S9700 Core Routing Switch

Hardware Description

Issue 09

Date 2014-10-25

HUAWEI TECHNOLOGIES CO., LTD.

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Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: http://enterprise.huawei.com

About This Document

Intended Audience

This document describes hardware components of the S9700, including the cabinet, chassis, power supply facilities, fan modules, cards, cables, and pluggable modules for interfaces. You can find useful information about S9700 hardware components from this document.

This document is intended for:

- Network planning engineers
- Hardware installation engineers
- Commissioning engineers
- On-site maintenance engineers
- System maintenance engineers

Symbol Conventions

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

Symbol	Description
DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may 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.

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Symbol	Description
NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

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.

Change History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

Issue 09 (2014-10-25)

This version has the following updates:

- **8 Pluggable Modules for Interfaces**

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Issue 08 (2014-03-20)

This version has the following updates:

The documentation is modified according to product updates.

Issue 07 (2014-01-26)

This version has the following updates:

The following information is added:

- **6.7.7 EH1D2G48TX1E-48-Port 10/100/1000BASE-T Interface Card (X1E, RJ45)**
- **6.7.11 EH1D2G48SX1E-48-Port 100/1000BASE-X Interface Card (X1E, SFP)**
- **6.8.3 EH1D2S04SX1E-4-Port 10GBASE-X and 24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card (X1E, RJ45/SFP/SFP+)**
- **6.8.4 EH1D2S08SX1E-8-Port 10GBASE-X and 8-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card (X1E, RJ45/SFP/SFP+)**
- **6.9.7 EH1D2X48SEC0-48-Port 10GBASE-X Interface Card (EC, SFP+)**

Issue 06 (2013-12-20)

This version has the following updates:

The following information is modified:

- **Indicators and Ports**
- **Indicators and Ports**
- **Indicators and Ports**

Issue 05 (2013-07-25)

This version has the following updates:

The following information is added:

- **1 Version Support for Components**

Issue 04 (2013-05-30)

This version has the following updates:

The documentation is modified according to product updates.

Issue 03 (2013-04-20)

This version has the following updates:

The following information is modified:

- **7.2 AC Power Cable**

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Issue 02 (2013-02-08)

This version has the following updates:

The following information is modified:

- **2 Cabinet**

Issue 01 (2012-12-08)

Initial commercial release.

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1 Version Support for Components

About This Chapter

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1.1 Components Available in V200R001C00

Table 1-1 shows components available in the S9700 V200R001C00.

Table 1-1 Components available in S9700 V200R001C00

Component	Name	Description
Chassis	S9703 chassis	-
	S9706 chassis	-
	S9712 chassis	-
	S9703 FCC chassis	The chassis have gained an FCC certificate.
	S9706 FCC chassis	
	S9712 FCC chassis	
Power module	2200 W DC power module	-
	2200 W AC power module	-
Fan module	S9700 fan module	-
MPU	EH1D2SRUDC00	S9706/S9712 Main Control Unit D (Optional Clock)
	EH1D2SRUDC01	S9706/S9712 Main Control Unit D (Optional Clock) - FCC
	EH1D2MCUAC00	S9703 Main Control Unit A (Optional Clock)
Subcard on the MPU	LE0D00CKMA00	Clock Pinch Board
CMU	EH1D200CMU00	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
100M interface card	EH1D2F48TEA0	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2F48TEC0	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2F48TFA0	48-port 10/100BASE-T interface card (FA, RJ45)-32K MAC

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Component	Name	Description
	EH1D2F48SEA0	48-port 100BASE-X interface card (EA, SFP)-32K MAC
	EH1D2F48SEC0	48-port 100BASE-X interface card (EC, SFP)-128K MAC
GE interface card	EH1D2G24SSA0	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC
	EH1D2G24SEC0	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2S24CSA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)-32K MAC
	EH1D2S24CEA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (EA, SFP/RJ45)-32K MAC
	EH1D2G24TFA0	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2T36SEA0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	EH1D2G48TEA0	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2G48TEC0	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC

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Component	Name	Description
	EH1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC
	EH1D2G48TFA0	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	EH1D2G48SEA0	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	EH1D2G48SEC0	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
	EH1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
GE/10GE interface card	EH1D2T24XEA0	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	EH1D2S24XEA0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	EH1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	EH1D2X02XEA0	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X02XEC0	2-port 10GBASE-X interface card (EC, XFP)-128K MAC

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Component	Name	Description
	EH1D2X04XEA0	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X04XEC0	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	EH1D2X12SSA0	12-port 10GBASE-X interface card (SA, SFP +)-32K MAC
	EH1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP +)-128K MAC
	EH1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP +)-128K MAC
POS interface card	EH1D2WM00000	WAN interface service processing card
	P4CF	4-port OC-3c/STM-1c POS-SFP flexible card (installed on the WAN interface service processing card)
	P4HF	4-port OC-12c/STM-4c POS-SFP flexible card (installed on the WAN interface service processing card)
	P1UF	1-port OC-48c/STM-16c POS-SFP flexible card (installed on the WAN interface service processing card)

1.2 Components Available in V200R002C00

NOTE

Components marked with * are added in V200R002C00.

Table 1-2 shows components available in the S9700 V200R002C00.

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Table 1-2 Components available in S9700 V200R002C00

Component	Name	Description
Chassis	S9703 chassis	-
	S9706 chassis	-
	S9712 chassis	-
	S9703 FCC chassis	The chassis have gained an FCC certificate.
	S9706 FCC chassis	
	S9712 FCC chassis	
Power module	2200 W DC power module	-
	2200 W AC power module	-
	800 W AC power module*	-
Fan module	S9700 fan module	-
MPU	EH1D2SRUDC00	S9706/S9712 Main Control Unit D (Optional Clock)
	EH1D2SRUDC01	S9706/S9712 Main Control Unit D (Optional Clock) - FCC
	EH1D2MCUAC00	S9703 Main Control Unit A (Optional Clock)
Subcard on the MPU	LE0D00CKMA00	Clock Pinch Board
CMU	EH1D200CMU00	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
OSPU	EH1D2PS00P00*	Open Service Platform Unit
100M interface card	EH1D2F48TEA0	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2F48TEC0	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2F48TFA0	48-port 10/100BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2F48SEA0	48-port 100BASE-X interface card (EA, SFP)-32K MAC

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Component	Name	Description
	EH1D2F48SEC0	48-port 100BASE-X interface card (EC, SFP)-128K MAC
GE interface card	EH1D2G24SSA0	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC
	EH1D2G24SEC0	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2S24CSA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)-32K MAC
	EH1D2S24CEA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (EA, SFP/RJ45)-32K MAC
	EH1D2G24TFA0	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2T36SEA0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	EH1D2G48TEA0	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2G48TEC0	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC

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Component	Name	Description
	EH1D2G48TFA0	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	EH1D2G48SEA0	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	EH1D2G48SEC0	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
	EH1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
GE/10GE interface card	EH1D2T24XEA0	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	EH1D2S24XEA0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	EH1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	EH1D2X02XEA0	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X02XEC0	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XEA0	4-port 10GBASE-X interface card (EA, XFP)-32K MAC

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Component	Name	Description
	EH1D2X04XEC0	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	EH1D2X12SSA0	12-port 10GBASE-X interface card (SA, SFP +)-32K MAC
	EH1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP +)-128K MAC
	EH1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP +)-128K MAC
	EH1D2X08SED4*	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	EH1D2X08SED5*	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
40GE interface card	EH1D2L02QFC0*	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
	EH1D2L08QFC0*	8-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
POS interface card	EH1D2WM00000	WAN interface service processing card
	P4CF	4-port OC-3c/STM-1c POS-SFP flexible card (installed on the WAN interface service processing card)
	P4HF	4-port OC-12c/STM-4c POS-SFP flexible card (installed on the WAN interface service processing card)
	P1UF	1-port OC-48c/STM-16c POS-SFP flexible card (installed on the WAN interface service processing card)

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1.3 Components Available in V200R003C00

NOTE

Components marked with * are added in V200R003C00.

Table 1-3 shows components available in the S9700 V200R003C00.

Table 1-3 Components available in S9700 V200R003C00

Component	Name	Description
Chassis	S9703 chassis	-
	S9706 chassis	-
	S9712 chassis	-
	S9703 FCC chassis	The chassis have gained an FCC certificate.
	S9706 FCC chassis	
	S9712 FCC chassis	
Power module	2200 W DC power module	-
	2200 W AC power module	-
	800 W AC power module	-
Fan module	S9700 fan module	-
MPU	EH1D2SRUDC00	S9706/S9712 Main Control Unit D (Optional Clock)
	EH1D2SRUDC01	S9706/S9712 Main Control Unit D (Optional Clock) - FCC
	EH1D2MCUAC00	S9703 Main Control Unit A (Optional Clock)
	EH1D2SRUC000*	S9706/S9712 Main Control Unit C (Optional Clock)
Subcard on the MPU	LE0D00CKMA00	Clock Pinch Board
	EH1D2VS08000*	8-Port 10G Cluster Switching System Service Unit (SFP+)
CMU	EH1D200CMU00	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
OSPU	EH1D2PS00P00	Open Service Platform Unit

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Component	Name	Description
100M interface card	EH1D2F48TEA0	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2F48TEC0	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2F48TFA0	48-port 10/100BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2F48SEA0	48-port 100BASE-X interface card (EA, SFP)-32K MAC
	EH1D2F48SEC0	48-port 100BASE-X interface card (EC, SFP)-128K MAC
GE interface card	EH1D2G24SSA0	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC
	EH1D2G24SEC0	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2S24CSA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/ RJ45)-32K MAC
	EH1D2S24CEA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (EA, SFP/ RJ45)-32K MAC
	EH1D2G24TFA0	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC

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Component	Name	Description
	EH1D2T36SEA0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	EH1D2G48TEA0	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2G48TEC0	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC
	EH1D2G48TFA0	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	EH1D2G48SEA0	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	EH1D2G48SEC0	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
	EH1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
GE/10GE interface card	EH1D2T24XEA0	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC

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Component	Name	Description
	EH1D2S24XEA0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	EH1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	EH1D2X02XEA0	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X02XEC0	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XEA0	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X04XEC0	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	EH1D2X12SSA0	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC
	EH1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	EH1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	EH1D2X08SED4	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	EH1D2X08SED5	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	EH1D2X02XEC1*	2-port 10GBASE-X interface card (EC, XFP), FCC
	EH1D2X04XEC1*	4-port 10GBASE-X interface card (EC, XFP), FCC
40GE interface card	EH1D2L02QFC0	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC

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Component	Name	Description
	EH1D2L08QFC0	8-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
POS interface card	EH1D2WM00000	WAN interface service processing card
	P4CF	4-port OC-3c/STM-1c POS-SFP flexible card (installed on the WAN interface service processing card)
	P4HF	4-port OC-12c/STM-4c POS-SFP flexible card (installed on the WAN interface service processing card)
	P1UF	1-port OC-48c/STM-16c POS-SFP flexible card (installed on the WAN interface service processing card)

1.4 Components Available in V200R005C00

NOTE

Components marked with * are added in V200R005C00.

Table 1-4 shows components available in the S9700 V200R005C00.

Table 1-4 Components available in S9700 V200R005C00

Component	Name	Description
Chassis	S9703 chassis	-
	S9706 chassis	-
	S9712 chassis	-
	S9703 FCC chassis	The chassis have gained an FCC certificate.
	S9706 FCC chassis	
	S9712 FCC chassis	
Power module	2200 W DC power module	-
	2200 W AC power module	-

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Component	Name	Description
	800 W AC power module	-
Fan module	S9700 fan module	-
MPU	EH1D2SRUDC00	S9706/S9712 Main Control Unit D (Optional Clock)
	EH1D2SRUDC01	S9706/S9712 Main Control Unit D (Optional Clock) - FCC
	EH1D2MCUAC00	S9703 Main Control Unit A (Optional Clock)
	EH1D2SRUC000	S9706/S9712 Main Control Unit C (Optional Clock)
Subcard on the MPU	LE0D00CKMA00	Clock Pinch Board
	EH1D2VS08000	8-port 10G Cluster Switching System Service Unit (SFP+)
CMU	EH1D200CMU00	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
OSPU	EH1D2PS00P00	Open Service Platform Unit
100M interface card	EH1D2F48TEA0	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2F48TEC0	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2F48SEA0	48-port 100BASE-X interface card (EA, SFP)-32K MAC
	EH1D2F48SEC0	48-port 100BASE-X interface card (EC, SFP)-128K MAC
GE interface card	EH1D2G24SEC0	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC

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Component	Name	Description
	EH1D2S24CEA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (EA, SFP/RJ45)-32K MAC
	EH1D2G24TFA0	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2T36SEA0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	EH1D2G48TEA0	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2G48TEC0	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC
	EH1D2G48TFA0	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	EH1D2G48SEA0	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	EH1D2G48SEC0	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC

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Component	Name	Description
	EH1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
	EH1D2G48TX1E*	48-port 10/100/1000BASE-T interface card (X1E, RJ45)
	EH1D2G48SX1E*	48-port 100/1000BASE-X interface card (X1E SFP)
GE/10GE interface card	EH1D2S04SX1E*	4-port 10GBASE-X and 24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)
	EH1D2S08SX1E*	8-port 10GBASE-X and 8-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)
	EH1D2T24XEA0	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	EH1D2S24XEA0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	EH1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	EH1D2X02XEA0	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X02XEC0	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XEA0	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X04XEC0	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC

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Component	Name	Description
	EH1D2X12SSA0	12-port 10GBASE-X interface card (SA, SFP +)-32K MAC
	EH1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP +)-128K MAC
	EH1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP +)-128K MAC
	EH1D2X08SED4	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	EH1D2X08SED5	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	EH1D2X02XEC1	2-port 10GBASE-X interface card (EC, XFP), FCC
	EH1D2X04XEC1	4-port 10GBASE-X interface card (EC, XFP), FCC
	EH1D2X48SEC0*	48-Port 10GBASE-X Interface Card (EC, SFP+)
40GE interface card	EH1D2L02QFC0	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
	EH1D2L08QFC0	8-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
ACU card	ACU2*	WLAN ACU2 Access Controller Unit (128 AP Control Resource Included) **NOTE** For details, see manuals of the ACU2 card.
NGFW card	ET1D2FW00S00*	NGFW Module A, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.

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Component	Name	Description
	ET1D2FW00S01*	NGFW Module B, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.
	ET1D2FW00S02*	NGFW Module C, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.
IPS card	ET1D2IPS0S00*	IPS Module A, with HW General Security Platform Software **NOTE** For details, see manuals of the IPS card.

1.5 Components Available in V200R006C00

Table 1-5 shows components available in the S9700 V200R006C00.

Table 1-5 Components available in S9700 V200R006C00

Component	Name	Description
Chassis	S9703 chassis	-
	S9706 chassis	-
	S9712 chassis	-
	S9703 FCC chassis	The chassis have gained an FCC certificate.
	S9706 FCC chassis	
	S9712 FCC chassis	
Power module	2200 W DC power module	-
	2200 W AC power module	-
	800 W AC power module	-
Fan module	S9700 fan module	-

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Component	Name	Description
MPU	EH1D2SRUDC00	S9706/S9712 Main Control Unit D (Optional Clock)
	EH1D2SRUDC01	S9706/S9712 Main Control Unit D (Optional Clock) - FCC
	EH1D2MCUAC00	S9703 Main Control Unit A (Optional Clock)
	EH1D2SRUC000	S9706/S9712 Main Control Unit C (Optional Clock)
Subcard on the MPU	LE0D00CKMA00	Clock Pinch Board
	EH1D2VS08000	8-port 10G Cluster Switching System Service Unit (SFP+)
CMU	EH1D200CMU00	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
OSPU	EH1D2PS00P00	Open Service Platform Unit
100M interface card	EH1D2F48TEA0	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2F48TEC0	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2F48SEA0	48-port 100BASE-X interface card (EA, SFP)-32K MAC
	EH1D2F48SEC0	48-port 100BASE-X interface card (EC, SFP)-128K MAC
GE interface card	EH1D2G24SEC0	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2S24CEA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (EA, SFP/RJ45)-32K MAC

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Component	Name	Description
	EH1D2G24TFA0	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2T36SEA0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	EH1D2G48TEA0	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2G48TEC0	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC
	EH1D2G48TFA0	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	EH1D2G48SEA0	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	EH1D2G48SEC0	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
	EH1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
	EH1D2G48TX1E	48-port 10/100/1000BASE-T interface card (X1E, RJ45)

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Component	Name	Description
	EH1D2G48SX1E	48-port 100/1000BASE-X interface card (X1E SFP)
GE/10GE interface card	EH1D2S04SX1E	4-port 10GBASE-X and 24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)
	EH1D2S08SX1E	8-port 10GBASE-X and 8-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)
	EH1D2T24XEA0	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	EH1D2S24XEA0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	EH1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	EH1D2X02XEA0	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X02XEC0	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XEA0	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X04XEC0	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	EH1D2X12SSA0	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC
	EH1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC

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Component	Name	Description
	EH1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP +)-128K MAC
	EH1D2X08SED4	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	EH1D2X08SED5	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	EH1D2X02XEC1	2-port 10GBASE-X interface card (EC, XFP), FCC
	EH1D2X04XEC1	4-port 10GBASE-X interface card (EC, XFP), FCC
	EH1D2X48SEC0	48-Port 10GBASE-X Interface Card (EC, SFP+)
40GE interface card	EH1D2L02QFC0	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
	EH1D2L08QFC0	8-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
ACU card	ACU2	WLAN ACU2 Access Controller Unit (128 AP Control Resource Included) **NOTE** For details, see manuals of the ACU2 card.
NGFW card	ET1D2FW00S00	NGFW Module A, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.
	ET1D2FW00S01	NGFW Module B, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.

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Component	Name	Description
	ET1D2FW00S02	NGFW Module C, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.
IPS card	ET1D2IPS0S00	IPS Module A, with HW General Security Platform Software **NOTE** For details, see manuals of the IPS card.

1.6 Components Available in V200R007C00

Table 1-6 shows components available in the S9700 V200R007C00.

Table 1-6 Components available in S9700 V200R007C00

Component	Name	Description
Chassis	S9703 chassis	-
	S9706 chassis	-
	S9712 chassis	-
	S9703 FCC chassis	The chassis have gained an FCC certificate.
	S9706 FCC chassis	
	S9712 FCC chassis	
Power module	2200 W DC power module	-
	2200 W AC power module	-
	800 W AC power module	-
Fan module	S9700 fan module	-
MPU	EH1D2SRUDC00	S9706/S9712 Main Control Unit D (Optional Clock)
	EH1D2SRUDC01	S9706/S9712 Main Control Unit D (Optional Clock) - FCC
	EH1D2MCUAC00	S9703 Main Control Unit A (Optional Clock)

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Component	Name	Description
	EH1D2SRUC000	S9706/S9712 Main Control Unit C (Optional Clock)
Subcard on the MPU	LE0D00CKMA00	Clock Pinch Board
	EH1D2VS08000	8-port 10G Cluster Switching System Service Unit (SFP+)
CMU	EH1D200CMU00	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
OSPU	EH1D2PS00P00	Open Service Platform Unit
100M interface card	EH1D2F48TEA0	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2F48TEC0	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2F48SEA0	48-port 100BASE-X interface card (EA, SFP)-32K MAC
	EH1D2F48SEC0	48-port 100BASE-X interface card (EC, SFP)-128K MAC
GE interface card	EH1D2G24SEC0	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2S24CEA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (EA, SFP/RJ45)-32K MAC
	EH1D2G24TFA0	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2T36SEA0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC

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Component	Name	Description
	EH1D2G48TEA0	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	EH1D2G48TEC0	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	EH1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC
	EH1D2G48TFA0	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	EH1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	EH1D2G48SEA0	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	EH1D2G48SEC0	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	EH1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	EH1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
	EH1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
	EH1D2G48TX1E	48-port 10/100/1000BASE-T interface card (X1E, RJ45)
	EH1D2G48SX1E	48-port 100/1000BASE-X interface card (X1E SFP)
GE/10GE interface card	EH1D2S04SX1E	4-port 10GBASE-X and 24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)

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Component	Name	Description
	EH1D2S08SX1E	8-port 10GBASE-X and 8-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)
	EH1D2T24XEA0	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	EH1D2S24XEA0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	EH1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	EH1D2X02XEA0	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X02XEC0	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XEA0	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	EH1D2X04XEC0	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	EH1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	EH1D2X12SSA0	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC
	EH1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	EH1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	EH1D2X08SED4	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	EH1D2X08SED5	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC

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Component	Name	Description
	EH1D2X02XEC1	2-port 10GBASE-X interface card (EC, XFP), FCC
	EH1D2X04XEC1	4-port 10GBASE-X interface card (EC, XFP), FCC
	EH1D2X48SEC0	48-Port 10GBASE-X Interface Card (EC, SFP+)
40GE interface card	EH1D2L02QFC0	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
	EH1D2L08QFC0	8-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
ACU card	ACU2	WLAN ACU2 Access Controller Unit (128 AP Control Resource Included) **NOTE** For details, see manuals of the ACU2 card.
NGFW card	ET1D2FW00S00	NGFW Module A, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.
	ET1D2FW00S01	NGFW Module B, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.
	ET1D2FW00S02	NGFW Module C, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.
IPS card	ET1D2IPS0S00	IPS Module A, with HW General Security Platform Software **NOTE** For details, see manuals of the IPS card.

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2 Cabinet

About This Chapter

2.1 N66E Cabinet
This section describes the appearance, technical specifications, components, operating environment, and structural features of an N66E cabinet.

2.2 N68E Cabinet
This section describes the appearance, technical specifications, components, operating environment, and structural features of an N68E cabinet.

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2.1 N66E Cabinet

This section describes the appearance, technical specifications, components, operating environment, and structural features of an N66E cabinet.

2.1.1 Appearance of an N66E Cabinet

Figure 2-1 shows an N66E cabinet. An N66E cabinet complies with the Dimensions of Mechanical Structures of the 482.6 mm (19 Inch) Series (IEC 60297-2 Standard). It uses a modular structure, which facilitates expansion and maintenance. The surface of the cabinet and the rack is NC purplish grey.

Figure 2-1 N66E cabinet

2.1.2 Specifications of an N66E Cabinet

Table 2-1 lists specifications of an N66E cabinet.

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Table 2-1 N66E cabinet specifications

Item	Specification
Empty cabinet weight **NOTE** Empty cabinet weight is the weight of a cabinet with a front door, a rear door, and two side panels.	73 kg±1 kg
Dimensions (W x D x H)	600 mm x 600 mm x 2200 mm
	24 in. x 24 in. x 87 in.
Mounting holes on the top	● Position (W x D): 450 mm x 400 mm ● Nuts: six M8 weld nuts
Mounting holes on the bottom	● Position (W x D): 413 mm x 487 mm ● Hole diameter: φ18 (four holes) ● Nuts: four M12 expansion bolts and matching nuts

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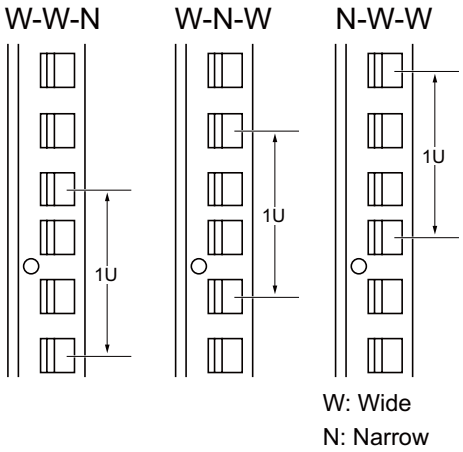
Item	Specification
Distance between holes on mounting rails	When marking the installation positions of a chassis on mounting rails, count every four holes with a wide-wide-narrow interval arrangement as 1 U. Any four adjacent holes on a mounting rail make a distance of 1 U. There are three interval arrangements for four adjacent holes on a mounting rail, as shown in **Figure 2-2**. **Figure 2-2** Interval arrangements for four adjacent holes  **NOTE** The interval between two holes is the distance between the axes of the holes. 1 U equals 1.75 in. (44.45 mm). U is a unit of height defined in International Electrotechnical Commission (IEC) 60297.
Available space	46 U
Angle opening width	450 mm
Space for a chassis (distance between axes of mounting holes)	465 mm
Distance between a front mounting rail and interior of the front door	95 mm

Figure 2-3 shows the dimensions of an N66E cabinet.

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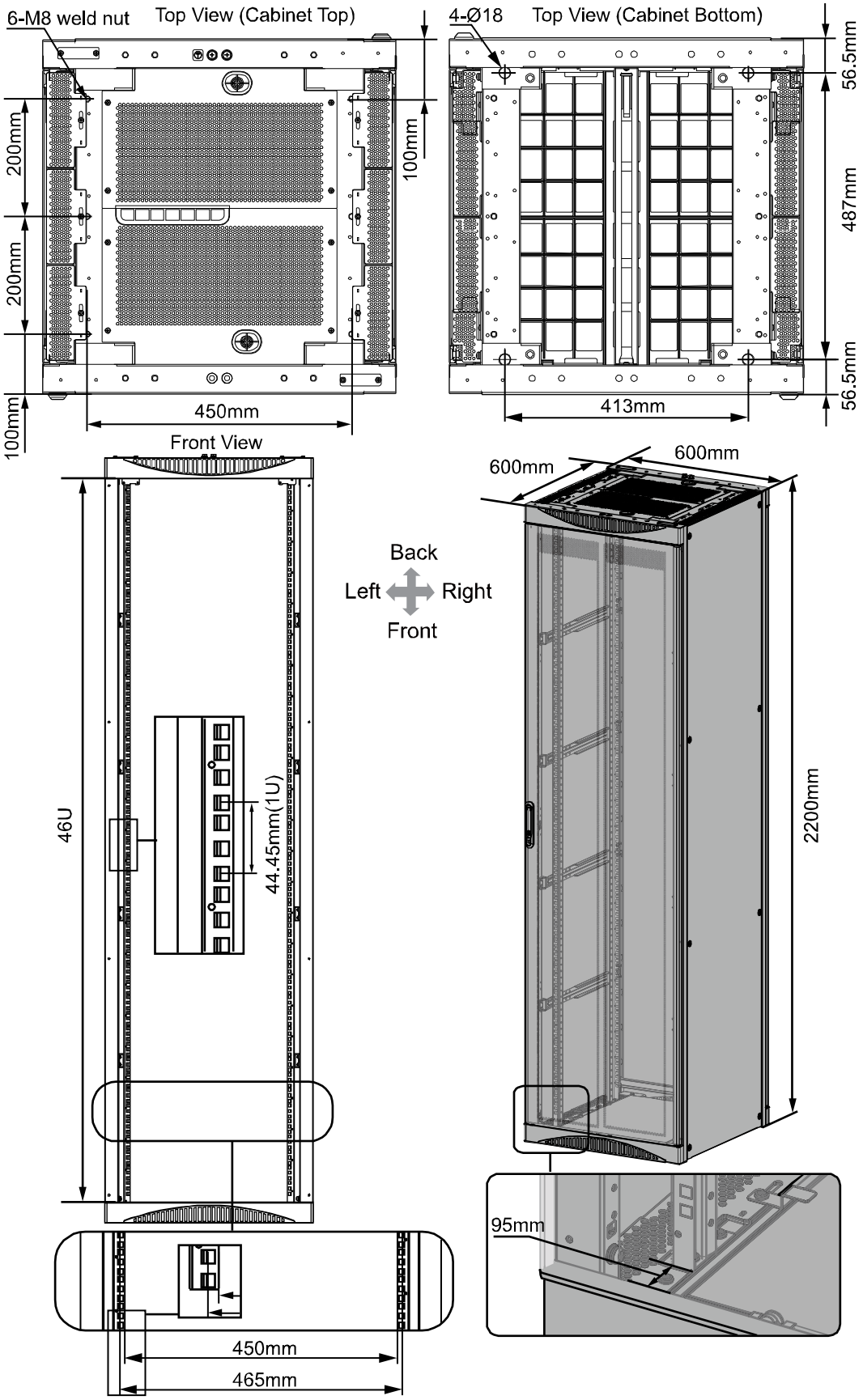
Figure 2-3 N66E cabinet dimensions



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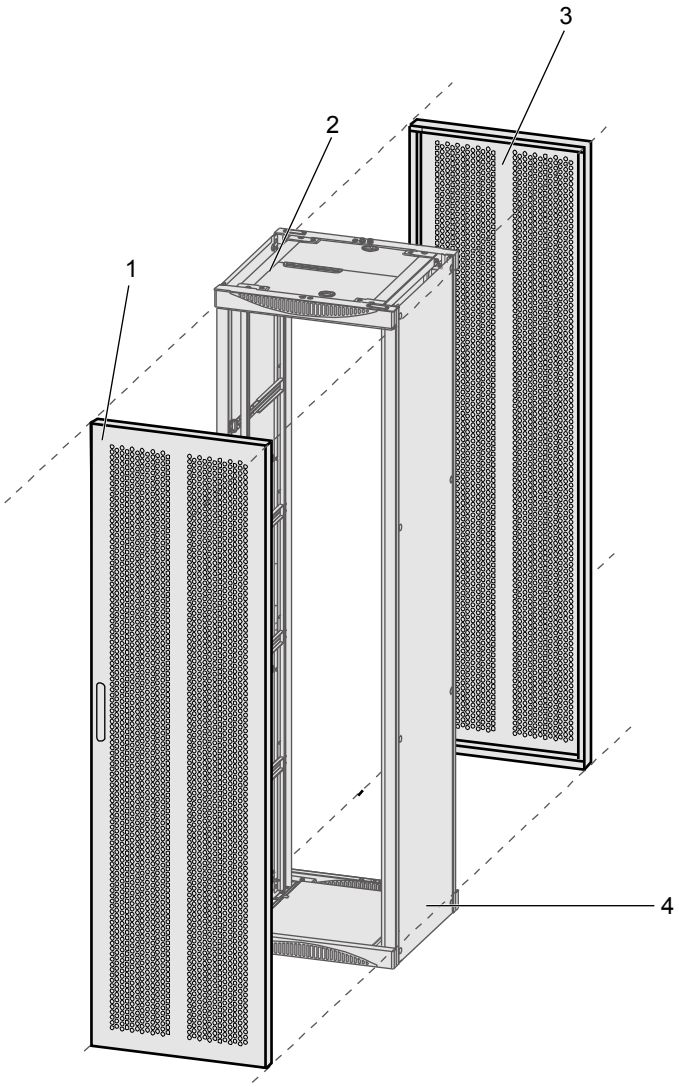
2.1.3 Components of an N66E Cabinet

Figure 2-4 show the components of a rear-serviceable cabinet. An N66E cabinet consists of a front door, a rear door, two side panels and a rack.

Figure 2-4 Components of a rear-serviceable N66E cabinet



1. Front door 2. Rack 3. Rear door 4. Side panels

2.1.4 Structural Features of an N66E Cabinet

Cabinet Material

An N66E cabinet is made of welded electro-galvanized steel sheets and cold-rolled steel sheets. The fireproof performance of the internal materials complies with the Underwriter Laboratories (UL) standards.

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Cabling Mode

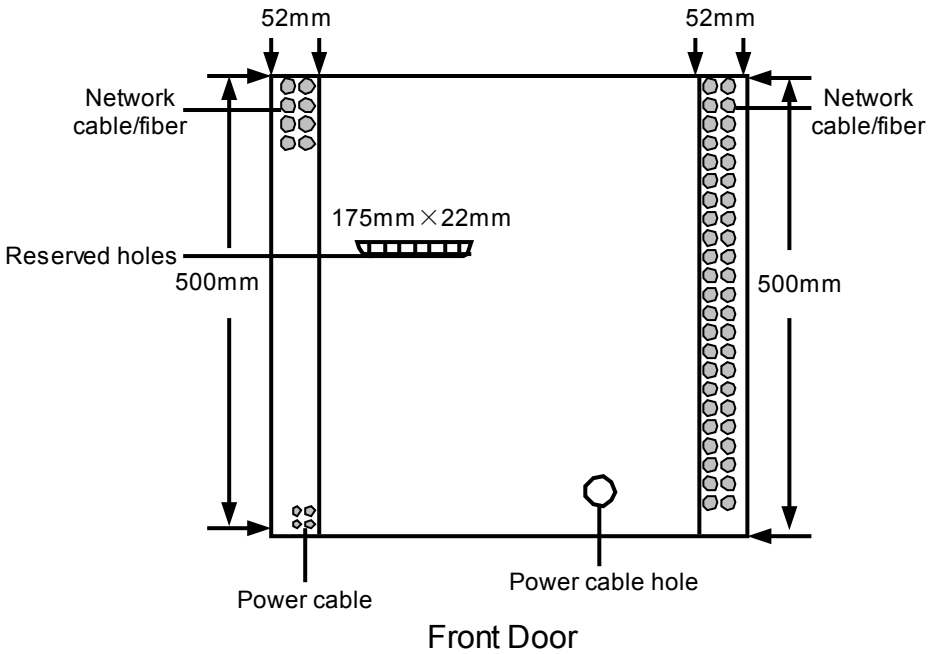
Cable apertures are reserved on the top and at the bottom of the N66E cabinet, so that the N66E cabinet supports overhead cabling and underfloor cabling:

- In the overhead cabling mode, external cables enter the cabinet through the top of the cabinet. **Figure 2-5** shows the cable apertures.
- In the underfloor cabling mode, external cables enter the cabinet through the bottom of the cabinet.

NOTE

The devices described in this document use the overhead cabling mode.

Figure 2-5 Cable apertures on the cabinet top



Heat Dissipation

The front door, rear door, and top plate of an N66E cabinet have high-density air vents. Therefore, the cabinet supports front air intake, rear air exhaust, and upper air exhaust, and provides good heat dissipation performance.

NOTE

- The devices described in this document adopt left-to-back airflow for heat dissipation and have fans installed at the rear of chassis, and the fan modules are located at the rear of the chassis.
- The airflow of devices described in this document in the cabinet is: front of the cabinet -> left side of the equipment -> inside the equipment -> rear of the equipment -> rear of the cabinet, as shown in **Figure 2-6**.

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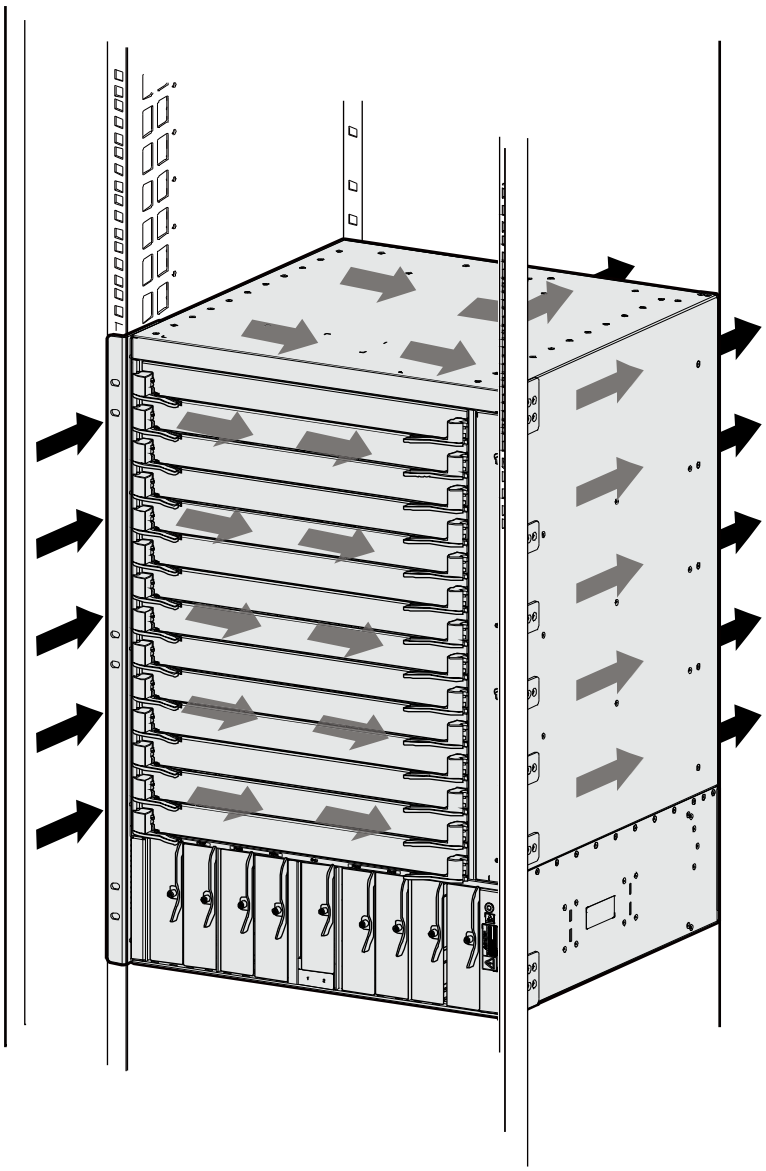
Figure 2-6 Airflow in the cabinet



Protection Performance

The protection performance of an N66E cabinet is described as follows:

- The cabinet design takes full account of electromagnetic compatibility (EMC) to ensure an excellent electromagnetic shielding performance.
- The air vents on the bottom plate of the cabinet have air filters installed, which enhance the dust-proof capability of the N66E cabinet.
- The grounding resistance of the N66E cabinet does not exceed 0.1 ohm.

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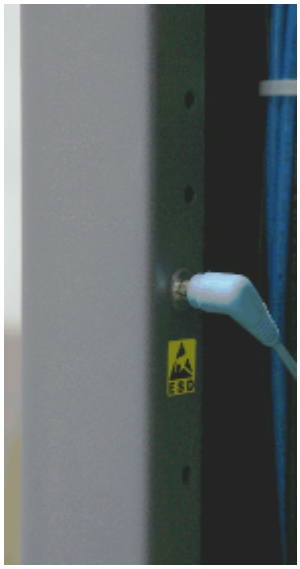
ESD Jack

When wearing an ESD wrist strap, connect the connector of the wrist strap to the ESD jack in the middle of the N66E cabinet, as shown in **Figure 2-7**.

Figure 2-7 ESD jack on the N66E cabinet



Installation Scenarios

An N66E cabinet can be installed on:

- Concrete floor
- ESD floor, in which case the N6X series supports are required

Cabinet Combination

N66E cabinets can be installed side by side. When installing N66E cabinets side by side, connect them using connecting plates, as shown in **Figure 2-8**. Connecting plates are delivered with the cabinet.

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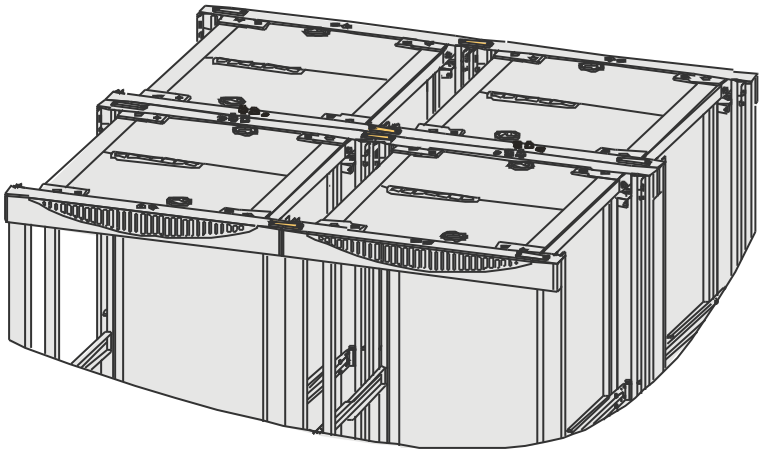
Figure 2-8 Combined N66E cabinets



2.2 N68E Cabinet

This section describes the appearance, technical specifications, components, operating environment, and structural features of an N68E cabinet.

2.2.1 Appearance of an N68E Cabinet

Figure 2-9 shows the appearance of an N68E cabinet.An N68E cabinet complies with the Dimensions of Mechanical Structures of the 482.6 mm (19 Inch) Series (IEC 60297-2 Standard). It uses a modular structure, which facilitates expansion and maintenance. The surface of the cabinet and the rack is NC purplish grey.

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Figure 2-9 Appearance of an N68E cabinet

2.2.2 Specifications of an N68E Cabinet

Table 2-2 lists specifications of an N68E cabinet.

Table 2-2 N68E cabinet specifications

Item	Specification
Empty cabinet weight **NOTE** Empty cabinet weight is the weight of a cabinet with a front door, a rear door, and two side panels.	100 kg
Dimensions (W x D x H)	600 mm x 800 mm x 2200 mm
	24 in. x 31 in. x 87 in.
Mounting holes on the top	● Position (W x D): 450 mm x 750 mm ● Nuts: 16 M8 self-clinching nuts

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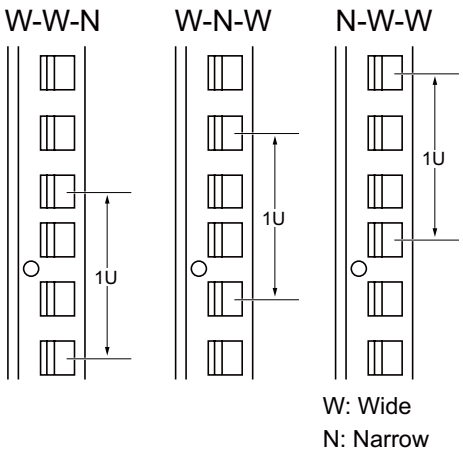
Item	Specification
Mounting holes on the bottom	● Position (W x D): 413 mm x 687 mm ● Hole diameter: φ18 (four holes) ● Nuts: four M12 expansion bolts and matching nuts
Distance between holes on mounting rails	When marking the installation positions of a chassis on mounting rails, count every four holes with a wide-wide-narrow interval arrangement as 1 U. Any four adjacent holes on a mounting rail make a distance of 1 U. There are three interval arrangements for four adjacent holes on a mounting rail, as shown in **Figure 2-10**. **Figure 2-10** Interval arrangements for four adjacent holes  **NOTE** The interval between two holes is the distance between the axes of the holes. 1 U equals 1.75 in. (44.45 mm). U is a unit of height defined in International Electrotechnical Commission (IEC) 60297.
Available space	46 U
Angle opening width	450 mm
Space for a chassis (distance between axes of mounting holes)	465 mm
Distance between a front mounting rail and interior of the front door	100 mm

Figure 2-11 shows the dimensions of an N68E cabinet.

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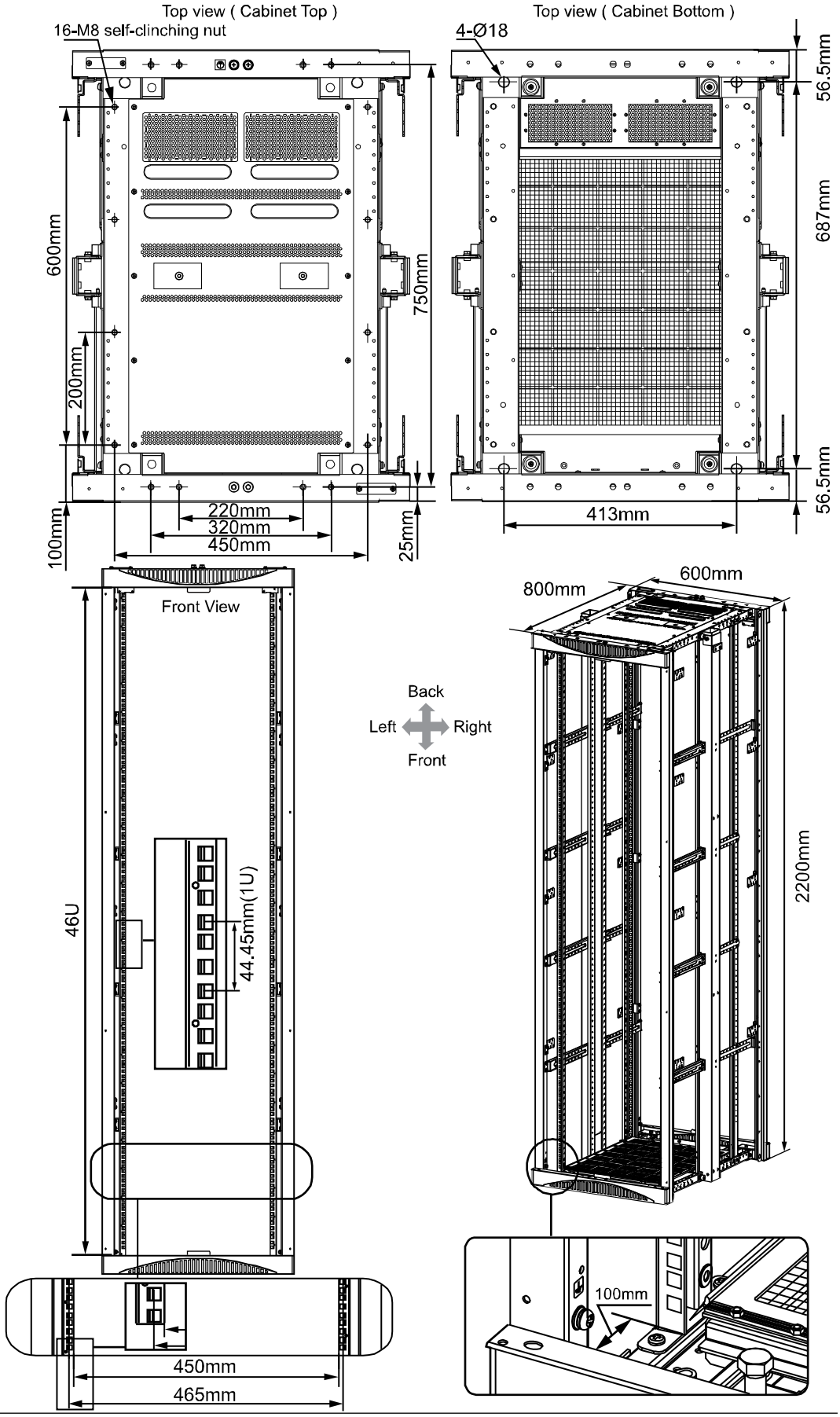
Figure 2-11 N68E cabinet dimensions



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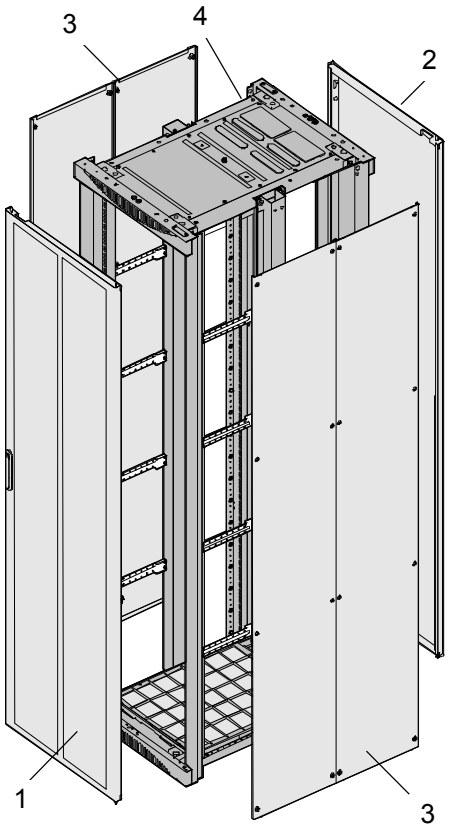
2.2.3 Components of an N68E cabinet

Figure 2-12 shows the structure of an N68E cabinet. An N68E cabinet consists of a front door, a rear door, two side panels, and a rack.

Figure 2-12 Structure of the N68E cabinet



1. Front door 2. Rear door 3. Side panels 4. Rack

2.2.4 Structural Features of an N68E Cabinet

Cabinet Material

The N68E cabinet is made of electro-galvanized steel sheets and cold-rolled steel sheets assembled by screws. The fireproof performance of internal materials complies with the standards of the Underwriter Laboratories (UL).

Cabling Mode

Cable apertures are reserved on the top and at the bottom of the N68E cabinet, so that the N68E cabinet supports overhead cabling and underfloor cabling:

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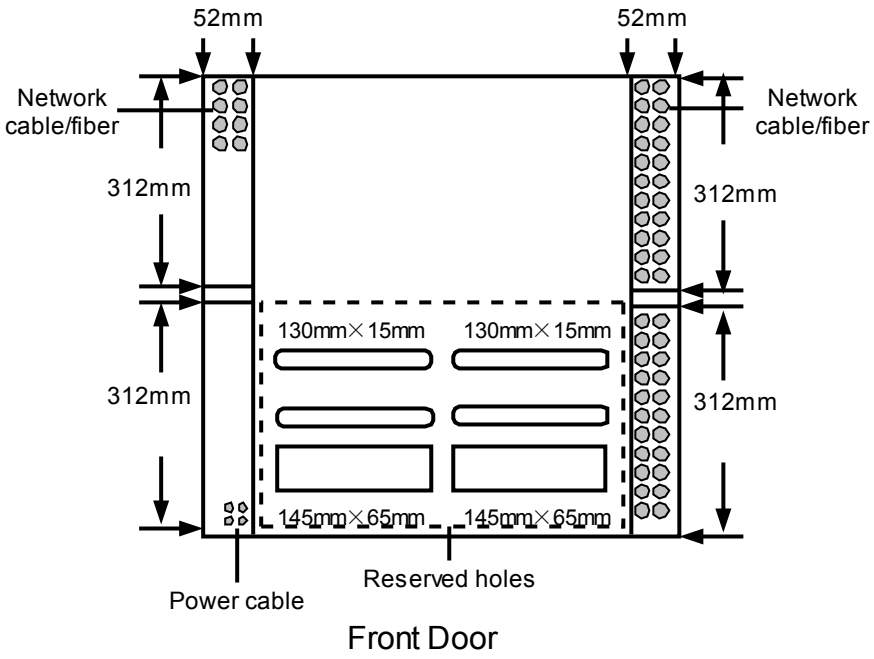
- In the overhead cabling mode, external cables enter the cabinet through the top of the cabinet. **Figure 2-13** shows the cable apertures.
- In the underfloor cabling mode, external cables enter the cabinet through the bottom of the cabinet.

NOTE

The devices described in this document use the overhead cabling mode.

Figure 2-13 Cable apertures on the cabinet top



ESD Jack

Before installing the N68E cabinet, wear an ESD wrist strap and insert connector of the ESD wrist strap into the ESD jack in the middle of the N68E cabinet, as shown in **Figure 2-14**.

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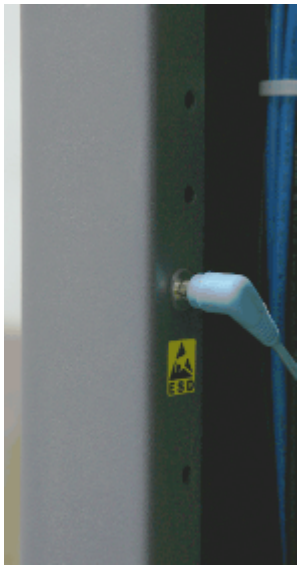
Figure 2-14 ESD jack in the middle of the N68E cabinet



Heat Dissipation

The front door, rear door, and top plate of the N68E cabinet have high-density air vents. Therefore, the N68E cabinet supports front air intake, rear air exhaust, and upper air exhaust and provides good heat dissipation performance.

NOTE

- The devices described in this document adopt left-to-back airflow for heat dissipation and have fans installed at the rear of chassis.
- The airflow of devices described in this document in the cabinet is: front of the cabinet -> left side of the equipment -> inside the equipment -> rear of the equipment -> rear of the cabinet, as shown in **Figure 2-15**.

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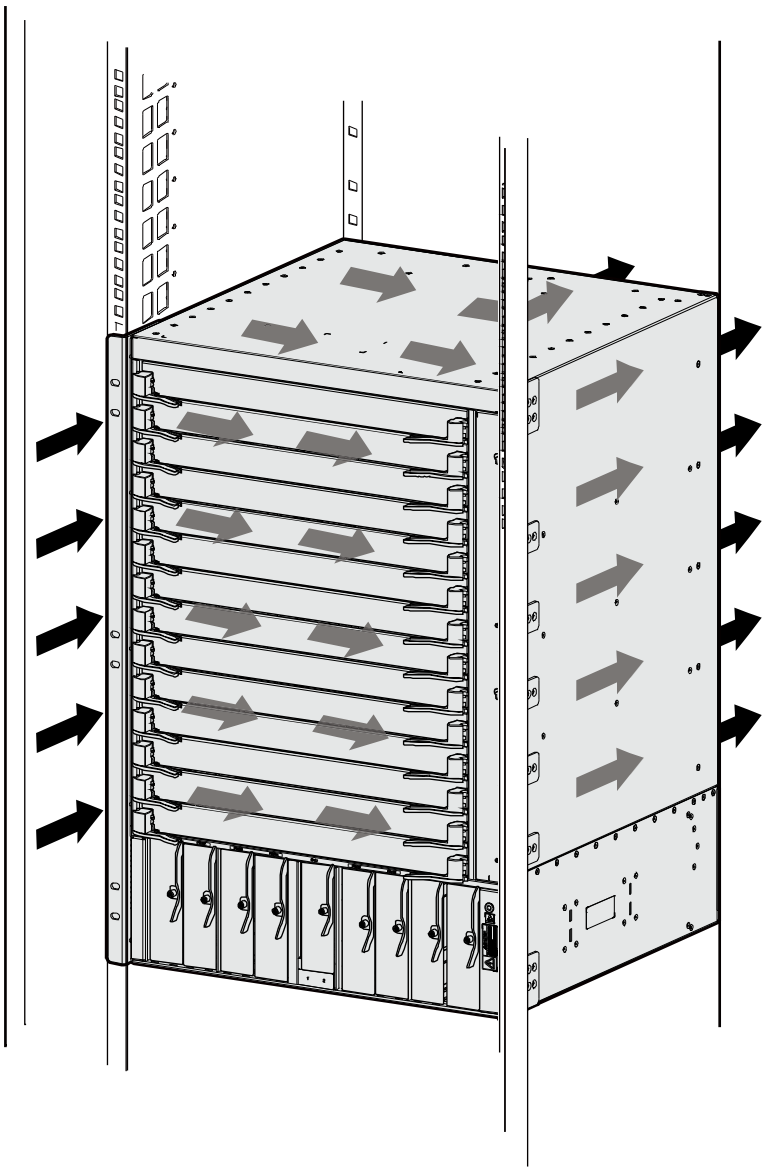
Figure 2-15 Airflow in the cabinet



Protection Performance

The protection performance of an N68E cabinet is described as follows:

- The cabinet design takes full account of electromagnetic compatibility (EMC) to ensure an excellent electromagnetic shielding performance.
- The air vents on the bottom plate of the cabinet have air filters installed, which enhance the dust-proof capability of the N68E cabinet.
- The grounding resistance of the N68E cabinet does not exceed 0.1 ohm.

Installation Scenarios

An N68E cabinet can be installed on:

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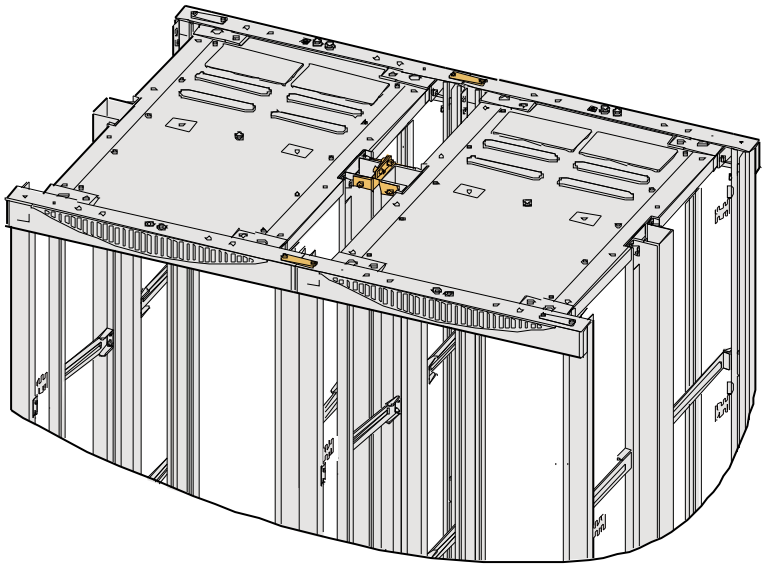
- Concrete floor
- ESD floor, in which case the N6X series supports are required

Cabinet Combination

N68E cabinets can be installed side by side. When installing N68E cabinets side by side, connect them using connecting plates, as shown in **Figure 2-16**. Connecting plates are delivered with the cabinet.

Figure 2-16 Combined N68E cabinets



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3 Chassis

About This Chapter

3.1 Version Mapping

3.2 Chassis Models

3.3 Appearance and Structure

3.4 Slots

3.5 Heat Dissipation

3.6 Specifications

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3.1 Version Mapping

Table 3-1 describes mapping between the S9700 chassis and software versions.

Table 3-1 Mapping between the S9700 chassis and software versions

Chassis	Version
S9703 chassis	V200R001C00 and later versions
S9703 chassis, FCC certified	V200R001C00 and later versions
S9706 chassis	V200R001C00 and later versions
S9706 chassis, FCC certified	V200R001C00 and later versions
S9712 chassis	V200R001C00 and later versions
S9712 chassis, FCC certified	V200R001C00 and later versions

3.2 Chassis Models

A variety of chassis models are provided to meet diverse customer requirements. Table 3-2 lists S9700 chassis models.

Select the chassis models based on your network requirements.

Table 3-2 Chassis models

Device Series	Chassis Model	Description
S9700	S9703	Supports two Main Control Units (MCUs), three Line Processing Units (LPUs), and AC or DC power modules in **N+N/N+1/N+0 (no redundancy)** backup mode.
	S9706	Supports two Switching and Routing Units (SRUs), six LPUs, and AC or DC power modules in **N+N/N+1/N+0 (no redundancy)** backup mode.
	S9712	Supports two SRUs, twelve LPUs, and AC or DC power modules in **N+N/N+1/N+0 (no redundancy)** backup mode.

NOTE

S9700 chassis include FCC-certified chassis and common chassis.

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3.3 Appearance and Structure

NOTE

The figures in this document are for reference only.

Appearance

The S9703 chassis is 4 U high (1 U = 44.45 mm). When the chassis has no cable management frame installed, the dimensions are 442 mm x 489 mm x 175 mm (W x D x H). When the chassis has cable management frames installed, the dimensions are 442 mm x 585 mm x 175 mm (W x D x H). **Figure 3-1** and **Figure 3-2** show the S9703 chassis.

Figure 3-1 S9703 chassis (front view)

Figure 3-2 S9703 chassis (rear view)

NOTE

The S9703 chassis include FCC-certified chassis and common chassis.

The S9706 chassis is 10 U high (1 U = 44.45 mm). When the chassis has no cable management frame installed, the dimensions are 442 mm x 489 mm x 441.7 mm (W x D x H). When the

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chassis has cable management frames installed, the dimensions are 442 mm x 585 mm x 441.7 mm (W x D x H). **Figure 3-3** and **Figure 3-4** show the S9706 chassis.

Figure 3-3 S9706 chassis (front view)

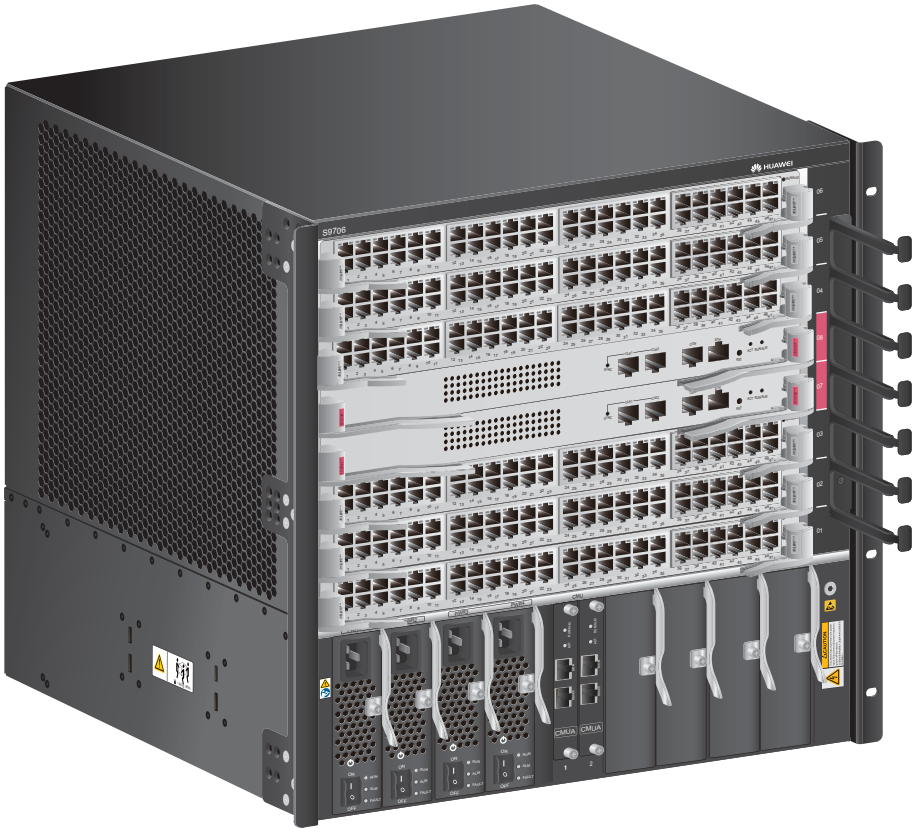

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Figure 3-4 S9706 chassis (rear view)

NOTE

S9706 chassis include FCC-certified chassis or common chassis.

The S9712 chassis is 15 U high (1 U = 44.45 mm). When the chassis has no cable management frame installed, the dimensions are 442 mm x 489 mm x 663.95 mm (W x D x H). When the chassis has cable management frames installed, the dimensions are 442 mm x 585 mm x 663.95 mm (W x D x H). **Figure 3-5** and **Figure 3-6** show the S9712 chassis.

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Figure 3-5 S9712 chassis (front view)

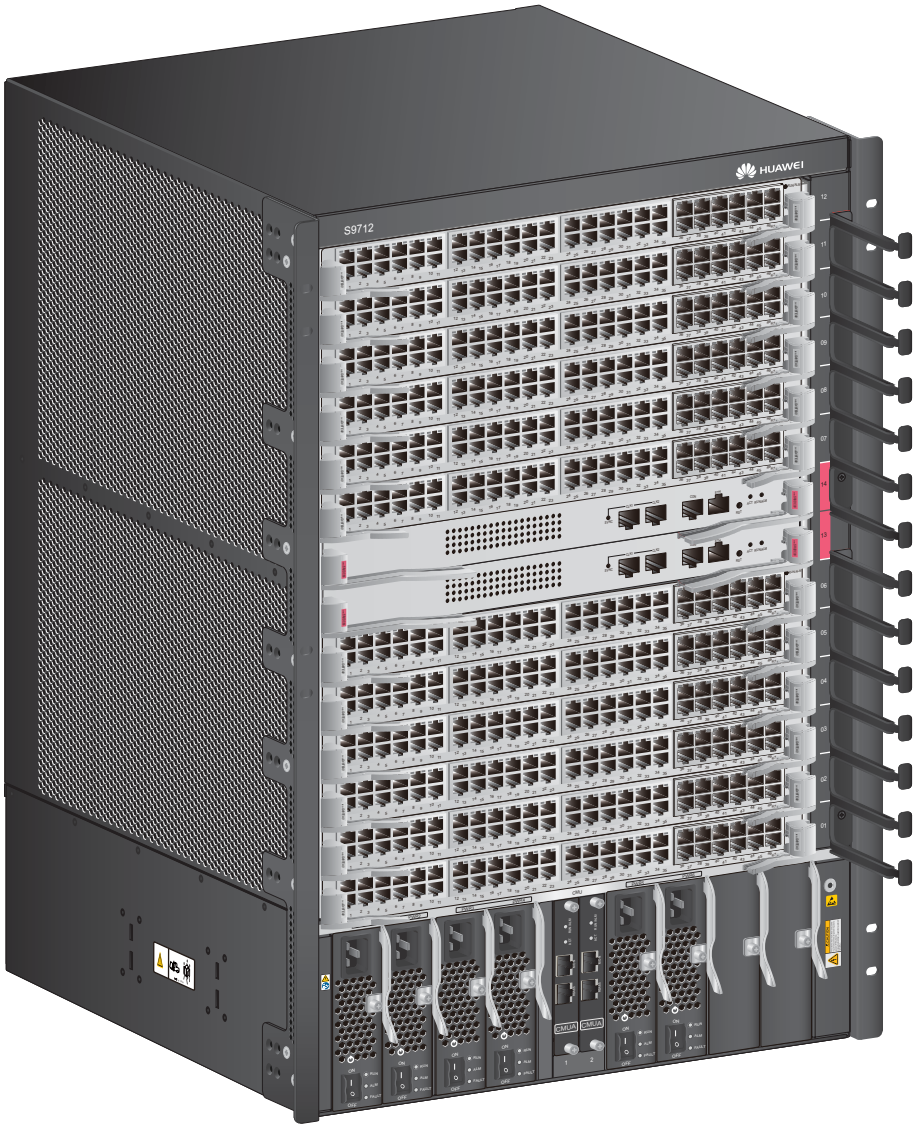

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Figure 3-6 S9712 chassis (rear view)

NOTE

S9712 chassis include FCC-certified chassis or common chassis.

Structure

Figure 3-7 shows the front structure of the S9703 chassis.

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Figure 3-7 S9703 chassis structure (front view)

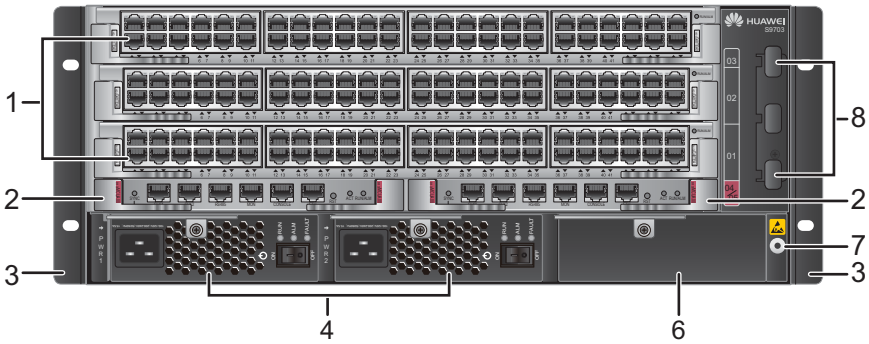

Figure 3-8 shows the front structure of the S9706 chassis.

