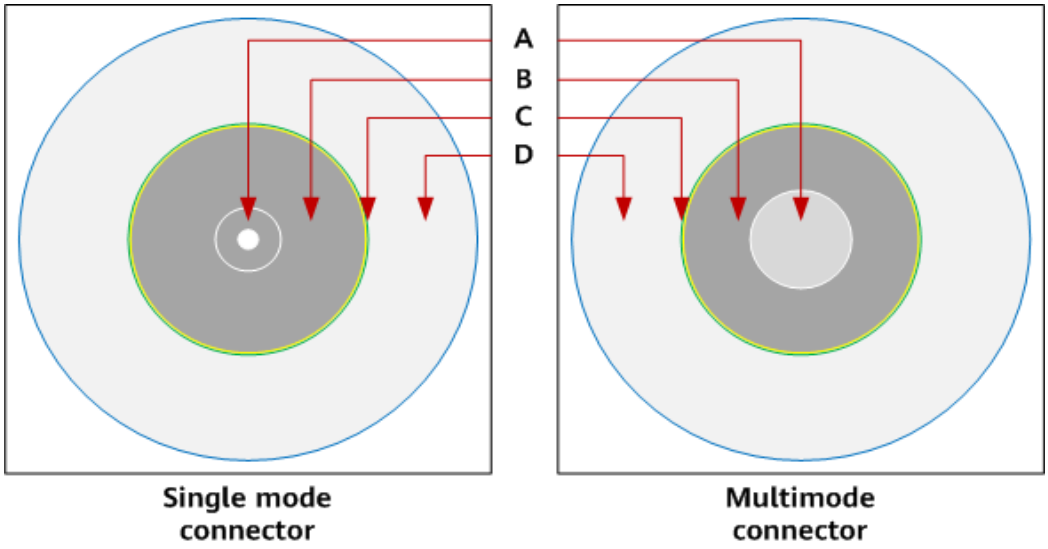


Table 8-18 Ceramic ferrule endface requirements

Connector Type	Zone	Diameter	Defect	Scratch
Single-mode optical fiber connector	A: Core zone	0–25 μm	None	None
	B: Cladding zone	25–120 μm	< 2 μm: no limit 2–5 μm: 5 > 5 μm: 0	≤ 3 μm: no limit > 3 μm: 0
	C: Adhesive/ epoxy zone	120–130 μm	No limit	No limit
	D: Contact/ ferrule zone	130–250 μm	≥ 10 μm: 0	No limit
Multimode optical fiber connector	A: Core zone	0–65 μm	≤ 5 μm: 4 > 5 μm: 0	≤ 5 μm: no limit > 5 μm: 0
	B: Cladding zone	65–120 μm	< 2 μm: no limit 2–5 μm: 5 > 5 μm: 0	≤ 5 μm: no limit > 5 μm: 0
	C: Adhesive/ epoxy zone	120–130 μm	No limit	No limit
	D: Contact/ ferrule zone	130–250 μm	≥ 10 μm: 0	No limit

8.8 High-Speed Cable

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8.8.1 Understanding High-Speed Cables

NOTE

You are advised to use high-speed cables that are certified for Huawei data center switches. This is because high-speed cables that are not certified for Huawei data center switches cannot ensure transmission reliability and may affect service stability. Huawei is not liable for any problems caused by high-speed cables that are not certified for Huawei data center switches and will not fix such problems.

Appearance and Structure

The following figures appearances various high-speed cables.

Figure 8-31 Appearance of an SFP+ to SFP+ or SFP28 to SFP28 high-speed cable



Figure 8-32 Appearance of a QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cable



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Figure 8-33 Appearance of a QSFP+ to 4*SFP+ or QSFP28 to 4*SFP28 high-speed cable



Figure 8-34 Appearance of a QSFP-DD to QSFP-DD high-speed cable



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Figure 8-35 Appearance of a QSFP-DD to 2*QSFP56 high-speed cable



The following figures show structures of various high-speed cables.

Figure 8-36 Structure of an SFP+ to SFP+ or SFP28 to SFP28 high-speed cable

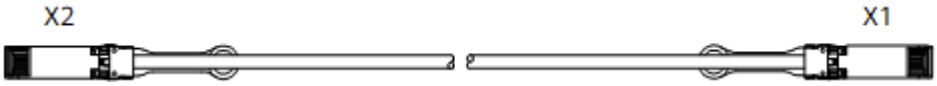


Figure 8-37 Structure of a QSFP+ to QSFP+ or QSFP28 to QSFP28 high-speed cable



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Figure 8-38 Structure of a QSFP+ to 4*SFP+ or QSFP28 to 4*SFP28 high-speed cable

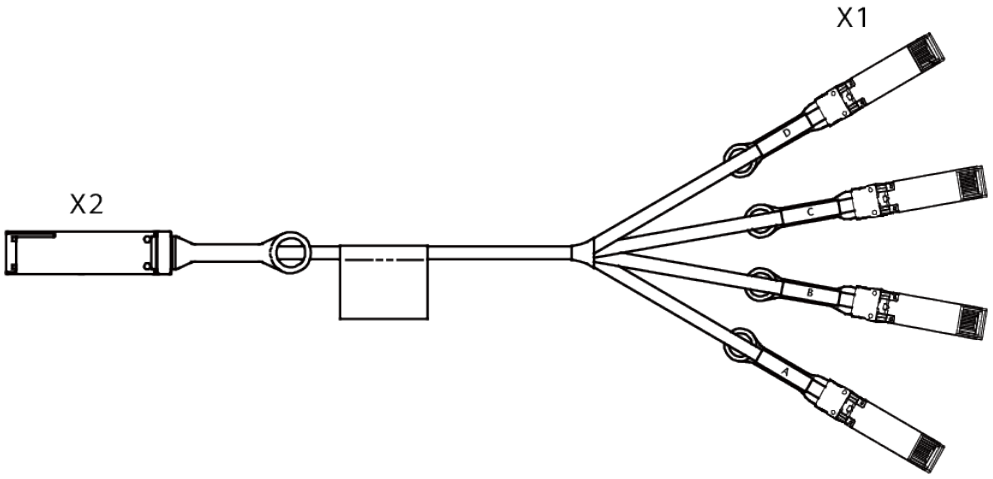
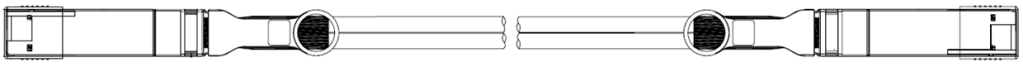


Figure 8-39 Structure of a QSFP-DD to QSFP-DD high-speed cable



8.8.2 SFP+ to SFP+ High-Speed Cable

8.8.2.1 SFP-10G-CU1M

Technical Specifications

Table 8-19 Technical specifications of the SFP-10G-CU1M

Item	Details
Part Number	02310MUN
Model	SFP-10G-CU1M
Description	SFP+,10G,High Speed Direct-attach Cables,1m,SFP +20M,CC2P0.254B(S),SFP+20M,Used indoor
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	1 m (3.28 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	25 mm (0.98 in.)

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Item	Details
Minimum Clearance for Cable Routing [mm (in.)]	60 mm (2.36 in.)

8.8.2.2 SFP-10G-CU3M

Technical Specifications

Table 8-20 Technical specifications of the SFP-10G-CU3M

Item	Details
Part Number	02310MUP
Model	SFP-10G-CU3M
Description	SFP+,10G,High Speed Direct-attach Cables,3m,SFP +20M,CC2P0.254B(S),SFP+20M,Used indoor
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	3 m (9.84 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	25 mm (0.98 in.)
Minimum Clearance for Cable Routing [mm (in.)]	60 mm (2.36 in.)

8.8.2.3 SFP-10G-CU5M

Technical Specifications

Table 8-21 Technical specifications of the SFP-10G-CU5M

Item	Details
Part Number	02310QPR
Model	SFP-10G-CU5M

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Item	Details
Description	SFP+,10G,High Speed Cable,5m,SFP +20M,CC2P0.254B(S),SFP +20M,LSFRZH For Indoor
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	5 m (16.40 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	30 mm (1.18 in.)
Minimum Clearance for Cable Routing [mm (in.)]	60 mm (2.36 in.)

8.8.2.4 SFP-10G-AC7M

Technical Specifications

Table 8-22 Technical specifications of the SFP-10G-AC7M

Item	Details
Part Number	02310QPS
Model	SFP-10G-AC7M
Description	SFP+,10G,Active High Speed Cable, 7m,SFP+20M,CC2P0.254B(S),SFP +20M,LSFRZH For Indoor
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	7 m (22.97 ft.)
Electrical attribute	Active
Bend radius [mm (in.)]	25 mm (0.98 in.)
Minimum Clearance for Cable Routing [mm (in.)]	60 mm (2.36 in.)

8.8.2.5 SFP-10G-AC10M

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Technical Specifications

Table 8-23 Technical specifications of the SFP-10G-AC10M

Item	Details
Part Number	02310MUQ
Model	SFP-10G-AC10M
Description	SFP+,10G,Active High Speed Cables, 10m,SFP+20M,CC2P0.32B(S),SFP +20M,Used indoor
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	10 m (32.81 ft.)
Electrical attribute	Active
Bend radius [mm (in.)]	25 mm (0.98 in.)
Minimum Clearance for Cable Routing [mm (in.)]	60 mm (2.36 in.)

8.8.3 SFP28 to SFP28 High-Speed Cable

8.8.3.1 SFP-25G-CU1M

Technical Specifications

Table 8-24 Technical specifications of the SFP-25G-CU1M

Item	Details
Part Number	02311NKS
Model	SFP-25G-CU1M
Description	SFP28,25G,High Speed Direct-attach Cables,1m, (SFP28),CC8P0.254B(S),SFP28
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	1 m (3.28 ft.)
Electrical attribute	Passive

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Item	Details
Bend radius [mm (in.)]	25 mm (0.98 in.)
Minimum Clearance for Cable Routing [mm (in.)]	70 mm (2.76 in.)

8.8.3.2 SFP-25G-CU3M

Technical Specifications

Table 8-25 Technical specifications of the SFP-25G-CU3M

Item	Details
Part Number	02311NKV
Model	SFP-25G-CU3M
Description	SFP28,25G,High Speed Direct-attach Cables,3m, (SFP28),CC8P0.254B(S),SFP28
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	3 m (9.84 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	25 mm (0.98 in.)
Minimum Clearance for Cable Routing [mm (in.)]	70 mm (2.76 in.)

8.8.3.3 SFP-25G-CU3M-N

Technical Specifications

Table 8-26 Technical specifications of the SFP-25G-CU3M-N

Item	Details
Part Number	02311MNV
Model	SFP-25G-CU3M-N

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Item	Details
Description	SFP28,25G,High Speed Direct-attach Cables,3m,(SFP28),CC2P0.4B(S), (SFP28)
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	3 m (9.84 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	30 mm (1.18 in.)
Minimum Clearance for Cable Routing [mm (in.)]	70 mm (2.76 in.)

8.8.3.4 SFP-25G-CU5M

Technical Specifications

Table 8-27 Technical specifications of the SFP-25G-CU5M

Item	Details
Part Number	02311MNW
Model	SFP-25G-CU5M
Description	SFP28,25G,High Speed Direct-attach Cables,5m,(SFP28),CC2P0.4B(S), (SFP28)
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	5 m (16.40 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	30 mm (1.18 in.)
Minimum Clearance for Cable Routing [mm (in.)]	70 mm (2.76 in.)

8.8.3.5 SFP-25G-AC10M

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Technical Specifications

Table 8-28 Technical specifications of the SFP-25G-AC10M

Item	Details
Part Number	02312LNP
Model	SFP-25G-AC10M
Description	SFP28,25G,Active High Speed Cables, 10m,SFP28,CC2P0.254B(S),SFP28,Used indoor
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	10 m (32.81 ft.)
Electrical attribute	Active
Bend radius [mm (in.)]	30 mm (1.18 in.)
Minimum Clearance for Cable Routing [mm (in.)]	70 mm (2.76 in.)

8.8.4 QSFP+ to QSFP+ High-Speed Cable

8.8.4.1 QSFP-40G-CU1M

Technical Specifications

Table 8-29 Technical specifications of the QSFP-40G-CU1M

Item	Details
Part Number	02310MUG
Model	QSFP-40G-CU1M
Description	QSFP+,40G,High Speed Direct-attach Cables,1m,QSFP +38M,CC8P0.254B(S),QSFP+38M,Used indoor
Connector X1	QSFP+
Connector X2	QSFP+
Cable length [m(ft.)]	1 m (3.28 ft.)

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Item	Details
Electrical attribute	Passive
Bend radius [mm (in.)]	35 mm (1.38 in.)
Minimum Clearance for Cable Routing [mm (in.)]	75 mm (2.95 in.)

8.8.4.2 QSFP-40G-CU3M

Technical Specifications

Table 8-30 Technical specifications of the QSFP-40G-CU3M

Item	Details
Part Number	02310MUH
Model	QSFP-40G-CU3M
Description	QSFP+,40G,High Speed Direct-attach Cables,3m,QSFP +38M,CC8P0.32B(S),QSFP+38M,Used indoor
Connector X1	QSFP+
Connector X2	QSFP+
Cable length [m(ft.)]	3 m (9.84 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	40 mm (1.57 in.)
Minimum Clearance for Cable Routing [mm (in.)]	75 mm (2.95 in.)

8.8.4.3 QSFP-40G-CU5M

Technical Specifications

Table 8-31 Technical specifications of the QSFP-40G-CU5M

Item	Details
Part Number	02310MUJ

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Item	Details
Model	QSFP-40G-CU5M
Description	QSFP+,40G,High Speed Direct-attach Cables,5m,QSFP +38M,CC8P0.40B(S),QSFP+38M,Used indoor
Connector X1	QSFP+
Connector X2	QSFP+
Cable length [m(ft.)]	5 m (16.40 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	45 mm (1.77 in.)
Minimum Clearance for Cable Routing [mm (in.)]	75 mm (2.95 in.)

8.8.5 QSFP+ to 4*SFP+ High-Speed Cable

8.8.5.1 QSFP-4SFP10G-CU1M

Technical Specifications

Table 8-32 Technical specifications of the QSFP-4SFP10G-CU1M

Item	Details
Part Number	02310MUK
Model	QSFP-4SFP10G-CU1M
Description	QSFP+,4SFP+10G,High Speed Direct-attach Cables,1m,QSFP +38M,CC8P0.254B(S),4*SFP+20M,Used indoor
Connector X1	QSFP+
Connector X2	4*SFP+
Cable length [m(ft.)]	1 m (3.28 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	25 mm (0.98 in.)

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Item	Details
Minimum Clearance for Cable Routing [mm (in.)]	QSFP+ end: 100 mm (3.94 in.) SFP+ end: 60 mm (2.36 in.)

8.8.5.2 QSFP-4SFP10G-CU3M

Technical Specifications

Table 8-33 Technical specifications of the QSFP-4SFP10G-CU3M

Item	Details
Part Number	02310MUL
Model	QSFP-4SFP10G-CU3M
Description	QSFP+,4SFP+10G,High Speed Direct-attach Cables,3m,QSFP +38M,CC8P0.32B(S),4*SFP+20M,Used indoor
Connector X1	QSFP+
Connector X2	4*SFP+
Cable length [m(ft.)]	3 m (9.84 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	25 mm (0.98 in.)
Minimum Clearance for Cable Routing [mm (in.)]	QSFP+ end: 100 mm (3.94 in.) SFP+ end: 60 mm (2.36 in.)

8.8.5.3 QSFP-4SFP10G-CU5M

Technical Specifications

Table 8-34 Technical specifications of the QSFP-4SFP10G-CU5M

Item	Details
Part Number	02310MUM
Model	QSFP-4SFP10G-CU5M

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Item	Details
Description	QSFP+,4SFP+10G,High Speed Direct-attach Cables,5m,QSFP +38M,CC8P0.4B(S),4*SFP+20M,Used indoor
Connector X1	QSFP+
Connector X2	4*SFP+
Cable length [m(ft.)]	5 m (16.40 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	30 mm (1.18 in.)
Minimum Clearance for Cable Routing [mm (in.)]	QSFP+ end: 100 mm (3.94 in.) SFP+ end: 60 mm (2.36 in.)

8.8.6 QSFP28 to QSFP28 High-Speed Cable

8.8.6.1 QSFP28-100G-CU1M

Technical Specifications

Table 8-35 Technical specifications of the QSFP28-100G-CU1M

Item	Details
Part Number	02311KNW
Model	QSFP28-100G-CU1M
Description	QSFP28,100G,High Speed Direct-attach Cables,1m, (QSFP28),CC8P0.254B(S),QSFP28,Used indoor
Connector X1	QSFP28
Connector X2	QSFP28
Cable length [m(ft.)]	1 m (3.28 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	70 mm (2.76 in.)
Minimum Clearance for Cable Routing [mm (in.)]	90 mm (3.54 in.)

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8.8.6.2 QSFP28-100G-CU3M

Technical Specifications

Table 8-36 Technical specifications of the QSFP28-100G-CU3M

Item	Details
Part Number	02311KNX
Model	QSFP28-100G-CU3M
Description	QSFP28,100G,High Speed Direct-attach Cables,3m,(QSFP28),CC8P0.254B(S),QSFP28,Used indoor
Connector X1	QSFP28
Connector X2	QSFP28
Cable length [m(ft.)]	3 m (9.84 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	70 mm (2.76 in.)
Minimum Clearance for Cable Routing [mm (in.)]	90 mm (3.54 in.)

8.8.6.3 QSFP28-100G-CU5M

Technical Specifications

Table 8-37 Technical specifications of the QSFP28-100G-CU5M

Item	Details
Part Number	02311KNY
Model	QSFP28-100G-CU5M
Description	QSFP28,100G,High Speed Direct-attach Cables,5m,(QSFP28),CC8P0.4B(S),QSFP28,Used indoor
Connector X1	QSFP28
Connector X2	QSFP28
Cable length [m(ft.)]	5 m (16.40 ft.)

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Item	Details
Electrical attribute	Passive
Bend radius [mm (in.)]	70 mm (2.76 in.)
Minimum Clearance for Cable Routing [mm (in.)]	90 mm (3.54 in.)

