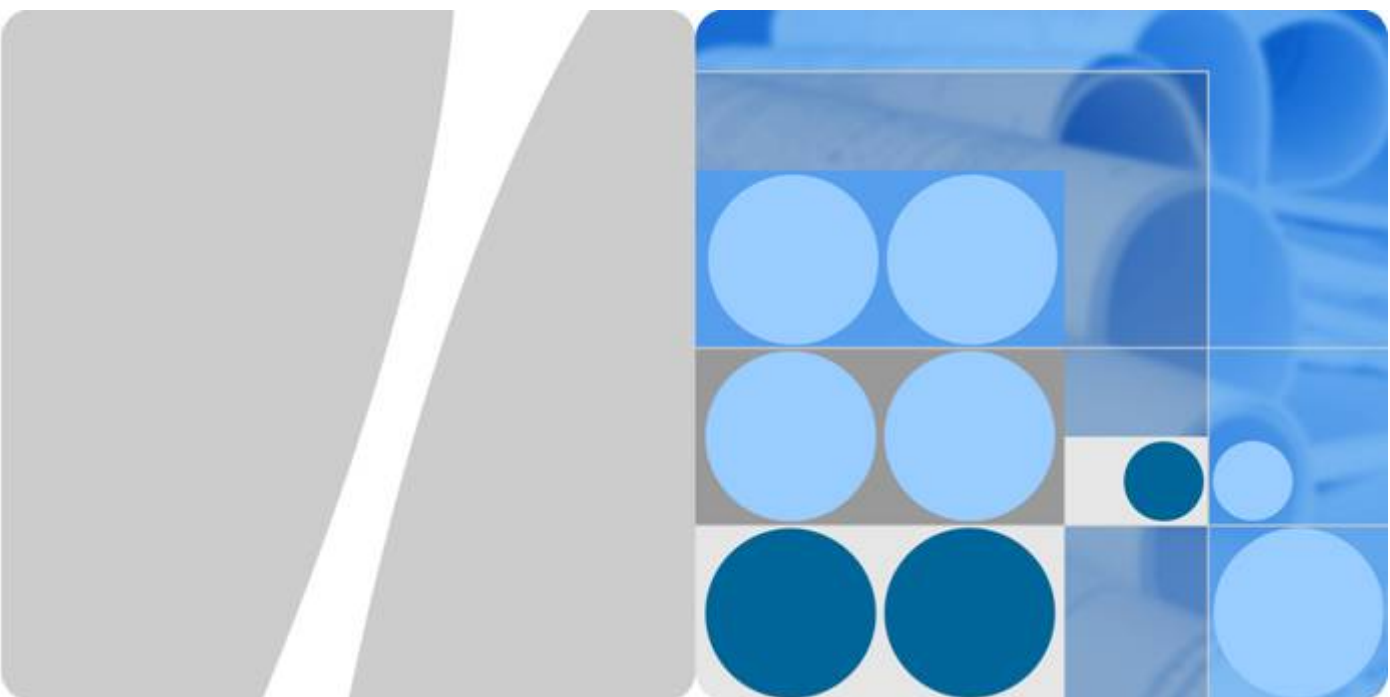




S7700 Smart Routing Switch

Hardware Description

Issue **08**
Date **2014-01-26**

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About This Document

Intended Audience

This document describes hardware components of the S7700, including the cabinet, chassis, power supply facilities, fan modules, cards, cables, and pluggable modules for interfaces. You can find useful information about S7700 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.

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 .
<i>Italic</i>	Command arguments are in <i>italics</i> .
[]	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 08 (2014-01-26)

This version has the following updates:

The following information is added:

- [6.7.7 ES1D2G48TX1E-48-Port 10/100/1000BASE-T Interface Card \(X1E, RJ45\)](#)
- [6.7.11 ES1D2G48SX1E-48-Port 100/1000BASE-X Interface Card \(X1E, SFP\)](#)
- [6.8.3 ES1D2S04SX1E-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 ES1D2S08SX1E-8-Port 10GBASE-X and 8-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card \(X1E, RJ45/SFP/SFP+\)](#)

Issue 07 (2013-12-20)

This version has the following updates:

The following information is modified:

- [Indicators and Ports](#)
- [Indicators and Ports](#)

Issue 06 (2013-07-25)

This version has the following updates:

The following information is modified:

- [6.2.4 ES02VSTSA-Cluster Switching System Service Unit](#)

Issue 05 (2013-05-30)

This version has the following updates:

The documentation is modified according to updates in V200R003C00.

Issue 04 (2013-04-20)

This version has the following updates:

The following information is modified:

- [7.2 AC Power Cable](#)

Issue 03 (2013-04-16)

This version has the following updates:

The following information is modified:

- [3.4.1 Slot Configuration on the Chassis](#)

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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- 1.2 Components Available in V200R001C00
- 1.3 Components Available in V200R002C00
- 1.4 Components Available in V200R003C00
- 1.5 Components Available in V200R005C00

1.1 Components Available in V100R006C00



Components marked with * are added in V100R006C00.

Table 1-1 shows components available in the S7700 V100R006C00.

Table 1-1 Components available in S7700 V100R006C00

Component	Name	Description
Chassis	Integrated S7703 chassis	Supports PoE
	S7706 chassis	-
	S7712 chassis	-
	S7706 PoE chassis	Supports PoE
	S7712 PoE chassis	Supports PoE
Power module	1600 W DC power module	-
	800 W AC power module	-
	2200 W AC power module*	-
Fan module	S7700 fan module	-
MPU	ES0D00SRUA00	S7706/S7712 Main Control Unit A
	ES0D00SRUB00	S7706/S7712 Main Control Unit B, clock
	ES0D00MCUA00	S7703 Main Control Unit A
Subcard on the SRU	ES0D00FSUA00	Enhanced Flexible Service Unit
CMU	● LE0DCMUA0000 ● EH1D200CMU00 NOTE EH1D200CMU00 has replaced LE0DCMUA0000 since February 1, 2013.	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
100M interface card	ES0D0F48TA00	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC

Component	Name	Description
	ES0D0F48TC00	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	ES0DF48TFA00	48-port 10/100BASE-T interface card (FA, RJ45)-32K MAC
GE interface card	ES0D0G24SA00	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC
	ES0D0G24SC00	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES0D0G24CA00	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)-32K MAC
	ES0DG48CEAT0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	ES0D0G48VA00	48-port 10/100/1000BASE-T PoE interface card (EA, RJ45, PoE)-32K MAC
	ES0D0G48TA00	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	ES0D0G48TC00	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	ES0DG48TFA00	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	ES0D0G48SA00	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC

Component	Name	Description
	ES0D0G48SC00	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES0DG24TFA00*	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
GE/10GE interface card	ES0D0T24XA00	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	ES0D0S24XA00	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
10GE interface card	ES0D0X2UXA00	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X2UXC00	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X4UXA00	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X4UXC00	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X12SA00*	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC

1.2 Components Available in V200R001C00

NOTE

Components marked with * are added in V200R001C00.

Table 1-2 shows components available in the S7700 V200R001C00.

Table 1-2 Components available in S7700 V200R001C00

Component	Name	Description
Chassis	Integrated S7703 chassis	Supports PoE
	S7706 chassis	-

Component	Name	Description
	S7712 chassis	-
	S7706 PoE chassis	Supports PoE
	S7712 PoE chassis	Supports PoE
Power module	1600 W DC power module	-
	800 W AC power module	-
	2200 W AC power module	-
Fan module	S7700 fan module	-
MPU	ES0D00SRUA00	S7706/S7712 Main Control Unit A
	ES0D00SRUB00	S7706/S7712 Main Control Unit B, clock
	ES0D00MCUA00	S7703 Main Control Unit A
Subcard on the SRU	ES0D00FSUA00	Enhanced Flexible Service Unit
	● LE0D0VSTSA00* ● ES02VSTSA NOTE ES02VSTSA has replaced LE0D0VSTSA00 since July 1, 2013.	Cluster Switching System Service Unit
CMU	● LE0DCMUA0000 ● EH1D200CMU00 NOTE EH1D200CMU00 has replaced LE0DCMUA0000 since February 1, 2013.	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
100M interface card	ES0D0F48TA00	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	ES0D0F48TC00	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	ES0DF48TFA00	48-port 10/100BASE-T interface card (FA, RJ45)-32K MAC

Component	Name	Description
GE interface card	ES0D0G24SA00	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC
	ES0D0G24SC00	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES0D0G24CA00	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)-32K MAC
	ES0DG48CEAT0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	ES0D0G48VA00	48-port 10/100/1000BASE-T PoE interface card (EA, RJ45, PoE)-32K MAC
	ES0D0G48TA00	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	ES0D0G48TC00	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	ES0DG48TFA00	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	ES0D0G48SA00	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	ES0D0G48SC00	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES0DG24TFA00	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC

Component	Name	Description
	ES1D2G48SED0*	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES1D2G48SFA0*	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
GE/10GE interface card	ES0D0T24XA00	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	ES0D0S24XA00	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
10GE interface card	ES0D0X2UXA00	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X2UXC00	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X4UXA00	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X4UXC00	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X12SA00	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC
	ES1D2X04XED0*	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	ES1D2X16SFC0*	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	ES1D2X40SFC0*	40-port 10GBASE-X interface card (FC, SFP+)-128K MAC

1.3 Components Available in V200R002C00

NOTE

Components marked with * are added in V200R002C00.

Table 1-3 shows components available in the S7700 V200R002C00.

Table 1-3 Components available in S7700 V200R002C00

Component	Name	Description
Chassis	Integrated S7703 chassis	Supports PoE
	S7706 chassis	-
	S7712 chassis	-
	S7706 PoE chassis	Supports PoE
	S7712 PoE chassis	Supports PoE
Power module	1600 W DC power module	-
	800 W AC power module	-
	2200 W AC power module	-
Fan module	S7700 fan module	-
MPU	ES0D00SRUA00	S7706/S7712 Main Control Unit A
	ES0D00SRUB00	S7706/S7712 Main Control Unit B, clock
	ES0D00MCUA00	S7703 Main Control Unit A
Subcard on the SRU	ES0D00FSUA00	Enhanced Flexible Service Unit
	● LE0D0VSTSA00 ● ES02VSTSA NOTE ES02VSTSA has replaced LE0D0VSTSA00 since July 1, 2013.	Cluster Switching System Service Unit
CMU	● LE0DCMUA0000 ● EH1D200CMU00 NOTE EH1D200CMU00 has replaced LE0DCMUA0000 since February 1, 2013.	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
OSPU	ES1D2PS00P00*	Open Service Platform Unit
100M interface card	ES0D0F48TA00	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC

Component	Name	Description
	ES0D0F48TC00	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	ES0DF48TFA00	48-port 10/100BASE-T interface card (FA, RJ45)-32K MAC
GE interface card	ES0D0G24SA00	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC
	ES0D0G24SC00	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES0D0G24CA00	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)-32K MAC
	ES0DG48CEAT0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	ES0D0G48VA00	48-port 10/100/1000BASE-T PoE interface card (EA, RJ45, PoE)-32K MAC
	ES0D0G48TA00	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	ES0D0G48TC00	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	ES0DG48TFA00	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	ES0D0G48SA00	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC

Component	Name	Description
	ES0D0G48SC00	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES0DG24TFA00	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	ES1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
	ES1D2G24SED0*	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES1D2G48TED0*	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC
	ES1D2G48TBC0*	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	ES1D2G48SBC0*	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
GE/10GE interface card	ES0D0T24XA00	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	ES0D0S24XA00	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	ES1D2S24XEC0*	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	ES0D0X2UXA00	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X2UXC00	2-port 10GBASE-X interface card (EC, XFP)-128K MAC

Component	Name	Description
	ES0D0X4UXA00	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X4UXC00	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X12SA00	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC
	ES1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	ES1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	ES1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	ES1D2X08SED4*	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	ES1D2X08SED5*	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
40GE interface card	ES1D2L02QFC0*	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC

1.4 Components Available in V200R003C00

NOTE

Components marked with * are added in V200R003C00.

Table 1-4 shows components available in the S7700 V200R003C00.

Table 1-4 Components available in S7700 V200R003C00

Component	Name	Description
Chassis	Integrated S7703 chassis	Supports PoE
	S7706 chassis	-
	S7712 chassis	-
	S7706 PoE chassis	Supports PoE

Component	Name	Description
	S7712 PoE chassis	Supports PoE
	S7703 chassis, FCC certified*	Supports PoE and has passed FCC certification
	S7706 chassis, FCC certified*	Has passed FCC certification
	S7712 chassis, FCC certified*	Has passed FCC certification
	S7706 PoE chassis, FCC certified*	Supports PoE and has passed FCC certification
	S7712 PoE chassis, FCC certified*	Supports PoE and has passed FCC certification
Power module	1600 W DC power module	-
	800 W AC power module	-
	2200 W AC power module	-
	2200 W DC power module*	-
Fan module	S7700 fan module	-
MPU	ES0D00SRUA00	S7706/S7712 Main Control Unit A
	ES0D00SRUB00	S7706/S7712 Main Control Unit B, clock
	ES0D00MCUA00	S7703 Main Control Unit A
Subcard on the SRU	ES0D00FSUA00	Enhanced Flexible Service Unit
	● LE0D0VSTSA00 ● ES02VSTSA NOTE ES02VSTSA has replaced LE0D0VSTSA00 since July 1, 2013.	Cluster Switching System Service Unit
CMU	● LE0DCMUA0000 ● EH1D200CMU00 NOTE EH1D200CMU00 has replaced LE0DCMUA0000 since February 1, 2013.	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card

Component	Name	Description
OSPU	ES1D2PS00P00	Open Service Platform Unit
100M interface card	ES0D0F48TA00	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	ES0D0F48TC00	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	ES0DF48TFA00	48-port 10/100BASE-T interface card (FA, RJ45)-32K MAC
GE interface card	ES0D0G24SA00	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC
	ES0D0G24SC00	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES0D0G24CA00	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)-32K MAC
	ES0DG48CEAT0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	ES0D0G48VA00	48-port 10/100/1000BASE-T PoE interface card (EA, RJ45, PoE)-32K MAC
	ES0D0G48TA00	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	ES0D0G48TC00	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	ES0DG48TFA00	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC

Component	Name	Description
	ES0D0G48SA00	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	ES0D0G48SC00	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES0DG24TFA00	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	ES1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
	ES1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC
	ES1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	ES1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
GE/10GE interface card	ES0D0T24XA00	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	ES0D0S24XA00	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	ES1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	ES0D0X2UXA00	2-port 10GBASE-X interface card (EA, XFP)-32K MAC

Component	Name	Description
	ES0D0X2UXC00	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X4UXA00	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X4UXC00	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X12SA00	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC
	ES1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	ES1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	ES1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	ES1D2X08SED4	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	ES1D2X08SED5	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	ES1D2X02XEC1*	2-port 10GBASE-X interface card (EC, XFP), FCC
	ES1D2X04XEC1*	4-port 10GBASE-X interface card (EC, XFP), FCC
40GE interface card	ES1D2L02QFC0	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC

1.5 Components Available in V200R005C00

NOTE

Components marked with * are added in V200R005C00.

Table 1-5 shows components available in the S7700 V200R005C00.

Table 1-5 Components available in S7700 V200R005C00

Component	Name	Description
Chassis	Integrated S7703 chassis	Supports PoE
	S7706 chassis	-
	S7712 chassis	-
	S7706 PoE chassis	Supports PoE
	S7712 PoE chassis	Supports PoE
	S7703 chassis, FCC certified*	Supports PoE and has passed FCC certification
	S7706 chassis, FCC certified*	Has passed FCC certification
	S7712 chassis, FCC certified*	Has passed FCC certification
	S7706 PoE chassis, FCC certified*	Supports PoE and has passed FCC certification
	S7712 PoE chassis, FCC certified*	Supports PoE and has passed FCC certification
Power module	1600 W DC power module	-
	800 W AC power module	-
	2200 W AC power module	-
	2200 W DC power module*	-
Fan module	S7700 fan module	-
MPU	ES0D00SRUA00	S7706/S7712 Main Control Unit A
	ES0D00SRUB00	S7706/S7712 Main Control Unit B, clock
	ES0D00MCUA00	S7703 Main Control Unit A
Subcard on the SRU	ES0D00FSUA00	Enhanced Flexible Service Unit
	● LE0D0VSTSA00 ● ES02VSTSA NOTE ES02VSTSA has replaced LE0D0VSTSA00 since July 1, 2013.	Cluster Switching System Service Unit

Component	Name	Description
CMU	● LE0DCMUA0000 ● EH1D200CMU00 NOTE EH1D200CMU00 has replaced LE0DCMUA0000 since February 1, 2013.	Centralized Monitoring Unit
Value-added service card	LE0D0VAMPA00	Value-added service card
OSPU	ES1D2PS00P00	Open Service Platform Unit
100M interface card	ES0D0F48TA00	48-port 10/100BASE-T interface card (EA, RJ45)-32K MAC
	ES0D0F48TC00	48-port 10/100BASE-T interface card (EC, RJ45)-128K MAC
	ES0DF48TFA00	48-port 10/100BASE-T interface card (FA, RJ45)-32K MAC
GE interface card	ES0D0G24SA00	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC
	ES0D0G24SC00	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES0D0G24CA00	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)-32K MAC
	ES0DG48CEAT0	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC
	ES0D0G48VA00	48-port 10/100/1000BASE-T PoE interface card (EA, RJ45, PoE)-32K MAC

Component	Name	Description
	ES0D0G48TA00	48-port 10/100/1000BASE-T interface card (EA, RJ45)-32K MAC
	ES0D0G48TC00	48-port 10/100/1000BASE-T interface card (EC, RJ45)-128K MAC
	ES0DG48TFA00	48-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	ES0D0G48SA00	48-port 100/1000BASE-X interface card (EA, SFP)-32K MAC
	ES0D0G48SC00	48-port 100/1000BASE-X interface card (EC, SFP)-128K MAC
	ES0DG24TFA00	24-port 10/100/1000BASE-T interface card (FA, RJ45)-32K MAC
	ES1D2G48SED0	48-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES1D2G48SFA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC
	ES1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC
	ES1D2G48TED0	48-port 10/100/1000BASE-T interface card (ED, RJ45)-512K MAC
	ES1D2G48TBC0	48-port 10/100/1000BASE-T interface card (BC, RJ45)-128K MAC
	ES1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC
	ES1D2G48TX1E*	48-port 10/100/1000BASE-T interface card (X1E, RJ45)
	ES1D2G48SX1E*	48-port 100/1000BASE-X interface card (X1E SFP)

Component	Name	Description
GE/10GE interface card	ES1D2S04SX1E*	4-port 10GBASE-X and 24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)
	ES1D2S08SX1E*	8-port 10GBASE-X and 8-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)
	ES0D0T24XA00	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC
	ES0D0S24XA00	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC
	ES1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC
10GE interface card	ES0D0X2UXA00	2-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X2UXC00	2-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X4UXA00	4-port 10GBASE-X interface card (EA, XFP)-32K MAC
	ES0D0X4UXC00	4-port 10GBASE-X interface card (EC, XFP)-128K MAC
	ES0D0X12SA00	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC
	ES1D2X04XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC
	ES1D2X16SFC0	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC
	ES1D2X40SFC0	40-port 10GBASE-X interface card (FC, SFP+)-128K MAC

Component	Name	Description
	ES1D2X08SED4	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	ES1D2X08SED5	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC
	ES1D2X02XEC1*	2-port 10GBASE-X interface card (EC, XFP), FCC
	ES1D2X04XEC1*	4-port 10GBASE-X interface card (EC, XFP), FCC
40GE interface card	ES1D2L02QFC0	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC
ACU	ACU2	WLAN ACU2 Access Controller Unit (128 AP Control Resource Included) NOTE For details, see the ACU product documentation.

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.

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

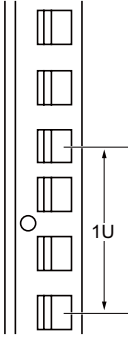
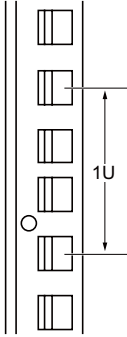
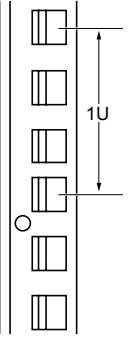


2.1.2 Specifications of an N66E Cabinet

Table 2-1 lists specifications of an N66E cabinet.

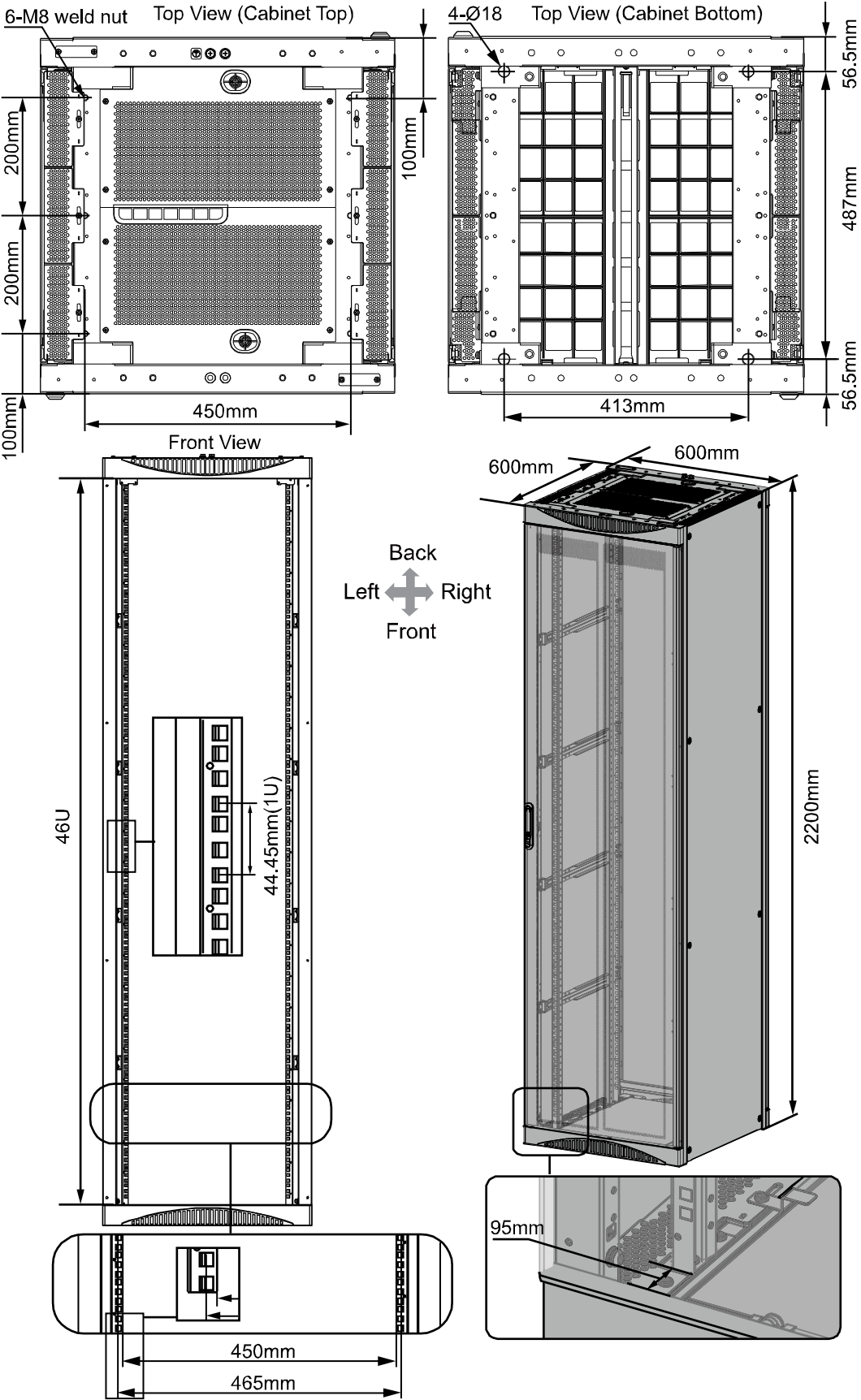
Table 2-1 N66E cabinet specifications

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: $\phi 18$ (four holes) ● Nuts: four M12 expansion bolts and matching nuts

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 W-W-N  W-N-W  N-W-W  W: Wide N: Narrow

[Figure 2-3](#) shows the dimensions of an N66E cabinet.