Figure 3-8 S9706 chassis structure (front view)

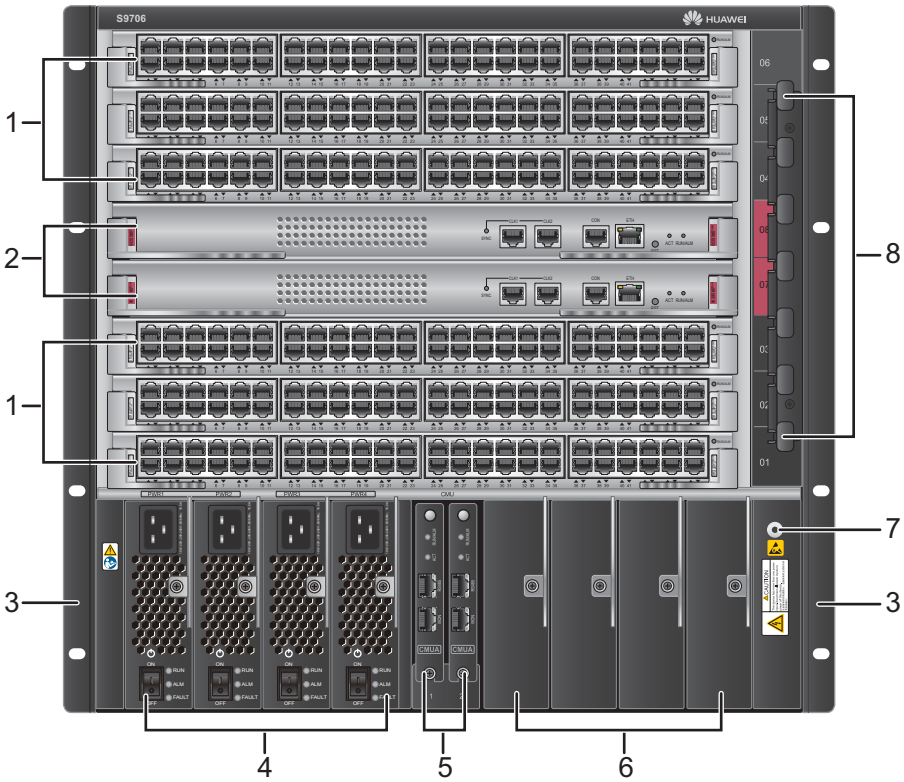

Figure 3-9 shows the front structure of the S9712 chassis.

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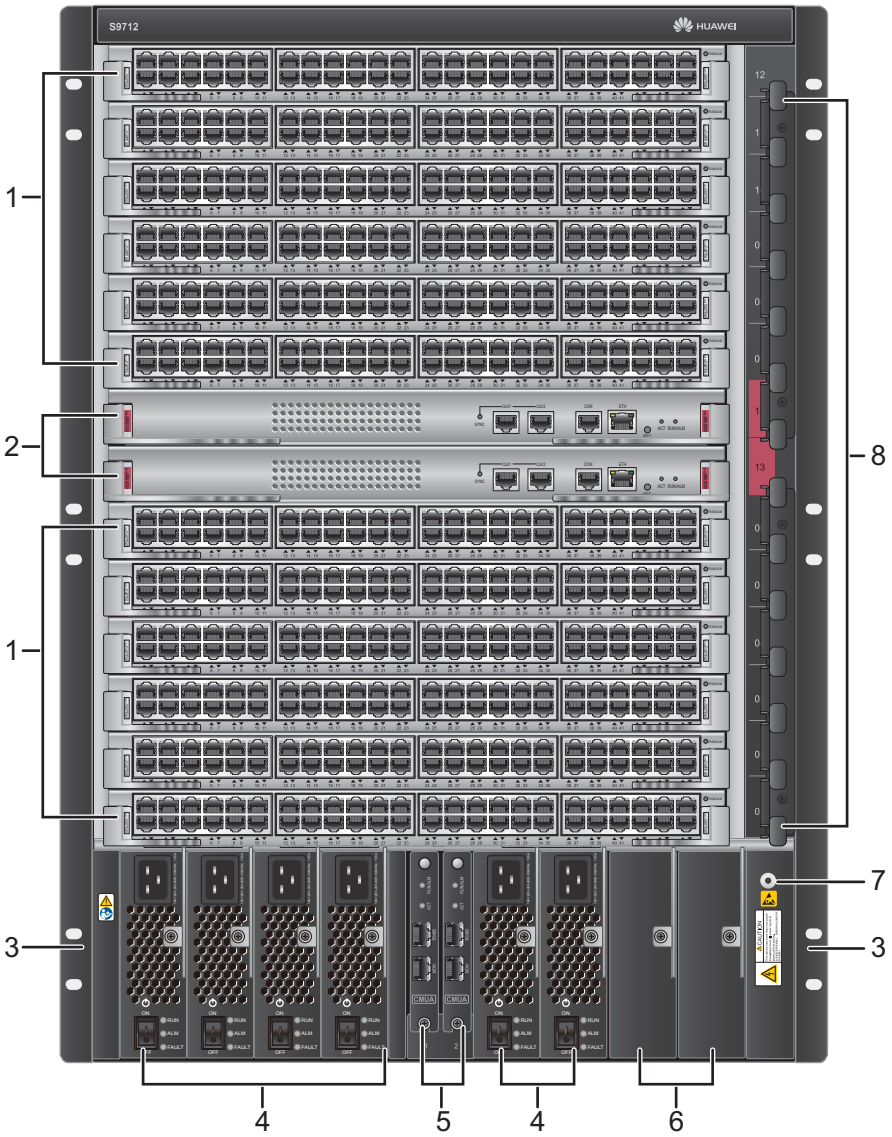
Figure 3-9 S9712 chassis structure (front view)



1. Three/six/twelve service cards, including: ● **Value-added service card** ● **Open Service Platform Unit (OSPU)** ● **6.6 100M Interface Card** ● **6.7 1000M Interface Card** ● **6.8 GE/10GE Interface Card** ● **6.9 10GE Interface Card** ● **6.10 40GE Interface Card**	2. Two **MPUs**	3. A pair of mounting brackets **NOTE** The mounting brackets are used to secure the chassis in the cabinet.

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4. Two/Four/Six **power modules**	5. Two **CMUs**	6. Reserved slot **NOTE** Install a filler panel in the reserved slot.
7. Front ESD jack **NOTE** The ground terminal of an ESD wrist strap can be inserted in this jack. The ESD wrist strap can provide ESD protection when the chassis is reliably grounded.	8. Cable management frames **NOTE** Cable management frames are used to route cables.	-

Figure 3-10 shows the rear structure of the S9703 chassis.

Figure 3-10 S9703 chassis structure (rear view)

Figure 3-10 shows the rear structure of the S9706 chassis.

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Figure 3-11 S9706 chassis structure (rear view)

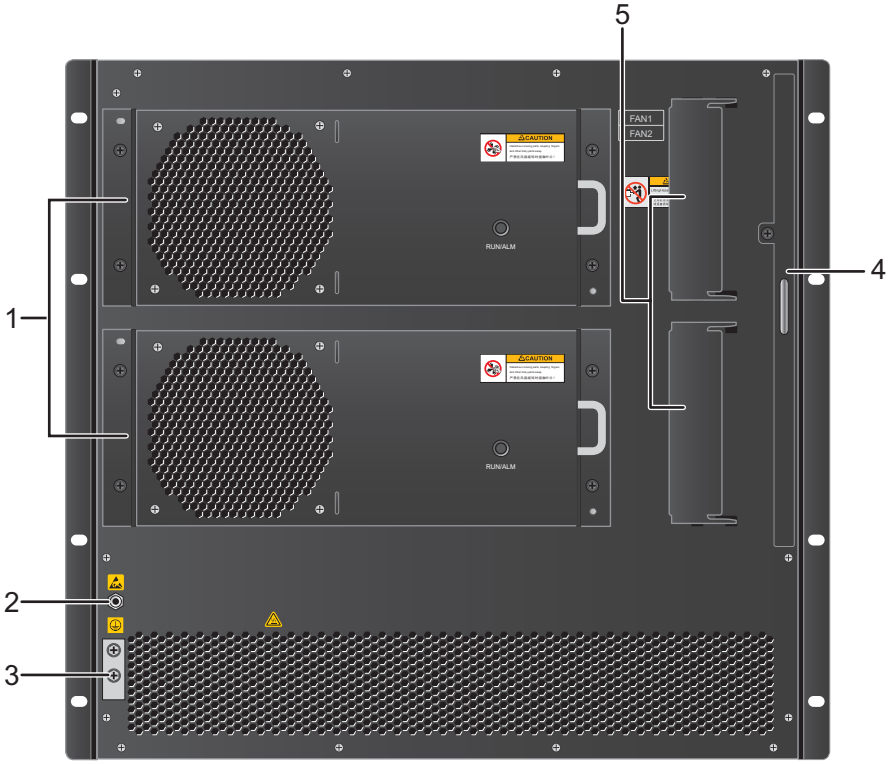

Figure 3-12 shows the rear structure of the S9712 chassis.

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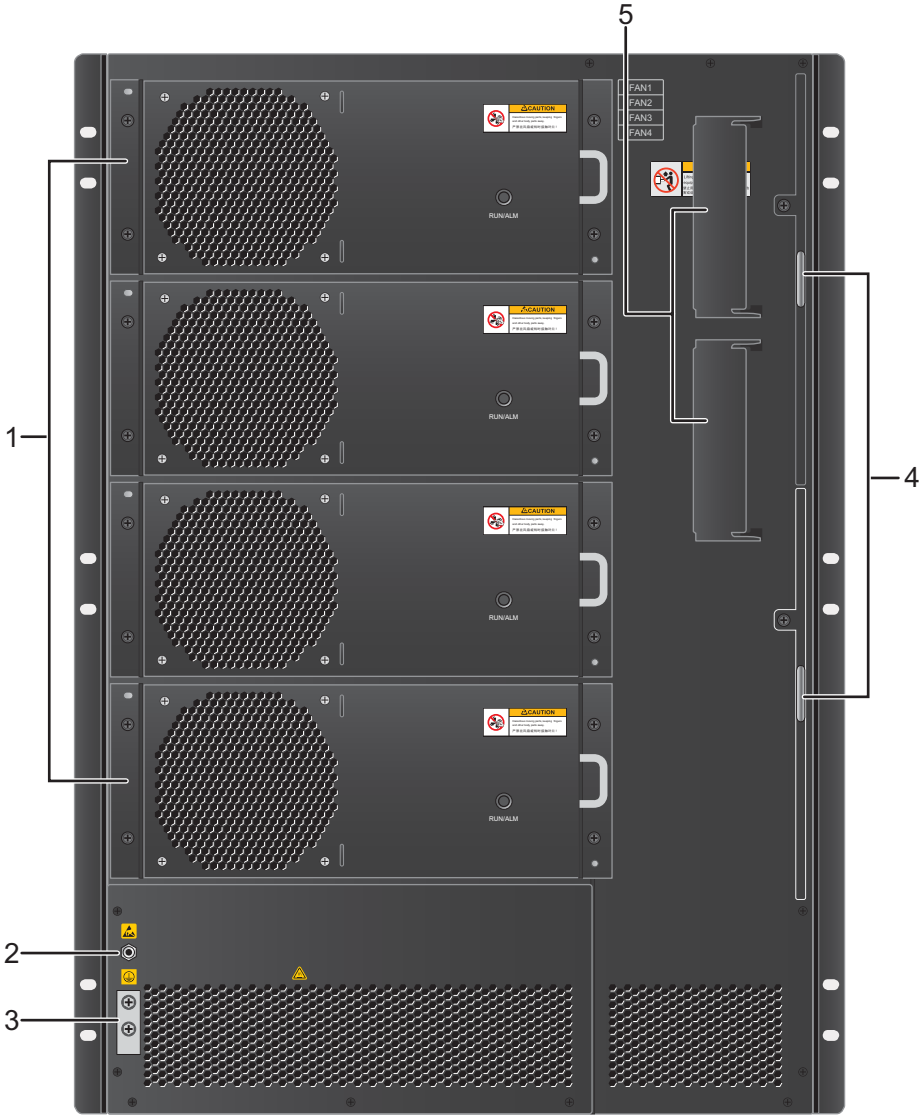
Figure 3-12 S9712 chassis structure (rear view)



1. One/Two/Four **fan modules**	2. Rear ESD jack **NOTE** The ground terminal of an ESD wrist strap can be inserted in this jack. The ESD wrist strap can provide ESD protection when the chassis is reliably grounded.	3. JG ground terminal **NOTE** The JG ground terminal is used to ground the chassis.
4. Air filter **NOTE** The air filter prevents dust from entering the chassis.	5. A pair of removable handles **NOTE** You can install these handles on two sides of the chassis to lift the chassis.	-

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3.4 Slots

3.4.1 Slot Configuration on the Chassis

The S9703 chassis provides three LPU slots, two MCU slots, and two power slots.

Figure 3-13 shows the slot layout at the front of the S9703 chassis, and **Figure 3-14** shows the slot layout at the rear of the S9703 chassis.

Figure 3-13 Slot layout on the S9703 chassis (front)

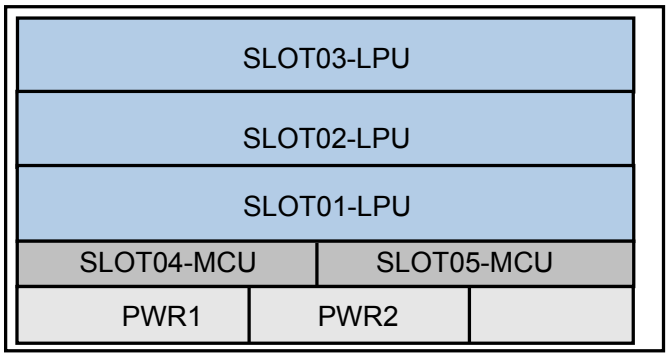
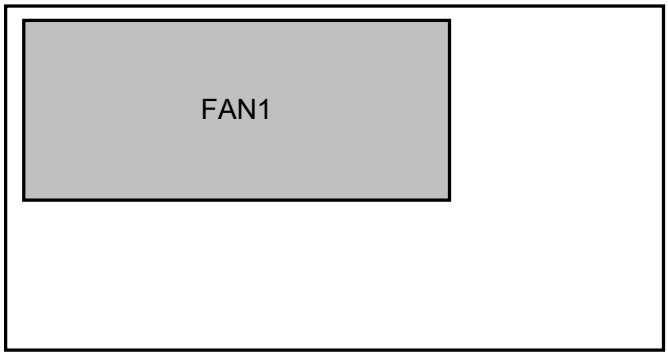


Figure 3-14 Slot layout on the S9703 chassis (rear)



The S9706 chassis provides six LPU slots, two SRU slots, two CMU slots, and four power slots.

Figure 3-15 shows the slot layout at the front of the S9706 chassis, and **Figure 3-16** shows the slot layout at the rear of the S9706.

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Figure 3-15 Slot layout on the S9706 chassis (front)

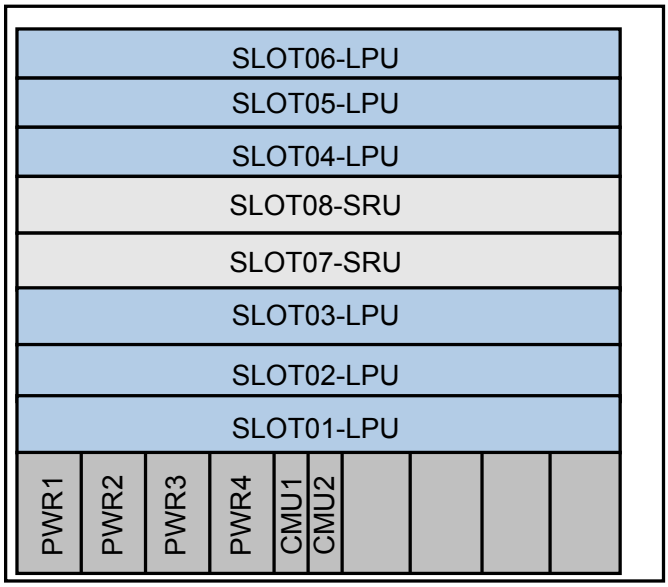
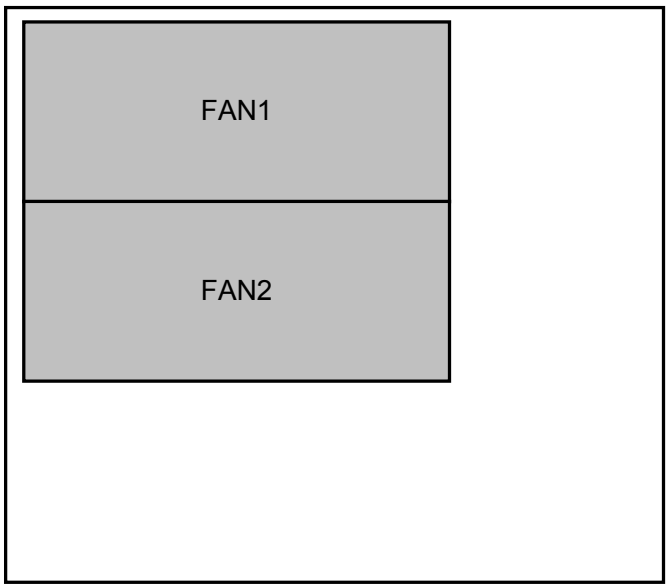


Figure 3-16 Slot layout on the S9706 chassis (rear)



The S9712 chassis provides twelve LPU slots, two SRU slots, two CMU slots, and six power slots.

Figure 3-17 shows the slot layout at the front of the S9712 chassis, and **Figure 3-18** shows the slot layout at the rear of the S9712 chassis.

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Figure 3-17 Slot layout on the S9712 chassis (front)

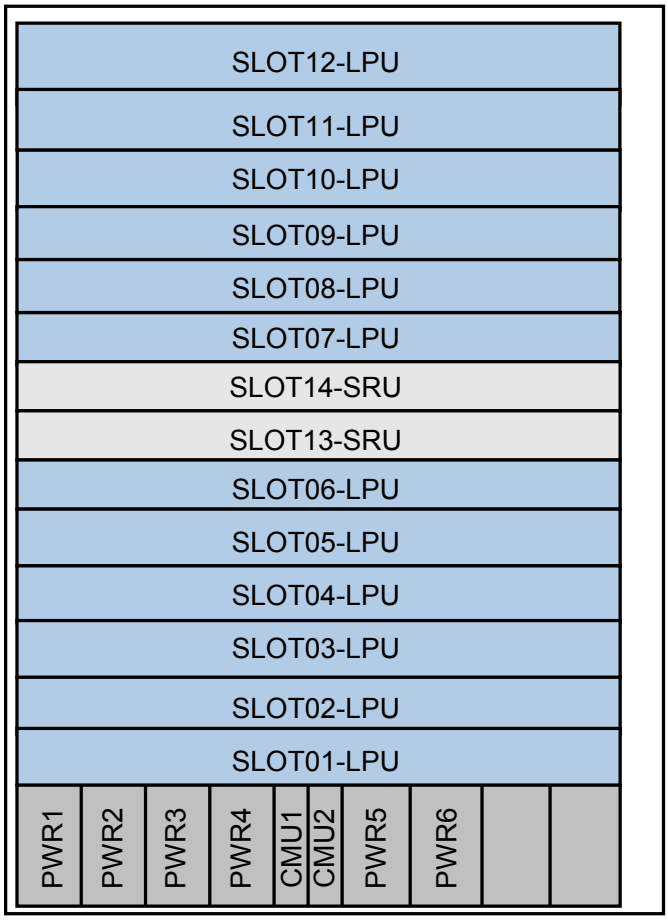

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Figure 3-18 Slot layout on the S9712 chassis (rear)

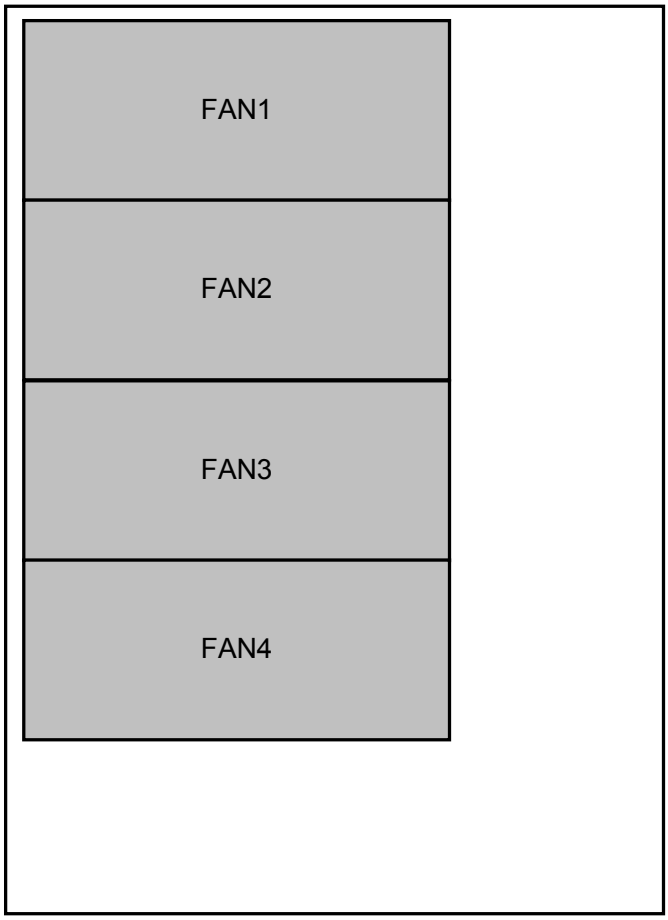

Table 3-3 describes the slot configuration in a chassis.

Table 3-3 S9700 slot configuration

Slot Type	Slot ID	Module Supported	Remarks
MCU slot	S9703: SLOT04 and SLOT05	**EH1D2MCUAC00**	The MCUs work in active/standby mode.
MPU slot	● S9706: SLOT07 and SLOT08 ● S9712: SLOT13 and SLOT14	● **EH1D2SRUC000** ● **EH1D2SRUDC00/ EH1D2SRUDC01**	The SRUs work in active/standby mode.

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Slot Type	Slot ID	Module Supported	Remarks
LPU slot	● S9703: SLOT01 to SLOT03 ● S9706: SLOT01 to SLOT06 ● S9712: SLOT01 to SLOT12	● **Value-Added Service Unit** ● **Open Service Platform Unit** ● **6.6 100M Interface Card** ● **6.7 1000M Interface Card** ● **6.8 GE/10GE Interface Card** ● **6.9 10GE Interface Card** ● **6.10 40GE Interface Card**	-
Power slot	PWR1 and PWR2 ● S9703: PWR1 and PWR2 ● S9706: PWR1 to PWR4 ● S9712: PWR1 to PWR6	● **4.1.1 2200 W DC Power Module** ● **4.1.2 800 W AC Power Module** ● **4.1.3 2200 W AC Power Module**	**NOTICE** These slots cannot have DC and AC power modules installed simultaneously, and cannot use AC power modules with different power values together.
CMU slot	● S9706: CMU1 and CMU2 ● S9712: CMU1 and CMU2	**EH1D200CMU00**	The CMUs work in active/standby mode.
Fan module slot	● S9703: FAN1 ● S9706: FAN1, FAN2 ● S9712: FAN1 to FAN4	**5 Fan Module**	-

3.4.2 Power Slot Configuration

Power Slot Description

The S9703 supports both AC and DC power modules and provides slots PWR1 and PWR2 for power modules, as shown in **Slot layout on the S9703 chassis (front)**.

The S9706 supports both AC and DC power modules and provides slots PWR1 to PWR4 for power modules, as shown in **Slot layout on the S9706 chassis (front)**.

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The S9712 supports both AC and DC power modules and provides slots PWR1 to PWR6 for power modules, as shown in **Slot layout on the S9712 chassis (front)**.

Power Redundancy

The S9700 series switches support three redundancy modes of power modules: N+N, N+1, and N+0. The value of N depends on the maximum power actually required by the system. Ensure that the total maximum output power of N power modules (N x maximum output power of each power module) is larger than the maximum power actually required by the system. **Table 3-4** describes the three power redundancy modes and the specific redundancy modes supported by the S9700 series switches.

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Table 3-4 Description of power redundancy modes

Redundancy Mode	Description	Scenario	Product Support
N+N	● System power supply is not affected if no more than N power modules are removed or fail. ● All the N+N power modules equally share the system power consumption. ● The maximum output power of the system is the total maximum output power of N power modules. ● N power modules are mandatory, and the other N power modules are optional. **NOTE** The N+N redundancy mode is often used when two power supply systems are available. In this case, N power modules are mandatory for the first power supply system, and the other N power modules are mandatory for the second power supply system. The use of double power supply systems provides redundancy of both power modules and power supply systems.	-	● S9703: 1+1 redundancy ● S9706: 1+1, and 2+2 redundancy ● S9712: 1+1, 2+2, and 3+3 redundancy
N+1	● System power supply is not affected if one power module is removed or fails. ● All the N+1 power modules equally	The 800 W AC power module is configured for 220 V AC input or 110 V dual-live-wire AC input.	● S9703: 1+1 redundancy ● S9706: 1+1, 2+1, and 3+1 redundancy ● S9712: 1+1, 2+1, 3+1, 4+1, and 5+1 redundancy

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Redundancy Mode	Description	Scenario	Product Support
	share the system power consumption. ● The maximum output power of the system is the total maximum output power of N power modules. ● N power modules are mandatory, and one power module is optional.	● The 2200 W AC power module is configured for 220 V AC input or 110 V dual-live-wire AC input. ● The 2200 W DC power module is configured for DC input.	● S9703: 1+1 redundancy ● S9706: 1+1, and 2+1 redundancy ● S9712: 1+1, 2+1, and 3+1 redundancy
		The 800 W AC or 2200 W AC power module is configured for 110 V dual-live-wire AC input.	● S9703: 1+1 redundancy ● S9706: 1+1, 2+1, and 3+1 redundancy ● S9712: 1+1, 2+1, 3+1, 4+1, and 5+1 redundancy
N+0 (no redundancy)	● System power supply is affected once any power module is removed or fails. ● All the N power modules equally share the system power consumption. ● The maximum output power of the system is the total maximum output power of N power modules. ● N power modules are mandatory, and no power module is optional.	The 800 W AC power module is configured for 220 V AC input or 110 V dual-live-wire AC input.	● S9703: 1+0, and 2+0 ● S9706: 1+0, 2+0, 3+0, and 4+0 ● S9712: 1+0, 2+0, 3+0, 4+0, 5+0, and 6+0
		● The 2200 W AC power module is configured for 220 V AC input or 110 V dual-live-wire AC input. ● The 2200 W DC power module is configured for DC input.	● S9703: 1+0 ● S9706: 1+0, and 2+0 ● S9712: 1+0, 2+0, and 3+0
		The 800 W AC or 2200 W AC power module is configured for 110 V dual-live-wire AC input.	● S9703: 1+0, and 2+0 ● S9706: 1+0, 2+0, 3+0, and 4+0 ● S9712: 1+0, 2+0, 3+0, 4+0, 5+0, and 6+0

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Power Module Configuration

NOTICE

AC and DC power modules cannot be used in the same chassis. Power modules with different power values cannot be used together either.

NOTE

- To use the N+N redundancy mode, equally divide the power modules into two groups and connect the two groups of power modules to two independent power supply systems. This configuration provides redundancy of power supply systems to enhance system reliability.
- To use the N+N redundancy mode, you are advised to install N power modules in the power slots at the left side and install the other N power modules in the power slots at the right side. Power slots are marked PWR.

To support power supply for S9712, the 800 W AC power modules must meet the following requirements:

- 220 V: At least two active 800 W AC power modules
- 110 V: At least three active 800 W AC power modules

The power module configuration for an S9700 switch varies according to the power supply environment:

- If DC power input is provided, configure power modules according to **DC power input**.
- If 220 V single-phase AC input or 110 V dual-live-wire AC input is provided, configure power modules according to **AC power input (220 V single-phase or 110 V dual-live-wire input)**.
- If 110 V single-live-wire AC input is provided, configure power modules according to **AC power input (110 V single-live-wire input)**.

DC power input

Table 3-5 describes the power module configuration for the S9700 series switches when DC power input is provided.

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Table 3-5 Power module configuration (DC power input)

Power Module Type	Redundancy Mode	Maximum Output Power
2200 W DC power module	**N+N**	● S9703: A maximum of 2 (1+1) 2200 W DC power modules can be configured, providing a maximum output power of 2200 W. ● S9706: A maximum of 4 (2+2) 2200 W DC power modules can be configured, providing a maximum output power of 4400 W. ● S9712: A maximum of 6 (3+3) 2200 W DC power modules can be configured, providing a maximum output power of 6600 W.
	N+1	● S9703: A maximum of 2 (1+1) 2200 W DC power modules can be configured, providing a maximum output power of 2200 W. ● S9706: A maximum of 3 (2+1) 2200 W DC power modules can be configured, providing a maximum output power of 4400 W. ● S9712: A maximum of 4 (3+1) 2200 W DC power modules can be configured, providing a maximum output power of 6600 W.
	N+0 (no redundancy)	● S9703: A maximum of 1 (1+0) 2200 W DC power modules can be configured, providing a maximum output power of 2200 W. ● S9706: A maximum of 2 (2+0) 2200 W DC power modules can be configured, providing a maximum output power of 4400 W. ● S9712: A maximum of 3 (3+0) 2200 W DC power modules can be configured, providing a maximum output power of 6600 W.

AC power input (220 V single-phase or 110 V dual-live-wire input)

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NOTE

If the input voltage is 110 V, the dual-live-wire input mode is recommended. In this case, the maximum output power of a 2200 W AC power module is 2200 W, and the maximum output power of a 800 W AC power module is 800 W.

Table 3-6 describes the power module configuration for the S9700 series switches when 220 V single-phase or 110 V dual-live-wire AC power input is provided.

Table 3-6 Power module configuration (220 V single-phase or 110 V dual-live-wire AC power input)

Power Module Type	Redundancy Mode	Maximum Output Power
2200 W AC power module	N+N	● S9703: A maximum of 2 (1+1) 2200 W AC power modules can be configured, providing a maximum output power of 2200 W. ● S9706: A maximum of 4 (2+2) 2200 W AC power modules can be configured, providing a maximum output power of 4400 W. ● S9712: A maximum of 6 (3+3) 2200 W AC power modules can be configured, providing a maximum output power of 6600 W.
	N+1	● S9703: A maximum of 2 (1+1) 2200 W AC power modules can be configured, providing a maximum output power of 2200 W. ● S9706: A maximum of 3 (2+1) 2200 W AC power modules can be configured, providing a maximum output power of 4400 W. ● S9712: A maximum of 4 (3+1) 2200 W AC power modules can be configured, providing a maximum output power of 6600 W.

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Power Module Type	Redundancy Mode	Maximum Output Power
	N+0 (no redundancy)	● S9703: A maximum of 1 (1+0) 2200 W AC power modules can be configured, providing a maximum output power of 2200 W. ● S9706: A maximum of 2 (2+0) 2200 W AC power modules can be configured, providing a maximum output power of 4400 W. ● S9712: A maximum of 3 (3+0) 2200 W AC power modules can be configured, providing a maximum output power of 6600 W.
800 W AC power module	**N+N**	● S9703: A maximum of 2 (1+1) 800 W AC power modules can be configured, providing a maximum output power of 800 W. ● S9706: A maximum of 4 (2+2) 800 W AC power modules can be configured, providing a maximum output power of 1600 W. ● S9712: A maximum of 6 (3+3) 800 W AC power modules can be configured, providing a maximum output power of 2400 W.
	N+1	● S9703: A maximum of 2 (1+1) 800 W AC power modules can be configured, providing a maximum output power of 800 W. ● S9706: A maximum of 4 (3+1) 800 W AC power modules can be configured, providing a maximum output power of 2400 W. ● S9712: A maximum of 6 (5+1) 800 W AC power modules can be configured, providing a maximum output power of 4000 W.

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Power Module Type	Redundancy Mode	Maximum Output Power
	N+0 (no redundancy)	● S9703: A maximum of 2 (2+0) 800 W AC power modules can be configured, providing a maximum output power of 1600 W. ● S9706: A maximum of 4 (4+0) 800 W AC power modules can be configured, providing a maximum output power of 3200 W. ● S9712: A maximum of 6 (6+0) 800 W AC power modules can be configured, providing a maximum output power of 4800 W.

AC power input (110 V single-live-wire input)

NOTE

When 110 V single-live-wire AC power input is provided, the maximum output power of a 2200 W AC power module is 1100 W. In this case, it is recommended that you use the N+1 or N+0 redundancy mode to increase the maximum output power of the system.

Table 3-7 describes the power module configuration for the S9700 series switches when 110 V single-live-wire AC power input is provided.

Table 3-7 Power module configuration (110 V single-live-wire AC power input is provided)

Power Module Type	Redundancy Mode	Maximum Output Power
2200 W AC power module	**N+N**	● S9703: A maximum of 2 (1+1) 2200 W AC power modules can be configured, providing a maximum output power of 1100 W. ● S9706: A maximum of 4 (2+2) 2200 W AC power modules can be configured, providing a maximum output power of 2200 W. ● S9712: A maximum of 6 (3+3) 2200 W AC power modules can be configured, providing a maximum output power of 3300 W.

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Power Module Type	Redundancy Mode	Maximum Output Power
	N+1	● S9703: A maximum of 2 (1+1) 2200 W AC power modules can be configured, providing a maximum output power of 1100 W. ● S9706: A maximum of 4 (3+1) 2200 W AC power modules can be configured, providing a maximum output power of 3300 W. ● S9712: A maximum of 6 (5+1) 2200 W AC power modules can be configured, providing a maximum output power of 5500 W.
	N+0 (no redundancy)	● S9703: A maximum of 2 (2+0) 2200 W AC power modules can be configured, providing a maximum output power of 2200 W. ● S9706: A maximum of 4 (4+0) 2200 W AC power modules can be configured, providing a maximum output power of 4400 W. ● S9712: A maximum of 6 (6+0) 2200 W AC power modules can be configured, providing a maximum output power of 6600 W.
800 W AC power module	**N+N**	● S9703: A maximum of 2 (1+1) 800 W AC power modules can be configured, providing a maximum output power of 400 W. ● S9706: A maximum of 4 (2+2) 800 W AC power modules can be configured, providing a maximum output power of 800 W. ● S9712: A maximum of 6 (3+3) 800 W AC power modules can be configured, providing a maximum output power of 1200 W.

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Power Module Type	Redundancy Mode	Maximum Output Power
	N+1	● S9703: A maximum of 2 (1+1) 800 W AC power modules can be configured, providing a maximum output power of 400 W. ● S9706: A maximum of 4 (3+1) 800 W AC power modules can be configured, providing a maximum output power of 1200 W. ● S9712: A maximum of 6 (5+1) 800 W AC power modules can be configured, providing a maximum output power of 2000 W.
	N+0 (no redundancy)	● S9703: A maximum of 2 (2+0) 800 W AC power modules can be configured, providing a maximum output power of 800 W. ● S9706: A maximum of 4 (4+0) 800 W AC power modules can be configured, providing a maximum output power of 1600 W. ● S9712: A maximum of 6 (6+0) 800 W AC power modules can be configured, providing a maximum output power of 2400 W.

3.5 Heat Dissipation

NOTE

It is recommended that you replace the air filter of a device every six months.

The S9700 cooling system consists of fan modules and air filters. The fan module is located behind the air exhaust vent (rear of the chassis), and the air filter is located outside the air intake vent (left side of the chassis).

- The S9703, S9706, and S9712have one, two, and four fan modules respectively, located at the rear of the chassis. It absorbs cold air into the chassis to dissipate heat generated by working components, ensuring that the chassis operates within a normal temperature range. For details about the performance and attributes of the fan module, see **5 Fan Module**.
- The air filter prevents dust from entering the chassis and ensures normal operation of the chassis.

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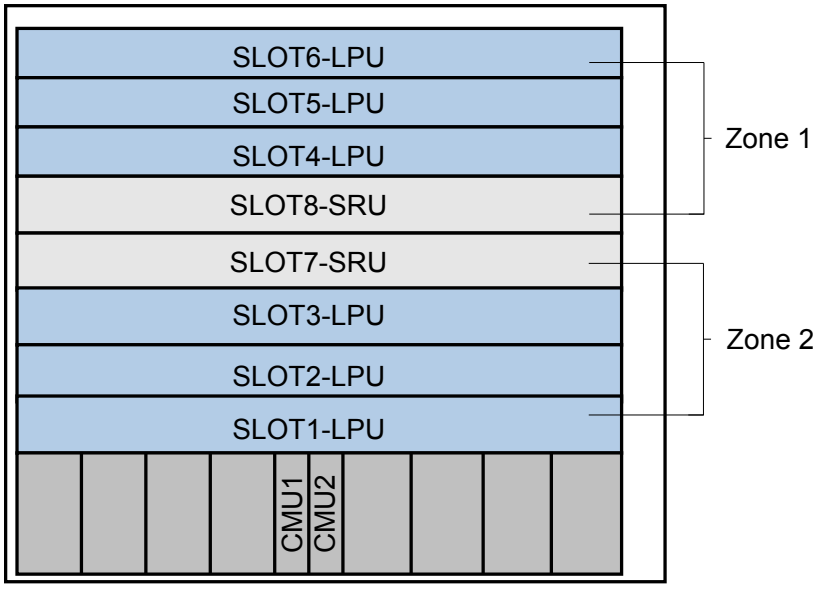
Fan Zones

The S9706 and S9712 chassis are divided into multiple zones. If there are empty slots in a zone, the fans corresponding to this zone operate at a low speed, which reduces power consumption and noises.

As shown in **Figure 3-19**, two fan modules of the S9706 serve two zones, with four cards in each zone.

Figure 3-19 S9706 fan zones



As shown in **Figure 3-20**, four fan modules of the S9712 serve four zones, with four cards in each zone. The cards in slots 4 and 9 each belong to two zones and are cooled by two fan modules.

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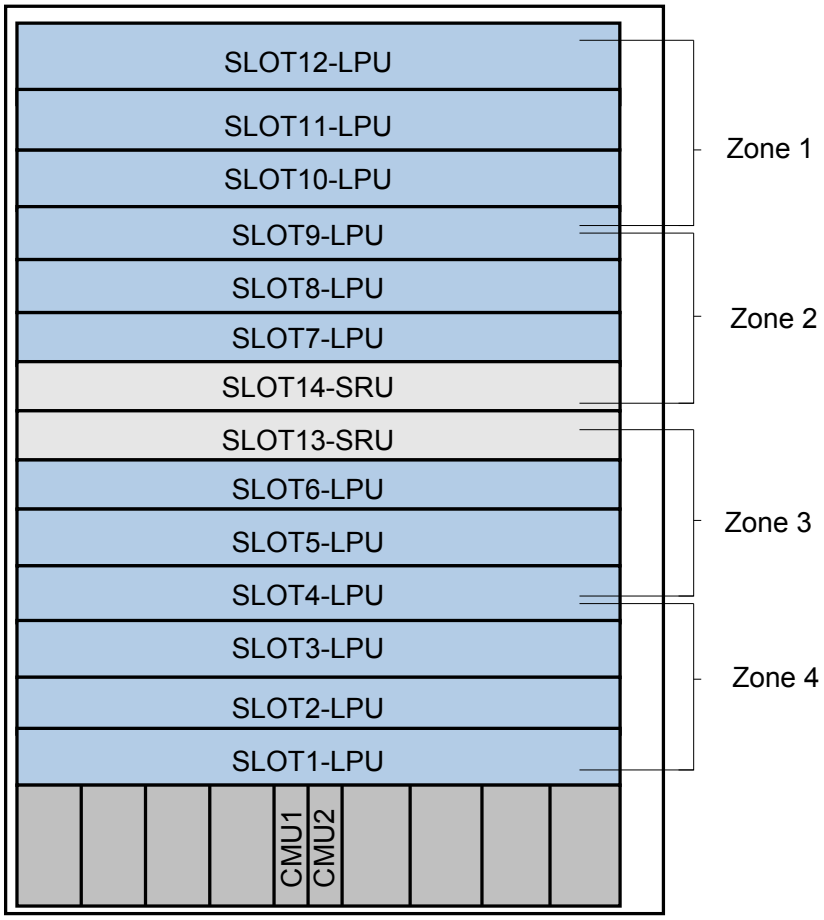
Figure 3-20 S9712 fan zones



Airflow

NOTE

The S9703, S9706, and S9712 use the same airflow design. The S9706 is used as an example to describe the airflow.

The fan module in the S9706 chassis dissipates heat by absorbing air. Air flows from the left side to the rear of the chassis. **Figure 3-21** shows the airflow in the chassis.

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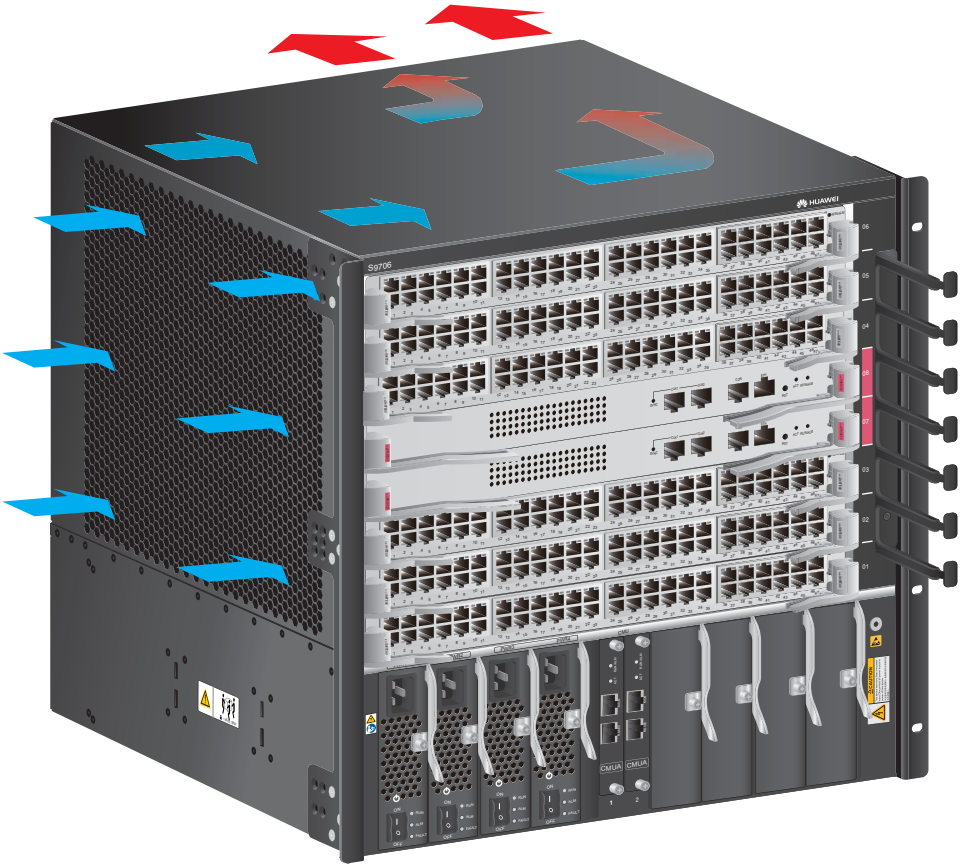
Figure 3-21 Airflow in the S9706 chassis



Air Filter

NOTE

The switches may use honeycomb air filters or non-honeycomb air filters. The switches with honeycomb air filters installed in all air filter slots comply with Federal Communications Commission (FCC) standards.

S9703 air filters

The S9703 uses either a sponge air filter or a honeycomb air filter. An FCC-certified chassis must use a honeycomb air filter. **Figure 3-22** shows a sponge air filter, and **Figure 3-23** shows a honeycomb air filter.

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Figure 3-22 Sponge air filter

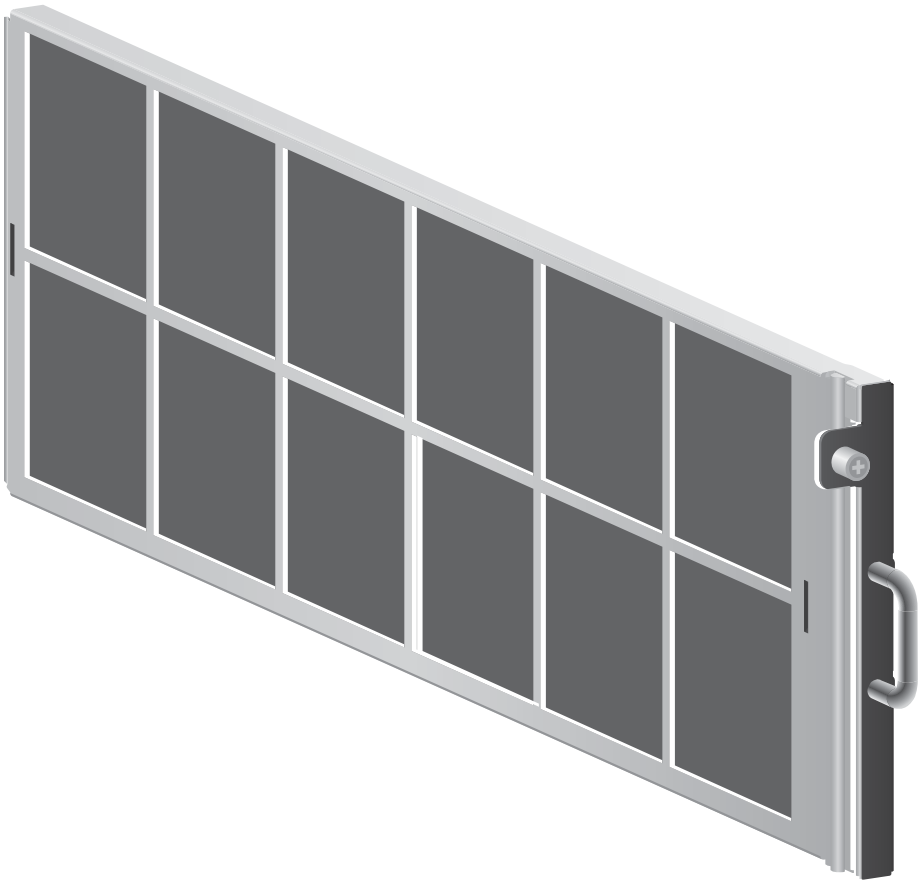

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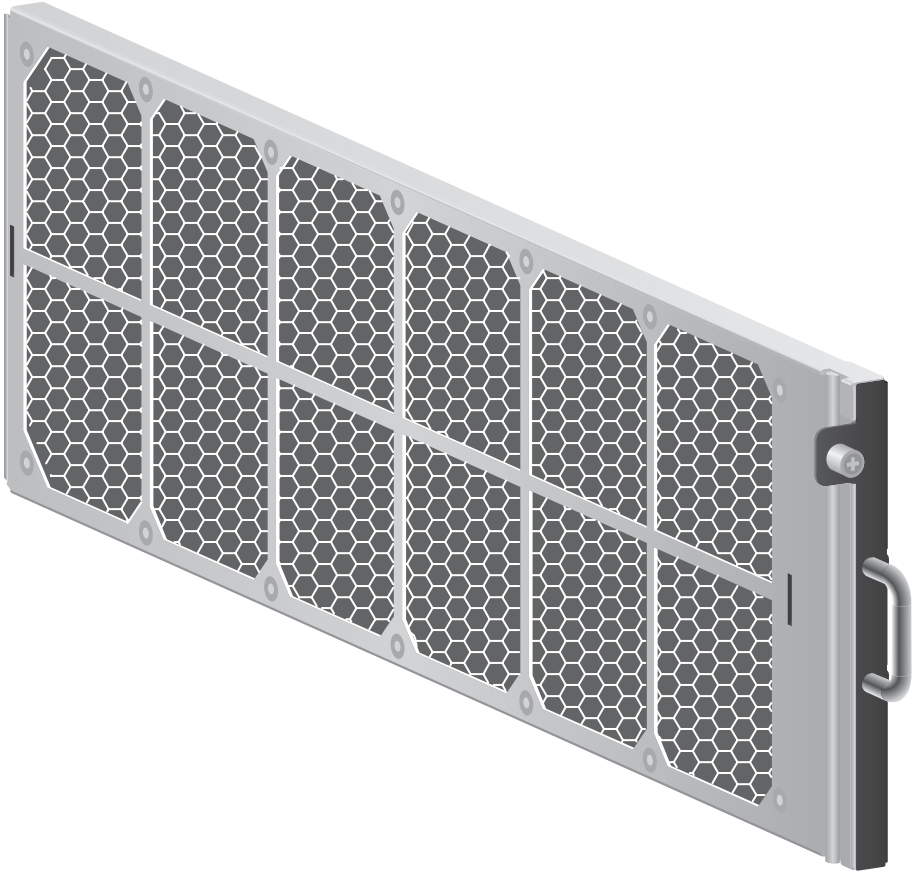
Figure 3-23 Honeycomb air filter



S9706 and S9712 air filters

The S9706 and S9712 uses sponge air filters or honeycomb air filters. An FCC-certified chassis must use honeycomb air filters. **Figure 3-24** shows a sponge air filter, and **Figure 3-25** shows a honeycomb air filter.

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Figure 3-24 Sponge air filter

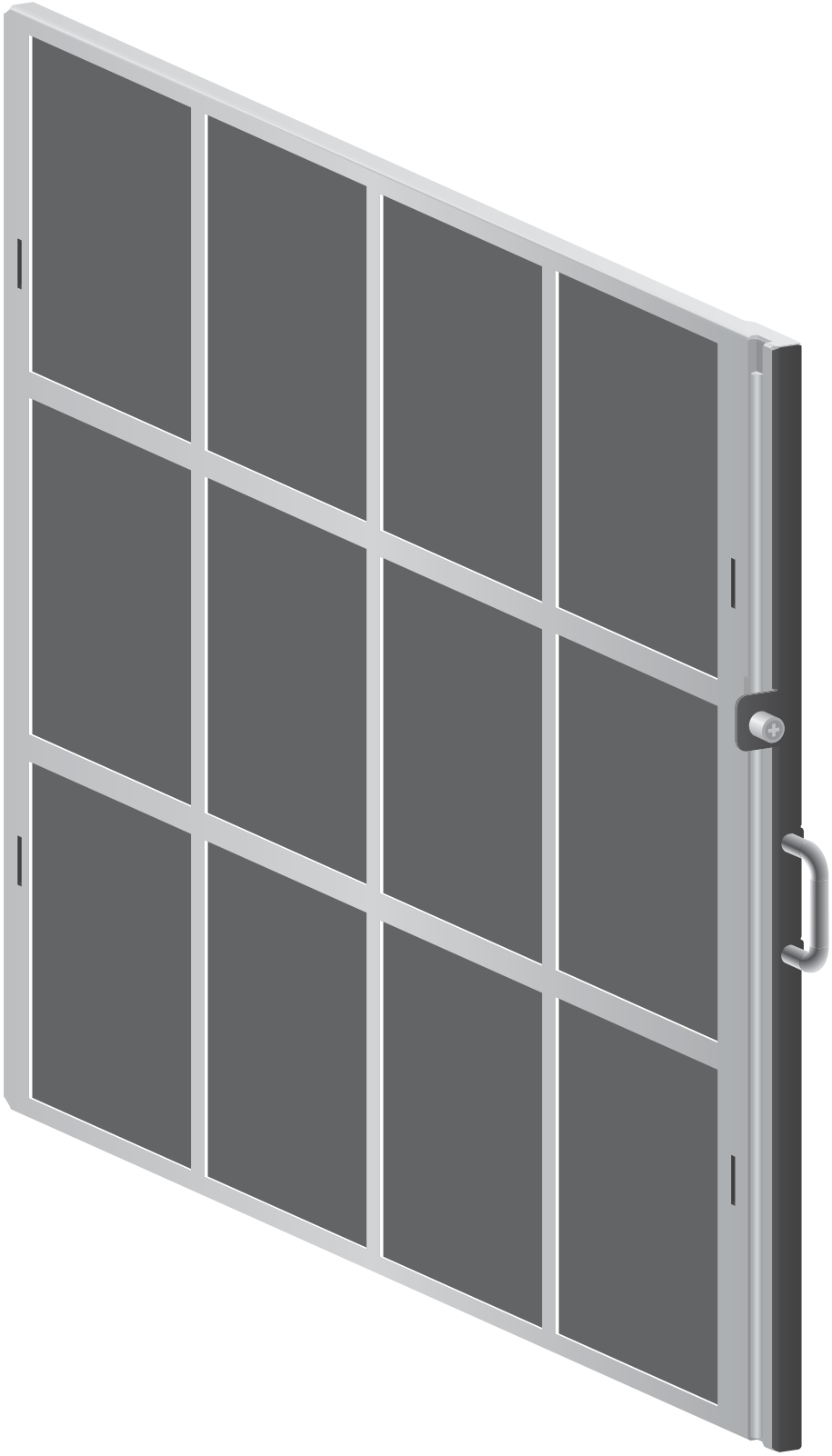

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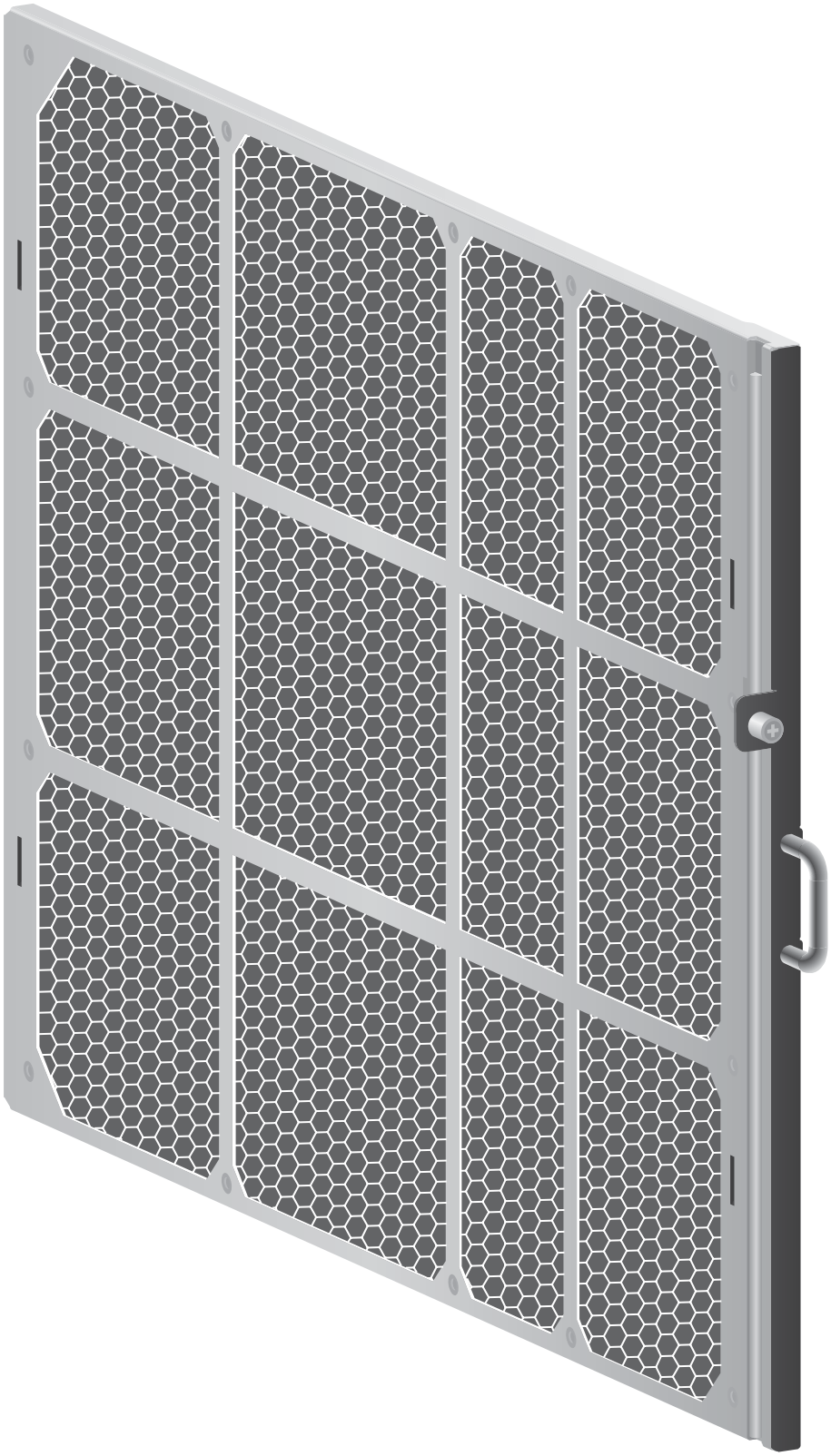
Figure 3-25 Honeycomb air filter



3.6 Specifications

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Table 3-8 lists the specifications of the S9700 chassis.

Table 3-8 S9700 chassis specifications

Item	Description
LPU slots	● S9703: 3 ● S9706: 6 ● S9712: 12
MCU slots	2
Fan slots	● S9703: 1 ● S9706: 2 ● S9712: 4
Power slots	● S9703: 2 ● S9706: 4 ● S9712: 6
Maximum port density	● S9703: 144xFE, 144xGE, 144x10GE, 24x40GE ● S9706: 288xFE, 288xGE, 288x10GE, 48x40GE ● S9712: 576xFE, 576xGE, 576x10GE, 96x40GE
Installation	N66E or N68E cabinet ● S9703: not limited ● S9706: two chassis in each cabinet ● S9712: one chassis in each cabinet
CSS	● S9703: not supported ● S9706: CSS setup using service ports or CSS cards ● S9712: CSS setup using service ports or CSS cards
Maximum power consumption (fully loaded) **NOTE** The heat dissipation value of a chassis equals the current power consumption of the chassis.	● S9703: 1100W ● S9706: 2200W ● S9712: 4400W

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Item	Description
Power specifications	● DC input voltage – Rated voltage: -48 V DC/-60 V DC – Voltage range: -40 V DC to -72 V DC ● AC input voltage – Rated voltage: 110 V AC/220 V AC, 50/60 Hz – Voltage range: 90 V AC to 290 V AC; 47 Hz to 63 Hz (The output power reduces to half of the maximum output when the input voltage is in the range of 90 V AC to 175 V AC.)
Dimensions (W x D x H, excluding rack-mounting brackets)	● S9703: – With cable management frames: 442 mm x 585 mm x 175 mm (4 U high) – Without cable management frames: 442 mm x 489 mm x 175 mm (4 U high) ● S9706: – With cable management frames: 442 mm x 585 mm x 441.7 mm (10 U high) – Without cable management frames: 442 mm x 489 mm x 441.7 mm (10 U high) ● S9712: – With cable management frames: 442 mm x 585 mm x 663.95 mm (15 U high) – Without cable management frames: 442 mm x 489 mm x 663.95 mm (15 U high)
Weight (empty/fully loaded)	● S9703: 11 kg/25 kg ● S9706: 29 kg/45 kg ● S9712: 37 kg/70 kg

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Item	Description
Reliability and availability	● S9703: – Mean time between failures (MTBF): 33.8 years – Mean time to repair (MTTR): 30 minutes – Availability: 0.99999964 ● S9706: – MTBF: 24.2 years – MTTR: 30 minutes – Availability: 0.99999959 ● S9712: – MTBF: 24.1 years – MTTR: 30 minutes – Availability: 0.99999959
Environment parameters	● Operating temperature and altitude: – -60 m to +1800 m: 0°C to 45°C – 1800 m to 4000 m: Temperature decreases by 1°C every time the altitude increases 220 m. – 4000 m: 0°C to 35°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage altitude: < 5000 m ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
Noise at normal temperature (acoustic power)	≤ 72 dBA

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

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4 Power Supply Facilities

About This Chapter

4.1 Power Module

4.2 Power Distribution Box

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4.1 Power Module

4.1.1 2200 W DC Power Module

Version Mapping

Table 4-1 lists the switch chassis and software versions matching a 2200 W DC power module.

Table 4-1 Switch chassis and software versions matching a 2200 W DC power module

Part Number	Power Module Name	S9700 Chassis
02270117	2200 W DC power module	Supported in V200R001C00 and later versions

Appearance

A 2200 W DC power module is standard 3 U high. Figure 4-1 shows a 2200 W DC power module.

Figure 4-1 2200 W DC power module

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Functions

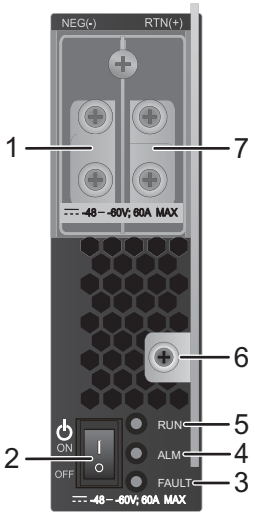
A 2200 W DC power module provides a maximum power of 2200 W for the chassis and has the following functions:

- EMC filtering
- Output overvoltage protection
- Output short circuit protection
- Input overvoltage protection
- Input undervoltage protection
- Overtemperature protection
- Short circuit protection
- Surge protection

Panel Description

Figure 4-2 shows the panel of a 2200 W DC power module.

Figure 4-2 Panel of a 2200 W DC power module



1. NEG terminal	2. Power switch **NOTE** ● ON: The power module is supplying power. ● OFF: The power module is not supplying power.	3. FAULT indicator
4. ALM indicator	5. RUN indicator	6. Ejector lever **NOTE** Raise the ejector lever to release the power module from the slot, and lower the ejector lever to lock the power module in the slot.

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7. RTN terminal	-	-

Table 4-2 describes the indicators on a 2200 W DC power module panel.

Table 4-2 Indicators on a power module panel

Indicator	Color	Description
FAULT	Red	Steady on: The power module has a fault that cannot be rectified.
ALM	Yellow	Steady on: A power output shutdown alarm, overtemperature alarm, output overcurrent alarm, input overvoltage alarm, or input undervoltage alarm has been generated. Blinking: Communication with the monitoring device (MCU or CMU) is interrupted.
RUN	Green	Steady on: The power input is normal.

Table 4-3 describes the relationship between cables and the terminals on a 2200 W DC power module.

Table 4-3 Relationship between cables and the terminals on a 2200 W DC power module

Input Terminal Identifier	Cable Type	Cable Color	Connected Terminal
RTN **NOTE** RTN indicates return.	Power ground cable	Black	OT bare crimp terminal
NEG	Power cable	Blue	

Specifications

Table 4-4 lists the technical specifications of a 2200 W DC power module.

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Table 4-4 Technical specifications of a 2200 W DC power module

Item		Value
Dimensions (W x D x H)		41 mm x 393 mm x 130 mm
Weight		< 6.0 kg
Input	Rated input voltage	-48 V DC/-60 V DC
	Input voltage range	-40 V DC to -72 V DC
	Maximum input current	60 A
Output	Maximum output current	42 A
	Maximum output power	2200 W
Environment parameters		● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

4.1.2 800 W AC Power Module

Version Mapping

Table 4-5 lists the switch chassis and software versions matching an 800 W AC power module.

Table 4-5 Switch chassis and software versions matching an 800 W AC power module

Part Number	Power Module Name	S9700 Chassis
02130979	800 W AC power module	Supported in V200R002C00 and later versions

Appearance

An 800 W AC power module is standard 3 U high. Figure 4-3 shows an 800 W AC power module.

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Figure 4-3 800 W AC power module

Functions

An 800 W AC power module provides a maximum of 800 W power for the chassis and has the following functions:

- EMC filtering
- Output overcurrent protection
- Output overvoltage protection
- Output short circuit protection
- Output undervoltage protection
- Input overvoltage protection
- Input undervoltage protection
- Overtemperature protection
- Short circuit protection
- Surge protection

Panel Description

Figure 4-4 shows the panel of an 800 W AC power module.

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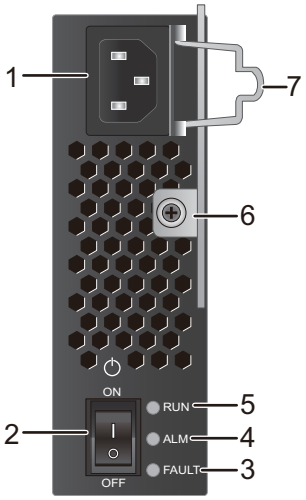
Figure 4-4 Panel of an 800 W AC power module



1. AC power socket	2. Power switch **NOTE** ● ON: The power module is supplying power. ● OFF: The power module is not supplying power.	3. FAULT indicator
4. ALM indicator	5. RUN indicator	6. Ejector lever **NOTE** Raise the ejector lever to release the power module from the slot, and lower the ejector lever to lock the power module in the slot.
7. Loose-proof pinch	-	-

Table 4-6 describes the indicators on an 800 W AC power module panel.

Table 4-6 Indicators on a power module panel

Indicator	Color	Description
FAULT	Red	Steady on: The power module has a fault that cannot be rectified.

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Indicator	Color	Description
ALM	Yellow	Steady on: A power output shutdown alarm, overtemperature alarm, output overcurrent alarm, input overvoltage alarm, or input undervoltage alarm has been generated. Blinking: Communication with the monitoring device (MCU or CMU) is interrupted.
RUN	Green	Steady on: The power input is normal.

Specifications

Table 4-7 lists the technical specifications of an 800 W AC power module.

Table 4-7 Technical specifications of an 800 W AC power module

Item		Value
Dimensions (W x D x H)		41 mm x 393 mm x 130 mm
Weight		< 2.50 kg
Input	Rated input voltage	220 V AC/110 V AC; 50/60 Hz
	Rated input voltage range	200 V AC to 240 V AC (220 V AC input)/100 V AC to 120 V AC (110 V AC input); 47 Hz to 63 Hz
	Maximum input voltage range	90 V AC to 290 V AC; 47 Hz to 63 Hz (When the input voltage is in the range of 90 V AC to 175 V AC, the power module provides up to half of the maximum output power.)
	Maximum input current	5 A
Output	Maximum output current	15 A (220 V AC input)/7.5 A (110 V AC input)
	Maximum output power	800 W (220 V AC input)/400 W (110 V AC input)

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Item	Value
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

4.1.3 2200 W AC Power Module

Version Mapping

Table 4-8 lists the switch chassis and software versions matching a 2200 W AC power module.

Table 4-8 Switch chassis and software versions matching a 2200 W AC power module

Part Number	Power Module Name	S9700 Chassis
02130977	2200 W AC power module	Supported in V200R001C00 and later versions

Appearance

A 2200 W AC power module is standard 3 U high. Figure 4-5 shows a 2200 W AC power module.