8.8.7 QSFP28 to 4*SFP28 High-Speed Cable

8.8.7.1 QSFP-4SFP25G-CU1M

Technical Specifications

Table 8-38 Technical specifications of the QSFP-4SFP25G-CU1M

Item	Details
Part Number	02311MNX
Model	QSFP-4SFP25G-CU1M
Description	100GE QSFP28-4SFP25G,High Speed Direct-attach Cables,1m,(QSFP28),(4*(CC2P0.254B(S))),(4SFP28)
Connector X1	QSFP28
Connector X2	4*SFP28
Cable length [m(ft.)]	1 m (3.28 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	35 mm (1.38 in.)
Minimum Clearance for Cable Routing [mm (in.)]	QSFP28 end: 100 mm (3.94 in.) SFP28 end: 70 mm (2.76 in.)

8.8.7.2 QSFP-4SFP25G-CU3M

Technical Specifications

Table 8-39 Technical specifications of the QSFP-4SFP25G-CU3M

Item	Details
Part Number	02311MNY
Model	QSFP-4SFP25G-CU3M
Description	100GE QSFP28-4SFP25G,High Speed Direct-attach Cables,3m,(QSFP28),(4*(CC2P0.254B(S))),(4SFP28)
Connector X1	QSFP28
Connector X2	4*SFP28
Cable length [m(ft.)]	3 m (9.84 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	35 mm (1.38 in.)
Minimum Clearance for Cable Routing [mm (in.)]	QSFP28 end: 100 mm (3.94 in.) SFP28 end: 70 mm (2.76 in.)

8.8.7.3 QSFP-4SFP25G-CU3M-N

Technical Specifications

Table 8-40 Technical specifications of the QSFP-4SFP25G-CU3M-N

Item	Details
Part Number	02311MPA
Model	QSFP-4SFP25G-CU3M-N
Description	100GE QSFP28-4SFP25G,High Speed Direct-attach Cables,3m,(QSFP28),(4*(CC2P0.4B(S))),(4SFP28)
Connector X1	QSFP28
Connector X2	4*SFP28
Cable length [m(ft.)]	3 m (9.84 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	45 mm (1.77 in.)

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Item	Details
Minimum Clearance for Cable Routing [mm (in.)]	QSFP28 end: 100 mm (3.94 in.) SFP28 end: 70 mm (2.76 in.)

8.8.7.4 QSFP-4SFP25G-CU5M

Technical Specifications

Table 8-41 Technical specifications of the QSFP-4SFP25G-CU5M

Item	Details
Part Number	02311MPB
Model	QSFP-4SFP25G-CU5M
Description	100GE QSFP28-4SFP25G,High Speed Direct-attach Cables,5m,(QSFP28),(4*(CC2P0.4B(S))),(4SFP28)
Connector X1	QSFP28
Connector X2	4*SFP28
Cable length [m(ft.)]	5 m (16.40 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	45 mm (1.77 in.)
Minimum Clearance for Cable Routing [mm (in.)]	QSFP28 end: 100 mm (3.94 in.) SFP28 end: 70 mm (2.76 in.)

8.8.8 QSFP-DD to QSFP-DD High-Speed Cable

8.8.8.1 QSFP-DD-400G-CU1M

Technical Specifications

Table 8-42 Technical specifications of the QSFP-DD-400G-CU1M

Item	Details
Part Number	02313FGX

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Item	Details
Model	QSFP-DD-400G-CU1M
Description	400G-QSFP-DD-Passive High Speed Cable-1m-DAC-Indoor
Connector X1	QSFP-DD
Connector X2	QSFP-DD
Cable length [m(ft.)]	1 m (3.28 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	45 mm (1.77 in.)
Minimum Clearance for Cable Routing [mm (in.)]	100 mm (3.94 in.)
Operating Temperature [°C (°F)]	-20 °C to 75 °C (-4 °F to 167 °F)

NOTE

Version support: V200R021C00 and later versions.

8.8.8.2 QSFP-DD-400G-CU2M5

Technical Specifications

Table 8-43 Technical specifications of the QSFP-DD-400G-CU2M5

Item	Details
Part Number	02313FGY
Model	QSFP-DD-400G-CU2M5
Description	400G-QSFP-DD-Passive High Speed Cable-2.5m-DAC-Indoor
Connector X1	QSFP-DD
Connector X2	QSFP-DD
Cable length [m(ft.)]	2.5 m (8.20 ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	70 mm (2.76 in.)
Minimum Clearance for Cable Routing [mm (in.)]	100 mm (3.94 in.)

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Item	Details
Operating Temperature [°C (°F)]	-20 °C to 75 °C (-4 °F to 167 °F)

NOTE

Version support: V200R021C00 and later versions.

8.8.9 QSFP-DD to 2*QSFP56 High-Speed Cable

8.8.9.1 QSFP-DD-2QSFP200G-CU2M5

Technical Specifications

Table 8-44 Technical specifications of the QSFP-DD-2QSFP200G-CU2M5

Item	Details
Part Number	02313TDR
Model	QSFP-DD-2QSFP200G-CU2M5
Description	400G QSFP-DD,2*200G QSFP56,Passive High Speed Cable,2.5m,DAC,Used indoor
Connector X1	QSFP-DD
Connector X2	2*QSFP56
Cable length [m(ft.)]	2.5 m(ft.)
Electrical attribute	Passive
Bend radius [mm (in.)]	50 mm (in.)
Minimum Clearance for Cable Routing [mm (in.)]	400GE QSFP-DD end: 100 mm 200GE QSFP56 end: 90 mm
Operating Temperature [°C (°F)]	-20 °C to 75 °C (-4 °F to 167 °F)

NOTE

Version support: V200R021C10 and later versions.

8.9 AOC Cable

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8.9.1 Understanding High-Speed Cable

Overview

An active optical cable (AOC) is an active optical fiber with optical modules at both ends, and therefore is easy to use.

Appearance and Structure

Figure 8-40 SFP+ to SFP+/SFP28 to SFP28 AOC cable



Figure 8-41 QSFP+ to QSFP+/QSFP28 to QSFP28 AOC cable



Figure 8-42 QSFP+ to 4*SFP+ AOC cable

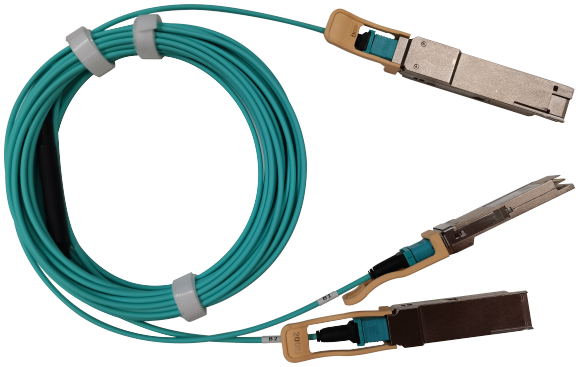


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Figure 8-43 QSFP-DD to QSFP-DD AOC cable



Figure 8-44 QSFP-DD to 2*QSFP56 AOC cable



Connection

Table 8-45 describes usage scenarios of AOC cables and cable connections in these scenarios.

Table 8-45 AOC cable usage scenarios and connections

Cable Type	Connection
SFP+ to SFP+ AOC cable	• Scenario 1: used for 10GE optical port connection or stacking between CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. • Scenarios 2: used for 10GE connection between and CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. Both ends connect to a 10GE optical port.

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Cable Type	Connection
QSFP+ to QSFP+ AOC cable	• Scenario 1: used for 40GE/100GE optical port connection or stacking between CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. • Scenarios 2: used for 40GE/100GE optical port connection between and CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches.
QSFP+ to 4*SFP+ AOC cable	When a 40GE optical port is split into four 10GE optical ports: • Scenario 1: used for 10GE optical port connection or stacking between CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. • Scenarios 2: used for 10GE connection between and CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. One end connects to the 40GE optical port, and the other end connects to four 10GE optical ports.
SFP28 to SFP28 AOC cable	Used for 25GE optical port connection or stacking between CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. Both ends connect to a 25GE optical port.
QSFP28 to QSFP28 AOC cable	Used for 100GE optical port connection or stacking between CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. Both ends connect to a 100GE optical port.
QSFP-DD to QSFP-DD AOC cable	Used for 400GE optical port connection or stacking between CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. Both ends connect to a 400GE optical port.
QSFP-DD to 2*QSFP56 AOC cable	When a 400GE optical port is split into two 200GE optical ports: Used for 200GE optical port connection or stacking between CloudEngine 9800, 8800, 7800, 6800, and 5800 series switches. One end connects to the 400GE optical port, and the other end connects to two 200GE optical ports.

8.9.2 SFP+ to SFP+ AOC Cable

8.9.2.1 SFP-10G-AOC-3M

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Technical Specifications

Table 8-46 Technical specifications of the SFP-10G-AOC-3M

Item	Details
Part Number	02311BKP
Model	SFP-10G-AOC-3M
Description	Optical transceiver,SFP+,1G~10.5G, (850nm,3m,AOC)
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	3 m (9.84 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.2.2 SFP-10G-AOC-5M

Technical Specifications

Table 8-47 Technical specifications of the SFP-10G-AOC-5M

Item	Details
Part Number	02311PQS
Model	SFP-10G-AOC-5M
Description	Active Optical Cable ,SFP+,10G, (850nm,5m,AOC)
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	5 m (16.40 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.2.3 SFP-10G-AOC-7M

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Technical Specifications

Table 8-48 Technical specifications of the SFP-10G-AOC-7M

Item	Details
Part Number	02311PQT
Model	SFP-10G-AOC-7M
Description	Active Optical Cable ,SFP+,10G, (850nm,7m,AOC)
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	7 m (22.97 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.2.4 SFP-10G-AOC10M

Technical Specifications

Table 8-49 Technical specifications of the SFP-10G-AOC10M

Item	Details
Part Number	02310QWH
Model	SFP-10G-AOC10M
Description	AOC Optical Transceiver,SFP+,850nm, 1G~10G,10m
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	10 m (32.81 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.2.5 SFP-10G-AOC20M

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Technical Specifications

Table 8-50 Technical specifications of the SFP-10G-AOC20M

Item	Details
Part Number	02310SSK
Model	SFP-10G-AOC20M
Description	Optical transceiver,SFP+ AOC,850nm, 2.5G~10.5G,20m
Connector X1	SFP+
Connector X2	SFP+
Cable length [m(ft.)]	20 m (65.62 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.3 SFP28 to SFP28 AOC Cable

8.9.3.1 SFP-25G-AOC-3M

Technical Specifications

Table 8-51 Technical specifications of the SFP-25G-AOC-3M

Item	Details
Part Number	02311MPE
Model	SFP-25G-AOC-3M
Description	Active Optical Cable ,SFP28,25G, (850nm,3m,AOC)
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	3 m (9.84 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

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8.9.3.2 SFP-25G-AOC-5M

Technical Specifications

Table 8-52 Technical specifications of the SFP-25G-AOC-5M

Item	Details
Part Number	02311MPD
Model	SFP-25G-AOC-5M
Description	Active Optical Cable ,SFP28,25G, (850nm,5m,AOC)
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	5 m (16.40 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.3.3 SFP-25G-AOC-7M

Technical Specifications

Table 8-53 Technical specifications of the SFP-25G-AOC-7M

Item	Details
Part Number	02311MPC
Model	SFP-25G-AOC-7M
Description	Active Optical Cable ,SFP28,25G, (850nm,7m,AOC)
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	7 m (22.97 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

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8.9.3.4 SFP-25G-AOC-10M

Technical Specifications

Table 8-54 Technical specifications of the SFP-25G-AOC-10M

Item	Details
Part Number	02311KNT
Model	SFP-25G-AOC-10M
Description	Active Optical Cable ,SFP28,25G,(850nm,10m,AOC)
Connector X1	SFP28
Connector X2	SFP28
Cable length [m(ft.)]	10 m (32.81 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.4 QSFP+ to QSFP+ AOC cable

8.9.4.1 QSFP-H40G-AOC10M

Technical Specifications

Table 8-55 Technical specifications of the QSFP-H40G-AOC10M

Item	Details
Part Number	02310SSH
Model	QSFP-H40G-AOC10M
Description	Optical transceiver,QSFP+,40G,(850nm,10m,AOC)
Connector X1	QSFP+
Connector X2	QSFP+
Cable length [m(ft.)]	10 m (32.81 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

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8.9.5 QSFP+ to 4*SFP+ AOC cable

8.9.5.1 QSFP-4SFP10-AOC10M

Technical Specifications

Table 8-56 Technical specifications of the QSFP-4SFP10-AOC10M

Item	Details
Part Number	02310SSJ
Model	QSFP-4SFP10-AOC10M
Description	Optical transceiver,QSFP+,40G,(850nm, 10m,AOC)(Connect to four SFP+ Optical Transceiver)
Connector X1	QSFP+
Connector X2	4*SFP+
Cable length [m(ft.)]	10 m (32.81 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.6 QSFP28 to QSFP28 AOC Cable

8.9.6.1 QSFP-100G-AOC-10M

Technical Specifications

Table 8-57 Technical specifications of the QSFP-100G-AOC-10M

Item	Details
Part Number	02311KNQ
Model	QSFP-100G-AOC-10M
Description	Active Optical Cable ,QSFP28,100G, (850nm,10m,AOC)

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Item	Details
Connector X1	QSFP28
Connector X2	QSFP28
Cable length [m(ft.)]	10 m (32.81 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.6.2 QSFP-100G-AOC-30M

Technical Specifications

Table 8-58 Technical specifications of the QSFP-100G-AOC-30M

Item	Details
Part Number	02311RAH
Model	QSFP-100G-AOC-30M
Description	Active Optical Cable ,QSFP28,100G, (850nm,30m,AOC)
Connector X1	QSFP28
Connector X2	QSFP28
Cable length [m(ft.)]	30 m (98.42 ft.)
Operating Wavelength [nm]	850 nm
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

8.9.7 QSFP56 to QSFP56 AOC Cable

8.9.7.1 QSFP56-200G-AOC-5M

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Technical Specifications

Table 8-59 Technical specifications of the QSFP56-200G-AOC-5M

Item	Details
Part Number	02314KLK
Model	QSFP56-200G-AOC-5M
Description	200G,QSFP56,Active Optical Cable Assembly,5m,AOC
Connector X1	QSFP56
Connector X2	QSFP56
Cable length [m(ft.)]	5 m (16.4 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

8.9.7.2 QSFP56-200G-AOC-10M

Technical Specifications

Table 8-60 Technical specifications of the QSFP56-200G-AOC-10M

Item	Details
Part Number	02313TDN
Model	QSFP56-200G-AOC-10M
Description	200G,QSFP56,Active Optical Cable Assembly,10m,AOC
Connector X1	QSFP56
Connector X2	QSFP56
Cable length [m(ft.)]	10 m (32.80 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

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8.9.7.3 QSFP56-200G-AOC-20M

Technical Specifications

Table 8-61 Technical specifications of the QSFP56-200G-AOC-20M

Item	Details
Part Number	02314KLL
Model	QSFP56-200G-AOC-20M
Description	200G,QSFP56,Active Optical Cable Assembly,20m,AOC
Connector X1	QSFP56
Connector X2	QSFP56
Cable length [m(ft.)]	20 m (65.62 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

8.9.7.4 QSFP56-200G-AOC-30M

Technical Specifications

Table 8-62 Technical specifications of the QSFP56-200G-AOC-30M

Item	Details
Part Number	02314KLM
Model	QSFP56-200G-AOC-30M
Description	200G,QSFP56,Active Optical Cable Assembly,30m,AOC
Connector X1	QSFP56
Connector X2	QSFP56
Cable length [m(ft.)]	30 m (98.42 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

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Item	Details
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

8.9.7.5 QSFP-2QSFP56100G-AOC10M

Technical Specifications

Table 8-63 Technical specifications of the QSFP-2QSFP56100G-AOC10M

Item	Details
Part Number	02313TUY
Model	QSFP-2QSFP56100G-AOC10M
Description	200G QSFP56-2*100G QSFP56-Active Optical Cable-10m-AOC
Connector X1	QSFP56
Connector X2	QSFP56
Cable length [m(ft.)]	10 m (32.81 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

8.9.8 QSFP-DD to QSFP-DD AOC cable

8.9.8.1 QSFP-DD-400G-AOC-10M

Technical Specifications

Table 8-64 Technical specifications of the QSFP-DD-400G-AOC-10M

Item	Details
Part Number	02313FHA

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Item	Details
Model	QSFP-DD-400G-AOC-10M
Description	400G-QSFP-DD-Active Optical Cable-10m-AOC
Connector X1	QSFP-DD
Connector X2	QSFP-DD
Cable length [m(ft.)]	10 m (32.80 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)

NOTE

Version support: V200R021C00 and later versions.

8.9.9 QSFP-DD to QSFP56 AOC Cable

8.9.9.1 QSFP-DD-2QSFP56200G-AOC5M

Technical Specifications

Table 8-65 Technical specifications of the QSFP-DD-2QSFP56200G-AOC5M

Item	Details
Part Number	02313TDP
Model	QSFP-DD-2QSFP56200G-AOC5M
Description	400G QSFP-DD-2*200G QSFP56-Active Optical Cable-5m-AOC
Connector X1	QSFP-DD
Connector X2	2*QSFP56
Cable length [m(ft.)]	5 m (16.4 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

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NOTE

Version support: V200R022C10 and later versions.

8.9.9.2 QSFP-DD-2QSFP200G-AOC10M

Technical Specifications

Table 8-66 Technical specifications of the QSFP-DD-2QSFP200G-AOC10M

Item	Details
Part Number	02314KLG
Model	QSFP-DD-2QSFP200G-AOC10M
Description	400G QSFP-DD-2*200G QSFP56-Active Optical Cable-10m-AOC
Connector X1	QSFP-DD
Connector X2	2*QSFP56
Cable length [m(ft.)]	10 m (32.81 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

NOTE

Version support: V200R022C10 and later versions.

8.9.9.3 QSFP-DD-2QSFP200G-AOC30M

Technical Specifications

Table 8-67 Technical specifications of the QSFP-DD-2QSFP200G-AOC30M

Item	Details
Part Number	02314KLH
Model	QSFP-DD-2QSFP200G-AOC30M
Description	400G QSFP-DD-2*200G QSFP56-Active Optical Cable-30m-AOC

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Item	Details
Connector X1	QSFP-DD
Connector X2	2*QSFP56
Cable length [m(ft.)]	30 m (98.42 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

NOTE

Version support: V200R022C10 and later versions.