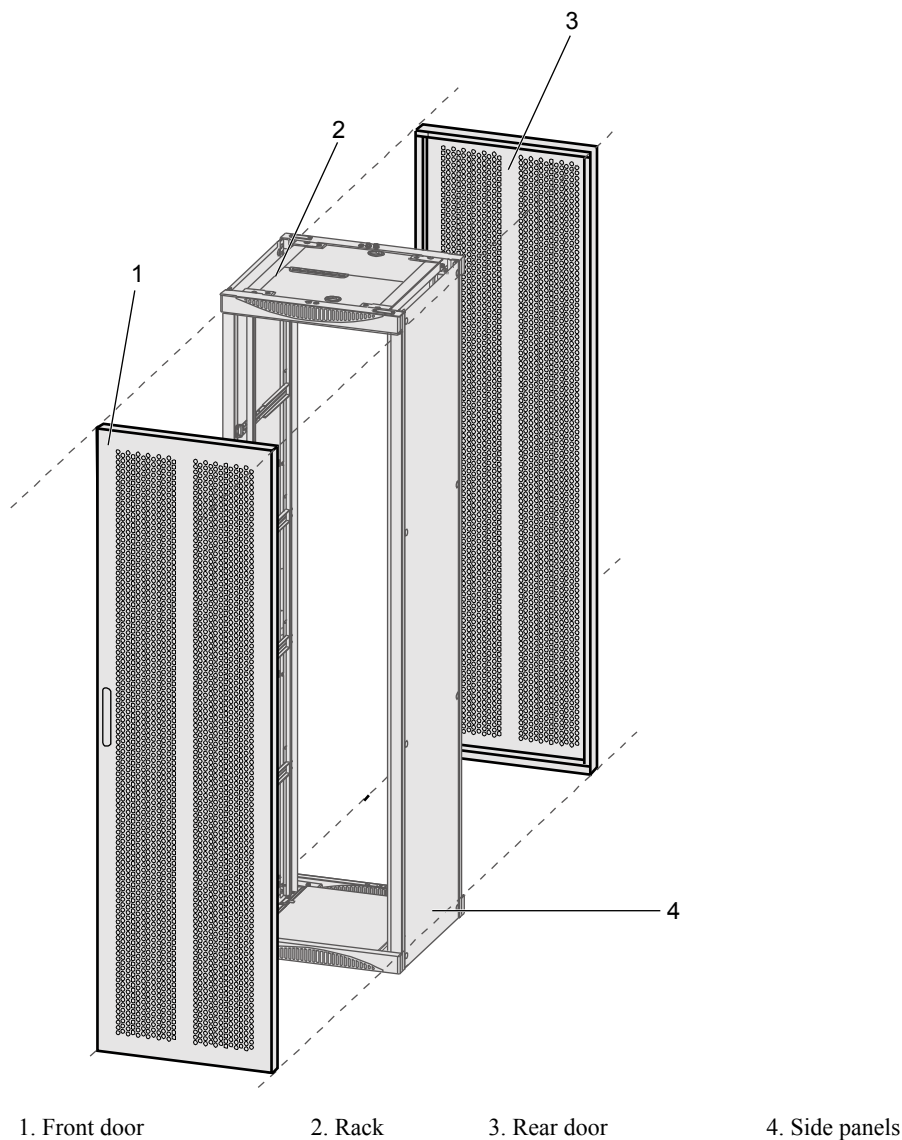
Figure 2-3 N66E cabinet dimensions



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



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.

Cabling Mode

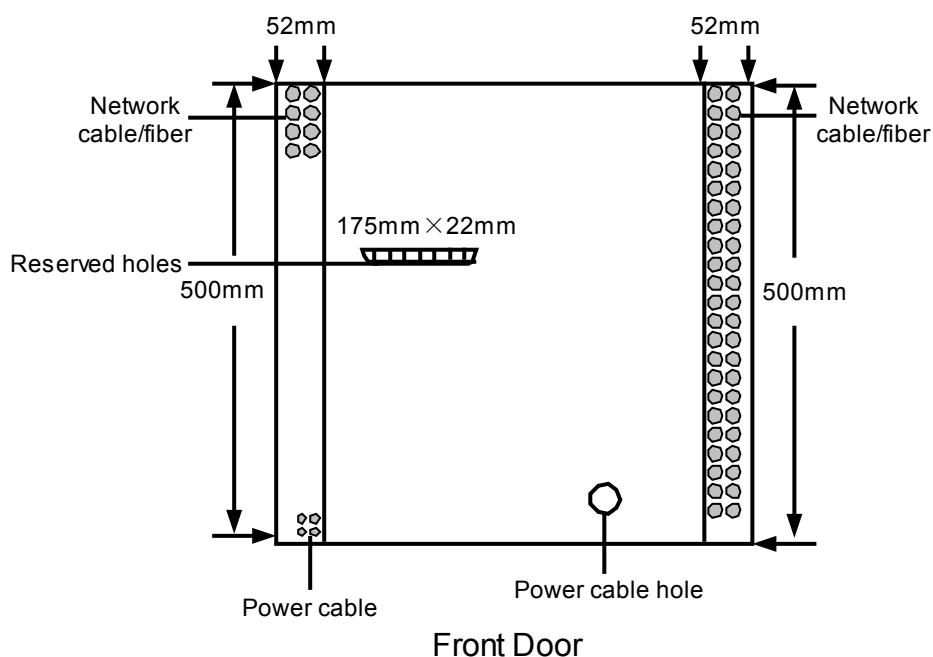
Cable apertures are reserved on the top and at the bottom of the N66E cabinet, so that the N66E cabinet supports overhead cabling and underfloor cabling:

- 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



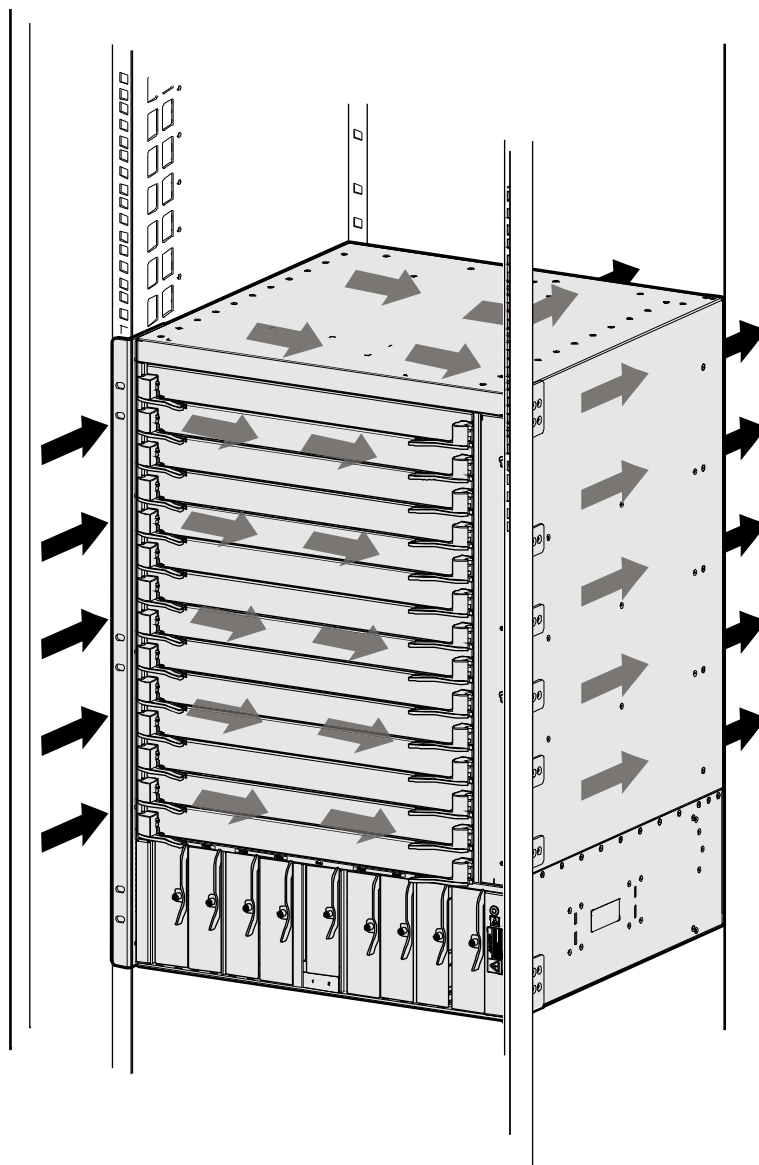
Heat Dissipation

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.
- 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](#).

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.

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

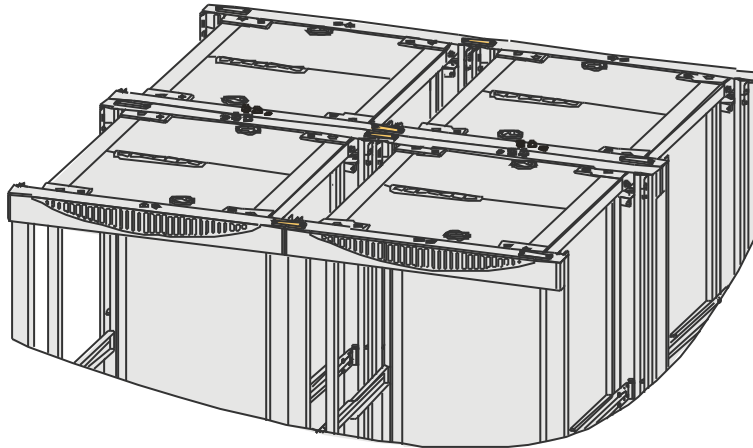
An N66E cabinet can be installed on:

- 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.

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.

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

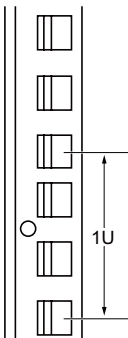
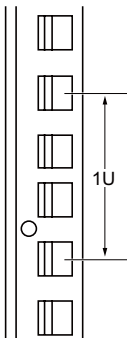
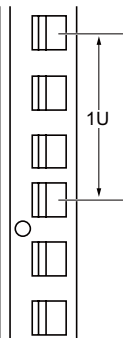
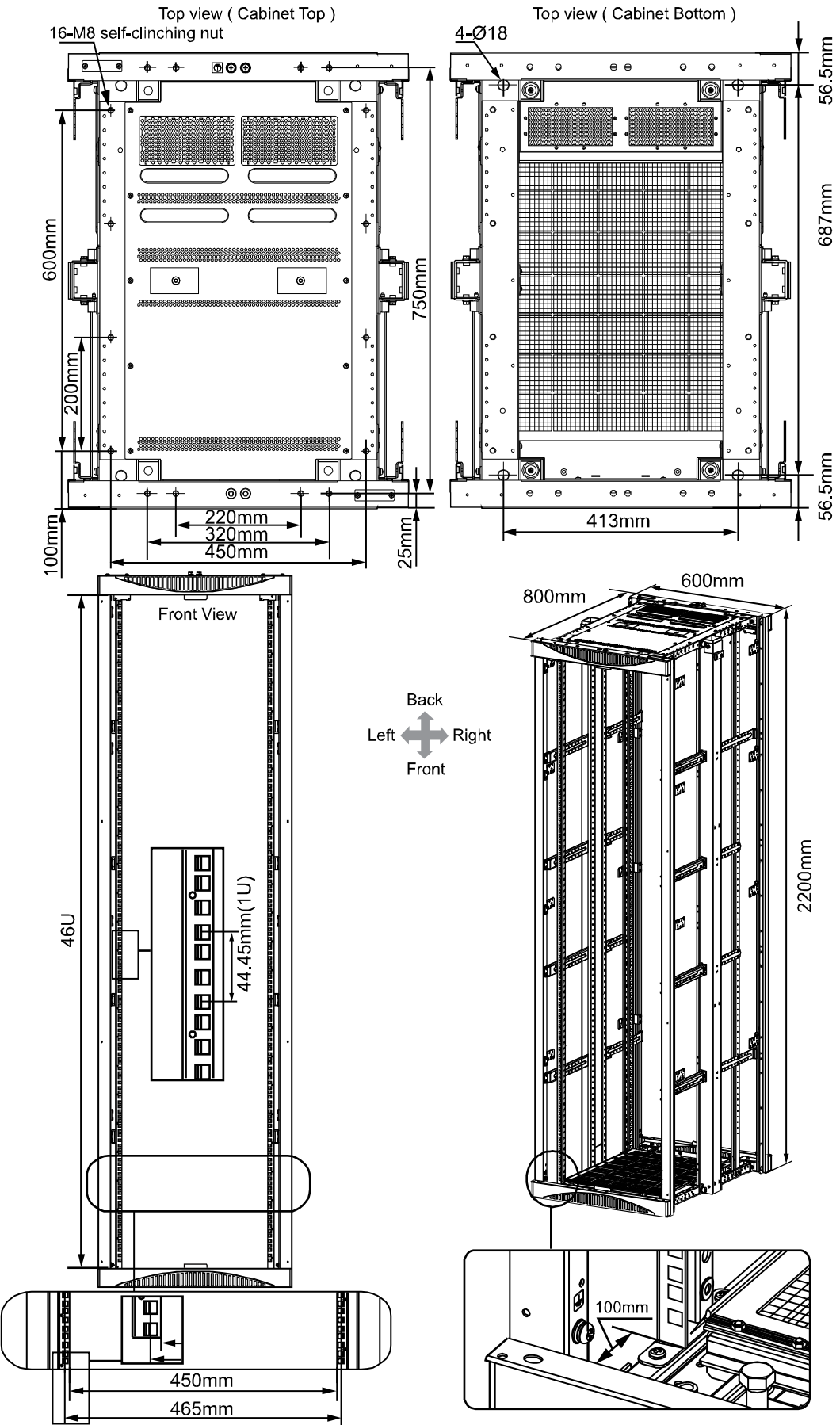
Item	Specification
Mounting holes on the bottom	● Position (W x D): 413 mm x 687 mm ● Hole diameter: $\phi 18$ (four holes) ● Nuts: four M12 expansion bolts and matching nuts
Distance between holes on mounting rails	When marking the installation positions of a chassis on mounting rails, count every four 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 W-W-N  W-N-W  N-W-W  W: Wide N: Narrow 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.

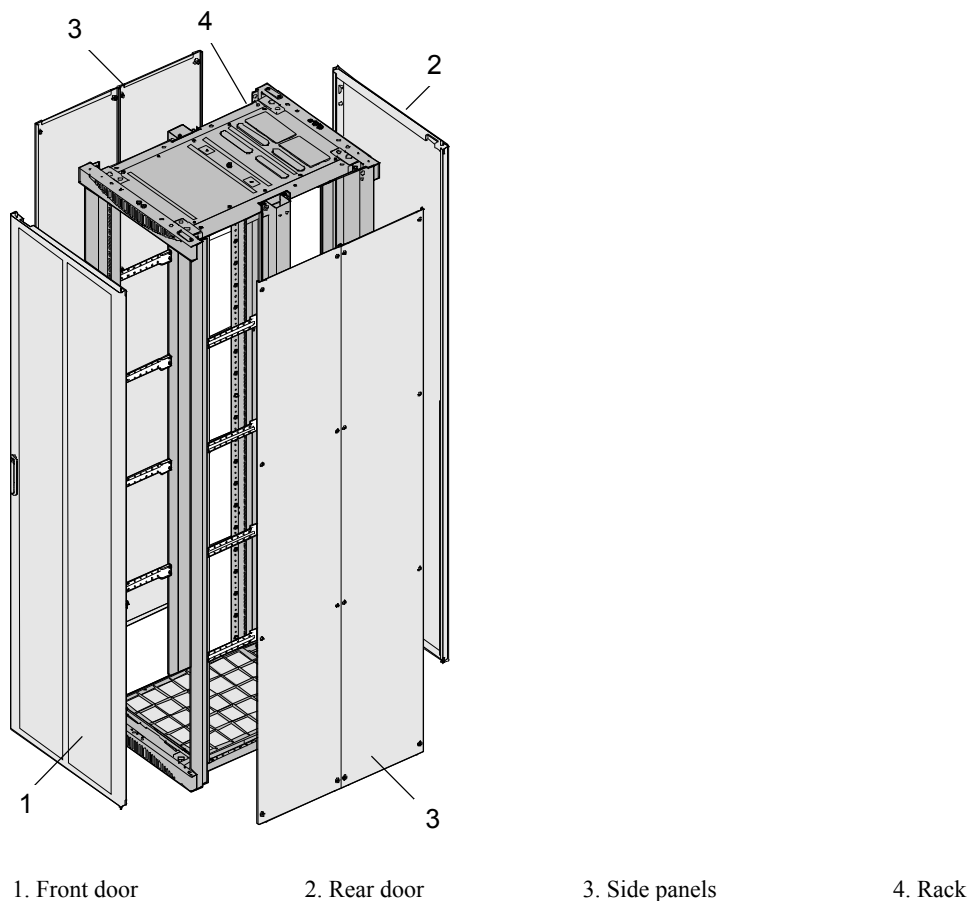
Figure 2-11 N68E cabinet dimensions



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



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

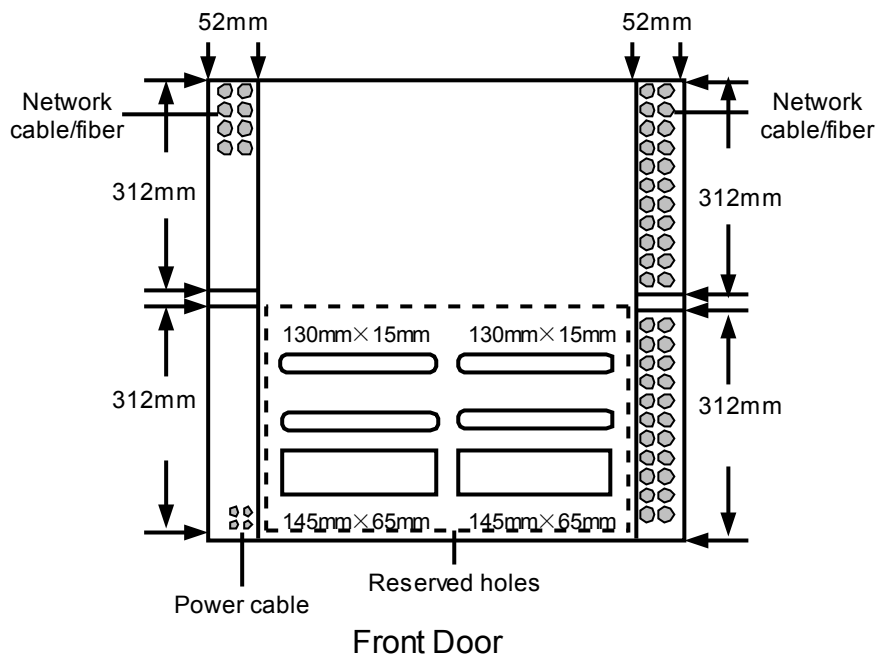
Cable apertures are reserved on the top and at the bottom of the N68E cabinet, so that the N68E cabinet supports overhead cabling and underfloor cabling:

- 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](#).

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



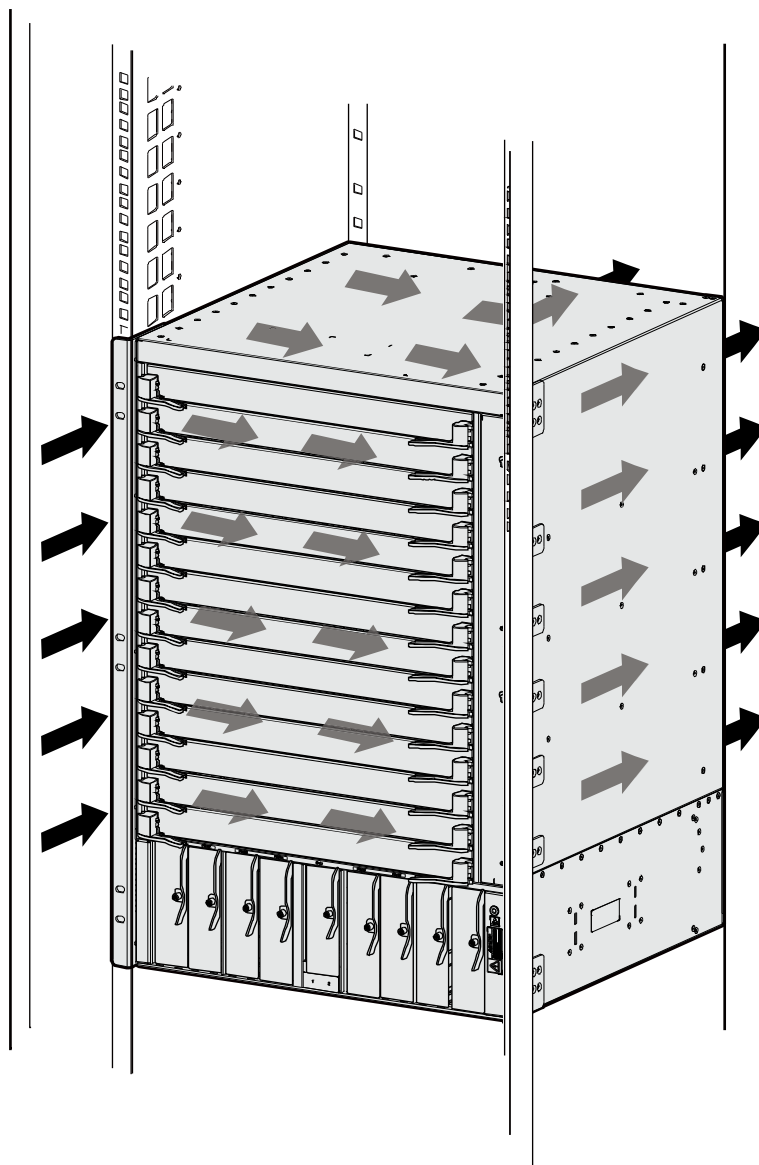
Heat Dissipation

The front door, rear door, and bottom 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.
- 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](#).