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Figure 4-5 2200 W AC power module

Functions

A 2200 W AC power module provides a maximum power of 2200 W for the chassis and has the following functions:

- EMC filtering
- Output overcurrent protection
- Output overvoltage protection
- Output short circuit protection
- Output undervoltage protection
- Input overvoltage protection
- Input undervoltage protection
- Overtemperature protection
- Short circuit protection
- Surge protection

Panel Description

Figure 4-6 shows the panel of a 2200 W AC power module.

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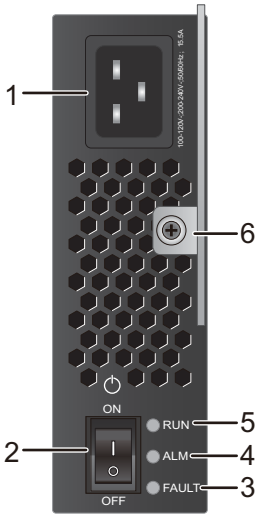
Figure 4-6 Panel of a 2200 W AC power module



1. Power socket	2. Power switch **NOTE** ● ON: The power module is supplying power. ● OFF: The power module is not supplying power.	3. FAULT indicator
4. ALM indicator	5. RUN indicator	6. Ejector lever **NOTE** Raise the ejector lever to release the power module from the slot, and lower the ejector lever to lock the power module in the slot.

Table 4-9 describes the indicators on a 2200 W AC power module panel.

Table 4-9 Indicators on a power module panel

Indicator	Color	Description
FAULT	Red	Steady on: The power module has a fault that cannot be rectified.

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Indicator	Color	Description
ALM	Yellow	Steady on: A power output shutdown alarm, overtemperature alarm, output overcurrent alarm, input overvoltage alarm, or input undervoltage alarm has been generated. Blinking: Communication with the monitoring device (MCU or CMU) is interrupted.
RUN	Green	Steady on: The power input is normal.

Specifications

Table 4-10 lists the technical specifications of a 2200 W AC power module.

Table 4-10 Technical specifications of a 2200 W AC power module

Item		Value
Dimensions (W x D x H)		41 mm x 393 mm x 130 mm
Weight		< 6.0 kg
Input	Rated input voltage	220 V AC/110 V AC; 50/60 Hz
	Rated input voltage range	200 V AC to 240 V AC (220 V AC input)/100 V AC to 120 V AC (110 V AC input); 47 Hz to 63 Hz
	Maximum input voltage range	90 V AC to 290 V AC; 47 Hz to 63 Hz (The maximum output power reduces by a half when the input voltage is in the range of 90 V AC to 175 V AC.)
	Maximum input current	15.5 A
Output	Maximum output current	42 A (220 V AC input)/21 A (110 V AC Input)
	Maximum output power	2200 W (220 V AC input)/1100 W (110 V AC input)

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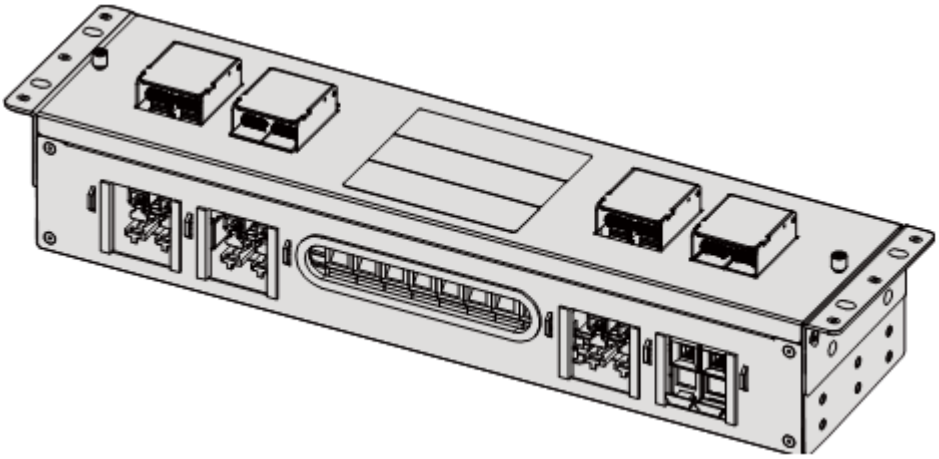
Item	Value
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

4.2 Power Distribution Box

4.2.1 2200 W DC Power Distribution Box

Figure 4-7 shows a 2200 W DC power distribution box.

Figure 4-7 2200 W DC power distribution box



A 2200 W DC power distribution box can use -48 V two-way short-circuiting bars, each of which provides JG input terminals. A -48 V two-way short-circuiting bar allows a maximum of 120 A input current and combines inputs from two circuit breakers into one. **Figure 4-8** shows a -48 V two-way short-circuiting bar.

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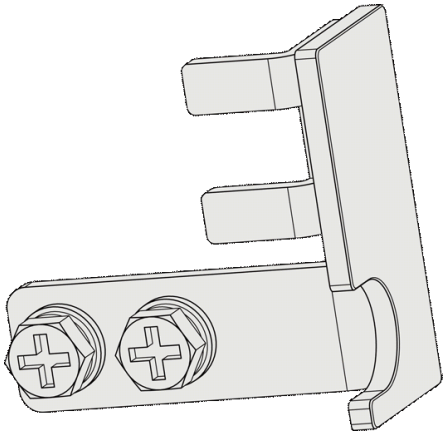
Figure 4-8 -48 V two-way short-circuiting bar



A 2200 W DC power distribution box provides short-circuit protection and overload protection.

Table 4-11 lists specifications of a 2200 W DC power distribution box.

Table 4-11 Specifications of a 2200 W DC power distribution box

Item		Description
Input	Rated input voltage	-48 V DC/-60 V DC
	Input voltage	-38.4 V DC to -72 V DC
	Input mode	Eight DC inputs by default (Short-circuiting bars can convert the eight inputs into four.)
	Maximum input current	60 A per input (120 A per input when short-circuiting bars are used)
	Input terminal	Cord end terminal, allowing power cables with a maximum of 35 mm^2 diameter (When short-circuiting bars are used, M6 OT terminals are used for -48 V input and cord end terminals are used for RTN input.)
Output	Rated output voltage	-48 V DC to -60 V DC
	Output voltage	-38.4 V DC to -72 V DC
	Number of outputs	Eight
	Current of each circuit breaker	63 A

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Item		Description
	Output protection	Overcurrent protection (Power supply needs to be restored manually once the power distribution box enters the overcurrent protection state.)
	Output terminal	Cord end terminal, allowing power cables with a maximum of 35 mm^2 diameter
Environment parameters	Operating temperature	-25°C to +55°C
	Storage temperature	-40°C to +70°C
	Relative humidity	≤ 95%
	Standard atmospheric pressure	70 kPa to 106 kPa
Dimensions (W x D x H)		442 mm x 95 mm x 2.5 U

Figure 4-9 and **Figure 4-10** show power distribution in a 2200 W DC power distribution box.

Figure 4-9 Power distribution in a 2200 W DC power distribution box (eight inputs and eight outputs)

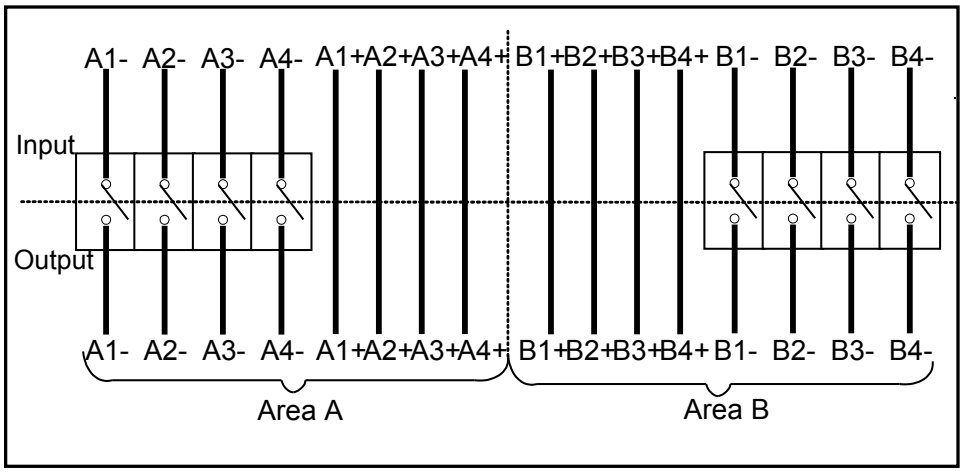

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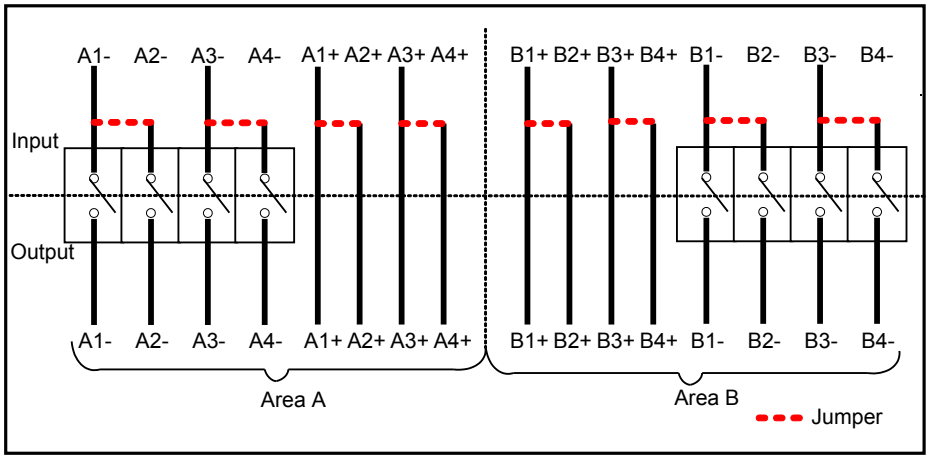
Figure 4-10 Power distribution in a 2200 W DC power distribution box (four inputs and eight outputs)



4.2.2 800 W AC Power Distribution Box

Figure 4-11 shows an 800 W AC power distribution box.

Figure 4-11 800 W AC power distribution box

An 800 W AC power distribution box can convert one power input into eight power outputs, and it provides short-circuit protection and overload protection.

Table 4-12 lists specifications of an 800 W AC power distribution box.

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Table 4-12 Specifications of an 800 W AC power distribution box

Item		Description
Input	Input voltage	Rated voltage: 100 V AC to 240 V AC Operating voltage: 90 V AC to 276 V AC
	Input terminal	Cord end terminal (applicable to 0.75-25 mm^2 power cables)
Output	Output voltage	Rated voltage: 100 V AC to 240 V AC Operating voltage: 90 V AC to 276 V AC
	Number of outputs	Eight outputs controlled by eight circuit breakers
	Current of each circuit breaker	10 A
	Output protection	Overcurrent protection (Power supply needs to be restored manually once the power distribution box enters the overcurrent protection state.)
	Output terminal	Cord end terminal (applicable to 1.0 mm^2 cables)
Environment parameters	Operating temperature	-25°C to +55°C
	Storage temperature	-40°C to +70°C
	Relative humidity	≤ 95%
	Standard atmospheric pressure	70 kPa to 106 kPa
Dimensions (W x D x H)		442 mm x 90 mm x 3 U

Figure 4-12 shows power distribution in an 800 W AC power distribution box.

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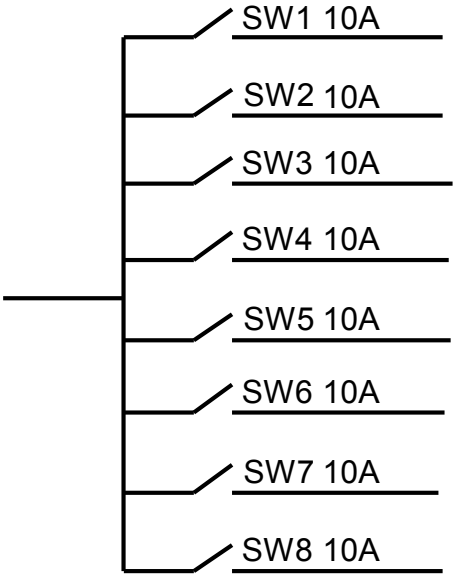
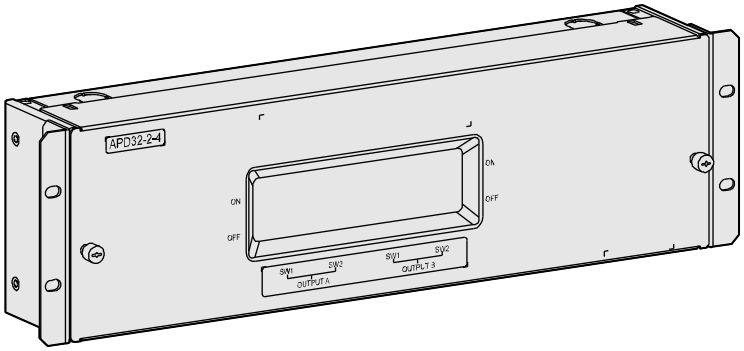
Figure 4-12 Power distribution in an 800 W AC power distribution box



4.2.3 2200 W AC Power Distribution Box

Figure 4-13 shows a 2200 W AC power distribution box.

Figure 4-13 2200 W AC power distribution box



A 2200 W AC power distribution box provides short-circuit protection and overload protection.

Table 4-13 lists specifications of a 2200 W AC power distribution box.

Table 4-13 Specifications of a 2200 W AC power distribution box

Item		Description
Input	Input voltage	Rated voltage: 100 V AC to 240 V AC Operating voltage: 90 V AC to 276 V AC

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Item		Description
	Input mode	Typical application: two AC inputs (1+1). The delivered terminal block has two AC input terminals (1+1) by default.
		Three AC inputs (2+1)
		Four AC inputs (2+2)
	Maximum input current	Two AC inputs (1+1): 32 A + 32 A (maximum)
		Three AC inputs (2+1): 16 A x 2 + 32 A (maximum)
		Four AC inputs (2+2): 16 A x 4 (maximum)
	Frequency	50/60 Hz±3 Hz
Output	Output voltage	Rated voltage: 100 V AC to 240 V AC Operating voltage: 90 V AC to 276 V AC
	Number of outputs	Four outputs, with short-circuit protection function
	Current of each output	16 A (maximum)
	Output protection	Overcurrent protection and short-circuit protection (Power supply needs to be restored manually once the power distribution box enters a protection state.)
Safety standards compliance		EN60950-1, IEC60950-1
Environmental standards compliance		RoHS, WEEE, Huawei regulation on the 13 hazardous substances
Dimensions (W x D x H)		482.6 mm x 130.5 mm x 79 mm
Color		NC purple grey
Environment parameters	Operating temperature	Long-term operating temperature: 0°C to 45°C Short-term operating temperature: -5°C to +55°C
	Storage temperature	-40°C to +70°C
	Relative humidity	Long-term humidity: 5% to 85% Short-term humidity: 5% to 95%
	Altitude	-60 m to +3000 m

Figure 4-14, **Figure 4-15**, and **Figure 4-16** show power distribution in a 2200 W AC power distribution box.

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NOTE

If a 2200 W AC power distribution box connects to one or two 2200 W AC power modules, only OUTPUT A and OUTPUT B are used. In this case, only one input is required.

Figure 4-14 Power distribution in a 2200 W AC power distribution box (two inputs)

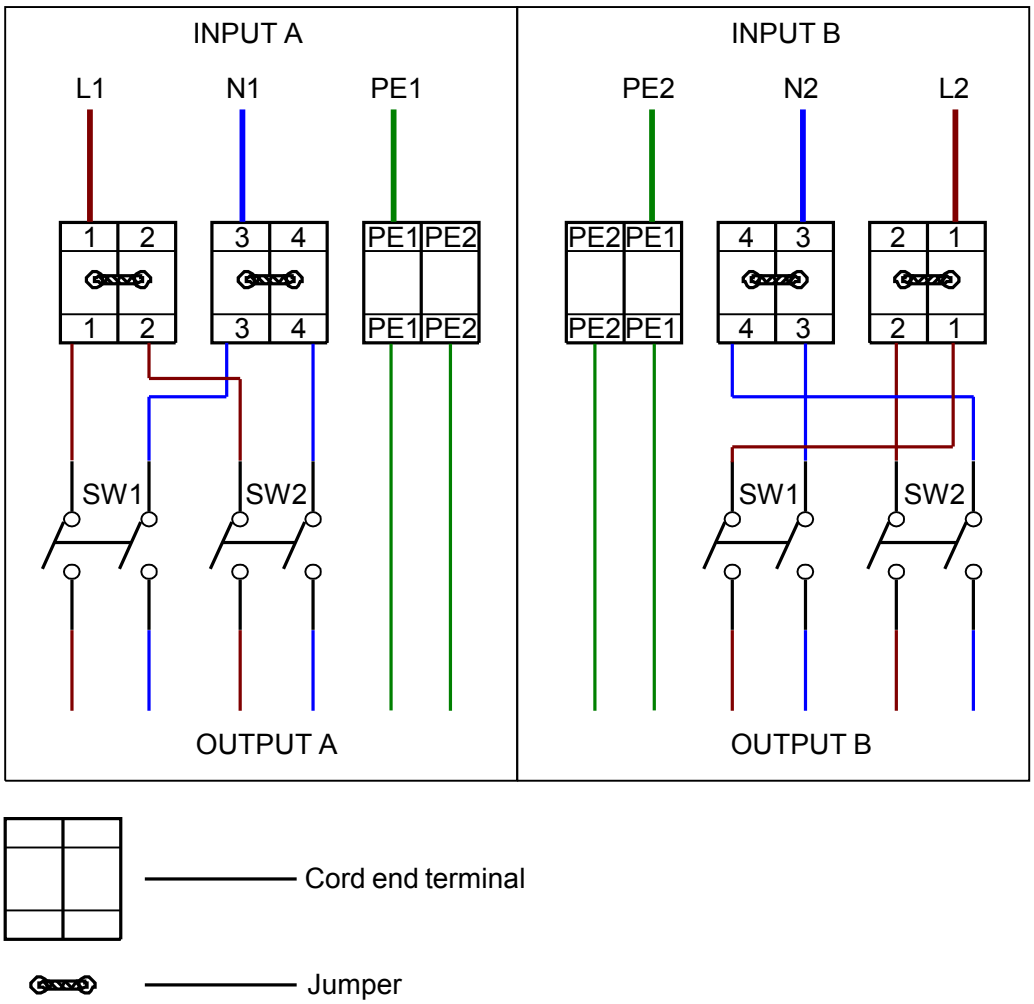

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Figure 4-15 Power distribution in a 2200 W AC power distribution box (three inputs)

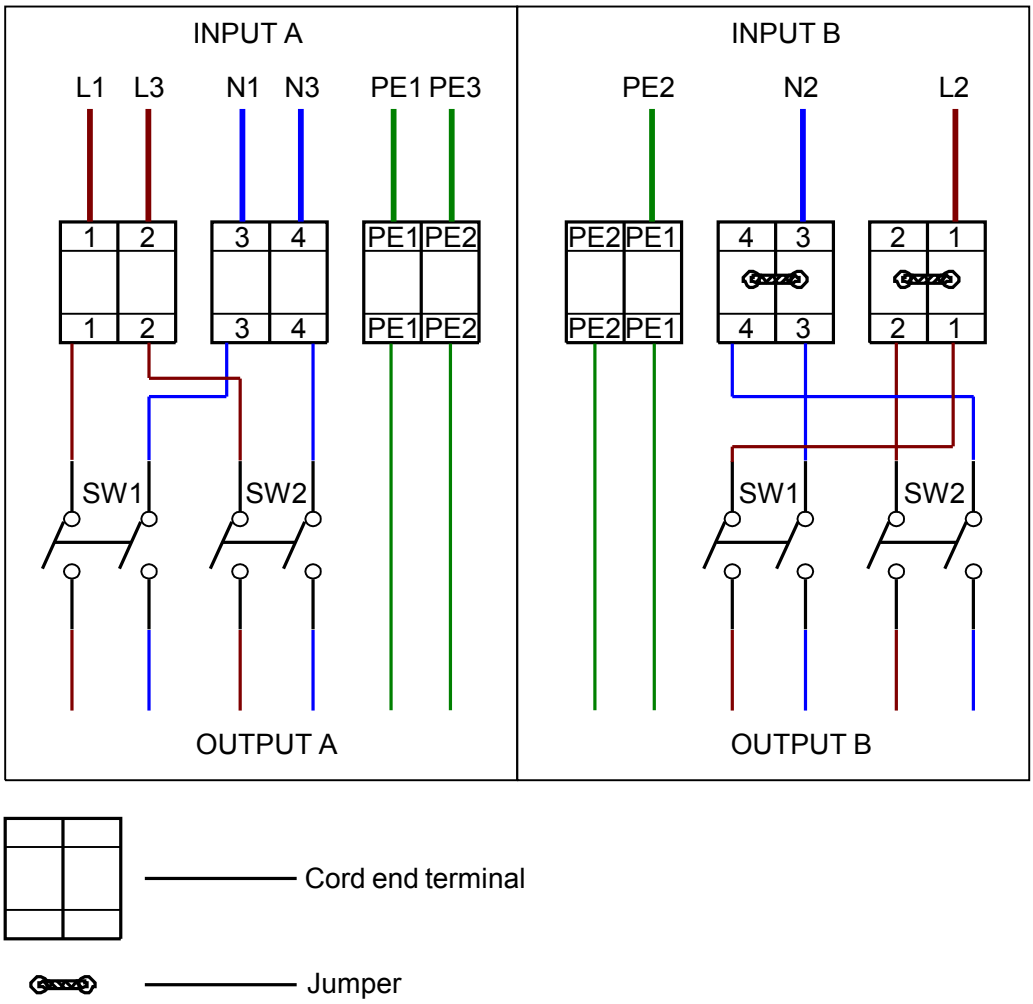

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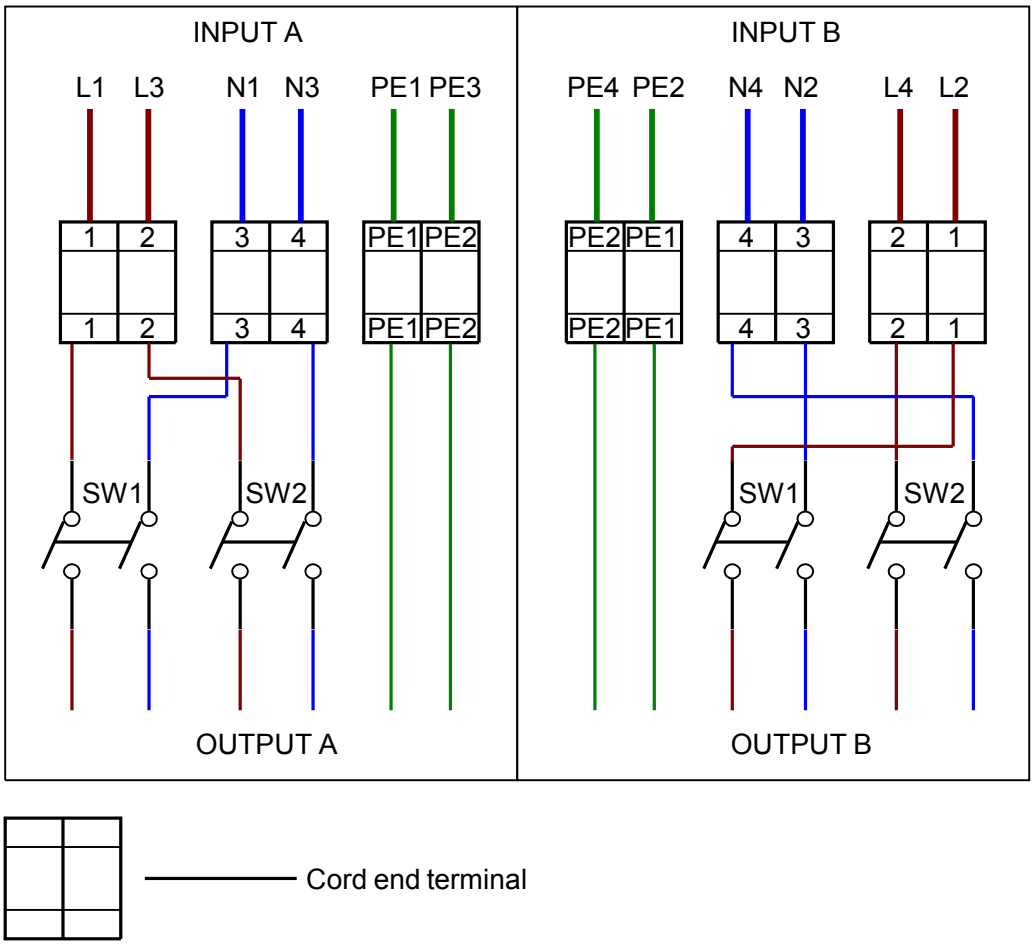
Figure 4-16 Power distribution in a 2200 W AC power distribution box (four inputs)



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5 Fan Module

NOTICE

A fan module reports an alarm when a fan in it fails. When receiving such an alarm, fix the fault immediately to ensure effective cooling for the chassis.

Version Mapping

A fan module can be installed in:

- Slot FAN1 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (rear)**.
- Slots FAN1 and FAN2 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (rear)**.
- Slots FAN1 to FAN4 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (rear)**.

Table 5-1 lists the switch chassis and software versions matching a fan module.

Table 5-1 Switch chassis and software versions matching a fan module

Name	S9700
Wide-voltage fan box	Supported in V200R001C00 and later versions

Appearance

A fan module has two fans, and a failure of a fan does not immediately affect system operations. When any fan in a fan module fails, fix the fan module as soon as possible. **Figure 5-1** shows a fan module.

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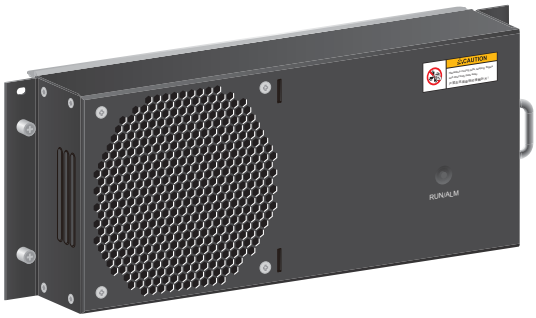
Figure 5-1 Fan module



Function

Table 5-2 describes the functions of fan modules.

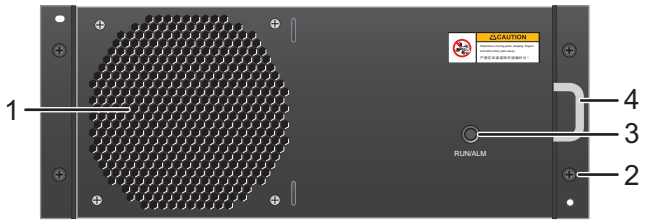
Table 5-2 Functions of fan modules

Function	Description
Hot swap	Supported Other fan modules are not affected when you install or remove a fan module.
Automatic fan speed adjustment	The S9700 supports intelligent fan speed adjustment. The system monitors the temperature of key components, such as cards and optical modules, and adjusts the fan speed based on temperature changes. This intelligent fan speed adjustment function ensures a proper operating temperature range for the system and reduces power consumption and noises. By default, the S9700 controls fan speed based on the card temperature. You can configure the S9700 to control fan speed based on the optical module temperature.

Panel Description

Figure 5-2 shows a fan module panel.

Figure 5-2 Fan module panel



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1. Air vent	2. Captive screw	3. Fan status indicator	4. Handle

Table 5-3 describes the indicators on a fan module panel.

Table 5-3 Indicators on a fan module panel

Indicator	Color	Description
RUN/ALM	Green	Slow blinking: The fan module is working properly, and the communication is normal. Fast blinking: The fan module is working properly, but communication has not been established.
	Red	Slow blinking: An alarm was generated. You must determine whether to replace the fan module, depending on the actual the situation. Steady on: The fan module has a hardware fault and needs to be replaced.

Specifications

Table 5-4 lists the technical specifications of a fan module.

Table 5-4 Technical specifications of a fan module

Item	Value
Dimensions (W x D x H)	323.9 mm x 74.8 mm x 126.6 mm
Number of fans	2
Weight	1540±20 g
Maximum power consumption	116 W
Maximum wind pressure	692 Pa
Maximum wind rate	245 CFM
Maximum noise	70 dBA
Operating voltage range	-30 V DC to -73 V DC

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Item	Value
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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6 Cards

About This Chapter

6.1 Introduction

6.2 Main Control Units and Subcards

6.3 EH1D200CMU00-Centralized Monitoring Unit

6.4 LE0D0VAMPA00-Value-Added Service Unit

6.5 EH1D2PS00P00-Open Service Platform Unit

6.6 100M Interface Card

6.7 1000M Interface Card

6.8 GE/10GE Interface Card

6.9 10GE Interface Card

6.10 40GE Interface Card

6.11 POS Interface Card

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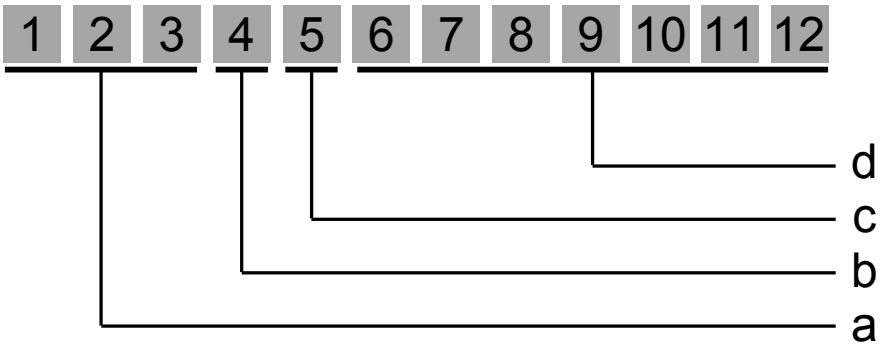
6.1 Introduction

6.1.1 Naming Conventions

A card name contains 12 characters, which are divided into four segments, as shown in **Figure 6-1**.

Figure 6-1 Card naming conventions



a (the first three characters): represents the product series. EH1 represents the S9700 series.	b (the fourth character): represents the component type. The letter D represents a card.
c (the fifth character): represents the card version, depending on the V version of the product. For example, if a card is available in V200R001C00 and later versions, c is 2.	d (the last six characters): represents the card type and attributes. See **Description of the Last Six Characters in a Card Name** for the meaning of each character.

Description of the Last Six Characters in a Card Name

MPU

Figure 6-2 and **Table 6-1** explain the last six characters in an MPU name.

Figure 6-2 Last six characters in an MPU name

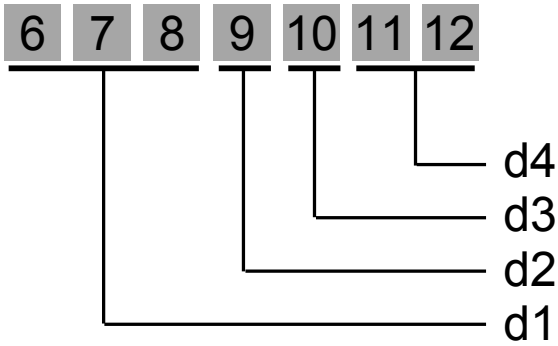


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Table 6-1 Description of the last six characters in an MPU name

ID	Description
d1	MPU type: ● MCU: Main Control Unit of the S9703 ● SRU: Switching and Routing Unit of the S9706 and S9712
d2	● For MCUs, this character is assigned in alphabetical order (A, B, C, and so on) to identify MCU types. ● For SRUs, this character represents the switching capacity.
d3	Extended attribute. The letter C means that the MPU has a clock daughter card. This character is 0 by default.
d4	A number that identifies the MPU type. The number is assigned to different types of MPUs in ascending order from 00 to 99.

Single-interface-type LPU

All the interfaces on such an LPU are the same type. For example, an EH1D2X12SSA0 card provides only 10GE BASE-SFP+ optical interfaces.

Figure 6-3 and Table 6-2 explain the last six characters in such an LPU's name.

Figure 6-3 Last six characters in the name of a single-interface-type LPU

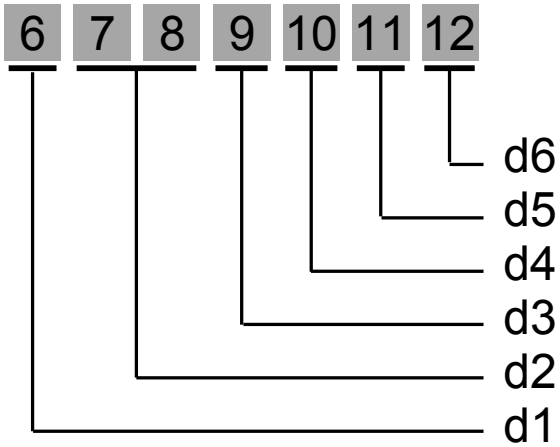

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Table 6-2 Description of the last six characters in the name of a single-interface-type LPU

ID	Description
d1	Interface speed: ● F: 100M interface ● G: GE interface ● X: 10GE interface ● L: 40GE interface ● C: 100GE interface
d2	Number of interfaces on the LPU. The value ranges from 00 to 99.
d3	Interface type: ● T: electrical interface ● S: SFP/SFP+ optical interface ● X: XFP optical interface ● Q: QSFP+ optical interface
d4	Card series: ● S: standard series. This series does not support MPLS or extension of table entries. ● F: common series. This series supports MPLS but does not support extension of table entries. ● E: enhanced series. This series supports MPLS and extension of routing, ACL, and MAC address entries. ● B: large buffer series. This series has a large buffer and supports MPLS and extension of routing, ACL, and MAC address entries.
d5	Sizes of the MAC address table and FIB: ● A: MAC entries ≤ 32K; FIB entries ≤ 32K ● C: MAC entries ≤ 128K; FIB entries ≤ 128K ● D: MAC entries ≤ 512K; FIB entries ≤ 512K
d6	A number that identifies the LPU type. The number is assigned to different LPU types in ascending order from 0 to 9.

Multi-interface-type LPU

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Such an LPU has interfaces of two or more types. For example, an EH1D2T24XEA0 card provides 10GE BASE-XFP interfaces and 10M/100M/1000M BASE-T interfaces. The interface type with the largest number of interfaces is the major interface type, and the other interfaces are minor interfaces.

Figure 6-4 and **Table 6-3** explain the last six characters in such an LPU's name.

Figure 6-4 Last six characters in the name of a multi-interface-type LPU

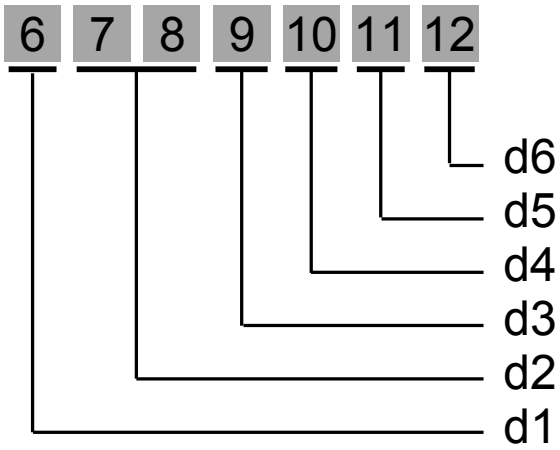

Table 6-3 Description of the last six characters in the name of a multi-interface-type LPU

ID	Description
d1	Major interface type: ● T: electrical interface ● S: SFP/SFP+ optical interface ● X: XFP optical interface ● Q: QSFP+ optical interface
d2	Number of major interfaces. The value ranges from 00 to 99.
d3	Minor interface type: ● T: electrical interface ● C: combo interface ● S: SFP/SFP+ optical interface ● X: XFP optical interface

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ID	Description
d4	Card series: ● S: standard series. This series does not support MPLS or extension of table entries. ● F: common series. This series supports MPLS but does not support extension of table entries. ● E: enhanced series. This series supports MPLS and extension of routing, ACL, and MAC address entries. ● B: large buffer series. This series has a large buffer and supports MPLS and extension of routing, ACL, and MAC address entries.
d5	Sizes of the MAC address table and FIB: ● A: MAC entries ≤ 32K; FIB entries ≤ 32K ● C: MAC entries ≤ 128K; FIB entries ≤ 128K ● D: MAC entries ≤ 512K; FIB entries ≤ 512K
d6	A number that identifies the LPU type. The number is assigned to different LPU types in ascending order from 0 to 9.

Flexible service unit

Figure 6-5 and Table 6-4 explain the last six characters in a flexible service unit name.

Figure 6-5 Last six characters in a flexible service unit name

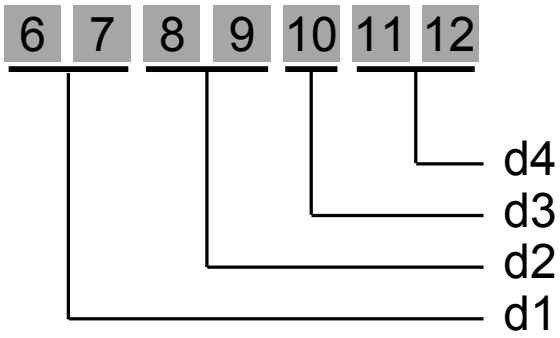

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Table 6-4 Description of the last six characters in a flexible service unit name

ID	Description
d1	Card type. VS represents a CSS card with SFP + optical interfaces.
d2	Number of interfaces on the flexible service unit. The value ranges from 00 to 99.
d3	Extended attributes. The default value is 0.
d4	A number that identifies the flexible service unit type. The number is assigned to different types of flexible service units in ascending order from 00 to 99.

Value-added service card

Figure 6-6 and Table 6-5 explain the last six characters in a value-added card name.

Figure 6-6 Last six characters in a value-added card name

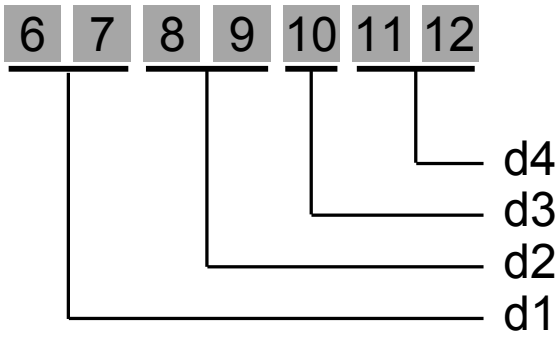

Table 6-5 Description of the last six characters in a value-added card name

ID	Description
d1	Card type: ● VA: Value-added service unit ● PS: open service platform unit
d2	Reserved for function expansion. The default value is 00.
d3	Card series. The value P represents value-added service unit and open service platform unit.

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ID	Description
d4	A number that identifies the value-added card type. The number is assigned to different types of value-added cards in ascending order from 00 to 99.

CMU, and clock daughter card

Figure 6-7 and Table 6-6 explain the last six characters in names of the CMU, and clock daughter card.

Figure 6-7 Last six characters in names of the CMU, and clock daughter card

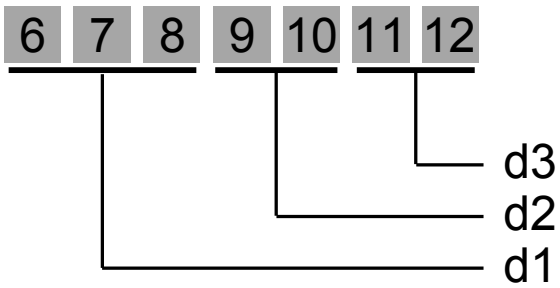

Table 6-6 Description of the last six characters in names of the CMU, and clock daughter card

ID	Description
d1	Card type: ● CMU: Centralized Monitoring Unit ● CKM: clock daughter card
d2	Extended attributes. The default value is 00.
d3	A number that identifies the card type. The number is assigned to different types of cards in ascending order from 00 to 99.

6.1.2 Card Types

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NOTE

- Interface cards consist of S series, E series, F series, B series, X1E series, and POS interface cards:
  - The S series has SA interface cards, for example, 24-port 100M/1000M BASE-X optical interface card (**SA**, SFP)-32K MAC.
  - The E series includes EA, EC, and ED interface cards, for example, 48-port 100M BASE-X optical interface card (**EA**, SFP)-32K MAC.
  - The F series includes FA and FC interface cards, for example, 48-port 1000M BASE-T electrical interface card (**FA**, RJ45)-32K MAC.
  - The B series has BC interface cards, for example, 48-port 100M/1000M BASE-X optical interface card (**BC**, SFP)-128K MAC.
  - The X1E series interface cards, for example, 48-Port 10/100/1000BASE-T Interface Card (**X1E**, RJ45).
  - The POS interface cards include a WAN interface service processing card and its subcards P4CF, P4HF, and P1UF.
- All the S9700 cards have gained the FCC certificate except the EH1D2SRUDC00, EH1D2X02XEA0, EH1D2X02XEC0, EH1D2X04XEA0, EH1D2X04XEC0, EH1D2X04XED0, EH1D2X12SSA0, and EH1D2X08SED4.
- The FCC-certified cards must be used with the FCC-certified chassis.
- When a GE optical port is configured with a 100M/1000M optical module, the port works at 1000 Mbit/s by default. When the GE optical port connects to a 100M optical port, run the **speed auto-negotiation** command to enable auto-negotiation on the GE optical port. The ports work at 100 Mbit/s after negotiation.

Table 6-7 lists the cards supported by the S9700.

Table 6-7 Cards supported by the S9700

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
Main Control Unit	EH1D2SRUDC00	S9706/S9712 Main Control Unit D (Optional Clock)	180 W (including the clock daughter card)	2.90 kg	No
	EH1D2SRUC000	S9706/S9712 Main Control Unit C (Optional Clock)	132 W (including the clock daughter card and CSS card)	3.30 kg	Yes
	EH1D2SRUDC01	S9706/S9712 Main Control Unit D (Optional Clock) - FCC	180 W (including the clock daughter card)	2.90 kg	Yes

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2MCUAC00	Main Control Unit A (Optional Clock)	26 W (including the clock daughter card)	0.92 kg	Yes
Subcard on the MPU	LE0D00CKMA00	Clock Pinch Board	6 W	0.10 kg	Yes
	EH1D2VS08000	8-port 10G Cluster Switching System Service Unit (SFP+)	30 W	0.50 kg	Yes
Value-added service card	LE0D0VAMPA00	Value-added service card	120 W	3.10 kg	Yes
OSPU	EH1D2PS00P00	Open Service Platform Unit	137.5 W	5.50 kg	Yes
CMU	EH1D200CMU00	Centralized Monitoring Unit	1 W	0.22 kg	Yes
LPU	EH1D2F48SEA0	48-port 100BASE-X interface card (EA, SFP)-32K MAC	64 W	2.54 kg	Yes
	EH1D2F48SEC0	48-port 100BASE-X interface card (EC, SFP)-128K MAC	76 W	2.66 kg	Yes
	EH1D2F48TEA0	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC	59 W	2.50 kg	Yes

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2F48TEC0	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC	70 W	2.62 kg	Yes
	EH1D2G48SEA0	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC	75 W	2.54 kg	Yes
	EH1D2G48SEC0	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC	92 W	2.66 kg	Yes
	EH1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC	110 W	2.66 kg	Yes
	EH1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC	65 W	2.60 kg	Yes
	EH1D2G48TEA0	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC	62 W	2.50 kg	Yes

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2G48TEC0	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC	68 W	2.62 kg	Yes
	EH1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC	98 W	2.62 kg	Yes
	EH1D2G48TFA0	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC	48 W	2.50 kg	Yes
	EH1D2T36SEA0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC	62 W	2.50 kg	Yes
	EH1D2X04XEA0	4-port 10GBASE-X interface card (EA, XFP)-32K MAC	64 W	2.16 kg	No

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2X04XEC0	4-port 10GBASE-X interface card (EC, XFP)-128K MAC	75 W	2.28 kg	No
	EH1D2X04XEC1	4-port 10GBASE-X interface card (EC, XFP), FCC-128K MAC	75 W	2.28 kg	Yes
	EH1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC	93 W	2.30 kg	No
	EH1D2X02XEA0	2-port 10GBASE-X interface card (EA, XFP)-32K MAC	52 W	2.14 kg	No
	EH1D2X02XEC0	2-port 10GBASE-X interface card (EC, XFP)-128K MAC	61 W	2.26 kg	No
	EH1D2X02XEC1	2-port 10GBASE-X interface card (EC, XFP), FCC-128K MAC	61 W	2.26 kg	Yes

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2S24CEA0	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (EA, SFP/RJ45)-32K MAC	70 W	2.70 kg	Yes
	EH1D2G24SEC0	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC	63 W	2.66 kg	Yes
	EH1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC	75 W	2.66 kg	Yes
	EH1D2X12SSA0	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC	85 W	2.30 kg	No
	EH1D2T24XEA0	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC	53 W	2.30 kg	Yes

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2S24XEA0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC	65 W	2.40 kg	Yes
	EH1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC	81 W	2.50 kg	Yes
	EH1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC	185 W	2.90 kg	Yes
	EH1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC	160 W	2.90 kg	Yes
	EH1D2G24TFA0	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC	32 W	2.20 kg	Yes

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP+)-128K MAC	183 W	2.90 kg	Yes
	EH1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC	150 W	2.60 kg	Yes
	EH1D2X08SED4	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC	198.1 W	2.50 kg	No
	EH1D2X08SED5	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC	198.1 W	2.50 kg	Yes
	EH1D2L02QFC0	2-port 40GBASE-X optical interface card (FC, QSFP +)-128K MAC	88 W	2.50 kg	Yes
	EH1D2L08QFC0	8-port 40GBASE-X interface card (FC, QSFP +)-128K MAC	157.2 W	2.80 kg	Yes

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2G48TX1E	48-Port 10/100/1000BASE-T Interface Card (X1E, RJ45)	120 W	2.92 kg	Yes
	EH1D2G48SX1E	48-Port 100/1000BASE-X Interface Card (X1E, SFP)	140 W	3.04 kg	Yes
	EH1D2S04SX1E	4-Port 10GBASE-X and 24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card (X1E, RJ45/SFP/SFP+)	130 W	2.88 kg	Yes
	EH1D2S08SX1E	8-Port 10GBASE-X and 8-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card (X1E, RJ45/SFP/SFP+)	130 W	2.84 kg	Yes

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	EH1D2X48SEC0	48-Port 10GBASE-X Interface Card (EC, SFP+)	300 W	3.42 kg	Yes
	ACU2	WLAN ACU2 Access Controller Unit (128 AP Control Resource Included) **NOTE** For details, see manuals of the ACU2 card.	-	-	-
	ET1D2FW00S00	NGFW Module A, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.	-	-	-
	ET1D2FW00S01	NGFW Module B, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.	-	-	-

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Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	ET1D2FW00S02	NGFW Module C, with HW General Security Platform Software **NOTE** For details, see manuals of the NGFW card.	-	-	-
	ET1D2IPS0S00	IPS Module A, with HW General Security Platform Software **NOTE** For details, see manuals of the IPS card.	-	-	-
POS interface card **NOTE** Supported only in V200R001C00, V200R002C00, and V200R003C00	EH1D2WM00000	WAN interface service processing card	● With two P1UFs: 84 W ● With two P4HFs: 91 W ● With two P4CFs: 86 W	3.80 kg (with a fire protection plate and two P1UFs)	Yes
	P4CF	4-port OC-3c/STM-1c POS-SFP flexible card (installed on the WAN interface service processing card)	14 W	0.50 kg	Yes

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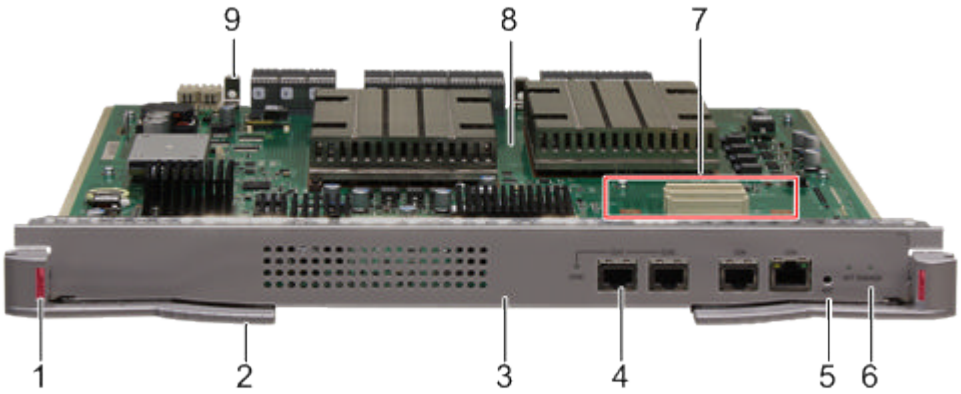
Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	P4HF	4-port OC-12c/STM-4c POS-SFP flexible card (installed on the WAN interface service processing card)	15 W	0.50 kg	Yes
	P1UF	1-port OC-48c/STM-16c POS-SFP flexible card (installed on the WAN interface service processing card)	12 W	0.50 kg	Yes

6.1.3 Card Structure and Dimensions

Card Structure

Figure 6-8 shows an example of a card.

Figure 6-8 Card



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1. Name label	2. Ejector lever	3. Front panel plate
4. Port	5. Button	6. Indicator
7. Clock daughter card slot	8. Printed circuit board (PCB)	9. Bolt

A card consists of the following components:

- PCB

  The PCB contains all the functional chips and is the core of the card. The PCB provides indicators, buttons, and ports on the front panel. PCBs of some cards provide a clock daughter card slot.

NOTE

Indicators, buttons, and ports on a card vary depending on the card model. Some cards support clock daughter cards, while others do not. For details, see the description of specific cards.

- Front panel, with captive screws, ejector levers, and a plate
  - Captive screws: fix the card into the chassis.
  - Ejector levers: allow you to insert and remove the card.
  - Plate: connects the ejector levers and PCB to the panel. Some labels are attached on the plate.

Card Dimensions

Figure 6-9 shows how the dimensions (width, height, and depth) of a card are defined.

Figure 6-9 Card width, height, and depth

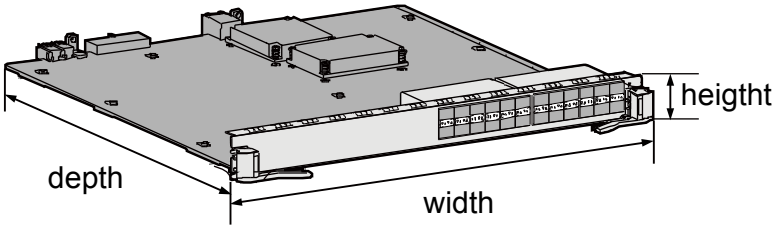

Table 6-8 provides the dimensions of S9700 cards.

Table 6-8 Card dimensions

Card Type	Dimensions (W x D x H)
MCU	194.5 mm x 426.8 mm x 19.9 mm
SRU	394.7 mm x 426.8 mm x 35.1 mm
CMU	112.9 mm x 412.7 mm x 19.8 mm
LPU	394.7 mm x 426.8 mm x 35.1 mm

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Card Type	Dimensions (W x D x H)
CKM	100.0 mm x 145.0 mm x 2.0 mm
VSU	213.0 mm x 151.8 mm x 35.1 mm

NOTE

The card dimensions are defined as follows:

- Depth: the distance between the top of an ejector lever and the end of the PCB
- Width: the longest distance between the tops of two ejector levers
- Height: the height of the front panel

6.1.4 Port Numbering

Physical Interface Numbering Rules

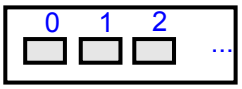
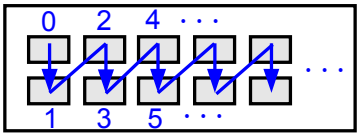
Physical interfaces are numbered in the following way:

A single switch uses slot ID/subcard ID/interface ID to identify physical interfaces.

A CSS switch uses frame ID/slot ID/subcard ID/interface ID to identify physical interfaces.

- Frame ID: indicates the ID of a switch in the CSS. The value is 1 or 2.
- Slot ID: indicates the number of the slot where a card is located.
- Subcard ID: indicates the ID of a subcard.
- Interface sequence number: indicates the sequence number of an interface on the card.

Table 6-9 Physical interface numbering rule

Row Number	Numbering Diagram	Description
1		From left to right, starting with 0.
2		There are two rows of interfaces on the interface card. These interfaces are numbered from top to bottom and left to right, starting from 0.

For example, if a card is inserted in slot 3 of a switch, the number of the fifth interfaces on the card that numbered from top to bottom and left to right is 3/0/4. If the switch is in a CSS and the CSS ID is 1, the interface is numbered 1/3/0/4.

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However, there is an exception. The switch can split a 40GE interface into four 10GE interfaces. After a 40GE interface is split into four 10GE interfaces, the four physical interfaces are numbered as follows:

If the 40GE interface is numbered 40GE x/y/0/n, the four 10GE interfaces are numbered 10GE x/y/1/(4n + z).

- x: indicates the frame ID, also called the CSS ID. This parameter is only available when the device is in a CSS.
- y: indicates the number of the slot where a card is located.
- n: indicates the sequence number of a 40GE interface, starting from 0.
- z: indicates the interface location. The value ranges from 0 to 3.

For example: on a single switch, if a 40GE interface is numbered 40GE1/0/1, the 10GE interfaces are numbered 10GE1/1/4, 10GE1/1/5, 10GE1/1/6, and 10GE1/1/7.

6.2 Main Control Units and Subcards

6.2.1 EH1D2SRUC000-S9706/S9712 Main Control Unit C (Optional Clock)

Introduction

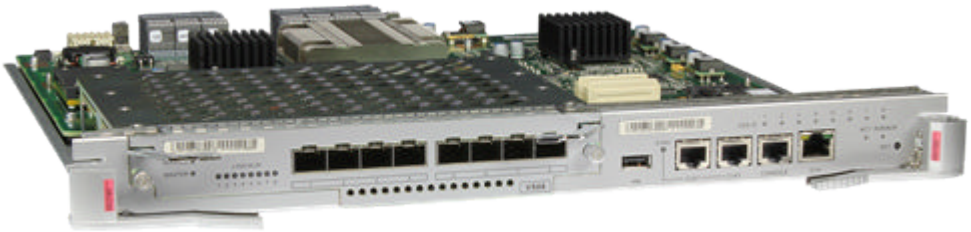
The EH1D2SRUC000 integrates control and switching functions and provides the control plane, management plane, and data plane for the system. This card provides a clock daughter card slot.

An EH1D2SRUC000 card can be installed in:

- Slots 07 and 08 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 13 and 14 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-10 shows an EH1D2SRUC000 card.

Figure 6-10 EH1D2SRUC000 card



Version Mapping

Table 6-10 lists the switch chassis and software versions matching the EH1D2SRUC000.

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Table 6-10 Switch chassis and software versions matching the EH1D2SRUC000

Card Name	S9703 Chassis	S9706 and S9712 Chassis
EH1D2SRUC000	Not supported	Supported in V200R003C00 and later versions

Functions and Features

The EH1D2SRUC000 integrates control and switching functions and provides the control plane, management plane, and data plane, which are described as follows:

- The control plane is responsible for protocol processing, service processing, route computing, forwarding control, service scheduling, traffic statistics collection, and system security.
- The management plane is responsible for system status monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrading.
- The data plane provides high-speed, non-blocking data channels to implement service switching between service modules.

The EH1D2SRUC000 consists of the following modules:

- Control module: provides the control and management plane for the EH1D2SRUC000 and the entire system, implementing protocol processing, route computing, forwarding control, system management, and system security.
- Switching module: provides the data plane and high-speed service channels for service switching.
- Local clock module: provides working clock for chips of the control module, switching module, and device management and monitoring module.
- Device management and monitoring module: provides a controller area network bus (CAN Bus) module to monitor the EH1D2SRUC000 and manage the CAN Bus modules of LPUs.
- Power supply module: provides power for the EH1D2SRUC000.

Table 6-11 describes the functions and features of the EH1D2SRUC000.

Table 6-11 Functions and features of the EH1D2SRUC000

Function and Feature	Description
Basic functions	The EH1D2SRUC000 is the system control and management unit for the S9712 and S9706. It integrates the main control unit, clock unit, switching unit, and system maintenance unit.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.

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Function and Feature	Description
CF card	512 MB by default, expandable to 1 GB or 2 GB The system configuration data, startup files, system software package, and system logs are saved to the CF card by default.
CSS	The EH1D2SRUC000 can have **EH1D2VS08000** installed to provide the CSS service.
Clock	The EH1D2SRUC000 can have **LE0D00CKMA00** installed to provide stratum-3 clock, synchronous Ethernet, and IEEE 1588v2 functions.
Redundancy backup	Main control board is mandatory for switches. Each switch must be configured with one or two main control boards. When one main control board is configured for a switch, the main control board can be installed in either main control board slot of the switch. When two main control boards are configured, the two main control boards work in hot standby mode to improve reliability of the switch. The active and standby main control boards monitor the status of each other. If the active main control board fails, the standby main control board becomes active automatically to ensure uninterrupted services.
Hot swap	The EH1D2SRUC000 is hot swappable. Before removing the active EH1D2SRUC000 card, perform an active/standby switchover.

Usage Constraints

NOTICE

- The fans on a switch work in intelligent speed adjustment mode after an active/standby switchover occurs on the switch. If the fans run at a specified speed before a switchover, run the **set fan-speed** command after the switchover to set the fan speed again.
- Different SRUs cannot be installed in the same chassis, that is, the EH1D2SRUC000 and EH1D2SRUDC00/EH1D2SRUDC01 cannot be installed in the same chassis.

Indicators and Ports

Indicator Description

Figure 6-11 shows the buttons and indicators on the EH1D2SRUC000 panel.

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Figure 6-11 Buttons and indicators on the EH1D2SRUC000 panel

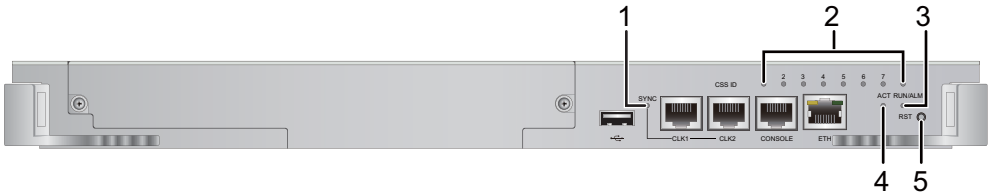

Table 6-12 describes the buttons and indicators on the EH1D2SRUC000 panel.

Table 6-12 Buttons and indicators on the EH1D2SRUC000 panel

Number	Indicator/ Button	Color	Description
1	SYNC	Green	Steady on: The switch supports time and clock synchronization, and a clock daughter card is installed on the SRU. Off: The switch supports time and clock synchronization, but no clock daughter card is installed on the SRU.
2	CSS ID	Green	There are eight CSS ID indicators on the panel, but only one is on at a time. ● CSS ID N is steady on: The CSS ID of the local chassis is N. ● All CSS ID indicators are off: The chassis is not running the CSS service.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The switch has a 1600 W DC power module installed or experiences a card failure. Manual intervention is required.

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Number	Indicator/ Button	Color	Description
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)
4	ACT: active/ standby status indicator	Green	Steady on: The card is the active SRU. Off: The card is the standby SRU. **NOTE** When two chassis set up a CSS using service ports, the indicator reads as follows: Steady on: The card is the active SRU of the CSS. Blinking: The card is the hot standby SRU of the CSS. Off: The card is the cold standby SRU of the CSS.
5	RST button	-	Press this button to reset the card. **NOTE** Resetting an SRU causes service interruption. Do not press the RST button unless necessary.

Port Description

Figure 6-12 shows the ports on the EH1D2SRUC000 panel.

Figure 6-12 Ports on the EH1D2SRUC000 panel

1	One subcard slot. **EH1D2VS08000** can be installed in this slot.
2	One USB port. In V200R005C00 and later versions, this port can be connected to a USB flash drive to load the system software to the switch during device deployment.

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3	Two BITS ports. Ports CLK1 and CLK2 on the SRU map ports BITS0 and BITS1 on the clock daughter card. BITS ports connect to BITS devices or BITS ports of other products to synchronize time and clock.
4	One console management port. This port can connect to a configuration terminal to implement onsite configuration.
5	One ETH management port (10M/100M BASE-TX auto-sensing). This port can connect to the network port of a configuration terminal or network management workstation to set up a local or remote configuration environment.

ETH management port

A switch can connect to a configuration terminal or network management workstation through this port for onsite or remote configuration. The port must use a **7.6 Ethernet Cable**. **Table 6-13** describes the attributes of an ETH management port.

Table 6-13 ETH management port attributes

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

Console management port

The console management port is connected to a configuration terminal or network management workstation for on-site configuration. The port must use a **7.4 Console Cable**. The console management port is used when a switch is powered on for the first time. **Table 6-14** describes the attributes of an console management port.

Table 6-14 Console management port attributes

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

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BITS port

Table 6-15 lists the attributes of a BITS port.

Table 6-15 BITS port attributes

Attribute	Description
Connector type	RJ45
Working mode	Clock synchronization mode: full-duplex Time synchronization mode: half-duplex
Frame format	● 1 pps + Time of Day (ToD) ● DC Level Shifter (DCLS) ● 2 MHz ● 2 Mbit/s: HDB3 code ● 1.544 Mbit/s: B8ZS code
Standards compliance	● 1 pps + ToD – NMEA-0183 – ToD standard of China Mobile ● DCLS: standard of DCLS signals ● 2 MHz: G.703 ● 2 Mbit/s: G.703 ● 1.544 Mbit/s: G.703
Cable used	Time synchronization mode: straight through network cable (RS422 signal) Clock synchronization mode: E1/T1 cable (120-ohm balanced cable) For details about cable parameters, see **Clock Cable**.

USB port

A USB flash drive can be connected to the USB port to transfer configuration files, software packages, or other files required for the switch during device deployment. Table 6-16 lists the attributes of the USB port. Table 6-17 lists the USB flash drive models that can be used on the USB port.

Table 6-16 USB port attributes

Attribute	Description
Connector type	USB A
Standards compliance	USB2.0

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Table 6-17 USB flash drive models applicable to the USB port

Capacity	Vendor	Model	Remarks
4 GB	Netac	U208	You can buy Netac USB 4 GB flash drives from Huawei or other vendors.
	SanDisk	Cruzer Blade	Huawei does not offer this USB flash drive, and you need to buy it from other vendors.
	Hewlett-Packard	v218G	Huawei does not offer this USB flash drive, and you need to buy it from other vendors.
	PNY	M1	Huawei does not offer this USB flash drive, and you need to buy it from other vendors.
8 GB	Netac	U208	Huawei does not offer this USB flash drive, and you need to buy it from other vendors.
	Hewlett-Packard	v225w	Huawei does not offer this USB flash drive, and you need to buy it from other vendors.
	STEC	SLUFD8GU2TUI	Huawei does not offer this USB flash drive, and you need to buy it from other vendors.

NOTE

Huawei is not responsible for maintenance service of USB flash drives purchased from other vendors.

JTAG port

Figure 6-13 shows the JTAG port on a card. The JTAG port is a maintenance port used to check and diagnose card faults.

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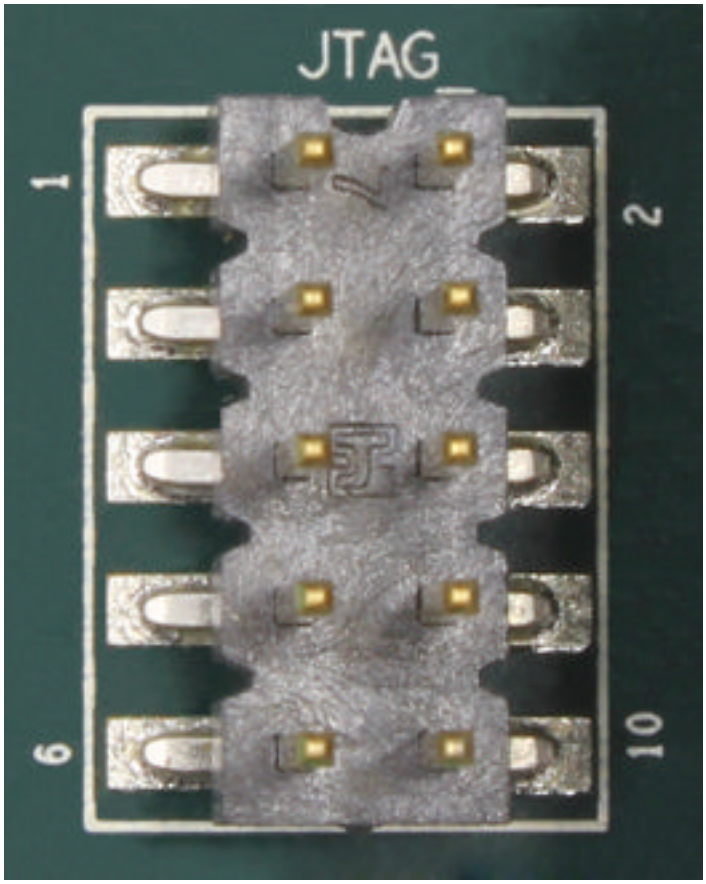
Figure 6-13 JTAG port



Specifications

Table 6-18 lists specifications of the EH1D2SRUC000.

Table 6-18 EH1D2SRUC000 specifications

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 3.30 kg ● Maximum power consumption 132 W (including power consumption of the LE0D00CKMA00 clock daughter card and EH1D2VS08000 CSS card)
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-19 provides the ordering information.

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Table 6-19 EH1D2SRUC000 ordering information

Part Number	Card Description	Card Model
03021UWG	S9706/S9712 Main Control Unit C (Optional Clock)	EH1D2SRUC000

6.2.2 EH1D2SRUDC00/EH1D2SRUDC01-Main Control Unit D (Optional Clock)

SRUs are available in the following models:

- EH1D2SRUDC00: S9706/S9712 Main Control Unit D (Optional Clock)
- EH1D2SRUDC01: S9706/S9712 Main Control Unit D (Optional Clock) - FCC

NOTE

The EH1D2SRUDC00 and EH1D2SRUDC01 are the same, except that the EH1D2SRUDC01 has gained an FCC certificate but the EH1D2SRUDC00 has not.