8.9.9.4 QSFP-DD-2QSFP200G-AOC100M

Technical Specifications

Table 8-68 Technical specifications of the QSFP-DD-2QSFP200G-AOC100M

Item	Details
Part Number	02314KLJ
Model	QSFP-DD-2QSFP200G-AOC100M
Description	400G QSFP-DD-2*200G QSFP56-Active Optical Cable-100m-AOC
Connector X1	QSFP-DD
Connector X2	2*QSFP56
Cable length [m(ft.)]	100 m (328.08 ft.)
Operating Temperature [°C (°F)]	0 °C to 70 °C (32 °F to 158 °F)
Note	**NOTE** Before interconnecting with servers, you are advised to contact the server vendor to evaluate whether their servers support the AOC.

NOTE

Version support: V200R022C10 and later versions.

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9 Pluggable Modules for Ports

9.1 Understanding Optical Modules
9.2 Understanding Copper Modules
9.3 FE SFP_eSFP Optical Modules
9.4 GE eSFP Optical Modules
9.5 GE SFP Copper Modules
9.6 2G, 4G, 8G, and 16G SFP Optical Modules
9.7 10GE SFP+ Optical Modules
9.8 25GE SFP28 Optical Modules
9.9 40GE QSFP+ Optical Modules
9.10 100GE QSFP28 Optical Modules
9.11 400GE QSFP-DD Optical Modules

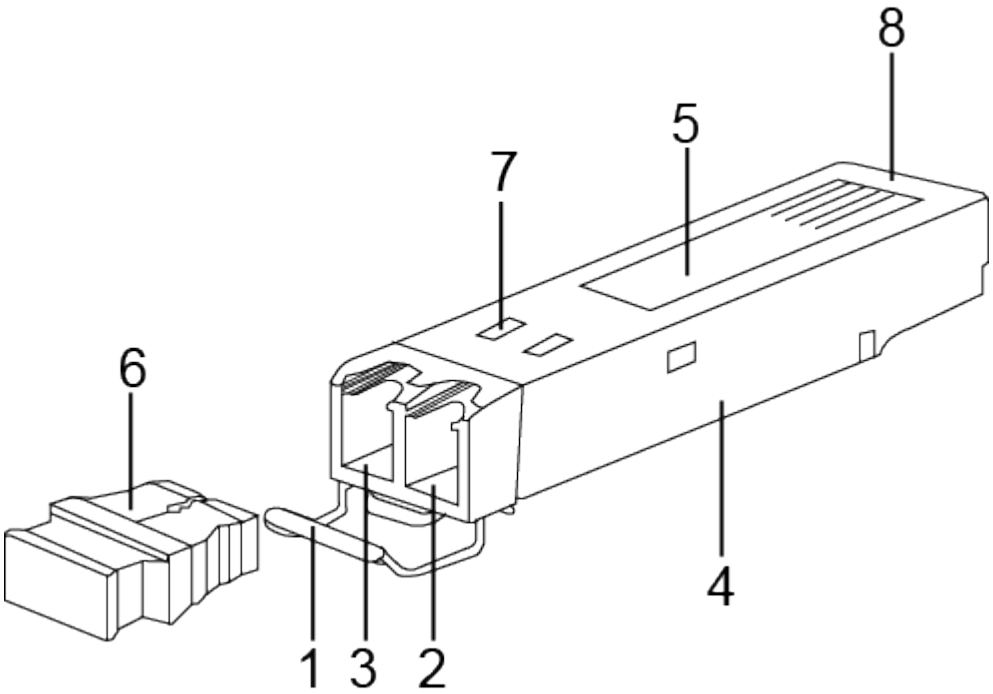
9.1 Understanding Optical Modules

9.1.1 Optical Module Appearance and Structure

Figure 9-1 shows the structure of an optical module.

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Figure 9-1 Optical module structure



1. Handle	2. Receiver	3. Transmitter	4. Shell
5. Label	6. Dust cap	7. Spring	8. Module connector

Figure 9-2 shows the appearance of an SFP/SFP+ optical module.

Figure 9-2 SFP/SFP+ optical module



Figure 9-3 shows the appearance of an SFP28 optical module.

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Figure 9-3 SFP28 optical module



Figure 9-4 shows the appearance of a QSFP+ optical module.

Figure 9-4 QSFP+ optical module



Figure 9-5 and **Figure 9-6** shows the appearance of a QSFP28 optical module.

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Figure 9-5 QSFP28 optical module (for LC optical fibers)



Figure 9-6 QSFP28 optical module (for MPO optical fibers)

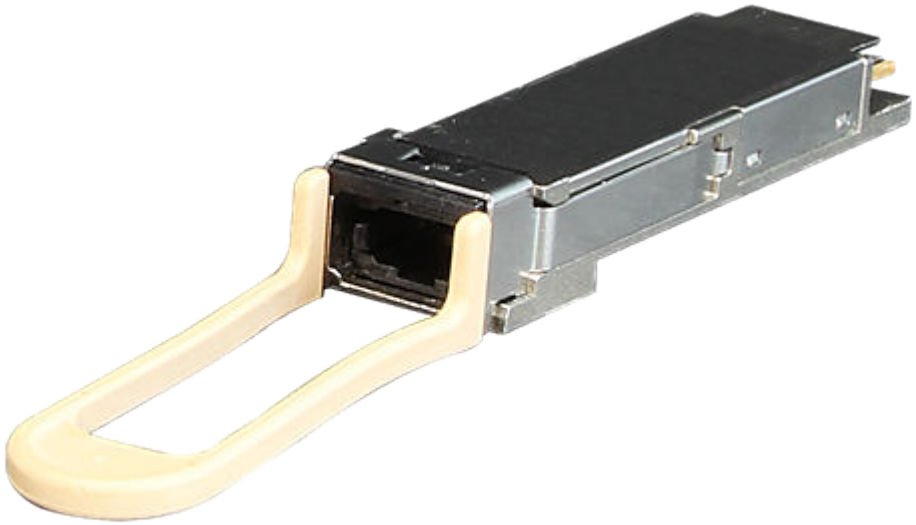


Figure 9-7 shows the appearance of a QSFP-DD optical module.

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Figure 9-7 QSFP-DD optical module

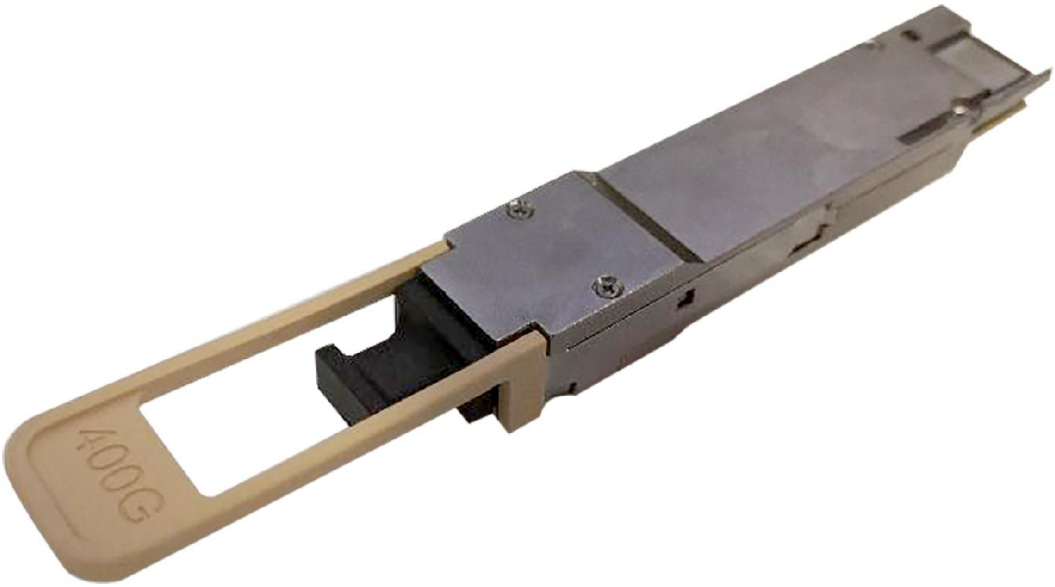


Figure 9-8 and **Figure 9-9** show CFP optical modules for different optical fibers.

Figure 9-8 CFP 100GE optical module (for LC optical fibers)



Figure 9-9 CFP 100GE optical module (for MPO optical fibers)



Figure 9-10 shows the appearance of a CXP optical module.

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Figure 9-10 CXP 100GE optical module (for MPO optical fibers)



Figure 9-11 and **Figure 9-12** show CFP2 optical modules for different optical fibers.

Figure 9-11 CFP2 100GE optical module (for LC optical fibers)



Figure 9-12 CFP2 100GE optical module (for MPO optical fibers)



9.1.2 Types of Optical Modules

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Optical modules are available in various types to meet diversified requirements.

- **Classified by transmission rates**

  Depending on transmission rates, optical modules are classified into 400GE, 100GE, 40GE, 25GE, 10GE, FE, and GE optical modules.

- **Classified by encapsulation types**

  The higher transmission rate an optical module provides, the more complex structure it has. According to the encapsulation type, optical modules are classified into SFP, eSFP, SFP+, XFP, SFP28, QSFP+, CXP, CFP, QSFP28, and QSFP-DD. All optical modules are hot swappable.

  - SFP: small form-factor pluggable. SFP optical modules support LC fiber connectors.
  - eSFP: enhanced small form-factor pluggable. An eSFP module is an SFP module that supports monitoring of voltage, temperature, bias current, transmit optical power, and receive optical power. Because all the SFP optical modules support these monitoring functions, eSFP is also called SFP.
  - SFP+: small form-factor pluggable plus, SFP with a higher rate. SFP+ modules are more sensitive to electromagnetic interference (EMI) because they have a higher rate. To reduce EMI, SFP+ modules have more springs than SFP modules and the cages for SFP+ modules on a card are tighter.
  - XFP: 10 Gigabit small form-factor pluggable. X is the Roman numeral 10, meaning that all XFP optical modules provide a 10 Gbit/s transmission rate. XFP optical modules support LC fiber connectors. XFP optical modules are wider and longer than SFP+ optical modules.
  - SFP28: with the same interface size as an SFP+ module. An SFP28 interface can use a 25GE SFP28 optical module or 10GE SFP+ optical module.
  - QSFP+: quad small form-factor pluggable. QSFP+ optical modules support MPO fiber connectors and are larger than SFP+ modules.
  - CXP: hot-pluggable high-density parallel optics transceiver form factor, which provides 12 channels of traffic in each of the Tx and Rx directions. It applies only to short multimode links.
  - CFP: C form-factor pluggable, a new standard for high-speed, hot-pluggable optical transceivers that support data communication and telecommunication applications. Dimensions of a CFP optical module are 144.75 mm x 82 mm x 13.6 mm (W x D x H).
  - QSFP28: with the same interface size as a QSFP+ module. A QSFP28 interface can use a 100GE QSFP28 optical module or a 40GE QSFP+ optical module.
  - QSFP-DD: quad small form factor pluggable-double density. A QSFP-DD optical module is a high-speed pluggable optical module defined by QSFP-DD MSA.

- **Classified by physical layer standards**

  Different physical layer standards are defined to allow data transmission in different modes. Therefore, different types of optical modules are produced to comply with these standards. For details, see **Standards compliance** of the specific optical module.

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- **Classified by modes**

  Optical fibers are classified into single-mode and multimode fibers. Therefore, optical modules are also classified into single-mode and multimode modules to support different optical fibers.

  – Single-mode optical modules are used with single-mode fibers. Single-mode fibers support a wide band and large transmission capacity, and are used for long-distance transmission.

  – Multimode optical modules are used with multimode fibers. Multimode fibers have lower transmission performance than single-mode fibers because of modal dispersion, but their costs are also lower. They are used for small-capacity, short-distance transmission.

Wavelength division multiplexing modules differ from other optical modules in center wavelengths. A common optical module has a center wavelength of 850 nm, 1310 nm, or 1550 nm, whereas a wavelength division multiplexing module transmits lights with different center wavelengths. Wavelength division multiplexing modules are classified into two types: coarse wavelength division multiplexing (CWDM) and dense wavelength division multiplexing (DWDM). Within the same band, DWDM modules are available in more types and use wavelength resources more efficiently than CWDM modules. DWDM and CWDM modules allow lights with different center wavelengths to be transmitted on one fiber without interfering each other. Therefore, a passive multiplexer can be used to combine the lights into one channel, which is then split into multiple channels by a demultiplexer on the remote end. This reduces the optical fibers required. DWDM and CWDM modules are used for long-distance transmission.

The transmit power of a long-distance optical module is often larger than its overload power. Therefore, when using such optical modules, select optical fibers of an appropriate length to ensure that the actual receive power is smaller than the overload power. If the optical fibers connected to a long-distance optical module are too short, use an optical attenuator to reduce the receive power on the remote optical module. Otherwise, the remote optical module may be burnt.

9.1.3 Optical Module Terms

Transmission distance	Maximum distance over which optical signals can transmit. Optical signals sent from different types of sources can transmit over different distances due to negative effects of optical fibers, such as dispersion and attenuation.
Interface rate	Maximum rate of electrical signals that an optical device can transmit without bit errors. The interface rates defined in Ethernet standards include 125 Mbit/s, 1.25 Gbit/s, 10.3125 Gbit/s, and 41.25 Gbit/s.

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Encapsulation type

Appearance type of an optical module. Encapsulation types of optical modules include SFP, eSFP, SFP+, XFP, SFP28, QSFP+, CXP, CFP, QSFP28, and QSFP-DD.

- SFP: small form-factor pluggable.
- eSFP: enhanced small form-factor pluggable. An eSFP module is an SFP module that supports monitoring of voltage, temperature, bias current, transmit optical power, and receive optical power. Because all the SFP optical modules support these monitoring functions, eSFP is also called SFP.
- SFP+: small form-factor pluggable plus, SFP with a higher rate. SFP+ modules are more sensitive to electromagnetic interference (EMI) because they have a higher rate. To reduce EMI, SFP+ modules have more springs than SFP modules and the cages for SFP+ modules on a card are tighter.
- XFP: 10GE optical module. X is the Roman numeral 10.
- SFP28: with the same interface size as an SFP+ module. An SFP28 interface can use a 25 GE SFP28 optical module or 10GE SFP+ optical module.
- QSFP+: Quad SFP+, four-channel SFP+.
- CXP: hot-pluggable high-density parallel optics transceiver form factor, which provides 12 channels of traffic in each of the Tx and Rx directions. It applies only to short multimode links.
- CFP: C form-factor pluggable, a new standard for high-speed, hot-pluggable optical transceivers that support data communication and telecommunication applications. Dimensions of a CFP optical module are 144.75 mm x 82 mm x 13.6 mm (W x D x H).
- QSFP28: with the same interface size as a QSFP+ module. A QSFP28 interface can use a 100GE QSFP28 optical module or a 40GE QSFP+ optical module.
- QSFP-DD: quad small form factor pluggable-double density. A QSFP-DD optical module is a high-speed pluggable optical module defined by QSFP-DD MSA.

Center wavelength

Wavelength measured at the midpoint of the half-amplitude line in the transmit spectrum.

Fiber mode

Mode of fibers defining based on core diameters and features of optical fibers. Optical fibers are classified into single-mode fibers and multi-mode fibers. Generally, multi-mode fibers have large core diameters and severe dispersion, so they transmit optical signals over short distances when working with multi-mode optical modules. Single-mode fibers have small dispersion and can transmit optical signals over long distances when working with single-mode optical modules.

Modal bandwidth

Bandwidth measured at a point with transmit power several dB lower than that of the point with the peak center wavelength. Modal bandwidth reflects spectrum characteristics of an optical module.

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Fiber diameter	Diameter of the core of a fiber. According to international standards for optical fibers, the diameter of a multi-mode fiber is 62.5 um or 50 um, and the diameter of a single-mode fiber is 9 um.
Fiber class	Optical signals with different wavelengths have their best working windows in different optical fibers. To help efficiently adjust wavelengths or dispersion features of optical fibers and change their refractive indexes, the following classes are defined: multi-mode fiber (G.651), common single-mode fiber (G.652), shifted dispersion fiber (G.653), and non-zero shifted dispersion fiber (G.655). G.651 and G.652 are commonly used fiber classes.
Connector type	Type of the interface on an optical module to accommodate a fiber. Commonly used connector types are LC (applicable to all the SFP, SFP+, and XFP modules) and MPO (applicable to 150 m QSFP+, 100 m CFP, and CXP modules).
Transmit optical power	Output optical power of an optical module when it is working properly.
Receiver sensitivity	Minimum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}).
Overload optical power	Maximum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}).
Extinction ratio	Minimum ratio of the average optical power with signals transmitted against the average optical power without signals transmitted in complete modulation mode. The extinction ratio indicates the capability of an optical module to identify signal 0 and signal 1.

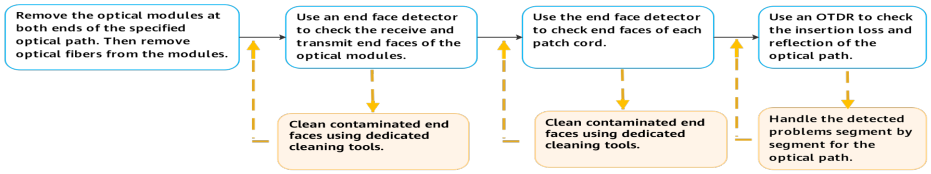
9.1.4 Guide to Using Optical Modules

Precautions for optical module installation:

- If a cabinet with a door is used, a sufficient distance must be reserved between the 400GE optical module and the cabinet door to prevent the puller or patch cord from bumping on the door.
- When optical path quality is tested using an OTDR, optical fibers must be removed from the associated optical module. This is because the OTDR's transmit optical power is far greater than the optical power damage threshold at the receive end of an optical module.

Method of checking an optical path:

Figure 9-13 Method of checking an optical path



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Method of cleaning the end faces of an optical fiber:

Before cleaning the end faces of an optical fiber that is in use, ensure that the optical fiber has no optical signals. To achieve this, shut down the ports at both ends of the fiber. Then, clean the end faces and insert the optical fiber back into the corresponding port.

To clean the end faces of an optical fiber that is not in use, remove the dust-proof cap from the fiber connector (or the patch cord connector of the involved optical component), and put the dust-proof cap into a dedicated cleaning kit. After the cleaning is complete, re-install the dust-proof cap.