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

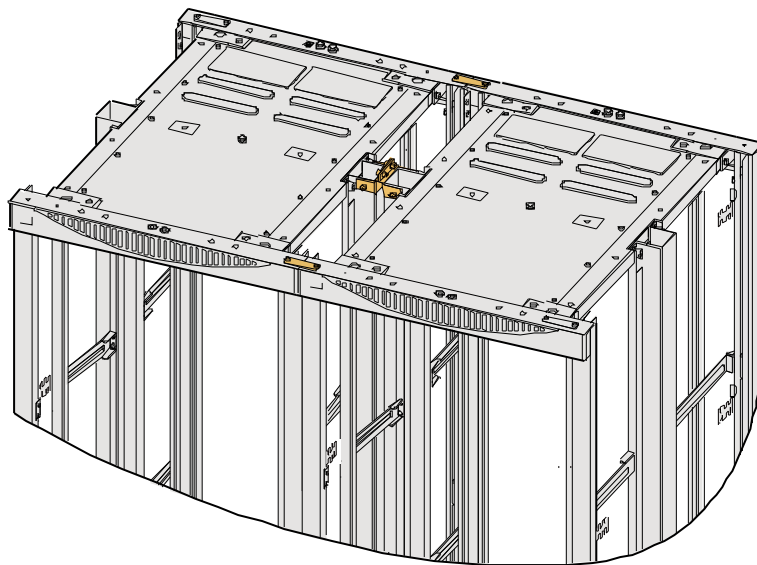
An N68E cabinet can be installed on:

- 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



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

3.1 Version Mapping

Table 3-1 describes mapping between the S7700 chassis and software versions.

Table 3-1 Mapping between the S7700 chassis and software versions

Chassis	Version
Integrated S7703 chassis	V100R003C01 and later versions
S7703 chassis, FCC certified	V200R003C00 and later versions
S7706 chassis	V100R003C01 and later versions
S7706 PoE chassis	V100R003C01 and later versions
S7706 chassis, FCC certified	V200R003C00 and later versions
S7706 PoE chassis, FCC certified	V200R003C00 and later versions
S7712 chassis	V100R003C01 and later versions
S7712 PoE chassis	V100R003C01 and later versions
S7712 chassis, FCC certified	V200R003C00 and later versions
S7712 PoE chassis, FCC certified	V200R003C00 and later versions

3.2 Chassis Models

A variety of chassis models are provided to meet diverse customer requirements. **Table 3-2** lists S7700 chassis models.

Select the chassis models based on your network requirements.

Table 3-2 Chassis models

Device Series	Chassis Model	Description
S7700	S7703	Supports two Main Control Units (MCUs), three Line Processing Units (LPUs), and AC or DC power modules in 1+1 backup mode.
	S7706	Supports two Switching and Routing Units (SRUs), six LPUs, and DC power modules in 1+1 or 2+2 backup mode, or AC power modules in 1+1 or 2+2 backup mode.

Device Series	Chassis Model	Description
	S7712	Supports two SRUs, twelve LPUs, and DC power modules in 1+1 or 2+2 backup mode, or AC power modules in 1+1 or 2+2 backup mode.

 NOTE

- The S7703 chassis integrates the PoE and non-PoE models. The S7706 and S7712 have PoE chassis and non-PoE chassis. A PoE chassis is identified by PoE on the nameplate and power slots.
- S7700 chassis include FCC-certified chassis and common chassis.

3.3 Appearance and Structure

 NOTE

The figures in this document are for reference only.

Appearance

The S7703 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 S7703 chassis.

Figure 3-1 S7703 chassis (front view)



Figure 3-2 S7703 chassis (rear view)



The S7706 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 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 S7706 chassis.

Figure 3-3 S7706 chassis (front view)



Figure 3-4 S7706 chassis (rear view)



The S7712 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 S7712 chassis.

Figure 3-5 S7712 chassis (front view)



Figure 3-6 S7712 chassis (rear view)



Structure

Figure 3-7 shows the front structure of the S7703 chassis.

Figure 3-7 S7703 chassis structure (front view)

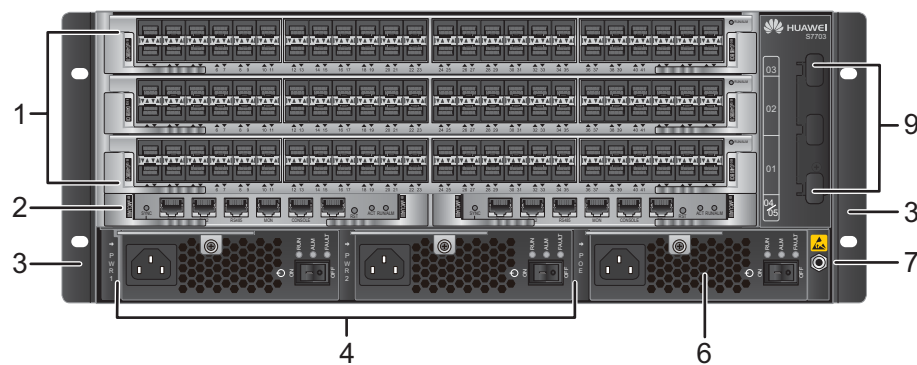


Figure 3-8 shows the front view of S7706 chassis structure.

Figure 3-8 S7706 chassis structure (front view)

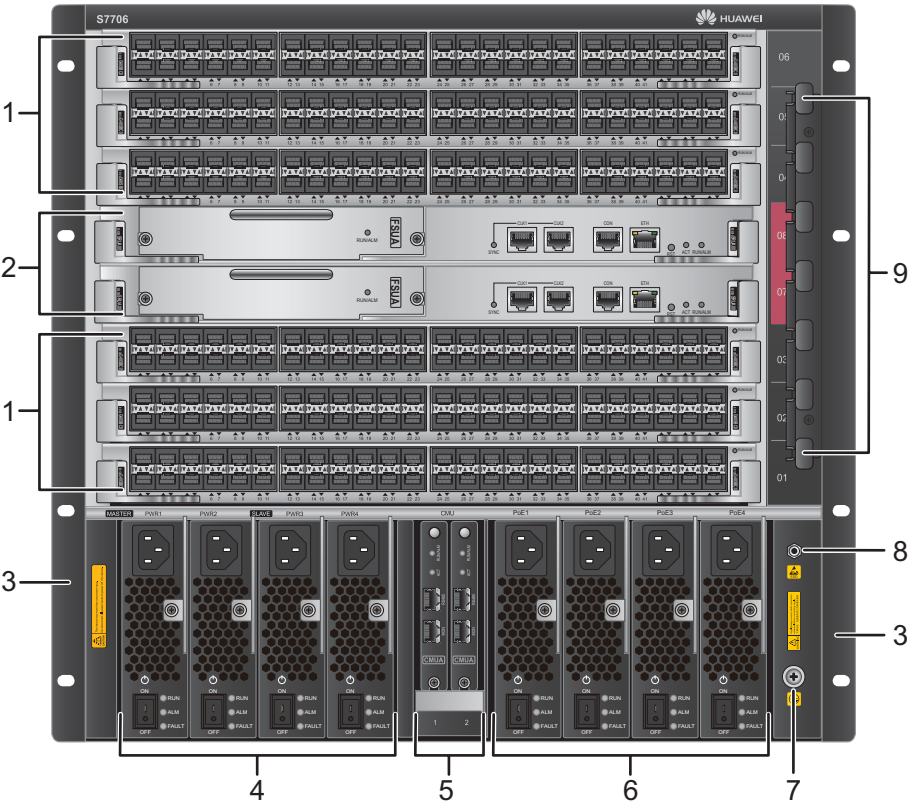
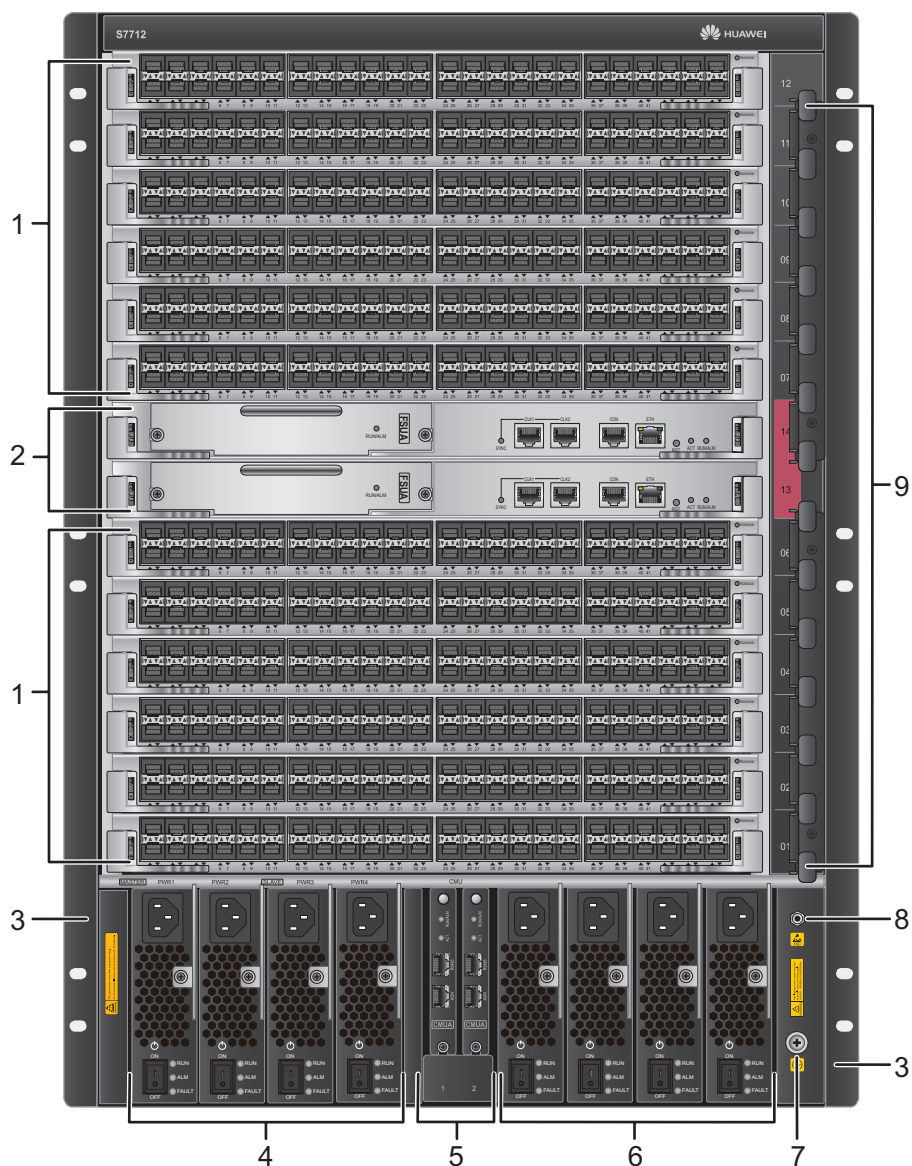


Figure 3-9 shows the front view of S7712 chassis structure.

Figure 3-9 S7712 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.
--	---------------------------	--

4. Two/Four power modules	5. Two CMUs	6. One/Four PoE power modules ● 4.1.3 800 W AC Power Module ● 4.1.4 2200 W AC Power Module
7. Ground screw NOTE The ground screw is used to ground the chassis.	8. 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.	9. Cable management frames NOTE Cable management frames are used to route cables.

Figure 3-10 shows the rear structure of the S7703 chassis.

Figure 3-10 S7703 chassis structure (rear view)



Figure 3-11 shows the rear view of S7706 chassis structure.

Figure 3-11 S7706 chassis structure (rear view)

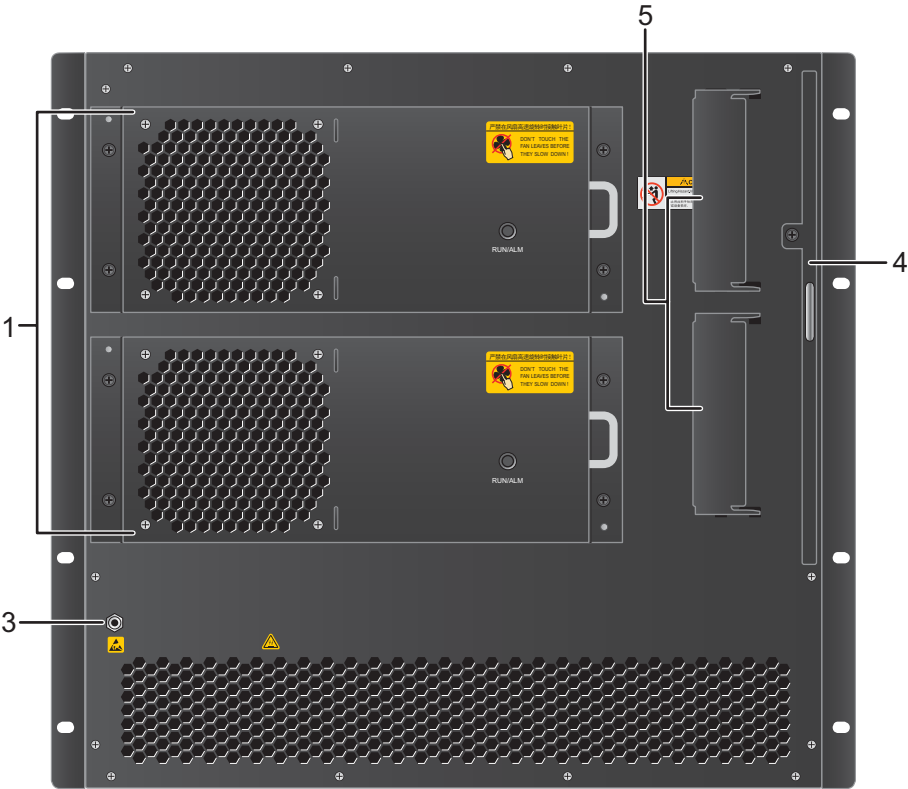
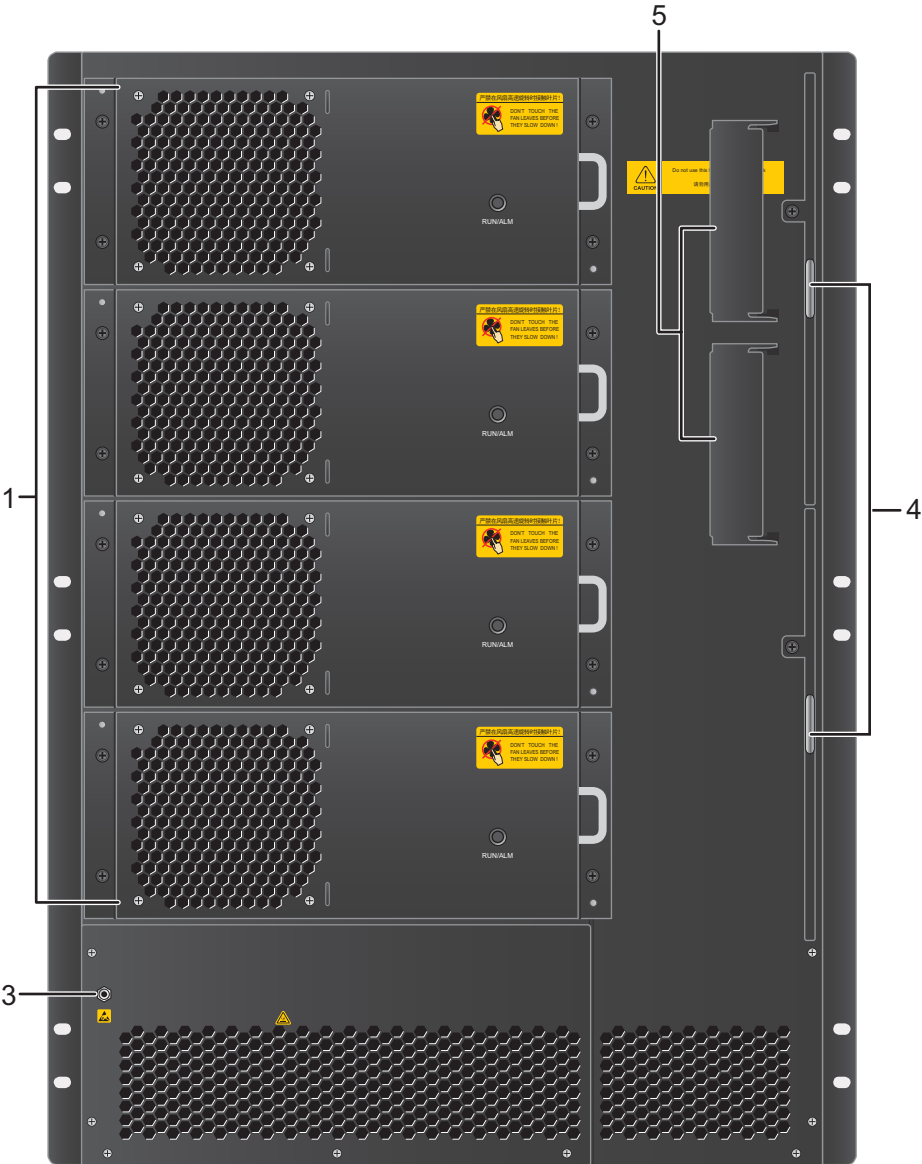


Figure 3-12 shows the rear view of S7712 chassis structure.

Figure 3-12 S7712 chassis structure (rear view)



1. One/Two/Four fan modules NOTE Each switch requires only one fan module. For details, see 5 Fan Module.	2. Ground screw NOTE The ground screw is used to ground the chassis.	3. 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.
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.	-

3.4 Slots

3.4.1 Slot Configuration on the Chassis

The S7703 chassis provides three LPU slots, two MCU slots, two system power slots, and one PoE power slot.

Figure 3-13 shows the layout of slots at the front of the S7703 chassis, and **Figure 3-14** shows the layout of slots at the rear of the S7703 chassis.

Figure 3-13 Slot layout on the S7703 chassis (front)

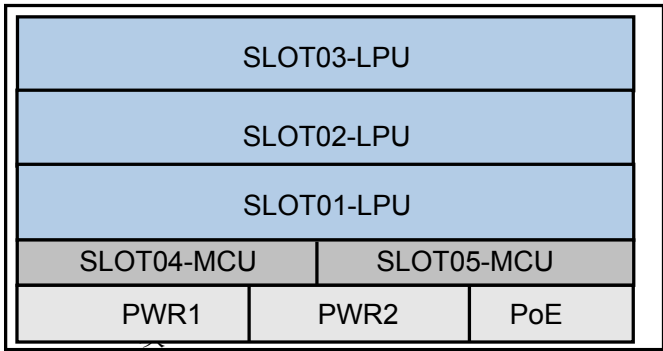
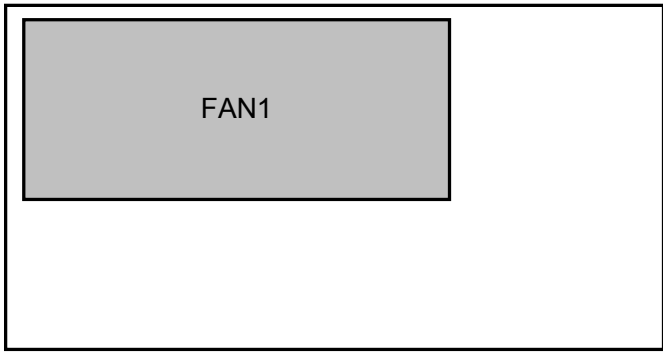


Figure 3-14 Slot layout on the S7703 chassis (rear)



The S7706 chassis provides six LPU slots, two SRU slots, two Centralized Monitoring Unit (CMU) slots, four system power slots, and four PoE power slots.

Figure 3-15 shows the slot layout at the front of the S7706 chassis, and **Figure 3-16** shows the slot layout at the rear of the S7706 chassis.

Figure 3-15 Slot layout on the S7706 chassis (front)

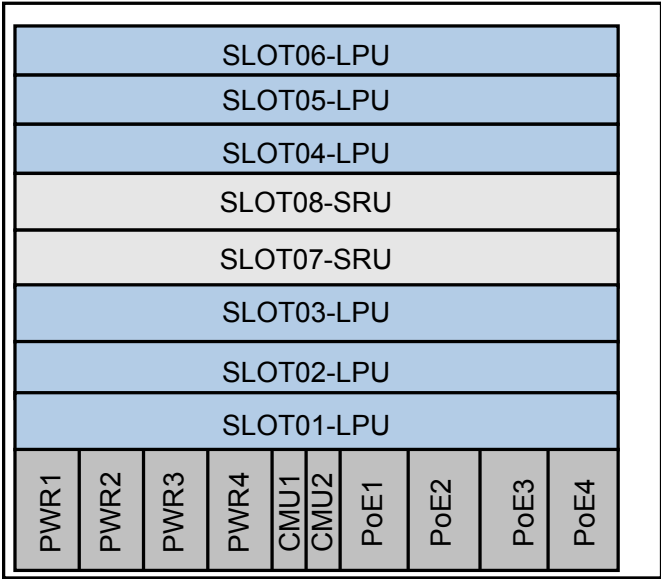
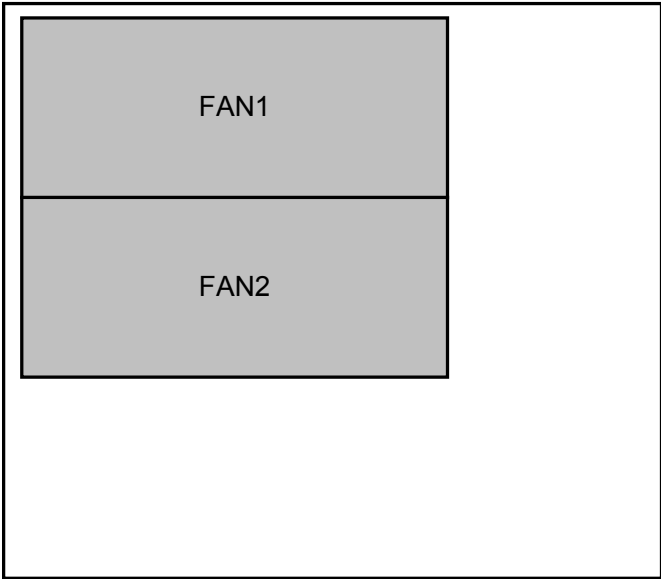


Figure 3-16 Slot layout on the S7706 chassis (rear)



The S7712 chassis provides twelve LPU slots, two SRU slots, two CMU slots, four system power supply slots, and four PoE power supply slots.

Figure 3-17 shows the slot layout at the front of the S7712 chassis, and Figure 3-18 shows the slot layout at the rear of the S7712 chassis.