Introduction

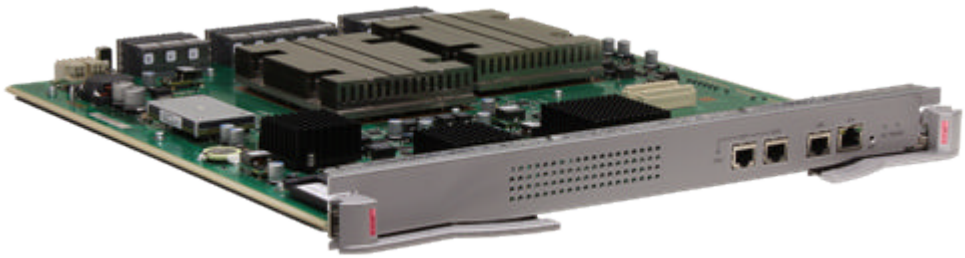
The EH1D2SRUDC00/EH1D2SRUDC01 integrates control and switching functions and provides the control plane, management plane, and data plane for the system. It supports a clock daughter card.

An EH1D2SRUDC00/EH1D2SRUDC01 card can be installed in:

- Slots 07 and 08 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 13 and 14 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-14 shows the EH1D2SRUDC00/EH1D2SRUDC01.

Figure 6-14 EH1D2SRUDC00/EH1D2SRUDC01



Version Mapping

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Table 6-20 lists the switch chassis and software versions matching the EH1D2SRUDC00/EH1D2SRUDC01.

Table 6-20 Switch chassis and software versions matching the EH1D2SRUDC00/EH1D2SRUDC01

Card Name	S9703 Chassis	S9706 and S9712 Chassis
EH1D2SRUDC00	Not supported	Supported in V200R001C00 and later versions
EH1D2SRUDC01	Not supported	Supported in V200R001C00 and later versions

Functions and Features

The EH1D2SRUDC00/EH1D2SRUDC01 integrates control and switching functions. It provides the control plane, management plane, and data plane, which are described as follows:

- The control plane is responsible for protocol processing, service processing, route computing, forwarding control, service scheduling, traffic statistics collection, and system security.
- The management plane is responsible for system status monitoring, environment monitoring, log and alarm processing, system software loading, and system upgrading.
- The data plane provides high-speed, non-blocking data channels to implement service switching between service modules. Two SRUs in a chassis can work in hot standby mode.

The EH1D2SRUDC00/EH1D2SRUDC01 consist of the following function modules:

- Control module: provides the control and management plane for the EH1D2SRUDC00/EH1D2SRUDC01 and the entire system, implementing protocol processing, route computing, forwarding control, system management, and system security.
- Switching module: provides the system data plane and provides high-speed service channels to implement service switching.
- Local clock module: provides working clock for chips of the control module, switching module, and device management and monitoring module on the EH1D2SRUDC00/EH1D2SRUDC01.
- Device management and monitoring module: provides the controller area network bus (CAN Bus) module to monitor the EH1D2SRUDC00/EH1D2SRUDC01 and manage the CAN Bus modules of LPUs.
- Power supply module: provides power for the EH1D2SRUDC00/EH1D2SRUDC01.
- Value-added service module: provides enhanced services such as operation, administration and maintenance (OAM) and bidirectional forwarding detection (BFD).

Table 6-21 describes the functions and features of theEH1D2SRUDC00/EH1D2SRUDC01.

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Table 6-21 Functions and features of the EH1D2SRUDC00/EH1D2SRUDC01

Function and Feature	Description
Basic function	The EH1D2SRUDC00/EH1D2SRUDC01 is the system control and management unit for the S9712 and S9706. They integrate the main control unit, clock unit, switching unit, and system maintenance unit.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
OAM	● 802.3ag: continuity check (CC) packet identification, detection, and transmission, with a maximum capacity of 4K@3.3ms, 8K@10ms, or 32K@100ms, 1s, or 10s. ● MPLS OAM: MPLS OAM packet identification, detection, and transmission; a maximum of 4K sessions. Each session supports detection interval of 10 ms, 50 ms, 100 ms, 500 ms, or 1s. ● OAM UNCFG_MEP: a maximum of 1K sessions. Each session supports detection interval of 3.3 ms, 10 ms, 100 ms, 1s, or 10s.
CF card	512 MB by default, expandable to 1 GB or 2 GB The system configuration data, startup files, system software package, and system logs are saved to the CF card by default.
Clock	The EH1D2SRUDC00/EH1D2SRUDC01 can have **LE0D00CKMA00** installed to provide stratum-3 clock, synchronous Ethernet, and IEEE 1588v2 functions.
Redundancy backup	Main control board is mandatory for switches. Each switch must be configured with one or two main control boards. When one main control board is configured for a switch, the main control board can be installed in either main control board slot of the switch. When two main control boards are configured, the two main control boards work in hot standby mode to improve reliability of the switch. The active and standby main control boards monitor the status of each other. If the active main control board fails, the standby main control board becomes active automatically to ensure uninterrupted services.
Hot swap	The EH1D2SRUDC00/EH1D2SRUDC01 is hot swappable. Before removing the active EH1D2SRUDC00/EH1D2SRUDC01 card, perform an active/standby switchover.

Usage Constraints

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NOTICE

- The fans on a switch work in intelligent speed adjustment mode after an active/standby switchover occurs on the switch. If the fans run at a specified speed before a switchover, run the **set fan-speed** command after the switchover to set the fan speed again.
- Different SRUs cannot be installed in the same chassis, that is, the EH1D2SRUC000 and EH1D2SRUDC00/EH1D2SRUDC01 cannot be installed in the same chassis.

Indicators and Ports

Indicator Description

Figure 6-15 shows the indicators on the EH1D2SRUDC00/EH1D2SRUDC01 panel.

Figure 6-15 Indicators on the EH1D2SRUDC00/EH1D2SRUDC01 panel

Table 6-22 describes the buttons and indicators on the EH1D2SRUDC00/EH1D2SRUDC01 panel.

Table 6-22 Buttons and indicators on the EH1D2SRUDC00/EH1D2SRUDC01 panel

Number	Indicator/ Button	Color	Description
1	SYNC	Green	Steady on: The switch supports time and clock synchronization, and a clock daughter card is installed on the SRU. Off: The switch supports time and clock synchronization but no clock daughter card is installed on the SRU.
2	RST button	-	Press this button to reset the card. **NOTE** Resetting a card causes service interruption. Do not press the RST button unless necessary.

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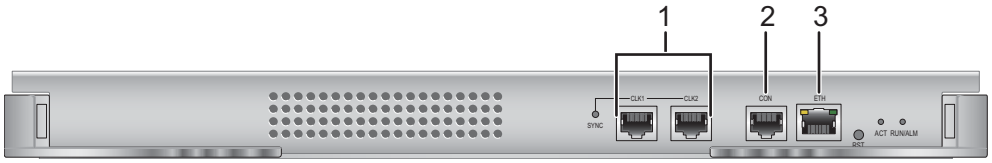
Number	Indicator/ Button	Color	Description
3	ACT: active/ standby status indicator	Green	Steady on: The card is in active state. Off: The card is in standby state. **NOTE** When two chassis set up a CSS using service ports, the indicator reads as follows: Steady on: The card is the active SRU of the CSS. Blinking: The card is the hot standby SRU of the CSS. Off: The card is the cold standby SRU of the CSS.
4	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The switch has a 1600 W DC power module installed or experiences a card failure. Manual intervention is required.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-16 shows the ports on the EH1D2SRUDC00/EH1D2SRUDC01 panel.

Figure 6-16 Ports on the EH1D2SRUDC00/EH1D2SRUDC01 panel



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1	Two BITS ports. The CLK1 and CLK2 ports on the SRU map the BITS0 and BITS1 ports on the clock daughter card. BITS ports connect to BITS devices or connected to the BITS ports of other products to synchronize the time and clock.
2	One Console management port. The console port can connect to a configuration terminal to implement on-site configuration of the S9700.
3	One ETH management port (10M/100M BASE-TX auto-sensing). The ETH port can connect to the network port of a configuration terminal or network management workstation to set up a local or remote configuration environment.

ETH management port

A switch can connect to a configuration terminal or network management workstation through this port for onsite or remote configuration. The port must use a **7.6 Ethernet Cable**. **Table 6-23** describes the attributes of an ETH management port.

Table 6-23 ETH management port attributes

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

Console management port

The console management port is connected to a configuration terminal or network management workstation for on-site configuration. The port must use a **7.4 Console Cable**. The console management port is used when a switch is powered on for the first time. **Table 6-24** describes the attributes of an console management port.

Table 6-24 Console management port attributes

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

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

BITS port

Table 6-25 lists the attributes of a BITS port.

Table 6-25 BITS port attributes

Attribute	Description
Connector type	RJ45
Working mode	Clock synchronization mode: full-duplex Time synchronization mode: half-duplex
Frame format	● 1 pps + Time of Day (ToD) ● DC Level Shifter (DCLS) ● 2 MHz ● 2 Mbit/s: HDB3 code ● 1.544 Mbit/s: B8ZS code
Standards compliance	● 1 pps + ToD – NMEA-0183 – ToD standard of China Mobile ● DCLS: standard of DCLS signals ● 2 MHz: G.703 standard ● 2 Mbit/s: G.703 standard ● 1.544 Mbit/s: G.703 standard
Cable used	Time synchronization mode: straight through network cable (RS422 signal) Clock synchronization mode: E1/T1 cable (120-ohm balanced cable) For details about cable parameters, see **Clock Cable**.

JTAG port

Figure 6-17 shows the JTAG port on a card. The JTAG port is a maintenance port used to check and diagnose card faults.

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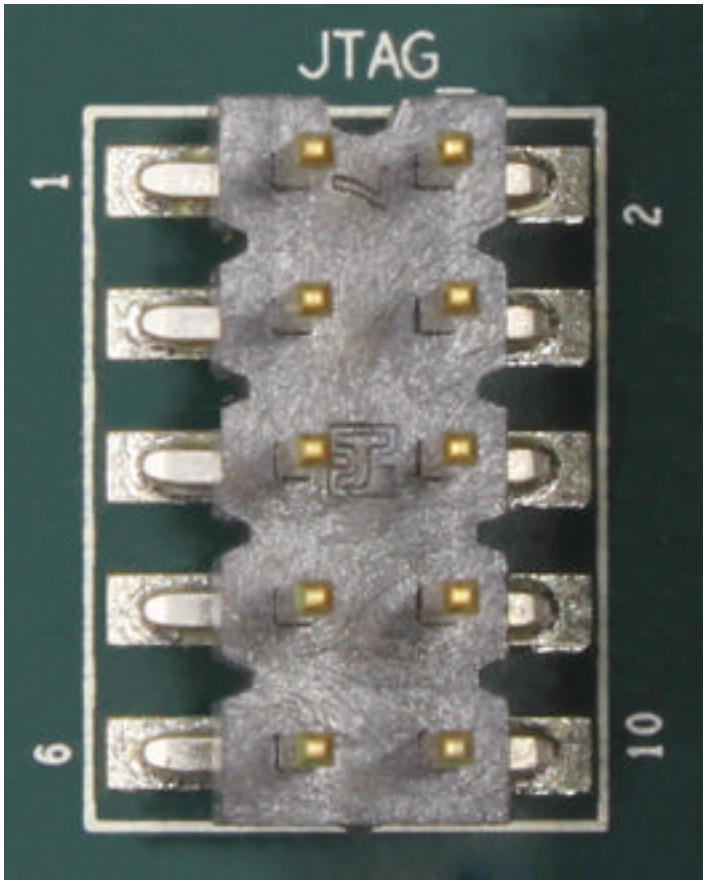
Figure 6-17 JTAG port



Specifications

Table 6-26 lists specifications of the EH1D2SRUDC00/LH2D2SRUDC00/EH1D2SRUDC01.

Table 6-26 Specifications of the EH1D2SRUDC00/EH1D2SRUDC01

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.90 kg ● Maximum power consumption: 180 W (including LE0D00CKMA00)
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-27 provides the ordering information.

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Table 6-27 SRU ordering information

Part Number	Card Description	Card Model
03030NXR	S9706/S9712 Main Control Unit D (Optional Clock)	EH1D2SRUDC00
03030PHA	S9706/S9712 Main Control Unit D (Optional Clock) - FCC	EH1D2SRUDC01

6.2.3 EH1D2MCUAC00-Main Control Unit A (Optional Clock)

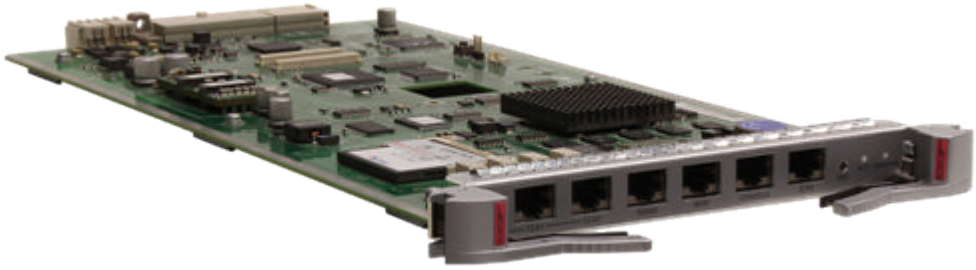
Introduction

The EH1D2MCUAC00 is the core of system control, management, maintenance, and also provides the clock source for the system. It provides functions of the control plane and system maintenance plane.

The EH1D2MCUAC00 can be installed in slots 04 and 05 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.

Figure 6-18 shows the EH1D2MCUAC00.

Figure 6-18 EH1D2MCUAC00



Version Mapping

Table 6-28 lists the switch chassis and software versions matching the EH1D2MCUAC00.

Table 6-28 Switch chassis and software versions matching the EH1D2MCUAC00

Card Name	S9703 Chassis	S9706 and S9712 Chassis
EH1D2MCUAC00	Supported in V200R001C00 and later versions	Not supported

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Functions and Features

The EH1D2MCUAC00 is the main control unit of the S9703. It integrates the control unit (Optional Clock) unit, and system maintenance unit, and provides the following functions:

- Provides channels for out-of-band communication between cards.
- Provides high-precision stratum-3 clock and synchronous Ethernet clock. These clock features ensure clock synchronization between ports and LPUs.
- Monitors system operation, The EH1D2MCUAC00 periodically collects operation data of different units. According to running status of the units, the EH1D2MCUAC00 generates control information to check card presence, control fabric running status, perform port switching, reset the forwarding engine, and increase the fan speed.
- Functions as the proxy of the network management software: The EH1D2MCUAC00 manages and maintains the switch through management ports (console port and Ethernet port).
- Stores configuration data, startup files, accounting information, upgrade software, and system logs. The EH1D2MCUAC00 provides a CF card to store data files as a mass storage device.

Table 6-29 describes the functions and features of the EH1D2MCUAC00.

Table 6-29 Functions and features of the EH1D2MCUAC00

Function and Feature	Description
Basic function	Integrates the main control unit, clock unit, and system maintenance unit.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
OAM	● 802.1ag: The CCM transmission interval can be 100 ms, 1s, 10s, 1 min, and 10 min. The default interval is 1s. The maximum capacity is 32K@100ms or 500@1s. ● Alarms on a maximum of 32 unexpected-MEPs ● BFD: The BFD detection interval ranges from 100 ms to 1000 ms. The maximum capacity is 32@100ms or 450@1s. ● MPLS OAM: The interval for sending Fast Failure Detection (FFD) packets is 500 ms, and the interval for sending Connectivity Verification (CV) packets is 1s. A maximum of 512 sessions are supported.
Routing	A maximum of 300K routes
CF card	512 MB The system configuration data, startup files, system software package, and system logs are saved to the CF card by default.

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Function and Feature	Description
Redundancy backup	Main control board is mandatory for switches. Each switch must be configured with one or two main control boards. When one main control board is configured for a switch, the main control board can be installed in either main control board slot of the switch. When two main control boards are configured, the two main control boards work in hot standby mode to improve reliability of the switch. The active and standby main control boards monitor the status of each other. If the active main control board fails, the standby main control board becomes active automatically to ensure uninterrupted services.
Clock	The can have **LE0D00CKMA00** installed to provide synchronous Ethernet, and stratum-3 clock.

Usage Constraints

NOTICE

- The fans on a switch work in intelligent speed adjustment mode after an active/standby switchover occurs on the switch. If the fans run at a specified speed before a switchover, run the **set fan-speed** command after the switchover to set the fan speed again.

Indicators and Ports

Indicator Description

Figure 6-19 shows the indicators on the EH1D2MCUAC00 panel.

Figure 6-19 Indicators on the EH1D2MCUAC00 panel

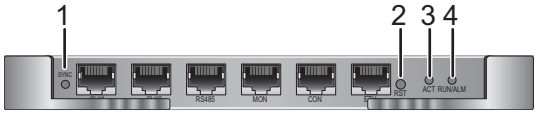

Table 6-30 describes the buttons and indicators on the EH1D2MCUAC00 panel.

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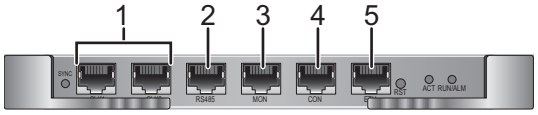
Table 6-30 Buttons and indicators on the EH1D2MCUAC00 panel

Number	Indicator/ Button	Color	Description
1	SYNC	Green	Steady on: The switch supports time and clock synchronization, and a clock daughter card is installed on the MCU. Off: The switch supports time and clock synchronization, but no clock daughter card is installed on the MCU.
2	RST button	-	Press this button to reset the card.
3	ACT: active/ standby status indicator	Green	Steady on: The card is the active MCU. Off: The card is the standby MCU.
4	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	● S7700: Steady on: The card has failed, and the fault requires manual intervention. ● S9700: Steady on: The switch has a 1600 W DC power module installed or experiences a card failure. Manual intervention is required.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-20 shows the ports on the EH1D2MCUAC00 panel.

Figure 6-20 Ports on the EH1D2MCUAC00 panel



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1	Two BITS ports. The CLK1 and CLK2 ports on the MCU map the BITS0 and BITS1 ports on the clock daughter card. BITS ports connect to BITS devices or BITS ports of other products to synchronize time and clock.
2	One RS485 port (reserved).
3	One MON port (reserved).
4	One console management port. The console port can connect to a configuration terminal to implement on-site configuration of the S9700.
5	One ETH management port (10M/100M BASE-TX auto-sensing). The ETH port can connect to the network port of a configuration terminal or network management workstation to set up a local or remote configuration environment.

ETH management port

A switch can connect to a configuration terminal or network management workstation through this port for onsite or remote configuration. The port must use a **7.6 Ethernet Cable**. **Table 6-31** describes the attributes of an ETH management port.

Table 6-31 ETH management port attributes

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

Console management port

The console management port is connected to a configuration terminal or network management workstation for on-site configuration. The port must use a **7.4 Console Cable**. The console management port is used when a switch is powered on for the first time. **Table 6-32** describes the attributes of an console management port.

Table 6-32 Console management port attributes

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

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Attribute	Description
Standards compliance	RS232
Baud rate	9600 bit/s to 115200 bit/s Default value: 9600 bit/s

BITS port

Table 6-33 lists the attributes of a BITS port.

Table 6-33 BITS port attributes

Attribute	Description
Connector type	RJ45
Working mode	Clock synchronization mode: full-duplex Time synchronization mode: half-duplex
Frame format	● 1 pps + Time of Day (ToD) ● DC Level Shifter (DCLS) ● 2 MHz ● 2 Mbit/s: HDB3 code ● 1.544 Mbit/s: B8ZS code
Standards compliance	● 1 pps + ToD – NMEA-0183 – ToD standard of China Mobile ● DCLS: standard of DCLS signals ● 2 MHz: G.703 standard ● 2 Mbit/s: G.703 standard ● 1.544 Mbit/s: G.703 standard
Cable used	Time synchronization mode: straight through network cable (RS422 signal). Clock synchronization mode: E1/T1 cable (120-ohm balanced cable) For details about cable parameters, see **Clock Cable**.

JTAG port

Figure 6-21 shows the JTAG port on a card. The JTAG port is a maintenance port used to check and diagnose card faults.

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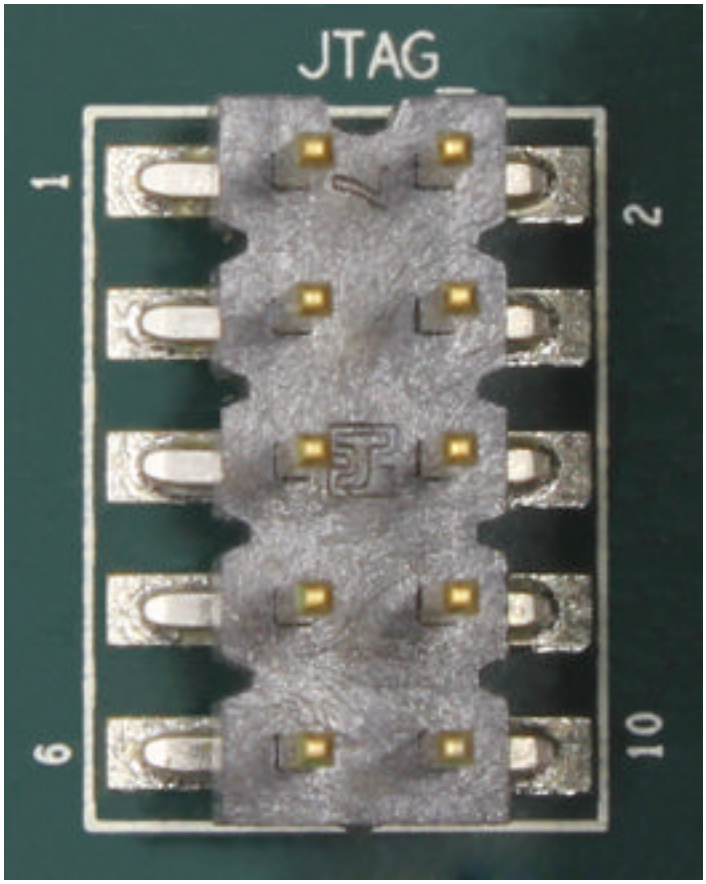
Figure 6-21 JTAG port



Specifications

Table 6-34 lists specifications of the EH1D2MCUAC00.

Table 6-34 Specifications of the EH1D2MCUAC00

Item	Description
Physical specifications	● Dimensions (W x D x H): 194.5 mm x 426.8 mm x 35.1 mm ● Weight: 0.90 kg ● Maximum power consumption: 26 W (including LE0D00CKMA00)
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-35 provides the ordering information.

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Table 6-35 MCUA ordering information

Part Number	Card Description	Card Model
03030NWA	S9303 Main Control Unit A (Optional Clock)	EH1D2MCUAC00

6.2.4 LE0D00CKMA00(Optional Clock) Pinch Board,

Introduction

The LE0D00CKMA00 is a daughter card installed on an SRU or MCU of the S9700 to provide clock and time synchronization. This card has two Building Integrated Timing Supply (BITS) ports.

The LE0D00CKMA00 can be used on the EH1D2SRUDC00/EH1D2SRUDC01 and EH1D2SRUC000 of the S9706 and S9712 and the EH1D2MCUAC00 of the S9703.

Figure 6-22 shows the LE0D00CKMA00.

Figure 6-22 LE0D00CKMA00

Version Mapping

Table 6-36 lists the switch chassis and software versions matching the CKM daughter card.

Table 6-36 Switch chassis and software versions matching the CKM daughter card

Card Name	S9700 Chassis
LE0D00CKMA00	Supported in V200R001C00 and later versions

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Functions and Features

The LE0D00CKMA00 consists of the following functional units:

- Clock synchronization unit (synchronous Ethernet clock)
- Time synchronization unit

The LE0D00CKMA00 provides the following functions:

- Provides the 19.44 MHz system clock and external clock signals. The output clock signal complies with the ITU-T G.813 standard.

Usage Constraints

NOTICE

You must install clock daughter cards on both the active and standby MPUs.

Components and Ports

Panel Description

Figure 6-23 shows the components on the LE0D00CKMA00.

Figure 6-23 Components on the LE0D00CKMA00

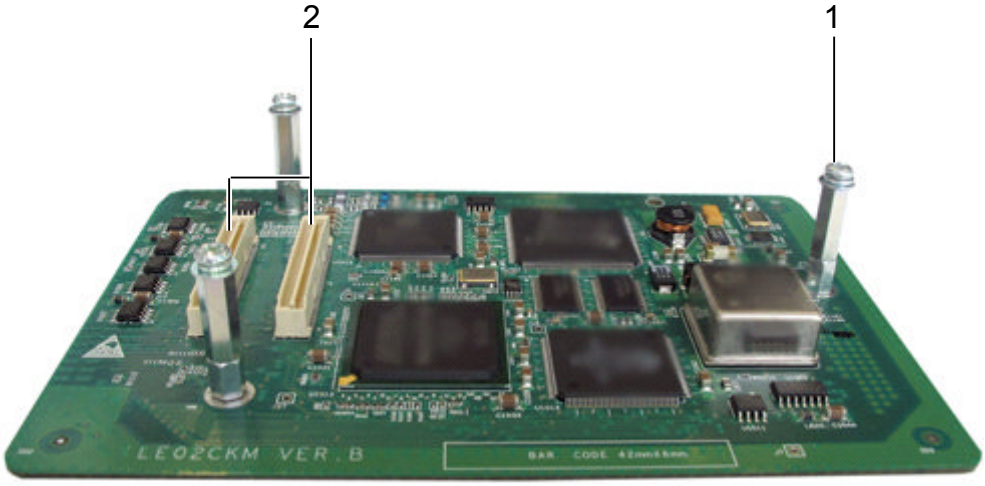

Table 6-37 describes the components on the LE0D00CKMA00 panel.

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Table 6-37 Components on the LE0D00CKMA00

Number	Component	Description
1	Stud	The studs fix the clock daughter card on the MPU.
2	Double-edge connector	The clock daughter card uses these connectors to exchange signals with the MPU.

Port Description

The LE0D00CKMA00 has two BITS ports, which are presented by CLK1 and CLK2 on the MPU, as shown in **Figure 6-24**.

Figure 6-24 BITS ports of the LE0D00CKMA00 on the MPU panel

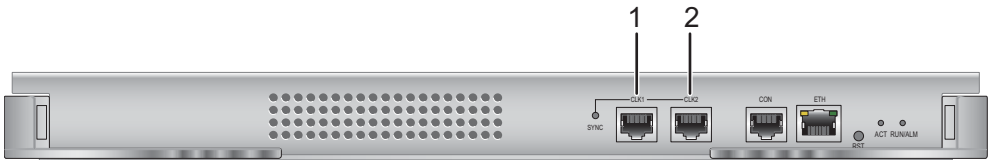

Table 6-38 Ports on the LE0D00CKMA00

Number	Port on the MPU Panel	Port on the LE0D00CKMA00	Description
1	CLK1	BITS0	A BITS port can be configured as an input or output port. ● Input port: receives 2.048 MHz clock signals, 2.048 Mbit/s clock signals, 1 pulse per second (pps) clock signals, or DC level shift (DCLS) code streams from the upstream device and generates 19.44 MHz clock signals for the system. The BITS port also obtains time information and provides time information for LPUs. ● Output port: sends 2.048 MHz clock signals, 2.048 Mbit/s clock signals, 1 pps clock signals, or DCLS code streams to the downstream device.
2	CLK2	BITS1	

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BITS port

Table 6-39 lists the attributes of a BITS port.

Table 6-39 BITS port attributes

Attribute	Description
Connector type	RJ45
Working mode	Transmission rate ● Clock synchronization: 2 MHz, 2 Mbps, 1.544 Mbps ● Time synchronization: 9600 bit/s (full-duplex mode supported)
Standards compliance	Clock synchronization: E1 and T1 Time synchronization: DCLS and Time of Day (ToD)

Specifications

Table 6-40 lists specifications of the LE0D00CKMA00.

Table 6-40 Specifications of the LE0D00CKMA00

Item	Description
Physical specifications	● Dimensions (W x D x H): 100.0 mm x 145.0 mm x 2.0 mm ● Weight: 0.10 kg ● Maximum power consumption: 6 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-41 lists CKM ordering information.

Table 6-41 CKM ordering information

Part Number	Card Description	Card Model
03020PPT	Clock Pinch Board	LE0D00CKMA00

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6.2.5 EH1D2VS08000-8-Port 10G Cluster Switching System Service Unit (SFP+)

Introduction

The EH1D2VS08000 provides eight 10G optical ports for data transmission and line-speed switching, and provides the cluster switching system (CSS) function.

The EH1D2VS08000 can be installed in the subcard slot of an EH1D2SRUC000, as shown in **Subcard slot on EH1D2SRUC000**.

Figure 6-25 shows the EH1D2VS08000.

Figure 6-25 EH1D2VS08000

Version Mapping

Table 6-42 lists the switch chassis and software versions matching the EH1D2VS08000.

Table 6-42 Switch chassis and software versions matching the EH1D2VS08000

Card Name	S9703 Chassis	S9706 and S9712 Chassis
EH1D2VS08000	Not supported	Supported in V200R003C00 and later versions

Functions and Features

The EH1D2VS08000 provides eight 10G optical ports for data transmission and line-speed switching.

Switches connected through optical ports on the EH1D2VS08000 cards form a switching domain and are considered as one device. You can log in to the master switch to manage all the switches in the CSS.

Usage Constraints

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NOTICE

To run the CSS service on a chassis, both SRUs in the chassis must have an EH1D2VS08000 card installed.

If ports on an EH1D2VS08000 card use **OSX040N01**, **LE2MXSC80FF0** or **SFP-10G-ZR** optical modules, ensure that the operating temperature of the card is below 45°C.

The EH1D2VS08000 is not hot swappable in the S9700.

Indicators and Ports

Indicator Description

Figure 6-26 shows the indicators on the EH1D2VS08000 panel.

Figure 6-26 Indicators on the EH1D2VS08000 panel

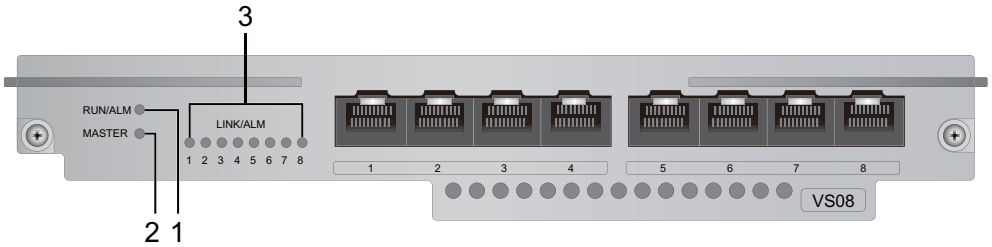

Table 6-43 describes the indicators on the EH1D2VS08000 panel.

Table 6-43 Indicators on the EH1D2VS08000 panel

Number	Indicator	Color	Description
1	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.

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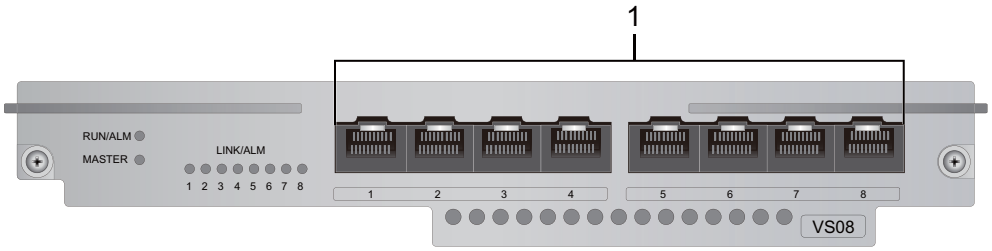
Number	Indicator	Color	Description
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)
2	MASTER: master/slave status indicator	Green	Steady on: The SRU with the EH1D2VS08000 card installed is the master SRU of the CSS. Off: The SRU with the EH1D2VS08000 card installed is not the master SRU of the CSS.
3	LINK/ALM	Green	Steady on: The link status of the CSS port is Up.
		Red	Steady on: The cable connection on the CSS port is incorrect.
		-	Off: The link status of the CSS port is Down.

Port Description

Figure 6-27 shows the ports on the EH1D2VS08000 panel.

Figure 6-27 Ports on the EH1D2VS08000 panel



1	Eight 10G BASE-SFP+ optical ports

10G BASE-SFP+ optical port

Table 6-44 lists the attributes of a 10G BASE-SFP+ optical port.

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Table 6-44 10G BASE-SFP+ optical port attributes

Attribute	Description
Connector type	SFP+
Optical port attribute	● When a 1 m, 3 m, or 10 m (active) **SFP+ - SFP+ high-speed cable** is connected to the optical port, the port attributes are determined by the **SFP+ - SFP+ high-speed cable**. ● When an active optical cable is connected to the optical port, the port attributes are determined by the **active optical cable**. ● When an optical module is installed on the optical port, the port attributes are determined by the optical module attributes. For details, see **Attributes of 10GE optical modules (1)**, **Attributes of 10GE optical modules (2)**, **Attributes of 10GE optical modules (3)**, **Attributes of 10GE optical modules (4)**, or **Attributes of 10GE bidirectional optical modules**.

Cable Connections

Ports on each EH1D2VS08000 card are divided into two groups: group 1 with ports 1, 2, 3, and 4, and group 2 with ports 5, 6, 7, and 8. When chassis 1 and chassis 2 needs to set up a cluster, use either of the following methods to connect their CSS cards:

NOTICE

Two groups with the same group ID in different chassis must be connected by at least one cluster cable. The ports in the two groups can be connected in any sequence. For example, any port in group 1 in chassis 1 can be connected to any port in group 1 in chassis 2.

- Method 1: Connect group 1 of card 1 to group 1 of card 3, group 2 of card 1 to group 2 of card 4, group 1 of card 2 to group 1 of card 4, and group 2 of card 2 to group 2 of card 3, as shown in **Figure 6-28**.

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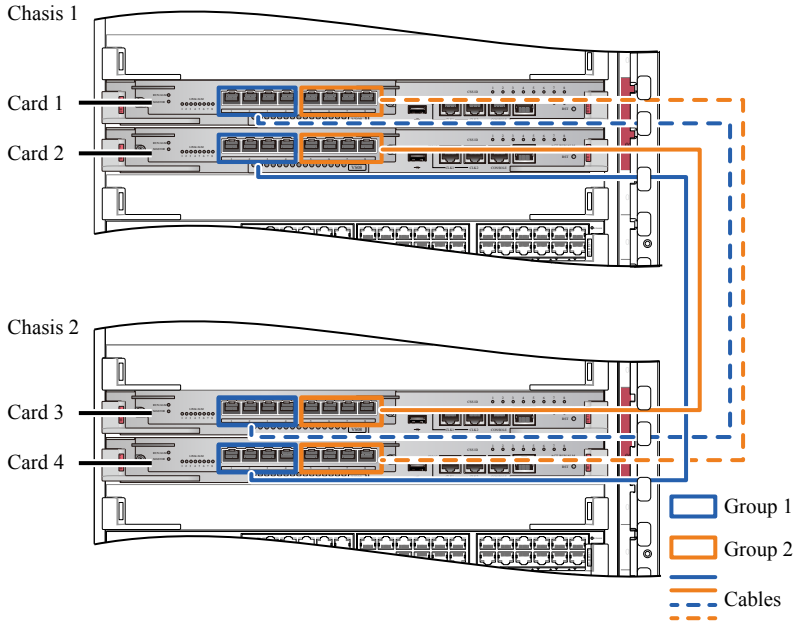
Figure 6-28 Cable connections on EH1D2VS08000 cards (method 1, only applicable to S9700 switches)



NOTE

Cluster cables are represented by solid lines and dashed lines in different colors to help you see the cable connections clearly. The shapes and colors of the lines do not represent specific cable types.

- Method 2: Connect group 1 of card 1 to group 1 of card 4, group 2 of card 1 to group 2 of card 3, group 1 of card 2 to group 1 of card 3, and group 2 of card 2 to group 2 of card 4, as shown in **Figure 6-29**.

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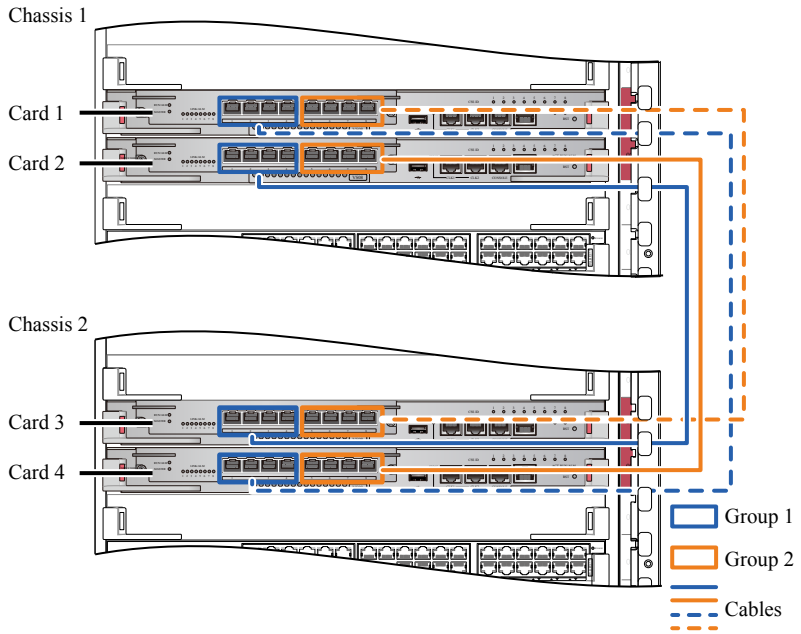
Figure 6-29 Cable connections on EH1D2VS08000 cards (method 2, only applicable to S9700 switches)



Specifications

Table 6-45 lists specifications of the EH1D2VS08000.

Table 6-45 EH1D2VS08000 specifications

Item	Description
Physical specifications	● Dimensions (W x D x H): 213.0 mm x 151.8 mm x 35.1 mm ● Weight: 0.50 kg ● Maximum power consumption: 30 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-46 provides the ordering information.

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Table 6-46 EH1D2VS08000 ordering information

Part Number	Card Description	Card Model
03021UWH	8-Port 10G Cluster Switching System Service Unit (SFP+)	EH1D2VS08000

6.3 EH1D200CMU00-Centralized Monitoring Unit

6.3.1 Introduction

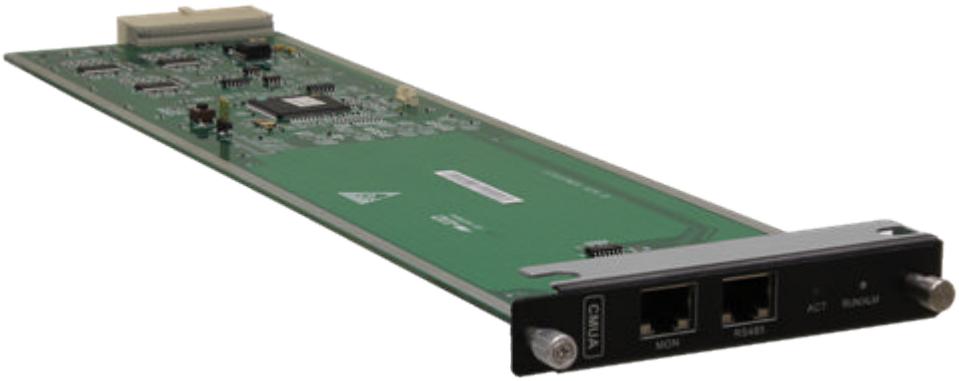
The EH1D200CMU00 manages system power modules and fan modules. Two EH1D200CMU00 cards can work in redundancy mode to improve device reliability.

The EH1D200CMU00 can be installed in:

- Slots CMU1 and CMU2 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots CMU1 and CMU2 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-30 shows the EH1D200CMU00.

Figure 6-30 EH1D200CMU00



6.3.2 Version Mapping

Table 6-47 lists the switch chassis and software versions matching the EH1D200CMU00.

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Table 6-47 Switch chassis and software versions matching the EH1D200CMU00

Card Name	S9703 Chassis	S9706 and S9712 Chassis
EH1D200CMU00	Not supported	Supported in V200R001C00 and later versions

6.3.3 Functions and Features

The EH1D200CMU00 consists of the following modules:

- Device management module: sends interface control signals for device management.
- Backplane interface module: provides management channels for power modules, fan modules, and communication channels between the active and standby EH1D200CMU00 cards.

The EH1D200CMU00 manages power modules and fan modules in a chassis. Two EH1D200CMU00 cards can be installed in a chassis to work in active/standby mode.

Fan Module Management

The EH1D200CMU00 provides the following fan module management functions:

- Fan module presence detection
- Fan module registration management
- Fan speed monitoring
- Fan speed control
- Management and report of fan module alarms
- Query of fan module electronic labels

The EH1D200CMU00 supports real-time fan module presence detection. Fan modules in the chassis register with the EH1D200CMU00. After they register, the EH1D200CMU00 obtains electronic labels of the fan modules and saves the electronic labels for users to query. Meanwhile, the EH1D200CMU00 monitors the speed and alarms of the fan modules in real time.

When detecting an alarm about a fan module, the EH1D200CMU00 reports the alarm to the MPU. When the alarm is cleared, the EH1D200CMU00 reports alarm clearance to the MPU.

When the EH1D200CMU00 receives a fan speed adjustment instruction from the MPU, it delivers the instruction to the fan modules. The fan modules then adjust their speed according to the instruction. If a chassis has no EH1D200CMU00 installed, fans run at full speed.

Power Module Management

The EH1D200CMU00 provides the following power module management functions:

- Power module presence detection
- Power module shutdown
- Power module registration management

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- Voltage and current monitoring
- Management and report of power module alarms
- Query of power module electronic labels

The EH1D200CMU00 supports real-time power module presence detection. Power modules in the chassis register with the EH1D200CMU00. After they register, the EH1D200CMU00 obtains electronic labels of the power modules and saves the electronic labels for users to query. Meanwhile, the EH1D200CMU00 queries the current and voltage of power modules in real time.

When detecting an alarm about a power module, the EH1D200CMU00 reports the alarm to the MPU. When the alarm is cleared, the EH1D200CMU00 reports alarm clearance to the MPU.

When the switch is working in deep energy saving mode, the EH1D200CMU00 automatically shuts down redundant power modules to save power. You can set the deep energy saving mode using the **set power manage mode** command.

6.3.4 Indicators and Ports

Indicator Description

Figure 6-31 shows the indicators on the EH1D200CMU00 panel.

Figure 6-31 Indicators on the EH1D200CMU00 panel

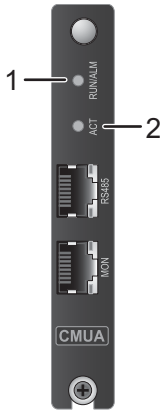

Table 6-48 describes the indicators on the EH1D200CMU00 panel.

Table 6-48 Indicators on the EH1D200CMU00 panel

Number	Indicator	Color	Description
1	RUN/ALM: running status indicator	Green	Slow blinking: The card software is running properly. Fast blinking: The card software is unregistered.

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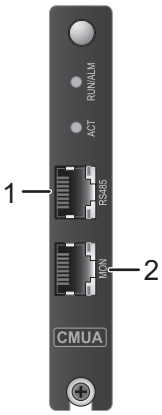
Number	Indicator	Color	Description
		Red	Steady on: The card has failed, and the fault requires manual intervention. Slow blinking: The switch is reporting an alarm. For example, a CMU, fan module, or power module on the switch fails. Fast blinking: The input power is insufficient or a 1600 W power module is installed.
2	ACT: active/ standby status indicator	Green	Steady on: The card is the active CMU. Off: The card is the standby CMU.

Port Description

Figure 6-32 shows the ports on the EH1D200CMU00.

Figure 6-32 Ports on the EH1D200CMU00 panel



1	One RS485 port (reserved)
2	One MON port (reserved)

6.3.5 Specifications

Table 6-49 lists specifications of the EH1D200CMU00.

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Table 6-49 Specifications of the EH1D200CMU00

Item	Description
Physical specifications	● Dimensions (W x D x H): 112.9 mm x 412.7 mm x 19.8 mm ● Weight: 0.22 kg ● Maximum power consumption: 1 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

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6.3.6 Ordering Information

To place an order, contact the Huawei local office.

Table 6-50 provides the ordering information.

Table 6-50 EH1D200CMU00 ordering information

Part Number	Card Description	Card Model
03030NWB	Centralized Monitoring Unit	EH1D200CMU00

6.4 LE0D0VAMPA00-Value-Added Service Unit

6.4.1 Introduction

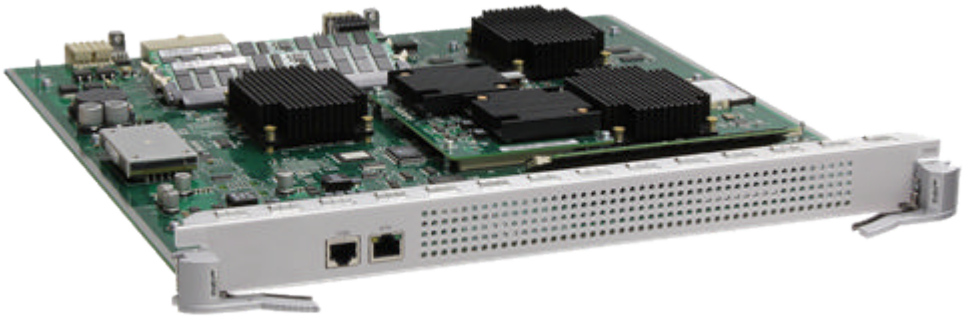
The LE0D0VAMPA00 is a Service Process Unit (SPU) for the S9700. It provides value-added services such as load balancing, firewall, Network Address Translation (NAT), IP Security (IPSec), and NetStream. Currently, the LE0D0VAMPA00 is the only SPU available.

An LE0D0VAMPA00 card can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-33 shows the LE0D0VAMPA00.

Figure 6-33 LE0D0VAMPA00



6.4.2 Version Mapping

Table 6-51 lists the switch chassis and software versions matching the LE0D0VAMPA00.

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Table 6-51 Switch chassis and software versions matching the LE0D0VAMPA00

Card Name	S9700 Chassis
LE0D0VAMPA00	Supported in V200R001C00 and later versions

6.4.3 Functions and Features

The LE0D0VAMPA00 provides value-added services such as load balancing, NAT, firewall, IPSec, and NetStream. When the LE0D0VAMPA00 is installed on a switch, packets related to a value-added service are directed to the LE0D0VAMPA00 for processing.

6.4.4 Indicators and Ports

Indicator Description

Figure 6-34 shows the indicators on the LE0D0VAMPA00 panel.

Figure 6-34 Indicators on the LE0D0VAMPA00 panel

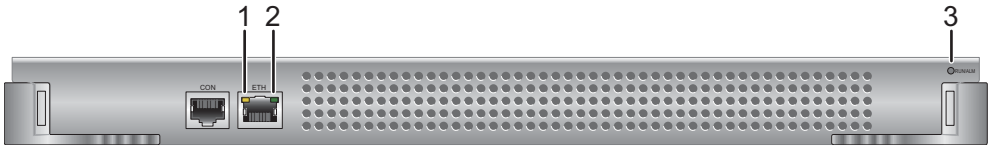

Table 6-52 describes the indicators on the LE0D0VAMPA00 panel.

Table 6-52 Indicators on the LE0D0VAMPA00 panel

Number	Indicator	Color	Description
1	ACT	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.

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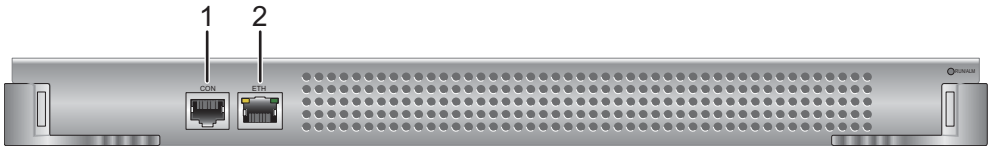
Number	Indicator	Color	Description
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-35 shows the ports on the LE0D0VAMPA00.

Figure 6-35 Ports on the LE0D0VAMPA00 panel



1	One console management port (serial port). You can connect the serial port on your PC to the CON port of an SPU and log in to the SPU to configure it.
2	One ETH management port (FE electrical port). You can connect your PC to the ETH port and log in to the SPU using Telnet to configure it.

ETH management port

A switch can connect to a configuration terminal or network management workstation through this port for onsite or remote configuration. The port must use a **7.6 Ethernet Cable**. **Table 6-53** describes the attributes of an ETH management port.

Table 6-53 ETH management port attributes

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

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Console management port

The console management port is connected to a configuration terminal or network management workstation for on-site configuration. The port must use a **7.4 Console Cable**. **Table 6-54** describes the attributes of an console management port.

Table 6-54 Console management port attributes

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

6.4.5 Specifications

Table 6-55 lists specifications of the LE0D0VAMPA00.

Table 6-55 Specifications of the LE0D0VAMPA00

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.60 kg ● Maximum power consumption: 120 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

6.4.6 Ordering Information

To place an order, contact the Huawei local office.

Table 6-56 provides the ordering information.

Table 6-56 LE0D0VAMPA00 ordering information

Part Number	Card Description	Card Model
03020RRN	Value-added service unit	LE0D0VAMPA00

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6.5 EH1D2PS00P00-Open Service Platform Unit

6.5.1 Introduction

The EH1D2PS00P00 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-36 shows the EH1D2PS00P00.

Figure 6-36 EH1D2PS00P00

6.5.2 Version Mapping

Table 6-57 lists the switch chassis and software versions matching the EH1D2PS00P00.

Table 6-57 Switch chassis and software versions matching the EH1D2PS00P00

Card Name	S9700 Chassis
EH1D2PS00P00	Supported in V200R002C00 and later versions

6.5.3 Functions and Features

The EH1D2PS00P00 can not only process and forward service data, but also provide certain functions using specific operating system and application software.

The EH1D2PS00P00 supports intrusion prevention system (IPS) software.

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The IPS software provides comprehensive security functions:

- Detects attacks based on a signature database. The IPS software can identify attacks targeted for vulnerabilities of commonly used applications (such as Adobe PDF Reader and Microsoft Office) and operating systems (such as Microsoft Windows), and abnormalities of these applications and operating systems.
- Identifies behaviors that violate RFC standards through application identification, protocol decoding, and state detection, and prevents running of the applications that use vulnerabilities of protocols.
- Detects attacks to HTTPS traffic and takes measures to protect the traffic.
- Automatically updates and upgrades the signature database to defend against vulnerabilities of applications and operating systems in advance.
- Supports periodic and emergent update of the signature database and allows users to add self-defined signatures according to their needs.
- Prevents intrusions at a high precision using the default security policy and provides the bypass function.

The IPS software also provides comprehensive management functions:

- Fine-grained right management: The IPS manages user rights based on different user levels, for example, monitoring level, configuration level, and management level.
- System management based on the web system, command line interface (CLI), and Simple Network Management Protocol (SNMP).
- Reports on logs and alarms: The IPS uses log analysis software to collect and analyze logs and alarms accurately, and provides various reports on the logs and alarms. Users can define reports according to their own needs.

Table 6-58 describes the functions and features of the EH1D2PS00P00 running application software.

Table 6-58 Functions and features of the EH1D2PS00P00 running application software

Functions and Features	Description
Operating system	VMware
Application software	IPS and other application software
CPU	Intel Core processor, 2.1 GHz, 4 cores, 6 MB cache
Memory	● DDR3-1066/1333 MT/s ● Standard configuration: two 2 GB memory cards (total capacity of 4 GB) ● Maximum configuration: two 8 GB memory cards (total capacity of 16 GB)
Built-in flash memory	8 GB

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Functions and Features	Description
Hard disk	● Provides two 2.5-inch 500 GB enterprise Serial Advanced Technology Attachment (SATA) hard disks. ● Supports RAID 0 and RAID 1. ● Supports hot swap. **NOTICE** Huawei-certified hard disks are required. Reliability of non-Huawei-certified hard disks cannot be ensured. Huawei is not responsible for any problems caused by non-Huawei-certified hard disks and will not fix such problems. Hard disks provided by Huawei are certified.
Service port	Two 10GE ports **NOTE** ● The two ports are not on the card panel. ● You can run the **interface** *interface-type interface-number* command to enter the view of the two service ports. The *interface-type* indicates the interface type and the *interface-number* indicates the interface number that is 0 or 1.
Management port	● One VGA port: – Hot swap – Standard DB15 socket ● Two USB ports: – Hot swap – USB 2.0 High-Speed – USB Specification Rev.2.0 ● One serial port: UART port ● One GE port: 10M/100M/1000M auto-sensing, RJ45 connector. The port enters sleeping state when no link is established.
Energy-saving	● Dynamic voltage and frequency scaling for CPU ● Sleeping of idle ports ● Card power detection

Table 6-59 describes the functions and features of the EH1D2PS00P00 for service data processing and forwarding.

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Table 6-59 Functions and features of the EH1D2PS00P00 for service data processing and forwarding

Function and Feature	Description
Basic function	Service data processing and forwarding
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	4 MB
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	32K
IPv4 ACL	6K for inbound traffic; 1K for outbound traffic
IPv4 FIB	16K
IPv6 ACL	3K for inbound traffic; 256 for outbound traffic
IPv6 FIB	8K
ARP	16376

6.5.4 Indicators and Ports

Button and Indicator Description

Figure 6-37 shows the buttons and indicators on the EH1D2PS00P00 panel.

Figure 6-37 Buttons and indicators on the EH1D2PS00P00 panel

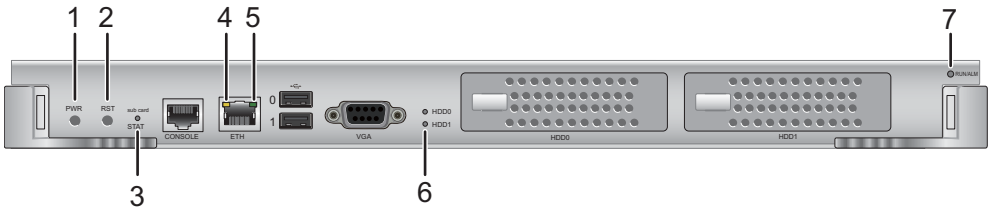

Table 6-60 describes the buttons and indicators on the EH1D2PS00P00 panel.

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Table 6-60 Buttons and indicators on the EH1D2PS00P00 panel

Number	Indicator/ Button	Color	Description
1	PWR button	-	Press for 0.5s to power on or off the card. Hold down the button for more than 4s forcibly to power off the card. This operation is performed when the card stops responding.
2	RST button	-	Press this button to reset the operating system and application software on the card. **NOTICE** Pressing the RST button causes loss of some service packets. Do not press this button unless necessary.
3	STAT	-	Off: The card is power off or is resetting.
		Yellow	Steady on: The BIOS is running.
		Green	Steady on: The operating system (OS) is running normally.
		Red	Steady on: A major alarm occurred and requires manual intervention. For example, hardware self-check fails or no OS is available.
4	ACT indicator of ETH port	Yellow	Blinking: The port is transmitting and receiving data.
5	LINK indicator of ETH port	Green	Steady on: A link has been established on the port.
6	HDD0 and HDD1 hard disk indicators	Green	Blinking: The hard disk is being accessed.
7	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.

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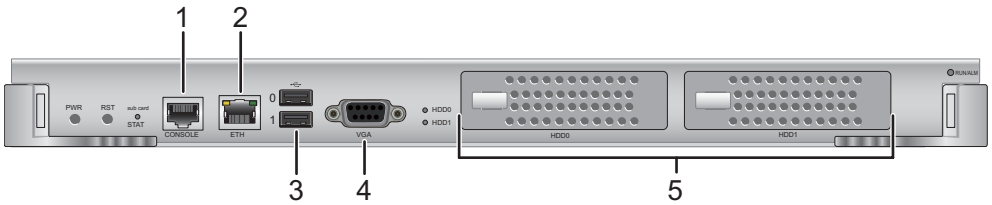
Number	Indicator/ Button	Color	Description
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-38 shows the ports on the EH1D2PS00P00 panel.

Figure 6-38 Ports on the EH1D2PS00P00 panel



1	One console management port, connected to a configuration terminal to implement onsite system configuration
2	One ETH management port (10M/100M/1000M BASE-T auto-sensing), connected to the network port of a configuration terminal or network management workstation to set up a local or remote configuration environment
3	Two USB ports, connected to peripherals such as a USB mouse or keyboard
4	One VGA port, used to connect to a monitor
5	Two hard disk slots

ETH management port

A switch can connect to a configuration terminal or network management workstation through this port for onsite or remote configuration. The port must use a **7.6 Ethernet Cable**. **Table 6-61** describes the attributes of an ETH management port.

Table 6-61 ETH management port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3

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Attribute	Description
Working mode	10/100/1000 Mbit/s auto-sensing Full duplex
Maximum transmission distance	100 m

Console management port

The console management port is connected to a configuration terminal or network management workstation for onsite configuration. The port must use a **7.4 Console Cable**. **Table 6-62** describes the attributes of an console management port.

Table 6-62 Console management port attributes

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

6.5.5 Specifications

Table 6-63 describes specifications of the EH1D2PS00P00.

Table 6-63 Specifications of the EH1D2PS00P00

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 5.50 kg ● Maximum power consumption: 137.5 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

6.5.6 Ordering Information

To place an order, contact the Huawei local office.

Table 6-64 provides the ordering information.

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Table 6-64 EH1D2PS00P00 ordering information

Part Number	Card Description	Card Model
03021PWE	Open Service Platform (OSP) unit	EH1D2PS00P00

6.6 100M Interface Card

6.6.1 EH1D2F48T-48-Port 10/100BASE-T Interface Card (RJ45)

The 48-port 10/100BASE-T interface cards are available in the following models:

- EH1D2F48TEA0: 48-Port 10/100BASE-T interface card (EA, RJ45)
- EH1D2F48TEC0: 48-Port 10/100BASE-T interface card (EC, RJ45)
- EH1D2F48TFA0: 48-Port 10/100BASE-T interface card (FA, RJ45)

Introduction

The EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0 provide 48 FE electrical ports for data transmission and line-speed switching. **Table 6-65** lists the their differences.

Table 6-65 Differences among the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0

Card Name	MAC Address Table Size
EH1D2F48TEA0	32K
EH1D2F48TEC0	128K
EH1D2F48TFA0	32K

NOTE

The EH1D2F48TEA0 and EH1D2F48TFA0 both support 32K MAC addresses, but the EH1D2F48TFA0 consumes less power than the EH1D2F48TEA0.

The EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-39 shows the EH1D2F48TEA0.

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Figure 6-39 EH1D2F48TEA0

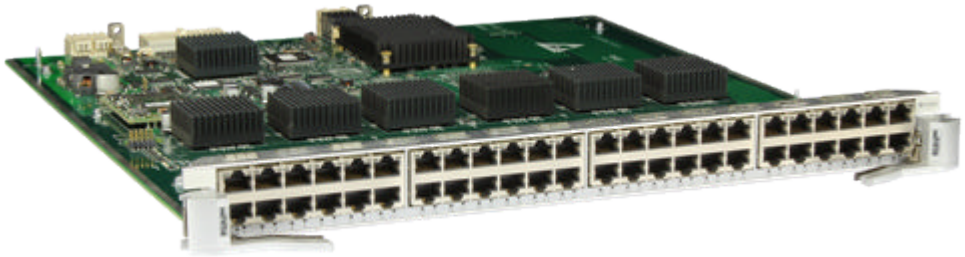
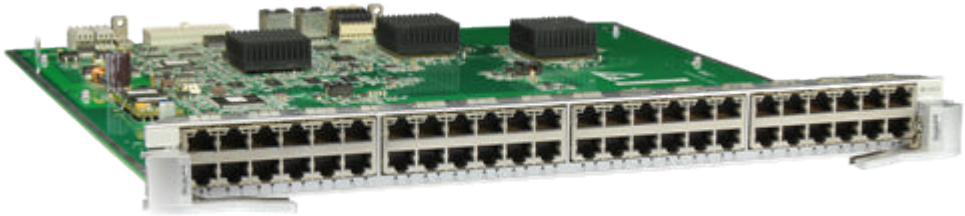


Figure 6-40 shows the EH1D2F48TEC0.

Figure 6-40 EH1D2F48TEC0

Figure 6-41 shows the EH1D2F48TFA0.

Figure 6-41 EH1D2F48TFA0



Version Mapping

Table 6-66 lists the switch chassis and software versions matching the EH1D2F48T.

Table 6-66 Switch chassis and software versions matching the EH1D2F48T

Card Name	S9700 Chassis
EH1D2F48TEA0	Supported in V200R001C00 and later versions
EH1D2F48TEC0	Supported in V200R001C00 and later versions
EH1D2F48TFA0	Supported only in V200R001C00, V200R002C00, and V200R003C00

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Functions and Features

Table 6-67 describes the functions and features of the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0.

Table 6-67 Functions and features of the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0

Function and Feature	Description
Basic function	Provides forty-eight FE electrical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	● EH1D2F48TEA0 and EH1D2F48TEC0: 4 MB ● EH1D2F48TFA0: 2 MB
Software feature	EH1D2F48TEA0 and EH1D2F48TEC0: NetStream.
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	● EH1D2F48TEA0: 32K ● EH1D2F48TEC0: 128K ● EH1D2F48TFA0: 32K
IPv4 ACL	● EH1D2F48TEA0: 6K for inbound traffic; 1K for outbound traffic ● EH1D2F48TEC0: 38K for inbound traffic; 1K for outbound traffic ● EH1D2F48TFA0: 1.5K for inbound traffic; 256 for outbound traffic
IPv4 FIB	● EH1D2F48TEA0: 16K ● EH1D2F48TEC0: 128K ● EH1D2F48TFA0: 12K
IPv6 ACL	● EH1D2F48TEA0: 3K for inbound traffic; 256 for outbound traffic ● EH1D2F48TEC0: 35K for inbound traffic; 256 for outbound traffic ● EH1D2F48TFA0: 512 for inbound traffic; 128 for outbound traffic

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Function and Feature	Description
IPv6 FIB	● EH1D2F48TEA0: 8K ● EH1D2F48TEC0: 64K ● EH1D2F48TFA0: 6K
ARP	● EH1D2F48TEA0: 16376 ● EH1D2F48TEC0: 16376 ● EH1D2F48TFA0: 8184

Indicators and Ports

Indicator Description

Figure 6-42 shows the indicators on the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0 panels.

Figure 6-42 Indicators on the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0 panels

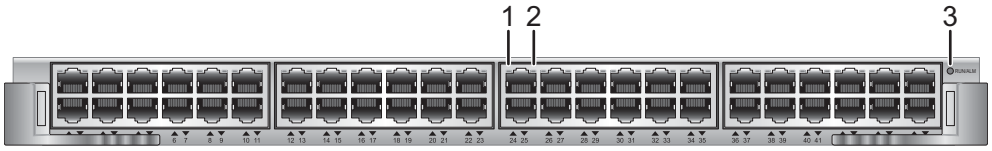

Table 6-68 describes the indicators on the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0 panels.

Table 6-68 Indicators on the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0 panels

Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of lower electrical port		

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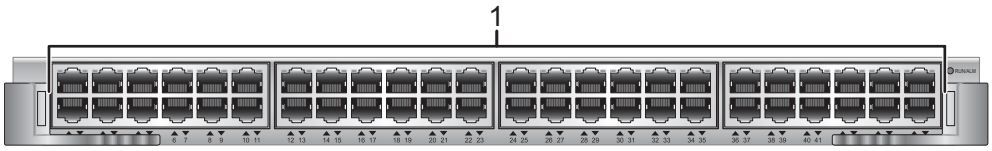
Number	Indicator	Color	Description
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-43 shows the ports on the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0 panels.

Figure 6-43 Ports on the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0 panels



1	Forty-eight 10M/100M BASE-T electrical ports

10M/100M BASE-T electrical ports

Table 6-69 lists the attributes of a 10M/100M BASE-T electrical port.

Table 6-69 10M/100M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP

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Attribute	Description
Network protocol	IP

Specifications

Table 6-70 lists specifications of the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0.

Table 6-70 Specifications of the EH1D2F48TEA0, EH1D2F48TEC0, and EH1D2F48TFA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: EH1D2F48TEA0: 2.50 kg EH1D2F48TEC0: 2.66 kg EH1D2F48TFA0: 2.30 kg ● Maximum power consumption: EH1D2F48TEA0: 59 W EH1D2F48TEC0: 70 W EH1D2F48TFA0: 40 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44
Environmental standards compliance	● RoHS ● REACH
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-71 provides the ordering information.

Table 6-71 EH1D2F48T ordering information

Part Number	Card Description	Card Model
03030NWP	48-port 10/100BASE-T interface card (EA, RJ45)	EH1D2F48TEA0
03030NWQ	48-port 10/100BASE-T interface card (EC, RJ45)	EH1D2F48TEC0

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Part Number	Card Description	Card Model
03030NXF	48-port 10/100BASE-T interface card (FA, RJ45)	EH1D2F48TFA0

6.6.2 EH1D2F48S-48-Port 100BASE-X Interface Card (SFP)

The 48-port 100BASE-X interface cards are available in the following models:

- EH1D2F48SEA0: 48-port 100BASE-X interface card (EA, SFP)
- EH1D2F48SEC0: 48-port 100BASE-X interface card (EC, SFP)

Introduction

The EH1D2F48SEA0 and EH1D2F48SEC0 provide 48 GE optical ports for data transmission and line-speed switching. **Table 6-72** lists the differences between the two cards.

Table 6-72 Differences between the EH1D2F48SEA0 and EH1D2F48SEC0

Card Name	MAC Address Table Size
EH1D2F48SEA0	32K
EH1D2F48SEC0	128K

The EH1D2F48SEA0 and EH1D2F48SEC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-44 shows the EH1D2F48SEA0.

Figure 6-44 EH1D2F48SEA0

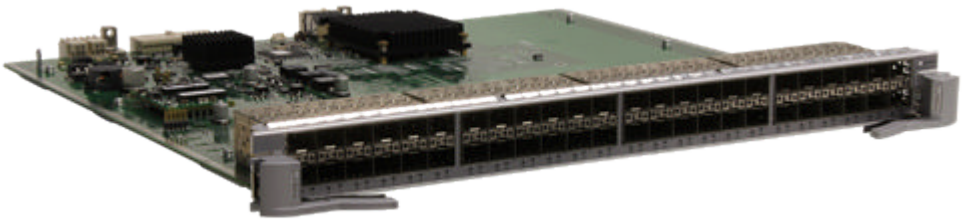

Figure 6-45 shows the EH1D2F48SEC0.

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Figure 6-45 EH1D2F48SEC0

Version Mapping

Table 6-73 lists the switch chassis and software versions matching the EH1D2F48S.