- Use the untouched part of a lint-free wipe to wipe the connector end face along one direction.
- If the end face of an optical fiber cannot be cleaned due to serious contamination, use a lint-free wipe dipped with cleanser to wipe the end face along one direction. Then, use a dry lint-free wipe to clean the end face. Ensure that the end face is dry before using the optical fiber.
- After the cleaning is complete, immediately install a dust-proof cap for any optical fiber connector that is not in use.

Precautions for using a lint-free wipe to clean the end face of an optical fiber:

- Use a smooth surface of the lint-free wipe for cleaning.
- Ensure that the optical fiber connector is vertical to the lint-free wipe during cleaning.
- Wipe the end face along the direction of the lint-free wipe's grain.
- Wipe the end face along one direction only.
- Any part of a lint-free wipe can be used only once, and a small piece of lint-free wipe can be used to clean only one connector.

Method of using lint-free swabs to clean the optical port of an optical module:

Remove the dust-proof cap from the optical port of the optical module, and put the dust-proof cap into a dedicated cleaning kit.

- Select a proper lint-free swab based on the type of the optical port to be cleaned. (For SC optical ports, use lint-free swabs with a diameter of 2.5 mm; for LC and MTRJ optical ports, use lint-free swabs with a diameter of 1.25 mm.) Dip the lint-free swab into cleanser, insert it into the inside of the optical port, and clean the optical port by rotating the swab 360 degrees in one direction along the inner wall of the optical port.
- Insert a dry lint-free swab of the same type into the inside of the optical port and clean the optical port by rotating the swab 360 degrees in one direction along the inner wall of the optical port.
- Cap the optical port after the cleaning is complete.

Precautions for using lint-free swabs to clean the optical port of an optical module:

- When cleaning the optical port of an optical module, clean the end faces of associated optical fibers to prevent the optical fibers from dirtying the optical port.

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- Typically, each lint-free swab can be used for cleaning only once. If a used lint-free swab is confirmed clean and can be reused, it can be used for a maximum of three times. For example, a lint-free swab that is ever used to dry an optical port can be used for a maximum of three times.

Safety precautions:

- ESD prevention: Optical modules are active optical/electrical components and are extremely sensitive to ESD. Therefore, take strict measures to protect against ESD when operating optical modules.
  - Touch only the shell of an optical module, and do not touch the module, especially the edge connector, with bare bands.
  - Wear an ESD wrist strap and a pair of ESD gloves when operating an optical module. When wearing an ESD wrist strap, ensure that one end of the ESD wrist strap is in close contact with your wrist, and the other end is inserted into the ESD jack of the cabinet or rack.
  - Avoid any contact between optical modules and your clothing. This is because the ESD voltages generated by the clothing are beyond the protection scope of the ESD wrist band, and will damage optical modules.
  - Optical modules must be packed in their original packages or ESD bags before being transferred.

  If strict ESD preventive measures are not taken when you operate an optical module, the optical module may fail intermittently or completely due to ESD damages.
- Laser protection: Do not look into optical ports without eye protection when reseating a module.

Inspecting optical fiber connectors:

The Ethernet port rate is increasing and the quality requirement for optical fibers and optical cables is higher. **Table 9-1** describes requirements for the loss of optical fiber connectors according to the standard ANSI/TIA-568-C or GBT50312-2016.

Table 9-1 Maximum attenuation of the optical fiber connector

Type	Maximum Attenuation of an Optical Fiber Connector (dB)
Fiber splicing connector	0.3
Optical mechanical connector	0.3
Optical connector	0.75

NOTE

Fiber cores are connected through connectors, such as the ODF, optical attenuator, and flange, in splicing and mechanical modes.

The following describes requirements in IEEE Std 802.3-2018 for the reflection of the optical fiber connector when Ethernet ports (such as 400GE) use PAM4

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encoding to double the rate. More connectors bring lower requirements for the reflection.

- QSFP-DD-400G-SR8: The maximum discrete reflectance shall be less than -20 dB.
- QSFP-DD-400G-FR4:

Table 9-2 QSFP-DD-400G-FR4 maximum value for each discrete reflectance

Number of Discrete Reflectance Above -55 dB	Maximum Value for Each Discrete Reflectance (dB)
1	-25
2	-31
4	-35
6	-38
8	-40
10	-41

- QSFP-DD-400G-LR8:

Table 9-3 QSFP-DD-400G-LR8 maximum value for each discrete reflectance

Number of Discrete Reflectance Above -55 dB	Maximum Value for Each Discrete Reflectance (dB)
1	-22
2	-29
4	-33
6	-35
8	-37
10	-39

- QSFP-DD-400G-DR4:

Table 9-4 QSFP-DD-400G-DR4 maximum value for each discrete reflectance

Number of Discrete Reflectance Above -55 dB	Maximum Value for Each Discrete Reflectance (dB)
1	-37
2	-42
4	-45

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Number of Discrete Reflectance Above -55 dB	Maximum Value for Each Discrete Reflectance (dB)
6	-47
8	-48
10	-49

The loss of optical fiber connectors and reflectance values are tested and processed as follows:

1. After the optical fiber at the peer end is disconnected, use the OTDR meter to test the local end. Check whether the loss and reflection of each link and node are normal. (The loss of a fiber splicing connector should be less than 0.3 dB, the loss of a connector should be less than 0.75 dB, and the reflection of a connector should be less than -30 dB.) If the test result is not within the required range, process the abnormal port.
2. Locate the equipment room where the port resides based on the distance between abnormal points in the OTDR test result. Preliminarily determine the port location, disconnect the port, and perform an OTDR test on the port that reports alarms. Check whether the distance is consistent with that in the previous test. If not, continue to test other ports.
3. After the abnormal port is found, test the port using a fiber end-face inspector. If the port is dirty, clean it.
4. After the port is cleaned, restore the port, and ensure that the connector is tightened. Perform an OTDR test on the port to check whether loss and reflection of each link and node are normal.
5. If the fault persists, replace the flange and perform an OTDR test on the port that reports alarms to check whether loss and reflection of each link and node are normal.
6. If the fault persists, replace the optical fiber and perform an OTDR test on the port that reports alarms to check whether loss and reflection of each link and node are normal.
7. If multiple abnormal points exist on the link, repeat steps 2 to 6.

Precautions for using optical modules on devices with port-side air intake or exhaust:

Data center switches with port-side air intake or exhaust have varying heat dissipation capabilities and therefore support different optical modules. **Table 9-5** lists the optical modules supported by data center switches with port-side air intake or exhaust.

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Table 9-5 Optical modules supported by data center switches with port-side air intake or exhaust

Optical Module Encapsulation Type	Port-side Air Exhaust	Port-side Air Intake
SFP+	• 10G-AOC/10G-SR/10G-LR • 10G-BIDI within 10 km	10G-AOC/10G-SR/10G-LR/10G-ER/10G-ZR/10G-BIDI
SFP28	25G-AOC/25G-SR/25G-LR	25G-AOC/25G-SR/25G-LR
QSFP28	• 40G series • 100G-SR4/100G-CWDM4/100G-CWDM4-lite/100G-SWDM4/100G-LX4/100G-AOC	• 40G series • 100G-SR4/100G-CWDM4/100G-CWDM4-lite/100G-SWDM4/100G-LX4/100G-AOC/100G-DR1/100G-FR1/100G-LR1/100G-BIDI/100G-4WDM-40/100G-ER4
QSFP56	200G-SR4/200G-AOC	200G-SR4/200G-FR4/200G-AOC
QSFP-DD	400G-SR8/400G-AOC	400G-SR8/AOC/FR4/DR4

9.1.5 Rules for Optical Module Interoperation

Interoperation Rules

Optical modules with the same standards can interoperate with each other. The standards define the rate, wavelength, and transmission distance of optical modules, but not their encapsulation modes (two interoperated optical modules can have different encapsulation modes).

If you need to achieve interoperability between optical modules with different standards, contact technical support personnel.

When connecting this product to other products, comply with the preceding optical module interoperation rules.

Standards Description

The following describes the standards, using 1000BASE-LX10 as an example:

- 1000 indicates the rate (1000 Mbit/s, in this case). Other rates include 10 Mbit/s, 100 Mbit/s, 10 Gbit/s, 40 Gbit/s, 100 Gbit/s, 200 Gbit/s and 400 Gbit/s.
- BASE indicates baseband transmission.
- L represents a center wavelength of the laser. Currently, the following center wavelengths are available: S (short wavelength: 850 nm), L (long wavelength: 1310 nm), E (extra long wavelength: 1550 nm), and B (single-fiber bidirectional long wavelength).

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- X represents the encoding format. The encoding formats include T (twisted pair), X (8B/10B), R (64B/66B), and W (WIS).
- 10 indicates the number of channels. Currently, the value can be 4 or 10. If there is no number, the value is 1.

NOTE

This example provides the definitions in IEEE standards, which are not applicable to all optical modules, for example, non-standard optical modules.

The following organizations or agreements define standards related to optical modules:

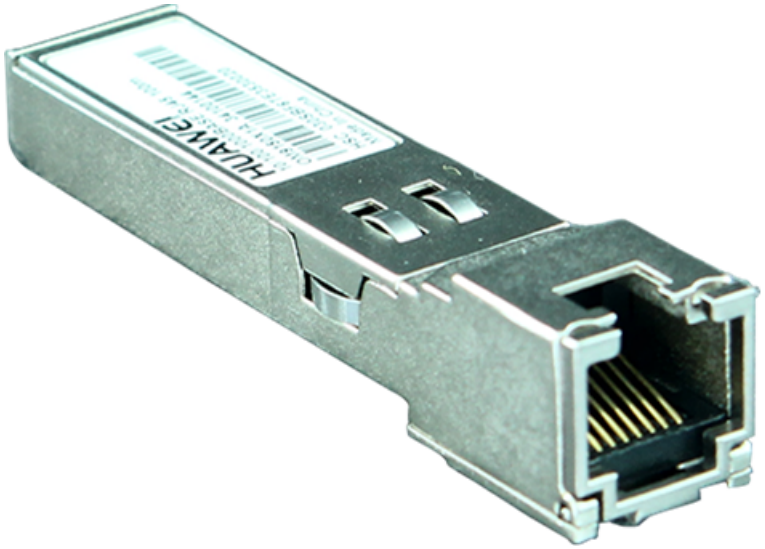
- IEEE 802.3, which defines MAC and PHY standards
- Small Form Factor (SFF) committee or Multi-Source Agreements (MSAs), which define optical module hardware, software, and structure standards

9.2 Understanding Copper Modules

Copper modules are also called RJ45 modules. Unlike optical modules, copper modules do not perform electrical-optical conversion. When two optical interfaces have copper modules installed, the interfaces can be connected using a copper cable. Currently, Huawei offers only GE copper modules with RJ45 interfaces. GE copper modules work with Category 5 network cables, comply with 1000BASE-T (IEEE 802.3ab), and support a maximum transmission distance of 100 m.

Figure 9-14 shows a GE SFP copper module.

Figure 9-14 Appearance of a GE SFP copper module



9.3 FE SFP_eSFP Optical Modules

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9.3.1 eSFP-FE-LX-SM1310

Table 9-6 eSFP-FE-LX-SM1310 specifications

Item	Value
Basic Information	
Module name	eSFP-FE-LX-SM1310
Part Number	02315205
Model	eSFP-FE-LX-SM1310
Form factor	eSFP
Application standard/Type	100BASE-LX
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Mbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 15 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	-8.0 dBm
Minimum Tx optical power (AVG) [dBm]	-15.0 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-31 dBm
Overload power (AVG) [dBm]	-8.0 dBm

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9.3.2 SFP-FE-LX-SM1310-BIDI

Table 9-7 SFP-FE-LX-SM1310-BIDI specifications

Item	Value
Basic Information	
Module name	SFP-FE-LX-SM1310-BIDI
Part Number	02315203
Model	SFP-FE-LX-SM1310-BIDI
Form factor	eSFP
Application standard/Type	100BASE-BX
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Mbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 15 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1550(RX)1310(TX)
Maximum Tx optical power (AVG) [dBm]	-8.0 dBm
Minimum Tx optical power (AVG) [dBm]	-15.0 dBm
Minimum extinction ratio [dB]	8.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-32.0 dBm
Overload power (AVG) [dBm]	-8.0 dBm
NOTE BIDI optical modules must be used in pairs. For example, SFP-FE-LX-SM1310-BIDI must be used with SFP-FE-LX-SM1550-BIDI.	

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9.3.3 SFP-FE-LX-SM1550-BIDI

Table 9-8 SFP-FE-LX-SM1550-BIDI specifications

Item	Value
Basic Information	
Module name	SFP-FE-LX-SM1550-BIDI
Part Number	02315202
Model	SFP-FE-LX-SM1550-BIDI
Form factor	eSFP
Application standard/Type	100BASE-BX
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
Transmission rate [bit/s]	100Mbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 15 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310(RX)1550(TX)
Maximum Tx optical power (AVG) [dBm]	-8.0 dBm
Minimum Tx optical power (AVG) [dBm]	-15.0 dBm
Minimum extinction ratio [dB]	8.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-32.0 dBm
Overload power (AVG) [dBm]	-8.0 dBm
NOTE BIDI optical modules must be used in pairs. For example, SFP-FE-LX-SM1550-BIDI must be used with SFP-FE-LX-SM1310-BIDI.	

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9.3.4 SFP-FE-SX-MM1310

Table 9-9 SFP-FE-SX-MM1310 specifications

Item	Value
Basic Information	
Module name	SFP-FE-SX-MM1310
Part Number	02315233
Model	SFP-FE-SX-MM1310
Form factor	SFP
Application standard/Type	100BASE-FX
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Not Supported
Transmission rate [bit/s]	100Mbit/s
Target transmission distance [km]	Multimode fiber (OM1) (with diameter of 62.5 μm): 2 km Multimode fiber (with diameter of 50 μm): 2 km Multimode fiber (OM2) (with diameter of 50 μm): 2 km
Modal bandwidth [MHz*km]	Multimode fiber (OM1): 200 MHz*km Multimode fiber: 400 MHz*km Multimode fiber (OM2): 500 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	-14.0 dBm
Minimum Tx optical power (AVG) [dBm]	-19.0 dBm
Minimum extinction ratio [dB]	10 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-30.0 dBm

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Item	Value
Overload power (AVG) [dBm]	-14.0 dBm

9.3.5 S-SFP-FE-LH40-SM1310

Table 9-10 S-SFP-FE-LH40-SM1310 specifications

Item	Value
Basic Information	
Module name	S-SFP-FE-LH40-SM1310
Part Number	02317344
Model	S-SFP-FE-LH40-SM1310
Form factor	eSFP
Application standard/Type	100BASE-EX
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Mbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0 dBm
Minimum Tx optical power (AVG) [dBm]	-5.0 dBm
Minimum extinction ratio [dB]	10.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-37.0 dBm
Overload power (AVG) [dBm]	-10.0 dBm

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9.4 GE eSFP Optical Modules

9.4.1 eSFP-GE-SX-MM850 (02315204)

Table 9-11 eSFP-GE-SX-MM850 specifications

Item	Value
Basic Information	
Module name	eSFP-GE-SX-MM850
Part Number	02315204
Model	eSFP-GE-SX-MM850
Form factor	eSFP
Application standard/Type	1000BASE-SX
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	-20°C to +85°C (-4°F to +185°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Multimode optical fiber (diameter: 62.5 μm): 220 m Multi-mode (OM1) optical fiber (diameter: 62.5 μm): 275 m Multimode optical fiber (diameter: 50 μm): 500 m Multimode (OM2) optical fiber (diameter: 50 μm): 550 m
Modal bandwidth [MHz*km]	Multimode optical fiber: 160 MHz*km Multi-mode (OM1) optical fiber: 200 MHz*km Multimode optical fiber: 400 MHz*km Multi-mode (OM2) optical fiber: 500 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm

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Item	Value
Maximum Tx optical power (AVG) [dBm]	-2.5 dBm
Minimum Tx optical power (AVG) [dBm]	-9.5 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-17.0 dBm
Overload power (AVG) [dBm]	0 dBm

9.4.2 eSFP-GE-SX-MM850 (02313URD)

Table 9-12 eSFP-GE-SX-MM850 specifications

Item	Value
Basic Information	
Module name	eSFP-GE-SX-MM850
Part Number	02313URD
Model	eSFP-GE-SX-MM850
Form factor	eSFP
Application standard/Type	1000BASE-SX
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s

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Item	Value
Target transmission distance [km]	Multimode optical fiber (diameter: 62.5 μm): 220 m Multi-mode (OM1) optical fiber (diameter: 62.5 μm): 275 m Multimode optical fiber (diameter: 50 μm): 500 m Multimode (OM2) optical fiber (diameter: 50 μm): 550 m
Modal bandwidth [MHz*km]	Multimode optical fiber: 160 MHz*km Multi-mode (OM1) optical fiber: 200 MHz*km Multimode optical fiber: 400 MHz*km Multi-mode (OM2) optical fiber: 500 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-2.5 dBm
Minimum Tx optical power (AVG) [dBm]	-9.5 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-17.0 dBm
Overload power (AVG) [dBm]	0 dBm

9.4.3 eSFP-GE-ZX100-SM1550

Table 9-13 eSFP-GE-ZX100-SM1550 specifications

Item	Value
Basic Information	
Module name	eSFP-GE-ZX100-SM1550
Part Number	02315206
Model	eSFP-GE-ZX100-SM1550
Form factor	eSFP

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Item	Value
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 100 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1550 nm
Maximum Tx optical power (AVG) [dBm]	5 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	8 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-30.0 dBm
Overload power (AVG) [dBm]	-9.0 dBm

9.4.4 LE2MGSC40DE0

Table 9-14 LE2MGSC40DE0 specifications

Item	Value
Basic Information	
Module name	LE2MGSC40DE0
Part Number	02310KVV
Model	LE2MGSC40DE0
Form factor	eSFP
Connector type	LC
Optical fiber type	SMF

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Item	Value
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1490(RX)1310(TX)
Maximum Tx optical power (AVG) [dBm]	3.0 dBm
Minimum Tx optical power (AVG) [dBm]	-2.0 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-23 dBm
Overload power (AVG) [dBm]	-3.0 dBm
NOTE Single-fiber bidirectional (BIDI) optical modules must be used in pairs. For example, LE2MGSC40DE0 must be used with LE2MGSC40ED0.	