Figure 3-17 Slot layout on the S7712 chassis (front)

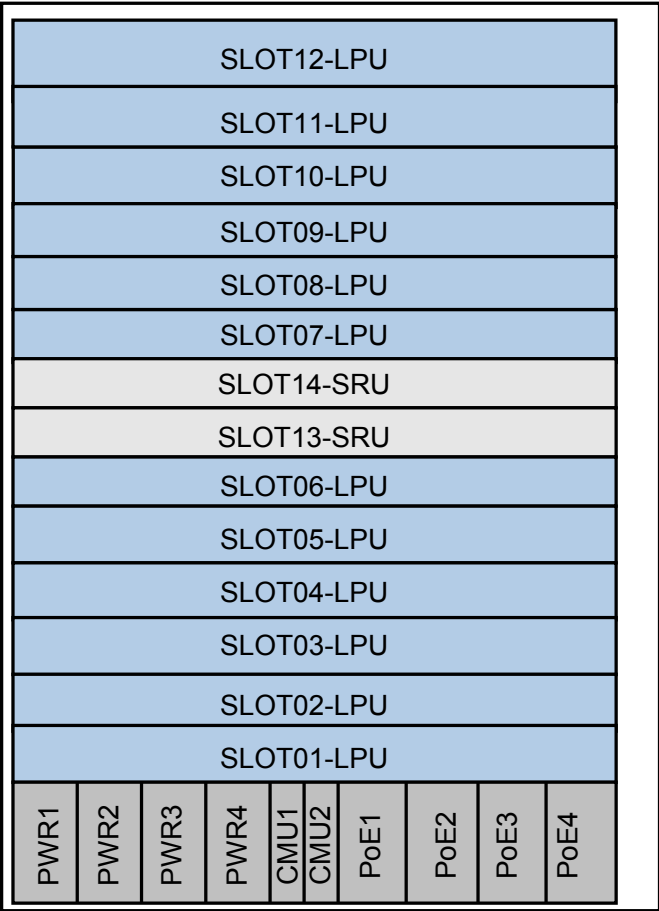


Figure 3-18 Slot layout on the S7712 chassis (rear)

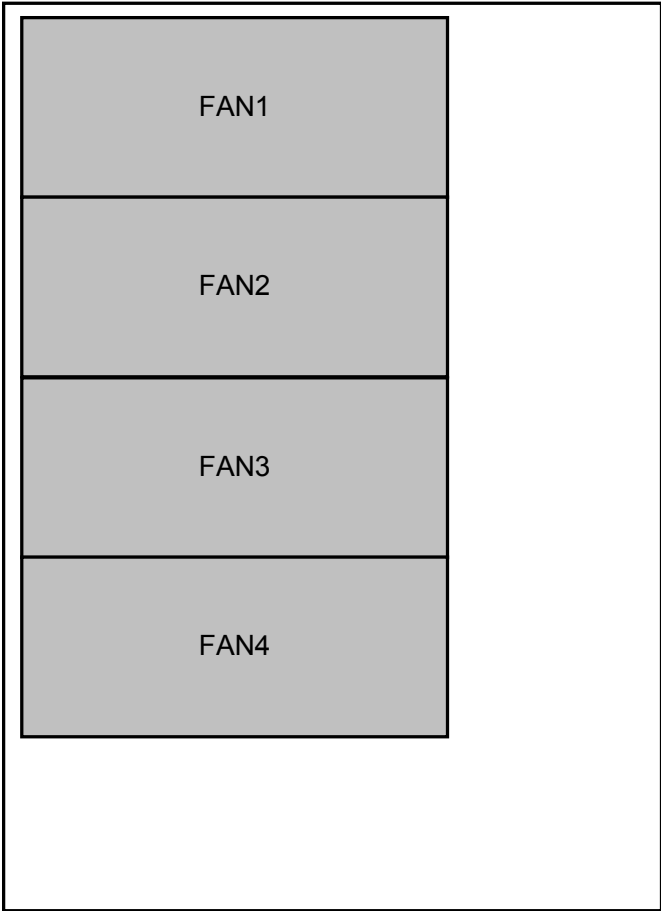


Table 3-3 describes the slot configuration in a chassis.

Table 3-3 S7700 slot configuration

Slot Type	Slot ID	Module Supported	Remarks
MPU slot	S7703: SLOT4 and SLOT5	6.2.2 ES0D00MCUA00-Main Control Unit	The two MCUs work in active/standby mode.
	- S7706: SLOT7 and SLOT8 - S7712: SLOT13 and SLOT14	6.2.1 SRUA/SRUB-Main Control Unit	The SRUs work in active/standby mode.

Slot Type	Slot ID	Module Supported	Remarks
LPU slot	● S7703: SLOT1 to SLOT3 ● S7706: SLOT1 to SLOT6 ● S7712: SLOT1 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	-
CMU slot	● S7706: CMU1 and CMU2 ● S7712: CMU1 and CMU2	6.3 LE0DCMUA0000/EH1D200CMU00-Centralized Monitoring Unit	● The S7703 does not support the CMU. ● The CMUs work in active/standby mode.
System power slot	● S7703: PWR1 and PWR2 ● S7706: PWR1 to PWR4 ● S7712: PWR1 to PWR4	● 4.1.1 1600 W DC Power Module ● 4.1.2 2200 W DC Power Module ● 4.1.3 800 W AC Power Module ● 4.1.4 2200 W AC Power Module	NOTICE AC and DC power modules or power modules with different power values cannot be installed simultaneously in the system power slots.
PoE power slot	● S7703: PoE ● S7706: PoE1 to PoE4 ● S7712: PoE1 to PoE4	● 4.1.3 800 W AC Power Module ● 4.1.4 2200 W AC Power Module	AC power modules with different power values cannot be installed simultaneously in the PoE power slots.
Fan module slot	● S7703: FAN1 ● S7706: FAN1, FAN2 ● S7712: FAN1 to FAN4	5 Fan Module	-

3.4.2 Power Slot Configuration

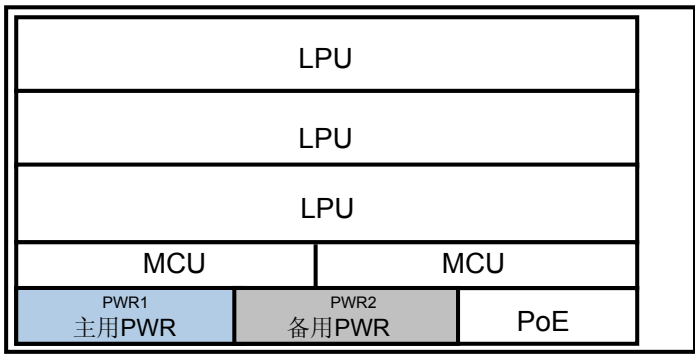
**NOTICE**

- AC and DC power modules or power modules with different power values cannot be installed simultaneously in the same type of power slots (system or PoE).
- Only AC power modules can be installed in the PoE slot.
- To use the PoE function on a switch, use AC power modules as the system power modules.
- When the number of standby power modules is 0, the power modules do not work in backup mode.
- When installed in a PoE slot, an AC power module is used as a PoE power module and provides power for powered devices (PDs) connected to Ethernet PoE electrical interface cards. When installed in a system power slot, an AC power module is used as a system power module and provides power for chassis.

S7703 Power Slot Configuration

The S7703 chassis provides two system power slots: PWR1 and PWR2. The two power slots support DC and AC power modules. PWR1 is in area A, and PWR2 is area B. Power modules in the two areas work in active/standby mode, as shown in [Figure 3-19](#).

Figure 3-19 Configuration of S7703 power modules



The following describes the AC and DC power module configurations on an S7703 chassis:

- DC power module configuration
The S7703 supports 1+1 backup of DC power modules, which provide a maximum power of 2200 W. [Table 3-4](#) describes the backup mode of DC power modules.

Table 3-4 Backup mode of DC power modules

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
1600 W DC power module	1	0	1600 W	Install the same power modules in power slots PWR1 and PWR2 shown in Figure 3-19 . An empty PWR slot must be covered by a filler panel.
	1	1		
2200 W DC power module	1	0	2200 W	
	1	1		

- AC power module configuration

The S7703 supports 1+1 backup of AC power modules, which provide a maximum power of 2200 W. [Table 3-5](#) describes the backup mode of AC power modules.

Table 3-5 Backup mode of AC power modules

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
2200 W AC power module	1	0	The maximum power values provided at different rated voltage are: ● 220 V: 2200 W ● 110 V: 1100 W	Install the same power modules in power slots PWR1 and PWR2 shown in Figure 3-19 . An empty PWR slot must be covered by a filler panel.
	1	1		
800 W AC power module	1	0	The maximum power values provided at different rated voltage are: ● 220 V: 800 W ● 110 V: 400 W	
	1	1		

The S7703 can be configured with a PoE power module that provides a maximum power of 2200 W. [Table 3-6](#) describes the backup mode of PoE power modules.

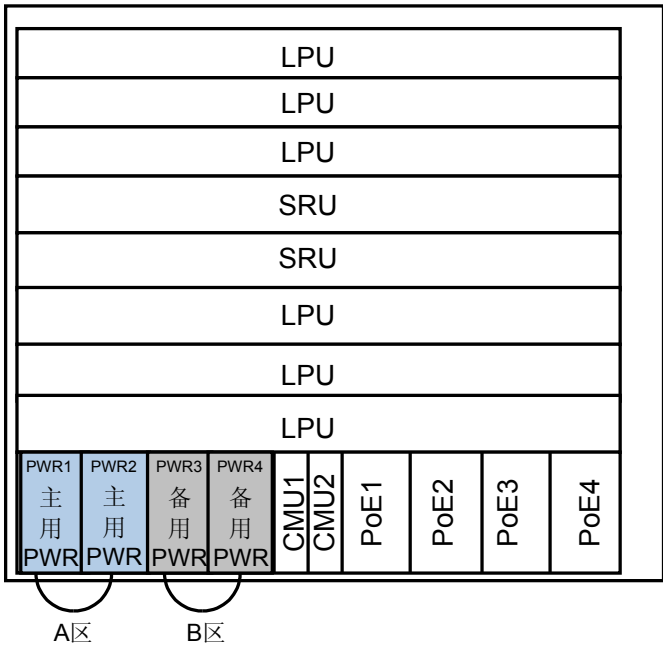
Table 3-6 Backup mode of PoE power modules

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
2200 W AC power module	1	0	The maximum power values provided at different rated voltage are: ● 220 V: 2200 W ● 110 V: 1100 W	Install an AC power module in the PoE power slot shown in Figure 3-19 .
800 W AC power module	1		The maximum power values provided at different rated voltage are: ● 220 V: 800 W ● 110 V: 400 W	

S7706 Power Slot Configuration

The S7706 chassis provides four system power slots: PWR1 to PWR4. These power slots support DC and AC power modules. PWR1 and PWR2 are in area A, and PWR3 and PWR4 are in area B. Area A and area B work in active/standby mode, and the power modules in each area work in load balancing mode, as shown in [Figure 3-20](#).

Figure 3-20 Configuration of S7706 power modules



The following describes the AC and DC power module configurations:

- DC power module configuration
The S7706 supports 1+1 and 2+2 backup of DC power modules, which provide a maximum power of 4400 W. Table 3-7 describes the backup mode of DC power modules.

Table 3-7 Backup mode of DC power modules

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
1600 W DC power module	1	0	1600 W	Install the same power modules in the PWR slots in area A (active) and area B (standby) shown in Figure 3-20 . An empty PWR slot must be covered by a filler panel.
	1	1		
2200 W DC power module	1	0	2200 W	
	1	1		
	2	0	4400 W	
	2	1		
	2	2		

- AC power module configuration

The S7706 supports 1+1 and 2+2 backup of AC power modules, which provide a maximum power of 4400 W. [Table 3-8](#) describes the backup mode of AC power modules.

Table 3-8 Backup mode of AC power modules

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
2200 W AC power module	1	0	The maximum power values provided at different rated voltage are: ● 220 V: 2200 W ● 110 V: 1100 W	Install the same power modules in the PWR slots in area A (active) and area B (standby) shown in Figure 3-20 . An empty PWR slot must be covered by a filler panel.
	1	1		
	2	0	The maximum power values provided at different rated voltage are: ● 220 V: 4400 W ● 110 V: 2200 W	
	2	1		
	2	2		
	800 W AC power module	1	0	
1		1		

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
	2	0	The maximum power values provided at different rated voltage are: ● 220 V: 1600 W ● 110 V: 800 W	
	2	1		
	2	2		

 NOTE

To meet the power requirement of the S7706, configure the 2+2 backup mode for 800 W AC power modules when 110 V AC power sources are used.

The S7706 can be configured with up to four PoE power modules, which provide a maximum power of 8800 W. [Table 3-9](#) describes the backup mode of PoE power modules.

Table 3-9 Backup mode of PoE power modules

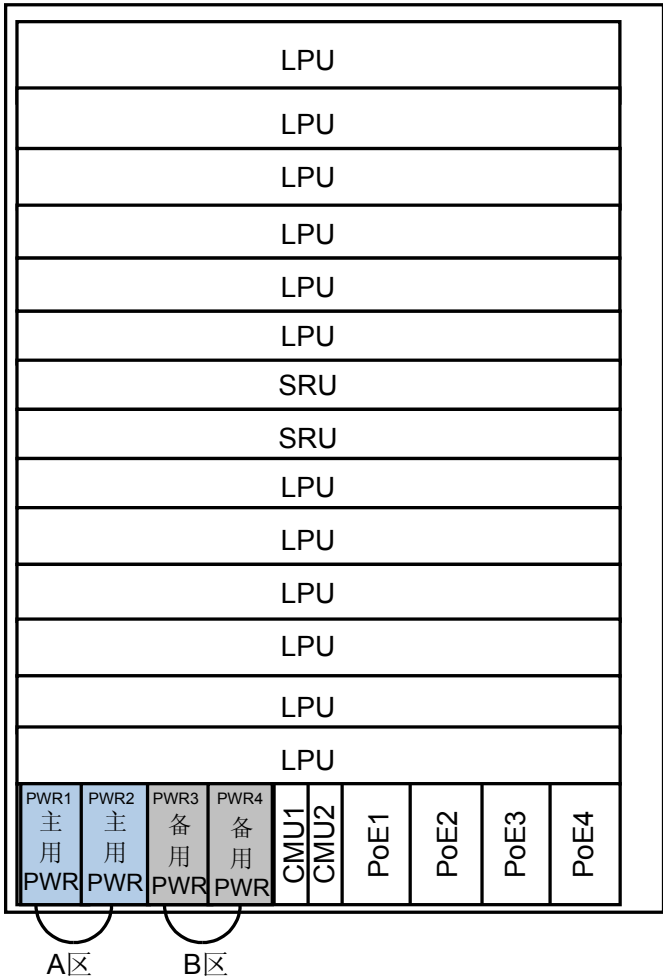
Power Module Type	Active Power Module Count (M)	Standby Power Module Count (N)	Maximum Power Provided	Installation Description
2200 W AC power module	$M \leq 4$	$N \leq M$ and $M + N \leq 4$	The maximum power values provided at different rated voltage are: ● 220 V: $M \times 2200$ W ● 110 V: $M \times 1100$ W	Install the same power modules in PoE power slots PoE1 to PoE4 shown in Figure 3-20 . An empty PoE power slot must be covered by a filler panel.

Power Module Type	Active Power Module Count (M)	Standby Power Module Count (N)	Maximum Power Provided	Installation Description
800 W AC power module	$M \leq 4$		The maximum power values provided at different rated voltage are: ● 220 V: M*800 W ● 110 V: M*400 W	

S7712Power Slot Configuration

The S7712 chassis has four system power slots: PWR1 to PWR4. These power slots support DC and AC power modules. PWR1 and PWR2 are in area A, and PWR3 and PWR4 are in area B. Area A and area B work in active/standby mode, and the power modules in each area work in load balancing mode, as shown in [Figure 3-21](#).

Figure 3-21 Configuration of S7712 power modules



The following describes the AC and DC power module configurations on an S7712 chassis:

- DC power module configuration
- The S7712 supports 1+1 and 2+2 backup of DC power modules, which provide a maximum power of 4400 W. [Table 3-10](#) describes the backup mode of DC power modules.

Table 3-10 Backup mode of DC power modules

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
1600 W DC power module	1	0	1600 W	Install the same power modules in the PWR slots in area A (active) and
	1	1		
2200 W DC power module	1	0	2200 W	

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
	1	1	4400 W	area B (standby) shown in Figure 3-21 . An empty PWR slot must be covered by a filler panel.
	2	0		
	2	1		
	2	2		

- AC power module configuration

The S7712 supports 1+1 and 2+2 backup of AC power modules, which provide a maximum power of 4400 W. [Table 3-11](#) describes the backup mode of AC power modules.

Table 3-11 Backup mode of AC power modules

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
2200 W AC power module	1	0	The maximum power values provided at different rated voltage are: ● 220 V: 2200 W ● 110 V: 1100 W	Install the same power modules in the PWR slots in area A (active) and area B (standby) shown in Figure 3-21 . An empty PWR slot must be covered by a filler panel.
	1	1		
	2	0	The maximum power values provided at different rated voltage are: ● 220 V: 4400 W ● 110 V: 2200 W	
	2	1		
	2	2		
800 W AC power module	1	0	The maximum power values provided at different rated voltage are:	

Power Module Type	Active Power Module Count	Standby Power Module Count	Maximum Power Provided	Installation Description
	1	1	● 220 V: 800 W ● 110 V: 400 W	
	2	0	The maximum power values provided at different rated voltage are: ● 220 V: 1600 W ● 110 V: 800 W	
	2	1		
	2	2		

The S7712 can be configured with up to four PoE power modules, which provide a maximum of 8800 W power. [Table 3-12](#) describes the backup mode of PoE power modules.

Table 3-12 Backup mode of PoE power modules

Power Module Type	Active Power Module Count (M)	Standby Power Module Count (N)	Maximum Power Provided	Installation Description
2200 W AC power module	$M \leq 4$	$N \leq M$ and $M + N \leq 4$	$M \times 2200$ W	Install the same power modules in PoE power slots PoE1 to PoE4 shown in Figure 3-21 . An empty PoE power slot must be covered by a filler panel.
800 W AC power module	$M \leq 4$		$M \times 800$ W	

3.5 Heat Dissipation

 NOTE

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

The S7700 cooling system consists of a fan module and an air filter. 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).

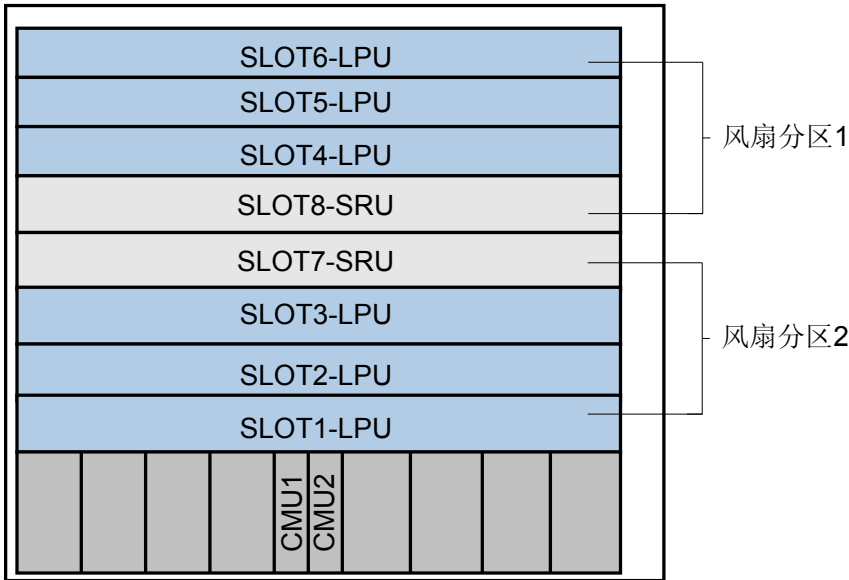
- The fan module can intelligently adjust the fan speed. It absorbs cold air into the chassis to dissipate heat generated by working components, ensuring that the chassis operates within a normal temperature range. For the performance and attributes of the fan module, see [5 Fan Module](#).
- The air filter prevents dust from entering the chassis and ensures normal operation of the chassis.

Fan Zones

The S7706 and S7712 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 3-22](#), two fan modules of the S7706 serve two zones, with four cards in each zone.

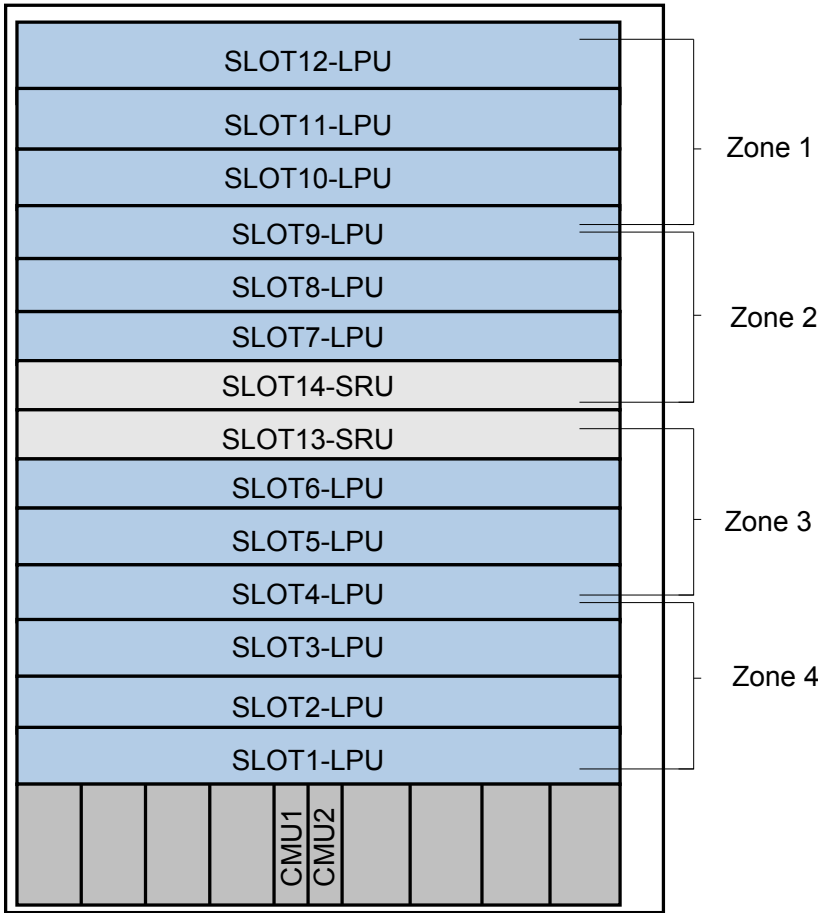
Figure 3-22 Fan zones on a S7706 chassis



The S7712 chassis is 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 3-23](#), four fan modules of the S7712 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.

Figure 3-23 Fan zones on the S7712 chassis



Airflow

The fan module in the S7700 chassis exhausts heat by absorbing air. Air flows from the left side to the rear of the chassis. [Figure 3-24](#) shows the airflow in the chassis.

 **NOTE**

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

Figure 3-24 Airflow in the S7706 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.

The S7703 uses either a sponge air filter or a honeycomb air filter. An FCC-certified chassis must use a honeycomb air filter. [Figure 3-25](#) shows a sponge air filter, and [Figure 3-26](#) shows a honeycomb air filter.