Table 6-73 Switch chassis and software versions matching the EH1D2F48S

Card Name	S9700 Chassis
EH1D2F48SEA0	Supported in V200R001C00 and later versions
EH1D2F48SEC0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-74 describes the functions and features of the EH1D2F48SEA0 and EH1D2F48SEC0.

Table 6-74 Functions and features of the EH1D2F48SEA0 and EH1D2F48SEC0

Function and Feature	Description
Basic function	Provides forty-eight FE optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	4 MB
Software feature	NetStream
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.

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Function and Feature	Description
MAC table size	● EH1D2F48SEA0: 32K ● EH1D2F48SEC0: 128K
IPv4 ACL	● EH1D2F48SEA0: 6K for inbound traffic; 1K for outbound traffic ● EH1D2F48SEC0: 38K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● EH1D2F48SEA0: 16K ● EH1D2F48SEC0: 128K
IPv6 ACL	● EH1D2F48SEA0: 3K for inbound traffic; 256 for outbound traffic ● EH1D2F48SEC0: 35K for inbound traffic; 256 for outbound traffic
IPv6 FIB	● EH1D2F48SEA0: 8K ● EH1D2F48SEC0: 64K
ARP	16376

Indicators and Ports

Indicator Description

Figure 6-46 shows the indicators on the EH1D2F48SEA0 and EH1D2F48SEC0 panels.

Figure 6-46 Indicators on the EH1D2F48SEA0 and EH1D2F48SEC0 panels

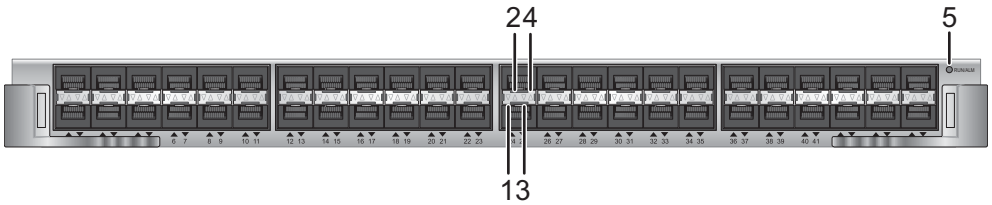

Table 6-75 describes the indicators on the EH1D2F48SEA0 and EH1D2F48SEC0 panels.

Table 6-75 Indicators on the EH1D2F48SEA0 and EH1D2F48SEC0 panels

Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.

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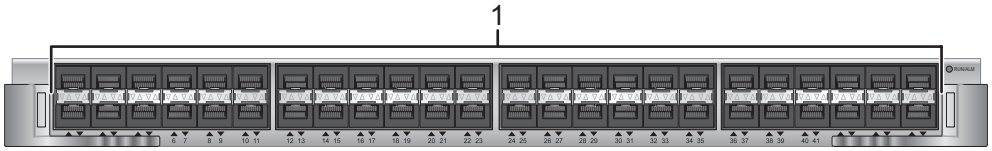
Number	Indicator	Color	Description
2	ACT indicator of upper optical port		
3	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of upper optical port		
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-47 shows the ports on the EH1D2F48SEA0 or EH1D2F48SEC0 panel.

Figure 6-47 Ports on the EH1D2F48SEA0 or EH1D2F48SEC0 panel



1	Forty-eight 100M BASE-X optical ports

100M BASE-X optical port

Table 6-76 lists the attributes of a 100M BASE-X optical port.

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Table 6-76 100M BASE-X optical port attributes

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details on the optical modules supported by the EH1D2F48SEA0 and EH1D2F48SEC0 and their attributes, see **Attributes of FE optical modules**.
Standards compliance	IEEE 802.3u
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-77 lists specifications of the EH1D2F48SEA0 and EH1D2F48SEC0.

Table 6-77 Specifications of the EH1D2F48SEA0 and EH1D2F48SEC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: EH1D2F48TEA0: 2.54 kg EH1D2F48TEC0: 2.66 kg ● Maximum power consumption: EH1D2F48TEA0: 64 W EH1D2F48TEC0: 76 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44
Environmental standards compliance	● RoHS ● REACH
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-78 provides the ordering information.

Table 6-78 EH1D2F48S ordering information

Part Number	Card Description	Card Model
03030NWJ	48-port 100BASE-X interface card (EA, SFP)	EH1D2F48SEA0
03030NWK	48-port 100BASE-X interface card (EC, SFP)	EH1D2F48SEC0

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6.7 1000M Interface Card

6.7.1 EH1D2G24S-24-Port 100/1000BASE-X Interface Card (SFP)

The 24-port 100/1000BASE-X interface cards are available in the following models:

- EH1D2G24SSA0: 24-port 100/1000BASE-X interface card (SA, SFP)
- EH1D2G24SEC0: 24-port 100/1000BASE-X interface card (EC, SFP)
- EH1D2G24SED0: 24-port 100/1000BASE-X interface card (ED, SFP)

Introduction

The EH1D2G24SSA0, EH1D2G24SEC0, and EH1D2G24SED0 provide twenty-four GE optical ports for data transmission and line-speed switching. **Table 6-79** lists the their differences.

Table 6-79 Differences among the EH1D2G24SSA0, EH1D2G24SEC0, and EH1D2G24SED0

Card Name	MAC Address Table Size
EH1D2G24SSA0	32K
EH1D2G24SEC0	128K
EH1D2G24SED0	512K

The EH1D2G24SSA0, EH1D2G24SEC0, and EH1D2G24SED0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-48 shows the EH1D2G24SSA0.

Figure 6-48 EH1D2G24SSA0

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Figure 6-49 shows the EH1D2G24SEC0.

Figure 6-49 EH1D2G24SEC0

Figure 6-50 shows the EH1D2G24SED0.

Figure 6-50 EH1D2G24SED0

Version Mapping

Table 6-80 lists the switch chassis and software versions matching the EH1D2G24S.

Table 6-80 Switch chassis and software versions matching the EH1D2G24S

Card Name	S9700 Chassis
EH1D2G24SSA0	Supported only in V200R001C00, V200R002C00, and V200R003C00
EH1D2G24SEC0	Supported in V200R001C00 and later versions
EH1D2G24SED0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-81 describes the functions and features of the EH1D2G24SSA0, EH1D2G24SEC0, and EH1D2G24SED0.

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Table 6-81 Functions and features of the EH1D2G24SSA0, EH1D2G24SEC0, and EH1D2G24SED0

Function and Feature	Description
Basic function	Provides twenty-four GE optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	● EH1D2G24SSA0: 2 MB ● EH1D2G24SEC0 and EH1D2G24SED0: 4 MB
Software feature	EH1D2G24SEC0 and EH1D2G24SED0 NetStream
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	● EH1D2G24SSA0: 32K ● EH1D2G24SEC0: 128K ● EH1D2G24SED0: 512K
IPv4 ACL	● EH1D2G24SSA0: 3K for inbound traffic; 512 for outbound traffic ● EH1D2G24SEC0: 38K for inbound traffic; 1K for outbound traffic ● EH1D2G24SED0: 70K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● EH1D2G24SSA0: 12K ● EH1D2G24SEC0: 128K ● EH1D2G24SED0: 512K
IPv6 ACL	● EH1D2G24SSA0: 1K for inbound traffic; 128 for outbound traffic ● EH1D2G24SEC0: 35K for inbound traffic; 256 for outbound traffic ● EH1D2G24SED0: 70K for inbound traffic; 1K for outbound traffic
IPv6 FIB	● EH1D2G24SSA0: 6K ● EH1D2G24SEC0: 64K ● EH1D2G24SED0: 256K

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Function and Feature	Description
ARP	● EH1D2G24SSA0: 8184 ● EH1D2G24SEC0 and EH1D2G24SED0: 16376

Indicators and Ports

Indicator Description

Figure 6-51 shows the indicators on the EH1D2G24SSA0 panel.

Figure 6-51 Indicators on the EH1D2G24SSA0 panel

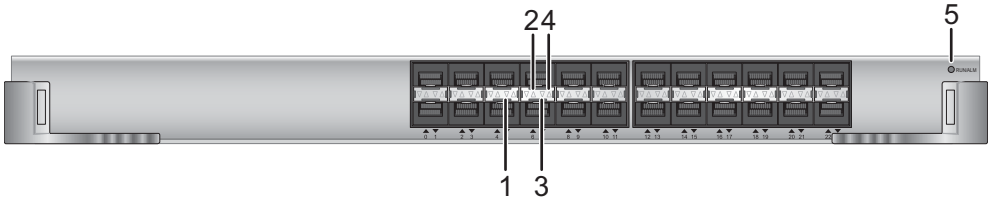

Figure 6-52 shows the indicators on the EH1D2G24SEC0 and EH1D2G24SED0 panels.

Figure 6-52 Indicators on the EH1D2G24SEC0 and EH1D2G24SED0 panels

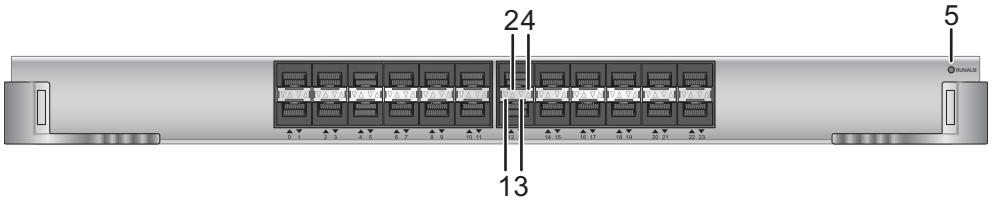

Table 6-82 describes the indicators on the EH1D2G24SEC0 and EH1D2G24SED0 panels.

Table 6-82 Indicators on the EH1D2G24SEC0 and EH1D2G24SED0 panels

Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of upper optical port		

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Number	Indicator	Color	Description
3	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of upper optical port		
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-53 shows the ports on the EH1D2G24SSA0 panel.

Figure 6-53 Ports on the EH1D2G24SSA0 panel

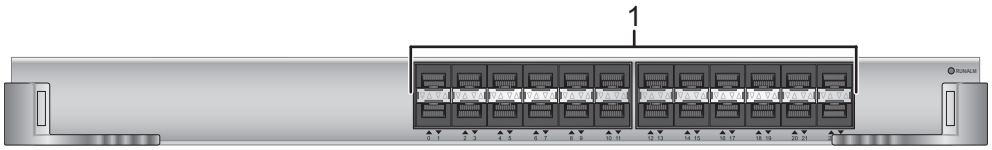
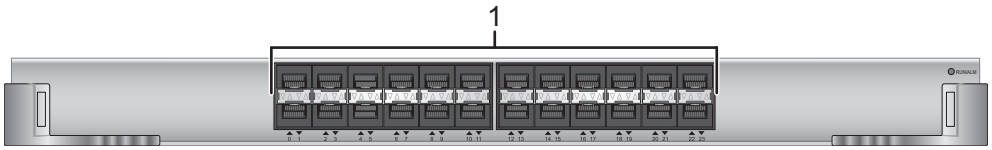


Figure 6-54 shows the ports on the EH1D2G24SEC0 and EH1D2G24SED0 panels.

Figure 6-54 Ports on the EH1D2G24SEC0 and EH1D2G24SED0 panels



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1	Twenty-four 100M/1000M BASE-X optical ports

100M/1000M BASE-X optical ports

Table 6-83 lists the attributes of a 100M/1000M BASE-X optical port with an optical module installed.

Table 6-83 100M/1000M BASE-X optical port attributes (1)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details about optical modules supported by the EH1D2G24SSA0, EH1D2G24SEC0, and EH1D2G24SED0 and their attributes, see **Attributes of FE optical modules**, **Attributes of GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-84 lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-84 Optical port attributes (copper module)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP copper module used. For details on the copper modules supported by the cards and attributes of the copper modules, see **Attributes of a GE SFP copper module**.
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Specifications

Table 6-85 lists specifications of the EH1D2G24SSA0, EH1D2G24SEC0, and EH1D2G24SED0.

Table 6-85 Specifications of the EH1D2G24SSA0, EH1D2G24SEC0, and EH1D2G24SED0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: EH1D2G24SSA0: 2.22 kg EH1D2G24SEC0: 2.66 kg EH1D2G24SED0: 2.66 kg ● Maximum power consumption: EH1D2G24SSA0: 45 W EH1D2G24SEC0: 63 W EH1D2G24SED0: 75 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A

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Item	Description
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-86 provides the ordering information.

Table 6-86 EH1D2G24S ordering information

Part Number	Card Description	Card Model
03030NWV	24-port 100/1000BASE-X interface card (SA, SFP)	EH1D2G24SSA0
03030NWG	24-port 100/1000BASE-X interface card (EC, SFP)	EH1D2G24SEC0
03030NWH	24-port 100/1000BASE-X interface card (ED, SFP)	EH1D2G24SED0

6.7.2 EH1D2S24CSA0-24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card (SA, SFP/RJ45)

Introduction

The EH1D2S24CSA0 provides eight electrical ports and twenty-four optical ports. The first eight optical ports are used with the eight electrical ports as combo ports. That is, each EH1D2S24CSA0 card provides line-speed switching on sixteen GE optical ports and eight GE combo ports.

The EH1D2S24CSA0 can be installed in:

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- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-55 shows the EH1D2S24CSA0.

Figure 6-55 EH1D2S24CSA0

Version Mapping

Table 6-87 lists the switch chassis and software versions matching the EH1D2S24CSA0.

Table 6-87 Switch chassis and software versions matching the EH1D2S24CSA0

Card Name	S9700 Chassis
EH1D2S24CSA0	Supported only in V200R001C00, V200R002C00, and V200R003C00

Functions and Features

Table 6-88 describes the functions and features of the EH1D2S24CSA0.

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Table 6-88 Functions and features of the EH1D2S24CSA0

Function and Feature	Description
Basic function	Provides line-speed switching on 16 GE optical ports and 8 combo ports. The combo ports can be configured as either optical ports or electrical ports. By default, a combo port works in the auto mode. In the auto mode, if the electrical port is connected first, the combo port works as an electrical port; if the optical port is connected first, the combo port works as an optical port. When both the optical port and electrical port are connected, the optical port takes precedence. You can run the **combo-port** command to manually set the working mode of a combo port. **NOTE** A maximum of 24 ports, that is, 16 GE optical ports and 8 combo ports, can work at the same time on the EH1D2S24CSA0.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	2 MB
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	32K
IPv4 ACL	3K for inbound traffic; 512 for outbound traffic
IPv4 FIB	12K
IPv6 ACL	1K for inbound traffic; 128 for outbound traffic
IPv6 FIB	6K
ARP	8184

Indicators and Ports

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Indicator Description

Figure 6-56 shows the indicators on the EH1D2S24CSA0 panel.

Figure 6-56 Indicators on the EH1D2S24CSA0 panel

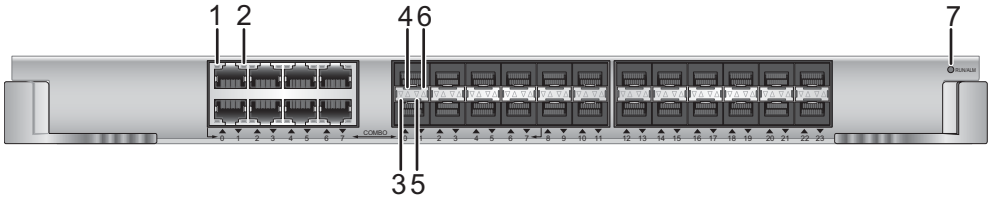

Table 6-89 describes the indicators on the EH1D2S24CSA0 panel.

Table 6-89 Indicators on the EH1D2S24CSA0 panel

Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of lower electrical port		
3	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
4	ACT indicator of upper optical port		
5	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
6	LINK indicator of upper optical port		

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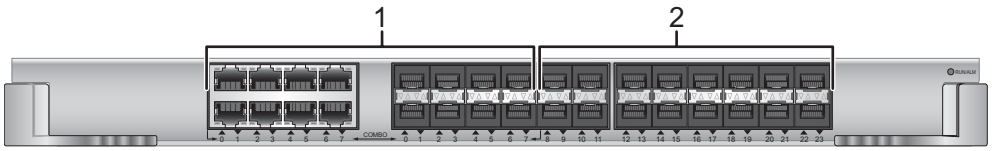
Number	Indicator	Color	Description
7	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-57 shows the ports on the EH1D2S24CSA0 panel.

Figure 6-57 Ports on the EH1D2S24CSA0 panel



1	Eight combo ports. Each combo port consists of a 10/100/1000BASE-T port and a 100/1000BASE-X port.
2	Sixteen 100M/1000M BASE-X optical ports

Combo

A combo port is a dual-purpose port consisting of an Ethernet optical port and an Ethernet electrical port. The electrical and optical ports of a combo port are multiplexed, and only one of them can work at a time.

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NOTE

A combo port can work in any of the following modes: auto (selects working mode automatically), fiber (optical port), and copper (electrical port). You can run the **combo-port** command to configure the working mode of a combo port. By default, a combo port works in auto mode. In this mode, a combo port determines the working port in the following way:

- If the combo port only has a network cable connected, the electrical port of the combo port is the working port after the combo port goes Up.
- If the combo port has an optical module installed, the optical port of the combo port is the working port after the combo port goes Up, regardless of whether a network cable is connected to combo port.

Table 6-90 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-90 10M/100M/1000M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

100M/1000M BASE-X optical ports

Table 6-91 lists the attributes of a 100M/1000M BASE-X optical port.

Table 6-91 100M/1000M BASE-X optical port attributes

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details about optical modules supported by the EH1D2S24CSA0 and their attributes, see **Attributes of FE optical modules**, **Attributes of GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-92 describes specifications of the EH1D2S24CSA0.

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Table 6-92 Specifications of the EH1D2S24CSA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.26 kg ● Maximum power consumption: 67 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

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Ordering Information

To place an order, contact the Huawei local office.

Table 6-93 provides the ordering information.

Table 6-93 EH1D2S24CSA0 ordering information

Part Number	Card Description	Card Model
03030NWW	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)	EH1D2S24CSA0

6.7.3 EH1D2S24CEA0-24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card(EA, SFP/RJ45, 1588)

Introduction

The EH1D2S24CEA0 provides eight electrical ports and twenty-four optical ports. The first eight optical ports are used with the eight electrical ports as combo ports. That is, each EH1D2S24CEA0 card provides line-speed switching on sixteen GE optical ports and eight GE combo ports.

The EH1D2S24CEA0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-58 shows the EH1D2S24CEA0.

Figure 6-58 EH1D2S24CEA0

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Version Mapping

Table 6-94 lists the switch chassis and software versions matching the EH1D2S24CEA0.

Table 6-94 Switch chassis and software versions matching the EH1D2S24CEA0

Card Name	S9700 Chassis
EH1D2S24CEA0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-95 describes the functions and features of the EH1D2S24CEA0.

Table 6-95 Functions and features of the EH1D2S24CEA0

Function and Feature	Description
Basic function	The EH1D2S24CEA0 provides line-speed switching on 16 GE optical ports and 8 GE combo ports. The combo ports can be configured as either optical ports or electrical ports. By default, a combo port works in the auto mode. In the auto mode, if the electrical port is connected first, the combo port works as an electrical port; if the optical port is connected first, the combo port works as an optical port. When both the optical port and electrical port are connected, the optical port takes precedence. You can run the **combo-port** command to manually set the working mode of a combo port. **NOTE** A maximum of 24 ports, that is, 16 GE optical ports and 8 combo ports, can work at the same time on the EH1D2S24CEA0.
Synchronous Ethernet	The 100 Mbit/s optical/electrical ports and GE optical ports of the EH1D2S24CEA0 support the synchronous Ethernet function. When a combo port works as a GE electrical port, it does not support the synchronous Ethernet function.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.

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Function and Feature	Description
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	4 MB
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	32K
IPv4 ACL	6K for inbound traffic; 1K for outbound traffic
IPv4 FIB	16K
IPv6 ACL	3K for inbound traffic; 256 for outbound traffic
IPv6 FIB	8K
ARP	16376

Usage Constraints

NOTICE

To use the synchronous Ethernet and Precision Time Protocol (PTP) functions on the EH1D2S24CEA0, make sure a clock daughter card is running on the device.

Indicators and Ports

Indicator Description

Figure 6-59 shows the indicators on the EH1D2S24CEA0 panel.

Figure 6-59 Indicators on the EH1D2S24CEA0 panel

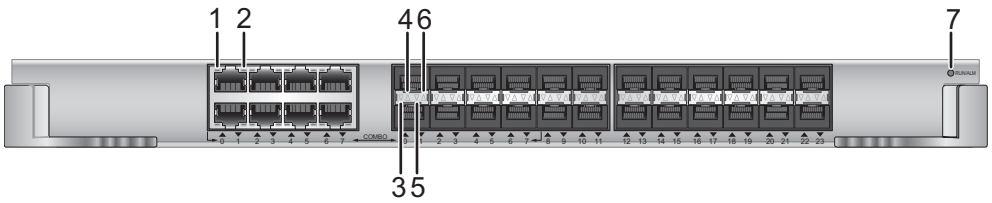

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Table 6-96 Indicators on the EH1D2S24CEA0 panel

Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of lower electrical port		
3	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
4	ACT indicator of upper optical port		
5	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
6	LINK indicator of upper optical port		
7	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

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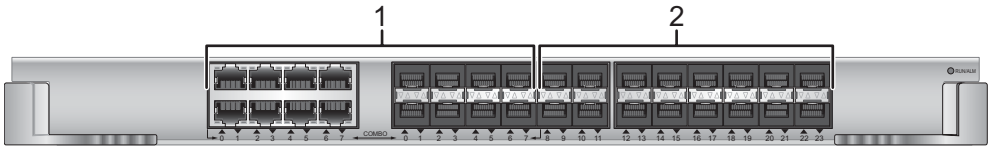
Port Description

Figure 6-60 shows the ports on the EH1D2S24CEA0 panel.

Figure 6-60 Ports on the EH1D2S24CEA0 panel



1	Eight combo ports. Each combo port consists of a 10/100/1000BASE-T port and a 100/1000BASE-X port.
2	Sixteen 100M/1000M BASE-X optical ports

Combo ports

A combo port is a dual-purpose port consisting of an Ethernet optical port and an Ethernet electrical port. The electrical and optical ports of a combo port are multiplexed, and only one of them can work at a time.

NOTE

A combo port can work in any of the following modes: auto (selects working mode automatically), fiber (optical port), and copper (electrical port). You can run the **combo-port** command to configure the working mode of a combo port. By default, a combo port works in auto mode. In this mode, a combo port determines the working port in the following way:

- If the combo port only has a network cable connected, the electrical port of the combo port is the working port after the combo port goes Up.
- If the combo port has an optical module installed, the optical port of the combo port is the working port after the combo port goes Up, regardless of whether a network cable is connected to combo port.

Table 6-97 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-97 10M/100M/1000M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-98 lists the attributes of a 100M/1000M BASE-X optical port.

100M/1000M BASE-X optical ports

Table 6-98 lists the attributes of a 100M/1000M BASE-X optical port.

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Table 6-98 100M/1000M BASE-X optical port attributes

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details about optical modules supported by the EH1D2S24CEA0 and their attributes, see **Attributes of FE optical modules**, **Attributes of GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-99 describes specifications of the EH1D2S24CEA0.

Table 6-99 Specifications of the EH1D2S24CEA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.70 kg ● Maximum power consumption: 75 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-100 provides the ordering information.

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Table 6-100 EH1D2S24CEA0 ordering information

Part Number	Card Description	Card Model
03030NXD	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (EA, SFP/RJ45, 1588)	EH1D2S24CEA0

6.7.4 EH1D2T36SEA0-36-Port 10/100/1000BASE-T and 12-Port 100/1000BASE-X Interface Card (EA, RJ45/SFP)

Introduction

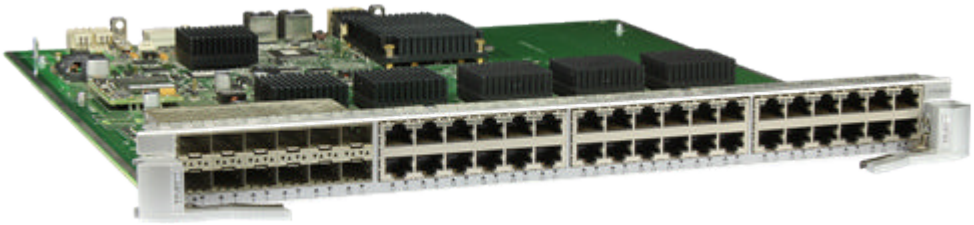
The EH1D2T36SEA0 provides thirty-six 10M/100M/1000M Ethernet electrical ports and twelve 100M/1000M Ethernet optical ports for data transmission and line-speed switching.

The EH1D2T36SEA0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-61 shows the EH1D2T36SEA0.

Figure 6-61 EH1D2T36SEA0



Version Mapping

Table 6-101 lists the switch chassis and software versions matching the EH1D2T36SEA0.

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Table 6-101 Switch chassis and software versions matching the EH1D2T36SEA0

Card Name	S9700 Chassis
EH1D2T36SEA0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-102 describes the functions and features of the EH1D2T36SEA0.

Table 6-102 Functions and features of the EH1D2T36SEA0

Function and Feature	Description
Basic function	Provides thirty-six 10M/100M/1000M Ethernet electrical ports and twelve 100M/1000M Ethernet optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	4 MB
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	32K
IPv4 ACL	6K for inbound traffic; 1K for outbound traffic
IPv4 FIB	16K
IPv6 ACL	3K for inbound traffic; 256 for outbound traffic
IPv6 FIB	8K
ARP	16376

Indicators and Ports

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Indicator Description

Figure 6-62 shows the indicators on the EH1D2T36SEA0 panel.

Figure 6-62 Indicators on the EH1D2T36SEA0 panel

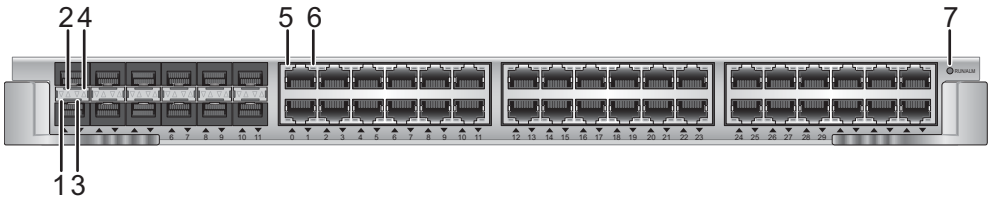

Table 6-103 describes the indicators on the EH1D2T36SEA0 panel.

Table 6-103 Indicators on the EH1D2T36SEA0 panel

Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of upper optical port		
3	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of upper optical port		
5	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
6	LINK/ACT indicator of lower electrical port		

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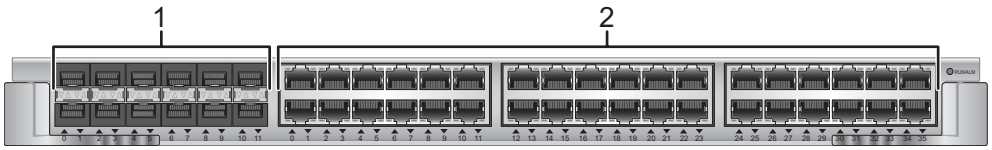
Number	Indicator	Color	Description
7	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-63 shows the ports on the EH1D2T36SEA0 panel.

Figure 6-63 Ports on the EH1D2T36SEA0 panel



1	Twelve 100M/1000M BASE-X optical ports
2	Thirty-six 10M/100M/1000M BASE-T electrical ports

100M/1000M BASE-X optical ports

Table 6-104 lists the attributes of a 100M/1000M BASE-X optical port.

Table 6-104 100M/1000M BASE-X optical port attributes

Attribute	Description
Connector type	SFP

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Attribute	Description
Optical port attribute	Depends on the SFP optical module used. For details about optical modules supported by the EH1D2T36SEA0 and their attributes, see **Attributes of FE optical modules**, **Attributes of GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

10M/100M/1000M BASE-T electrical ports

Table 6-105 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-105 10M/100M/1000M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-106 describes specifications of the EH1D2T36SEA0.

Table 6-106 Specifications of the EH1D2T36SEA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.50 kg ● Maximum power consumption: 62 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-107 provides the ordering information.

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Table 6-107 EH1D2T36SEA0 ordering information

Part Number	Card Description	Card Model
03030NXE	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)	EH1D2T36SEA0

6.7.5 EH1D2G24TFA0-24-Port 10/100/1000BASE-T Interface Card (FA, RJ45)

Introduction

The EH1D2G24TFA0 provides twenty-four 10M/100M/1000M Ethernet electrical ports for data transmission and line-speed switching, and supports Energy Efficient Ethernet (EEE).

The EH1D2G24TFA0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-64 shows the EH1D2G24TFA0.

Figure 6-64 EH1D2G24TFA0

Version Mapping

Table 6-108 lists the switch chassis and software versions matching the EH1D2G24TFA0.

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Table 6-108 Switch chassis and software versions matching the EH1D2G24TFA0

Card Name	S9700 Chassis
EH1D2G24TFA0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-109 describes the functions and features of the EH1D2G24TFA0.

Table 6-109 Functions and features of the EH1D2G24TFA0

Function and Feature	Description
Basic function	Provides twenty-four 10M/100M/1000M Ethernet electrical ports for data transmission and line-speed switching.
Energy Efficient Ethernet (EEE)	The EEE mode can dynamically adjust power consumption based on network traffic volume.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	2 MB
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	32K
IPv4 ACL	1K for inbound traffic; 512 for outbound traffic
IPv4 FIB	12K
IPv6 ACL	512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	6K
ARP	8184

Indicators and Ports

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Indicator Description

Figure 6-65 shows the indicators on the EH1D2G24TFA0 panel.

Figure 6-65 Indicators on the EH1D2G24TFA0 panel

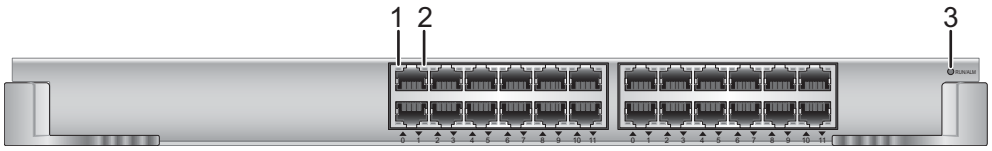

Table 6-110 describes the indicators on the EH1D2G24TFA0 panel.

Table 6-110 Indicators on the EH1D2G24TFA0 panel

Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of lower electrical port		
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-66 shows the ports on the EH1D2G24TFA0 panel.

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Figure 6-66 Ports on the EH1D2G24TFA0 panel

1	Twenty-four 10M/100M/1000M BASE-T electrical ports

10M/100M/1000M BASE-T electrical ports

Table 6-111 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-111 10M/100M/1000M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3ab and IEEE802.3az
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-112 describes specifications of the EH1D2G24TFA0.

Table 6-112 Specifications of the EH1D2G24TFA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.20 kg ● Maximum power consumption: 32 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-113 provides the ordering information.

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Table 6-113 EH1D2G24TFA0 ordering information

Part Number	Card Description	Card Model
03030NXL	24-port 10/100/1000BASE-T interface card (FA, RJ45)	EH1D2G24TFA0

6.7.6 EH1D2G48T-48-Port 10/100/1000BASE-T Interface Card (RJ45)

The 48-port 10/100/1000BASE-T interface cards are available in the following models:

- EH1D2G48TEA0: 48-port 10/100/1000BASE-T interface card (EA, RJ45)
- EH1D2G48TEC0: 48-port 10/100/1000BASE-T interface card (EC, RJ45)
- EH1D2G48TED0: 48-port 10/100/1000BASE-T interface card (ED,RJ45)
- EH1D2G48TFA0: 48-port 10/100/1000BASE-T interface card (FA, RJ45)

Introduction

The EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0 provide forty-eight GE electrical ports for data transmission and line-speed switching. **Table 6-114** lists their differences.

Table 6-114 Differences EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0

Card Name	MAC Address Table Size
EH1D2G48TEA0	32K
EH1D2G48TEC0	128K
EH1D2G48TED0	512K
EH1D2G48TFA0	32K

NOTE

The EH1D2G48TEA0 and EH1D2G48TFA0 both support 32K MAC addresses, but the EH1D2G48TFA0 consumes less power than the EH1D2G48TEA0.

The EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.

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- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-67 shows the EH1D2G48TEA0.

Figure 6-67 EH1D2G48TEA0

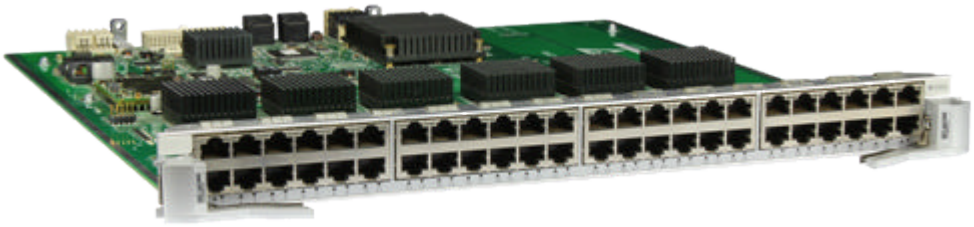


Figure 6-68 shows the EH1D2G48TEC0.

Figure 6-68 EH1D2G48TEC0

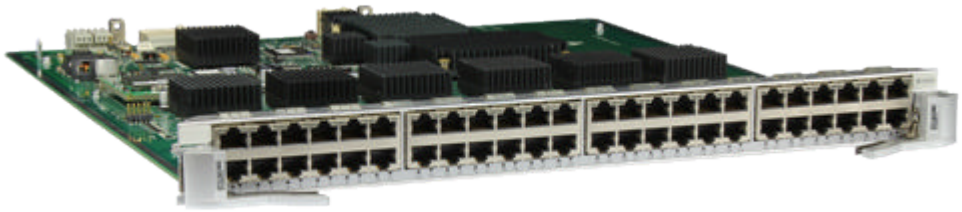


Figure 6-69 shows the EH1D2G48TED0.

Figure 6-69 EH1D2G48TED0

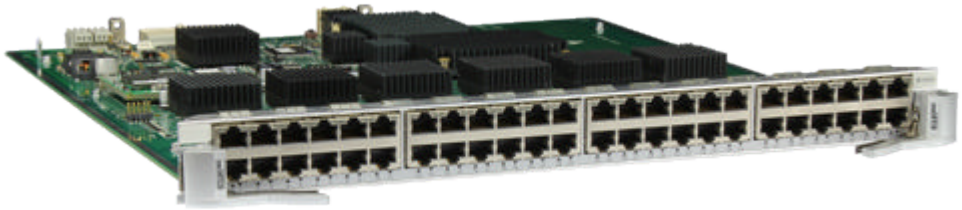
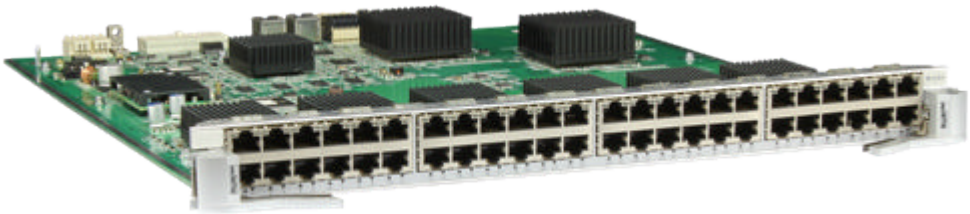


Figure 6-70 shows the EH1D2G48TFA0.

Figure 6-70 EH1D2G48TFA0



Version Mapping

Table 6-115 lists the switch chassis and software versions matching the EH1D2G48T.

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Table 6-115 Switch chassis and software versions matching the EH1D2G48T

Card Name	S9700 Chassis
EH1D2G48TEA0	Supported in V200R001C00 and later versions
EH1D2G48TEC0	Supported in V200R001C00 and later versions
EH1D2G48TED0	Supported in V200R001C00 and later versions
EH1D2G48TFA0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-116 describes the functions and features of the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0.

Table 6-116 Functions and features of the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0

Functions and Features	Description
Basic function	Provides forty-eight GE electrical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	● EH1D2G48TEA0, EH1D2G48TEC0, and EH1D2G48TED0: 4 MB ● EH1D2G48TFA0: 2 MB
Software feature	EH1D2G48TEA0, EH1D2G48TEC0, and EH1D2G48TED0: NetStream
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	● EH1D2G48TEA0 and EH1D2G48TFA0: 32K ● EH1D2G48TEC0: 128K ● EH1D2G48TED0: 512K

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Functions and Features	Description
IPv4 ACL	● EH1D2G48TEA0: 6K for inbound traffic; 1K for outbound traffic ● EH1D2G48TEC0: 38K for inbound traffic; 1K for outbound traffic ● EH1D2G48TED0: 70K for inbound traffic; 1K for outbound traffic ● EH1D2G48TFA0: 1.5K for inbound traffic; 256 for outbound traffic
IPv4 FIB	● EH1D2G48TEA0: 16K ● EH1D2G48TEC0: 128K ● EH1D2G48TED0: 512K ● EH1D2G48TFA0: 12K
IPv6 ACL	● EH1D2G48TEA0: 3K for inbound traffic; 256 for outbound traffic ● EH1D2G48TEC0: 35K for inbound traffic; 256 for outbound traffic ● EH1D2G48TED0: 67K for inbound traffic; 256 for outbound traffic ● EH1D2G48TFA0: 512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	● EH1D2G48TEA0: 8K ● EH1D2G48TEC0: 64K ● EH1D2G48TED0: 256K ● EH1D2G48TFA0: 6K
ARP	● EH1D2G48TEA0, EH1D2G48TEC0, and EH1D2G48TED0: 16376 ● EH1D2G48TFA0: 8184

Indicators and Ports

Indicator Description

Figure 6-71 shows the indicators on the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0 panels.

Figure 6-71 Indicators on the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0 panels

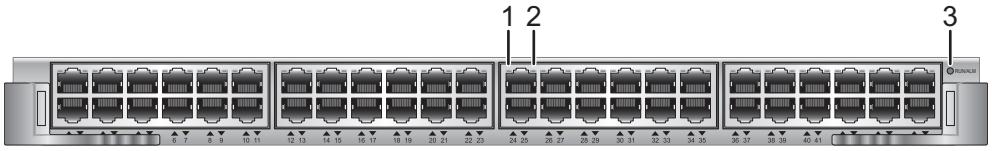

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Table 6-117 describes the indicators on the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0 panels.

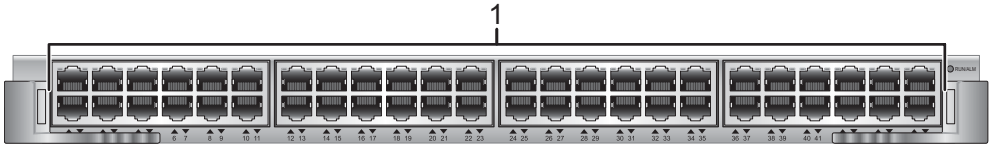
Table 6-117 Indicators on the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0 panels

Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of lower electrical port		
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-72 shows the ports on the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0 panels.

Figure 6-72 Ports on the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0 panels



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1	Forty-eight 10M/100M/1000M BASE-T electrical ports

10M/100M/1000M BASE-T electrical ports

Table 6-118 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-118 10M/100M/1000M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-119 lists specifications of the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0.

Table 6-119 Specifications of the EH1D2G48TEA0, EH1D2G48TEC0, EH1D2G48TED0, and EH1D2G48TFA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: EH1D2G48TEA0: 2.50 kg EH1D2G48TEC0: 2.66 kg EH1D2G48TED0: 2.66 kg EH1D2G48TFA0: 2.50 kg ● Maximum power consumption: EH1D2G48TEA0: 62 W EH1D2G48TEC0: 68 W EH1D2G48TED0: 98 W EH1D2G48TFA0: 48 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-120 provides the ordering information.

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Table 6-120 EH1D2G48T ordering information

Part Number	Card Description	Card Model
03030NWL	48-port 10/100/1000BASE-T interface card (EA, RJ45)	EH1D2G48TEA0
03030NWM	48-port 10/100/1000BASE-T interface card (EC, RJ45)	EH1D2G48TEC0
03030NWN	48-port 10/100/1000BASE-T interface card (ED, RJ45)	EH1D2G48TED0
03030NXH	48-port 10/100/1000BASE-T interface card (FA, RJ45)	EH1D2G48TFA0

6.7.7 EH1D2G48TX1E-48-Port 10/100/1000BASE-T Interface Card (X1E, RJ45)

Introduction

The EH1D2G48TX1E provides high performance, large entry sizes, and a large buffer for data switching. This card is highly integrated and has a large port density.

The EH1D2G48TX1E can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-73 shows an EH1D2G48TX1E card.

Figure 6-73 EH1D2G48TX1E card

Version Mapping

Table 6-121 lists the switch chassis and software versions matching the interface card.

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Table 6-121 Switch chassis and software versions matching the interface card

Card Name	S9700 Chassis
EH1D2G48TX1E	Supported in V200R005C00 and later versions

Functions and Features

The EH1D2G48TX1E provides the following functions:

- Communicates with the MPU and works under the control of the MPU.
- Searches for routes and destination addresses of data packets for forwarding.
- Forwards data packets.

Table 6-122 describes functions and features of the EH1D2G48TX1E.

Table 6-122 Functions and features of the EH1D2G48TX1E

Function and Feature	Description
Basic functions	Provides forty-eight GE electrical ports for data access and line-speed switching.
Forwarding speed	48 Gbit/s
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queues	Eight queues per port
Scheduling	Priority queuing (PQ), deficit round robin (DRR), and PQ+DRR
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	1M
IPv4 ACL	64K for inbound and outbound traffic
IPv4 FIB	1M(S9706/S9712), 150K(S9703)
IPv6 ACL	16K for inbound and outbound traffic
IPv6 FIB	512K(S9706/S9712), 150K(S9703)
ARP	256K

Indicators and Ports

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Indicator Description

Figure 6-74 shows indicators on the EH1D2G48TX1E panel.

Figure 6-74 Indicators on the EH1D2G48TX1E panel

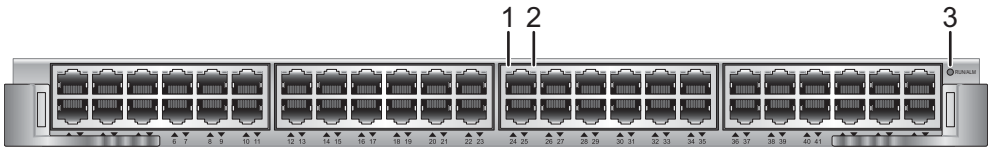

Table 6-123 describes indicators on the EH1D2G48TX1E panel.

Table 6-123 Indicators on the EH1D2G48TX1E panel

Number	Indicator	Color	Description
1	LINK/ACT indicator of an upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of a lower electrical port		
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-75 shows ports on the EH1D2G48TX1E panel.

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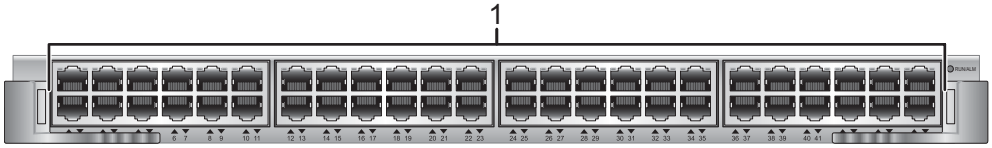
Figure 6-75 Ports on the EH1D2G48TX1E panel



1	Forty-eight 10M/100M/1000M BASE-T ports

10M/100M/1000M BASE-T port

Table 6-124 describes the attributes of a 10M/100M/1000M BASE-T port.

Table 6-124 10M/100M/1000M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-125 lists specifications of the EH1D2G48TX1E.

Table 6-125 Specifications of the EH1D2G48TX1E

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.92 kg ● Maximum power consumption: 120 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-126 provides EH1D2G48TX1E ordering information.

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Table 6-126 EH1D2G48TX1E ordering information

Part Number	Card Name	Card Model
03030RPK	48-port 10/100/1000BASE-T interface card (X1E, RJ45)	EH1D2G48TX1E

6.7.8 EH1D2G48TBC0-48-Port 10/100/1000BASE-T Interface Card (BC, RJ45)

Introduction

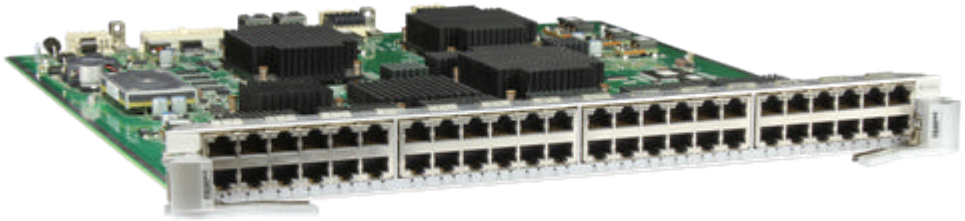
The EH1D2G48TBC0 provides forty-eight 10M/100M/1000M Ethernet electrical ports for data transmission and line-speed switching. The large buffer of the card enables the card to handle 50 Gbit/s traffic in case of traffic bursts.

The EH1D2G48TBC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-76 shows the EH1D2G48TBC0.

Figure 6-76 EH1D2G48TBC0



Version Mapping

Table 6-127 lists the switch chassis and software versions matching the EH1D2G48TBC0.

Table 6-127 Switch chassis and software versions matching the EH1D2G48TBC0

Card Name	S9700 Chassis
EH1D2G48TBC0	Supported in V200R001C00 and later versions

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Application

The EH1D2G48TBC0 and EH1D2G48SBC0 of the S9700 have a large buffer capacity. The 1.25 GB buffer capacity on each port achieves 200 ms buffering, which prevents packet loss caused by traffic bursts on a network. When the network is congested and traffic bursts occur, the large-buffer cards can effectively buffer traffic on ports. The large buffer capacity, combined with QoS traffic shaping, ensures even, stable traffic transmission on a congested, unstable network. These cards prevent packet loss while reducing congestion and traffic bursts on upstream devices.

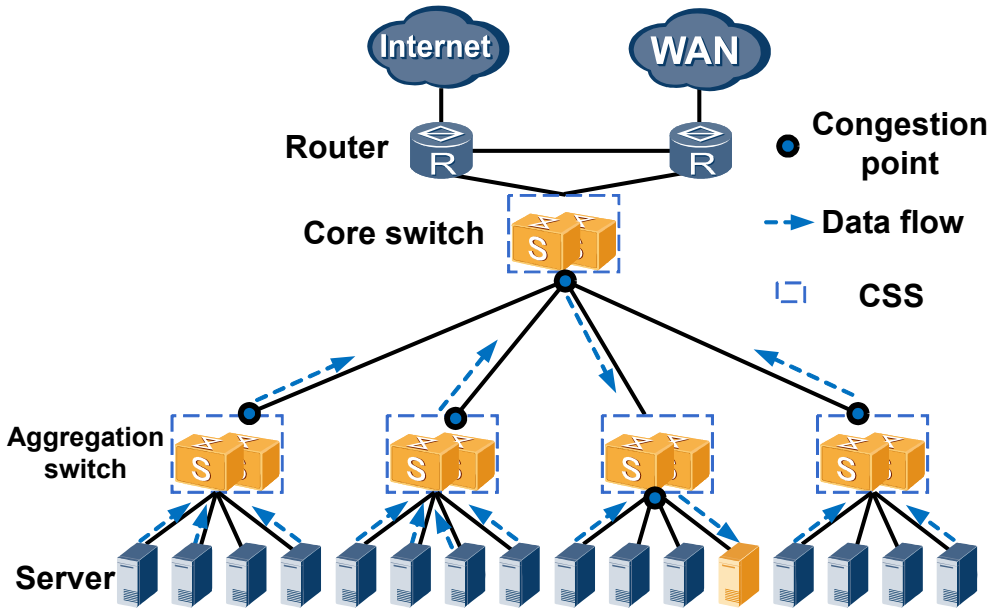
The large-buffer cards apply to data center networks and video networks:

- When used on a data center network, these cards ensure fast, stable, and low-latency data forwarding.
- When used on a video network, these cards can prevent voice/image distortion, delay, and asynchronous image and voice presence caused by packet loss and transmission latency, guaranteeing high-quality video conferences.

The following uses a collaborative computing scenario as an example to describe application of these cards in a data center.

Complicated computing tasks, such as search engine computing, oil exploration computing, and meteorological computing, must be carried out by multiple servers simultaneously. In this situation, the servers perform collaborative computing, which results in fast transmission of data flows on a network and traffic bursts when multiple servers send computing data to one server at the same time. Traffic bursts cause congestion on network nodes, as shown in **Figure 6-77**. Packets are dropped on congested network nodes.

Figure 6-77 Traffic bursts caused by collaborative computing in EoR deployment



As shown in **Figure 6-78**, all switches from the end of row (EoR) switches to core switches in a data center are equipped with large-buffer cards. These large-buffer cards prevent packet loss caused by traffic bursts in the data center.

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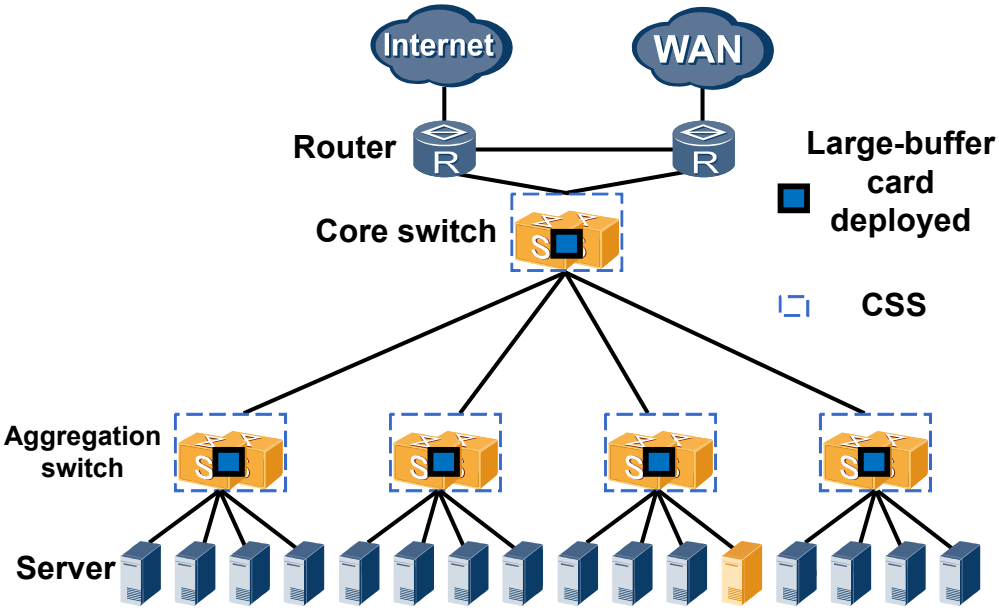
Figure 6-78 Large-buffer cards deployed in a data center



Functions and Features

Table 6-128 describes the functions and features of the EH1D2G48TBC0.

Table 6-128 Functions and features of the EH1D2G48TBC0

Function and Feature	Description
Basic function	Provides forty-eight 10M/100M/1000M Ethernet electrical ports for data transmission and line-speed switching. Capable of handling 50 Gbit/s traffic.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	1.25 GB
Jumbo frame	A maximum of 9 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	128K
IPv4 ACL	38K for inbound traffic; 1K for outbound traffic
IPv4 FIB	128K

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Function and Feature	Description
IPv6 ACL	35K for inbound traffic; 256 for outbound traffic
IPv6 FIB	64K
ARP	16376

Indicators and Ports

Indicator Description

Figure 6-79 shows the indicators on the EH1D2G48TBC0 panel.

Figure 6-79 Indicators on the EH1D2G48TBC0 panel

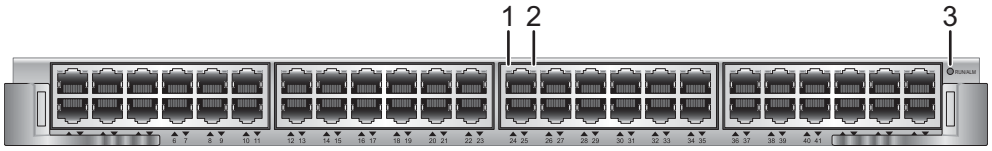

Table 6-129 describes the indicators on the EH1D2G48TBC0 panel.

Table 6-129 Indicators on the EH1D2G48TBC0 panel

Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of lower electrical port		
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.

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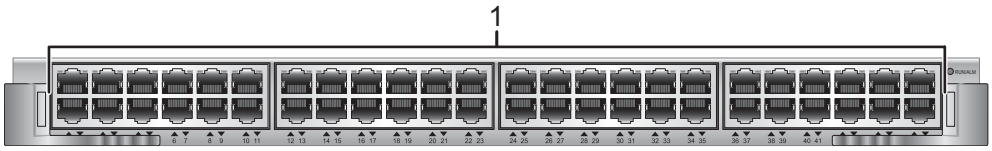
Number	Indicator	Color	Description
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-80 shows the ports on the EH1D2G48TBC0 panel.

Figure 6-80 Ports on the EH1D2G48TBC0 panel



1	Forty-eight 10M/100M/1000M BASE-T electrical ports

10M/100M/1000M BASE-T electrical ports

Table 6-130 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-130 10M/100M/1000M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-131 describes specifications of the EH1D2G48TBC0.

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Table 6-131 Specifications of the EH1D2G48TBC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.90 kg ● Maximum power consumption: 160 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

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Ordering Information

To place an order, contact the Huawei local office.

Table 6-132 provides the ordering information.

Table 6-132 EH1D2G48TBC0 ordering information

Part Number	Card Description	Card Model
03030NXK	48-port 10/100/1000BASE-T interface card (BC, RJ45)	EH1D2G48TBC0

6.7.9 EH1D2G48S-48-Port 100/1000BASE-X Interface Card (SFP)

The 48-port 100/1000BASE-X interface cards are available in the following models:

- EH1D2G48SEA0: 48-port 100/1000BASE-X interface card (EA, SFP)
- EH1D2G48SEC0: 48-port 100/1000BASE-X interface card (EC, SFP)
- EH1D2G48SED0: 48-port 100/1000BASE-X interface card (ED, SFP)
- EH1D2G48SFA0: 48-port 100/1000BASE-X interface card (FA, SFP)

Introduction

The EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 provide forty-eight GE optical ports for data transmission and line-speed switching. Table 6-133 lists their differences.

Table 6-133 Differences among the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0

Card Name	MAC Address Table Size
EH1D2G48SEA0	32K
EH1D2G48SEC0	128K
EH1D2G48SED0	512K
EH1D2G48SFA0	32K

NOTE

The EH1D2G48SEA0 and EH1D2G48SFA0 both support 32K MAC addresses, but the EH1D2G48SFA0 consumes less power than the EH1D2G48SEA0.

The EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 can be installed in:

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- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-81 shows the EH1D2G48SEA0.

Figure 6-81 EH1D2G48SEA0

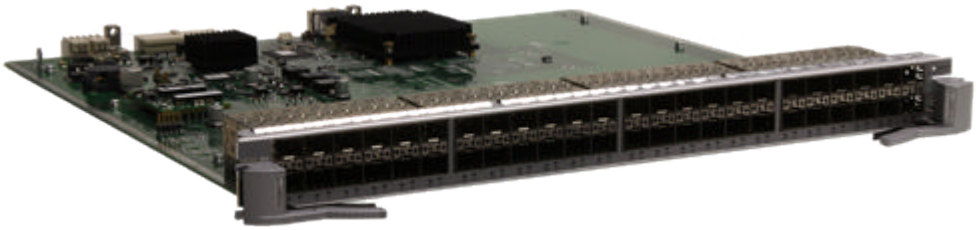

Figure 6-82 shows the EH1D2G48SEC0.

Figure 6-82 EH1D2G48SEC0

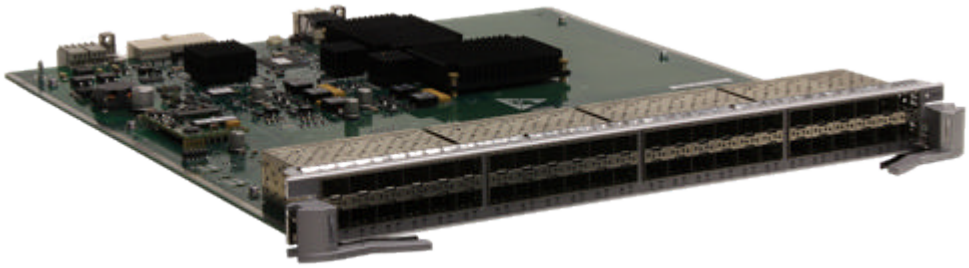

Figure 6-83 shows the EH1D2G48SED0.

Figure 6-83 EH1D2G48SED0

Figure 6-84 shows the EH1D2G48SFA0.

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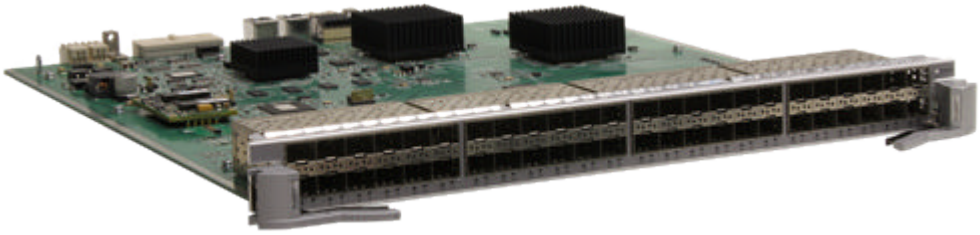
Figure 6-84 EH1D2G48SFA0



Version Mapping

Table 6-134 lists the switch chassis and software versions matching the EH1D2G48S.

Table 6-134 Switch chassis and software versions matching the EH1D2G48S

Card Name	S9700 Chassis
EH1D2G48SEA0	Supported in V200R001C00 and later versions
EH1D2G48SEC0	Supported in V200R001C00 and later versions
EH1D2G48SED0	Supported in V200R001C00 and later versions
EH1D2G48SFA0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-135 describes the functions and features of the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0.

Table 6-135 Functions and features of the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0

Function and Feature	Description
Basic function	Provides forty-eight GE optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR

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Function and Feature	Description
Buffer	● EH1D2G48SEA0, EH1D2G48SEC0, and EH1D2G48SED0: 4 MB ● EH1D2G48SFA0: 2 MB
Software feature	EH1D2G48SEA0, EH1D2G48SEC0, and EH1D2G48SED0: NetStream
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	● EH1D2G48SEA0 and EH1D2G48SFA0: 32K ● EH1D2G48SEC0: 128K ● EH1D2G48SED0: 512K
IPv4 ACL	● EH1D2G48SEA0: 6K for inbound traffic; 1K for outbound traffic ● EH1D2G48SEC0: 38K for inbound traffic; 1K for outbound traffic ● EH1D2G48SED0: 70K for inbound traffic; 1K for outbound traffic ● EH1D2G48SFA0: 1.5K for inbound traffic; 256 for outbound traffic
IPv4 FIB	● EH1D2G48SEA0: 16K ● EH1D2G48SEC0: 128K ● EH1D2G48SED0: 512K ● EH1D2G48SFA0: 12K
IPv6 ACL	● EH1D2G48SEA0: 3K for inbound traffic; 256 for outbound traffic ● EH1D2G48SEC0: 35K for inbound traffic; 256 for outbound traffic ● EH1D2G48SED0: 67K for inbound traffic; 256 for outbound traffic ● EH1D2G48SFA0: 512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	● EH1D2G48SEA0: 8K ● EH1D2G48SEC0: 64K ● EH1D2G48SED0: 256K ● EH1D2G48SFA0: 6K

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Function and Feature	Description
ARP	● EH1D2G48SEA0, EH1D2G48SEC0, and EH1D2G48SED0: 16376 ● EH1D2G48SFA0: 8184

Indicators and Ports

Indicator Description

Figure 6-85 shows the indicators on the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 panels.

Figure 6-85 Indicators on the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 panels

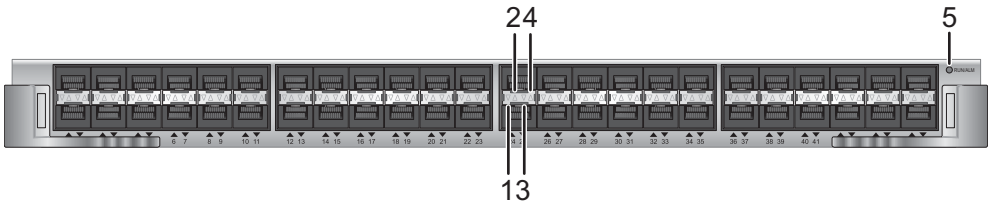

Table 6-136 describes the indicators on the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 panels.

Table 6-136 Indicators on the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 panels

Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of upper optical port		
3	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of upper optical port		

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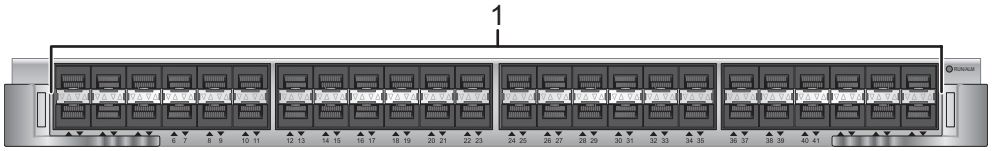
Number	Indicator	Color	Description
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-86 shows the ports on the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 panels.

Figure 6-86 Ports on the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 panels



1	Forty-eight 100M/1000M BASE-X optical ports

100M/1000M BASE-X optical ports

Table 6-137 lists the attributes of a 100M/1000M BASE-X optical port with an optical module installed.

Table 6-137 Optical port attributes (optical module)

Attribute	Description
Connector type	SFP

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Attribute	Description
Optical port attribute	Depends on the SFP optical module used. For details about optical modules supported by the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0 and their attributes, see **Attributes of FE optical modules**, **Attributes of GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-138 lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-138 Optical port attributes (copper module)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP copper module used. For details on the copper modules supported by the cards and attributes of the copper modules, see **Attributes of a GE SFP copper module**.
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-139 lists specifications of the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0.

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Table 6-139 Specifications of the EH1D2G48SEA0, EH1D2G48SEC0, EH1D2G48SED0, and EH1D2G48SFA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: EH1D2G48SEA0: 2.54 kg EH1D2G48SEC0: 2.66 kg EH1D2G48SED0: 2.66 kg EH1D2G48SFA0: 2.60 kg ● Maximum power consumption: EH1D2G48SEA0: 75 W EH1D2G48SEC0: 92 W EH1D2G48SED0: 110 W EH1D2G48SFA0: 65 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE

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Item	Description
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-140 provides the ordering information.

Table 6-140 EH1D2G48S ordering information

Part Number	Card Description	Card Model
03030NWD	48-port 100/1000BASE-X interface card (EA, SFP)	EH1D2G48SEA0
03030NWE	48-port 100/1000BASE-X interface card (EC, SFP)	EH1D2G48SEC0
03030NWF	48-port 100/1000BASE-X interface card (ED, SFP)	EH1D2G48SED0
03030NXG	48-port 100/1000BASE-X interface card (FA, SFP)	EH1D2G48SFA0

6.7.10 EH1D2G48SBC0-48-Port 100/1000BASE-X Interface Card (BC, SFP)

Introduction

The EH1D2G48SBC0 provides forty-eight 100M/1000M optical interfaces for line-speed forwarding. The large buffer of the card enables the card to handle 50 Gbit/s traffic in case of traffic bursts.

The EH1D2G48SBC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.

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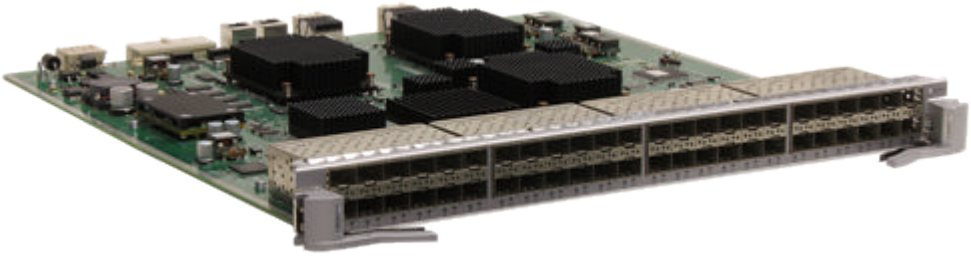
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-87 shows the EH1D2G48SBC0.

Figure 6-87 EH1D2G48SBC0



Version Mapping

Table 6-141 lists the switch chassis and software versions matching the EH1D2G48SBC0.

Table 6-141 Switch chassis and software versions matching the EH1D2G48SBC0

Card Name	S9700 Chassis
EH1D2G48SBC0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-142 describes the functions and features of the EH1D2G48SBC0.

Table 6-142 Functions and features of the EH1D2G48SBC0

Function and Feature	Description
Basic function	Provides forty-eight 100M/1000M GE optical ports for data transmission and line-speed switching. Capable of handling 50 Gbit/s traffic.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	1.25 GB

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Function and Feature	Description
Jumbo frame	A maximum of 9 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	128K
IPv4 ACL	38K for inbound traffic; 1K for outbound traffic
IPv4 FIB	128K
IPv6 ACL	35K for inbound traffic; 256 for outbound traffic
IPv6 FIB	64K
ARP	16376

Application

The EH1D2G48TBC0 and EH1D2G48SBC0 of the S9700 have a large buffer capacity. The 1.25 GB buffer capacity on each port achieves 200 ms buffering, which prevents packet loss caused by traffic bursts on a network. When the network is congested and traffic bursts occur, the large-buffer cards can effectively buffer traffic on ports. The large buffer capacity, combined with QoS traffic shaping, ensures even, stable traffic transmission on a congested, unstable network. These cards prevent packet loss while reducing congestion and traffic bursts on upstream devices.

The large-buffer cards apply to data center networks and video networks:

- When used on a data center network, these cards ensure fast, stable, and low-latency data forwarding.
- When used on a video network, these cards can prevent voice/image distortion, delay, and asynchronous image and voice presence caused by packet loss and transmission latency, guaranteeing high-quality video conferences.

The following uses a collaborative computing scenario as an example to describe application of these cards in a data center.

Complicated computing tasks, such as search engine computing, oil exploration computing, and meteorological computing, must be carried out by multiple servers simultaneously. In this situation, the servers perform collaborative computing, which results in fast transmission of data flows on a network and traffic bursts when multiple servers send computing data to one server at the same time. Traffic bursts cause congestion on network nodes, as shown in **Figure 6-88**. Packets are dropped on congested network nodes.