9.4.5 LE2MGSC40ED0

Table 9-15 LE2MGSC40ED0 specifications

Item	Value
Basic Information	
Module name	LE2MGSC40ED0
Part Number	02310KVU
Model	LE2MGSC40ED0
Form factor	eSFP
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC

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Item	Value
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310(RX)1490(TX)
Maximum Tx optical power (AVG) [dBm]	3.0 dBm
Minimum Tx optical power (AVG) [dBm]	-2.0 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-23 dBm
Overload power (AVG) [dBm]	-3.0 dBm
NOTE Single-fiber bidirectional (BIDI) optical modules must be used in pairs. For example, LE2MGSC40ED0 must be used with LE2MGSC40DE0.	

9.4.6 SFP-GE-LX-SM1310 (02315200)

Table 9-16 SFP-GE-LX-SM1310 specifications

Item	Value
Basic Information	
Module name	SFP-GE-LX-SM1310
Part Number	02315200
Model	SFP-GE-LX-SM1310
Form factor	eSFP
Application standard/Type	1000BASE-LX10
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC

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Item	Value
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode (G.652) optical fiber (diameter: 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	-3.0 dBm
Minimum Tx optical power (AVG) [dBm]	-9.0 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-20.0 dBm
Overload power (AVG) [dBm]	-3.0 dBm

9.4.7 SFP-GE-LX-SM1310 (02313URF)

Table 9-17 SFP-GE-LX-SM1310 specifications

Item	Value
Basic Information	
Module name	SFP-GE-LX-SM1310
Part Number	02313URF
Model	SFP-GE-LX-SM1310
Form factor	eSFP
Application standard/Type	1000BASE-LX10
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)

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Item	Value
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode (G.652) optical fiber (diameter: 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	-3.0 dBm
Minimum Tx optical power (AVG) [dBm]	-9.0 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-20.0 dBm
Overload power (AVG) [dBm]	-3.0 dBm

9.4.8 SFP-GE-LX-SM1310-BIDI

Table 9-18 SFP-GE-LX-SM1310-BIDI specifications

Item	Value
Basic Information	
Module name	SFP-GE-LX-SM1310-BIDI
Part Number	02315285
Model	SFP-GE-LX-SM1310-BIDI
Form factor	eSFP
Application standard/Type	1000BASE-BX10
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported

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Item	Value
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode (G.652) optical fiber (diameter: 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1490(RX)1310(TX)
Maximum Tx optical power (AVG) [dBm]	-3.0 dBm
Minimum Tx optical power (AVG) [dBm]	-9.0 dBm
Minimum extinction ratio [dB]	6 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19.5 dBm
Overload power (AVG) [dBm]	-3.0 dBm
NOTE Single-fiber bidirectional (BIDI) optical modules must be used in pairs. For example, SFP-GE-LX-SM1310-BIDI must be used with SFP-GE-LX-SM1490-BIDI.	

9.4.9 SFP-GE-LX-SM1490-BIDI

Table 9-19 SFP-GE-LX-SM1490-BIDI specifications

Item	Value
Basic Information	
Module name	SFP-GE-LX-SM1490-BIDI
Part Number	02315286
Model	SFP-GE-LX-SM1490-BIDI
Form factor	eSFP
Application standard/Type	1000BASE-BX10
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported

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Item	Value
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310(RX)1490(TX)
Maximum Tx optical power (AVG) [dBm]	-3.0 dBm
Minimum Tx optical power (AVG) [dBm]	-9.0 dBm
Minimum extinction ratio [dB]	6 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19.5 dBm
Overload power (AVG) [dBm]	-3.0 dBm
NOTE Single-fiber bidirectional (BIDI) optical modules must be used in pairs. For example, SFP-GE-LX-SM1490-BIDI must be used with SFP-GE-LX-SM1310-BIDI.	

9.4.10 S-SFP-GE-LH40-SM1310

Table 9-20 S-SFP-GE-LH40-SM1310 specifications

Item	Value
Basic Information	
Module name	S-SFP-GE-LH40-SM1310
Part Number	02317346
Model	S-SFP-GE-LH40-SM1310
Form factor	eSFP
Application standard/Type	1000BASE-EX
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported

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Item	Value
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0 dBm
Minimum Tx optical power (AVG) [dBm]	-5.0 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-23 dBm
Overload power (AVG) [dBm]	-3.0 dBm

9.4.11 S-SFP-GE-LH80-SM1550

Table 9-21 S-SFP-GE-LH80-SM1550 specifications

Item	Value
Basic Information	
Module name	S-SFP-GE-LH80-SM1550
Part Number	02317348
Model	S-SFP-GE-LH80-SM1550
Form factor	eSFP
Application standard/Type	1000BASE-ZX
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s

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Item	Value
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 80 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1550 nm
Maximum Tx optical power (AVG) [dBm]	5.0 dBm
Minimum Tx optical power (AVG) [dBm]	-2.0 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-23 dBm
Overload power (AVG) [dBm]	-3.0 dBm

9.4.12 CWDM-SFPGE-LH40-1471

Table 9-22 CWDM-SFPGE-LH40-1471 specifications

Item	Value
Basic Information	
Module name	CWDM-SFPGE-LH40-1471
Part Number	02312FWB
Model	CWDM-SFPGE-LH40-1471
Form factor	eSFP
Application standard/Type	GE-CWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km

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Item	Value
Transmitter Optical Characteristics	
Center wavelength [nm]	1471 nm
Maximum Tx optical power (AVG) [dBm]	5.0 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19 dBm
Overload power (AVG) [dBm]	-3 dBm

9.4.13 CWDM-SFPGE-LH40-1491

Table 9-23 CWDM-SFPGE-LH40-1491 specifications

Item	Value
Basic Information	
Module name	CWDM-SFPGE-LH40-1491
Part Number	02312FVX
Model	CWDM-SFPGE-LH40-1491
Form factor	eSFP
Application standard/Type	GE-CWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1491 nm

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Item	Value
Maximum Tx optical power (AVG) [dBm]	5.0 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19 dBm
Overload power (AVG) [dBm]	-3 dBm

9.4.14 CWDM-SFPGE-LH40-1511

Table 9-24 CWDM-SFPGE-LH40-1511 specifications

Item	Value
Basic Information	
Module name	CWDM-SFPGE-LH40-1511
Part Number	02312FWC
Model	CWDM-SFPGE-LH40-1511
Form factor	eSFP
Application standard/Type	GE-CWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1511 nm
Maximum Tx optical power (AVG) [dBm]	5.0 dBm

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Item	Value
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19 dBm
Overload power (AVG) [dBm]	-3 dBm

9.4.15 CWDM-SFPGE-LH40-1531

Table 9-25 CWDM-SFPGE-LH40-1531 specifications

Item	Value
Basic Information	
Module name	CWDM-SFPGE-LH40-1531
Part Number	02312FWQ
Model	CWDM-SFPGE-LH40-1531
Form factor	eSFP
Application standard/Type	GE-CWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1531 nm
Maximum Tx optical power (AVG) [dBm]	5.0 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm

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Item	Value
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19 dBm
Overload power (AVG) [dBm]	-3 dBm

9.4.16 CWDM-SFPGE-LH40-1551

Table 9-26 CWDM-SFPGE-LH40-1551 specifications

Item	Value
Basic Information	
Module name	CWDM-SFPGE-LH40-1551
Part Number	02312FWR
Model	CWDM-SFPGE-LH40-1551
Form factor	eSFP
Application standard/Type	GE-CWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1551 nm
Maximum Tx optical power (AVG) [dBm]	5.0 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	

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Item	Value
Rx sensitivity (OMA) [dBm]	-19 dBm
Overload power (AVG) [dBm]	-3 dBm

9.4.17 CWDM-SFPGE-LH40-1571

Table 9-27 CWDM-SFPGE-LH40-1571 specifications

Item	Value
Basic Information	
Module name	CWDM-SFPGE-LH40-1571
Part Number	02312FWS
Model	CWDM-SFPGE-LH40-1571
Form factor	eSFP
Application standard/Type	GE-CWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1571 nm
Maximum Tx optical power (AVG) [dBm]	5.0 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19 dBm
Overload power (AVG) [dBm]	-3 dBm

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9.4.18 CWDM-SFPGE-LH40-1591

Table 9-28 CWDM-SFPGE-LH40-1591 specifications

Item	Value
Basic Information	
Module name	CWDM-SFPGE-LH40-1591
Part Number	02312FWT
Model	CWDM-SFPGE-LH40-1591
Form factor	eSFP
Application standard/Type	GE-CWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1591 nm
Maximum Tx optical power (AVG) [dBm]	5.0 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19 dBm
Overload power (AVG) [dBm]	-3 dBm

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9.4.19 CWDM-SFPGE-LH40-1611

Table 9-29 CWDM-SFPGE-LH40-1611 specifications

Item	Value
Basic Information	
Module name	CWDM-SFPGE-LH40-1611
Part Number	02312FWU
Model	CWDM-SFPGE-LH40-1611
Form factor	eSFP
Application standard/Type	GE-CWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	1Gbit/s
Target transmission distance [km]	Single-mode fiber: 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1611 nm
Maximum Tx optical power (AVG) [dBm]	5.0 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19 dBm
Overload power (AVG) [dBm]	-3 dBm

9.5 GE SFP Copper Modules

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9.5.1 SFP-1000BaseT (02314171)

Table 9-30 SFP-1000BaseT specifications

Item	Value
Basic Information	
Module name	SFP-1000BaseT
Part Number	02314171
Model	SFP-1000BaseT
Form factor	SFP
Application standard/Type	1000BASE-T (SFP-GE-T)
Connector type	RJ45
DDM options	Not Supported
Target transmission distance [km]	0.1 km

9.5.2 SFP-1000BaseT (02313URG)

Table 9-31 SFP-1000BaseT specifications

Item	Value
Basic Information	
Module name	SFP-1000BaseT
Part Number	02313URG
Model	SFP-1000BaseT
Form factor	SFP
Application standard/Type	1000BASE-T (SFP-GE-T)
Connector type	RJ45
DDM options	Not Supported
Target transmission distance [km]	0.1 km

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9.5.3 SFP-1000BaseT-G2

Table 9-32 SFP-1000BaseT-G2 specifications

Item	Value
Basic Information	
Module name	SFP-1000BaseT-G2
Part Number	02314BDD
Model	SFP-1000BaseT-G2
Form factor	SFP
Application standard/Type	1000BASE-T (SFP-GE-T)
Connector type	RJ45
DDM options	Not Supported
Target transmission distance [km]	0.1 km

NOTE

Version support: V200R022C00 and later versions

9.5.4 SFP-1000BaseT-MP

Table 9-33 SFP-1000BaseT-MP specifications

Item	Value
Basic Information	
Module name	SFP-1000BaseT-MP
Part Number	02313GCE
Model	SFP-1000BaseT-MP
Form factor	SFP
Application standard/Type	1000BASE-T (SFP-GE-T)
Connector type	RJ45
DDM options	Not Supported
Target transmission distance [km]	0.1 km

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9.6 2G, 4G, 8G, and 16G SFP Optical Modules

9.6.1 SFP-FC2G-LW

Table 9-34 Technical specifications

Item	Description
Part number	02311BJG
Version support	V100R006C00 and later versions
Transceiver form factor	SFP
Transmission speed	2G
Center wavelength (nm)	1310
Connector type	LC
Type of the end face of the fiber ceramic ferrule	PC or UPC
Applicable cable and maximum transmission distance	Single-mode fiber (G.652) (with diameter of 9 μm): 15 km
Modal bandwidth	-
Transmit power (dBm)	-5 to 0
Maximum receiver sensitivity (dBm)	-21
Overload power (dBm)	0
Extinction ratio (dB)	≥ 8.2
Operating temperature	0°C to 70°C (32°F to 158°F)

9.6.2 SFP-FC2G-SW

Table 9-35 Technical specifications

Item	Description
Part number	02311BJH

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Item	Description
Version support	V100R005C10 and later versions
Transceiver form factor	SFP
Transmission speed	2G
Center wavelength (nm)	850
Connector type	LC
Type of the end face of the fiber ceramic ferrule	PC or UPC
Applicable cable and maximum transmission distance	• Multimode fiber (OM2) (with diameter of 50 μm): 0.3 km • Multimode fiber (OM3) (with diameter of 50 μm): 0.5 km
Modal bandwidth	• Multimode fiber (OM2): 500 MHz*km • Multimode fiber (OM3): 2000 MHz*km
Transmit power (dBm)	-9.5 to -2.5
Maximum receiver sensitivity (dBm)	-17
Overload power (dBm)	0
Extinction ratio (dB)	≥ 9
Operating temperature	-20°C to 85°C (-4°F to 185°F)

9.6.3 SFP-FC4G-LW

Table 9-36 Technical specifications

Item	Description
Part number	02311BJE
Version support	V100R005C10 and later versions
Transceiver form factor	SFP
Transmission speed	2G/4G
Center wavelength (nm)	1310
Connector type	LC

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Item	Description
Type of the end face of the fiber ceramic ferrule	PC or UPC
Applicable cable and maximum transmission distance	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Modal bandwidth	-
Transmit power (dBm)	-8.4 to -1
Maximum receiver sensitivity (dBm)	-18
Overload power (dBm)	0
Extinction ratio (dB)	≥ 9
Operating temperature	0°C to 70°C (32°F to 158°F)

9.6.4 SFP-FC4G-SW

Table 9-37 Technical specifications

Item	Description
Part number	02311BJF
Version support	V100R005C10 and later versions
Transceiver form factor	SFP
Transmission speed	2G/4G
Center wavelength (nm)	850
Connector type	LC
Type of the end face of the fiber ceramic ferrule	PC or UPC
Applicable cable and maximum transmission distance	Multimode fiber (OM3) (with diameter of 50 μm): 0.3 km
Modal bandwidth	Multimode fiber (OM3): 2000 MHz*km
Transmit power (dBm)	-9 to -1.5

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Item	Description
Maximum receiver sensitivity (dBm)	-15
Overload power (dBm)	0
Extinction ratio (dB)	≥ 3
Operating temperature	-20°C to 85°C (-4°F to 185°F)

9.6.5 SFP-FC8G-LW

Table 9-38 Technical specifications

Item	Description
Part number	02311BJA
Version support	V100R005C10 and later versions
Transceiver form factor	SFP
Transmission speed	2G/4G/8G
Center wavelength (nm)	1310
Connector type	LC
Type of the end face of the fiber ceramic ferrule	PC or UPC
Applicable cable and maximum transmission distance	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Modal bandwidth	-
Transmit power (dBm)	-8.4 to 0.5
Maximum receiver sensitivity (dBm)	-13.8
Overload power (dBm)	0.5
Extinction ratio (dB)	≥ 3.5
Operating temperature	0°C to 70°C (32°F to 158°F)

9.6.6 SFP-FC8G-SW

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Table 9-39 Technical specifications

Item	Description
Part number	02311BJL
Version support	V100R005C10 and later versions
Transceiver form factor	SFP
Transmission speed	2G/4G/8G
Center wavelength (nm)	850
Connector type	LC
Type of the end face of the fiber ceramic ferrule	PC or UPC
Applicable cable and maximum transmission distance	2G: • Multimode fiber (OM2) (with diameter of 50 μm): 0.3 km • Multimode fiber (OM3) (with diameter of 50 μm): 0.5 km 4G: • Multimode fiber (OM2) (with diameter of 50 μm): 0.15 km • Multimode fiber (OM3) (with diameter of 50 μm): 0.38 km 8G: • Multimode fiber (OM2) (with diameter of 50 μm): 0.05 km • Multimode fiber (OM3) (with diameter of 50 μm): 0.15 km
Modal bandwidth	• Multimode fiber (OM2): 500 MHz*km • Multimode fiber (OM3): 2000 MHz*km
Transmit power (dBm)	-8.2 to -1.3
Maximum receiver sensitivity (dBm)	-11.2
Overload power (dBm)	0
Extinction ratio (dB)	≥ 9
Operating temperature	0°C to 70°C (32°F to 158°F)

9.6.7 SFP-FC16G-SW

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Table 9-40 Technical specifications

Item	Description
Part number	02311TPA
Version support	V200R003C00 and later versions
Transceiver form factor	SFP+
Transmission speed	4G/8G/16G
Center wavelength (nm)	850
Connector type	LC
Type of the end face of the fiber ceramic ferrule	PC or UPC
Applicable cable and maximum transmission distance	4G: • Multimode fiber (OM2) (with diameter of 50 μm): 0.15 km • Multimode fiber (OM3) (with diameter of 50 μm): 0.38 km 8G: • Multimode fiber (OM2) (with diameter of 50 μm): 0.05 km • Multimode fiber (OM3) (with diameter of 50 μm): 0.15 km 16G: • Multimode fiber (OM2) (with diameter of 50 μm): 0.035 km • Multimode fiber (OM3) (with diameter of 50 μm): 0.1 km
Modal bandwidth	• Multimode fiber (OM2): 500 MHz*km • Multimode fiber (OM3): 2000 MHz*km
Transmit power (dBm)	-7.8 to 0
Maximum receiver sensitivity (dBm)	-10.5
Overload power (dBm)	0
Extinction ratio (dB)	≥ 9
Operating temperature	0°C to 70°C (32°F to 158°F)

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9.7 10GE SFP+ Optical Modules

9.7.1 LE2MXSC80FF0

Table 9-41 Technical specifications

Item	Description
Part number	02310JFE
Version support	Supported only in V100R001C00 and V100R002C00
Transceiver form factor	SFP+
Transmission speed	10G
Center wavelength (nm)	1550
Standards compliance	10GBASE-ZR
Connector type	LC
Type of the end face of the fiber ceramic ferrule	PC or UPC
Applicable cable and maximum transmission distance	Single-mode fiber (G.652) (with diameter of 9 μm): 80 km
Modal bandwidth	-
Transmit power (dBm)	0 to 4
Maximum receiver sensitivity (dBm)	-24
Overload power (dBm)	-7
Extinction ratio (dB)	≥ 9
Operating temperature	0°C to 70°C

9.7.2 OMXD30000 (02318169)

Table 9-42 OMXD30000 specifications

Item	Value
Basic Information	

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Item	Value
Module name	OMXD30000
Part Number	02318169
Model	OMXD30000
Form factor	SFP+
Application standard/Type	10GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (with diameter of 62.5 μm): 26 m Multimode fiber (OM1) (with diameter of 62.5 μm): 33 m Multimode fiber (with diameter of 50 μm): 66 m Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m
Modal bandwidth [MHz*km]	Multimode fiber: 160 MHz*km Multimode fiber (OM1): 200 MHz*km Multimode fiber: 400 MHz*km Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm

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Item	Value
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

9.7.3 OMXD30000 (02313URC)

Table 9-43 OMXD30000 specifications

Item	Value
Basic Information	
Module name	OMXD30000
Part Number	02313URC
Model	OMXD30000
Form factor	SFP+
Application standard/Type	10GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (with diameter of 62.5 μm): 26 m Multimode fiber (OM1) (with diameter of 62.5 μm): 33 m Multimode fiber (with diameter of 50 μm): 66 m Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m

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Item	Value
Modal bandwidth [MHz*km]	Multimode fiber: 160 MHz*km Multimode fiber (OM1): 200 MHz*km Multimode fiber: 400 MHz*km Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

9.7.4 OSX010000 (02318170)

Table 9-44 OSX010000 specifications

Item	Value
Basic Information	
Module name	OSX010000
Part Number	02318170
Model	OSX010000
Form factor	SFP+
Application standard/Type	10GBASE-LR
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)

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Item	Value
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-12.6 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.5 OSX010000 (02313URK)

Table 9-45 OSX010000 specifications

Item	Value
Basic Information	
Module name	OSX010000
Part Number	02313URK
Model	OSX010000
Form factor	SFP+
Application standard/Type	10GBASE-LR
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported

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Item	Value
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-12.6 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.6 OSX040N01

Table 9-46 OSX040N01 specifications

Item	Value
Basic Information	
Module name	OSX040N01
Part Number	02310CNF
Model	OSX040N01
Form factor	SFP+
Application standard/Type	10GBASE-ER
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s

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Item	Value
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1550 nm
Maximum Tx optical power (AVG) [dBm]	4.0 dBm
Minimum Tx optical power (AVG) [dBm]	-4.7 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-14.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

9.7.7 OSXD22N00

Table 9-47 OSXD22N00 specifications

Item	Value
Basic Information	
Module name	OSXD22N00
Part Number	02310CRM
Model	OSXD22N00
Form factor	SFP+
Application standard/Type	10GBASE-LRM
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s

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Item	Value
Target transmission distance [km]	Multimode fiber (with diameter of 62.5 μm): 220 m Multimode fiber (OM1) (with diameter of 62.5 μm): 220 m Multimode fiber (with diameter of 50 μm): 100 m Multimode fiber (OM2) (with diameter of 50 μm): 220 m Multimode fiber (OM3) (with diameter of 50 μm): 220 m
Modal bandwidth [MHz*km]	Multimode fiber: 160/500 MHz*km Multimode fiber (OM1): 200/500 MHz*km Multimode fiber: 400/400 MHz*km Multimode fiber (OM2): 500/500 MHz*km Multimode fiber (OM3): 1500/500 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-6.5 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-6.5 dBm
Overload power (AVG) [dBm]	1.5 dBm

9.7.8 SFP-10G-BXD1

Table 9-48 SFP-10G-BXD1 specifications

Item	Value
Basic Information	
Module name	SFP-10G-BXD1
Part Number	02310QDT

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Item	Value
Model	SFP-10G-BXD1
Form factor	SFP+
Application standard/Type	10GBASE-BX
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	-40°C to +85°C (-40°F to +185°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1270(RX)1330(TX)
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-14.4 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.9 SFP-10G-BXU1

Table 9-49 SFP-10G-BXU1 specifications

Item	Value
Basic Information	
Module name	SFP-10G-BXU1
Part Number	02310QBJ
Model	SFP-10G-BXU1

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Item	Value
Form factor	SFP+
Application standard/Type	10GBASE-BX
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	-40°C to +85°C (-40°F to +185°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1330(RX)1270(TX)
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-14.4 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.10 SFP-10G-ER

Table 9-50 SFP-10G-ER specifications

Item	Value
Basic Information	
Module name	SFP-10G-ER
Part Number	02314GFL
Model	SFP-10G-ER
Form factor	SFP+

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Item	Value
Application standard/Type	10GBASE-ER
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Random failure rate (60% CL, 50°C case temperature)	300 FIT
Optical power diagnosis accuracy [dB]	2 dB
Transmitter Optical Characteristics	
Center wavelength [nm]	1550 nm
Maximum Tx optical power (AVG) [dBm]	4.0 dBm
Minimum Tx optical power (AVG) [dBm]	-4.7 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-14.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

9.7.11 SFP-10G-ER-1310

Table 9-51 SFP-10G-ER-1310 specifications

Item	Value
Basic Information	
Module name	SFP-10G-ER-1310
Part Number	02311RLX
Model	SFP-10G-ER-1310

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Item	Value
Form factor	SFP+
Application standard/Type	10GBASE-ER
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	4.0 dBm
Minimum Tx optical power (AVG) [dBm]	-2.0 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-20 dBm
Overload power (AVG) [dBm]	-7.0 dBm
NOTE When connected to a 10GBASE-ER standard optical module (1550 nm, 10 Gbit/s, 40 km), an SFP-10G-ER-1310 optical module supports only 20 km of maximum transmission distance.	

9.7.12 SFP-10G-ER-SM1270-BIDI

Table 9-52 SFP-10G-ER-SM1270-BIDI specifications

Item	Value
Basic Information	
Module name	SFP-10G-ER-SM1270-BIDI
Part Number	02311BJC

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Item	Value
Model	SFP-10G-ER-SM1270-BIDI
Form factor	SFP+
Application standard/Type	10GBASE-BDER
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1330(RX)1270(TX)
Maximum Tx optical power (AVG) [dBm]	5 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-18 dBm
Overload power (AVG) [dBm]	-9 dBm

9.7.13 SFP-10G-ER-SM1330-BIDI

Table 9-53 SFP-10G-ER-SM1330-BIDI specifications

Item	Value
Basic Information	
Module name	SFP-10G-ER-SM1330-BIDI
Part Number	02311BJB
Model	SFP-10G-ER-SM1330-BIDI

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Item	Value
Form factor	SFP+
Application standard/Type	10GBASE-BDER
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1270(RX)1330(TX)
Maximum Tx optical power (AVG) [dBm]	5 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-18 dBm
Overload power (AVG) [dBm]	-9 dBm

9.7.14 SFP-10G-iLR

Table 9-54 SFP-10G-iLR specifications

Item	Value
Basic Information	
Module name	SFP-10G-iLR
Part Number	02311BJJ
Model	SFP-10G-iLR
Form factor	SFP+

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Item	Value
Application standard/Type	10GBASE-iLR
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	-40°C to +85°C (-40°F to +185°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 1.4 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-14.4 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.15 SFP-10G-LR (02310QDJ)

Table 9-55 SFP-10G-LR specifications

Item	Value
Basic Information	
Module name	SFP-10G-LR
Part Number	02310QDJ
Model	SFP-10G-LR
Form factor	SFP+
Application standard/Type	10GBASE-LR

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Item	Value
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-12.6 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.16 SFP-10G-LR (02313URL)

Table 9-56 SFP-10G-LR specifications

Item	Value
Basic Information	
Module name	SFP-10G-LR
Part Number	02313URL
Model	SFP-10G-LR
Form factor	SFP+
Application standard/Type	10GBASE-LR
Connector type	LC/DLC

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Item	Value
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-12.6 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.17 SFP-10G-LR-MP

Table 9-57 SFP-10G-LR-MP specifications

Item	Value
Basic Information	
Module name	SFP-10G-LR-MP
Part Number	02313BJH
Model	SFP-10G-LR-MP
Form factor	SFP+
Application standard/Type	10GBASE-LR
Connector type	LC/DLC
Optical fiber type	SMF

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Item	Value
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-12.6 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.18 SFP-10G-SR1

Table 9-58 SFP-10G-SR1 specifications

Item	Value
Basic Information	
Module name	SFP-10G-SR1
Part Number	02314GDS
Model	SFP-10G-SR1
Form factor	SFP+
Application standard/Type	10GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC

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Item	Value
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (with diameter of 62.5 μm): 26 m Multimode fiber (OM1) (with diameter of 62.5 μm): 33 m Multimode fiber (with diameter of 50 μm): 66 m Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m
Modal bandwidth [MHz*km]	Multimode fiber: 160 MHz*km Multimode fiber (OM1): 200 MHz*km Multimode fiber: 400 MHz*km Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Random failure rate (60% CL, 50°C case temperature)	300 FIT
Optical power diagnosis accuracy [dB]	2 dB
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

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9.7.19 SFP-10G-SR-MP

Table 9-59 SFP-10G-SR-MP specifications

Item	Value
Basic Information	
Module name	SFP-10G-SR-MP
Part Number	02313AMY
Model	SFP-10G-SR-MP
Form factor	SFP+
Application standard/Type	10GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (with diameter of 62.5 μm): 26 m Multimode fiber (OM1) (with diameter of 62.5 μm): 33 m Multimode fiber (with diameter of 50 μm): 66 m Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m
Modal bandwidth [MHz*km]	Multimode fiber: 160 MHz*km Multimode fiber (OM1): 200 MHz*km Multimode fiber: 400 MHz*km Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm

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Item	Value
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

9.7.20 SFP-10G-SRV

Table 9-60 SFP-10G-SRV specifications

Item	Value
Basic Information	
Module name	SFP-10G-SRV
Part Number	02310STB
Model	SFP-10G-SRV
Form factor	SFP+
Application standard/Type	10GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s

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Item	Value
Target transmission distance [km]	Multimode fiber (with diameter of 62.5 μm): 26 m Multimode fiber (OM1) (with diameter of 62.5 μm): 33 m Multimode fiber (with diameter of 50 μm): 66 m Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m
Modal bandwidth [MHz*km]	Multimode fiber: 160 MHz*km Multimode fiber (OM1): 200 MHz*km Multimode fiber: 400 MHz*km Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

9.7.21 SFP-10G-SR-E

Table 9-61 SFP-10G-SR-E specifications

Item	Value
Basic Information	
Module name	SFP-10G-SR-E

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Item	Value
Part Number	02314JUU
Model	SFP-10G-SR-E
Form factor	SFP+
Application standard/Type	10GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (with diameter of 62.5 μm): 26 m Multimode fiber (OM1) (with diameter of 62.5 μm): 33 m Multimode fiber (with diameter of 50 μm): 66 m Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m
Modal bandwidth [MHz*km]	Multimode fiber: 160 MHz*km Multimode fiber (OM1): 200 MHz*km Multimode fiber: 400 MHz*km Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB

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Item	Value
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

9.7.22 SFP-10G-SRV-MP

Table 9-62 SFP-10G-SRV-MP specifications

Item	Value
Basic Information	
Module name	SFP-10G-SRV-MP
Part Number	02313BJJ
Model	SFP-10G-SRV-MP
Form factor	SFP+
Application standard/Type	10GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (with diameter of 62.5 μm): 26 m Multimode fiber (OM1) (with diameter of 62.5 μm): 33 m Multimode fiber (with diameter of 50 μm): 66 m Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m

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Item	Value
Modal bandwidth [MHz*km]	Multimode fiber: 160 MHz*km Multimode fiber (OM1): 200 MHz*km Multimode fiber: 400 MHz*km Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	-1.0 dBm

9.7.23 SFP-10G-USR (02310MNW)

Table 9-63 SFP-10G-USR specifications

Item	Value
Basic Information	
Module name	SFP-10G-USR
Part Number	02310MNW
Model	SFP-10G-USR
Form factor	SFP+
Application standard/Type	10GBASE-USR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)

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Item	Value
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (OM2) (with diameter of 50 μm): 30 m Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.7 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.24 SFP-10G-USR (02313URN)

Table 9-64 SFP-10G-USR specifications

Item	Value
Basic Information	
Module name	SFP-10G-USR
Part Number	02313URN
Model	SFP-10G-USR
Form factor	SFP+
Application standard/Type	10GBASE-USR
Connector type	LC/DLC

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Item	Value
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (OM2) (with diameter of 50 μm): 30 m Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.7 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.7.25 SFP-10G-USR-MP

Table 9-65 SFP-10G-USR-MP specifications

Item	Value
Basic Information	
Module name	SFP-10G-USR-MP
Part Number	02313BJE

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Item	Value
Model	SFP-10G-USR-MP
Form factor	SFP+
Application standard/Type	10GBASE-USR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Multimode fiber (OM2) (with diameter of 50 μm): 30 m Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-1.0 dBm
Minimum Tx optical power (AVG) [dBm]	-7.3 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.7 dBm
Overload power (AVG) [dBm]	0.5 dBm

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9.7.26 SFP-10G-ZDWT-L

Table 9-66 SFP-10G-ZDWT-L specifications

Item	Value
Basic Information	
Module name	SFP-10G-ZDWT-L
Part Number	02312DAN
Model	SFP-10G-ZDWT-L
Form factor	SFP+
Application standard/Type	10GBASE-DWDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 60 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1529.16 nm - 1560.61 nm
Maximum Tx optical power (AVG) [dBm]	3 dBm
Minimum Tx optical power (AVG) [dBm]	-1 dBm
Minimum extinction ratio [dB]	8.2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-24 dBm
Overload power (AVG) [dBm]	-1 dBm

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9.7.27 SFP-10G-ZR

Table 9-67 SFP-10G-ZR specifications

Item	Value
Basic Information	
Module name	SFP-10G-ZR
Part Number	02310SNN
Model	SFP-10G-ZR
Form factor	SFP+
Application standard/Type	10GBASE-ZR
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 80 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1550 nm
Maximum Tx optical power (AVG) [dBm]	4.0 dBm
Minimum Tx optical power (AVG) [dBm]	0 dBm
Minimum extinction ratio [dB]	9 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-24.0 dBm
Overload power (AVG) [dBm]	-7.0 dBm

9.8 25GE SFP28 Optical Modules

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9.8.1 SFP-25G-LR

Table 9-68 SFP-25G-LR specifications

Item	Value
Basic Information	
Module name	SFP-25G-LR
Part Number	02312LSE
Model	SFP-25G-LR
Form factor	SFP28
Application standard/Type	25GBASE-LR
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	-45°C to +85°C (-49°F to +185°F)
DDM options	Supported
Transmission rate [bit/s]	25Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	-7 dBm
Minimum Tx optical power (AVG) [dBm]	2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.3 dBm
Overload power (AVG) [dBm]	2 dBm

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9.8.2 SFP-25G-SR (02311KNR)

Table 9-69 SFP-25G-SR specifications

Item	Value
Basic Information	
Module name	SFP-25G-SR
Part Number	02311KNR
Model	SFP-25G-SR
Form factor	SFP28
Application standard/Type	25GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	25Gbit/s
Target transmission distance [km]	When the bit error rate (BER) is 10^-12: Multimode fiber (OM3) (with diameter of 50 μm): 30 m Multimode fiber (OM4) (with diameter of 50 μm): 40 m When the BER is 5*10^-5: Multimode fiber (OM3) (with diameter of 50 μm): 70 m Multimode fiber (OM4) (with diameter of 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-8.4 dBm
Minimum Tx optical power (AVG) [dBm]	2.4 dBm

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Item	Value
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.3 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.8.3 SFP-25G-SR (02313URP)

Table 9-70 SFP-25G-SR specifications

Item	Value
Basic Information	
Module name	SFP-25G-SR
Part Number	02313URP
Model	SFP-25G-SR
Form factor	SFP28
Application standard/Type	25GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	25Gbit/s
Target transmission distance [km]	When the bit error rate (BER) is 10^-12: Multimode fiber (OM3) (with diameter of 50 μm): 30 m Multimode fiber (OM4) (with diameter of 50 μm): 40 m When the BER is 5*10^-5: Multimode fiber (OM3) (with diameter of 50 μm): 70 m Multimode fiber (OM4) (with diameter of 50 μm): 100 m

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Item	Value
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-8.4 dBm
Minimum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.3 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.8.4 SFP-25G-SR (02314GDT)

Table 9-71 SFP-25G-SR specifications

Item	Value
Basic Information	
Module name	SFP-25G-SR
Part Number	02314GDT
Model	SFP-25G-SR-E
Form factor	SFP28
Application standard/Type	25GBASE-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	25Gbit/s

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Item	Value
Target transmission distance [km]	When the bit error rate (BER) is 10^-12: Multimode fiber (OM3) (with diameter of 50 μm): 30 m Multimode fiber (OM4) (with diameter of 50 μm): 40 m When the BER is 5*10^-5: Multimode fiber (OM3) (with diameter of 50 μm): 70 m Multimode fiber (OM4) (with diameter of 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-8.4 dBm
Minimum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.3 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.8.5 SFP-25G-SR-MP

Table 9-72 SFP-25G-SR-MP specifications

Item	Value
Basic Information	
Module name	SFP-25G-SR-MP
Part Number	02313BJK
Model	SFP-25G-SR-MP
Form factor	SFP28
Application standard/Type	25GBASE-SR

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Item	Value
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	25Gbit/s
Target transmission distance [km]	When the bit error rate (BER) is 10^-12: Multimode fiber (OM3) (with diameter of 50 μm): 30 m Multimode fiber (OM4) (with diameter of 50 μm): 40 m When the BER is 5*10^-5: Multimode fiber (OM3) (with diameter of 50 μm): 70 m Multimode fiber (OM4) (with diameter of 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	-8.4 dBm
Minimum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.3 dBm
Overload power (AVG) [dBm]	2.4 dBm

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9.8.6 SFP-25G/10G-SR

Table 9-73 SFP-25G/10G-SR specifications

Item	Value
Basic Information	
Module name	SFP-25G/10G-SR
Part Number	02313FCC
Model	SFP-25G/10G-SR
Form factor	SFP28
Application standard/Type	25Gbase-SR
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	10/25G
Target transmission distance [km]	25G with no FEC: Multimode fiber (OM3) (with diameter of 50 μm): 30 m Multimode fiber (OM4) (with diameter of 50 μm): 40 m 25G with FEC: Multimode fiber (OM3) (with diameter of 50 μm): 70 m Multimode fiber (OM4) (with diameter of 50 μm): 100 m 10G: Multimode fiber (OM3) (with diameter of 50 μm): 70 m Multimode fiber (OM4) (with diameter of 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm

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Item	Value
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-8.4 dBm
Maximum Tx optical power (OMA) [dBm]	3 dBm
Minimum Tx optical power (OMA) [dBm]	-6.4 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.3 dBm
Overload power (AVG) [dBm]	2.4 dBm

NOTE

Only the CE6865-48S8CQ-EI, CE8861-4C-EI (CE88-D24S2CQ card), and CE8868-4C-EI (CE88-D24S2CQcard) switches support this optical module.