Figure 3-25 Sponge air filter

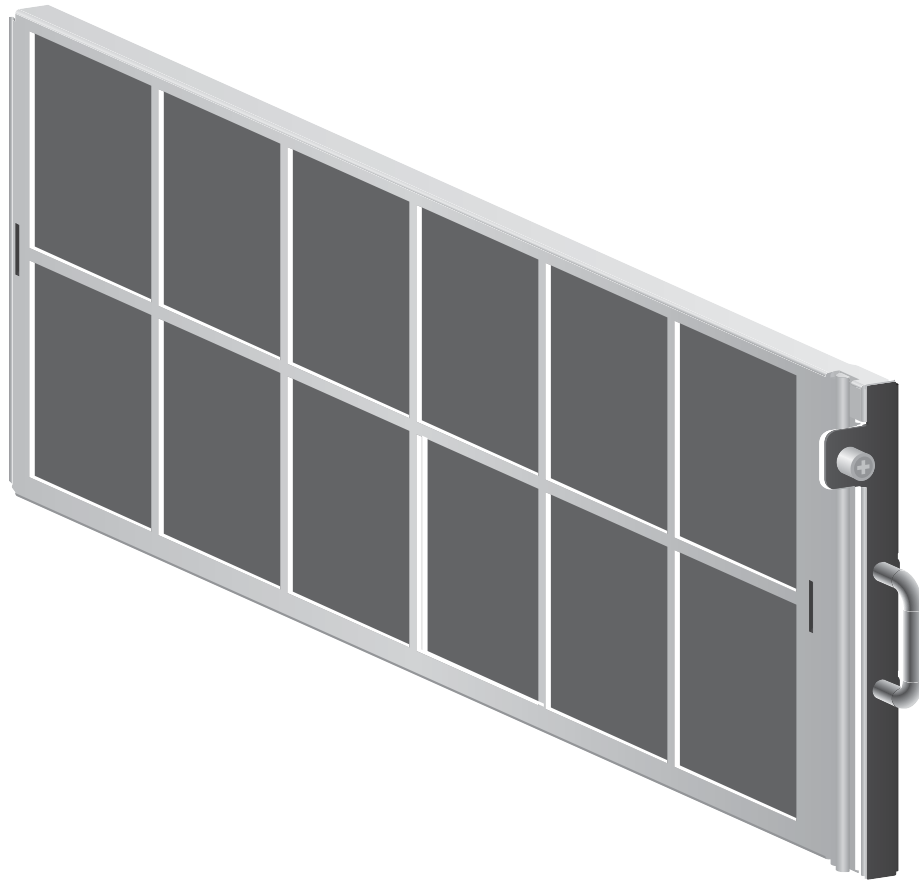
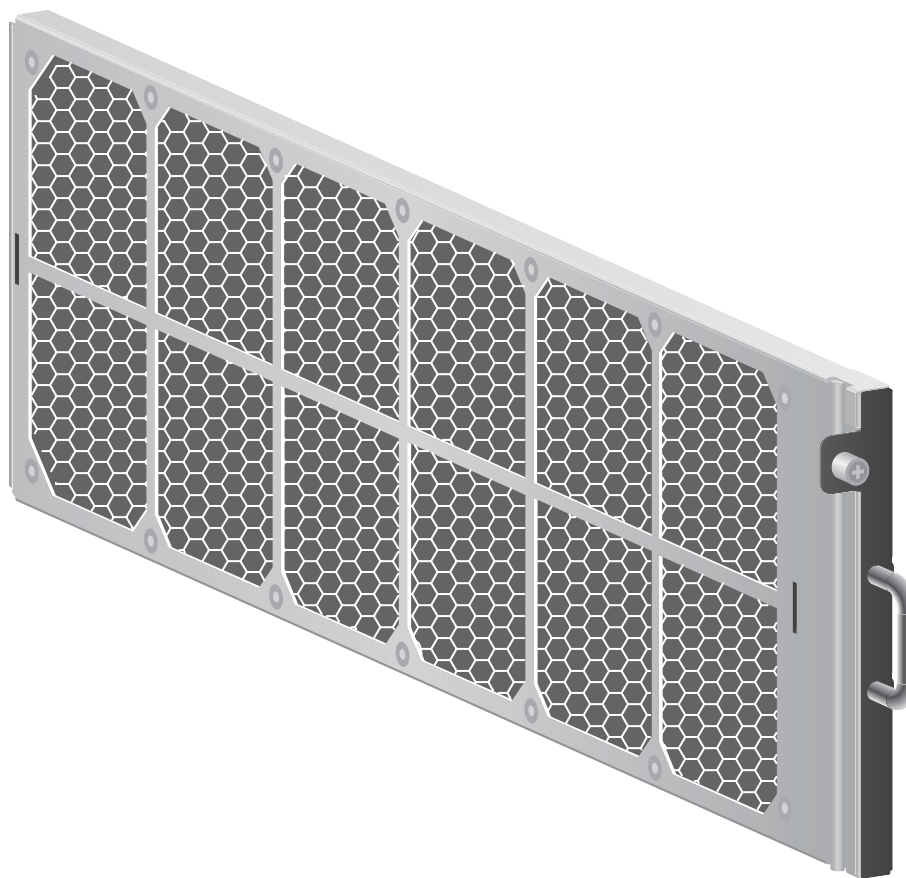


Figure 3-26 Waveguide air filter



The S7706 and S7712 uses sponge air filters or honeycomb air filters. An FCC-certified chassis must use honeycomb air filters. [Figure 3-27](#) shows a sponge air filter, and [Figure 3-23](#) shows a honeycomb air filter.

Figure 3-27 Sponge air filter

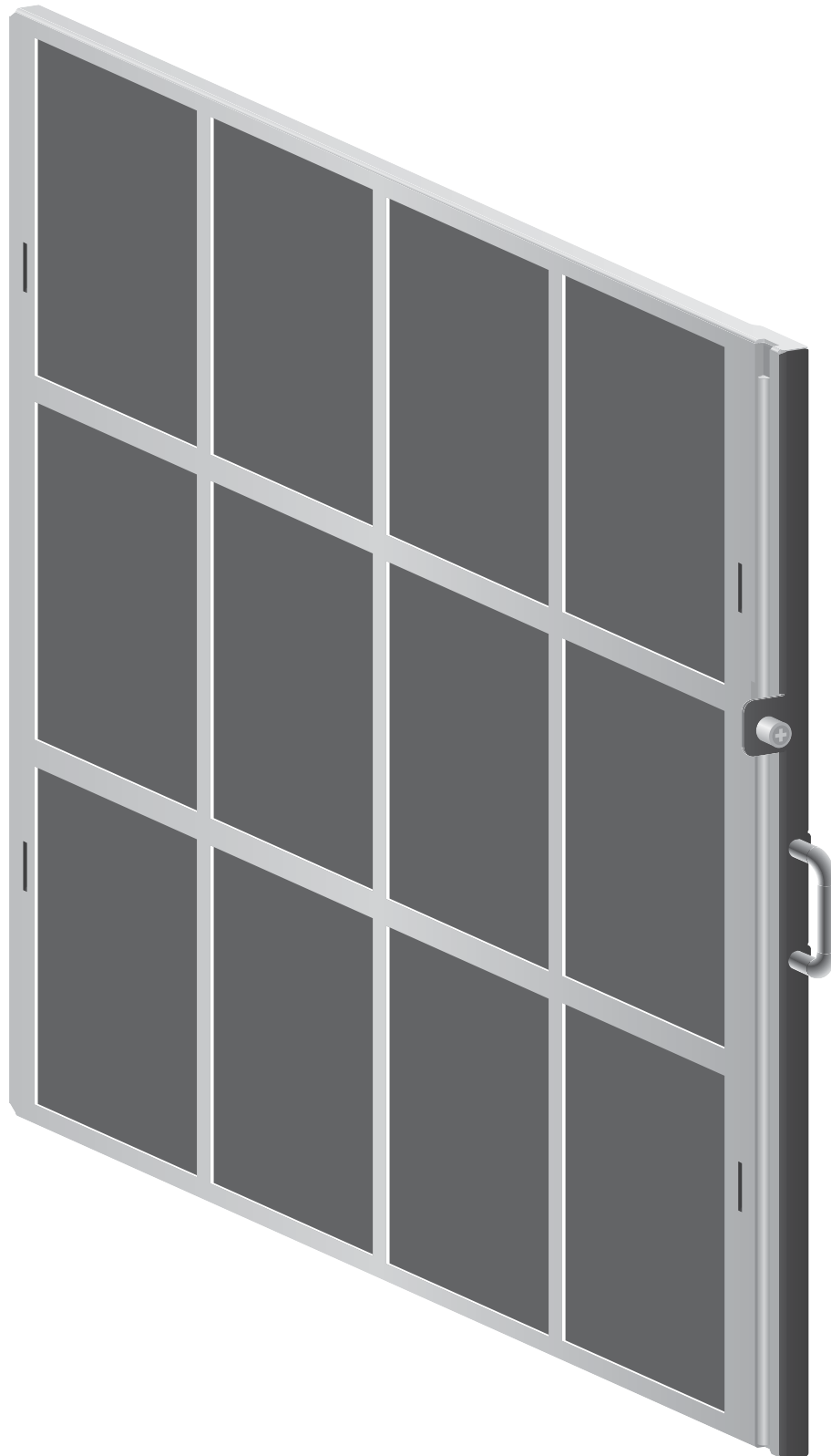
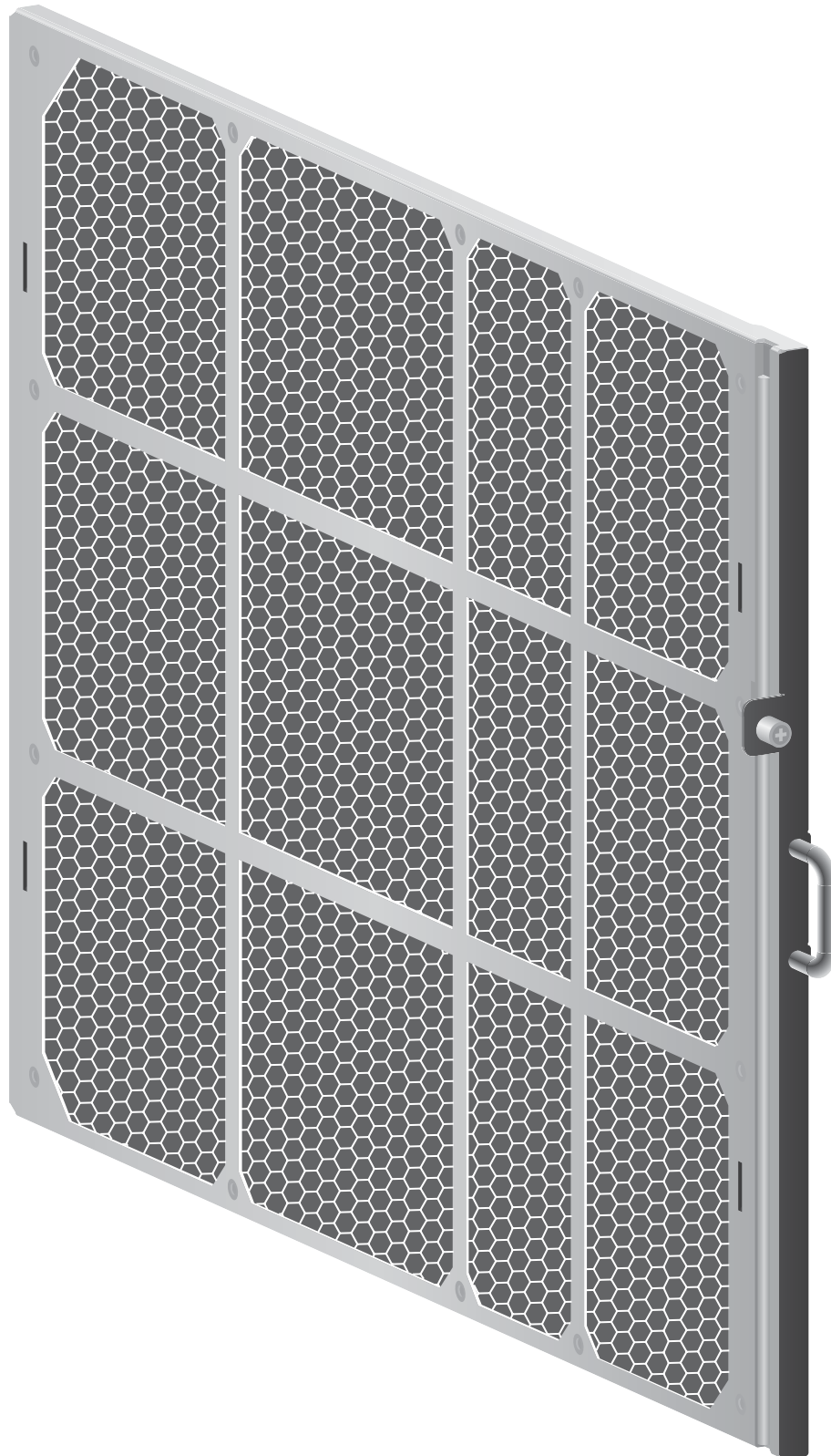


Figure 3-28 Waveguide air filter



3.6 Specifications

Table 3-13 lists the specifications of the S7700 chassis.

Table 3-13 S7700 chassis specifications

Item	Description
LPU slots	● S7703: 3 ● S7706: 6 ● S7712: 12
MPU slots	2
Fan slots	● S7703: 1 ● S7706: 2 ● S7712: 4
System power slots	● S7703: 2 ● S7706: 4 ● S7712: 4
PoE power slots	● S7703: 1 ● S7706: 4 ● S7712: 4
Maximum port density	● S7703: 144xFE, 144xGE, 120x10GE, 6x40GE ● S7706: 288xFE, 288xGE, 240x10GE, 12x40GE ● S7712: 576xFE, 576xGE, 480x10GE, 24x40GE
CSS	● S7703: not supported ● S7706: service port clustering and CSS card clustering ● S7712: service port clustering and CSS card clustering

Item	Description
PoE	● S7703: - Power input: AC input power only - PoE power module backup: no backup - Maximum output power: 2200 W ● S7706: - Power input: AC input power only - PoE power module backup: no backup, 3+1 backup, or 2+2 backup - Maximum output power: 8800 W ● S7712: - Power input: AC input power only - PoE power module backup: no backup, 3+1 backup, or 2+2 backup - Maximum output power: 8800 W
Maximum power consumption (fully loaded, no PoE) NOTE The heat dissipation value of a chassis equals the current power consumption of the chassis.	● S7703:800 W ● S7706:1600 W ● S7712:3000 W
Power specifications	● DC input voltage - Rated voltage: -48 V DC/-60 V DC - Voltage range: -38.4 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.)

Item	Description
Dimensions (W x D x H, excluding rack-mounting brackets)	● S7703: – 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) ● S7706: – 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) ● S7712: – 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)	● S7703: 10 kg/22 kg ● S7706: 15 kg/42 kg ● S7712: 25 kg/70 kg
Reliability and availability	● S7703: – Mean time between failures (MTBF): 33.8 years – Mean time to repair (MTTR): 30 minutes – Availability: 0.99999964 ● S7706: – MTBF: 24.2 years – MTTR: 30 minutes – Availability: 0.99999959 ● S7712: – MTBF: 24.1 years – MTTR: 30 minutes – Availability: 0.99999959

Item	Description
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
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

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

4 Power Supply Facilities

About This Chapter

[4.1 Power Module](#)

[4.2 Power Distribution Box](#)

4.1 Power Module

4.1.1 1600 W DC Power Module

Version Mapping

Table 4-1 lists the switch chassis and software versions matching a 1600 W DC power module.

Table 4-1 Switch chassis and software versions matching a 1600 W DC power module

Power Module Name	S7700 Chassis
1600 W DC power module	Supported in V100R003C01 and later versions

Appearance

A 1600 W DC power module is standard 3 U high. **Figure 4-1** shows a 1600 W DC power module.

Figure 4-1 1600 W DC power module



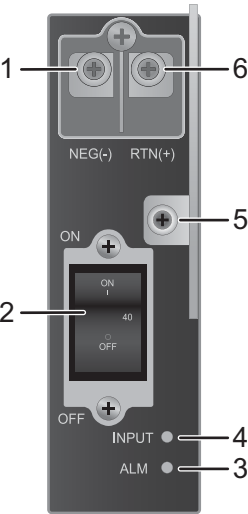
Function

- A 1600 W DC power module provides a maximum of 1600 W power for the chassis and has the following functions:
- EMC filtering, surge protection, and short circuit protection
 - Alarms about various power supply events, for example, no power input, air breaker status, ineffective surge protection, and input undervoltage

Panel Description

Figure 4-2 shows the panel of a 1600 W DC power module.

Figure 4-2 Panel of a 1600 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. ALM indicator
4. INPUT indicator	5. 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.	6. RTN terminal

Table 4-2 describes the indicators on a 1600 W DC power module panel.

Table 4-2 Indicators on a 1600 W DC power module panel

Indicator	Color	Description
INPUT	Green	Steady on: The input power is normal. Off: No input power is available.
ALM	Red	Steady on: The protection circuit has failed. Off: The protection circuit is working properly.

Table 4-3 describes the relationship between cables and the terminals on a 1600 W DC power module.

Table 4-3 Relationship between cables and the terminals on a 1600 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 1600 W DC power module.

Table 4-4 Technical specifications of a 1600 W DC power module

Item		Value
Dimensions (W x D x H)		41 mm x 393 mm x 130 mm
Weight		1.50 kg
Input	Rated input voltage	-48 V DC/-60 V DC
	Input voltage range	-38.4 V DC to -72 V DC
	Maximum input current	40 A
Output	Maximum output current	40 A
	Maximum output power	1600 W

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)

4.1.2 2200 W DC Power Module

Version Mapping

Table 4-5 lists the switch chassis and software versions matching a 2200 W DC power module.

Table 4-5 Switch chassis and software versions matching a 2200 W DC power module

Power Module Name	S7700 Chassis
2200 W DC power module	Supported in V200R003C00 and later versions

Appearance

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

Figure 4-3 2200 W DC power module



Functions

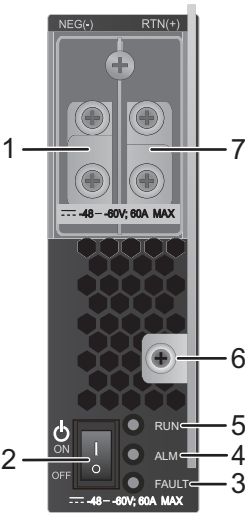
A 2200 W DC power module provides a maximum power of 2200 W for the chassis and has the following functions:

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

Figure 4-4 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.
7. RTN terminal	-	-

Table 4-6 describes the indicators on a 2200 W DC 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.

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 (MPU or CMU) is interrupted.
RUN	Green	Steady on: The power input is normal.

Table 4-7 describes the relationship between cables and the terminals on a 2200 W DC power module.

Table 4-7 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 4-8 lists the technical specifications of a 2200 W DC power module.

Table 4-8 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

Item		Value
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)

4.1.3 800 W AC Power Module

Version Mapping

Table 4-9 lists the switch chassis and software versions matching an 800 W AC power module.

Table 4-9 Switch chassis and software versions matching an 800 W AC power module

Power Module Name	S7700 Chassis
800 W AC power module	Supported in V100R003C01 and later versions

Appearance

An 800 W AC power module is standard 3 U high. **Figure 4-5** shows an 800 W AC power module.

Figure 4-5 800 W AC power module



Function

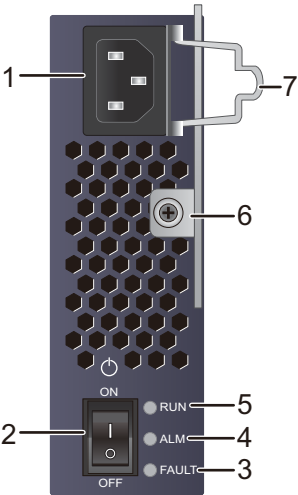
An 800 W AC power module provides a maximum of 800 W power for the chassis and has the following functions:

- 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 4-6 shows the panel of an 800 W AC power module.

Figure 4-6 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 4-10 describes the indicators on an 800 W AC power module panel.

Table 4-10 Indicators on a power module panel

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

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 (MPU or CMU) is interrupted.
RUN	Green	Steady on: The power input is normal.

Specifications

Table 4-11 lists the technical specifications of an 800 W AC power module.

Table 4-11 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)

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)

4.1.4 2200 W AC Power Module

Version Mapping

Table 4-12 lists the switch chassis and software versions matching a 2200 W AC power module.

Table 4-12 Switch chassis and software versions matching a 2200 W AC power module

Power Module Name	S7700 Chassis
2200 W AC power module	Supported in V100R006C00 and later versions

Appearance

A 2200 W AC power module is standard 3 U high. **Figure 4-7** shows a 2200 W AC power module.

Figure 4-7 2200 W AC power module



Functions

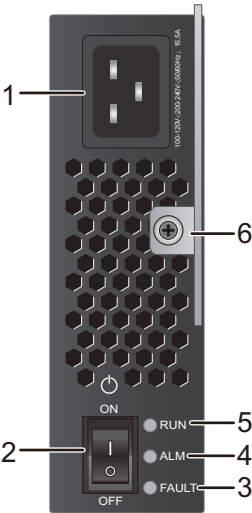
A 2200 W AC power module provides a maximum power of 2200 W for the chassis and has the following functions:

- 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 4-8 shows the panel of a 2200 W AC power module.

Figure 4-8 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 4-13 describes the indicators on a 2200 W AC power module panel.

Table 4-13 Indicators on a power module panel

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

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 (MPU or CMU) is interrupted.
RUN	Green	Steady on: The power input is normal.

Specifications

Table 4-14 lists the technical specifications of a 2200 W AC power module.

Table 4-14 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)

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 1600 W DC Power Distribution Box

Figure 4-9 shows a 1600 W DC power distribution box.

Figure 4-9 1600 W DC power distribution box



A 1600 W DC power distribution box is C3 type and provides short-circuit protection and overload protection functions.

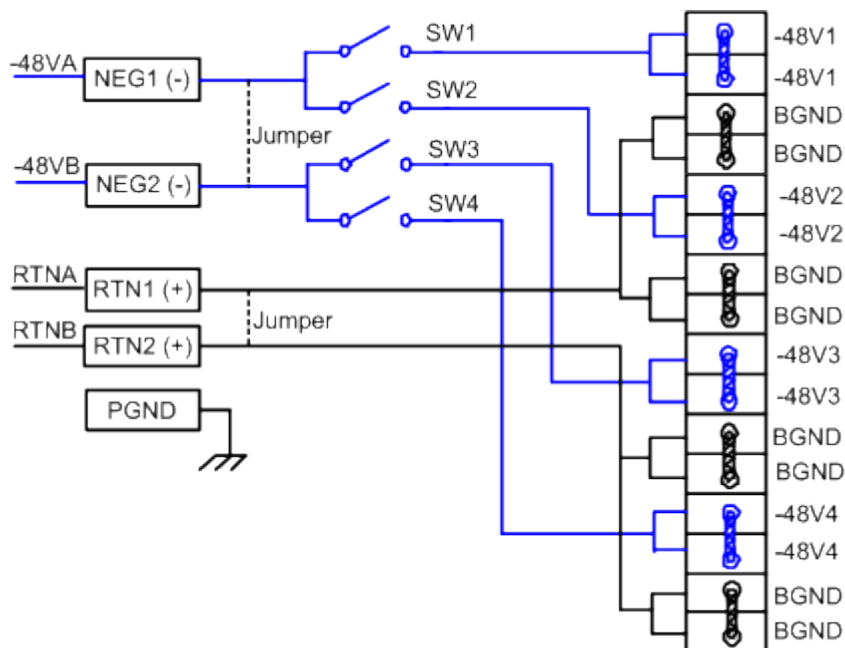
Table 4-15 lists specifications of a 1600 W DC power distribution box.