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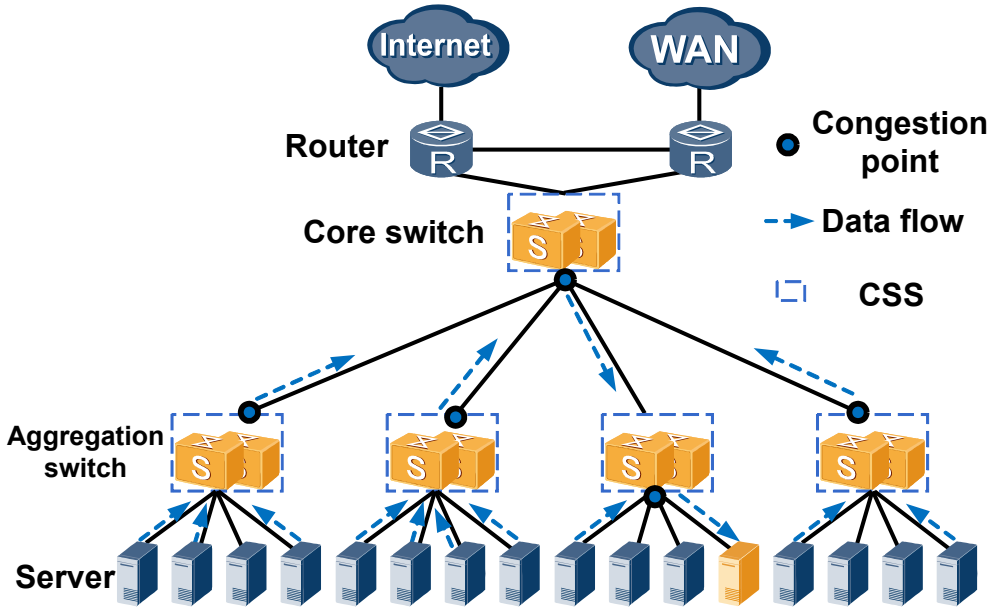
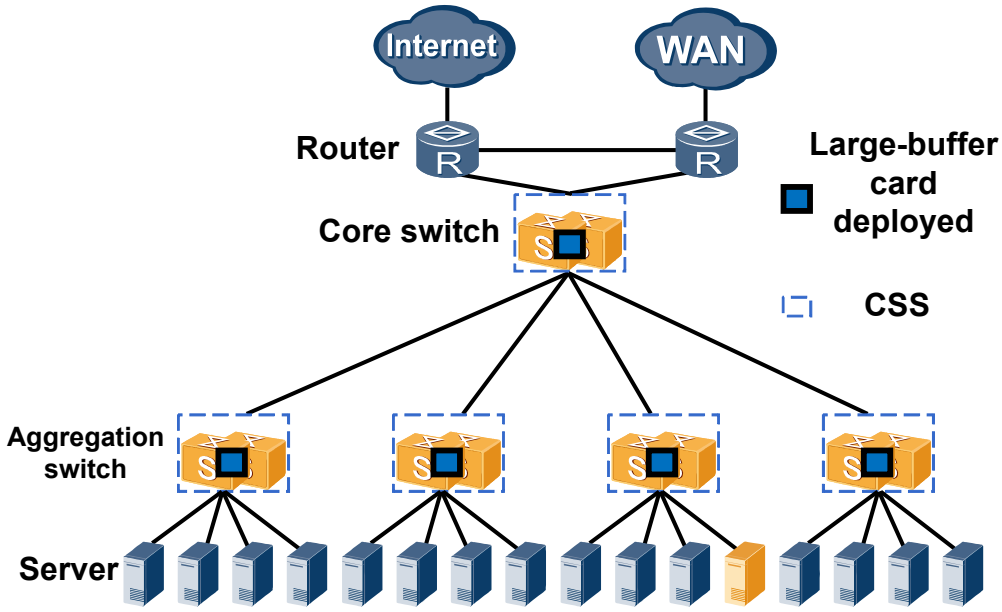
Figure 6-88 Traffic bursts caused by collaborative computing in EoR deployment



As shown in **Figure 6-89**, all switches from the end of row (EoR) switches to core switches in a data center are equipped with large-buffer cards. These large-buffer cards prevent packet loss caused by traffic bursts in the data center.

Figure 6-89 Large-buffer cards deployed in a data center



Indicators and Ports

Indicator Description

Figure 6-90 shows the indicators on the EH1D2G48SBC0 panel.

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Figure 6-90 Indicators on the EH1D2G48SBC0 panel

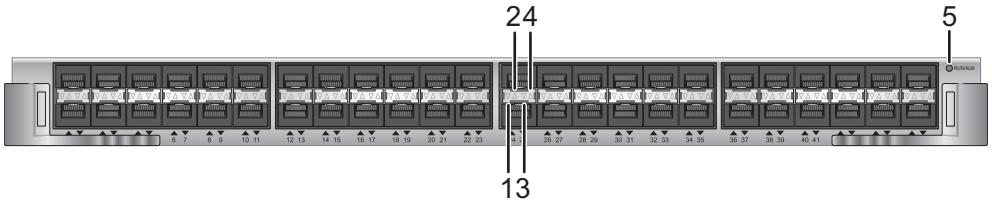

Table 6-143 describes the indicators on the EH1D2G48SBC0 panel.

Table 6-143 Indicators on the EH1D2G48SBC0 panel

Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of upper optical port		
3	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of upper optical port		
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

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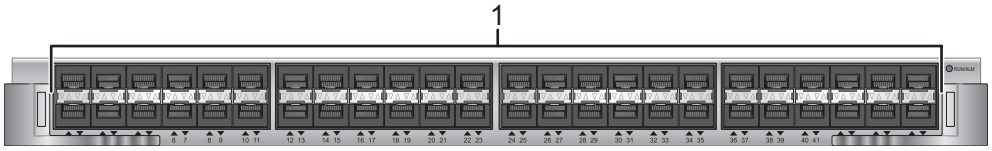
Port Description

Figure 6-91 shows the ports on the EH1D2G48SBC0 panel.

Figure 6-91 Ports on the EH1D2G48SBC0 panel



1	Forty-eight 100M/1000M BASE-X optical ports

100M/1000M BASE-X optical ports

Table 6-144 lists the attributes of a 100M/1000M BASE-X optical port with an optical module installed.

Table 6-144 Optical port attributes (optical module)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details about optical modules supported by the EH1D2G48SBC0 and their attributes, see **Attributes of FE optical modules**, **Attributes of GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-145 lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-145 Optical port attributes (copper module)

Attribute	Description
Connector type	SFP

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Attribute	Description
Optical port attribute	Depends on the SFP copper module used. For details on the copper modules supported by the cards and attributes of the copper modules, see **Attributes of a GE SFP copper module**.
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-146 describes specifications of the EH1D2G48SBC0.

Table 6-146 Specifications of the EH1D2G48SBC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.90 kg (excluding the optical module) ● Maximum power consumption: 185 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-147 provides the ordering information.

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Table 6-147 EH1D2G48SBC0 ordering information

Part Number	Card Description	Card Model
03030NXJ	48-port 100/1000BASE-X interface card (BC, SFP)	EH1D2G48SBC0

6.7.11 EH1D2G48SX1E-48-Port 100/1000BASE-X Interface Card (X1E, SFP)

Introduction

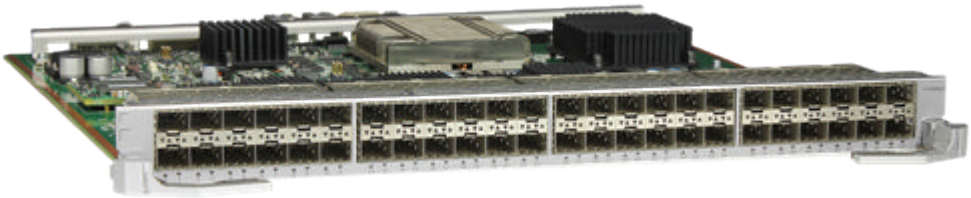
The EH1D2G48SX1E provides high performance, large entry sizes, and a large buffer for data switching. This card is highly integrated and has a large port density.

The EH1D2G48SX1E can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-92 shows an EH1D2G48SX1E card.

Figure 6-92 EH1D2G48SX1E card



Version Mapping

Table 6-148 lists the switch chassis and software versions matching the interface card.

Table 6-148 Switch chassis and software versions matching the interface card

Card Name	S9700 Chassis
EH1D2G48SX1E	Supported in V200R005C00 and later versions

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Functions and Features

The EH1D2G48SX1E provides the following functions:

- Communicates with the MPU and works under the control of the MPU.
- Searches for routes and destination addresses of data packets for forwarding.
- Forwards data packets.

Table 6-149 describes functions and features of the EH1D2G48SX1E.

Table 6-149 Functions and features of the EH1D2G48SX1E

Function and Feature	Description
Basic functions	Provides forty-eight GE optical ports for data access and line-speed switching.
Forwarding speed	48 Gbit/s
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queues	Eight queues per port
Scheduling	Priority queuing (PQ), deficit round robin (DRR), and PQ+DRR
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	1M
IPv4 ACL	64K for inbound and outbound traffic
IPv4 FIB	1M(S9706/S9712), 150K(S9703)
IPv6 ACL	16K for inbound and outbound traffic
IPv6 FIB	512K(S9706/S9712), 150K(S9703)
ARP	256K

Indicators and Ports

Indicator Description

Figure 6-93 shows indicators on the EH1D2G48SX1E panel.

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Figure 6-93 Indicators on the EH1D2G48SX1E panel

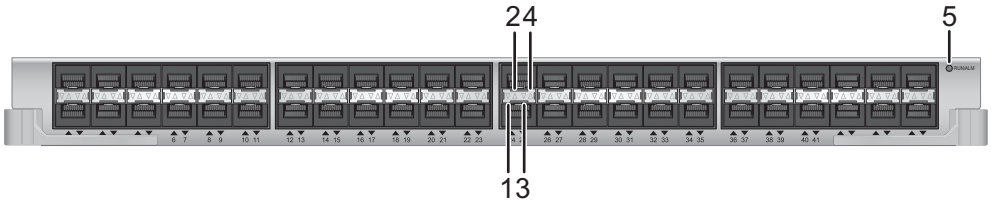

Table 6-150 describes indicators on the EH1D2G48SX1E panel.

Table 6-150 Indicators on the EH1D2G48SX1E panel

Number	Indicator	Color	Description
1	ACT indicator of a lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of an upper optical port		
3	LINK indicator of a lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of an upper optical port		
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

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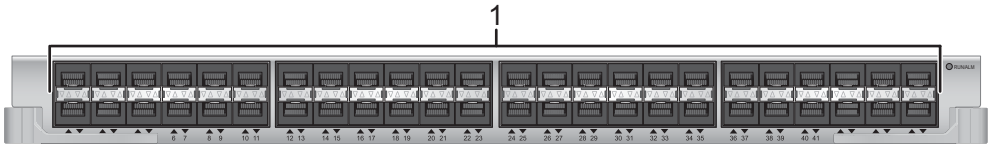
Port Description

Figure 6-94 shows ports on the EH1D2G48SX1E panel.

Figure 6-94 Ports on the EH1D2G48SX1E panel



1	Forty-eight 100M/1000M BASE-X ports

100M/1000M BASE-X port

Table 6-151 describes the attributes of a 100M/1000M BASE-X port with an optical module installed.

Table 6-151 Optical port attributes (optical module)

Attribute	Description
Connector Type	SFP
Optical port attributes	Depends on the SFP optical module used. For optical modules supported by the EH1D2G48SX1E and their attributes, see **Attributes of an FE optical module**, **Attributes of a GE optical module**, **Attributes of a CWDM optical module**, and **Attributes of a DWDM optical module**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-152 describes the attributes of a 100M/1000M BASE-X port with a copper module installed.

Table 6-152 Optical port attributes (copper module)

Attribute	Description
Connector type	SFP

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Attribute	Description
Optical port attribute	Depends on the SFP copper module used. For details on the copper modules supported by the cards and attributes of the copper modules, see **Attributes of a GE SFP copper module**.
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-153 lists specifications of the EH1D2G48SX1E.

Table 6-153 Specifications of the EH1D2G48SX1E

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 3.04 kg ● Maximum power consumption: 140 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-154 provides EH1D2G48SX1E ordering information.

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Table 6-154 EH1D2G48SX1E ordering information

Part Number	Card Name	Card Model
03030RPJ	48-port 100/1000BASE-X interface card (X1E SFP)	EH1D2G48SX1E

6.8 GE/10GE Interface Card

6.8.1 EH1D2T24XEA0-24-Port 10/100/1000BASE-T and 2-Port 10GBASE-X Interface Card (EA, RJ45/XFP)

Introduction

The EH1D2T24XEA0 provides twenty-four GE electrical ports and two 10GE optical ports for data transmission and line-speed switching.

The EH1D2T24XEA0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-95 shows the EH1D2T24XEA0.

Figure 6-95 EH1D2T24XEA0

Version Mapping

Table 6-155 lists the switch chassis and software versions matching the EH1D2T24XEA0.

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Table 6-155 Switch chassis and software versions matching the EH1D2T24XEA0

Card Name	S9700 Chassis
EH1D2T24XEA0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-156 describes the functions and features of the EH1D2T24XEA0.

Table 6-156 Functions and features of the EH1D2T24XEA0

Function and Feature	Description
Basic function	Provides twenty-four GE electrical ports and two 10GE optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	4 MB
Software feature	IP session and LAN/WAN switching
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	32K
IPv4 ACL	6K for inbound traffic; 1K for outbound traffic
IPv4 FIB	16K
IPv6 ACL	3K for inbound traffic; 256 for outbound traffic
IPv6 FIB	8K
ARP	16376

Indicators and Ports

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Indicator Description

Figure 6-96 shows the indicators on the EH1D2T24XEA0 panel.

Figure 6-96 Indicators on the EH1D2T24XEA0 panel

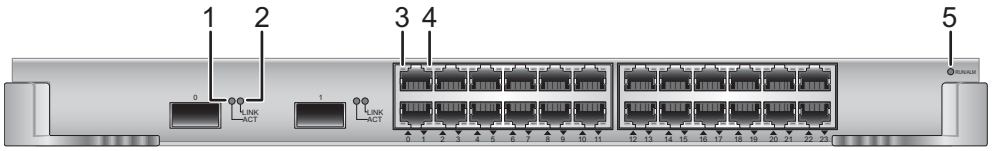

Table 6-157 describes the indicators on the EH1D2T24XEA0 panel.

Table 6-157 Indicators on the EH1D2T24XEA0 panel

Number	Indicator	Color	Description
1	ACT	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK	Green	Steady on: A link has been established on the port.
3	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
4	LINK/ACT indicator of lower electrical port		
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

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Port Description

Figure 6-97 shows the ports on the EH1D2T24XEA0 panel.

Figure 6-97 Ports on the EH1D2T24XEA0 panel

1	Two 10GE BASE-XFP optical ports
2	Twenty-four 10M/100M/1000M BASE-T electrical ports

10M/100M/1000M BASE-T electrical port

Table 6-158 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-158 10M/100M/1000M BASE-T electrical port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

10GE BASE-XFP optical port

Table 6-159 lists the attributes of a 10GE BASE-XFP optical port.

Table 6-159 10GE BASE-XFP optical port attributes

Attribute	Description
Connector type	XFP
Optical port attribute	Depends on the XFP optical module used. For details about the optical modules supported by the EH1D2T24XEA0 and their attributes, see **Attributes of 10GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3ae

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Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-160 lists specifications of the EH1D2T24XEA0.

Table 6-160 Specifications of the EH1D2T24XEA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.30 kg ● Maximum power consumption: 53 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A

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Item	Description
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-161 lists provides the ordering information.

Table 6-161 EH1D2T24XEA0 ordering information

Part Number	Card Description	Card Model
03030NWY	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)	EH1D2T24XEA0

6.8.2 EH1D2S24X-24-Port 100/1000BASE-X and 2-Port 10GBASE-X Interface Card (SFP/XFP)

24-port 100/1000BASE-X and 2-port 10GBASE-X interface cards are available in the following models:

- EH1D2S24XEA0: 24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)
- EH1D2S24XEC0: 24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)

Introduction

The EH1D2S24XEA0 or EH1D2S24XEC0 provide twenty-four GE optical ports and two 10GE optical ports for data transmission and line-speed switching. Table 6-162 lists the differences between the two cards.

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Table 6-162 Differences between the EH1D2S24XEA0 and EH1D2S24XEC0

Card Name	MAC Address Table Size
EH1D2S24XEA0	32K
EH1D2S24XEC0	128K

The EH1D2S24XEA0 and EH1D2S24XEC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-98 shows the EH1D2S24XEA0.

Figure 6-98 EH1D2S24XEA0

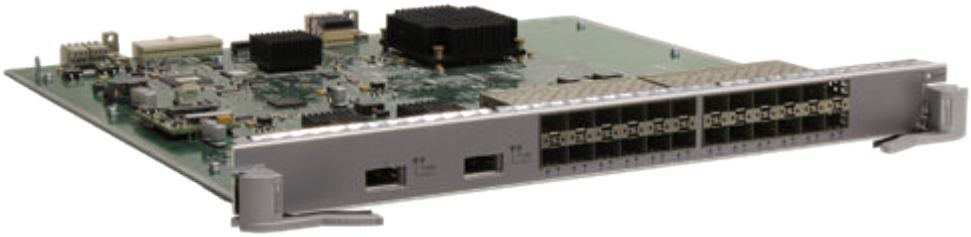

Figure 6-99 shows the EH1D2S24XEC0.

Figure 6-99 EH1D2S24XEC0

Version Mapping

Table 6-163 lists the switch chassis and software versions matching the EH1D2S24X.

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Table 6-163 Switch chassis and software versions matching the EH1D2S24X

Card Name	S9700 Chassis
EH1D2S24XEA0	Supported in V200R001C00 and later versions
EH1D2S24XEC0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-164 describes the functions and features of the EH1D2S24XEA0 and EH1D2S24XEC0.

Table 6-164 Functions and features of the EH1D2S24XEA0 and EH1D2S24XEC0

Function and Feature	Description
Basic function	Provides twenty-four GE optical ports and two 10GE optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	4 MB
Software feature	EH1D2S24XEA0: IP session and LAN/WAN switching EH1D2S24XEC0: LAN/WAN switching
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	● EH1D2S24XEA0: 32K ● EH1D2S24XEC0: 128K
IPv4 ACL	● EH1D2S24XEA0: 6K for inbound traffic; 1K for outbound traffic ● EH1D2S24XEC0: 38K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● EH1D2S24XEA0: 16K ● EH1D2S24XEC0: 128K

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Function and Feature	Description
IPv6 ACL	● EH1D2S24XEA0: 3K for inbound traffic; 256 for outbound traffic ● EH1D2S24XEC0: 35K for inbound traffic; 256 for outbound traffic
IPv6 FIB	● EH1D2S24XEA0: 8K ● EH1D2S24XEC0: 64K
ARP	16376

Indicators and Ports

Indicator Description

Figure 6-100 shows the indicators on the EH1D2S24XEA0 and EH1D2S24XEC0 panels.

Figure 6-100 Indicators on the EH1D2S24XEA0 and EH1D2S24XEC0 panels

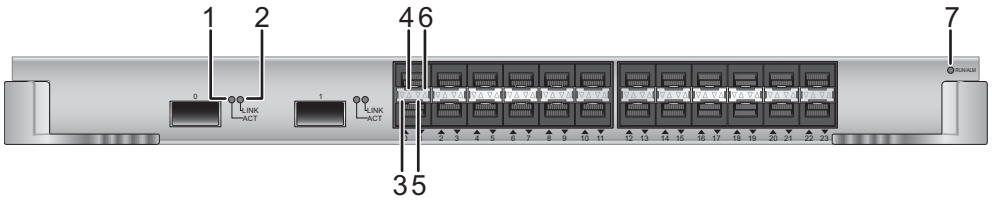

Table 6-165 describes the indicators on the EH1D2S24XEA0 and EH1D2S24XEC0 panels.

Table 6-165 Indicators on the EH1D2S24XEA0 and EH1D2S24XEC0 panels

Number	Indicator	Color	Description
1	ACT indicator	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator	Green	Steady on: A link has been established on the port.
3	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
4	ACT indicator of upper optical port		

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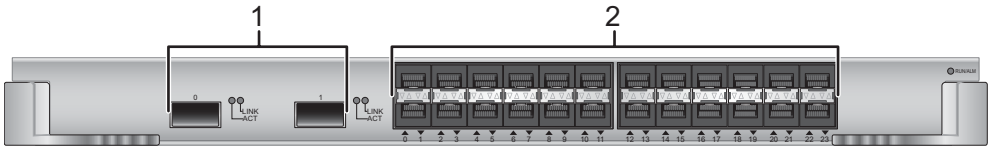
Number	Indicator	Color	Description
5	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
6	LINK indicator of upper optical port		
7	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-101 shows the ports on the EH1D2S24XEA0 or EH1D2S24XEC0 panels.

Figure 6-101 Ports on the EH1D2S24XEA0 or EH1D2S24XEC0 panels



1	Two 10GE BASE-XFP optical ports
2	Twenty-four 100M/1000M BASE-X optical ports

100M/1000M BASE-X optical port

Table 6-166 lists the attributes of a 100M/1000M BASE-X optical port with an optical module installed.

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Table 6-166 100M/1000M BASE-X optical port attributes (1)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details about the optical modules supported by the EH1D2S24XEA0 and EH1D2S24XEC0 and their attributes, see **Attributes of FE optical modules**, **Attributes of GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-167 lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-167 Optical port attributes (copper module)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP copper module used. For details on the copper modules supported by the cards and attributes of the copper modules, see **Attributes of a GE SFP copper module**.
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

10GE BASE-XFP optical port

Table 6-168 lists the attributes of a 10GE BASE-XFP optical port.

Table 6-168 10GE BASE-XFP optical port attributes

Attribute	XFP Description
Connector type	XFP

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Attribute	XFP Description
Optical port attribute	Depends on the XFP optical module used. For details about the optical modules supported by the EH1D2S24XEA0 and EH1D2S24XEC0 and their attributes, see **Attributes of 10GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-169 lists specifications of the EH1D2S24XEA0 and EH1D2S24XEC0.

Table 6-169 Specifications of the EH1D2S24XEA0 and EH1D2S24XEC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: EH1D2S24XEA0: 2.40 kg EH1D2S24XEC0: 2.50 kg ● Maximum power consumption: EH1D2S24XEA0: 65 W EH1D2S24XEC0: 81 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-170 provides the ordering information.

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Table 6-170 EH1D2S24X ordering information

Part Number	Card Description	Card Model
03030NXA	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)	EH1D2S24XEA0
03030NXN	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)	EH1D2S24XEC0

6.8.3 EH1D2S04SX1E-4-Port 10GBASE-X and 24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card (X1E, RJ45/SFP/SFP+)

Introduction

The EH1D2S04SX1E provides high performance, large entry sizes, and a large buffer for data switching. This card is highly integrated and provides various types of ports.

The EH1D2S04SX1E can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-102 shows an EH1D2S04SX1E card.

Figure 6-102 EH1D2S04SX1E card

Version Mapping

Table 6-171 lists the switch chassis and software versions matching the interface card.

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Table 6-171 Switch chassis and software versions matching the interface card

Card Name	S9700 Chassis
EH1D2S04SX1E	Supported in V200R005C00 and later versions

Functions and Features

The EH1D2S04SX1E provides the following functions:

- Communicates with the MPU and works under the control of the MPU.
- Searches for routes and destination addresses of data packets for forwarding.
- Forwards data packets.

Table 6-172 describes functions and features of the EH1D2S04SX1E.

Table 6-172 Functions and features of the EH1D2S04SX1E

Function and Feature	Description
Basic functions	Provides four 10G Ethernet optical ports, sixteen 100/1000M Ethernet optical ports, and eight 10/100/1000M combo ports for data access and line-speed switching.
Forwarding speed	64 Gbit/s
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queues	Eight queues per port
Scheduling	Priority queuing (PQ), deficit round robin (DRR), and PQ+DRR
Software feature	LAN/WAN switchover
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC	1M
IPv4 ACL	64K for inbound and outbound traffic
IPv4 FIB	1M(S9706/S9712), 150K(S9703)
IPv6 ACL	16K for inbound and outbound traffic
IPv6 FIB	512K(S9706/S9712), 150K(S9703)
ARP	256K

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Indicators and Ports

Indicator Description

Figure 6-103 shows indicators on the EH1D2S04SX1E panel.

Figure 6-103 Indicators on the EH1D2S04SX1E panel

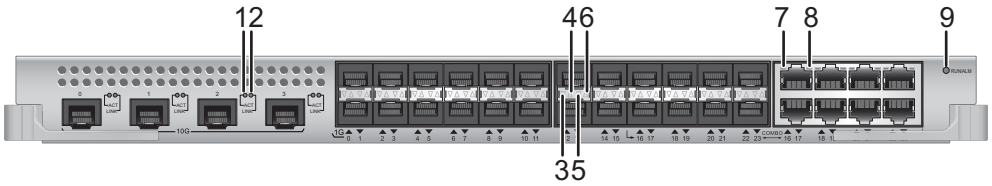

Table 6-173 describes indicators on the EH1D2S04SX1E panel.

Table 6-173 Indicators on the EH1D2S04SX1E panel

Number	Indicator	Color	Description
1	ACT indicator of a 10GE optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator of a 10GE optical port	Green	Steady on: A link has been established on the port.
3	ACT indicator of a lower GE optical port	Yellow	Blinking: The port is transmitting and receiving data.
4	ACT indicator of an upper GE optical port		
5	LINK indicator of a lower GE optical port	Green	Steady on: A link has been established on the port.
6	LINK indicator of an upper GE optical port		
7	LINK/ACT indicator of an upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.

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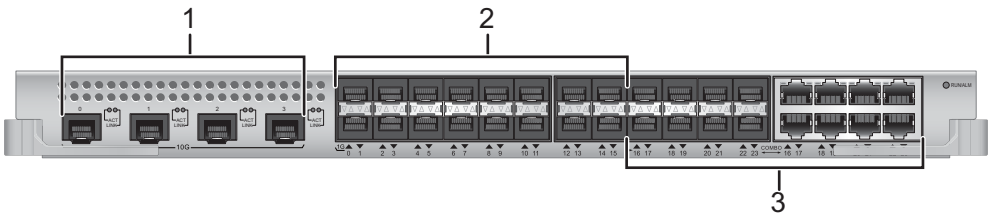
Number	Indicator	Color	Description
8	LINK/ACT indicator of a lower electrical port		
9	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-104 shows ports on the EH1D2S04SX1E panel.

Figure 6-104 Ports on the EH1D2S04SX1E panel



1	Four 10GBASE-X ports
2	Sixteen 100/1000BASE-X ports
3	Eight combo ports. Each combo port consists of a 10/100/1000BASE-T port and a 100/1000BASE-X port.

10GBASE-X port

Table 6-174 describes the attributes of a 10GBASE-X port.

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Table 6-174 Attributes of a 10GBASE-X port

Attribute	Description
Connector Type	SFP+
Optical port attributes	Depends on the **SFP+ - SFP+ high-speed cable (1 m, 3 m, 10 m)**, **QSFP+ - 4*SFP+ high-speed cable (1 m, 3 m, 5 m)**, SFP+ optical module, or **SFP+ optical cable** used. For the optical modules supported by the EH1D2S04SX1E and their attributes, see **Attributes of 10GE optical modules (1)**, **Attributes of 10GE optical modules (2)**, **Attributes of 10GE optical modules (3)**, **Attributes of 10GE optical modules (4)**, **Attributes of 10GE bidirectional optical modules**, and **Attributes of SFP+ CWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

100/1000BASE-X port

Table 6-175 describes the attributes of a 100/1000BASE-X port.

Table 6-175 Attributes of a 100/1000BASE-X port

Attribute	Description
Connector Type	SFP
Optical port attributes	Depends on the SFP optical module used. For optical modules supported by the EH1D2S04SX1E and their attributes, see **Attributes of an FE optical module**, **Attributes of a GE optical module**, **Attributes of a CWDM optical module**, **Attributes of a DWDM optical module**, and **Attributes of a GE copper transceiver**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Combo Port

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A combo port is a dual-purpose port consisting of an Ethernet optical port and an Ethernet electrical port. The electrical and optical ports of a combo port are multiplexed, and only one of them can work at a time.

NOTE

A combo port can work in any of the following modes: auto (selects working mode automatically), fiber (optical port), and copper (electrical port). You can run the **combo-port** command to configure the working mode of a combo port. By default, a combo port works in auto mode. In this mode, a combo port determines the working port in the following way:

- If the combo port only has a network cable connected, the electrical port of the combo port is the working port after the combo port goes Up.
- If the combo port has an optical module installed, the optical port of the combo port is the working port after the combo port goes Up, regardless of whether a network cable is connected to combo port.

Table 6-176 describes the attributes of a 10/100/1000BASE-T port.

Table 6-176 Attributes of a 10/100/1000BASE-T port

Attribute	Description
Connector Type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-177 describes the attributes of a 100/1000BASE-X port.

Table 6-177 Attributes of a 100M/1000M BASE-X port

Attribute	Description
Connector Type	SFP
Optical port attributes	Depends on the SFP optical module used. For optical modules supported by the EH1D2S04SX1E and their attributes, see **Attributes of an FE optical module**, **Attributes of a GE optical module**, **Attributes of a CWDM optical module**, and **Attributes of a DWDM optical module**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Specifications

Table 6-178 lists specifications of the EH1D2S04SX1E.

Table 6-178 Specifications of the EH1D2S04SX1E

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.88 kg ● Maximum power consumption: 130 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE

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Item	Description
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-179 provides EH1D2S04SX1E ordering information.

Table 6-179 EH1D2S04SX1E ordering information

Part Number	Card Name	Card Model
03030RPL	4-port 10GBASE-X and 24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)	EH1D2S04SX1E

6.8.4 EH1D2S08SX1E-8-Port 10GBASE-X and 8-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card (X1E, RJ45/SFP/SFP+)

Introduction

The EH1D2S08SX1E provides high performance, large entry sizes, and a large buffer for data switching. This card is highly integrated and provides various types of ports.

The EH1D2S08SX1E can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-105 shows an EH1D2S08SX1E card.

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Figure 6-105 EH1D2S08SX1E card

Version Mapping

Table 6-180 lists the switch chassis and software versions matching the interface card.

Table 6-180 Switch chassis and software versions matching the interface card

Card Name	S9700 Chassis
EH1D2S08SX1E	Supported in V200R005C00 and later versions

Functions and Features

The EH1D2S08SX1E provides the following functions:

- Communicates with the MPU and works under the control of the MPU.
- Searches for routes and destination addresses of data packets for forwarding.
- Forwards data packets.

Table 6-181 describes functions and features of the EH1D2S08SX1E.

Table 6-181 Functions and features of the EH1D2S08SX1E

Function and Feature	Description
Basic functions	Provides eight 10GBASE-X ports and eight 10/100/1000M combo ports for data access and line-speed switching.
Forwarding speed	88 Gbit/s
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queues	Eight queues per port
Scheduling	Priority queuing (PQ), deficit round robin (DRR), and PQ+DRR

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Function and Feature	Description
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	1M
IPv4 ACL	64K for inbound and outbound traffic
IPv4 FIB	1M(S9706/S9712), 150K(S9703)
IPv6 ACL	16K for inbound and outbound traffic
IPv6 FIB	512K(S9706/S9712), 150K(S9703)
ARP	256K

Indicators and Ports

Indicator Description

Figure 6-106 shows indicators on the EH1D2S08SX1E panel.

Figure 6-106 Indicators on the EH1D2S08SX1E panel

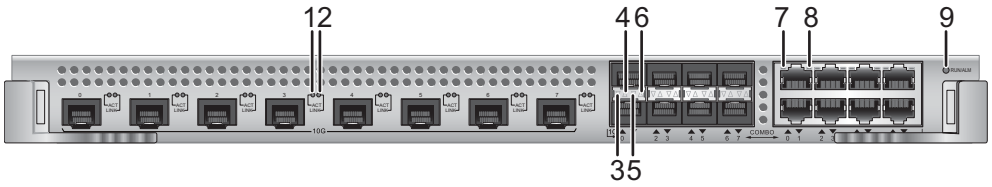

Table 6-182 describes indicators on the EH1D2S08SX1E panel.

Table 6-182 Indicators on the EH1D2S08SX1E panel

Number	Indicator	Color	Description
1	ACT indicator of a 10GE optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator of a 10GE optical port	Green	Steady on: A link has been established on the port.

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Number	Indicator	Color	Description
3	ACT indicator of a lower GE optical port	Yellow	Blinking: The port is transmitting and receiving data.
4	ACT indicator of an upper GE optical port		
5	LINK indicator of a lower GE optical port	Green	Steady on: A link has been established on the port.
6	LINK indicator of an upper GE optical port		
7	LINK/ACT indicator of an upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
8	LINK/ACT indicator of a lower electrical port		
9	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-107 shows ports on the EH1D2S08SX1E panel.

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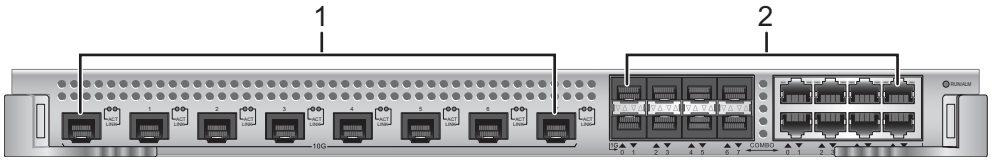
Figure 6-107 Ports on the EH1D2S08SX1E panel



1	Eight 10GBASE-X ports to transmit and receive Ethernet services at 10 Gbit/s.
2	Eight combo ports. Each combo port consists of a 10/100/1000BASE-T port and a 100/1000BASE-X port.

10GBASE-X port

Table 6-183 describes the attributes of a 10GBASE-X port.

Table 6-183 Attributes of a 10GBASE-X port

Attribute	Description
Connector Type	SFP+
Optical port attributes	Depends on the **SFP+ - SFP+ high-speed cable (1 m, 3 m, 10 m)**, **QSFP+ - 4*SFP+ high-speed cable (1 m, 3 m, 5 m)**, SFP+ optical module, or **SFP+ optical cable** used. For the optical modules supported by the EH1D2S08SX1E and their attributes, see **Attributes of 10GE optical modules (1)**, **Attributes of 10GE optical modules (2)**, **Attributes of 10GE optical modules (3)**, **Attributes of 10GE optical modules (4)**, **Attributes of 10GE bidirectional optical modules**, and **Attributes of SFP+ CWDM optical modules**.
Standards compliance	IEEE802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Combo port

A combo port is a dual-purpose port consisting of an Ethernet optical port and an Ethernet electrical port. The electrical and optical ports of a combo port are multiplexed, and only one of them can work at a time.

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NOTE

A combo port can work in any of the following modes: auto (selects working mode automatically), fiber (optical port), and copper (electrical port). You can run the **combo-port** command to configure the working mode of a combo port. By default, a combo port works in auto mode. In this mode, a combo port determines the working port in the following way:

- If the combo port only has a network cable connected, the electrical port of the combo port is the working port after the combo port goes Up.
- If the combo port has an optical module installed, the optical port of the combo port is the working port after the combo port goes Up, regardless of whether a network cable is connected to combo port.

Table 6-184 describes the attributes of a 10/100/1000BASE-T port.

Table 6-184 Attributes of a 10/100/1000BASE-T port

Attribute	Description
Connector Type	RJ45
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-185 describes the attributes of a 100/1000BASE-X port.

Table 6-185 Attributes of a 100M/1000M BASE-X port

Attribute	Description
Connector Type	SFP
Optical port attributes	Depends on the SFP optical module used. For optical modules supported by the EH1D2S08SX1E and their attributes, see **Attributes of an FE optical module**, **Attributes of a GE optical module**, **Attributes of a CWDM optical module**, and **Attributes of a DWDM optical module**.
Standards compliance	IEEE 802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-186 lists specifications of the EH1D2S08SX1E.

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Table 6-186 Specifications of the EH1D2S08SX1E

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.84 kg ● Maximum power consumption: 130 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

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Ordering Information

To place an order, contact the Huawei local office.

Table 6-187 provides EH1D2S08SX1E ordering information.

Table 6-187 EH1D2S08SX1E ordering information

Part Number	Card Name	Card Model
03030RPM	8-port 10GBASE-X and 8-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)	EH1D2S08SX1E

6.9 10GE Interface Card

6.9.1 EH1D2X02X-2-Port 10GBASE-X Interface Card (XFP)

The 2-port 10GBASE-X interface cards are available in the following models:

- EH1D2X02XEA0: 2-port 10GBASE-X interface card (EA, XFP)
- EH1D2X02XEC0: 2-port 10GBASE-X interface card (EC, XFP)
- EH1D2X02XEC1: 2-port 10GBASE-X interface card (EC, XFP), FCC

NOTE

The EH1D2X02XEC0 and EH1D2X02XEC1 are the same, except that the EH1D2X02XEC1 has gained an FCC certificate but the EH1D2X02XEC0 has not.

Introduction

The EH1D2X02XEA0 and EH1D2X02XEC0/EH1D2X02XEC1 provide two 10GE optical ports for data transmission and line-speed switching. Table 6-188 lists the differences between the two cards.

Table 6-188 Differences between the EH1D2X02XEA0 and EH1D2X02XEC0/EH1D2X02XEC1

Card Name	MAC Address Table Size
EH1D2X02XEA0	32K
EH1D2X02XEC0/EH1D2X02XEC1	128K

The EH1D2X02XEA0 and EH1D2X02XEC0/EH1D2X02XEC1 can be installed in:

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- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-108 shows the EH1D2X02XEA0.

Figure 6-108 EH1D2X02XEA0

Figure 6-109 shows the EH1D2X02XEC0/EH1D2X02XEC1.

Figure 6-109 EH1D2X02XEC0/EH1D2X02XEC1

Version Mapping

Table 6-189 lists the switch chassis and software versions matching the EH1D2X02X.

Table 6-189 Switch chassis and software versions matching the EH1D2X02X

Card Name	S9700 Chassis
EH1D2X02XEA0	Supported in V200R001C00 and later versions
EH1D2X02XEC0	Supported in V200R001C00 and later versions
EH1D2X02XEC1	Supported in V200R003C00 and later versions

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Functions and Features

Table 6-190 describes the functions and features of the EH1D2X02XEA0 and EH1D2X02XEC0/EH1D2X02XEC1.

Table 6-190 Functions and features of the EH1D2X02XEA0 and EH1D2X02XEC0/EH1D2X02XEC1

Function and Feature	Description
Basic function	Provides two 10GE optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	4 MB
Software feature	NetStream
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	● EH1D2X02XEA0: 32K ● EH1D2X02XEC0/EH1D2X02XEC1: 128K
IPv4 ACL	● EH1D2X02XEA0: 6K for inbound traffic; 1K for outbound traffic ● EH1D2X02XEC0/EH1D2X02XEC1: 38K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● EH1D2X02XEA0: 16K ● EH1D2X02XEC0/EH1D2X02XEC1: 128K
IPv6 ACL	● EH1D2X02XEA0: 3K for inbound traffic; 256 for outbound traffic ● EH1D2X02XEC0/EH1D2X02XEC1: 35K for inbound traffic; 256 for outbound traffic
IPv6 FIB	● EH1D2X02XEA0: 8K ● EH1D2X02XEC0/EH1D2X02XEC1: 64K
ARP	16376

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Indicators and Ports

Indicator Description

Figure 6-110 shows the indicators on the EH1D2X02XEA0 or EH1D2X02XEC0/EH1D2X02XEC1 panel.

Figure 6-110 Indicators on the EH1D2X02XEA0 or EH1D2X02XEC0/EH1D2X02XEC1 panel

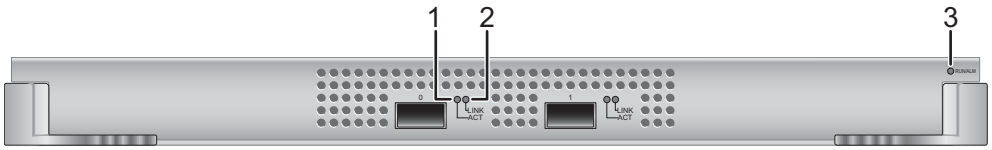

Table 6-191 describes the indicators on the EH1D2X02XEA0 or EH1D2X02XEC0/EH1D2X02XEC1 panel.

Table 6-191 Indicators on the EH1D2X02XEA0 or EH1D2X02XEC0/EH1D2X02XEC1 panel

Number	Indicator	Color	Description
1	ACT	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

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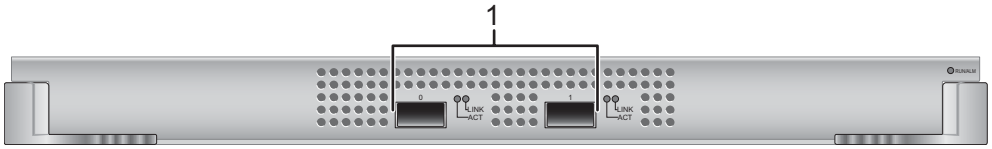
Port Description

Figure 6-111 shows the ports on the EH1D2X02XEA0 or EH1D2X02XEC0/EH1D2X02XEC1 panel.

Figure 6-111 Ports on the EH1D2X02XEA0 or EH1D2X02XEC0/EH1D2X02XEC1 panel



1	Two 10GE BASE-XFP optical ports

10GE BASE-XFP optical port

Table 6-192 lists the attributes of a 10GE BASE-XFP optical port.

Table 6-192 10GE BASE-XFP optical port attributes

Attribute	Description
Connector type	XFP
Optical port attribute	Depends on the XFP optical module used. For details about the optical modules supported by the EH1D2X02XEA0 and EH1D2X02XEC0/EH1D2X02XEC1 and their attributes, see **Attributes of 10GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-193 lists specifications of the EH1D2X02XEA0 and EH1D2X02XEC0/EH1D2X02XEC1.

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Table 6-193 Specifications of the EH1D2X02XEA0 and EH1D2X02XEC0/EH1D2X02XEC1

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: EH1D2X02XEA0: 2.14 kg EH1D2X02XEC0/EH1D2X02XEC1: 2.26 kg ● Maximum power consumption: EH1D2X02XEA0: 52 W EH1D2X02XEC0/EH1D2X02XEC1: 61 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE

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Item	Description
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-194 provides the ordering information.

Table 6-194 EH1D2X02X ordering information

Part Number	Card Description	Card Model
03030NWT	2-port 10GBASE-X interface card (EA, XFP)	EH1D2X02XEA0
03030NWU	2-port 10GBASE-X interface card (EC, XFP)	EH1D2X02XEC0
03030RCU	2-port 10GBASE-X interface card (EC, XFP), FCC	EH1D2X02XEC1

6.9.2 EH1D2X04X-4-Port 10GBASE-X Interface Card (XFP)

The 4-port 10GBASE-X interface cards are available in the following models:

- EH1D2X04XEA0: 4-port 10GBASE-X interface card (EA, XFP)
- EH1D2X04XEC0: 4-port 10GBASE-X interface card (EC, XFP)
- EH1D2X04XEC1: 4-port 10GBASE-X interface card (EC, XFP), FCC
- EH1D2X04XED0: 4-port 10GBASE-X interface card (ED, XFP)

NOTE

The EH1D2X04XEC0 and EH1D2X04XEC1 are the same, except that the EH1D2X04XEC1 has gained an FCC certificate but the EH1D2X04XEC0 has not.

Introduction

The EH1D2X04XEA0, EH1D2X04XEC0/EH1D2X04XEC1, and EH1D2X04XED0 provide four 10GE optical ports for data transmission and line-speed switching. Table 6-195 lists their differences.

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Table 6-195 Differences among the EH1D2X04XEA0, EH1D2X04XEC0/EH1D2X04XEC1, and EH1D2X04XED0

Card Name	MAC Address Table Size
EH1D2X04XEA0	32K
EH1D2X04XEC0/EH1D2X04XEC1	128K
EH1D2X04XED0	512K

The EH1D2X04XEA0, EH1D2X04XEC0/EH1D2X04XEC1, and EH1D2X04XED0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-112 shows the EH1D2X04XEA0.

Figure 6-112 EH1D2X04XEA0

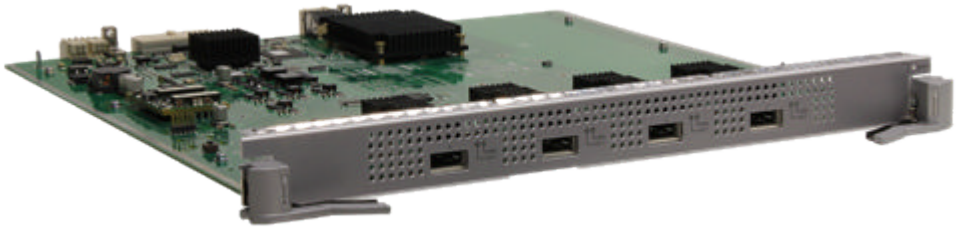

Figure 6-113 shows the EH1D2X04XEC0/EH1D2X04XEC1.

Figure 6-113 EH1D2X04XEC0/EH1D2X04XEC1

Figure 6-114 shows the EH1D2X04XED0.

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Figure 6-114 EH1D2X04XED0

Version Mapping

Table 6-196 lists the switch chassis and software versions matching the EH1D2X04X.

Table 6-196 Switch chassis and software versions matching the EH1D2X04X

Card Name	S9700 Chassis
EH1D2X04XEA0	Supported in V200R001C00 and later versions
EH1D2X04XEC0	Supported in V200R001C00 and later versions
EH1D2X04XEC1	Supported in V200R003C00 and later versions
EH1D2X04XED0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-197 describes the functions and features of the EH1D2X04XEA0, EH1D2X04XEC0/EH1D2X04XEC1, and EH1D2X04XED0.

Table 6-197 Functions and features of the EH1D2X04XEA0, EH1D2X04XEC0/EH1D2X04XEC1, and EH1D2X04XED0

Function and Feature	Description
Basic function	Provides four 10GE optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR

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Function and Feature	Description
Buffer	4 MB
Software feature	EH1D2X04XEA0, EH1D2X04XEC0/ EH1D2X04XEC1 support NetStream.
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	● EH1D2X04XEA0: 32K ● EH1D2X04XEC0/EH1D2X04XEC1: 128K ● EH1D2X04XED0: 512K
IPv4 ACL	● EH1D2X04XEA0: 6K for inbound traffic; 1K for outbound traffic ● EH1D2X04XEC0/EH1D2X04XEC1: 38K for inbound traffic; 1K for outbound traffic ● EH1D2X04XED0: 70K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● EH1D2X04XEA0: 16K ● EH1D2X04XEC0/EH1D2X04XEC1: 128K ● EH1D2X04XED0: 512K
IPv6 ACL	● EH1D2X04XEA0: 3K for inbound traffic; 256 for outbound traffic ● EH1D2X04XEC0/EH1D2X04XEC1: 35K for inbound traffic; 256 for outbound traffic ● EH1D2X04XED0: 67K for inbound traffic; 256 for outbound traffic
IPv6 FIB	● EH1D2X04XEA0: 8K ● EH1D2X04XEC0/EH1D2X04XEC1: 64K ● EH1D2X04XED0: 256K
ARP	16376

Indicators and Ports

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Indicator Description

Figure 6-115 shows the indicators on the EH1D2X04XEA0, EH1D2X04XEC0, or EH1D2X04XED0 panels.

Figure 6-115 Indicators on the EH1D2X04XEA0, EH1D2X04XEC0, or EH1D2X04XED0 panels

Table 6-198 describes the indicators on the EH1D2X04XEA0, EH1D2X04XEC0, or EH1D2X04XED0 panels.

Table 6-198 Indicators on the EH1D2X04XEA0, EH1D2X04XEC0, or EH1D2X04XED0 panels

Number	Indicator	Color	Description
1	ACT	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-116 shows the ports on the EH1D2X04XEA0, EH1D2X04XEC0, or EH1D2X04XED0 panels.

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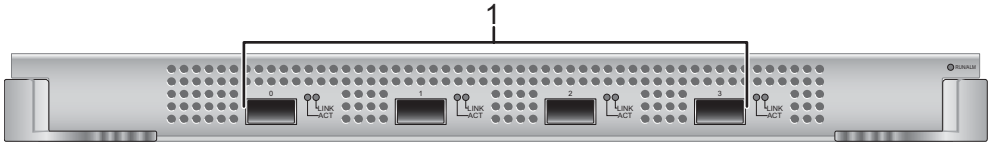
Figure 6-116 Ports on the EH1D2X04XEA0, EH1D2X04XEC0, or EH1D2X04XED0 panels



1	Four 10GE BASE-XFP optical ports

10GE BASE-XFP optical port

Table 6-199 lists the attributes of a 10GE BASE-XFP optical port.

Table 6-199 10GE BASE-XFP optical port attributes

Attribute	Description
Connector type	XFP
Optical port attribute	Depends on the XFP optical module used. For details about the optical modules supported by the EH1D2X04XEA0, EH1D2X04XEC0, and EH1D2X04XED0 and their attributes, see **Attributes of 10GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-200 lists specifications of the EH1D2X04XEA0, EH1D2X04XEC0/EH1D2X04XEC1, and EH1D2X04XED0.

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Table 6-200 Specifications of the EH1D2X04XEA0, EH1D2X04XEC0/EH1D2X04XEC1, and EH1D2X04XED0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: EH1D2X04XEA0: 2.16 kg EH1D2X04XEC0/EH1D2X04XEC1: 2.28 kg EH1D2X04XED0: 2.30 kg ● Maximum power consumption: EH1D2X04XEA0: 64 W EH1D2X04XEC0/EH1D2X04XEC1: 75 W EH1D2X04XED0: 93 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE

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Item	Description
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-201 provides the ordering information.

Table 6-201 EH1D2X04X order information

Part Number	Card Description	Card Model
03030NWR	4-port 10GBASE-X interface card (EA, XFP)	EH1D2X04XEA0
03030NWS	4-port 10GBASE-X interface card (EC, XFP)	EH1D2X04XEC0
03030RCW	4-port 10GBASE-X interface card (EC, XFP), FCC	EH1D2X04XEC1
03030NXC	4-port 10GBASE-X interface card (ED, XFP)	EH1D2X04XED0

6.9.3 EH1D2X08SED4/EH1D2X08SED5-8-Port 10GBASE-X Interface Card (ED, SFP+)

NOTE

The EH1D2X08SED4 and EH1D2X08SED5 are the same, except that the EH1D2X08SED5 has gained an FCC certificate but the EH1D2X08SED4 has not.

Introduction

The EH1D2X08SED4/EH1D2X08SED5 provides eight 10GE BASE-X optical ports for data transmission and line-speed switching.

The EH1D2X08SED4/EH1D2X08SED5 can be installed in:

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- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-117 shows the EH1D2X08SED4/EH1D2X08SED5.

Figure 6-117 EH1D2X08SED4/EH1D2X08SED5

Version Mapping

Table 6-202 lists the switch chassis and software versions matching the EH1D2X08SED4/EH1D2X08SED5.

Table 6-202 Switch chassis and software versions matching the EH1D2X08SED4/EH1D2X08SED5

Card Name	S9700 Chassis
EH1D2X08SED4	Supported in V200R002C00 and later versions
EH1D2X08SED5	Supported in V200R002C00 and later versions

Functions and Features

Table 6-203 describes the functions and features of the EH1D2X08SED4/EH1D2X08SED5.

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Table 6-203 Functions and features of the EH1D2X08SED4/EH1D2X08SED5

Function and Feature	Description
Basic function	Provides eight 10GE BASE-X optical ports for data transmission and line-speed switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	8 MB
Software feature	NetStream and service port clustering
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	512K
IPv4 ACL	70K for inbound traffic; 1K for outbound traffic
IPv4 FIB	512K
IPv6 ACL	67K for inbound traffic; 256 for outbound traffic
IPv6 FIB	256K
ARP	16376

Usage Constraints

NOTICE

When ports on an EH1D2X08SED4/EH1D2X08SED5 card need to be used to set up a CSS, the card can only be installed on S9712 or S9706 chassis and must use **10G optical modules or 10G cables**.

Indicators and Ports

Indicator Description

Figure 6-118 shows the indicators on the EH1D2X08SED4/EH1D2X08SED5 panel.

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Figure 6-118 Indicators on the EH1D2X08SED4/EH1D2X08SED5 panel

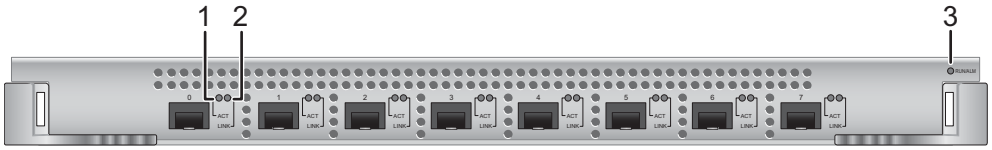


Table 6-204 describes the indicators on the EH1D2X08SED4/EH1D2X08SED5 panel.

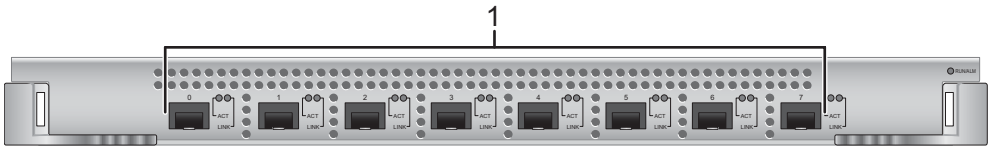
Table 6-204 Indicators on the EH1D2X08SED4/EH1D2X08SED5 panel

Number	Indicator	Color	Description
1	ACT indicator of an optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator of an optical port	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-119 shows the ports on the EH1D2X08SED4/EH1D2X08SED5 panel.

Figure 6-119 Ports on the EH1D2X08SED4/EH1D2X08SED5 panel



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1	Eight 10GE BASE-SFP+ optical ports

10GE BASE-SFP+ optical port

Table 6-205 lists the attributes of a 10GE BASE-SFP+ optical port.

Table 6-205 Optical port attributes

Attribute	Description
Connector type	SFP+
Optical port attribute	Depends on the **SFP+ - SFP+ high-speed cable (1 m, 3 m, 10 m)**, **QSFP+ - 4*SFP+ high-speed cable (1 m, 3 m, 5 m)**, SFP+ optical module, or **SFP+ optical cable** used. For the optical modules supported by the EH1D2X08SED4/EH1D2X08SED5, see **Attributes of 10GE optical modules (1)**, **Attributes of 10GE optical modules (2)**, **Attributes of 10GE optical modules (3)**, **Attributes of 10GE optical modules (4)**, **Attributes of 10GE bidirectional optical modules**, and **Attributes of SFP+ CWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-206 lists specifications of the EH1D2X08SED4/EH1D2X08SED5.

Table 6-206 Specifications of the EH1D2X08SED4/EH1D2X08SED5

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.50 kg ● Maximum power consumption: 198.1 W

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Item	Description
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-207 provides the ordering information.

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Table 6-207 EH1D2X08SED4/EH1D2X08SED5 ordering information

Part Number	Card Description	Card Model
03021TJE	8-port 10GBASE-X interface card (ED, SFP+)	EH1D2X08SED4
03021TJF	8-port 10GBASE-X interface card (ED, SFP+), FCC	EH1D2X08SED5

6.9.4 EH1D2X12SSA0-12-Port 10GBASE-X Interface Card (SA, SFP +)

Introduction

The EH1D2X12SSA0 provides twelve 10GE BASE-X optical ports for data transmission and **line-speed switching**. The optical ports can be used to set up a cluster switching system (CSS).

The EH1D2X12SSA0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-120 shows the EH1D2X12SSA0.

Figure 6-120 EH1D2X12SSA0

Version Mapping

Table 6-208 lists the switch chassis and software versions matching the EH1D2X12SSA0.

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Table 6-208 Switch chassis and software versions matching the EH1D2X12SSA0

Card Name	S9700 Chassis
EH1D2X12SSA0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-209 describes the functions and features of the EH1D2X12SSA0.

Table 6-209 Functions and features of the EH1D2X12SSA0

Function and Feature	Description
Basic function	Provides twelve 10GE optical ports for data transmission and **line-speed switching**.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	2 MB
Software feature	Service port clustering and LAN/WAN switchover
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	32K
IPv4 ACL	1.5K for inbound traffic; 512 for outbound traffic
IPv4 FIB	12K
IPv6 ACL	512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	6K
ARP	8184

Usage Constraints

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NOTICE

When ports on an EH1D2X12SSA0 card need to be used to set up a CSS, the card can only be installed on S9712 or S9706 chassis.

The EH1D2X12SSA0 can be installed in any LPU slot on the S9703 and S9706 to provide line-speed switching. The EH1D2X12SSA0 must be installed in slot 6 or slot 7 of the S9712 to provide line-speed switching.

Indicators and Ports

Indicator Description

Figure 6-121 shows the indicators on the EH1D2X12SSA0 panel.

Figure 6-121 Indicators on the EH1D2X12SSA0 panel

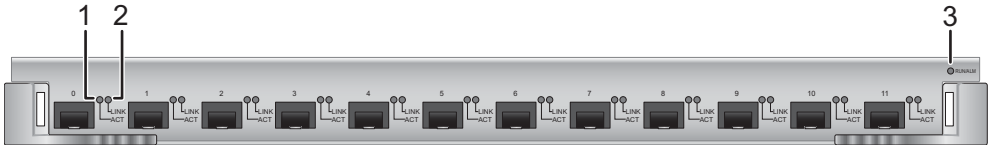

Table 6-210 describes the indicators on the EH1D2X12SSA0 panel.

Table 6-210 Indicators on the EH1D2X12SSA0 panel

Number	Indicator	Color	Description
1	ACT indicator of an optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator of an optical port	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.

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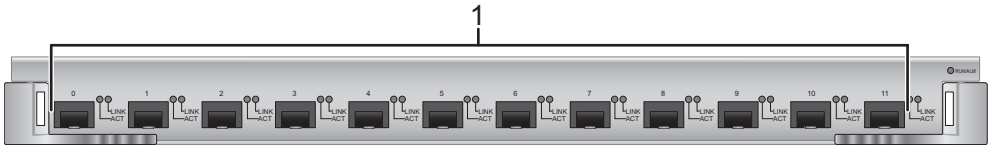
Number	Indicator	Color	Description
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-122 shows the ports on the EH1D2X12SSA0 panel.

Figure 6-122 Ports on the EH1D2X12SSA0 panel



1	Twelve 10GE BASE-SFP+ optical ports (can be used to set up a CSS)

10GE BASE-SFP+ optical port

Table 6-211 lists the attributes of a 10GE BASE-SFP+ optical port.

Table 6-211 10GE BASE-SFP+ optical port attributes

Attribute	Description
Connector type	SFP+
Optical port attribute	Depends on the **SFP+ - SFP+ high-speed cable** (1 m or 10 m), SFP+ optical module, or **SFP+ optical cable** used. For the optical modules supported by the EH1D2X12SSA0 and their attributes, see **Attributes of 10GE optical modules (1)**, **Attributes of 10GE optical modules (3)**, **Attributes of 10GE bidirectional optical modules**, and **Attributes of SFP+ CWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Specifications

Table 6-212 lists specifications of the EH1D2X12SSA0.

Table 6-212 Specifications of the EH1D2X12SSA0.

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.30 kg ● Maximum power consumption: 85 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE

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Item	Description
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-213 provides the ordering information.

Table 6-213 EH1D2X12SSA0 ordering information

Part Number	Card Description	Card Model
03030NWX	12-port 10GBASE-X interface card (SA, SFP+)	EH1D2X12SSA0

6.9.5 EH1D2X16SFC0 16-Port 10GBASE-X Interface Card (FC, SFP +)

Introduction

The EH1D2X16SFC0 provides sixteen 1000M/10GE BASE-X optical ports for data transmission and switching.

The EH1D2X16SFC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-123 shows the EH1D2X16SFC0.

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Figure 6-123 EH1D2X16SFC0

Version Mapping

Table 6-214 lists the switch chassis and software versions matching the EH1D2X16SFC0.

Table 6-214 Switch chassis and software versions matching the EH1D2X16SFC0

Card Name	S9700 Chassis
EH1D2X16SFC0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-215 describes the functions and features of the EH1D2X16SFC0.

Table 6-215 Functions and features of the EH1D2X16SFC0

Function and Feature	Description
Basic function	Provides sixteen 10GE BASE-X optical ports for data transmission and switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	9 MB
Software feature	Service port clustering
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	128K

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Function and Feature	Description
IPv4 ACL	1K for inbound traffic; 512 for outbound traffic
IPv4 FIB	16K
IPv6 ACL	512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	8K
ARP	8184

Usage Constraints

NOTICE

When ports on an EH1D2X16SFC0 card need to be used to set up a CSS, the card can only be installed on S9712 or S9706 chassis and must use **10G optical modules or 10G cables**.

If ports on an EH1D2X16SFC0 card use **OSX040N01**, **SFP-10G-ZR**, or **LE2MXSC80FF0** optical modules, ensure that the operating temperature of the card is below 45°C.

Indicators and Ports

Indicator Description

Figure 6-124 shows the indicators on the EH1D2X16SFC0 panel.

Figure 6-124 Indicators on the EH1D2X16SFC0 panel

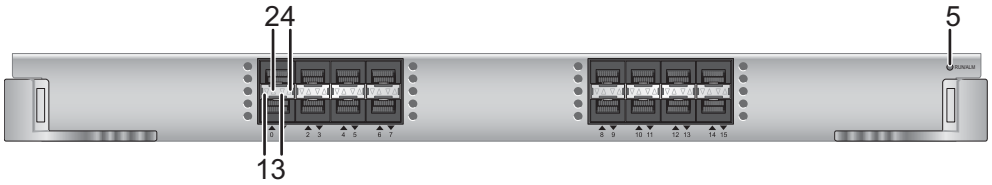

Table 6-216 describes the indicators on the EH1D2X16SFC0 panel.

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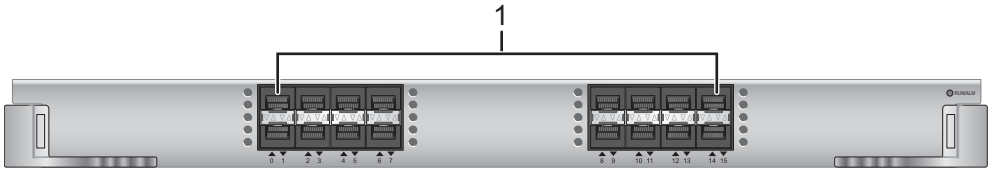
Table 6-216 Indicators on the EH1D2X16SFC0 panel

Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of upper optical port		
3	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of upper optical port		
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-125 shows the ports on the EH1D2X16SFC0 panel.

Figure 6-125 Ports on the EH1D2X16SFC0 panel



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1	Sixteen 10GE BASE-SFP+/1000M BASE-X optical ports

10GE BASE-SFP+/1000M BASE-X optical port

10GE BASE-SFP+/1000M BASE-X optical ports support 10GE and GE auto sensing. **Table 6-217** lists the attributes of a 1000M BASE-X optical port, and **Table 6-218** lists the attributes of a 10GE BASE-SFP+ optical port. **Table 6-219** lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-217 Optical port attributes (GE optical module)

Attribute	Description
Connector type	SFP+
Optical port attribute	Depends on the SFP optical module used. For the optical modules supported by the EH1D2X16SFC0 and their attributes, see **Attributes of GE optical modules**, **Attributes of CWDM optical modules**, and **Attributes of DWDM optical modules**.
Standards compliance	IEEE802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-218 Optical port attributes (10GE optical module)

Attribute	Description
Connector type	SFP+
Optical port attribute	Depends on the **SFP+ - SFP+ high-speed cable (1 m, 3 m, 10 m)**, **QSFP+ - 4*SFP+ high-speed cable (1 m, 3 m, 5 m)**, SFP+ optical module, or **SFP+ optical cable** used. For the optical modules supported by the EH1D2X16SFC0 and their attributes, see **Attributes of 10GE optical modules (1)**, **Attributes of 10GE optical modules (2)**, **Attributes of 10GE optical modules (3)**, **Attributes of 10GE bidirectional optical modules**, and **Attributes of SFP+ CWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Table 6-219 Optical port attributes (copper module)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP copper module used. For details on the copper modules supported by the cards and attributes of the copper modules, see **Attributes of a GE SFP copper module**.
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-220 lists specifications of the EH1D2X16SFC0.

Table 6-220 Specifications of the EH1D2X16SFC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.60 kg ● Maximum power consumption: 150 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-221 provides the ordering information.

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Table 6-221 EH1D2X16SFC0 ordering information

Part Number	Card Description	Card Model
03030NXP	16-port 10GBASE-X interface card (FC, SFP+)	EH1D2X16SFC0

6.9.6 EH1D2X40SFC0 40-Port 10GBASE-X Interface Card (FC, SFP+)

Introduction

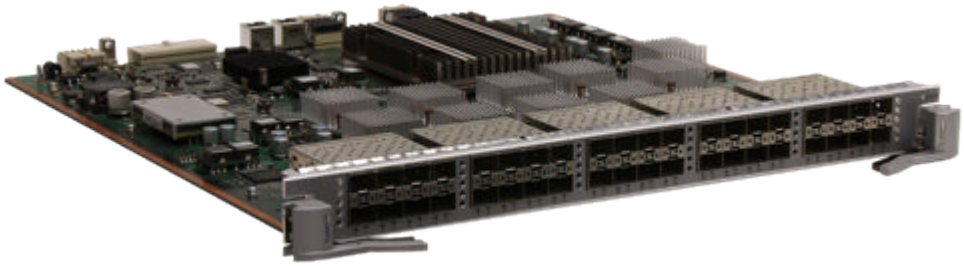
The EH1D2X40SFC0 provides forty 10GE BASE-X optical ports for data transmission and switching.

This EH1D2X40SFC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-126 shows the EH1D2X40SFC0.

Figure 6-126 EH1D2X40SFC0



Version Mapping

Table 6-222 lists the switch chassis and software versions matching the EH1D2X40SFC0.

Table 6-222 Switch chassis and software versions matching the EH1D2X40SFC0

Card Name	S9700 Chassis
EH1D2X40SFC0	Supported in V200R001C00 and later versions

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Functions and Features

Table 6-223 describes the functions and features of the EH1D2X40SFC0.