9.9 40GE QSFP+ Optical Modules

9.9.1 QSFP-40G-ER4

Table 9-74 QSFP-40G-ER4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-ER4
Part Number	02311BKT
Model	QSFP-40G-ER4
Form factor	QSFP+
Application standard/Type	40GBASE-ER4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC

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Item	Value
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	4.5 dBm
Minimum Tx optical power (AVG) [dBm]	-2.7 dBm
Minimum extinction ratio [dB]	5.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-19.5 dBm
Overload power (AVG) [dBm]	-4.5 dBm

9.9.2 QSFP-40G-eSM4

Table 9-75 QSFP-40G-eSM4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-eSM4
Part Number	02311DTR
Model	QSFP-40G-eSM4
Form factor	QSFP+
Application standard/Type	40GBASE-eSM4
Connector type	MPO
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC/UPC/APC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)

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Item	Value
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-12.6 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.9.3 QSFP-40G-eSR4 (02310RMB)

Table 9-76 QSFP-40G-eSR4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-eSR4
Part Number	02310RMB
Model	QSFP-40G-eSR4
Form factor	QSFP+
Application standard/Type	40GBASE-eSR4 10GBASE-SR (four lanes)
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)

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Item	Value
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-7.6 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.9.4 QSFP-40G-eSR4 (02313URU)

Table 9-77 QSFP-40G-eSR4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-eSR4
Part Number	02313URU
Model	QSFP-40G-eSR4
Form factor	QSFP+

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Item	Value
Application standard/Type	40GBASE-eSR4 10GBASE-SR (four lanes)
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-7.6 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	2.4 dBm

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9.9.5 QSFP-40G-eSR4-MP

Table 9-78 QSFP-40G-eSR4-MP specifications

Item	Value
Basic Information	
Module name	QSFP-40G-eSR4-MP
Part Number	02313GAA
Model	QSFP-40G-eSR4-MP
Form factor	QSFP+
Application standard/Type	40GBASE-eSR4 10GBASE-SR (four lanes)
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode fiber (OM2) (with diameter of 50 μm): 82 m Multimode fiber (OM3) (with diameter of 50 μm): 300 m Multimode fiber (OM4) (with diameter of 50 μm): 400 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-7.6 dBm
Minimum extinction ratio [dB]	3.0 dB

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Item	Value
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.1 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.9.6 QSFP-40G-iSM4

Table 9-79 QSFP-40G-iSM4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-iSM4
Part Number	02311DRW
Model	QSFP-40G-iSM4
Form factor	QSFP+
Application standard/Type	40GBASE-iSM4
Connector type	MPO 1×12
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	APC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Single-mode fiber (G.652) (with diameter of 9 μm): 1.4 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-8.2 dBm
Minimum extinction ratio [dB]	3.5 dB

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Item	Value
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.5 dBm
Overload power (AVG) [dBm]	0.5 dBm

9.9.7 QSFP-40G-iSR4 (02310MHR)

Table 9-80 QSFP-40G-iSR4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-iSR4
Part Number	02310MHR
Model	QSFP-40G-iSR4
Form factor	QSFP+
Application standard/Type	40GBASE-SR4 10GBASE-USR (four lanes)
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode fiber (OM2) (with diameter of 50 μm): 30 m Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km

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Item	Value
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-7.6 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-9.5 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.9.8 QSFP-40G-iSR4 (02313URW)

Table 9-81 QSFP-40G-iSR4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-iSR4
Part Number	02313URW
Model	QSFP-40G-iSR4
Form factor	QSFP+
Application standard/Type	40GBASE-SR4 10GBASE-USR (four lanes)
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s

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Item	Value
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode fiber (OM2) (with diameter of 50 μm): 30 m Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-7.6 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-9.5 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.9.9 QSFP-40G-iSR4-MP

Table 9-82 QSFP-40G-iSR4-MP specifications

Item	Value
Basic Information	
Module name	QSFP-40G-iSR4-MP
Part Number	02313FYY
Model	QSFP-40G-iSR4-MP
Form factor	QSFP+
Application standard/Type	40GBASE-SR4 10GBASE-USR (four lanes)
Connector type	MPO

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Item	Value
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode fiber (OM2) (with diameter of 50 μm): 30 m Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM2): 500 MHz*km Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	0.5 dBm
Minimum Tx optical power (AVG) [dBm]	-7.6 dBm
Minimum extinction ratio [dB]	3.0 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-9.5 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.9.10 QSFP-40G-LR4 (02310MHS)

Table 9-83 QSFP-40G-LR4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-LR4

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Item	Value
Part Number	02310MHS
Model	QSFP-40G-LR4
Form factor	QSFP+
Application standard/Type	40GBASE-LR4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.3 dBm
Minimum Tx optical power (AVG) [dBm]	-7.0 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.5 dBm
Overload power (AVG) [dBm]	3.3 dBm

9.9.11 QSFP-40G-LR4 (02313URY)

Table 9-84 QSFP-40G-LR4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-LR4
Part Number	02313URY

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Item	Value
Model	QSFP-40G-LR4
Form factor	QSFP+
Application standard/Type	40GBASE-LR4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.3 dBm
Minimum Tx optical power (AVG) [dBm]	-7.0 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.5 dBm
Overload power (AVG) [dBm]	3.3 dBm

9.9.12 QSFP-40G-LR4-Lite (02311YVB)

Table 9-85 QSFP-40G-LR4-Lite specifications

Item	Value
Basic Information	
Module name	QSFP-40G-LR4-Lite
Part Number	02311YVB
Model	QSFP-40G-LR4-Lite

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Item	Value
Form factor	QSFP+
Application standard/Type	40GBASE-LR4 Lite
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 2 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.3 dBm
Minimum Tx optical power (AVG) [dBm]	-9 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.5 dBm
Overload power (AVG) [dBm]	2.3 dBm

9.9.13 QSFP-40G-LR4-Lite (02313URS)

Table 9-86 QSFP-40G-LR4-Lite specifications

Item	Value
Basic Information	
Module name	QSFP-40G-LR4-Lite
Part Number	02313URS
Model	QSFP-40G-LR4-Lite
Form factor	QSFP+

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Item	Value
Application standard/Type	40GBASE-LR4 Lite
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 2 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.3 dBm
Minimum Tx optical power (AVG) [dBm]	-9 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.5 dBm
Overload power (AVG) [dBm]	2.3 dBm

9.9.14 QSFP-40G-LX4

Table 9-87 QSFP-40G-LX4 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-LX4
Part Number	02311HNP
Model	QSFP-40G-LX4
Form factor	QSFP+
Application standard/Type	40GBASE-LX4

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Item	Value
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Multimode fiber (OM3) (with diameter of 50 μm): 150 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m Single-mode fiber (G.652) (with diameter of 9 μm): 2 km
Overfilled Launch Bandwidth [MHz*km]	Multimode (OM3) optical fiber: 500 MHz*km Multimode (OM4) optical fiber: 500 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.3 dBm
Minimum Tx optical power (AVG) [dBm]	-7.0 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.5 dBm
Overload power (AVG) [dBm]	2.3 dBm
NOTE Limitations: - In actual applications, the number of connectors in an optical fiber link cannot exceed 4. - This module is sensitive to fiber link contamination. During deployment, ensure that the fiber end face meets the fiber application standard. For details, refer to the requirements for single-mode connectors in the end face requirements for fiber ceramic ferrules under "Cables" > "Fiber Jumpers."	

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9.9.15 QSFP-40G-LX4-MM

Table 9-88 QSFP-40G-LX4-MM specifications

Item	Value
Basic Information	
Module name	QSFP-40G-LX4-MM
Part Number	02313NUG
Model	QSFP-40G-LX4-MM
Form factor	QSFP+
Application standard/Type	40GBASE-LX4
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Multimode OM3 optical fiber (diameter: 50 μm): 150 m Multimode OM4 optical fiber (diameter: 50 μm): 150 m
Overfilled Launch Bandwidth [MHz*km]	Multimode (OM3) optical fiber: 500 MHz*km Multimode (OM4) optical fiber: 500 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.3 dBm
Minimum Tx optical power (AVG) [dBm]	-7.0 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.5 dBm
Overload power (AVG) [dBm]	3.5 dBm

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Item	Value
NOTE Limitations: - In actual applications, the number of connectors in an optical fiber link cannot exceed 4. - This module is sensitive to fiber link contamination. During deployment, ensure that the fiber end face meets the fiber application standard. For details, refer to the requirements for single-mode connectors in the end face requirements for fiber ceramic ferrules under "Cables" > "Fiber Jumpers."	

9.9.16 QSFP-40G-LX4-MM-E

Table 9-89 QSFP-40G-LX4-MM-E specifications

Item	Value
Basic Information	
Module name	QSFP-40G-LX4-MM-E
Part Number	02314GDU
Model	QSFP-40G-LX4-MM-E
Form factor	QSFP+
Application standard/Type	40GBASE-LX4
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Multimode OM3 optical fiber (diameter: 50 μm): 150 m Multimode OM4 optical fiber (diameter: 50 μm): 150 m
Overfilled Launch Bandwidth [MHz*km]	Multimode (OM3) optical fiber: 500 MHz*km Multimode (OM4) optical fiber: 500 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm

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Item	Value
Maximum Tx optical power (AVG) [dBm]	2.3 dBm
Minimum Tx optical power (AVG) [dBm]	-7.0 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.5 dBm
Overload power (AVG) [dBm]	3.5 dBm
NOTE Limitations: - In actual applications, the number of connectors in an optical fiber link cannot exceed 4. - This module is sensitive to fiber link contamination. During deployment, ensure that the fiber end face meets the fiber application standard. For details, refer to the requirements for single-mode connectors in the end face requirements for fiber ceramic ferrules under "Cables" > "Fiber Jumpers."	

NOTE

Version support: V200R022C10 and later versions.

9.9.17 QSFP-40G-SR-BD

Table 9-90 QSFP-40G-SR-BD specifications

Item	Value
Basic Information	
Module name	QSFP-40G-SR-BD
Part Number	02311FPA
Model	QSFP-40G-SR-BD
Form factor	QSFP+
Application standard/Type	40GBASE-BIDI
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	10°C to 70°C (50°F to 158°F)
DDM options	Not Supported

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Item	Value
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm, 900 nm
Maximum Tx optical power (AVG) [dBm]	5 dBm
Minimum Tx optical power (AVG) [dBm]	-4 dBm
Minimum extinction ratio [dB]	4.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-4.5 dBm
Overload power (AVG) [dBm]	5 dBm

9.9.18 QSFP-40G-eSDLC-PAM

Table 9-91 QSFP-40G-eSDLC-PAM specifications

Item	Value
Basic Information	
Module name	QSFP-40G-eSDLC-PAM
Part Number	02311QTR
Model	QSFP-40G-eSDLC-PAM
Form factor	QSFP+
Application standard/Type	40GBase-eSDLC-PAM4
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC

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Item	Value
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 300 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-2 dBm
Minimum extinction ratio [dB]	3 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.0 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.9.19 QSFP-40G-eSDLC-PAM-G2

Table 9-92 QSFP-40G-eSDLC-PAM-G2 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-eSDLC-PAM-G2
Part Number	02312ELG
Model	QSFP-40G-eSDLC-PAM-G2
Form factor	QSFP+
Application standard/Type	40GBase-eSDLC-PAM4
Connector type	LC/DLC
Optical fiber type	MMF

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Item	Value
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 300 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-2 dBm
Minimum extinction ratio [dB]	3 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.0 dBm
Overload power (AVG) [dBm]	2.4 dBm
NOTE The QSFP-40G-eSDLC-PAM optical module cannot be connected to the QSFP-40G-eSDLC-PAM-G2 optical module.	

9.9.20 QSFP-40G-SDLC-PAM

Table 9-93 QSFP-40G-SDLC-PAM specifications

Item	Value
Basic Information	
Module name	QSFP-40G-SDLC-PAM
Part Number	02311PUU
Model	QSFP-40G-SDLC-PAM

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Item	Value
Form factor	QSFP+
Application standard/Type	40GBase-SDLC-PAM4
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-2.5 dBm
Minimum extinction ratio [dB]	3 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.0 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.9.21 QSFP-40G-SDLC-PAM-G2

Table 9-94 QSFP-40G-SDLC-PAM-G2 specifications

Item	Value
Basic Information	
Module name	QSFP-40G-SDLC-PAM-G2

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Item	Value
Part Number	02312ELH
Model	QSFP-40G-SDLC-PAM-G2
Form factor	QSFP+
Application standard/Type	40GBase-SDLC-PAM4
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	40Gbit/s
Target transmission distance [km]	Multimode fiber (OM3) (with diameter of 50 μm): 100 m Multimode fiber (OM4) (with diameter of 50 μm): 150 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-2.5 dBm
Minimum extinction ratio [dB]	3 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.0 dBm
Overload power (AVG) [dBm]	2.4 dBm
NOTE The QSFP-40G-SDLC-PAM optical module cannot be connected to the QSFP-40G-SDLC-PAM-G2 optical module.	

9.10 100GE QSFP28 Optical Modules

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9.10.1 QSFP28-100G-BIDI

Table 9-95 QSFP28-100G-BIDI specifications

Item	Value
Basic Information	
Module name	QSFP28-100G-BIDI
Part Number	02313EEK
Model	QSFP28-100G-BIDI
Form factor	QSFP28
Application standard/Type	100G PAM4 BiDi
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	10°C to 70°C (50°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Multi-mode (OM3) optical fiber (diameter: 50 μm): 70 m Multi-mode (OM4) optical fiber (diameter: 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode (OM3) optical fiber: 2000 MHz*km Multimode (OM4) optical fiber: 4700 MHz*km
Bit error ratio (BER)	1e-12
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm/910 nm
Maximum Tx optical power (AVG) [dBm]	4 dBm
Minimum Tx optical power (AVG) [dBm]	-4.4 dBm
Maximum Tx optical power (OMA) [dBm]	3 dBm
Minimum Tx optical power (OMA) [dBm]	-2.4 dBm

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Item	Value
Minimum extinction ratio [dB]	3 dB
Receiver Optical Characteristics	
Rx sensitivity (AVG) [dBm]	-7.9 dBm
Rx sensitivity (OMA) [dBm]	-5.9 dBm
Overload power (AVG) [dBm]	3.5 dBm

NOTE

- Version support:
  - Supported by V200R002SPH032 and later patches in V200R002C50SPC800, and V200R005SPH026 and later patches in V200R005C10SPC800, and V200R005SPH026 and later patches in V200R005C20SPC800, and V200R019SPH007 and later patches in V200R019C10SPC800.
  - V200R020C10 and later versions.
- Before installing a QSFP28-100G-BIDI optical module on a port, you need to disable the FEC function on the port. For example, if the RS-FEC function is enabled on a port that has a QSFP28-100G-BIDI optical module installed, the port status will become Down (Transceiver type mismatch).

9.10.2 QSFP-100G-BIDI-G2

Table 9-96 QSFP-100G-BIDI-G2 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-BIDI-G2
Part Number	02314DBW
Model	QSFP-100G-BIDI-G2
Form factor	QSFP28
Application standard/Type	100G-BIDI
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s

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Item	Value
Target transmission distance [km]	Multi-mode (OM3) optical fiber (diameter: 50 μm): 70 m Multi-mode (OM4) optical fiber (diameter: 50 μm): 100 m
Transmitter Optical Characteristics	
Center wavelength [nm]	850,910 nm
Maximum Tx optical power (AVG) [dBm]	4 dBm
Minimum Tx optical power (AVG) [dBm]	-4.4 dBm
Maximum Tx optical power (OMA) [dBm]	3 dBm
Minimum Tx optical power (OMA) [dBm]	-2.4 dBm
Minimum extinction ratio [dB]	3 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	max (-6.6, SECQ - 8)
Overload power (AVG) [dBm]	3.5 dBm

NOTE

Version support: V200R022C00 and later versions.

This optical module is available only for models with air flowing into the chassis from the port side.

9.10.3 QSFP28-100G-DR

Table 9-97 QSFP28-100G-DR specifications

Item	Value
Basic Information	
Module name	QSFP28-100G-DR
Part Number	02312VSP
Model	QSFP28-100G-DR
Form factor	QSFP28
Application standard/Type	100GBase-DR

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Item	Value
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 500m
Transmitter Optical Characteristics	
Center wavelength [nm]	1311 nm
Maximum Tx optical power (AVG) [dBm]	4 dBm
Minimum Tx optical power (AVG) [dBm]	-2.9 dBm
Maximum Tx optical power (OMA) [dBm]	4.2 dBm
Minimum Tx optical power (OMA) [dBm]	-0.8 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (AVG) [dBm]	-5.9 dBm
Rx sensitivity (OMA) [dBm]	Max(-3.9,SECQ-5.3)
Overload power (AVG) [dBm]	4 dBm

NOTE

- Version support: V200R020C10 and later versions.
- A port that has a QSFP28-100G-DR optical module installed cannot be used for stack connection.
- Before installing a QSFP28-100G-DR optical module on a port, you need to disable the FEC function on the port. For example, if the RS-FEC function is enabled on a port that has a QSFP28-100G-DR optical module installed, the port status will become Down (Transceiver type mismatch).