Table 4-15 Specifications of a 1600 W DC power distribution box

Item		Description
Input	Rated input voltage	-48 V DC/-60 V DC
	Input voltage range	-38.4 V DC to -72 V DC
	Input mode	Two DC inputs. By default, the two inputs are provided by different power sources. To use the same power source to provide two inputs, short circuit the two input terminals using two short-circuiting bars, as shown in Figure 4-10 .
	Maximum input current	80 A per input
	Input terminal	M8 OT terminal
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 outputs, controlled by four circuit breakers (Each circuit breaker controls two outputs.)
	Current of each circuit breaker	40 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 (12 AWG to 10 AWG)
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)		436 mm x 116.4 mm x 2 U

Figure 4-10 shows power distribution in a 1600 W DC power distribution box.

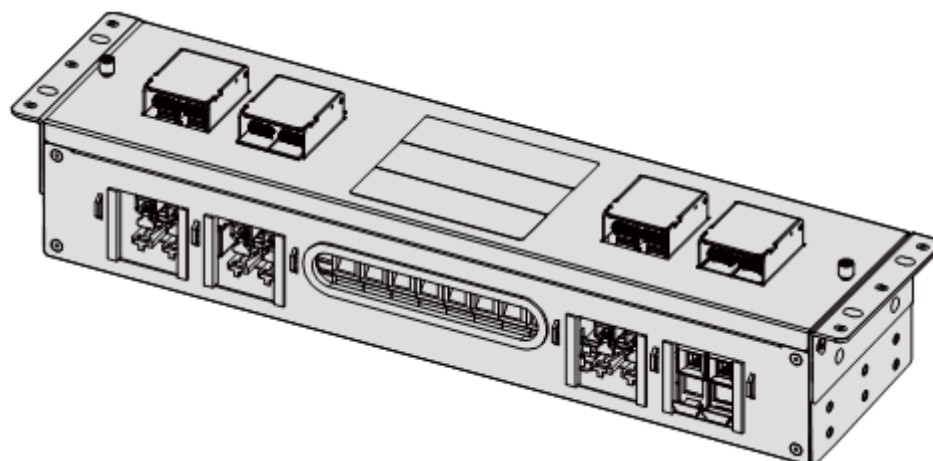
Figure 4-10 Power distribution in a 1600 W DC power distribution box



4.2.2 2200 W DC Power Distribution Box

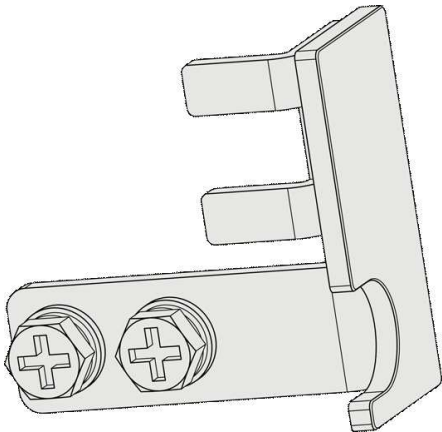
Figure 4-11 shows a 2200 W DC power distribution box.

Figure 4-11 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 two OT 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 4-12** shows a -48 V two-way short-circuiting bar.

Figure 4-12 -48 V two-way short-circuiting bar



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

Table 4-16 lists specifications of a 2200 W DC power distribution box.

Table 4-16 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

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 4-13](#) and [Figure 4-14](#) show power distribution in a 2200 W DC power distribution box.

Figure 4-13 Power distribution in a 2200 W AC power distribution box (eight inputs and eight outputs)

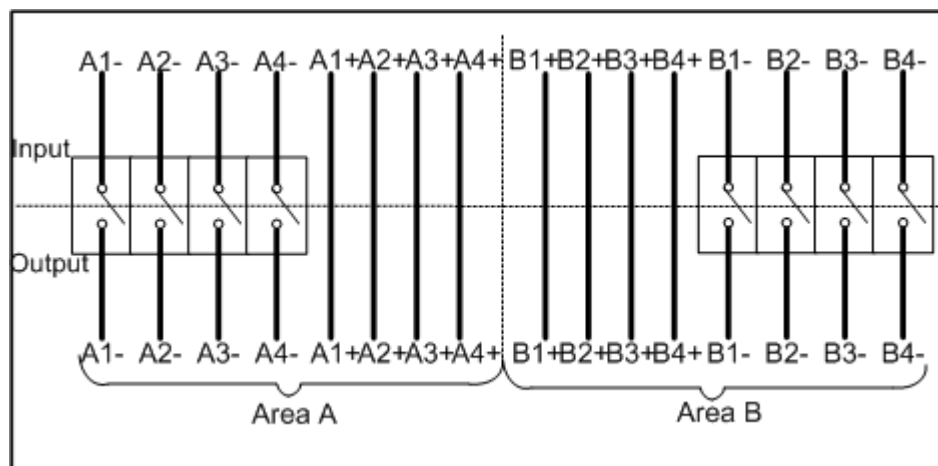
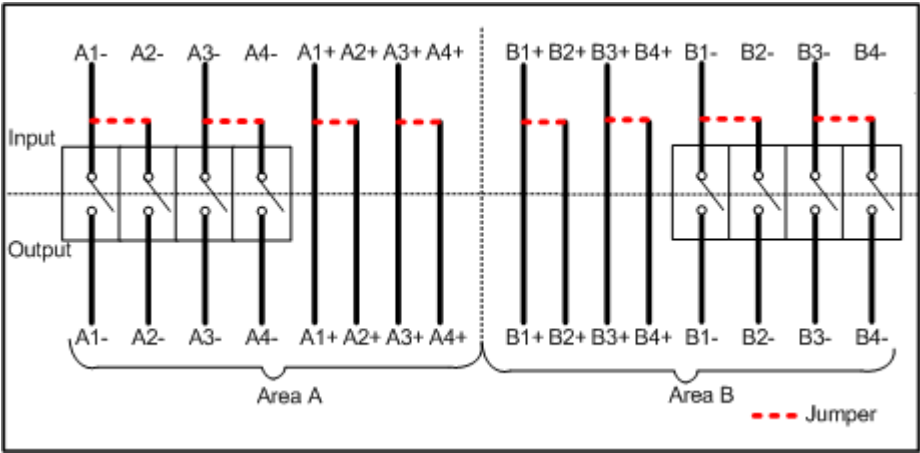


Figure 4-14 Power distribution in a 2200 W AC power distribution box (four inputs and eight outputs)



4.2.3 800 W AC Power Distribution Box

Figure 4-15 shows an 800 W AC power distribution box.

Figure 4-15 800 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.

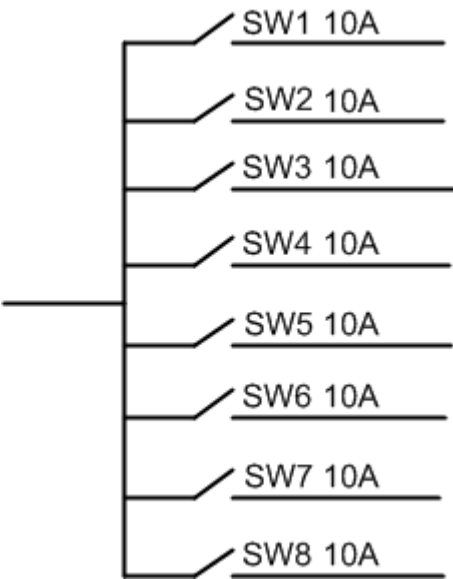
Table 4-17 lists specifications of an 800 W AC power distribution box.

Table 4-17 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 4-16 shows power distribution in an 800 W AC power distribution box.

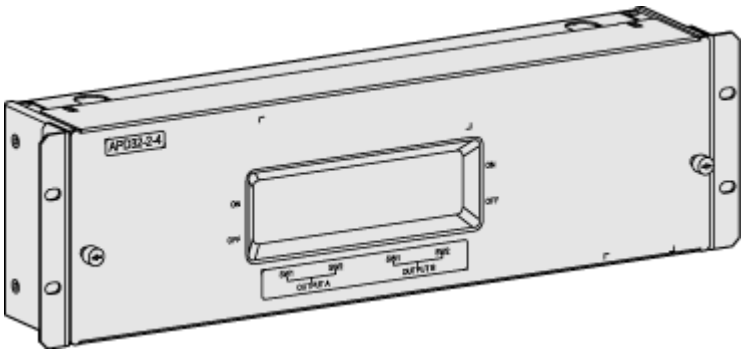
Figure 4-16 Power distribution in an 800 W AC power distribution box



4.2.4 2200 W AC Power Distribution Box

Figure 4-17 shows a 2200 W AC power distribution box.

Figure 4-17 2200 W AC power distribution box



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

Table 4-18 lists specifications of a 2200 W AC power distribution box.

Table 4-18 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

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 4-18, **Figure 4-19**, and **Figure 4-20** show power distribution in a 2200 W AC power distribution box.

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 4-18 Power distribution in a 2200 W AC power distribution box (two inputs)

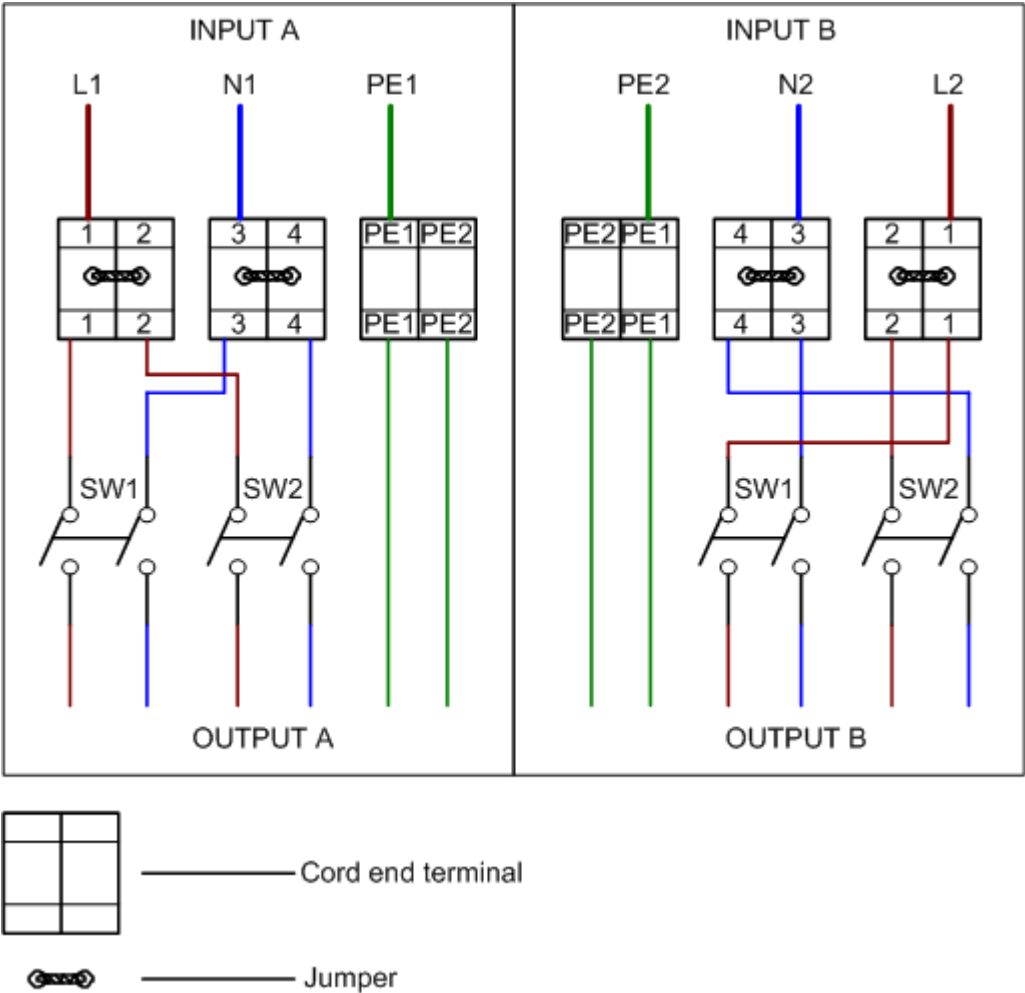


Figure 4-19 Power distribution in a 2200 W AC power distribution box (three inputs)

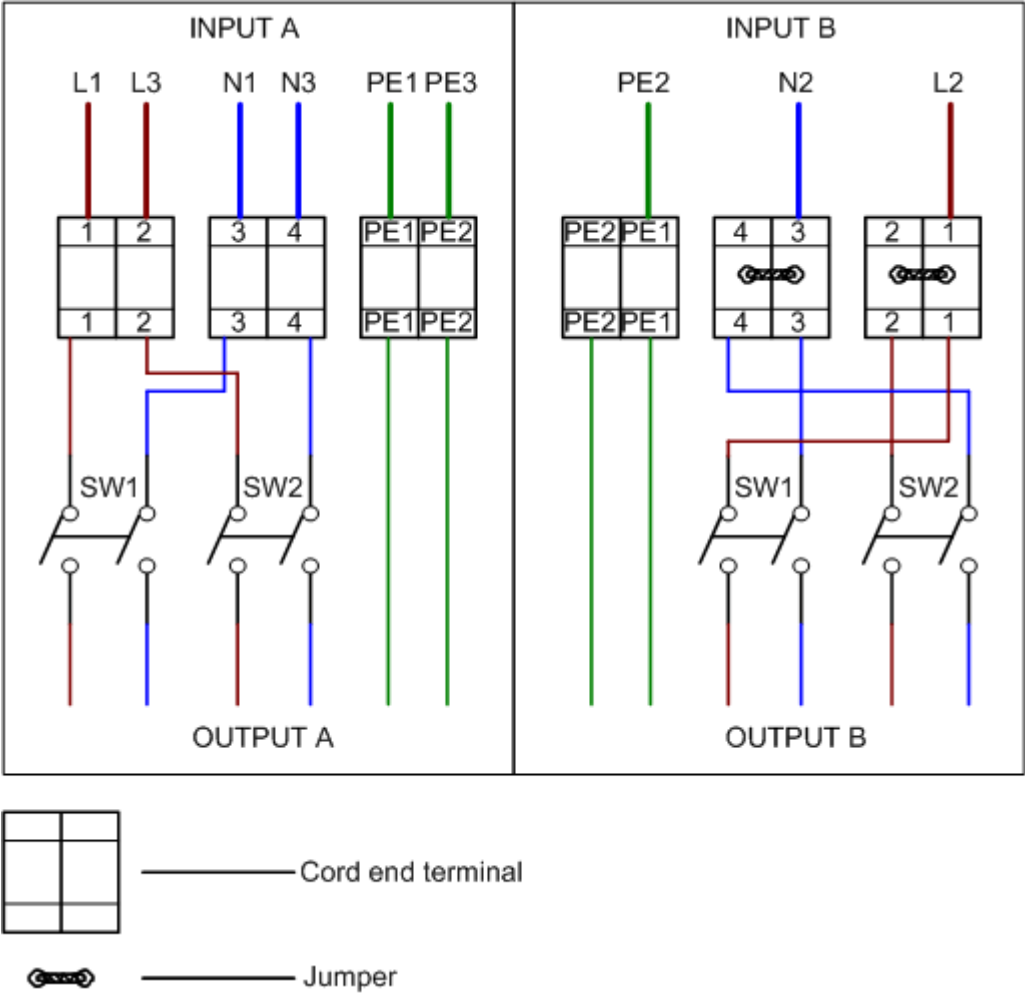
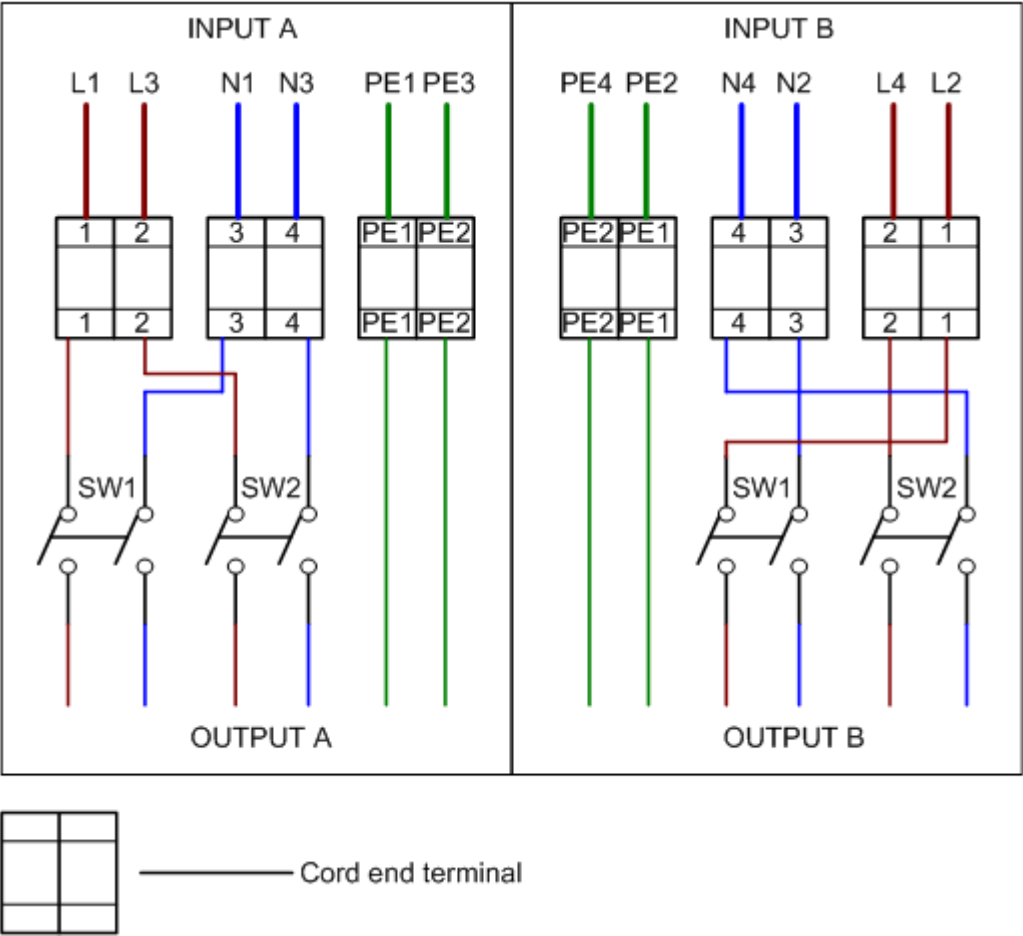


Figure 4-20 Power distribution in a 2200 W AC power distribution box (four inputs)



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 S7703 chassis, as shown in [Slot layout on the S7703 chassis \(rear\)](#).
- Slots FAN1 and FAN2 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(rear\)](#).
- Slots FAN1 to FAN4 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(rear\)](#).

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

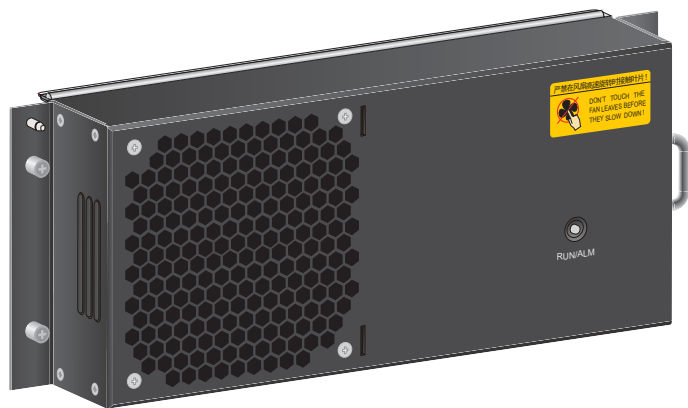
Table 5-1 Switch chassis and software versions matching a fan module

Name	S7700
Wide-voltage fan box	Supported in V100R003C01 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.

Figure 5-1 Fan module



Function

Table 5-2 describes the functions of fan modules.

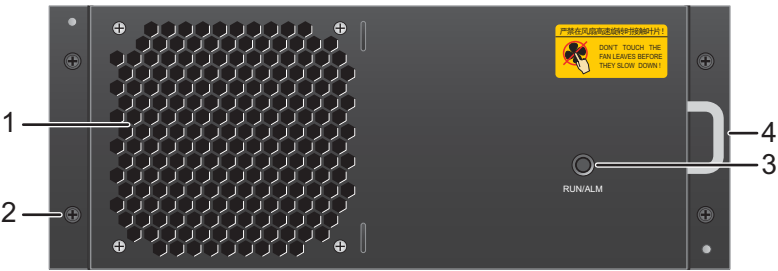
Table 5-2 Functions of fan modules

Function	Description
Hot swap	Supported Other fan modules are not affected when you install or remove a fan module.
Intelligent fan speed adjustment	The S7700 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 S7700 controls fan speed based on the card temperature. You can configure the S7700 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



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

Item	Value
Weight	1140±20 g
Maximum power consumption	43 W
Maximum wind pressure	331 Pa
Maximum wind rate	163 cubic feet per minute (CFM)
Maximum noise	62 dBA
Operating voltage range	-38.4 V DC to -72 V DC
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)

6 Cards

About This Chapter

- 6.1 Introduction
- 6.2 Main Control Units and Subcards
- 6.3 LE0DCMUA0000/EH1D200CMU00-Centralized Monitoring Unit
- 6.4 LE0D0VAMPA00-Value-Added Service Unit
- 6.5 ES1D2PS00P00 -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

6.1 Introduction

6.1.1 Card Types

 NOTE

- Interface cards consist of S series, E series, F series, B series, and X1E series 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).
- All the S7700 cards have gained the FCC certificate except the ES0D0X2UXA00, ES0D0X2UXC00, ES0D0X4UXA00, ES0D0X4UXC00, ES1D2X04XED0, ES1D2X08SED4 and ES0D0X12SA00.
- 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 6-1 lists the cards supported by the S7700.