Table 6-223 Functions and features of the EH1D2X40SFC0

Function and Feature	Description
Basic function	Provides forty 1000M/10GE BASE-X optical ports for data transmission and switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	9 MB
Software feature	Service port clustering
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	128K
IPv4 ACL	1K for inbound traffic; 512 for outbound traffic
IPv4 FIB	16K
IPv6 ACL	512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	8K
ARP	8184

Usage Constraints

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NOTICE

When ports on an EH1D2X40SFC0 card need to be used to set up a CSS, the card can only be installed on S9712 or S9706 chassis and must use **10G optical modules or 10G cables**.

If ports on an EH1D2X40SFC0 card use **OSX040N01**, **SFP-10G-ZR**, or **LE2MXSC80FF0** optical modules, ensure that the operating temperature of the card is below 45°C.

Indicators and Ports

Indicator Description

Figure 6-127 shows the indicators on the EH1D2X40SFC0 panel.

Figure 6-127 Indicators on the EH1D2X40SFC0 panel

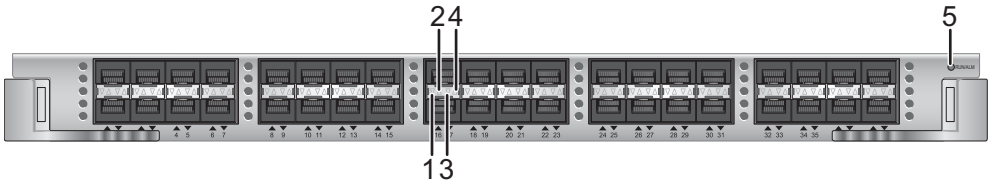

Table 6-224 describes the indicators on the EH1D2X40SFC0 panel.

Table 6-224 Indicators on the EH1D2X40SFC0 panel

Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of upper optical port		
3	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of upper optical port		

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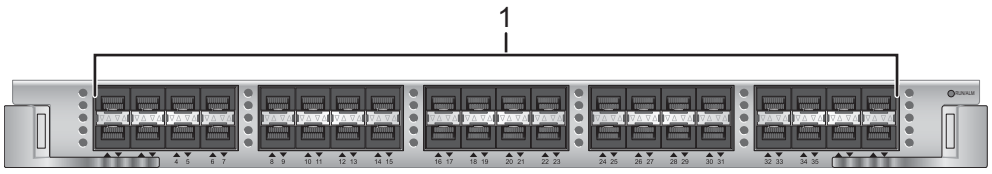
Number	Indicator	Color	Description
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-128 shows the ports on the EH1D2X40SFC0 panel.

Figure 6-128 Ports on the EH1D2X40SFC0 panel



1	Forty 10GE BASE-SFP+/1000M BASE-X optical ports

NOTE

- When a lot of cables are used, the cable management frame may have insufficient space. In this case, place the cables in three layers and route them through the cable management frame, as shown in **Figure 6-129**. Ensure that the cables do not cross over each other.
- Cables affect routing of optical fibers. Therefore, using cables and optical fibers together on a card is not recommended. If cables and optical fibers are used together, connect the optical fibers to ports near the left side of the card and the cables to ports near the right side, as shown in **Figure 6-130**.

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Figure 6-129 Three-layer cabling in cable management frame (side view)

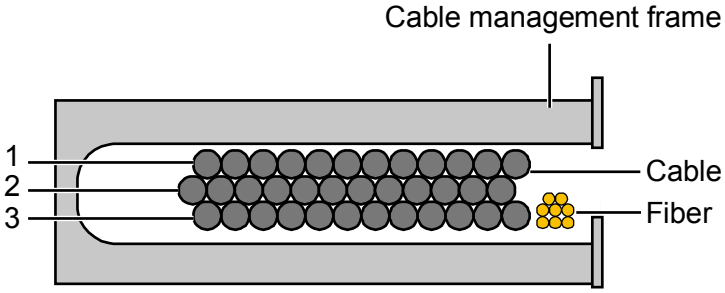

Figure 6-130 Arrangement of optical fibers and SFP+ cables

10GE BASE-SFP+/1000M BASE-X optical port

10GE BASE-SFP+/1000M BASE-X optical ports support 10GE and GE auto sensing. **Table 6-225** lists the attributes of a 1000M BASE-X optical port, and **Table 6-226** lists the attributes of a 10GE BASE-SFP+ optical port. **Table 6-227** lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-225 Optical port attributes (GE optical module)

Attribute	Description
Connector type	SFP+
Optical port attribute	Depends on the SFP optical module used. For the optical modules supported by the EH1D2X40SFC0 and their attributes, see **Attributes of a GE optical module (100/1000 Mbit/s)**, **Attributes of a CWDM optical module (0.1 Gbit/s to 2.67 Gbit/s)**, and **Attributes of a DWDM optical module (0.1 Gbit/s to 2.67 Gbit/s)**.
Standards compliance	IEEE802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Table 6-226 Optical port attributes (10GE optical module)

Attribute	Description
Connector type	SFP+
Optical port attribute	Depends on the **SFP+ - SFP+ high-speed cable (1 m, 3 m, 10 m)**, **QSFP+ - 4*SFP+ high-speed cable (1 m, 3 m, 5 m)**, SFP+ optical module, or **SFP+ optical cable** used. For the optical modules supported by the EH1D2X40SFC0 and their attributes, see **Attributes of 10GE optical modules (1)**, **Attributes of 10GE optical modules (2)**, **Attributes of 10GE optical modules (3)**, **Attributes of 10GE bidirectional optical modules**, and **Attributes of SFP+ CWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-227 Optical port attributes (copper module)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP copper module used. For details on the copper modules supported by the cards and attributes of the copper modules, see **Attributes of a GE SFP copper module**.
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-228 lists specifications of the EH1D2X40SFC0.

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Table 6-228 Specifications of the EH1D2X40SFC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.90 kg ● Maximum power consumption: 183 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

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Ordering Information

To place an order, contact the Huawei local office.

Table 6-229 provides the ordering information.

Table 6-229 EH1D2X40SFC0 ordering information

Part Number	Card Description	Card Model
03030NXM	40-port 10GBASE-X interface card (FC, SFP+)	EH1D2X40SFC0

6.9.7 EH1D2X48SEC0-48-Port 10GBASE-X Interface Card (EC, SFP+)

Introduction

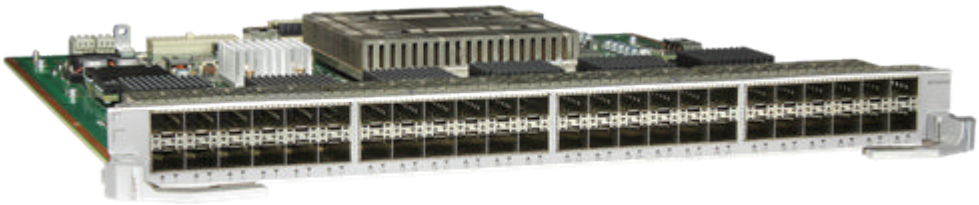
The EH1D2X48SEC0 provides forty-eight 10GE optical ports for data access and switching.

The EH1D2X48SEC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-131 shows an EH1D2X48SEC0 card.

Figure 6-131 EH1D2X48SEC0 card



Version Mapping

Table 6-230 lists the switch chassis and software versions matching the interface card.

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Table 6-230 Switch chassis and software versions matching the interface card

Card Name	S9700 Chassis
EH1D2X48SEC0	Supported in V200R005C00 and later versions

Functions and Features

The EH1D2X48SEC0 provides the following functions:

- Communicates with the MPU and works under the control of the MPU.
- Searches for routes and destination addresses of data packets for forwarding.
- Forwards data packets.

Table 6-231 describes functions and features of the EH1D2X48SEC0.

Table 6-231 Functions and features of the EH1D2X48SEC0

Function and Feature	Description
Basic functions	Provides forty-eight 1000M/10G BASE-X ports for data access and switching.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queues	Eight queues per port
Scheduling	Priority queuing (PQ), weighted round robin (WRR), deficit round robin (DRR), PQ +WRR, and PQ+DRR
Buffer	9 MB
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	256K
IPv4 ACL	supports 3K for inbound traffic and 1K for outbound traffic
IPv4 FIB	128K
IPv6 ACL	supports 1.5K for inbound traffic and 256 for outbound traffic
IPv6 FIB	80K
ARP	44K

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Usage Constraints

NOTICE

If the EH1D2X48SEC0 uses **OSX040N01**, **SFP-10G-ZR**, or **LE2MXSC80FF0** optical modules, ensure that the operating temperature of the card is below 45°C.

Indicators and Ports

Indicator Description

Figure 6-132 shows indicators on the EH1D2X48SEC0 panel.

Figure 6-132 Indicators on the EH1D2X48SEC0 panel

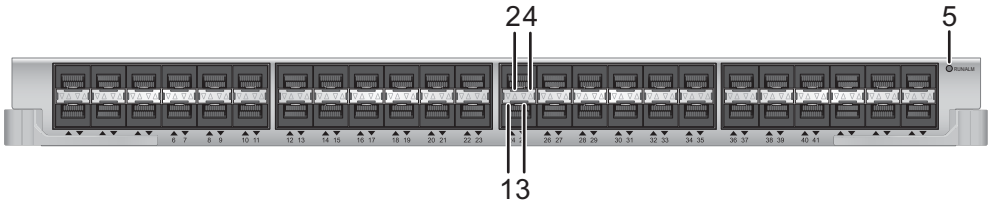

Table 6-232 describes indicators on the EH1D2X48SEC0 panel.

Table 6-232 Indicators on the EH1D2X48SEC0 panel

Number	Indicator	Color	Description
1	ACT indicator of a lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of an upper optical port		
3	LINK indicator of a lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of an upper optical port		

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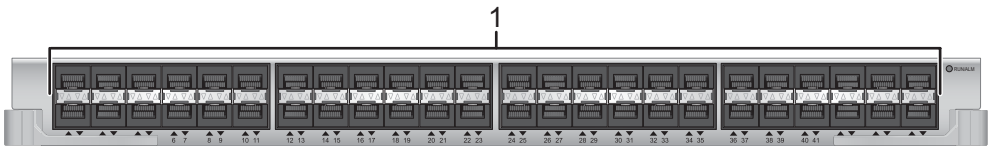
Number	Indicator	Color	Description
5	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-133 shows ports on the EH1D2X48SEC0 panel.

Figure 6-133 Ports on the EH1D2X48SEC0 panel



1	Forty-eight 10G BASE-SFP+/1000M BASE-X ports to transmit and receive services at 10 Gbit/s or 1000 Mbit/s

NOTE

- When a lot of cables are connected to a card, the cable management frame for this slot may not have sufficient space. In this case, deploy cables in three layers that do not cross over each other, and then put the three layers through the cable management frame. See **Figure 6-134**.
- It is not recommended to connect copper cables and optical fibers to the same card because copper cables may block the routes of optical fibers. If copper cables and optical fibers are used on the same card, connect the optical fibers to ports near the left side of the card and the copper cables to ports near the right side, as shown in **Figure 6-135**.

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Figure 6-134 Three layers of cables in a cable management frame

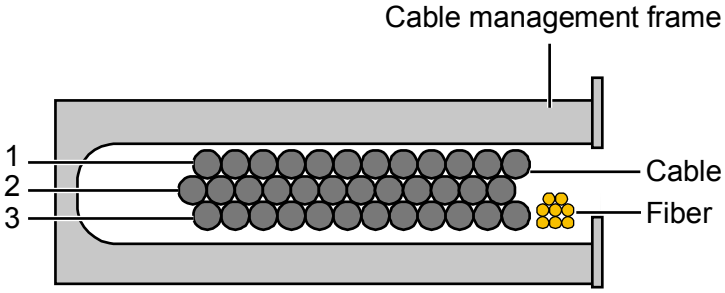

Figure 6-135 Optical fibers and SFP+ cables on the same card

10GE BASE-SFP+/1000M BASE-X port

10GE BASE-SFP+/1000M BASE-X ports support 10GE and GE auto sensing. **Table 6-233** describes the attributes of a 1000M BASE-X port, and **Table 6-234** describes the attributes of a 10GE BASE-SFP+ port. **Table 6-235** lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-233 Optical port attributes (GE optical module)

Attribute	Description
Connector Type	SFP+
Optical port attributes	Depends on the SFP optical module used. For the SFP optical modules supported by the EH1D2X48SEC0 and their attributes, see **Attributes of a GE optical module (100/1000 Mbit/s)**, **Attributes of a CWDM optical module (0.1 Gbit/s to 2.67Gbit/s)**, and **Attributes of a DWDM optical module (0.1 Gbit/s to 2.67Gbit/s)**.
Standards compliance	IEEE802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

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Table 6-234 Optical port attributes (10GE optical module)

Attribute	Description
Connector Type	SFP+
Optical port attributes	Depends on the **SFP+ - SFP+ high-speed cable (1 m, 3 m, 10 m)**, **QSFP+ - 4*SFP+ high-speed cable (1 m, 3 m, 5 m)**, SFP+ optical module, or **SFP+ optical cable** used. For the optical modules supported by the EH1D2X48SEC0 and their attributes, see **Attributes of 10GE optical modules (1)**, **Attributes of 10GE optical modules (2)**, **Attributes of 10GE optical modules (3)**, **Attributes of 10GE optical modules (4)**, **Attributes of 10GE bidirectional optical modules**, and **Attributes of SFP+ CWDM optical modules**.
Standards compliance	IEEE 802.3ae
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-235 Optical port attributes (copper module)

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP copper module used. For details on the copper modules supported by the cards and attributes of the copper modules, see **Attributes of a GE SFP copper module**.
Standards compliance	IEEE 802.3ab
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-236 lists specifications of the EH1D2X48SEC0.

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Table 6-236 Specifications of the EH1D2X48SEC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 3.42 kg ● Maximum power consumption: 300 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)
EMC	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

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Ordering Information

To place an order, contact the Huawei local office.

Table 6-237 provides EH1D2X48SEC0 ordering information.

Table 6-237 EH1D2X48SEC0 ordering information

Part Number	Card Name	Card Model
03030RPH	48-port 10GBASE-X interface card (EC, SFP+)	EH1D2X48SEC0

6.10 40GE Interface Card

6.10.1 EH1D2L02QFC0-2-Port 40GBASE-X Interface Card (FC, QSFP+)

Introduction

The EH1D2L02QFC0 card provides two 40GE optical ports for data transmission and line-speed switching.

The EH1D2L02QFC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-136 shows the EH1D2L02QFC0.

Figure 6-136 EH1D2L02QFC0

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Version Mapping

Table 6-238 lists the switch chassis and software versions matching the EH1D2L02QFC0.

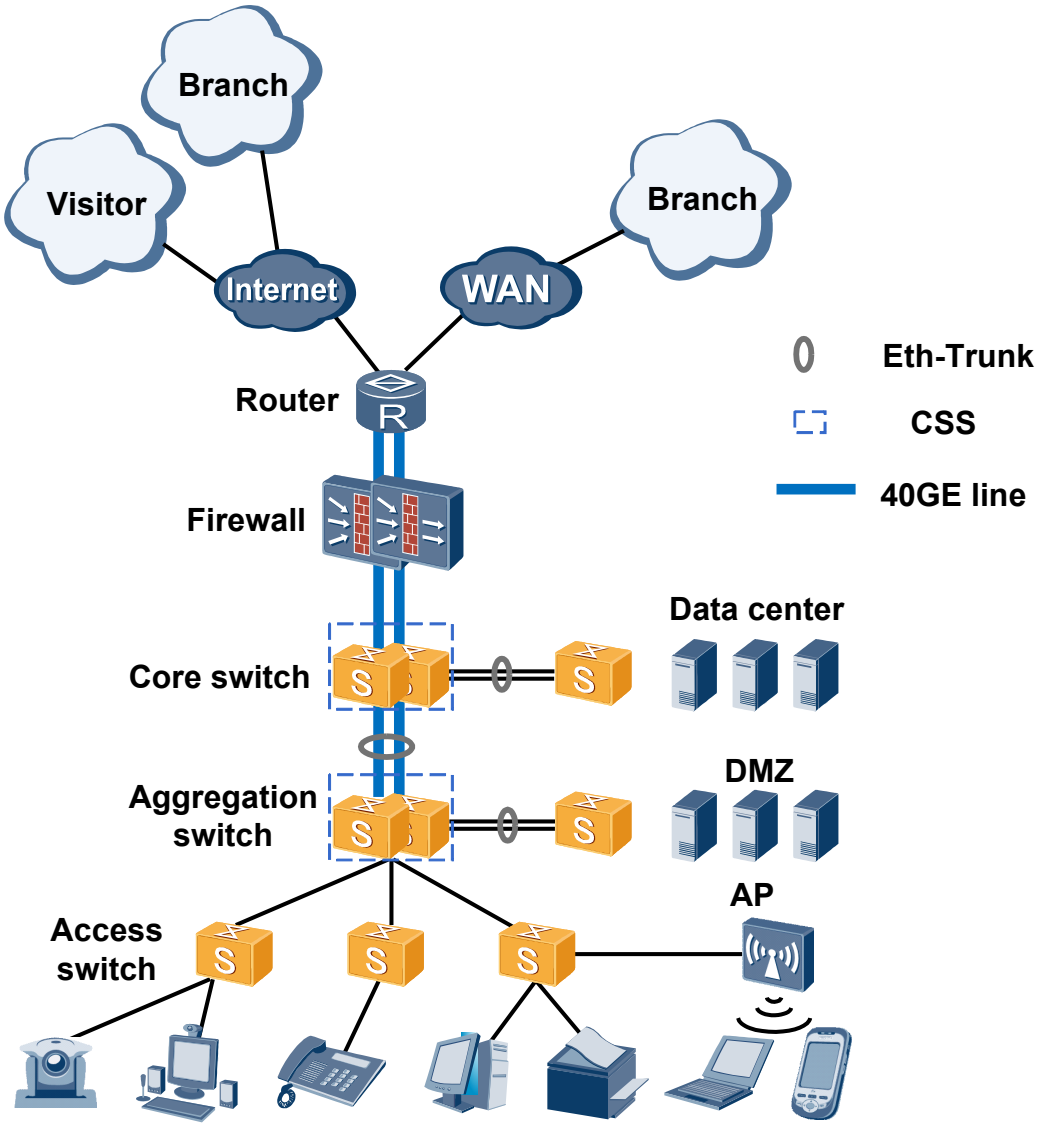
Table 6-238 Switch chassis and software versions matching the EH1D2L02QFC0

Card Name	S9700 Chassis
EH1D2L02QFC0	Supported in V200R002C00 and later versions

Application

A 40GE network can be established by installing 40GE cards on aggregation switches and core switches (S9700), as shown in Figure 6-137.

Figure 6-137 40GE cards deployed on a campus network



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The S9700 supports 40 GE cards EH1D2L02QFC0 and EH1D2L08QFC0. A 40GE network with 40GE cards deployed has the following advantages:

- Provides higher bandwidth.
- Is compatible with 10GE networks because a 40GE interface can be split into four 10GE interfaces. This feature enables customers to seamlessly upgrade their 10GE networks to 40GE networks.
- Has a higher efficiency and lower packet loss ratio than a 40GE network established by bundling four 10GE lines for load balancing.

The 40GE cards are used on networks that need to provide high bandwidth, for example, video surveillance bearer networks and high-definition (HD) video conference bearer networks. The following uses an HD video conference bearer network as an example to describe application of 40GE cards.

Transmission of HD video and voice flows consumes high bandwidth on a network, especially on the aggregation layer and core layer. Aggregation and core devices usually become bottlenecks on an HD video conference bearer network. As shown in **Figure 6-137**, 40GE cards are deployed on the aggregation layer and core layer to transmit HD video and voice flows faster, more efficiently, with fewer packets lost. This deployment ensures sufficient bandwidth for the HD video conference bearer network and delivers high quality HD images and voice.

Functions and Features

Table 6-239 describes the functions and features of the EH1D2L02QFC0.

Table 6-239 Functions and features of the EH1D2L02QFC0

Function and Feature	Description
Basic function	● Provides two 40GE optical ports for data transmission and line-speed switching. ● Allows a 40GE port to split into four 10GE ports.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	9 MB
Software feature	Service port clustering
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	128K

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Function and Feature	Description
IPv4 ACL	1K for inbound traffic; 512 for outbound traffic
IPv4 FIB	16K
IPv6 ACL	512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	8K
ARP	16376

Usage Constraints

NOTICE

When ports on an EH1D2L02QFC0 card need to be used to set up a CSS, the card can only be installed on S9712 or S9706 chassis.

The EH1D2L02QFC0 can forward packets at line speed in any LPU slot on the S9703, S9706 and S9712.

Indicators and Ports

Indicator Description

Figure 6-138 shows the indicators on the EH1D2L02QFC0 panel.

Figure 6-138 Indicators on the EH1D2L02QFC0 panel

Table 6-240 describes the indicators on the EH1D2L02QFC0 panel.

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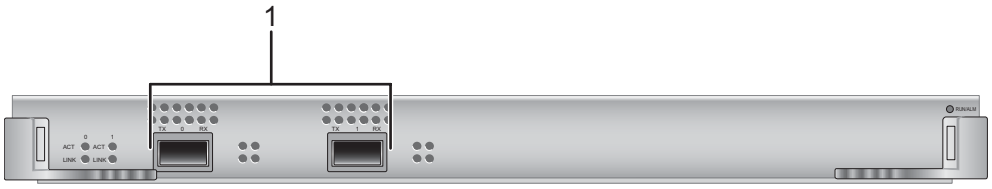
Table 6-240 Indicators on the EH1D2L02QFC0 panel

Number	Indicator	Color	Description
1	ACT	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-139 shows the ports on the EH1D2L02QFC0 panel.

Figure 6-139 Ports on the EH1D2L02QFC0 panel



1	Two 40GE BASE-X optical ports

40GE BASE-X optical port

Table 6-241 lists the attributes of a 40GE BASE-X optical port.

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Table 6-241 40GE BASE-X optical port attributes

Attribute	Description
Connector type	QSFP+
Optical port attribute	Depends on the QSFP+ optical module, **QSFP+ - QSFP+ high-speed cable (1 m, 3 m, 5 m)** or **QSFP+ - 4*SFP+ high-speed cable (1 m, 3 m, 5 m)** used. For details on optical modules supported by the EH1D2L02QFC0 and their attributes, see **Attributes of QSFP+ 40GE optical modules**.
Standards compliance	IEEE802.3ba
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-242 describes specifications of the EH1D2L02QFC0.

Table 6-242 Specifications of the EH1D2L02QFC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.50 kg ● Maximum power consumption: 88 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-243 provides the ordering information.

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Table 6-243 EH1D2L02QFC0 ordering information

Part Number	Card Description	Card Model
03021RNK	2-port 40GBASE-X interface card (FC, QSFP+)	EH1D2L02QFC0

6.10.2 EH1D2L08QFC0-8-Port 40GBASE-X Interface Card (FC, QSFP+)

Introduction

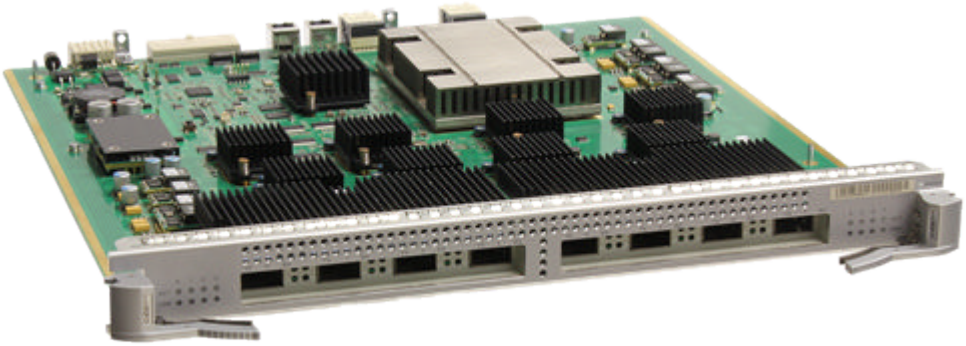
The EH1D2L08QFC0 provides eight 40GE optical ports for data transmission and line-speed switching.

The EH1D2L08QFC0 can be installed in:

- Slots 01 to 03 in an S9703 chassis, as shown in **Slot layout on the S9703 chassis (front)**.
- Slots 01 to 06 in an S9706 chassis, as shown in **Slot layout on the S9706 chassis (front)**.
- Slots 01 to 12 in an S9712 chassis, as shown in **Slot layout on the S9712 chassis (front)**.

Figure 6-140 shows the EH1D2L08QFC0.

Figure 6-140 EH1D2L08QFC0



Version Mapping

Table 6-244 lists the switch chassis and software versions matching the EH1D2L08QFC0.

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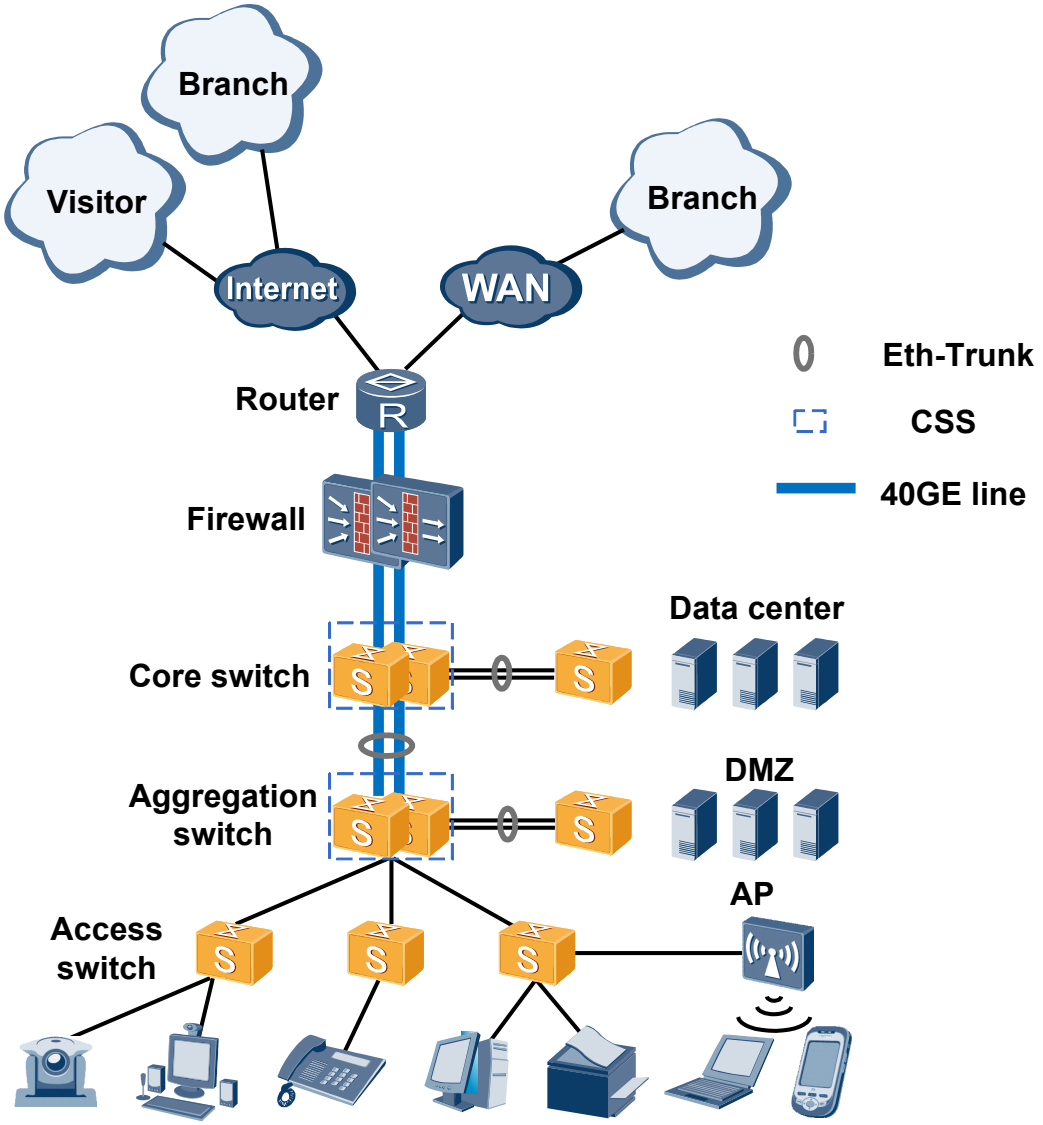
Table 6-244 Switch chassis and software versions matching the EH1D2L08QFC0

Card Name	S9700 Chassis
EH1D2L08QFC0	Supported in V200R002C00 and later versions

Application

A 40GE network can be established by installing 40GE cards on aggregation switches and core switches (S9700), as shown in **Figure 6-141**.

Figure 6-141 40GE cards deployed on a campus network



The S9700 supports 40 GE cards EH1D2L02QFC0 and EH1D2L08QFC0. A 40GE network with 40GE cards deployed has the following advantages:

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- Provides higher bandwidth.
- Is compatible with 10GE networks because a 40GE interface can be split into four 10GE interfaces. This feature enables customers to seamlessly upgrade their 10GE networks to 40GE networks.
- Has a higher efficiency and lower packet loss ratio than a 40GE network established by bundling four 10GE lines for load balancing.

The 40GE cards are used on networks that need to provide high bandwidth, for example, video surveillance bearer networks and high-definition (HD) video conference bearer networks. The following uses an HD video conference bearer network as an example to describe application of 40GE cards.

Transmission of HD video and voice flows consumes high bandwidth on a network, especially on the aggregation layer and core layer. Aggregation and core devices usually become bottlenecks on an HD video conference bearer network. As shown in **Figure 6-141**, 40GE cards are deployed on the aggregation layer and core layer to transmit HD video and voice flows faster, more efficiently, with fewer packets lost. This deployment ensures sufficient bandwidth for the HD video conference bearer network and delivers high quality HD images and voice.

Functions and Features

Table 6-245 describes the functions and features of the EH1D2L08QFC0.

Table 6-245 Functions and features of the EH1D2L08QFC0

Function and Feature	Description
Basic function	● Provides eight 40GE optical ports for data transmission and line-speed switching. ● Allows a 40GE port to split into four 10GE ports.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ, WRR, DRR, PQ+WRR, and PQ+DRR
Buffer	9 MB
Software feature	Service port clustering
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the **jumboframe enable** command.
MAC table size	128K
IPv4 ACL	1K for inbound traffic; 512 for outbound traffic
IPv4 FIB	16K

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Function and Feature	Description
IPv6 ACL	512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	8K
ARP	16376

Usage Constraints

NOTICE

When ports on an EH1D2L08QFC0 card need to be used to set up a CSS, the card can only be installed on S9712 or S9706 chassis.

The EH1D2L08QFC0 can forward packets at line speed in any LPU slot on the S9703 or S9706. When an EH1D2L08QFC0 card is installed in slot 6 or slot 7 of an S9712 chassis, you can run the **set fabric-mode turbo** command to enable line-speed forwarding on this card.

Indicators and Ports

Indicator Description

Figure 6-142 shows the indicators on the EH1D2L08QFC0 panel.

Figure 6-142 Indicators on the EH1D2L08QFC0 panel

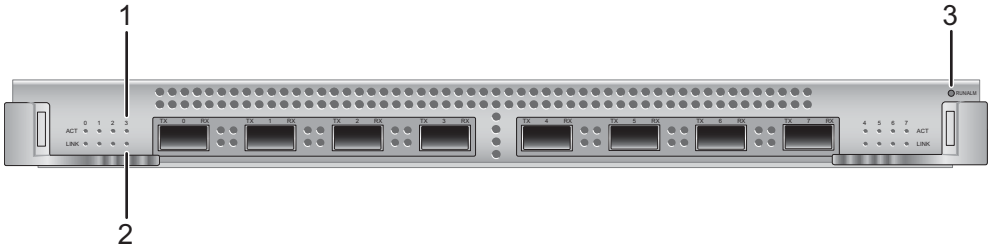

Table 6-246 describes the indicators on the EH1D2L08QFC0 panel.

Table 6-246 Indicators on the EH1D2L08QFC0

Number	Indicator	Color	Description
1	ACT	Yellow	Blinking: The port is transmitting and receiving data.

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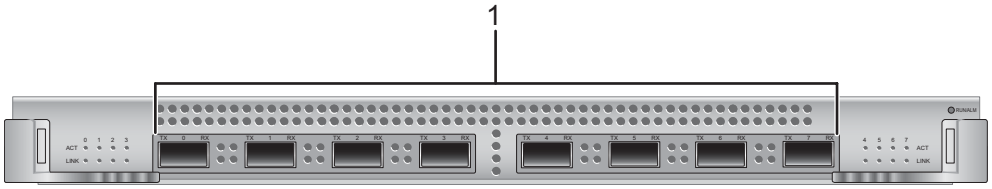
Number	Indicator	Color	Description
2	LINK	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Port Description

Figure 6-143 shows the ports on the EH1D2L08QFC0 panel.

Figure 6-143 Ports on the EH1D2L08QFC0 panel



1	Eight 40GE BASE-X optical ports

NOTE

When multiple QSFP+ cables are connected to an EH1D2L08QFC0 card, divide all the cables on the card into two bundles. Route the two bundles in two layers through the cable management frame to ensure that the bend radius of the cables is in the allowed range.

40GE BASE-X optical port

Table 6-247 lists the attributes of a 40GE BASE-X optical port.

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Table 6-247 0GE BASE-X optical port attributes

Attribute	Description
Connector type	QSFP+
Optical port attribute	Depends on the QSFP+ optical module, **QSFP+ - QSFP+ high-speed cable (1 m, 3 m, 5 m)** or **QSFP+ - 4*SFP+ high-speed cable (1 m, 3 m, 5 m)** used. For details on optical modules supported by the EH1D2L08QFC0 and their attributes, see **Attributes of QSFP+ 40GE optical modules**.
Standards compliance	IEEE802.3ba
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-248 describes specifications of the EH1D2L08QFC0.

Table 6-248 Specifications of the EH1D2L08QFC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 2.80 kg ● Maximum power consumption: 157.2 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-249 provides the ordering information.

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Table 6-249 EH1D2L08QFC0 ordering information

Part Number	Card Description	Card Model
03021PHM	8-port 40GBASE-X interface card (FC, QSFP+)	EH1D2L08QFC0

6.11 POS Interface Card

6.11.1 EH1D2WM00000 - WAN Interface Service Process Card

Introduction

The EH1D2WM00000 is a WAN interface card that provides 10 Gbit/s line-speed forwarding and switching.

The EH1D2WM00000 can be installed in any LPU slot on the S9712, S9706, or S9703 chassis.

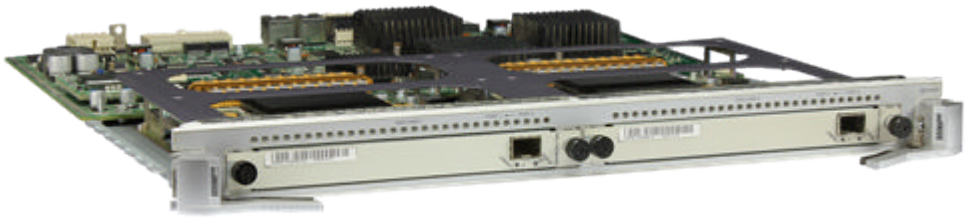
The EH1D2WM00000 has two subcard slots and allows different types of subcards to be installed in the slots at the same time. **Table 6-250** lists the subcards for EH1D2WM00000 and the number and type of ports provided by each subcard.

Table 6-250 Subcard list

Subcard Name	Ports
P1UF	One OC-48c POS-SFP port
P4HF	Four OC-12c POS-SFP ports
P4CF	Four OC-3c POS-SFP ports

Figure 6-144 shows the EH1D2WM00000.

Figure 6-144 EH1D2WM00000



Version Mapping

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Table 6-251 lists the switch chassis and software versions matching the EH1D2WM00000.

Table 6-251 Switch chassis and software versions matching the EH1D2WM00000

Card Name	S9700 Chassis
EH1D2WM00000	Supported only in V200R001C00, V200R002C00, and V200R003C00

Functions and Features

Table 6-252 describes the functions and features of the EH1D2WM00000.

Table 6-252 Functions and features of the EH1D2WM00000

Function and Feature	Description
Basic function	Provides 10 Gbit/s line-speed forwarding and switching and supports the following subcards: ● P1UF: provides one 2.5GE POS port. ● P4HF: provides four 622M POS ports. ● P4CF: provides four 155M POS ports. Any two types of the subcards can be used together.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
Queue	Eight queues on each port
Traffic scheduling	PQ+WFQ (PQ in queues 5, 6, and 7, and WFQ in the other queues)
Software feature	WAN features
IPv4 ACL	32K (inbound), 16K (outbound)
IPv4 FIB	512K

Usage Constraints

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NOTICE

- When using the EH1D2WM00000, install an LE0D00CKMA00 daughter card on the MPU. If the S9700 uses two MPUs, both MPUs must have an LE0D00CKMA00 daughter card installed.
- When using an EH1D2WM00000 card, insert one or two subcards on the card; otherwise, the EH1D2WM00000 card cannot work.
- The EH1D2WM00000 does not support hot swap of subcards.

Indicators and Slots

Indicator Description

Figure 6-145 shows the indicators on the EH1D2WM00000 panel.

Figure 6-145 Indicators on the EH1D2WM00000 panel

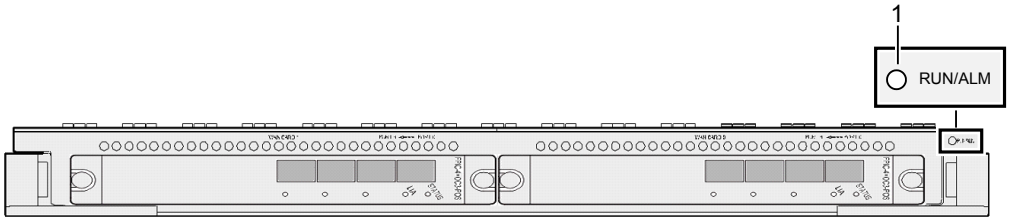

Table 6-253 describes the indicator on the EH1D2WM00000 panel.

Table 6-253 Indicator on the EH1D2WM00000

Number	Indicator	Color	Description
1	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The card software is running properly. Fast blinking: The card software is starting.
		Red	Steady on: The card has failed, and the fault requires manual intervention.

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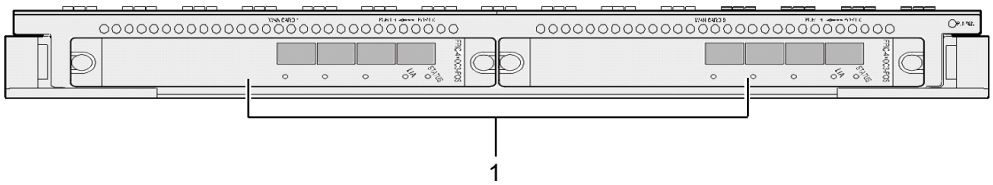
Number	Indicator	Color	Description
		Yellow	Steady on: The card is in power-off state. (For example, the card is forcibly powered off using the **power off** command, or the card is starting.)

Slot Description

Figure 6-146 shows slots on the EH1D2WM00000 panel.

Figure 6-146 Slots on the EH1D2WM00000 panel



1. Two subcard slots. Subcards can be installed in the slots to provide POS optical ports.

Specifications

Table 6-254 describes specifications of the EH1D2WM00000.

Table 6-254 Specifications of the EH1D2WM00000

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 3.80 kg (with a fire protection plate and two P1UF subcards) ● Maximum power consumption: Two P1UF subcards: 84 W Two P4HF subcards: 91 W Two P4CF subcards: 86 W
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-255 provides the ordering information.

Table 6-255 EH1D2WM00000 ordering information

Card Description	Card Model
WAN interface service processing card	EH1D2WM00000

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6.11.2 P1UF-1-Port OC-48c/STM-16c POS-SFP Flexible Card

Introduction

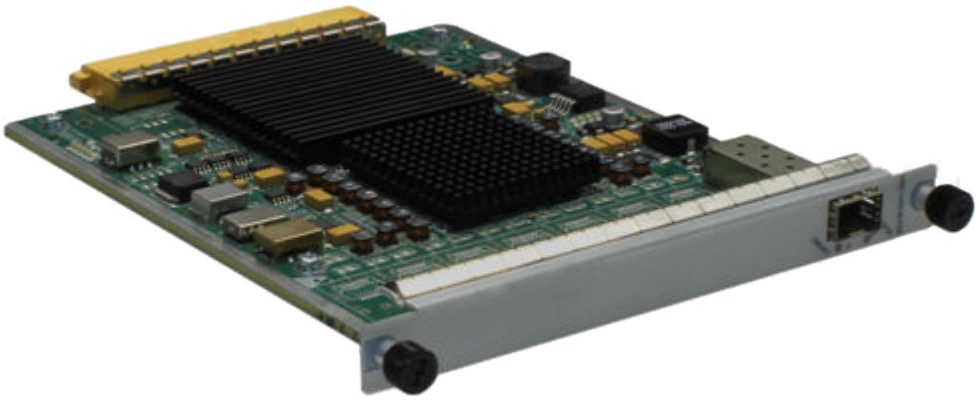
The P1UF provides a 2.5 Gbit/s optical port and can be used on the aggregation layer of a Multiprotocol Label Switching (MPLS) backbone network.

The P1UF is an optional subcard that can be installed in a subcard slot on the EH1D2WM00000.

You can choose to install this subcard based on service requirements. This subcard improves service flexibility and facilitates service expansion.

Figure 6-147 shows the P1UF.

Figure 6-147 P1UF



Version Mapping

Table 6-256 lists the switch chassis and software versions matching the P1UF.

Table 6-256 Switch chassis and software versions matching the P1UF

Card Name	S9700 Chassis
P1UF	Supported only in V200R001C00, V200R002C00, and V200R003C00

Functions and Features

Table 6-257 describes the functions and features of the P1UF.

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Table 6-257 Functions and features of the P1UF

Function and Feature	Description
Basic function	Provides a 2.5 Mbit/s optical port and can be used on the aggregation layer of an MPLS backbone network.
Protocol and service	PPP and HDLC
Port type	SFP
Reliability and availability	Hot swappable

Indicators and Ports

Indicator Description

Figure 6-148 shows the indicators on the P1UF.

Figure 6-148 Indicators on the P1UF panel

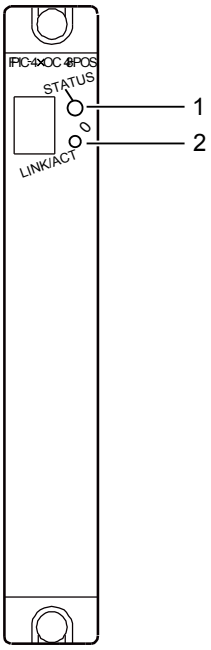

Table 6-258 describes the indicators on the P1UF panel.

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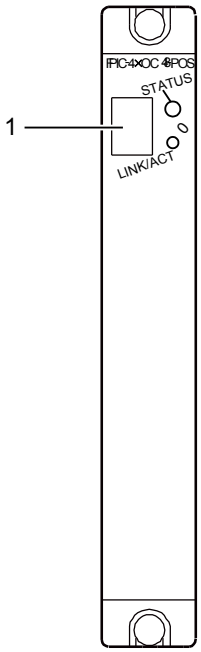
Table 6-258 Indicators on the P1UF panel

Number	Indicator	Color	Description
1	STATUS	Green	Slow blinking: The card software is running properly. Fast blinking: The system is in the alarm state.
2	LINK/ACT	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data. Off: No link is established on the port.

Port Description

Figure 6-149 shows the ports on the P1UF panel.

Figure 6-149 Ports on the P1UF panel



1. One OC-3c/STM-1c POS-SFP optical port (2.5 Gbit/s)

OC-3c/STM-1c POS-SFP optical port

Table 6-259 lists the attributes of an OC-3c/STM-1c POS-SFP optical port.

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Table 6-259 OC-3c/STM-1c POS-SFP optical port attributes

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details on the optical modules supported by the P1UF and their attributes, see **Attributes of POS optical modules**.
Duplex mode	Full duplex
Frame format	PPP and HDLC
Network protocol	IP

Specifications

Table 6-260 describes specifications of the P1UF.

Table 6-260 Specifications of the P1UF

Item	Description
Network management	Enhanced command-line management interface SNMP and MIB
Physical specifications	● Dimensions (W x D x H): 145 mm x 185 mm x 20 mm ● Weight: 0.50 kg ● Typical power consumption: 12 W ● Heat dissipation: 49 BTU/hour
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-261 provides the ordering information.

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Table 6-261 P1UF ordering information

Card Description	Card Model
1-port OC-48c/STM-16c POS-SFP flexible card	P1UF

6.11.3 P4HF-4-Port OC-12c/STM-4c POS-SFP Flexible Card

Introduction

The P4HF provides 622 Mbit/s optical ports and can be used on the aggregation layer of an MPLS backbone network.

The P4HF is an optional subcard that can be installed in a subcard slot on the EH1D2WM00000.

You can choose to install this subcard based on service requirements. This subcard improves service flexibility and facilitates service expansion.

Figure 6-150 shows the P4HF.

Figure 6-150 P4HF

Version Mapping

Table 6-262 lists the switch chassis and software versions matching the P4HF.

Table 6-262 Switch chassis and software versions matching the P4HF

Card Name	S9700 Chassis
P4HF	Supported only in V200R001C00, V200R002C00, and V200R003C00

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Functions and Features

Table 6-263 describes the functions and features of the P4HF.

Table 6-263 Functions and features of the P4HF

Function and Feature	Description
Basic function	Provides 622 Mbit/s optical ports and can be used on the aggregation layer of an MPLS backbone network.
Protocol and service	PPP and HDLC
Port type	SFP
Reliability and availability	Hot swappable

Indicators and Ports

Indicator Description

Figure 6-151 shows the indicators on the P4HF panel.

Figure 6-151 Indicators on the P4HF panel

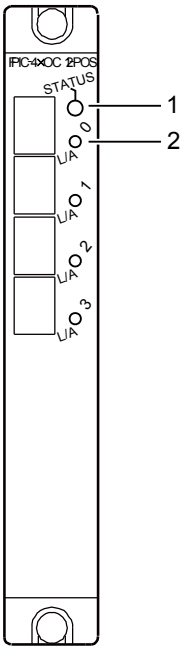

Table 6-264 describes the indicators on the P4HF panel.

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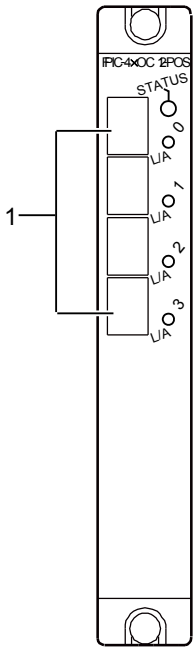
Table 6-264 Indicators on the P4HF panel

Number	Indicator	Color	Description
1	STATUS	Green	Slow blinking: The card software is running properly. Fast blinking: The system is in the alarm state.
2	LINK/ACT	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data. Off: The link is disconnected.

Port Description

Figure 6-152 shows the ports on the P4HF panel.

Figure 6-152 Ports on the P4HF panel



1. Four OC-12c/STM-4c POS-SFP FPIC optical ports (622 Mbit/s)

OC-12c/STM-4c POS-SFP FPIC optical port

Table 6-265 lists the attributes of an OC-12c/STM-4c POS-SFP FPIC optical port.

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Table 6-265 Attributes of an OC-12c/STM-4c POS-SFP FPIC optical port

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details on the optical modules supported by the P4HF and their attributes, see **Attributes of POS optical modules**.
Duplex mode	Full duplex
Frame format	PPP and HDLC
Network protocol	IP

Specifications

Table 6-266 describes specifications of the P4HF.

Table 6-266 Specifications of the P4HF

Item	Description
Network management	Enhanced command-line management interface SNMP and MIB
Physical specifications	● Dimensions (W x D x H): 145 mm x 185 mm x 20 mm ● Weight: 0.50 kg ● Typical power consumption: 15 W ● Heat dissipation: 65 BTU/hour
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-267 provides the ordering information.

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Table 6-267 P4HF ordering information

Card Description	Card Model
4-port OC-12c/STM-4c POS-SFP flexible card	P4HF

6.11.4 P4CF-4-Port OC-3c/STM-1c POS-SFP Flexible Card

Introduction

The P4CF provides 155 Mbit/s optical ports and can be used on the aggregation layer of an MPLS backbone network.

The P4CF is an optional subcard that can be installed in a subcard slot on the EH1D2WM00000.

You can choose to install this subcard based on service requirements. This subcard improves service flexibility and facilitates service expansion.

Figure 6-153 shows the P4CF.

Figure 6-153 P4CF

Version Mapping

Table 6-268 lists the switch chassis and software versions matching the P4CF.

Table 6-268 Switch chassis and software versions matching the P4CF

Card Name	S9700 Chassis
P4CF	Supported only in V200R001C00, V200R002C00, and V200R003C00

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Functions and Features

Table 6-269 describes the functions and features of the P4CF.

Table 6-269 Functions and features of the P4CF

Function and Feature	Description
Basic function	Provides 155 Mbit/s optical ports and can be used on the aggregation layer of an MPLS backbone network.
Protocol and service	PPP and HDLC
Port type	SFP
Reliability and availability	Hot swappable

Indicators and Ports

Indicator Description

Figure 6-154 shows the indicators on the P4CF panel.

Figure 6-154 Indicators on the P4CF panel

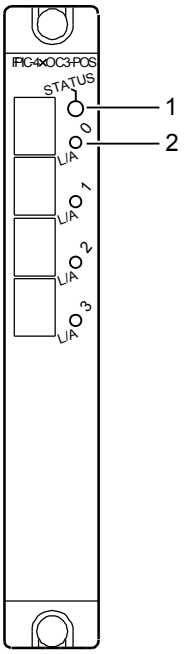

Table 6-270 describes the indicators on the P4CF panel.

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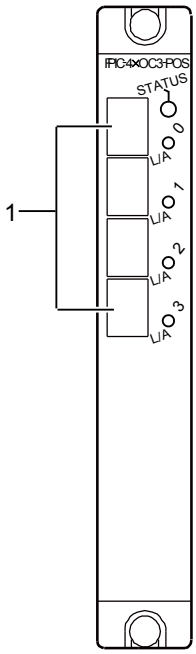
Table 6-270 Indicators on the P4CF panel

Number	Indicator	Color	Description
1	STATUS	Green	Slow blinking: The card software is running properly. Fast blinking: The system is in the alarm state.
2	LINK/ACT	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data. Off: No link is established on the port.

Port Description

Figure 6-155 shows the ports on the P4CF panel.

Figure 6-155 Ports on the P4CF panel



1. Four OC-3c/STM-1c POS-SFP optical ports (155 Mbit/s)

OC-3c/STM-1c POS-SFP optical ports

Table 6-271 lists the attributes of an OC-3c/STM-1c POS-SFP optical port.

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Table 6-271 OC-3c/STM-1c POS-SFP optical port attributes

Attribute	Description
Connector type	SFP
Optical port attribute	Depends on the SFP optical module used. For details on the optical modules supported by the P4CF and their attributes, see **Attributes of POS optical modules**.
Duplex mode	Full duplex
Frame format	PPP and HDLC
Network protocol	IP

Specifications

Table 6-272 describes specifications of the P4CF.

Table 6-272 Specifications of the P4CF

Item	Description
Network management	Enhanced command-line management interface SNMP and MIB
Physical specifications	● Dimensions (W x D x H): 145 mm x 185 mm x 20 mm ● Weight: 0.50 kg ● Typical power consumption: 14 W ● Heat dissipation: 58 BTU/hour
Environment parameters	● Operating temperature: 0°C to 45°C ● Operating relative humidity: 5% RH to 95% RH (noncondensing) ● Storage temperature: -40°C to +70°C ● Storage relative humidity: 5% RH to 95% RH (noncondensing)

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Item	Description
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 Class A ● CFR 47 FCC Part 15 Class A ● ICES 003 Class A ● AS/NZS CISPR22 Class A ● VCCI Class A ● IEC61000-6-2 ● IEC61000-6-4 ● IEC61000-4-2 ● ITU-T K 20 ● ITU-T K 21 ● ITU-T K 44 ● CNS13438 CLASS A ● KN 22 CLASS A
Environmental standards compliance	● RoHS ● REACH ● WEEE
Safety standards compliance	● IEC 60950-1 ● EN 60950-1 ● UL 60950-1 ● CSA C22.2 No 60950-1 ● AS/NZS 60950.1 ● BS EN 60950-1

Ordering Information

To place an order, contact the Huawei local office.

Table 6-273 provides the ordering information.

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Table 6-273 P4CF ordering information

Card Description	Card Model
4-port OC-3c/STM-1c POS-SFP flexible card	P4CF

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7 Cables

About This Chapter

7.1 DC Power Cable
7.2 AC Power Cable
7.3 Ground Cable
7.4 Console Cable
7.5 Clock Cable
7.6 Ethernet Cable
7.7 High-Speed Cable
7.8 Optical Fiber

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7.1 DC Power Cable

NOTICE

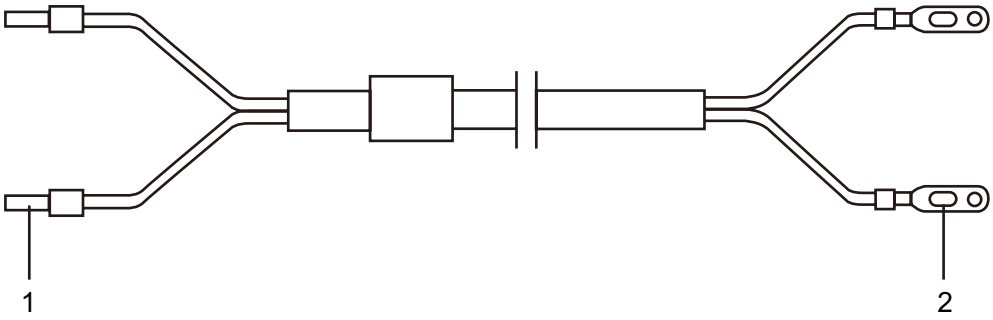
Connectors and power capacity of a power cable must match the device on which the cable is used. Therefore, a device must use the power cables delivered with it.

Types of DC Power Cables

DC power cables of fixed lengths (integer number of meters) are delivered with switches. Cut the DC power cables into appropriate lengths according to actual situations in your site.

DC power cables include -48 V power cables and RTN ground cables. The lengths and terminal types of DC power cables used between power distribution boxes and power distribution frames are determined according to site survey results. DC power cables with JG terminals are connected to power modules. **Figure 7-1** shows such a DC power cable.

Figure 7-1 DC power cable with a JG terminal



1. Cord end terminal	2. JG terminal

Connection

A DC power cable with a JG terminal is connected as follows: The cord end terminal connects to a power distribution box or power distribution frame, and the JG terminal connects to a 2200 W DC power module.

7.2 AC Power Cable

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NOTICE

Connectors and power capacity of a power cable must match the device on which the cable is used. Therefore, a device must use the power cables delivered with it.

NOTE

If country-specific power cables are required, ensure that the power cables used on a device comply with standards of the destination country or region. This document uses the China-specific power cables as an example.

Types of AC Power Cables

Select AC power cables according to situations of the power supply system in your equipment room. The length and connectors of the AC power cables used between a power distribution box and a power distribution frame are determined according to site survey results. Standard and country-specific AC power cables can be directly connected to power modules.

- Standard power cables: used to transmit power from a PDU. **Figure 7-2** shows the structure of a C14 straight male to C13 straight female AC power cable, and **Figure 7-3** shows the structure of a C20 straight male to C19 straight female AC power cable.
- Country-specific power cables: used to transmit power from a country-specific power strip. The cables are delivered in compliance with standards of the destination country or region. For example, PI angle male to C13 straight female AC power cables (**Figure 7-4**) and PI angle male to C19 straight female AC power cables (**Figure 7-5**) are used in China.
- The AC power cables connected to a power distribution box must have cord end terminals. **Figure 7-6** shows the structure of a cord end to C13 straight female AC power cable. **Figure 7-7** shows the structure of a cord end to C19 straight female AC power cable.

Figure 7-2 Structure of a C14 straight male to C13 straight female AC power cable

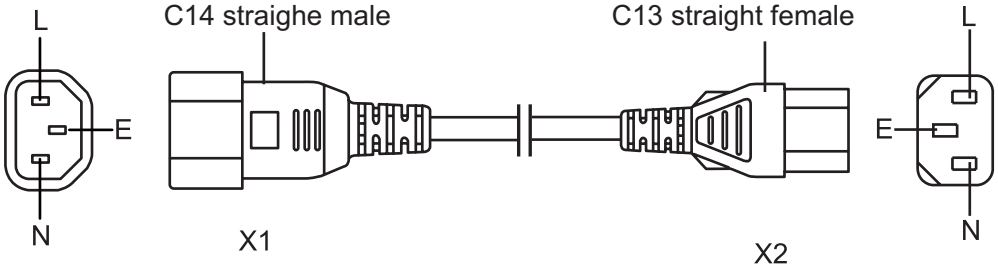

Figure 7-3 Structure of a C20 straight male to C19 straight female AC power cable

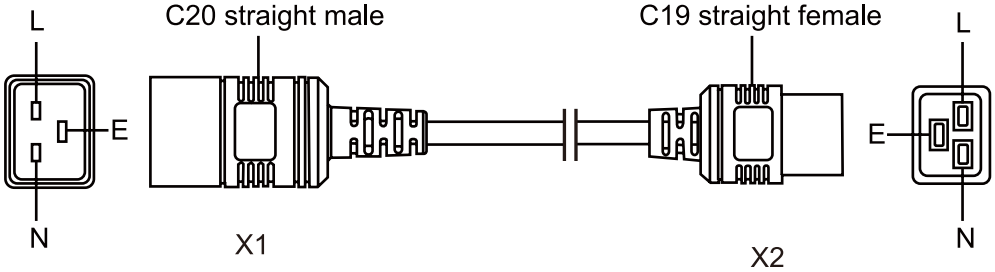

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Figure 7-4 Structure of a PI angle male to C13 straight female AC power cable (used in China)

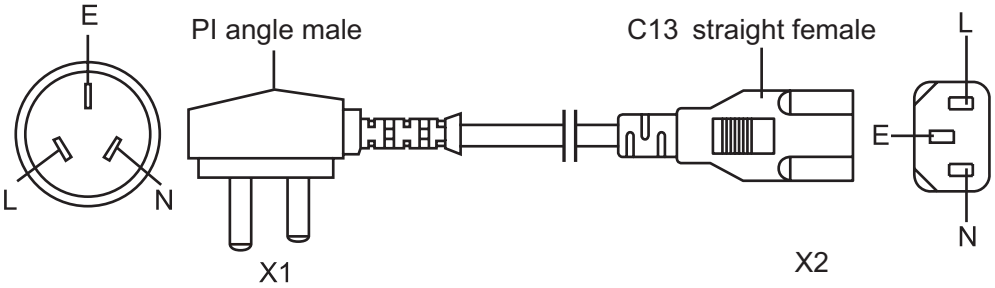


Figure 7-5 Structure of a PI angle male to C19 straight female AC power cable (used in China)

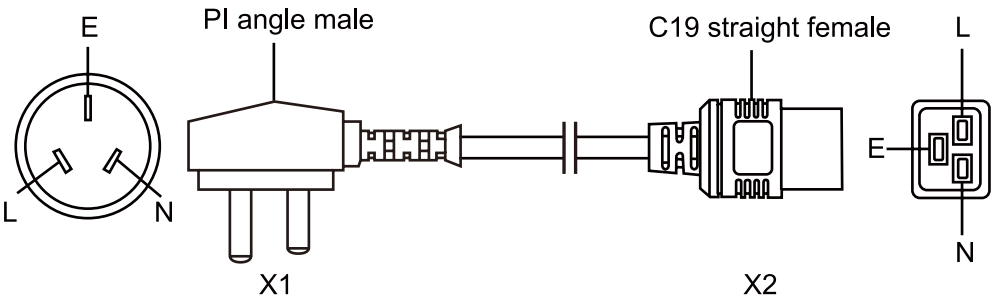


Figure 7-6 Structure of a Cord end to C13 straight female AC power cable (used in China)

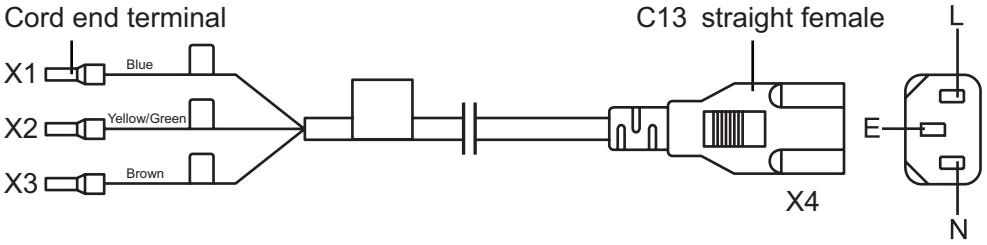
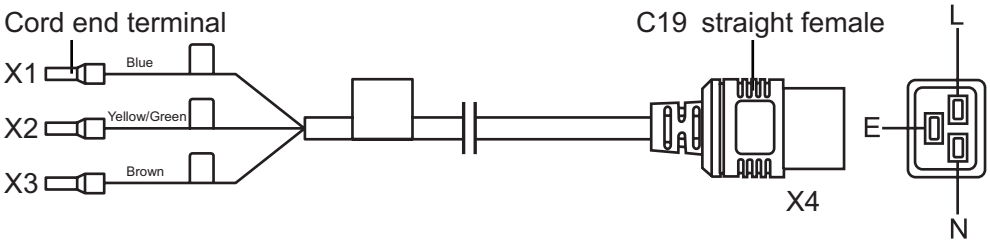


Figure 7-7 Structure of a Cord end to C19 straight female AC power cable (used in China)



Connection

Table 7-1 shows connections of various AC power cables.

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Table 7-1 Connections of AC power cables

Power Cable Type	Connector Type and Connection	
C14 straight male to C13 straight female AC power cable	C14 straight male connector: connected to a PDU	C13 straight female connector: connected to **the power socket of an 800 W AC power module**
PI angle male to C13 straight female AC power cable (used in China)	PI angle male connector: connected to a country-specific power strip	
Cord end to C13 straight female AC power cable (used in China)	Cord end terminal: connected to a power distribution box or power distribution frame. Connect the brown wire to the L terminal, blue wire to the N terminal, and the yellow-green to the ground terminal. Different AC power cables may be delivered in compliance with local regulations or customer requirements.	
C20 straight male to C19 straight female AC power cable	C20 straight male connector: connected to a PDU	C19 straight female connector: connected to **the power socket of a 2200 W AC power module**
PI angle male to C19 straight female AC power cable (used in China)	PI angle male connector: connected to a country-specific power strip	
Cord end to C19 straight female AC power cable (used in China)	Cord end terminal: connected to a power distribution box or power distribution frame. Connect the brown wire to the L terminal, blue wire to the N terminal, and the yellow-green to the ground terminal. Different AC power cables may be delivered in compliance with local regulations or customer requirements.	

7.3 Ground Cable

Ground cables connect the chassis and cabinet to the ground. The ground cables are connected on the front door, rear door, and side panels of a cabinet before delivery.

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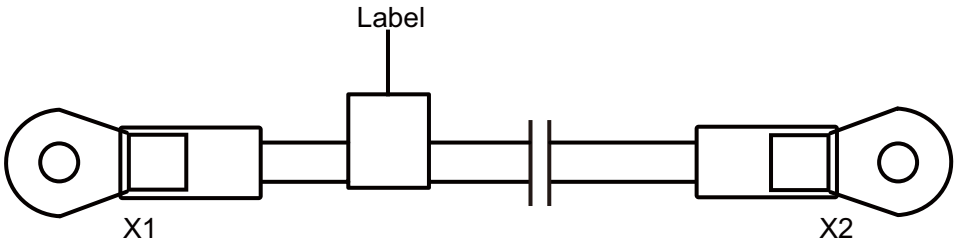
Figure 7-8 shows the structure of a ground cable.

Figure 7-8 Structure of a ground cable



7.4 Console Cable

Console Cables Types

A console cable connects the S9700 console port to the serial port of a configuration terminal to transmit configuration data.

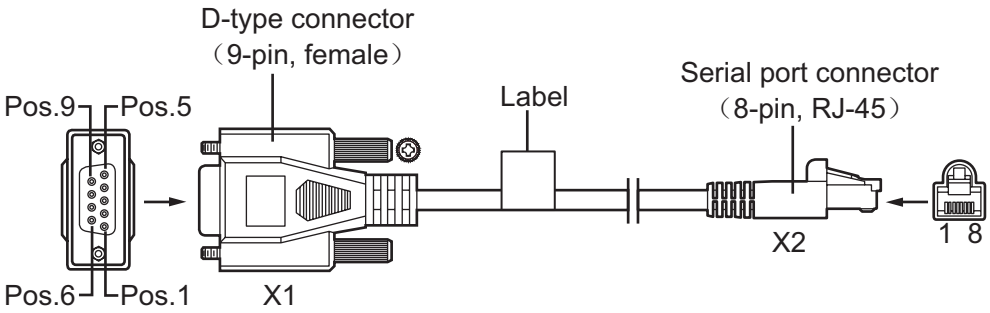
Console cables include the following types:

- Shielded console cable
- Unshielded console cable

Appearance and Structure

Figure 7-9 shows the structure of a console cable.

Figure 7-9 Structure of a console cable



Connection

A console cable has an RJ45 connector on one end and a DB9 connector on the other end. The RJ45 connector connects to the console port of the main processing unit, and the DB9 connector connects to the serial port of a computer.

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7.5 Clock Cable

Introduction

The external clock ports of a switch are used for clock and time synchronization.

A clock cable connects a switch to an external clock source or a time source device.

When a switch connects to external devices through clock cables, it provides the following functions:

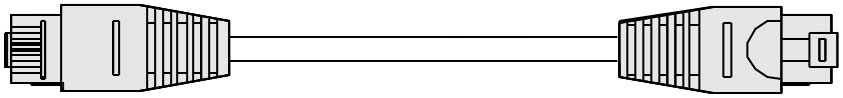
- Receives 2-channel 2.048 MHz or 2.048 Mbit/s clock signals from the upstream device and delivers 2-channel 2.048 MHz or 2.048 Mbit/s clock signals to the downstream device.
- Receives 2-channel ToD or DCLS time signals from the upstream device and delivers 2-channel ToD or DCLS time signals to the downstream device.

Appearance and Structure

RJ48 Cable

RJ48 cables applicable to the S9700 are 120-ohm trunk cables (shielded cables), as shown in **Figure 7-10**.