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9.10.4 QSFP28-100G-LR4 (02311KNU)

Table 9-98 QSFP28-100G-LR4 specifications

Item	Value
Basic Information	
Module name	QSFP28-100G-LR4
Part Number	02311KNU
Model	QSFP28-100G-LR4
Form factor	QSFP28
Application standard/Type	100GBASE-LR4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1295 nm, 1300 nm, 1304 nm, 1309 nm
Maximum Tx optical power (AVG) [dBm]	4.5 dBm
Minimum Tx optical power (AVG) [dBm]	-4.3 dBm
Minimum extinction ratio [dB]	4 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.6 dBm
Overload power (AVG) [dBm]	4.5 dBm

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9.10.5 QSFP28-100G-LR4 (02313URT)

Table 9-99 QSFP28-100G-LR4 specifications

Item	Value
Basic Information	
Module name	QSFP28-100G-LR4
Part Number	02313URT
Model	QSFP28-100G-LR4
Form factor	QSFP28
Application standard/Type	100GBASE-LR4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1295 nm, 1300 nm, 1304 nm, 1309 nm
Maximum Tx optical power (AVG) [dBm]	4.5 dBm
Minimum Tx optical power (AVG) [dBm]	-4.3 dBm
Minimum extinction ratio [dB]	4 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.6 dBm
Overload power (AVG) [dBm]	4.5 dBm

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9.10.6 QSFP28-100G-PSM4

Table 9-100 QSFP28-100G-PSM4 specifications

Item	Value
Basic Information	
Module name	QSFP28-100G-PSM4
Part Number	02311MNM
Model	QSFP28-100G-PSM4
Form factor	QSFP28
Application standard/Type	100GBASE-PSM4
Connector type	MPO 1×12
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	APC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Single-mode fiber (G.652) (with diameter of 9 μm): 500 m
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	2 dBm
Minimum Tx optical power (AVG) [dBm]	-9.4 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.35 dBm
Overload power (AVG) [dBm]	2.2 dBm

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9.10.7 QSFP28-100G-SR4 (02311GBW)

Table 9-101 QSFP28-100G-SR4 specifications

Item	Value
Basic Information	
Module name	QSFP28-100G-SR4
Part Number	02311GBW
Model	QSFP28-100G-SR4
Form factor	QSFP28
Application standard/Type	100GBASE-SR4
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode (OM3) optical fiber (diameter: 50 μm): 70 m Multimode (OM4) optical fiber (diameter: 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode (OM3) optical fiber: 2000 MHz*km Multimode (OM4) optical fiber: 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-8.4 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	

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Item	Value
Rx sensitivity (OMA) [dBm]	-8.5 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.10.8 QSFP28-100G-SR4 (02313URQ)

Table 9-102 QSFP28-100G-SR4 specifications

Item	Value
Basic Information	
Module name	QSFP28-100G-SR4
Part Number	02313URQ
Model	QSFP28-100G-SR4
Form factor	QSFP28
Application standard/Type	100GBASE-SR4
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode optical fiber (OM3) (with a diameter of 50 μm): 70 m Multimode optical fiber (OM4) (with a diameter of 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode optical fiber (OM3): 2000 MHz*km Multimode optical fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm

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Item	Value
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-8.4 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.5 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.10.9 QSFP28-100G-SR4-MP

Table 9-103 QSFP28-100G-SR4-MP specifications

Item	Value
Basic Information	
Module name	QSFP28-100G-SR4-MP
Part Number	02313FYX
Model	QSFP28-100G-SR4-MP
Form factor	QSFP28
Application standard/Type	100GBASE-SR4
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	8-strand or 12-strand, type B, female connector Multimode (OM3) optical fiber (diameter: 50 μm): 70 m Multimode (OM4) optical fiber (diameter: 50 μm): 100 m

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Item	Value
Modal bandwidth [MHz*km]	Multimode (OM3) optical fiber: 2000 MHz*km Multimode (OM4) optical fiber: 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-8.4 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.5 dBm
Overload power (AVG) [dBm]	2.4 dBm

9.10.10 QSFP-100G-4WDM-40

Table 9-104 QSFP-100G-4WDM-40 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-4WDM-40
Part Number	02312QTL
Model	QSFP-100G-4WDM-40
Form factor	QSFP28
Application standard/Type	100GBASE-4WDM
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s

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Item	Value
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	6.5 dBm
Minimum Tx optical power (AVG) [dBm]	-2.5 dBm
Minimum extinction ratio [dB]	4.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-18.5 dBm
Overload power (AVG) [dBm]	-3.5 dBm

9.10.11 QSFP-100G-CLR4

Table 9-105 QSFP-100G-CLR4 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-CLR4
Part Number	02311MNP
Model	QSFP-100G-CLR4
Form factor	QSFP28
Application standard/Type	100GBASE-CLR4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 2 km

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Item	Value
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.5 dBm
Minimum Tx optical power (AVG) [dBm]	-6.5 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.7 dBm
Overload power (AVG) [dBm]	2.5 dBm

9.10.12 QSFP-100G-CWDM4

Table 9-106 QSFP-100G-CWDM4 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-CWDM4
Part Number	02311MNN
Model	QSFP-100G-CWDM4
Form factor	QSFP28
Application standard/Type	100GBASE-CWDM4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 2 km
Transmitter Optical Characteristics	

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Item	Value
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.5 dBm
Minimum Tx optical power (AVG) [dBm]	-6.5 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-9.8 dBm
Overload power (AVG) [dBm]	2.5 dBm

9.10.13 QSFP-100G-CWDM4-Lite

Table 9-107 QSFP-100G-CWDM4-Lite specifications

Item	Value
Basic Information	
Module name	QSFP-100G-CWDM4-Lite
Part Number	02312UJN
Model	QSFP-100G-CWDM4-Lite
Form factor	QSFP28
Application standard/Type	100GBASE-CWDM4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 0.5 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm

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Item	Value
Maximum Tx optical power (AVG) [dBm]	2.5 dBm
Minimum Tx optical power (AVG) [dBm]	-6.5 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-9.8 dBm
Overload power (AVG) [dBm]	2.5 dBm

9.10.14 QSFP-100G-C4-Lite-E

Table 9-108 QSFP-100G-C4-Lite-E specifications

Item	Value
Basic Information	
Module name	QSFP-100G-C4-Lite-E
Part Number	02314GDV
Model	QSFP-100G-C4-Lite-E
Form factor	QSFP28
Application standard/Type	100G-CWDM4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 0.5 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1310 nm
Maximum Tx optical power (AVG) [dBm]	2.5 dBm

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Item	Value
Minimum Tx optical power (AVG) [dBm]	-6.5 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-9.8 dBm
Overload power (AVG) [dBm]	2.5 dBm

NOTE

Version support: V200R022C10 and later versions.

9.10.15 QSFP-100G-ER4

Table 9-109 QSFP-100G-ER4 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-ER4
Part Number	02314HES
Model	QSFP-100G-ER4
Form factor	QSFP28
Application standard/Type	100GBASE-ER4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 40 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1295 nm, 1300 nm, 1304 nm, 1309 nm

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Item	Value
Maximum Tx optical power (AVG) [dBm]	2.9 dBm
Minimum Tx optical power (AVG) [dBm]	-2.9 dBm
Maximum Tx optical power (OMA) [dBm]	4.5 dBm
Minimum Tx optical power (OMA) [dBm]	0.1 dBm
Minimum extinction ratio [dB]	8 dB
Receiver Optical Characteristics	
Rx sensitivity (AVG) [dBm]	-20.9 dBm
Overload power (AVG) [dBm]	-3.5 dBm

NOTE

Version support: V200R022C00 and later versions.

This optical module is available only for models with air flowing into the chassis from the port side.

9.10.16 QSFP-100G-ER4-Lite

Table 9-110 QSFP-100G-ER4-Lite specifications

Item	Value
Basic Information	
Module name	QSFP-100G-ER4-Lite
Part Number	02311YXR
Model	QSFP-100G-ER4-Lite
Form factor	QSFP28
Application standard/Type	100GBASE-ER4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)

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Item	Value
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 30 km (FEC OFF)/40 km (FEC ON)
Transmitter Optical Characteristics	
Center wavelength [nm]	1295 nm, 1300 nm, 1304 nm, 1309 nm
Maximum Tx optical power (AVG) [dBm]	2.9 dBm
Minimum Tx optical power (AVG) [dBm]	-2.5 dBm
Minimum extinction ratio [dB]	8 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-18.4 dBm
Overload power (AVG) [dBm]	-3.5 dBm

9.10.17 QSFP-100G-FR1

Table 9-111 QSFP-100G-FR1 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-FR1
Part Number	02314BDE
Model	QSFP-100G-FR1
Form factor	QSFP28
Application standard/Type	100GBASE-FR1
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported

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Item	Value
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode (G.652) optical fiber (diameter: 9 μm): 2 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1311 nm
Maximum Tx optical power (AVG) [dBm]	4 dBm
Minimum Tx optical power (AVG) [dBm]	-3.1 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	Max(-4.5,TECQ-5.9)
Overload power (AVG) [dBm]	4 dBm

NOTE

- Version support: V200R022C00 and later versions.
- A port that has a QSFP-100G-FR1 optical module installed cannot be used for stack connection.
- Before installing a QSFP-100G-FR1 optical module on a port, you need to disable the FEC function on the port. For example, if the RS-FEC function is enabled on a port that has a QSFP-100G-FR1 optical module installed, the port status will become Down (Transceiver type mismatch).
- This optical module is available only for models with air flowing into the chassis from the port side.

9.10.18 QSFP-100G-LR4-Lite

Table 9-112 QSFP-100G-LR4-Lite specifications

Item	Value
Basic Information	
Module name	QSFP-100G-LR4-Lite
Part Number	02311UPS
Model	QSFP-100G-LR4-Lite
Form factor	QSFP28
Application standard/Type	100GBASE-LR4

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Item	Value
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 2 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1295 nm, 1300 nm, 1304 nm, 1309 nm
Maximum Tx optical power (AVG) [dBm]	4.5 dBm
Minimum Tx optical power (AVG) [dBm]	-4.3 dBm
Minimum extinction ratio [dB]	4 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-8.6 dBm
Overload power (AVG) [dBm]	4.5 dBm

9.10.19 QSFP-100G-LX4-MM

Table 9-113 QSFP-100G-LX4-MM specifications

Item	Value
Basic Information	
Module name	QSFP-100G-LX4-MM
Part Number	02314DBX
Model	QSFP-100G-LX4-MM
Form factor	QSFP28
Application standard/Type	100G-LX4
Connector type	LC/DLC

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Item	Value
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Multimode (OM3) optical fiber (diameter: 50 μm): 100 m Multimode (OM4) optical fiber (diameter: 50 μm): 100 m
Overfilled Launch Bandwidth [MHz*km]	Multimode (OM3) optical fiber: 510 MHz*km Multimode (OM4) optical fiber: 510 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	4.5 dBm
Minimum Tx optical power (AVG) [dBm]	-3 dBm
Maximum Tx optical power (OMA) [dBm]	4.5 dBm
Minimum Tx optical power (OMA) [dBm]	-3 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-11.5 dBm
Overload power (AVG) [dBm]	4.5 dBm
NOTE Limitations: - In actual applications, the number of connectors in an optical fiber link cannot exceed 4. - This module is sensitive to fiber link contamination. During deployment, ensure that the fiber end face meets the fiber application standard. For details, refer to the requirements for single-mode connectors in the end face requirements for fiber ceramic ferrules under "Cables" > "Fiber Jumpers."	

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NOTE

Version support: V200R022C00 and later versions

9.10.20 QSFP-100G-eCWDM4

Table 9-114 QSFP-100G-eCWDM4 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-eCWDM4
Part Number	02312DAT
Model	QSFP-100G-eCWDM4
Form factor	QSFP28
Application standard/Type	100GBASE-eCWDM4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	2.5 dBm
Minimum Tx optical power (AVG) [dBm]	-6.5 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-13 dBm
Overload power (AVG) [dBm]	2.5 dBm

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9.10.21 QSFP-100G-SWDM4

Table 9-115 QSFP-100G-SWDM4 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-SWDM4
Part Number	02311QUK
Model	QSFP-100G-SWDM4
Form factor	QSFP28
Application standard/Type	100G-SWDM4
Connector type	LC/DLC
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Multimode fiber (OM3) (with diameter of 50 μm): 75 m Multimode fiber (OM4) (with diameter of 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	3.4 dBm
Minimum Tx optical power (AVG) [dBm]	-7.5 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	-10.5 dBm
Overload power (AVG) [dBm]	2.4 dBm

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9.10.22 QSFP-100G/40G-SR4

Table 9-116 QSFP-100G/40G-SR4 specifications

Item	Value
Basic Information	
Module name	QSFP-100G/40G-SR4
Part Number	02313FCH
Model	QSFP-100G/40G-SR4
Form factor	QSFP28
Application standard/Type	100Gbase-SR4
Connector type	MPO
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	-10°C to +75°C (14°F to 167°F)
DDM options	Supported
Transmission rate [bit/s]	40/100G
Target transmission distance [km]	Multimode fiber (OM3) (with diameter of 50 μm): 70 m Multimode fiber (OM4) (with diameter of 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode fiber (OM3): 2000 MHz*km Multimode fiber (OM4): 4700 MHz*km
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	2.4 dBm
Minimum Tx optical power (AVG) [dBm]	-8.4 dBm
Maximum Tx optical power (OMA) [dBm]	3 dBm
Minimum Tx optical power (OMA) [dBm]	-6.4 dBm
Minimum extinction ratio [dB]	2 dB
Receiver Optical Characteristics	

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Item	Value
Rx sensitivity (OMA) [dBm]	-8.5 dBm
Overload power (AVG) [dBm]	2.4 dBm

NOTE

- Only the CE8850-64CQ-EI and CE8861-4C-EI switches support this optical module.
- Version support: V200R020C10 and later versions.

9.10.23 QSFP-100G-LR1

Table 9-117 QSFP-100G-LR1 specifications

Item	Value
Basic Information	
Module name	QSFP-100G-LR1
Part Number	02314GYT
Model	QSFP-100G-LR1
Form factor	QSFP28
Application standard/Type	100GBASE-FR1
Connector type	LC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
Transmission rate [bit/s]	100Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Transmitter Optical Characteristics	
Center wavelength [nm]	1311 nm
Maximum Tx optical power (AVG) [dBm]	4.8 dBm
Minimum Tx optical power (AVG) [dBm]	-1.9 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	

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Item	Value
Rx sensitivity (OMA) [dBm]	Max(-6.1,TECQ-7.5)
Overload power (AVG) [dBm]	4.8 dBm

9.11 400GE QSFP-DD Optical Modules

9.11.1 QSFP-DD-400G-SR8

Table 9-118 QSFP-DD-400G-SR8 specifications

Item	Value
Basic Information	
Module name	QSFP-DD-400G-SR8
Part Number	02312NPG
Model	QSFP-DD-400G-SR8
Form factor	QSFP-DD
Application standard/Type	400GBASE-SR8
Connector type	MPO 1×16
Optical fiber type	MMF
Type of the end face of the fiber ceramic ferrule	APC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	400Gbit/s
Target transmission distance [km]	16-strand, type B, female connector, APC Multimode (OM3) optical fiber (diameter: 50 μm): 70 m Multimode (OM4) optical fiber (diameter: 50 μm): 100 m
Modal bandwidth [MHz*km]	Multimode (OM3) optical fiber: 2000 MHz*km Multimode (OM4) optical fiber: 4700 MHz*km
Bit error ratio (BER)	2.4e-4

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Item	Value
Transmitter Optical Characteristics	
Center wavelength [nm]	850 nm
Maximum Tx optical power (AVG) [dBm]	4 dBm
Minimum Tx optical power (AVG) [dBm]	-6.5 dBm
Minimum extinction ratio [dB]	3 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	max(–6.5, SECQ-7.9)
Overload power (AVG) [dBm]	4 dBm

NOTE

- Version support: V200R021C00 and later versions.

9.11.2 QSFP-DD-400G-FR4

Table 9-119 QSFP-DD-400G-FR4 specifications

Item	Value
Basic Information	
Module name	QSFP-DD-400G-FR4
Part Number	02312NPJ
Model	QSFP-DD-400G-FR4
Form factor	QSFP-DD
Application standard/Type	400Gbase-FR4
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	400Gbit/s

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Item	Value
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 2km
Bit error ratio (BER)	2.4e-4
Transmitter Optical Characteristics	
Center wavelength [nm]	1271 nm, 1291 nm, 1311 nm, 1331 nm
Maximum Tx optical power (AVG) [dBm]	3.5 dBm
Minimum Tx optical power (AVG) [dBm]	-3.3 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	max(-4.6, SECQ-6)
Overload power (AVG) [dBm]	3.5 dBm

NOTE

- Version support: V200R021C00 and later versions.

9.11.3 QSFP-DD-400G-LR8

Table 9-120 QSFP-DD-400G-LR8 specifications

Item	Value
Basic Information	
Module name	QSFP-DD-400G-LR8
Part Number	02312NPK
Model	QSFP-DD-400G-LR8
Form factor	QSFP-DD
Application standard/Type	400GBase-LR8
Connector type	LC/DLC
Optical fiber type	SMF
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)

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Item	Value
DDM options	Supported
Transmission rate [bit/s]	400Gbit/s
Target transmission distance [km]	Single-mode fiber (G.652) (with diameter of 9 μm): 10 km
Bit error ratio (BER)	2.4e-4
Transmitter Optical Characteristics	
Center wavelength [nm]	1273.55 nm, 1277.89 nm, 1282.26 nm, 1286.67 nm, 1295.56 nm, 1300.06 nm, 1304.59 nm, 1309.14 nm
Maximum Tx optical power (AVG) [dBm]	5.3 dBm
Minimum Tx optical power (AVG) [dBm]	-2.8 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (OMA) [dBm]	max(-6.6, SECQ-8)
Overload power (AVG) [dBm]	5.3 dBm

NOTE

- Version support: V200R021C00 and later versions.

9.11.4 QSFP-DD-400G-ZR

Table 9-121 QSFP-DD-400G-ZR specifications

Item	Value
Basic Information	
Module name	QSFP-DD-400G-ZR
Part Number	02313FHD
Model	QSFP-DD-400G-ZR
Form factor	QSFP-DD
Application standard/Type	400ZR,Single Wavelength
Connector type	LC/DLC
Optical fiber type	SMF

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Item	Value
Type of the end face of the fiber ceramic ferrule	PC or UPC
Working case temperature [°C (°F)]	0°C to 70°C (32°F to 158°F)
DDM options	Supported
Transmission rate [bit/s]	400Gbit/s
Target transmission distance [km]	Single-mode (G.652) optical fiber (diameter: 9 μm): 40 km (no optical amplifier connected. The actual transmission distance depends on the optical link quality.) 80 km (connected to an external optical amplifier)
Bit error ratio (BER)	<1E-15(after FEC) <1.25E-2(before FEC)
Transmitter Optical Characteristics	
Center wavelength [nm]	1547.715 nm
Maximum Tx optical power (AVG) [dBm]	-6 dBm
Minimum Tx optical power (AVG) [dBm]	-10 dBm
Minimum extinction ratio [dB]	3.5 dB
Receiver Optical Characteristics	
Rx sensitivity (AVG) [dBm]	-20 dBm
Overload power (AVG) [dBm]	5.3 dBm

NOTE

Version support: V200R021C10 and later versions

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