Table 6-1 Cards supported by the S7700

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
MPU	ES0D00SRUA00	S7706/S7712 Main Control Unit A	81 W (including the ES0D00FSUA00)	2.80 kg	Yes
	ES0D00SRUB00	S7706/S7712 Main Control Unit B, clock	105 W (including the ES0D00FSUA00)	2.90 kg	Yes
	ES0D00MCUA00	S7703 Main Control Unit A	18 W	0.90 kg	Yes

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
Subcard on the SRU	ES02VSTS A NOTE This card has replaced LE0D0VST SA00 since July 1, 2013.	Cluster Switching System Service Unit	12 W	1 kg	Yes
	LE0D0VST SA00 NOTE This card is replaced by ES02VSTS A since July 1, 2013.	Cluster Switching System Service Unit	12 W	1 kg	Yes
	ES0D00FSU A00	Enhanced Flexible Service Unit	20 W	0.42 kg	Yes
Value-added service card	LE0D0VA MPA00	Value-added service card	120 W	3.10 kg	Yes
OSPU	ES1D2PS00 P00	Open Service Platform Unit	137.5 W	5.50 kg	Yes
CMU	EH1D200C MU00 NOTE This card has replaced LE0DCMU A0000 since February 1, 2013.	Centralized Monitoring Unit	1 W	0.22 kg	Yes
	LE0DCMU A0000 NOTE This card is replaced by EH1D200C MU00 since February 1, 2013.	Centralized Monitoring Unit	1 W	0.22 kg	Yes

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
LPU	ES0D0F48T A00	48-port 10/100BAS E-T interface card (EA, RJ45)-32K MAC	59 W	2.50 kg	Yes
	ES0D0F48T C00	48-port 10/100BAS E-T interface card (EC, RJ45)-128K MAC	70 W	2.62 kg	Yes
	ES0DF48TF A00	48-port 10/100BAS E-T interface card (FA, RJ45)-32K MAC	40 W	2.30 kg	Yes
	ES0D0G48S A00	48-port 100/1000BA SE-X interface card (EA, SFP)-32K MAC	75 W	2.54 kg	Yes
	ES0D0G48S C00	48-port 100/1000BA SE-X interface card (EC, SFP)-128K MAC	92 W	2.66 kg	Yes
	ES1D2G48S ED0	48-port 100M/1000M BASE-X interface card (ED, SFP)-512K MAC	110 W	2.66 kg	Yes

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	ES1D2G48S FA0	48-port 100/1000BASE-X interface card (FA, SFP)-32K MAC	65 W	2.60 kg	Yes
	ES0D0G48TA00	48-port 10/100/1000 BASE-T interface card (EA, RJ45)-32K MAC	62 W	2.50 kg	Yes
	ES0D0G48TC00	48-port 10/100/1000 BASE-T interface card (EC, RJ45)-128K MAC	68 W	2.62 kg	Yes
	ES0DG48T FA00	48-port 10/100/1000 BASE-T interface card (FA, RJ45)-32K MAC	48 W	2.50 kg	Yes
	ES0DG48C EAT0	36-port 10/100/1000 BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)-32K MAC	62 W	2.50 kg	Yes

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	ES0D0G48VA00	48-port 10/100/1000 BASE-T PoE interface card (EA, RJ45, PoE)-32K MAC	64 W (not including PoE power consumption)	2.60 kg	Yes
	ES0D0X4UXA00	4-port 10GBASE-X interface card (EA, XFP)-32K MAC	64 W	2.16 kg	No
	ES0D0X4UXC00	4-port 10GBASE-X interface card (EC, XFP)-128K MAC	75 W	2.28 kg	No
	ES1D2X04XEC1	4-port 10GBASE-X interface card (EC, XFP), FCC-128K MAC	75 W	2.28 kg	Yes
	ES1D2X02XED1	4-port 10GBASE-X interface card (EC, XFP), FCC-128K MAC	75 W	2.28 kg	Yes
	ES0D0X2UXA00	2-port 10GBASE-X interface card (EA, XFP)-32K MAC	52 W	2.14 kg	No

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	ES0D0X2U XC00	2-port 10GBASE-X interface card (EC, XFP)-128K MAC	61 W	2.26 kg	No
	ES1D2X02 XEC1	2-port 10GBASE-X interface card (EC, XFP), FCC-128K MAC	61 W	2.26 kg	Yes
	ES1D2X04 XED0	4-port 10GBASE-X interface card (ED, XFP)-512K MAC	93 W	2.30 kg	No
	ES0D0G24S A00	24-port 100/1000BASE-X interface card (SA, SFP)-32K MAC	45 W	2.22 kg	Yes
	ES0D0G24S C00	24-port 100/1000BASE-X interface card (EC, SFP)-128K MAC	63 W	2.66 kg	Yes

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	ES0D0G24CA00	24-port 100/1000BASE-X and 8-port 10/100/1000 BASE-T combo interface card (SA, SFP/RJ45)-32K MAC	67 W	2.26 kg	Yes
	ES0D0X12SA00	12-port 10GBASE-X interface card (SA, SFP+)-32K MAC	85 W	2.30 kg	No
	ES0D0T24XA00	24-port 10/100/1000 BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)-32K MAC	53 W	2.30 kg	Yes
	ES0D0S24XA00	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)-32K MAC	65 W	2.40 kg	Yes

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	ES0DG24T FA00	24-port 10/100/1000 BASE-T interface card (FA, RJ45)-32K MAC	32 W	2.20 kg	Yes
	ES1D2X40S FC0	40-port 10GBASE-X interface card (FC, SFP+)-128K MAC	183 W	2.90 kg	Yes
	ES1D2X16S FC0	16-port 10GBASE-X interface card (FC, SFP+)-128K MAC	150 W	2.60 kg	Yes
	ES1D2L02Q FC0	2-port 40GBASE-X interface card (FC, QSFP+)-128K MAC	88 W	2.50 kg	Yes
	ES1D2X08S ED4	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC	198.1 W	2.50 kg	No
	ES1D2X08S ED5	8-port 10GBASE-X interface card (ED, SFP+)-512K MAC	198.1 W	2.50 kg	Yes

Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	ES1D2G24SED0	24-port 100/1000BASE-X interface card (ED, SFP)-512K MAC	75 W	2.66 kg	Yes
	ES1D2G48TED0	48-port 10/100/1000 BASE-T interface card (ED, RJ45)-512K MAC	98 W	2.62 kg	Yes
	ES1D2G48SBC0	48-port 100/1000BASE-X interface card (BC, SFP)-128K MAC	185 W	2.90 kg	Yes
	ES1D2G48TBC0	48-port 10/100/1000 BASE-T interface card (BC, RJ45)-128K MAC	160 W	2.90 kg	Yes
	ES1D2S24XEC0	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)-128K MAC	81 W	2.50 kg	Yes

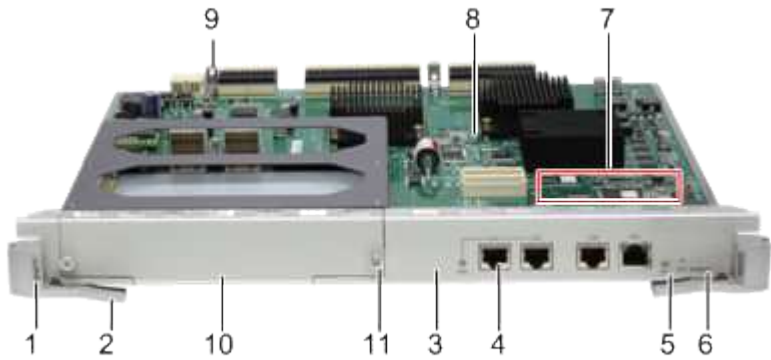
Card Type	Card Name	Card Description	Maximum Power Consumption	Weight	FCC-certified
	ES1D2G48TX1E	48-Port 10/100/1000 BASE-T Interface Card (X1E, RJ45)	120 W	2.92 kg	Yes
	ES1D2G48SX1E	48-Port 100/1000BASE-X Interface Card (X1E, SFP)	140 W	3.04 kg	Yes
	ES1D2S04SX1E	4-Port 10GBASE-X and 24-Port 100/1000BASE-X and 8-Port 10/100/1000 BASE-T Combo Interface Card (X1E, RJ45/SFP/SFP+)	130 W	2.88 kg	Yes
	ES1D2S08SX1E	8-Port 10GBASE-X and 8-Port 100/1000BASE-X and 8-Port 10/100/1000 BASE-T Combo Interface Card (X1E, RJ45/SFP/SFP+)	130 W	2.84 kg	Yes

6.1.2 Card Structure and Dimensions

Card Structure

Figure 6-1 shows an example of a card.

Figure 6-1 Card



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
10. Subcard slot	11. Captive screw	-

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.
- 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.

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.

Card Dimensions

Figure 6-2 shows how the dimensions (width, height, and depth) of a card are defined.

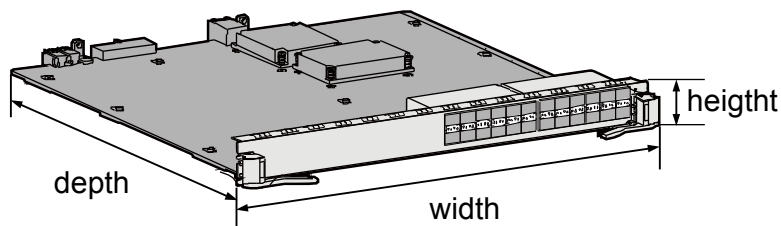
Figure 6-2 Card width, height, and depth

Table 6-2 provides the dimensions of S7700 cards.

Table 6-2 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
FSU/VSU	170.0 mm x 243.7 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

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

6.1.3 Port Numbering

Physical Interface Numbering Rules

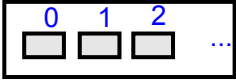
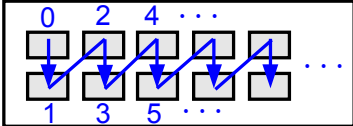
Physical interfaces are numbered in the following way:

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 6-3 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.

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 SRUA/SRUB-Main Control Unit

SRUs of the switch are classified into the following types:

- ES0D00SRUA00: S7706/S7712 Main Control Unit A
- ES0D00SRUB00: S7706/S7712 Main Control Unit B

Introduction

The ES0D00SRUA00 and ES0D00SRUB00 integrate control and switching functions and provide the control plane, management plane, and data plane for the system.

- The ES0D00SRUA00 and ES0D00SRUB00 can be installed in:
- Slots 07 and 08 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
 - Slots 13 and 14 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-3](#) shows the ES0D00SRUA00.

Figure 6-3 ES0D00SRUA00



[Figure 6-4](#) shows the ES0D00SRUB00.

Figure 6-4 ES0D00SRUB00



Version Mapping

[Table 6-4](#) lists the switch chassis and software versions matching the SRUs.

Table 6-4 Switch chassis and software versions matching the SRUs

Card Name	S7703 Chassis	S7706 and S7712 Chassis
ES0D00SRUA00	Not supported	Supported in V100R003C01 and later versions

Card Name	S7703 Chassis	S7706 and S7712 Chassis
ES0D00SRUB00	Not supported	Supported in V100R003C01 and later versions

Functions and Features

An SRU integrates control and switching functions. It provides the control plane, management plane, and data plane for the system, 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.

An SRU consist of the following modules:

- Control module: control and management plane for the SRU and the entire system. It implements protocol processing, route computing, forwarding control, system management, and system security.
- Switching module: data plane of the system. It provides high-speed service channels for data 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 the controller area network bus (CAN Bus) module to monitor the SRU and LPU CAN Bus modules.
- Power supply module: provides power for the SRU and FSU.

Table 6-5 describes the functions and features of the ES0D00SRUA00 and ES0D00SRUB00.

Table 6-5 Functions and features of the ES0D00SRUA00 and ES0D00SRUB00

Function and Feature	Description
Basic function	System control and management unit for the S7712 and S7706, integrating the control unit, clock unit, switching unit, and system maintenance unit.
Distributed forwarding	Performs concurrent data forwarding using a distributed data plane.
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.

Function and Feature	Description
CSS	The ES0D00SRUA00 and ES0D00SRUB00 can have ES02VSTSA installed to provide the CSS service.
OAM	The ES0D00SRUA00 and ES0D00SRUB00 can have ES0D00FSUA00 installed to provide enhanced services such as OAM and BFD. ● 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.
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 ES0D00SRUA00 and ES0D00SRUB00 are hot swappable. Before removing the active ES0D00SRUA00 or ES0D00SRUB00 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 ES0D00SRUA00 and ES0D00SRUB00 cannot be installed in the same chassis.

Indicators and Ports

Indicator Description

Figure 6-5 shows the indicators on the ES0D00SRUA00 panel. Figure 6-6 shows the indicators on the ES0D00SRUB0 panel.

Figure 6-5 Indicators on the ES0D00SRUA00 panel



Figure 6-6 Indicators on the ES0D00SRUB00 panel



Table 6-6 describes the buttons and indicators on the ES0D00SRUA00 and ES0D00SRUB00 panels.

Table 6-6 Buttons and indicators on the ES0D00SRUA00 and ES0D00SRUB00 panel

Number	Indicator/ Button	Color	Description
1	SYNC NOTE This indicator is reserved.	-	-
2	ACT indicator of the ETH port	Yellow	Blinking: The port is transmitting and receiving data.
3	LINK indicator of the ETH port	Green	Steady on: A link has been established on the port.
4	RST button	-	Press this button to reset the card. NOTE Resetting a card causes service interruption. Do not press the RST button unless necessary.

Number	Indicator/ Button	Color	Description
5	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.
6	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

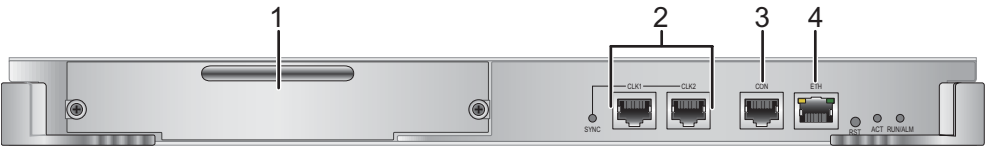
Figure 6-7 shows the ports on the ES0D00SRUA00 panel.

Figure 6-7 Ports on the ES0D00SRUA00 panel



Figure 6-8 shows the ports on the ES0D00SRUB00 panel.

Figure 6-8 Ports on the ES0D00SRUB00 panel



1	One subcard slot. A subcard for the SRU can be installed in this slot.
2	Two BITS ports. The ports are reserved.
3	One console management port. The console port can connect to a configuration terminal to implement on-site configuration.
4	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 7.5 Ethernet Cable. Table 6-7 describes the attributes of an ETH management port.

Table 6-7 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 6-8 describes the attributes of an console management port.

Table 6-8 Console management port attributes

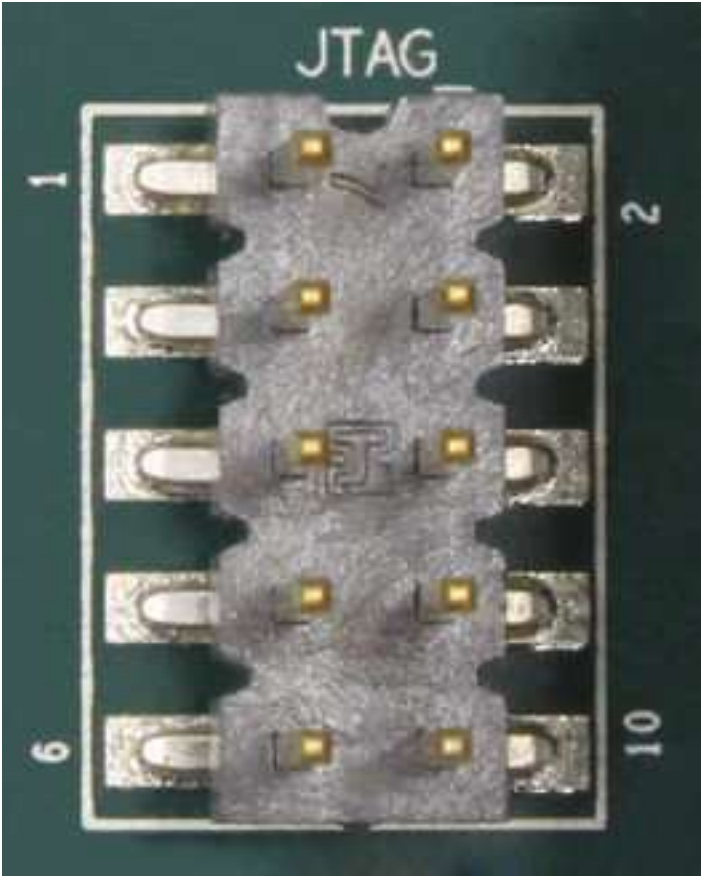
Attribute	Description
Connector type	RJ45

Attribute	Description
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

JTAG port

Figure 6-9 shows the JTAG port on a card. The JTAG port is a maintenance port used to check and diagnose card faults.

Figure 6-9 JTAG port



Specifications

Table 6-9 lists specifications of the ES0D00SRUA00 and ES0D00SRUB00.

Table 6-9 Specifications of the ES0D00SRUA00 and ES0D00SRUB00

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm Space reserved for a subcard: 243.7 mm x 170.0 mm x 35.1 mm ● Weight ES0D00SRUA00: 2.80 kg ES0D00SRUB00: 2.90 kg ● Maximum power consumption ES0D00SRUA00: 81 W (including ES0D00FSUA00) ES0D00SRUB00: 105 W (including ES0D00FSUA00)
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

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 6-10 provides the ordering information.

Table 6-10 SRU ordering information

Part Number	Card Description	Card Model
03030MQS	S7706/S7712 Main Control Unit A	ES0D00SRUA00
03030MQR	S7706/S7712 Main Control Unit B	ES0D00SRUB00

6.2.2 ES0D00MCUA00-Main Control Unit

Introduction

The ES0D00MCUA00 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 ES0D00MCUA00 can be installed in slots 04 and 05 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).

Figure 6-10 shows the ES0D00MCUA00.

Figure 6-10 ES0D00MCUA00



Version Mapping

Table 6-11 lists the switch chassis and software versions matching the ES0D00MCUA00.

Table 6-11 Switch chassis and software versions matching the ES0D00MCUA00

Card Name	S7703 Chassis	S7706 and S7712 Chassis
ES0D00MCUA00	Not supported	Supported in V100R003C01 and later versions

Functions and Features

The ES0D00MCUA00 is the main control unit of the S7703. It integrates the control unit, clock unit, and system maintenance unit, and provides the following functions:

- Provides channels for out-of-band communication between cards.
- Monitors system operation, The ES0D00MCUA00 periodically collects operation data of different units. According to running status of the units, the ES0D00MCUA00 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 ES0D00MCUA00 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 ES0D00MCUA00 provides a CF card to store data files as a mass storage device.

Table 6-12 describes the functions and features of the ES0D00MCUA00.

Table 6-12 Functions and features of the ES0D00MCUA00

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.

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 6-11 shows the indicators on the ES0D00MCUA00 panel.

Figure 6-11 Indicators on the ES0D00MCUA00 panel

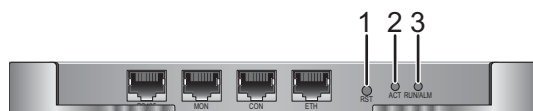


Table 6-13 describes the buttons and indicators on the ES0D00MCUA00 panel.

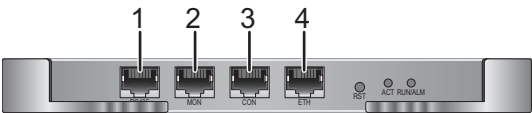
Table 6-13 Buttons and indicators on the ES0D00MCUA00 panel

Number	Indicator/ Button	Color	Description
1	RST button	-	Press this button to reset the card.
2	ACT: active/ standby status indicator	Green	Steady on: The card is the active MCU. Off: The card is the standby MCU.
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 6-12 shows the ports on the ES0D00MCUA00 panel.

Figure 6-12 Ports on the ES0D00MCUA00 panel



1	One RS485 port (reserved).
2	One MON port (reserved).
3	One console management port. The console port can connect to a configuration terminal to implement on-site configuration of the S7700.

4	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 [7.5 Ethernet Cable](#). [Table 6-14](#) describes the attributes of an ETH management port.

Table 6-14 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 6-15](#) describes the attributes of an console management port.

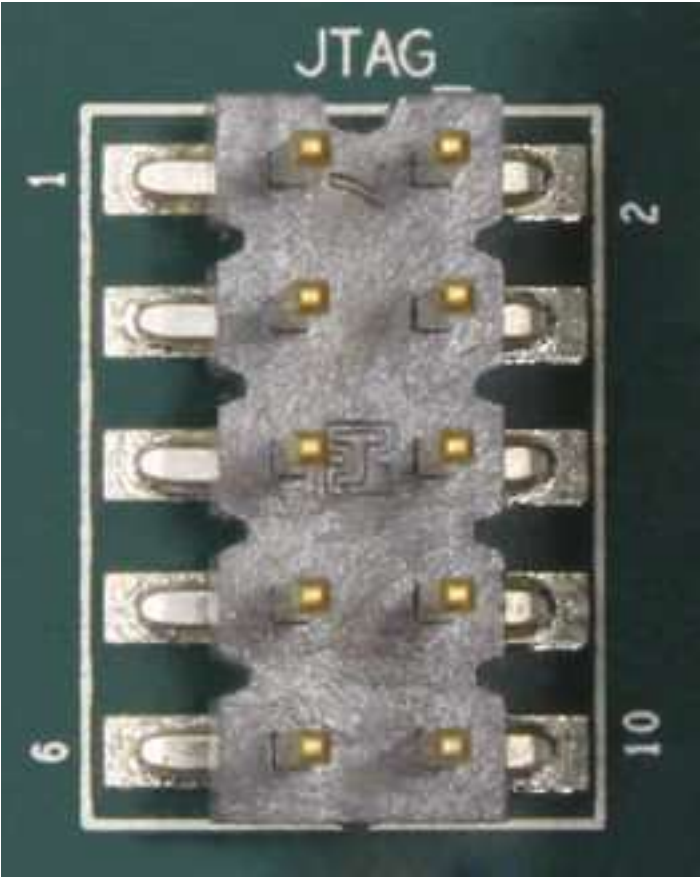
Table 6-15 Console management port attributes

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

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.

Figure 6-13 JTAG port



Specifications

Table 6-16 lists specifications of the ES0D00MCUA00.

Table 6-16 Specifications of the ES0D00MCUA00

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: 0.90 kg ● Maximum power consumption: 18 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)

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 6-17 provides the ordering information.

Table 6-17 MCUA ordering information

Part Number	Card Description	Card Model
03030MPV	MCUA	ES0D00MCUA00

6.2.3 ES0D00FSUA00-Enhanced Flexible Service Unit

Introduction

The ES0D00FSUA00 is an optional subcard that enhances service features such as operation, administration and maintenance (OAM), bidirectional forwarding detection (BFD), and security.

ES0D00FSUA00 can be installed in the subcard slot of an SRU, as shown in [Subcard slot on SRU](#).

[Figure 6-14](#) shows the ES0D00FSUA00.

Figure 6-14 ES0D00FSUA00



Version Mapping

[Table 6-18](#) lists the switch chassis and software versions matching the ES0D00FSUA00.

Table 6-18 Switch chassis and software versions matching the ES0D00FSUA00

Card Name	S7703 Chassis	S7706 and S7712 Chassis
ES0D00FSUA00	Not supported	Supported in V100R003C01 and later versions

Functions and Features

The ES0D00FSUA00 provides the following functions:

- Enhances OAM and BFD features.
- Ensures CPU security by limiting the rate of packets sent to the CPU.
- Stores the card information for query.