Figure 7-10 Structure of a 120-ohm trunk cable



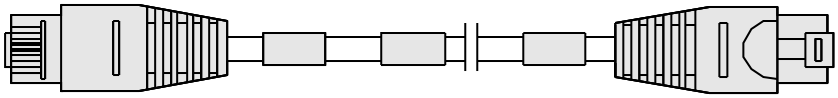
NOTE

To connect a switch to a clock source providing an RJ45 interface, use an RJ48 cable.

RJ45 Cable

RJ45 cables applicable to the S9700 are straight-through cables (shielded cables), as shown in **Figure 7-11**.

Figure 7-11 Structure of a straight-through cable



NOTE

To connect a switch to a time source providing an RJ45 interface, use an RJ45 cable.

To connect a switch to a clock source providing a sub-miniature B (SMB) or bayonet-neill-concelman (BNC) interface, use an RJ45 cable and a transmultiplexer.

SMB/SMB Trunk Cable

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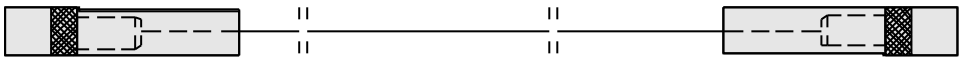
An SMB/SMB trunk cable is a 75-ohm trunk cable with SMB connectors at both ends, as shown in **Figure 7-12**.

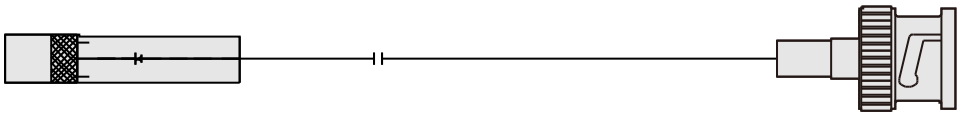
Figure 7-12 SMB/SMB trunk cable



SMB/BNC Trunk Cable

An SMB/BNC trunk cable is a 75-ohm trunk cable with an SMB connector and a BNC connector, as shown in **Figure 7-13**.

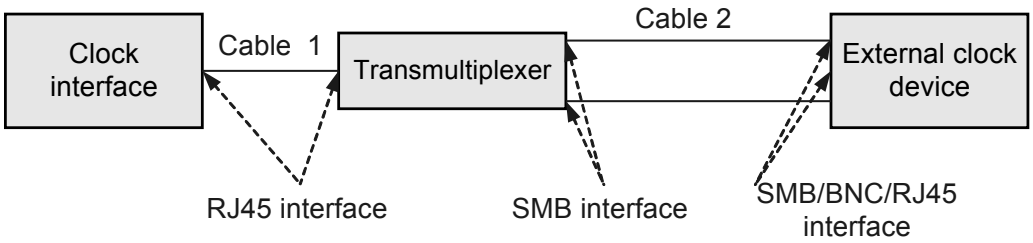
Figure 7-13 SMB/BNC trunk cable



Connection

One end of a clock cable is an RJ45 connector that connects to the BITS interface on the Switching and Routing Unit (SRU) or Main Control Unit (MCU) of the S9700. The other end of the clock cable connects to an external clock device. The connector type depends on the type of the external clock device. The external clock device can be a clock source providing an SMB, BNC, or RJ45 interface or a time source providing an RJ45 interface.

Figure 7-14 Clock cable connections



Based on the functions and interface types of the external clock device connected to the S9700, the following cables can be selected:

- When the connected device is a clock source with an RJ45 interface:

  Cable 1 can be an RJ48 cable. No transmultiplexer or cable 2 is required.
- When the connected device is a time source with an RJ45 interface:

  Cable 1 can be an RJ45 cable. No transmultiplexer or cable 2 is required.
- When the connected device is a clock source with an SMB interface:

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Cable 1 can be an RJ45 cable, and cable 2 can be an SMB/SMB trunk cable. A transmultiplexer is required.

- When the connected device is a clock source with a BNC interface:

  Cable 1 can be an RJ45 cable, and cable 2 can be an SMB/BNC trunk cable. A transmultiplexer is required.

7.6 Ethernet Cable

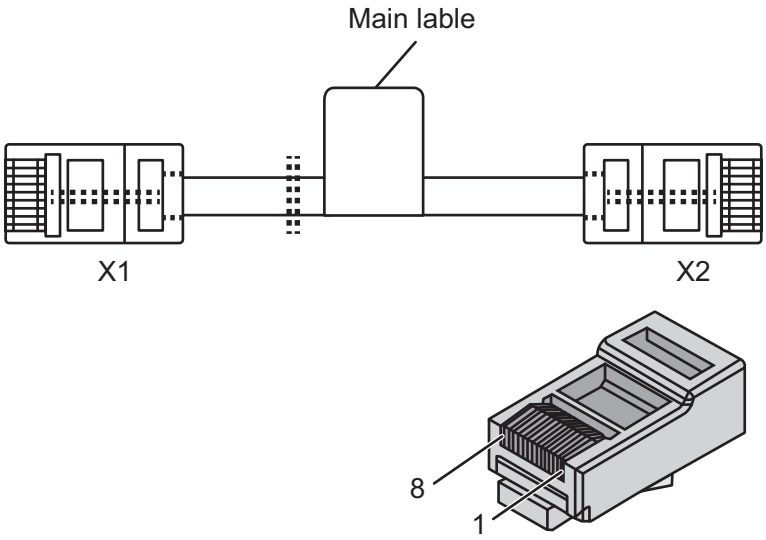
Types of Ethernet Cables

Ethernet cables include straight-through cables and crossover cables.

Structure

Straight-through cables and crossover cables are standard unshielded network cables with RJ45 connectors, as shown in **Figure 7-15**.

Figure 7-15 Structure of a network cable



Pin Assignments

Table 7-2 lists pin assignments of a straight-through cable.

Table 7-2 Pin assignments of a straight-through cable

Connector X1	Connector X2	Color	Relationship
X1.2	X2.2	Orange	Twisted pair

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Connector X1	Connector X2	Color	Relationship
X1.1	X2.1	White/Orange	
X1.6	X2.6	Green	Twisted pair
X1.3	X2.3	White/Green	
X1.4	X2.4	Blue	Twisted pair
X1.5	X2.5	White/Blue	
X1.8	X2.8	Brown	Twisted pair
X1.7	X2.7	White/Brown	

Table 7-3 lists pin assignments of a crossover cable.

Table 7-3 Pin assignments of a crossover cable

Connector X1	Connector X2	Color	Relationship
X1.6	X2.2	Orange	Twisted pair
X1.3	X2.1	White/Orange	
X1.2	X2.6	Green	Twisted pair
X1.1	X2.3	White/Green	
X1.4	X2.4	Blue	Twisted pair
X1.5	X2.5	White/Blue	
X1.8	X2.8	Brown	Twisted pair
X1.7	X2.7	White/Brown	

Connection

A straight-through cable connects Ethernet ports between the following devices:

- A router and a hub
- A router and an Ethernet switch
- A computer and an Ethernet switch
- A computer and a hub

A crossover cable connects Ethernet ports between the following devices:

- Two routers

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- A router and a computer
- Two hubs
- A hub and a switch
- Two switches
- Two computers

7.7 High-Speed Cable

Types of High-Speed Cable

High-speed cables are classified into three types, as described in **Table 7-4**.

Table 7-4 High-speed cable types

Cable Type	Connector Type	Specifications	Cabling Requirements
SFP+ - SFP+ high-speed cable	Both ends have a 10GE SFP+ connector.	● 1 m SFP+ high-speed cable ● 3 m SFP+ high-speed cable ● 10 m SFP+ active high-speed cable	● Minimum clearance for cable routing: 46 mm ● Minimum bend radius: 25 mm
QSFP+ - QSFP+ high-speed cable	Both ends have a 40GE QSFP+ connector.	● 1 m QSFP+ - QSFP+ high-speed cable ● 3 m QSFP+ - QSFP+ high-speed cable ● 5 m QSFP+ - QSFP+ high-speed cable	● Minimum clearance for cable routing: 77.88 mm ● Minimum bend radius: 50.8 mm

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Cable Type	Connector Type	Specifications	Cabling Requirements
QSFP+ - 4*SFP+ high-speed cable	One end has a 40GE QSFP+ connector, and the other end has four 10GE SFP+ (LC) connectors.	● 1 m QSFP+ - 4*SFP+ high-speed cable ● 3 m QSFP+ - 4*SFP+ high-speed cable ● 5 m QSFP+ - 4*SFP+ high-speed cable	1 m and 3 m cables: ● Minimum clearance for cable routing: 47 mm ● Minimum bend radius: 25 mm 5 m cables: ● Minimum clearance for cable routing: 72 mm ● Minimum bend radius: 50 mm

NOTICE

Do not reversely insert the QSFP+ cable plugs. The side with an L-shaped groove is the top of a QSFP+ cable plug, as shown in **Figure 7-16**. Keep the top side up when inserting the QSFP+ cable plug into a port.

Both ends of a QSFP+ high-speed cable must be covered by ESD caps.

Figure 7-16 QSFP+ cable plug

Appearance and Structure

Figure 7-17 shows an SFP+ - SFP+ high-speed cable.

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Figure 7-17 SFP+ - SFP+ high-speed cable

Figure 7-18 shows a QSFP+ - QSFP+ high-speed cable.

Figure 7-18 QSFP+ - QSFP+ high-speed cable

Figure 7-19 shows a QSFP+ - 4*SFP+ high-speed cable.

Figure 7-19 QSFP+ - 4*SFP+ high-speed cable

Figure 7-20 shows the structure of an SFP+ - SFP+ high-speed cable.

Figure 7-20 Structure of an SFP+ - SFP+ high-speed cable

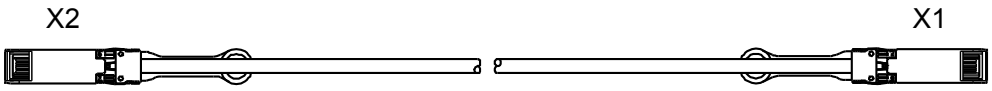

Figure 7-21 shows the structure of a QSFP+ - QSFP+ high-speed cable.

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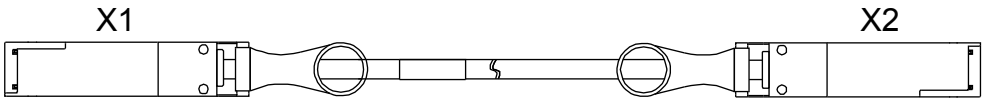
Figure 7-21 Structure of a QSFP+ - QSFP+ high-speed cable

Front view:



Rear view:

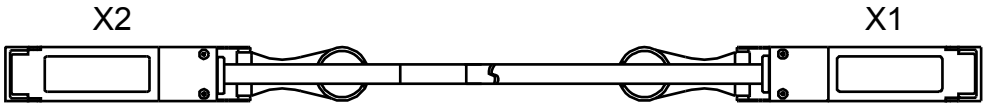
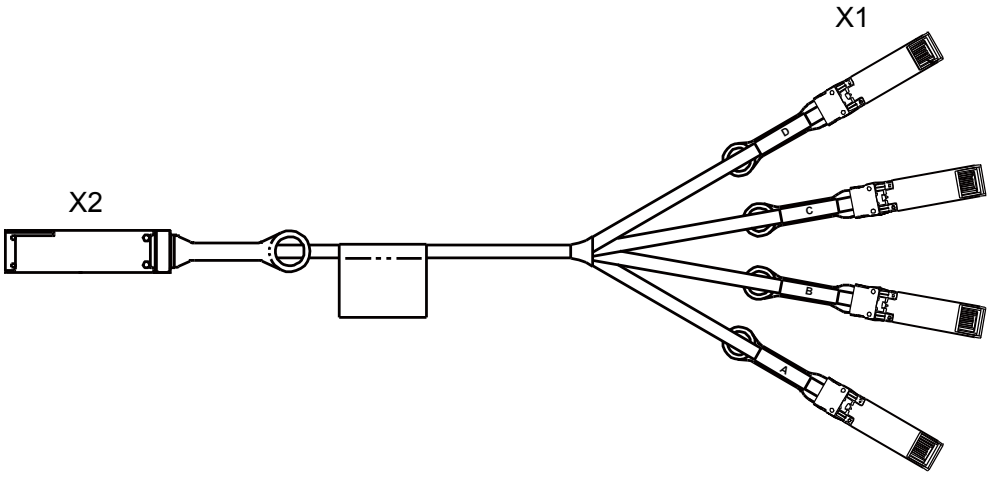


Figure 7-22 shows the structure of a QSFP+ - 4*SFP+ high-speed cable.

Figure 7-22 Structure of a QSFP+ - 4*SFP+ high-speed cable



7.8 Optical Fiber

Active Optical Cable

An active optical cable (AOC) is an optical fiber with optical modules at both ends. AOC cables are easier to use than common optical fibers. **Figure 7-23** shows an AOC cable.

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Figure 7-23 AOC cable

Table 7-5 lists the models and attributes of AOC cables.

Table 7-5 Attributes of AOC cables

Model	Length	Bend Radius	Connector Type	Operating Temperature
SFP-10G-A0C3M	3 m	30 mm	SFP+	0°C to 70°C
SFP-10G-A0C10M	10 m	30 mm		

Fiber Jumper

A fiber jumper consists of one or more fibers of a certain length and the optical connectors at both ends. A fiber jumper connects an optical module to a fiber terminal box.

Figure 7-24 shows a single-mode LC/PC fiber jumper.

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Figure 7-24 Single-mode LC/PC fiber jumper

Figure 7-25 shows a multimode LC/PC fiber jumper.

Figure 7-25 Multimode LC/PC fiber jumper

Figure 7-26 shows a single-mode SC/PC fiber jumper.

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Figure 7-26 Appearance of a single-mode SC/PC fiber jumper

Figure 7-27 shows an MPO-MPO fiber jumper.

Figure 7-27 MPO-MPO fiber jumper

Figure 7-28 shows an MPO-4*DLC fiber jumper.

Figure 7-28 MPO-4*DLC fiber jumper

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Use the following rules when selecting fiber jumpers:

1. Determine the length of fiber jumpers based on the onsite cabling distance.
2. Determine the fiber 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 connector type based on the interface type.

   Ensure that the optical connector at each end of a fiber jumper is the same type as the interface connected.

Figure 7-29 shows the structure of an MPO-MPO fiber jumper.

Figure 7-29 Structure of an MPO-MPO fiber jumper

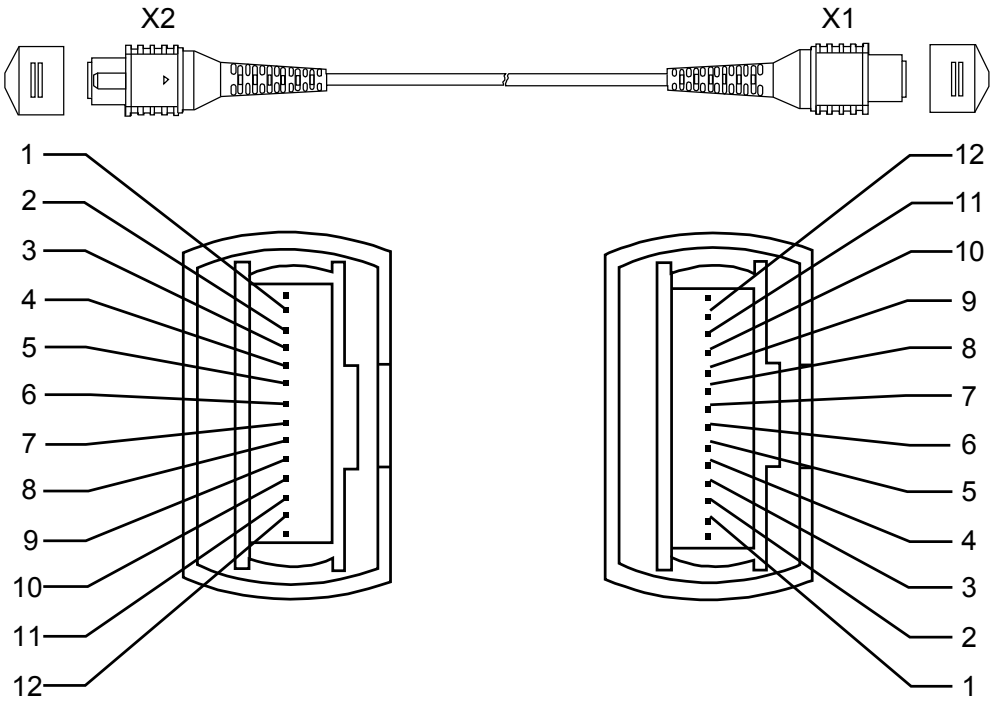

Figure 7-30 shows the structure of an MPO-4*DLC fiber jumper.

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Figure 7-30 Structure of an MPO-4*DLC fiber jumper

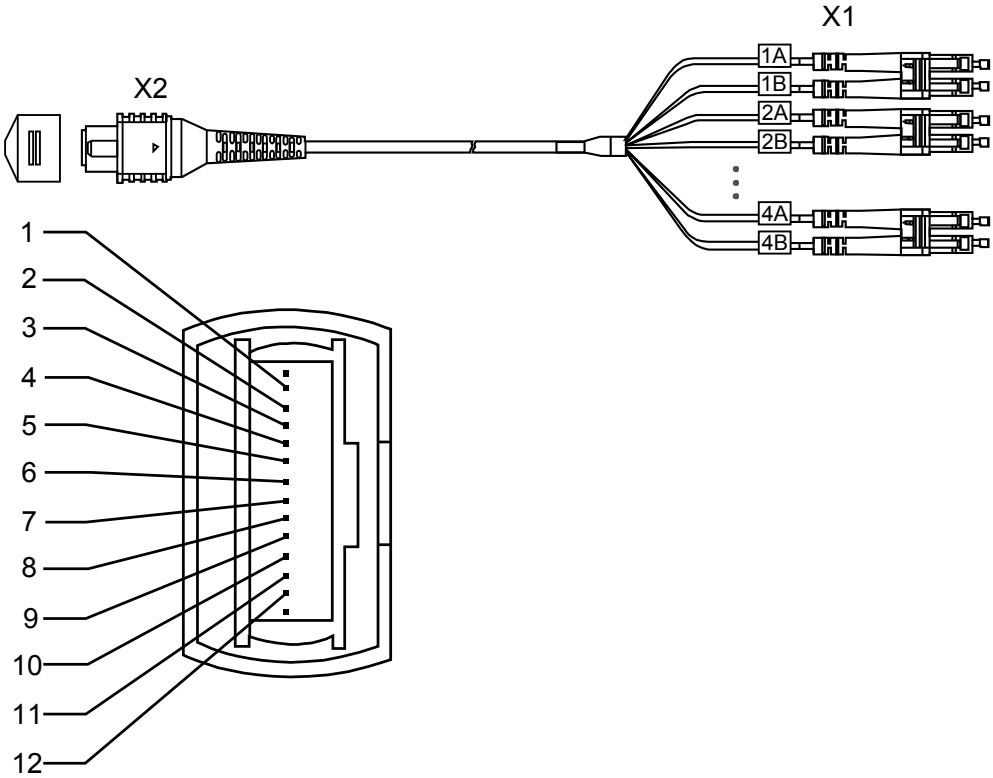

Table 7-6 lists the pin assignments of an MPO-MPO fiber jumper.

Table 7-6 Pin assignments of an MPO-MPO fiber jumper

X2 Pin	Wire Color	X1 Pin
1	Blue	1
2	Orange	2
3	Green	3
4	Brown	4
9	Gray	9
10	White	10
11	Red	11
12	Black	12

Table 7-7 lists the pin assignments of an MPO-4*DLC fiber jumper.

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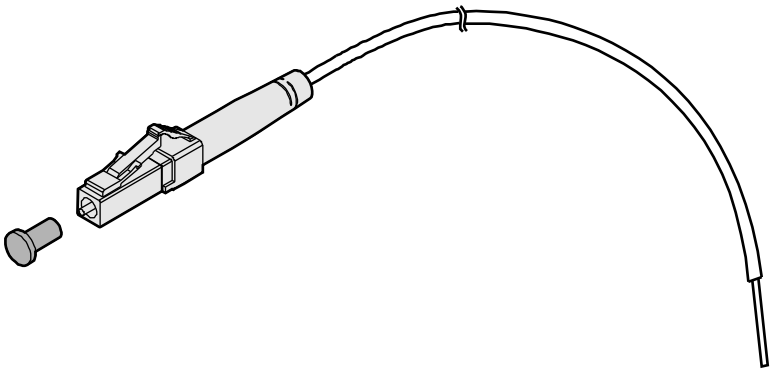
Table 7-7 Pin assignments of an MPO-4*DLC fiber jumper

X2 Pin	Wire Color	X1 Pin
1	Blue	1A
2	Orange	2A
3	Green	3A
4	Brown	4A
9	Gray	4B
10	White	3B
11	Red	2B
12	Black	1B

Fiber Pigtail

A fiber pigtail is an optical fiber that has an optical connector on one end and a piece of exposed fiber at the other end. The exposed fiber can be fused to another optical fiber. Fiber pigtails are commonly used to connect optical fibers to optical fiber modules in fiber terminal boxes (couplers and jumpers are also used). **Figure 7-31** shows the structure of a fiber pigtail.

Figure 7-31 Structure of a fiber pigtail



Fiber pigtails are classified into single-mode and multimode fiber pigtails and are used for short-distance connections.

Optical Fiber, Optical Connector, and Fiber Adapter

Optical Fibers

Optical fibers are classified into single-mode fibers and multimode fibers.

- Single-mode fibers have a diameter of 5-10 um and transmit laser in one mode under a specified wavelength. These fibers support a wide frequency band and a large transmission capacity, so they are used for long-distance transmission. Most single-mode fibers are yellow, as shown in **Figure 7-24**.

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- Multimode fibers have a diameter of 50 um or 62.5 um and transmit laser in multiple modes under a specified wavelength. These fibers have a lower transmission capacity than single-mode fibers due to modal dispersion, so they are used for short-distance transmission. Most multimode fibers are orange, as shown in **Figure 7-25**.

Optical Connector

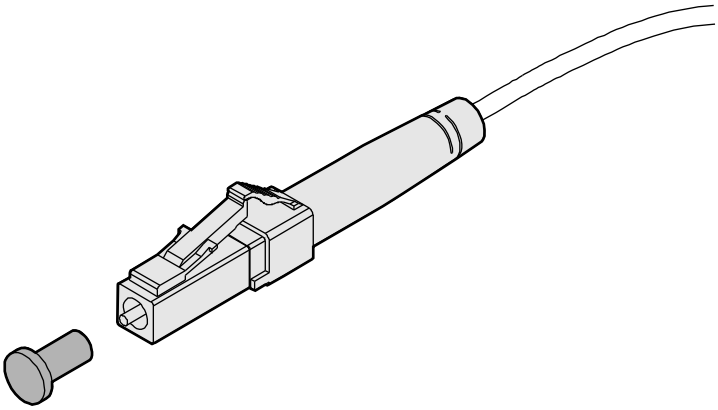
Optical connectors are used to connect optical fibers of the same type. **Table 7-8** lists common optical connectors.

Table 7-8 Common optical connectors

Connector Type	Optical Connector			
Square connector	SC/PC connector	LC/PC connector	MTRJ/PC connector	MPO connector
Round connector	FC/PC connector	ST/PC connector	-	-

Figure 7-32 shows an LC/PC optical connector.

Figure 7-32 LC/PC optical connector



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NOTICE

When connecting or removing an LC/PC optical connector, align the connector with the optical port and do not rotate the fiber. Pay attention to the following points:

- To connect a fiber, align the optical connector with the optical port and gently insert the optical fiber into the port.
- To remove a fiber, press the clip on the connector and pull the fiber out.

Fiber Adapter

A fiber adapter (also called a flange) is a fiber connection component. Two fiber connectors need to be connected using a fiber adapter. Fiber adapters are widely used in optical distribution frames (ODFs), fiber transmission equipment, and optical instruments.

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8 Pluggable Modules for Interfaces

About This Chapter

NOTE

- In this document, optical modules are classified based on encapsulation types, and optical modules of each encapsulation type are classified based on interface rates.
- Use optical modules certified for Huawei switches. Non-certified optical modules cannot ensure transmission reliability and may affect service stability on the switch. Huawei is not responsible for any problems caused by non-certified optical modules and will not fix such problems.

8.1 Important Notes About Using Optical Modules Certified for Huawei Switches

8.2 Understanding Optical Modules

8.3 Understanding Copper Modules

8.4 Models and Parameters

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8.1 Important Notes About Using Optical Modules Certified for Huawei Switches

8.1.1 How to Identify Huawei-Certified Optical Modules

NOTICE

- Huawei switches must use Huawei-certified optical modules. Non-Huawei-certified optical modules cannot ensure transmission reliability and may affect service stability. Huawei is not liable for any problem caused by the use of non-Huawei-certified optical modules and will not fix such problems.
- The methods provided here are only for reference. To confirm whether optical modules you use have been certified by Huawei, contact Huawei Technical Assistant Center (TAC).

If the optical modules you use are delivered after July 1, 2013, use either of the following methods to determine whether they have been certified by Huawei.

Method 1: Check for "HUAWEI" on the Label

If an optical module has been certified by Huawei, its label contains "HAUWEI", as shown in **Figure 8-1**.

Figure 8-1 "HUAWEI" on the label of a Huawei-certified optical module

Method 2: Run the display transceiver Command

If an optical module meets the following conditions, it has been certified by Huawei. Otherwise, the optical module is not a Huawei-certified one.

- In the **display elabel** command output, the **Manufactured** field displays a date later than 2013-07-01.
- In the **display version** command output, the display version is V200R001C00 or later.
- In the **display transceiver** command output, the **Manufacturing Date** field displays a date later than 2013-07-01, and the **Vendor Name** field displays **HUAWEI**.

```
<HUAWEI> display transceiver
XGigabitEthernet2/0/0 transceiver information:
------------------------------------------------------------
Common information:
  Transceiver Type               :XFP-STM64-LX-SM1310
  Connector Type                 :LC
  Wavelength(nm)                 :1310
  Transfer Distance(m)           :100000(9um)
```


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```
  Digital Diagnostic Monitoring  :YES
  Vendor Name                 :HUAWEI
  Vendor Part Number              :02315208
  Ordering Name                   :
-------------------------------------------------------------
Manufacture information:
  Manu. Serial Number             :210231520810E4000803
  Manufacturing Date              :2013-09-11
  Vendor Name                 :HUAWEI
-------------------------------------------------------------
Alarm information:
  RX loss of signal
  RX power low
-------------------------------------------------------------
```

8.1.2 Risks of Using Non-Huawei-Certified Optical Modules

During certification of optical modules for Huawei switches, Huawei completes comprehensive functionality verification to ensure quality of optical modules. The verified items include optical module plug/unplug, transmit optical power, receive optical power, signal transmission quality, data reading, error tolerance, compatibility, electromagnetic compatibility (EMC), and environmental parameters.

Non-Huawei-certified optical modules may cause the following problems:

- Non-standard structure and size cause failures to install optical modules on adjacent optical interfaces.

  Structures or sizes of some non-Huawei-certified optical modules do not comply with the Multi-Source Agreement (MSA). When such an optical module is installed on an optical interface, the size of this optical module hinders optical module installation on adjacent optical interfaces.
- Data bus defects cause suspension of a switch's data bus.

  Some non-Huawei-certified optical modules have defects in data bus designs. Using such an optical module on a switch causes suspension of the connected data bus on the switch. As a result, data on the suspended bus cannot be read.
- Improper edge connector size damages electronic devices of optical interfaces.

  If a non-Huawei-certified optical module with improper edge connector size is used on an optical interface, electronic devices of the optical interface will be damaged by short circuits.
- Unnormalized temperature monitoring causes incorrect alarms.

  The temperature monitoring systems of some non-Huawei-certified optical modules do not comply with industry standards and report temperature values higher than the real temperature. When such optical modules are used on a switch, the system will report incorrect temperature alarms.
- Improper register settings cause errors or failures in reading parameters or diagnostic information.

  Some non-Huawei-certified optical modules have improper register values on page A0, which can cause errors or failures when the system attempts to read parameters or diagnostic information from a data bus.
- Some non-Huawei-certified optical modules are not designed in compliance with EMC standards and have low anti-interference capability. Additionally, they bring electromagnetic interference to nearby devices.

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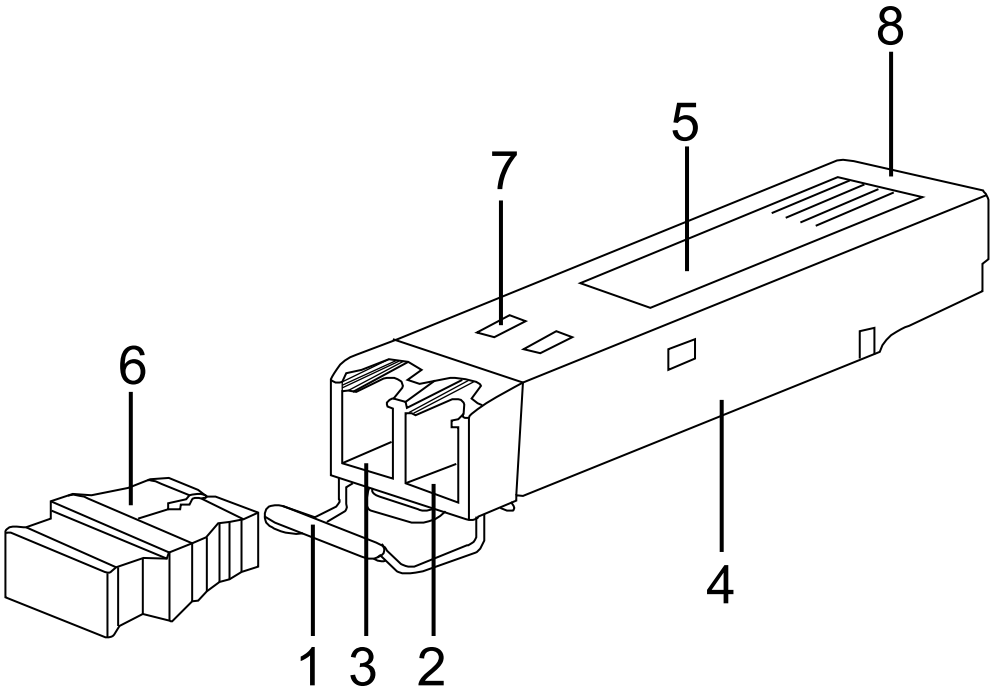
- The operating temperature ranges of non-Huawei-certified optical modules cannot meet service requirements. When they are used under relatively high temperature, the optical power decreases, resulting in service interruption.

8.2 Understanding Optical Modules

8.2.1 What Is an Optical Module

On an optical network, a sender needs to convert electrical signals into optical signals before sending them to a receiver, and the receiver needs to convert received optical signals into electrical signals. An optical module is a component that completes electrical/optical conversion on an optical network. **Figure 8-2** shows the structure of an optical module.

Figure 8-2 Structure of an optical module



1. Handle	2. Receiver	3. Transmitter
4. Shell	5. Label	6. Dust plug
7. Spring	8. Connector	-

8.2.2 Types of Optical Modules

Optical modules are available in various types to meet diversified requirements.

- **Classified by transmission rates**

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Depending on transmission rates, optical modules are classified into FE, GE, 10GE, and 40GE optical modules.

- **Classified by encapsulation types**

  The higher transmission rate an optical module provides, the more complex structure it has. Optical modules are encapsulated in different modes to provide different structures. Huawei switches support optical modules of the following encapsulation types: SFP, eSFP, SFP+, XFP, and QSFP+.

  - SFP: small form-factor pluggable. SFP optical modules support LC fiber connectors and are hot swappable.
  - 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. Therefore, eSFP is also called SFP sometimes..
  - SFP+: small form-factor pluggable plus, SFP with a higher rate. SFP+ optical modules are more sensitive to electromagnetic interference (EMI) because they have a higher rate. To reduce EMI, SFP+ optical modules have more springs than SFP optical 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 and are hot swappable. They are wider and longer than SFP + optical modules.
  - QSFP+: quad small form-factor pluggable. QSFP+ optical modules support MPO fiber connectors and are larger than SFP+ optical modules.

- **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. The **Standard** column of **Table 8-1** lists the physical layer standards.

- **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.

Table 8-1 provides optical module classification based on different factors.

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Table 8-1 Optical module classification

Encapsulation Type	Rate	Standard	Description
SFP	FE	100BASE-FX (IEEE 802.3u)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 100 Mbit/s over a distance within 2 km.
eSFP	FE	100BASE-LX (IEEE 802.3ah)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 100 Mbit/s over a distance within 80 km.
		100BASE-BX (IEEE 802.3ah)	Uses one single-mode fiber for bidirectional transmission at 100 Mbit/s over a distance within 15 km.
	GE	1000BASE-SX (IEEE 802.3z)	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 1 km.
		1000base-LX/LH (IEEE 802.3ah)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 40 km.
		1000base-ZX (IEEE 802.3)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 1 Gbit/s over a distance within 100 km.
		1000base-BX (IEEE 802.3ah)	Uses one single-mode fiber for bidirectional transmission at 1 Gbit/s over a distance within 40 km.
		CWDM (IEEE 802.3)	Coarse wavelength division multiplexing, which uses one single-mode fiber to transmit signals on multiple channels. It transmits data at 1 Gbit/s over a distance within 80 km.
		DWDM (IEEE 802.3)	Dense wavelength division multiplexing, which uses one single-mode fiber to transmit signals on multiple channels. It transmits data at 1 Gbit/s over a distance within 120 km.

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Encapsulation Type	Rate	Standard	Description
SFP+	10GE	10Gbase-USR (IEEE 802.3)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 10 Gbit/s over a distance within 100 m.
		10Gbase-BX (IEEE 802.3)	Uses one single-mode fiber for bidirectional transmission at 10 Gbit/s over a distance within 10 km.
● SFP+ ● XFP	10GE	10GBASE-SR (IEEE 802.3ae)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 10 Gbit/s over a distance within 400 m.
		10GBASE-LR (IEEE 802.3ae)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 10 km.
		10GBASE-ER (IEEE 802.3ae)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 40 km.
		10Gbase-ZR (IEEE 802.3)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 10 Gbit/s over a distance within 80 km.
QSFP+	40GE	40Gbase-SR4 (IEEE 802.3ba)	Uses one Rx multimode fiber and one Tx multimode fiber to transmit data at 40 Gbit/s over a distance within 400 m.
		40Gbase-LR4 (IEEE 802.3ba)	Uses one Rx single-mode fiber and one Tx single-mode fiber to transmit data at 40 Gbit/s over a distance within 10 km.

8.2.3 Parameter Description

Transmit optical power Output optical power of an optical module when it is working properly. When two optical modules are connected, the transmit optical power of one end must be within the range of receive optical power on the other end.

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Receive optical power Average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10^{-12}). The upper limit of this parameter is the overload optical power and the lower limit is the maximum receiver sensitivity. When two optical modules are connected, the receive optical power on one end determines the range of transmit optical power on the other end.

Maximum 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}). When two optical modules are connected, the maximum receiver sensitivity on one end determines the minimum value of transmit optical power on the other end.

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}). When two optical modules are connected, the overload optical power on one end determines the maximum transmit optical power on the other end.

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. This parameter is a quality indicator for optical modules. Optical modules with a large extinction ratio may not have good quality. Qualified optical modules should have an extinction ratio complying with IEEE 802.3.

Fiber mode Mode of optical fibers defined based on core diameters and features of optical fibers. Optical fibers are classified into single-mode and multimode fibers. Generally, multimode fibers have large core diameters and severe dispersion, so they are used to transmit optical signals over short distances. Single-mode fibers have smaller diameters and small dispersion, so they can transmit optical signals over long distances.

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 multimode fibers. The higher modal bandwidth a multimode fiber has, the longer transmission distance the fiber supports.

Fiber diameter Diameter of the core of a fiber. According to international standards for optical fibers, the diameter of a multimode fiber is 62.5 um or 50 um, and the diameter of a single-mode fiber is 9 um. Select optical fibers with diameters supported by the optical modules.

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 fiber classes are defined: multimode 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. Optical fibers of higher classes support longer transmission distances. When selecting optical fibers for optical modules, determine the classes of fibers based on the required transmission distances.

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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), SC, and MPO (applicable to 150 m QSFP+ and CXP modules). Select optical fibers with connectors supported the optical modules.
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. When connecting optical interfaces, select optical modules and fibers based on the maximum signal transmission distance.
Interface rate	Maximum rate of electrical signals that an optical component 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. When connecting optical interfaces, select optical modules and fibers based on the maximum signal transmission rate.
Center wavelength	Wavelength measured at the midpoint of the half-amplitude line in the transmit spectrum. Two connected optical modules must have the same center wavelength.
MSA	Multi-Source Agreement, a non-profit organization jointly established by optical module manufacturers. This agreement defines the structure and dimensions of optical transceivers by referring to Optical Internetworking Forum (OIF) and International Telecommunication Union (ITU) standards.

8.2.4 How to View Optical Module Parameters

Viewing the Hardware Description

If you know the model or type of an optical module, you can view the section "Pluggable Modules for Interfaces" in the *Hardware Description* to look up parameters of the optical module, including the center wavelength, transmission distance, fiber types supported, receive optical power, and transmit optical power.

Using a Command

If an optical module is installed in a running switch, you can run the **display transceiver** command to view parameters of the optical module, including the center wavelength, transmission distance, fiber types supported, receive optical power, and transmit optical power.

8.3 Understanding Copper 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.

8.4 Models and Parameters

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8.4.1 SFP/eSFP Modules

Appearance

Figure 8-3 shows an SFP/eSFP optical module.

Figure 8-3 SFP/eSFP optical module

FE Optical Module

Table 8-2 and Table 8-3 list the attributes of FE optical modules.

Table 8-2 Attributes of FE optical modules

Model	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
SFP-FE-SX-MM1310 (SFP optical module)	≤ 2	100base-FX	● Fiber mode: multimode ● Core diameter: 50/125 μm or 62.5/125 μm ● Connector type: LC	0°C to 70°C

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Model	Transmission Distance (km)	Standard	Fiber Type	Operating Temperature
eSFP-FE-LX-SM1310	≤ 15	100base-LX	● Fiber mode: single-mode ● Connector type: LC	
S-SFP-FE-LH40-SM1310	≤ 40			
S-SFP-FE-LH80-SM1550	≤ 80			
SFP-FE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	≤ 15	100base-BX		
SFP-FE-LX-SM1550-BIDI (Single-fiber bidirectional optical module)				

Table 8-3 Optical parameters of FE optical modules

Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
SFP-FE-SX-MM1310 (SFP optical module)	1310	-19.0 to -14.0	≤ -30.0	-14.0	> 10
eSFP-FE-LX-SM1310		-15.0 to -8.0	≤ -31.0	-8.0	> 8.2
S-SFP-FE-LH40-SM1310		-5.0 to 0	≤ -37.0	-10.0	> 10.5
S-SFP-FE-LH80-SM1550	1550				
SFP-FE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	RX1550/TX1310	-15.0 to -8.0	≤ -32.0	-8.0	> 8.5

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Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
SFP-FE-LX-SM1550-BIDI (Single-fiber bidirectional optical module)	RX1310/ TX1550				

GE Optical Module

Table 8-4 and Table 8-5 list the attributes of GE optical modules.

Table 8-4 Attributes of GE optical modules

Model	Standard	Fiber Type	Transmission Distance (km)	Operating Temperature
eSFP-GE-SX-MM850	1000base-SX	● Fiber mode: multimode ● Modal Bandwidth: 160 MHz*km ● Core diameter: 62.5/125 μm ● Connector type: LC	≤ 0.22	0°C to 70°C
		● Fiber mode: multimode (OM1) ● Connector type: LC	≤ 0.275	
		● Fiber mode: multimode ● Modal Bandwidth: 400 MHz*km ● Core diameter: 50/125 μm ● Connector type: LC	≤ 0.5	
		● Fiber mode: multimode (OM2) ● Connector type: LC	≤ 0.55	
		● Fiber mode: multimode (OM3) ● Connector type: LC	≤ 1	

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Model	Standard	Fiber Type	Transmission Distance (km)	Operating Temperature
SFP-GE-LX-SM1310	1000base-LX/LH	● Fiber mode: single-mode ● Connector type: LC	≤ 10	
S-SFP-GE-LH40-SM1310			≤ 40	
S-SFP-GE-LH40-SM1550				
S-SFP-GE-LH80-SM1550	1000base-ZX		≤ 80	
eSFP-GE-ZX100-SM1550			≤ 100	
SFP-GE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	1000base-BX		≤ 10	
SFP-GE-LX-SM1490-BIDI (Single-fiber bidirectional optical module)				
LE2MGSC40DE0 (Single-fiber bidirectional optical module)			≤ 40	
LE2MGSC40ED0 (Single-fiber bidirectional optical module)				
SFP-GE-BXU1-SC (Single-fiber bidirectional optical module)	1000base-BX	● Fiber mode: single-mode ● Connector type: SC	≤ 10	

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Table 8-5 Optical parameters of GE optical modules

Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
eSFP-GE-SX-MM850	850	-9.5 to -2.5	≤ -17.0	0	> 9
SFP-GE-LX-SM1310	1310	-9.0 to -3.0	≤ -20.0	-3.0	> 9
S-SFP-GE-LH40-SM1310	1310	-5.0 to 0	≤ -23	-3.0	> 9
S-SFP-GE-LH40-SM1550	1550	-5.0 to 0	≤ -22	-3.0	> 8.5
S-SFP-GE-LH80-SM1550	1550	-2.0 to 5.0	≤ -23.0	-3.0	> 9
eSFP-GE-ZX100-SM1550	1550	0 to 5	≤ -30.0	-9.0	> 9
SFP-GE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	RX1490/ TX1310	-9.0 to -3.0	≤ -19.5	-3.0	> 6
SFP-GE-LX-SM1490-BIDI (Single-fiber bidirectional optical module)	RX1310/ TX1490	-9.0 to -3.0	≤ -19.5	-3.0	> 6
LE2MGSC40DE0 (Single-fiber bidirectional optical module)	RX1490/ TX1310	-2.0 to 3.0	≤ -23	-3.0	> 9
LE2MGSC40ED0 (Single-fiber bidirectional optical module)	RX1310/ TX1490	-2.0 to 3.0	≤ -23	-3.0	> 9
SFP-GE-BXU1-SC (Single-fiber bidirectional optical module)	RX1310/ TX1490	-9.0 to -3.0	≤ -21	-3.0	> 9

POS Optical Module

Table 8-6 and Table 8-7 list the attributes of POS optical modules.

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Table 8-6 Attributes of POS optical modules

Model	Transmission Distance (km)	Fiber Type	Operating Temperature
eSFP-SM1310-155M-2.5G-15km	≤ 15	● Fiber mode: single-mode ● Connector type: LC	0°C to 70°C
eSFP-1310nm-L-16.1	≤ 40		
eSFP-1550nm-L-16.2	≤ 80		

Table 8-7 Optical parameters of POS optical modules

Model	Center Wavelength (nm)	Usage Scenario (Service Rate)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
eSFP-SM1310-155M-2.5G-15km	1310	2.5 Gbit/s	-5.0 to 0	≤ -21.0	0	> 8.2
		622 Mbit/s	-15.0 to -8.0	≤ -31.0	-8.0	
		155 Mbit/s	-15.0 to -8.0	≤ -31.0	-8.0	
eSFP-1310nm-L-16.1	1310	2.5 Gbit/s	-2.0 to 3.0	≤ -30.0	-9.0	> 8.5
		622 Mbit/s	-3.0 to 2.0	≤ -30.0	-8.0	
		155 Mbit/s	-5.0 to 0	≤ -37.0	-10.0	
eSFP-1550nm-L-16.2	1550	2.5 Gbit/s	-2.0 to 3.0	≤ -30.0	-9.0	> 8.2
		622 Mbit/s	-3.0 to 2.0	≤ -30.0	-8.0	
		155 Mbit/s	-5.0 to 0	≤ -37.0	-10.0	

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eSFP CWDM Optical Module

Table 8-8 lists the attributes of coarse wavelength division multiplexing (CWDM) optical modules.

Table 8-8 Attributes of eSFP CWDM optical modules

Center Wavelength (nm), Model	1471, CWDM-SFPGE-1471	1491, CWDM-SFPGE-1491	1511, CWDM-SFPGE-1511	1531, CWDM-SFPGE-1531
	1551, CWDM-SFPGE-1551	1571, CWDM-SFPGE-1571	1591, CWDM-SFPGE-1591	1611, CWDM-SFPGE-1611
Specifications	Encapsulation type: eSFP			
	Transmission distance: ≤ 80 km			
	Fiber type: single-mode, LC			
	Standard: CWDM			
	Operating temperature: 0°C to 70°C			
	● Transmit power: 0 dBm to 5.0 dBm ● Receiver sensitivity: ≤ -28.0 dBm ● Overload optical power: -9.0 dBm ● Extinction ratio: > 8.5 dB			

eSFP DWDM Optical Module

Table 8-9 lists the attributes of dense wavelength division multiplexing (DWDM) optical modules.

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Table 8-9 Attributes of eSFP DWDM optical modules

Center Wavelength (nm), Model	1529.55, DWDM-SFPGE-1529-55	1530.33, DWDM-SFPGE-1530-33	1531.12, DWDM-SFPGE-1531-12	1531.90, DWDM-SFPGE-1531-90	1532.68, DWDM-SFPGE-1532-68
	1533.47, DWDM-SFPGE-1533-47	1534.25, DWDM-SFPGE-1534-25	1535.04, DWDM-SFPGE-1535-04	1535.82, DWDM-SFPGE-1535-82	1536.61, DWDM-SFPGE-1536-61
	1537.40, DWDM-SFPGE-1537-40	1538.19, DWDM-SFPGE-1538-19	1538.98, DWDM-SFPGE-1538-98	1539.77, DWDM-SFPGE-1539-77	1540.56, DWDM-SFPGE-1540-56
	1541.35, DWDM-SFPGE-1541-35	1542.14, DWDM-SFPGE-1542-14	1542.94, DWDM-SFPGE-1542-94	1543.73, DWDM-SFPGE-1543-73	1544.53, DWDM-SFPGE-1544-53
	1545.32, DWDM-SFPGE-1545-32	1546.12, DWDM-SFPGE-1546-12	1546.92, DWDM-SFPGE-1546-92	1547.72, DWDM-SFPGE-1547-72	1548.51, DWDM-SFPGE-1548-51
	1549.32, DWDM-SFPGE-1549-32	1550.12, DWDM-SFPGE-1550-12	1550.92, DWDM-SFPGE-1550-92	1551.72, DWDM-SFPGE-1551-72	1552.52, DWDM-SFPGE-1552-52
	1553.33, DWDM-SFPGE-1553-33	1554.13, DWDM-SFPGE-1554-13	1554.94, DWDM-SFPGE-1554-94	1555.75, DWDM-SFPGE-1555-75	1556.55, DWDM-SFPGE-1556-55
	1557.36, DWDM-SFPGE-1557-36	1558.17, DWDM-SFPGE-1558-17	1558.98, DWDM-SFPGE-1558-98	1559.79, DWDM-SFPGE-1559-79	1560.61, DWDM-SFPGE-1560-61
Specifications	Encapsulation type: eSFP				
	Transmission distance: ⩽ 120 km				
	Fiber type: single-mode, LC				
	Standard: DWDM				
	Operating temperature: 0°C to 45°C				
	● Transmit power: 0 dBm to 4.0 dBm ● Receiver sensitivity: ⩽ -28.0 dBm ● Overload optical power: -8.0 dBm ● Extinction ratio: > 8.2 dB				

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NOTE

CWDM and DWDM optical modules look similar to common optical modules. These optical modules are distinguished by their labels. In practice, the corresponding optical fibers are labeled to distinguish the optical modules.

SFP Copper Module

Table 8-10 lists the attributes of a GE SFP copper module.

Table 8-10 Attributes of a GE SFP copper module

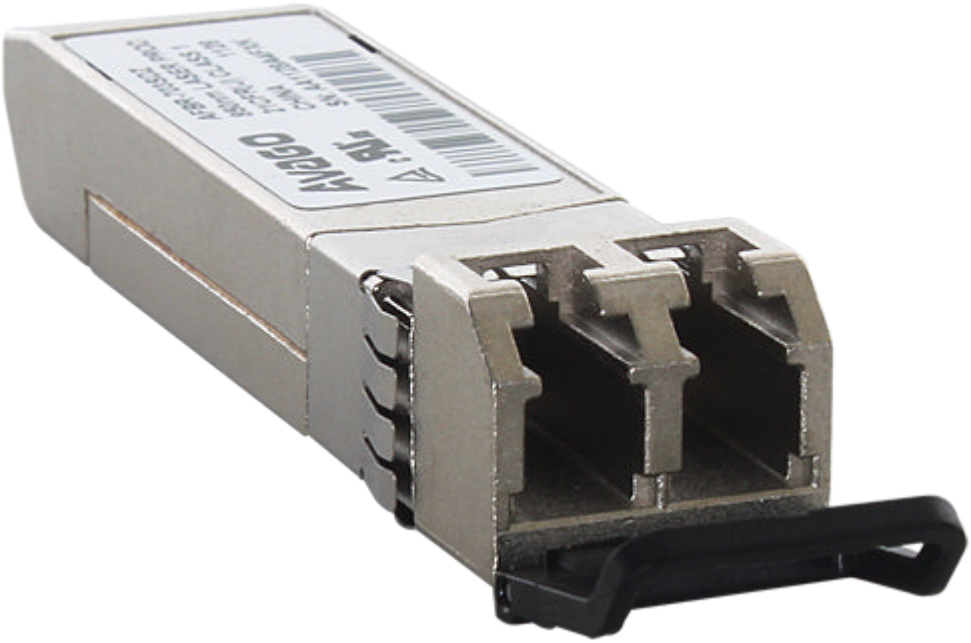
Model	Transmission Distance (km)	Connector Type	Standard	Operating Temperature
SFP-1000BaseT	≤ 0.1	RJ45	1000Base-T	-40°C to +85°C

8.4.2 SFP+ Modules

Appearance

Figure 8-4 shows an SFP+ optical module.

Figure 8-4 SFP+ optical module



10GE Optical Module

Table 8-11, Table 8-12, Table 8-13, Table 8-14, Table 8-15, and Table 8-16 list the attributes of 10GE optical modules.

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Table 8-11 Attributes of 10GE optical modules (1)

Model	Standard	Fiber Type	Transmission Distance (km)	Interface Optical Parameters	Operating Temperature
SFP-10G-USR	10Gbase-USR	● Fiber mode: multimode (OM3) ● Connector type: LC	≤ 0.1	● Center wavelength: 850 nm ● Transmit power: -7.3 to -1 dBm ● Receiver sensitivity: ≤ -11 dBm ● Overload optical power: 0.5 dBm ● Extinction ratio: > 3.0 dB	0°C to 70°C
OMXD30000	10Gbase-SR	● Fiber mode: multimode ● Modal Bandwidth: 160 MHz*km ● Core diameter: 62.5 μm ● Connector type: LC	≤ 0.026	● Center wavelength: 850 nm ● Transmit power: -7.3 to -1.0 dBm ● Receiver sensitivity: ≤ -11.1 dBm ● Overload optical power: -1.0 dBm ● Extinction ratio: > 3.0 dB	
		● Fiber mode: multimode (OM1) ● Connector type: LC	≤ 0.033		
		● Fiber mode: multimode ● Modal Bandwidth: 400 MHz*km ● Core diameter: 50 μm ● Connector type: LC	≤ 0.066		
		● Fiber mode: multimode (OM2) ● Connector type: LC	≤ 0.082		
		● Fiber mode: multimode (OM3) ● Connector type: LC	≤ 0.3		

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Model	Standard	Fiber Type	Transmission Distance (km)	Interface Optical Parameters	Operating Temperature
		● Fiber mode: multimode (OM4) ● Connector type: LC	≤ 0.4		
OSX010000	10Gbase-LR	● Fiber mode: single-mode ● Connector type: LC	≤ 10	● Center wavelength: 1310 nm ● Transmit power: -8.2 to 0.5 dBm ● Receiver sensitivity: ≤ -12.6 dBm ● Overload optical power: 0.5 dBm ● Extinction ratio: > 3.5 dB	

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Table 8-12 Attributes of 10GE optical modules (2)

Model	Standard	Fiber Type	Transmission Distance (km)	Interface Optical Parameters	Operating Temperature
OSXD22N00 Linear	10Gbase-LRM	● Fiber mode: multimode ● Modal Bandwidth: 400 MHz*km ● Core diameter: 50 μm ● Connector type: LC	≤ 0.1	● Center wavelength: 1310 nm ● Transmit power: -6.5 to 0.5 dBm ● Receiver sensitivity: ≤ -6.5 dBm ● Overload optical power: 1.5 dBm ● Extinction ratio: > 3.5 dB	0°C to 70°C
		● Fiber mode: multimode ● Modal Bandwidth: 500 MHz*km ● Core diameter: 62.5 μm ● Connector type: LC	≤ 0.22		
		● Fiber mode: multimode (OM1, OM2, OM3) ● Connector type: LC			

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Table 8-13 Attributes of 10GE optical modules (3)

Model	Transmission Distance (km)	Standard	Fiber Type	Interface Optical Parameters	Operating Temperature
OSX040N01	≤ 40	10Gbase-ER	● Fiber mode: single-mode ● Connector type: LC	● Center wavelength: 1550 nm ● Transmit power: -4.7 to 4.0 dBm ● Receiver sensitivity: ≤ -14.1 dBm ● Overload optical power: -1.0 dBm ● Extinction ratio: > 3 dB	0°C to 70°C
SFP-10G-ZR Limiting	≤ 80	10Gbase-ZR		● Center wavelength: 1550 nm ● Transmit power: 0 dBm to 4.0 dBm ● Receiver sensitivity: ≤ -24.0 dBm ● Overload optical power: -7.0 dBm ● Extinction ratio: > 9 dB	

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Table 8-14 Attributes of 10GE optical modules (4)

Model	Transmission Distance (km)	Standard	Fiber Type	Interface Optical Parameters	Operating Temperature
LE2MXSC80FF0 Linear	≤ 80	10Gbase-ZR	● Fiber mode: single-mode ● Connector type: LC	● Center wavelength: 1550 nm ● Transmit power: 0 to 4.0 dBm ● Receiver sensitivity: ≤ -24.0 dBm ● Overload optical power: -7.0 dBm ● Extinction ratio: > 9 dB	0°C to 70°C

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Table 8-15 Attributes of 10GE bidirectional optical modules

Model	Transmission Distance (km)	Standard	Fiber Type	Interface Optical Parameters	Operating Temperature
SFP-10G-BXU1 (Single-fiber bidirectional optical module)	≤ 10	10Gbase-BX	● Fiber mode: single-mode ● Connector type: LC	● Center wavelength: TX1270/RX1330 nm ● Transmit power: -8.2 dBm to 0.5 dBm ● Receiver sensitivity: ≤ -14.4 dBm ● Overload optical power: 0.5 dBm ● Extinction ratio: > 3.5 dB	-40°C to +85°C
SFP-10G-BXD1 (Single-fiber bidirectional optical module)	≤ 10			● Center wavelength: TX1330/RX1270 nm ● Transmit power: -8.2 dBm to 0.5 dBm ● Receiver sensitivity: ≤ -14.4 dBm ● Overload optical power: 0.5 dBm ● Extinction ratio: > 3.5 dB	

NOTE

- The SFP+ and XFP optical modules are 10GE hot-pluggable optical modules. Compared with XFP optical modules, SFP+ optical modules have a smaller caliber.
- The 10GE SFP+ and XFP optical modules support LAN access and WAN access.

SFP+ CWDM Optical Module

Table 8-16 lists the attributes of coarse wavelength division multiplexing (CWDM) optical modules.

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Table 8-16 Attributes of SFP+ CWDM optical modules

Center Wavelength (nm), Model	1471, SFP-10G-ZCW1471	1491, SFP-10G-ZCW1491	1511, SFP-10G-ZCW1511	1531, SFP-10G-ZCW1531
	1551, SFP-10G-ZCW1551	1571, SFP-10G-ZCW1571	1591, SFP-10G-ZCW1591	1611, SFP-10G-ZCW1611
Specifications	Encapsulation type: SFP+			
	Transmission distance: ≤ 70 km			
	Fiber type: single-mode, LC			
	Standard: CWDM			
	Operating temperature: 0°C to 70°C			
	● Transmit power: 0 dBm to 4.0 dBm ● Receiver sensitivity: ≤ -23.0 dBm ● Overload optical power: -7.0 dBm ● Extinction ratio: > 8.2 dB			

8.4.3 XFP Modules

Appearance

Figure 8-5 shows an XFP module.

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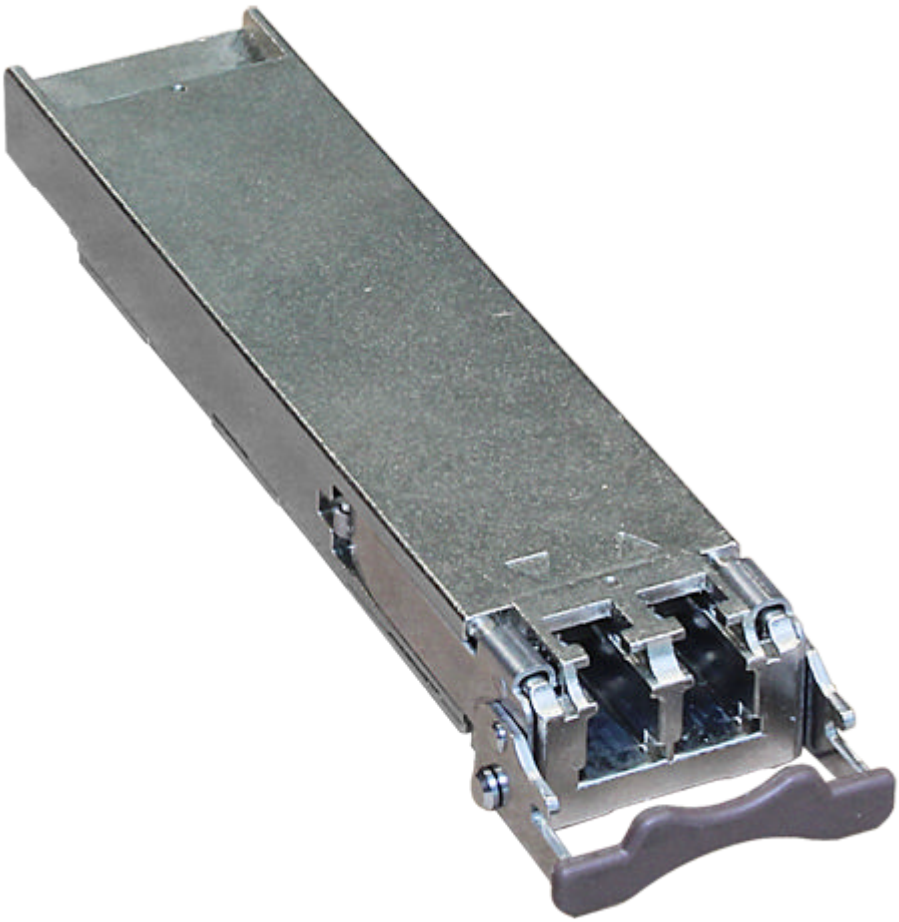
Figure 8-5 XFP optical module



10GE Optical Module

Table 8-17 and **Table 8-18** list the attributes of 10GE optical modules.

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Table 8-17 Attributes of 10GE optical modules

Model	Standard	Fiber Type	Transmission Distance (km)	Operating Temperature
XFP-SX-MM850	10Gbase-SR	● Fiber mode: multimode ● Modal Bandwidth: 160 MHz*km ● Core diameter: 62.5 μm ● Connector type: LC	≤ 0.026	0°C to 70°C
		● Fiber mode: multimode (OM1) ● Connector type: LC	≤ 0.033	
		● Fiber mode: multimode ● Modal Bandwidth: 400 MHz*km ● Core diameter: 50 μm ● Connector type: LC	≤ 0.066	
		● Fiber mode: multimode (OM2) ● Connector type: LC	≤ 0.082	
		● Fiber mode: multimode (OM3) ● Connector type: LC	≤ 0.3	
		● Fiber mode: multimode (OM4) ● Connector type: LC	≤ 0.4	
XFP-STM64-LX-SM1310	10Gbase-LR	● Fiber mode: single-mode ● Connector type: LC	≤ 10	
XFP-STM64-LH40-SM1550	10Gbase-ER		≤ 40	
XFP-STM64-SM1550-80km	10Gbase-ZR		≤ 80	

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Table 8-18 Optical parameters of 10GE optical modules

Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
XFP-SX-MM850	850	-7.3 to -1.3	≤ -7.5	-1.0	3.0
XFP-STM64-LX-SM1310	1310	-6.0 to -1.0	≤ -14.4	0.5	6.0
XFP-STM64-LH40-SM1550	1550	-1 to 2	≤ -15.0	-1.0	8.2
XFP-STM64-SM1550-80km	1550	0 to 4	≤ -24.0	-7.0	9.0

NOTE

- The SFP+ and XFP optical modules are 10GE hot-pluggable optical modules. Compared with the XFP optical modules, the SFP+ optical modules have a smaller caliber.
- The 10GE SFP+ and XFP optical modules support LAN access and WAN access.

CWDM Optical Module

Table 8-19 lists the attributes of CWDM optical modules.

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Table 8-19 Attributes of CWDM optical modules

Center Wavelength (nm), Model	1471, CWDM-XFP10G-1471	1491, CWDM-XFP10G-1491	1511, CWDM-XFP10G-1511	1531, CWDM-XFP10G-1531
	1551, CWDM-XFP10G-1551	1571, CWDM-XFP10G-1571	1591, CWDM-XFP10G-1591	1611, CWDM-XFP10G-1611
Specifications	Encapsulation type: XFP			
	Transmission distance: ≤ 70 km			
	Fiber type: single-mode, LC			
	Standard: CWDM			
	Operating temperature: 0°C to 70°C			
	● Transmit power: 0 dBm to 3.0 dBm ● Receiver sensitivity: ≤ -21.0 dBm ● Overload optical power: -9.0 dBm ● Extinction ratio: > 8.2 dB			

DWDM Optical Module

Table 8-20 lists the attributes of DWDM optical modules.

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Table 8-20 Attributes of DWDM optical modules

Center Wavelength (nm), Model	1533.47, DWDM-XFP10G-1533-47	1534.25, DWDM-XFP10G-1534-25	1535.04, DWDM-XFP10G-1535-04	1552.52, DWDM-XFP10G-1552-52
	1553.33, DWDM-XFP10G-1553-33	1554.13, DWDM-XFP10G-1554-13	1530.33, DWDM-XFP10G-1530-33	1549.32, DWDM-XFP10G-1549-32
	1531.12, DWDM-XFP10G-1531-12	1531.90, DWDM-XFP10G-1531-90	1550.12, DWDM-XFP10G-1550-12	1550.92, DWDM-XFP10G-1550-92
	1532.68, DWDM-XFP10G-1532-68	1551.72, DWDM-XFP10G-1551-72	1529.55, DWDM-XFP10G-1529-55	1548.51, DWDM-XFP10G-1548-51
Specifications	Encapsulation type: XFP			
	Transmission distance: ≤ 80 km			
	Fiber type: single-mode, LC			
	Standard: DWDM			
	Operating temperature: 0°C to 70°C			
	● Transmit power: -1.0 dBm to +3.0 dBm ● Receiver sensitivity: ≤ -24.0 dBm ● Overload optical power: -9.0 dBm ● Extinction ratio: > 8.2 dB			

NOTE

CWDM and DWDM optical modules look similar to common optical modules. These optical modules are distinguished by their labels. In practice, the corresponding optical fibers are labeled to distinguish the optical modules.

8.4.4 QSFP+ Modules

Appearance

Figure 8-6 shows a QSFP+ optical module.

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Figure 8-6 QSFP+ optical module

NOTICE

Do not reversely insert a QSFP+ optical module. The side with an L-shaped groove is the top of the QSFP+ optical module, as shown in **Figure 8-6**. Keep the top side up when inserting the optical module to a port.

Currently, there is no uniform standard for 40GE optical modules. Therefore, some diagnostic information about 40GE optical modules may be missing. This problem exists in most products in the industry and does not affect functions of optical modules.

40GE Optical Module

Table 8-21 and **Table 8-22** list the attributes of QSFP+ 40GE optical modules.

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Table 8-21 Attributes of QSFP+ 40GE optical modules

Model	Standard	Fiber Type	Transmission Distance (km)	Operating Temperature
QSFP-40G-SR4	40Gbase-SR4	● Fiber mode: multimode (OM3) ● Connector type: MPO	≤ 0.1	0°C to 70°C
		● Fiber mode: multimode (OM4) ● Connector type: MPO	≤ 0.15	
QSFP-40G-iSR4 (supporting 4*10G)	40Gbase-SR4	● Fiber mode: multimode (OM3) ● Connector type: MPO	≤ 0.1	
		● Fiber mode: multimode (OM4) ● Connector type: MPO	≤ 0.15	
QSFP-40G-eSR4 (supporting 4*10G)	40Gbase-SR4	● Fiber mode: multimode ● Modal Bandwidth: 160 MHz*km ● Core diameter: 62.5 μm ● Connector type: MPO	≤ 0.026	
		● Fiber mode: multimode (OM1) ● Connector type: MPO	≤ 0.033	
		● Fiber mode: multimode ● Modal Bandwidth: 400 MHz*km ● Core diameter: 50 μm ● Connector type: MPO	≤ 0.066	
		● Fiber mode: multimode (OM2) ● Connector type: MPO	≤ 0.082	
		● Fiber mode: multimode (OM3) ● Connector type: MPO	≤ 0.3	
		● Fiber mode: multimode (OM4) ● Connector type: MPO	≤ 0.4	
QSFP-40G-LR4	40Gbase-LR4	● Fiber mode: single-mode ● Connector type: LC	≤ 10	

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Table 8-22 Optical parameters of QSFP+ 40GE optical modules

Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
QSFP-40G-SR4	850	-7.6 to 2.4	≤ -5.4	2.4	> 3.0
QSFP-40G-iSR4 (supporting 4*10G)	850	-7.6 to -1	≤ -9.5	2.4	> 3.0
QSFP-40G-eSR4 (supporting 4*10G)	850	-7.0 to 2.3	≤ -11.5	2.3	> 3.5
QSFP-40G-LR4	1271, 1291, 1311, and 1331	-7.6 to 2.4	≤ -5.4	2.3	> 3.5

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