Usage Constraints

**NOTICE**

- To use ES0D00FSUA00 cards, install them on all the SRUs in a chassis or CSS.
- The ES0D00FSUA00 can be installed only on the SRUA or SRUB.
- The ES0D00FSUA00 is not hot swappable.

Indicators

Indicator Description

Figure 6-15 shows the indicator on the ES0D00FSUA00 panel.

Figure 6-15 Indicator on the ES0D00FSUA00 panel



Table 6-19 Indicator on the ES0D00FSUA00 panel

Number	Indicator	Color	Description
1	RUN	Green	Steady on: The FSU is present and is powered on. Off: The FSU is not present or is not powered on.

Specifications

Table 6-20 lists specifications of the ES0D00FSUA00.

Table 6-20 Specifications of the ES0D00FSUA00

Item	Description
Physical specifications	● Dimensions (W x D x H): 170.0 mm x 243.7 mm x 35.1 mm ● Weight: 0.42 kg ● Maximum power consumption: 20 W

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 6-21 provides the ordering information.

Table 6-21 FSU ordering information

Part Number	Card Description	Card Model
03030MQQ	Enhanced Flexible Service Unit	ES0D00FSUA00

6.2.4 ES02VSTSA-Cluster Switching System Service Unit

Introduction

The ES02VSTSA provides four 16GE optical ports for data transmission and line-speed switching, and supports the cluster switching system (CSS) function.

Multiple switches can be connected through ports on the ES02VSTSA cards to set up a switching domain and function as one logical device. You can manage all the switches in a switching domain on the master switch.

The ES02VSTSA can be installed in the subcard slot of an SRU, as shown in [Subcard slot on SRU](#). To configure the CSS service, install ES02VSTSA cards on both SRUs in a chassis.

[Figure 6-16](#) shows the ES02VSTSA.

Figure 6-16 ES02VSTSA

Version Mapping

[Table 6-22](#) lists the switch chassis and software versions matching the ES02VSTSA.

Table 6-22 Switch chassis and software versions matching the ES02VSTSA

Card Name	S7703 Chassis	S7706 and S7712 Chassis
ES02VSTSA	Not supported	This card is supported since July 1, 2013. It is supported in V200R001C00 and later versions.

Usage Constraints

**NOTICE**

- The ES02VSTSA does not support hot swap and can only be installed or removed before the SRU is powered on.
- The ES02VSTSA can be installed only on the ES0D00SRUA00 and ES0D00SRUB00.
- The ES0D00FSUA00 and the ES02VSTSA are installed in the subcard slots of the SRUs; however, they cannot be installed simultaneously on the SRUs in the same chassis or CSS.

Indicators and Ports

Indicator Description

Figure 6-17 shows the indicators on the ES02VSTSA.

Figure 6-17 Indicators on the ES02VSTSA

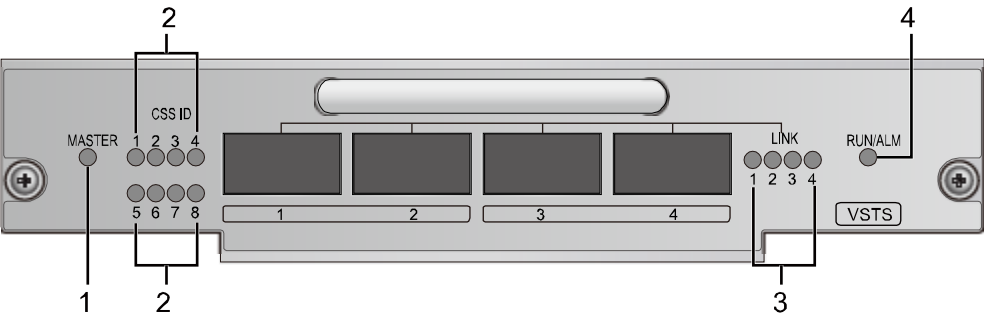


Table 6-23 Indicators on the ES02VSTSA

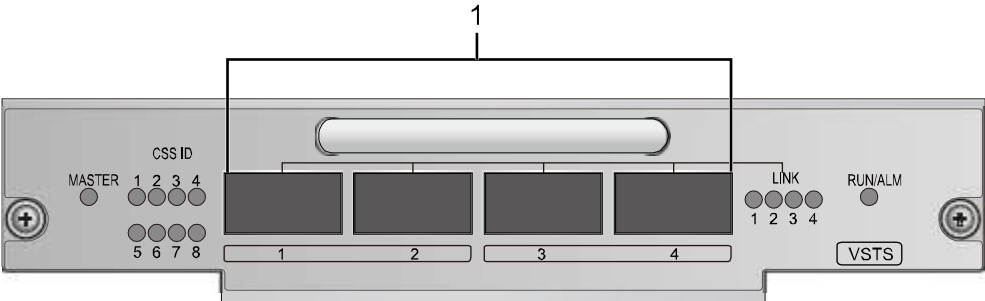
Number	Indicator	Color	Description
1	MASTER: master/slave status indicator	Green	Steady on: The SRU with this ES02VSTSA card installed is the master SRU of the CSS. Off: The SRU with this ES02VSTSA card installed is not the master SRU of the CSS.
2	CSS ID	Green	Indicates the CSS ID of the local chassis. For example, when indicator 1 is on, the CSS ID of the local chassis is 1.
3	LINK	Green	Steady on: The link state of the corresponding CSS port is Up. Off: The link state of the corresponding CSS port is Down.

Number	Indicator	Color	Description
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 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 6-18 shows optical ports on the ES02VSTSA.

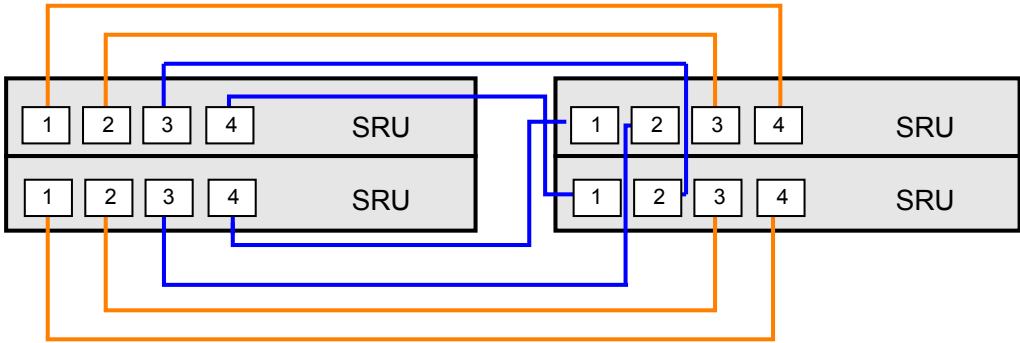
Figure 6-18 Ports on the ES02VSTSA



1	Four 16GE SR4 optical ports
---	-----------------------------

The S7700 only supports a CSS of two switches. To connect two S7700 switches through ES02VSTSA cards, connect the ports on the ES02VSTSA cards according to Figure 6-19.

Figure 6-19 Cable connection between CSS ports



QSFP+ high-speed cables and optical fibers can be used as cluster cables to connect CSS ports on the ES02VSTSA cards. CSS-capable S7706 or S7712 switches can be connected through the cluster cables to form a logical switch.

To use high-speed cables as cluster cables, select 3 m or 10 m QSFP+ to QSFP+ cables (7.6 High-Speed Cable).

To use optical fibers as cluster cables, select QSFP+ optical modules (see 8.5 QSFP+ Modules) and MPO-MPO jumpers (see 7.7 Optical Fiber).

NOTE

Two types of MPO-MPO jumpers can be used to connect CSS ports:

- OM3: The maximum transmission distance is 100 m.
- OM4: The maximum transmission distance is 150 m.

Specifications

Table 6-24 lists specifications of the ES02VSTSA.

Table 6-24 Specifications of the ES02VSTSA

Item	Description
Physical specifications	● Dimensions (W x D x H): 170.0 mm x 243.7 mm x 35.1 mm ● Weight: 1 kg ● Maximum power consumption: 12 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)

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 6-25 provides the ordering information.

Table 6-25 ES02VSTSA ordering information

Part Number	Card Description	Card Model
03030QHL	Cluster switching system service unit	ES02VSTSA

6.2.5 LE0D0VSTSA00-Cluster Switching System Service Unit

Introduction

The LE0D0VSTSA00 provides four 16GE electrical or optical ports for data transmission and line-speed switching, and supports the cluster switching system (CSS) function.

Multiple switches can be connected through ports on the LE0D0VSTSA00 cards to set up a switching domain and function as one logical device. You can manage all the switches in a switching domain on the master switch.

The LE0D0VSTSA00 can be installed in the subcard slot of an SRU, as shown in [Subcard slot on SRU](#). To configure the CSS service, install LE0D0VSTSA00 cards on both SRUs in a chassis.

[Figure 6-20](#) shows the appearance of the LE0D0VSTSA00.

Figure 6-20 LE0D0VSTSA00 appearance



Version Mapping

[Table 6-26](#) lists the switch chassis and software versions matching the LE0D0VSTSA00.

Table 6-26 Switch chassis and software versions matching the LE0D0VSTSA00

Card Name	S7703 Chassis	S7706 and S7712 Chassis
LE0D0VSTSA00	Not supported	This card is not supported after June 30, 2013. It is supported in V200R001C00, V200R002C00, and V200R003C00.

Usage Constraints



NOTICE

The LE0D0VSTSA00 does not support hot swap and can only be installed or removed before the SRU is powered on.

The LE0D0VSTSA00 can be installed only on the ES0D00SRUA00 and ES0D00SRUB00.

The ES0D00FSUA00 and the LE0D0VSTSA00 are installed in the subcard slots of the SRUs; however, they cannot be installed simultaneously on the SRUs in the same chassis or CSS.

Indicators and Ports

Indicator Description

Figure 6-21 shows indicators on the LE0D0VSTSA00.

Figure 6-21 Indicators on the LE0D0VSTSA00

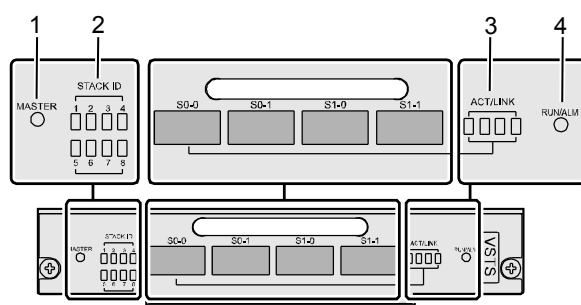


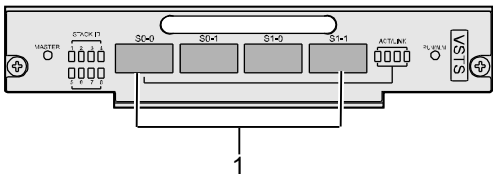
Table 6-27 Indicators on the LE0D0VSTSA00

Number	Indicator	Color	Description
1	MASTER: master/slave status indicator	Green	Steady on: The SRU with this LE0D0VSTSA00 card installed is the master SRU of the CSS. Off: The SRU with this LE0D0VSTSA00 card installed is not the master SRU of the CSS.
2	STACK ID: CSS ID indicator	Green	Indicates the CSS ID of the local chassis. For example, when indicator 1 is on, the CSS ID of the local chassis is 1.
3	ACT/LINK: ACT/LINK indicator	Green	Steady on: The link state of the corresponding CSS port is Up. Off: The link state of the corresponding CSS port is Down.
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 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 6-22 shows optical ports on the LE0D0VSTSA00.

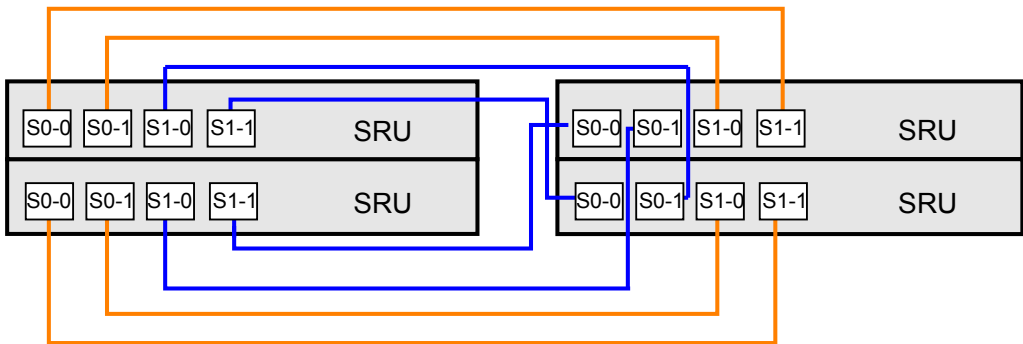
Figure 6-22 Ports on the LE0D0VSTSA00



1	Four 16GE SR4 optical ports
---	-----------------------------

The S7700 only supports a CSS of two switches. To connect two S7700 switches through LE0D0VSTSA00 cards, connect the ports on the LE0D0VSTSA00 cards according to [Figure 6-23](#).

Figure 6-23 Cable connection between CSS ports



QSFP+ high-speed cables and optical fibers can be used as cluster cables to connect CSS ports on the LE0D0VSTSA00 cards. CSS-capable S7706 or S7712 switches can be connected through the cluster cables to form a logical switch.

To use high-speed cables as cluster cables, select 3 m or 10 m QSFP+ to QSFP+ cables ([7.6 High-Speed Cable](#)).

To use optical fibers as cluster cables, select QSFP+ optical modules (see [8.5 QSFP+ Modules](#)) and MPO-MPO jumpers (see [7.7 Optical Fiber](#)).

NOTE

Two types of MPO-MPO jumpers can be used to connect CSS ports:

- OM3: The maximum transmission distance is 100 m.
- OM4: The maximum transmission distance is 150 m.

Specifications

[Table 6-28](#) lists specifications of the LE0D0VSTSA00.

Table 6-28 Specifications of the LE0D0VSTSA00

Item	Description
Physical specifications	● Dimensions (W x D x H): 170.0 mm x 243.7 mm x 35.1 mm ● Weight: 1 kg ● Maximum power consumption: 12 W

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 6-29 provides the ordering information.

Table 6-29 ES02VSTSA ordering information

Part Number	Card Name	Card Model
03020RCJ	Cluster switching system service unit	ES02VSTSA

6.3 LE0DCMUA0000/EH1D200CMU00-Centralized Monitoring Unit

6.3.1 Introduction

The LE0DCMUA0000/EH1D200CMU00 manages system power modules and fan modules. Two LE0DCMUA0000/EH1D200CMU00 cards can work in redundancy mode to improve device reliability.

The LE0DCMUA0000/EH1D200CMU00 can be installed in:

- Slots CMU1 and CMU2 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots CMU1 and CMU2 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-24](#) shows the LE0DCMUA0000.

Figure 6-24 LE0DCMUA0000



[Figure 6-25](#) shows the EH1D200CMU00.

Figure 6-25 EH1D200CMU00



6.3.2 Version Mapping

Table 6-30 lists the switch chassis and software versions matching the LE0DCMUA0000/EH1D200CMU00.

Table 6-30 Switch chassis and software versions matching the LE0DCMUA0000/EH1D200CMU00

Card Name	S7703 Chassis	S7706 and S7712 Chassis
LE0DCMUA0000	Not supported	This card is not supported after January 31, 2013. It is supported in V100R003C01, V100R006C00, V200R001C00, and V200R002C00.
EH1D200CMU00	Not supported	This card is supported since February 01, 2013. It is supported in V100R003C01 and later versions.

6.3.3 Functions and Features

The LE0DCMUA0000/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 LE0DCMUA0000/EH1D200CMU00 cards.

The LE0DCMUA0000/EH1D200CMU00 manages power modules and fan modules in a chassis. Two LE0DCMUA0000/EH1D200CMU00 cards can be installed in a chassis to work in active/standby mode.

Fan Module Management

The LE0DCMUA0000/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 LE0DCMUA0000/EH1D200CMU00 supports real-time fan module presence detection. Fan modules in the chassis register with the LE0DCMUA0000/EH1D200CMU00. After they register, the LE0DCMUA0000/EH1D200CMU00 obtains electronic labels of the fan modules and saves the electronic labels for users to query. Meanwhile, the LE0DCMUA0000/EH1D200CMU00 monitors the speed and alarms of the fan modules in real time.

When detecting an alarm about a fan module, the LE0DCMUA0000/EH1D200CMU00 reports the alarm to the MPU. When the alarm is cleared, the LE0DCMUA0000/EH1D200CMU00 reports alarm clearance to the MPU.

When the LE0DCMUA0000/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 LE0DCMUA0000/EH1D200CMU00 installed, fans run at full speed.

Power Module Management

The LE0DCMUA0000/EH1D200CMU00 manages power modules in either of the following ways:

- Uses the RS485 bus to provide the following functions:
 - Power module presence detection
 - Power module registration management
 - Power module shutdown
 - Voltage and current monitoring
 - Management and report of power module alarms
 - Query of power module electronic labels
- Uses the I²C bus to provide the following functions:
 - Power module presence detection
 - Power module registration management
 - Management and report of power module alarms
 - Query of power module electronic labels

Only 1600 W DC power modules are managed using the I²C bus, and all the other power modules are managed using the RS485 bus.

The LE0DCMUA0000/EH1D200CMU00 supports real-time power module presence detection. Power modules in a chassis register with the LE0DCMUA0000/EH1D200CMU00. After they

register, the LE0DCMUA0000/EH1D200CMU00 obtains electronic labels of the power modules and saves the electronic labels for users to query. Then the power modules are managed using the RS485 bus or I²C bus:

- Using the RS485 bus:

The LE0DCMUA0000/EH1D200CMU00 queries the current and voltage of power modules in real-time.

When detecting an alarm about a power module, the LE0DCMUA0000/EH1D200CMU00 sends the alarm to the MPU. When the alarm is cleared, the LE0DCMUA0000/EH1D200CMU00 reports alarm clearance to the MPU.

When the switch is working in deep energy saving mode, the LE0DCMUA0000/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.

- Using the I²C bus:

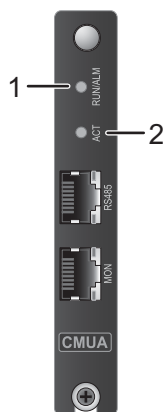
When detecting an alarm about a power module, the LE0DCMUA0000/EH1D200CMU00 sends the alarm to the MPU. When the alarm is cleared, the LE0DCMUA0000/EH1D200CMU00 reports alarm clearance to the MPU.

6.3.4 Indicators and Ports

Indicator Description

[Figure 6-26](#) shows the indicators on the LE0DCMUA0000/EH1D200CMU00 panel.

Figure 6-26 Indicators on the LE0DCMUA0000/EH1D200CMU00 panel



[Table 6-31](#) describes the indicators on the LE0DCMUA0000/EH1D200CMU00 panel.

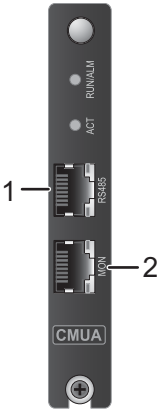
Table 6-31 Indicators on the LE0DCMUA0000/EH1D200CMU00 panel

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.
		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.
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 6-27 shows the ports on the LE0DCMUA0000/EH1D200CMU00.

Figure 6-27 Ports on the LE0DCMUA0000/EH1D200CMU00 panel



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

6.3.5 Specifications

Table 6-32 lists specifications of the LE0DCMUA0000/EH1D200CMU00.

Table 6-32 Specifications of the LE0DCMUA0000/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

6.3.6 Ordering Information

To place an order, contact the Huawei local office.

Table 6-33 provides the ordering information.

Table 6-33 LE0DCMUA0000/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 S7700. 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 S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

Figure 6-28 shows the LE0D0VAMPA00.

Figure 6-28 LE0D0VAMPA00



6.4.2 Version Mapping

Table 6-34 lists the switch chassis and software versions matching the LE0D0VAMPA00.

Table 6-34 Switch chassis and software versions matching the LE0D0VAMPA00

Card Name	S7700 Chassis
LE0D0VAMPA00	Supported in V100R003C01 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 6-29 shows the indicators on the LE0D0VAMPA00 panel.

Figure 6-29 Indicators on the LE0D0VAMPA00 panel

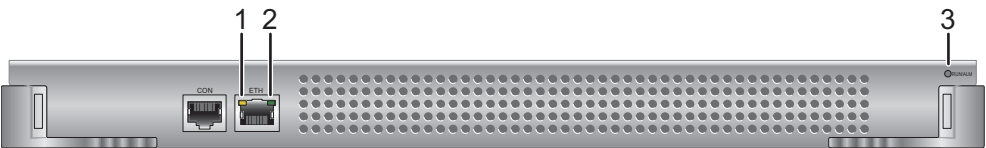


Table 6-35 describes the indicators on the LE0D0VAMPA00 panel.

Table 6-35 Indicators on the LE0D0VAMPA00 panel

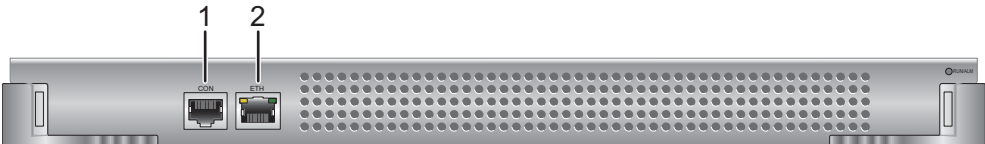
Number	Indicator	Color	Description
1	ACT	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered on, but the software is not running. Slow blinking: The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

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 6-30 shows the ports on the LE0D0VAMPA00.

Figure 6-30 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 7.5 Ethernet Cable. Table 6-36 describes the attributes of an ETH management port.

Table 6-36 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](#). [Table 6-37](#) describes the attributes of an console management port.

Table 6-37 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 6-38](#) lists specifications of the LE0D0VAMPA00.

Table 6-38 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)

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 6-39 provides the ordering information.

Table 6-39 LE0D0VAMPA00 ordering information

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

6.5 ES1D2PS00P00 -Open Service Platform Unit

6.5.1 Introduction

The ES1D2PS00P00 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-31](#) shows the ES1D2PS00P00.

Figure 6-31 ES1D2PS00P00



6.5.2 Version Mapping

[Table 6-40](#) lists the switch chassis and software versions matching the ES1D2PS00P00.

Table 6-40 Switch chassis and software versions matching the ES1D2PS00P00

Card Name	S7700 Chassis
ES1D2PS00P00	Supported in V200R002C00 and later versions

6.5.3 Functions and Features

The ES1D2PS00P00 can not only process and forward service data, but also provide certain functions using specific operating system and application software.

The ES1D2PS00P00 supports intrusion prevention system (IPS) software.

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 6-41 describes the functions and features of the ES1D2PS00P00 running application software.

Table 6-41 Functions and features of the ES1D2PS00P00 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

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 number 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 6-42 describes the functions and features of the ES1D2PS00P00 for service data processing and forwarding.

Table 6-42 Functions and features of the ES1D2PS00P00 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	16K

6.5.4 Indicators and Ports

Button and Indicator Description

Figure 6-32 shows the buttons and indicators on the ES1D2PS00P00 panel.

Figure 6-32 Buttons and indicators on the ES1D2PS00P00 panel

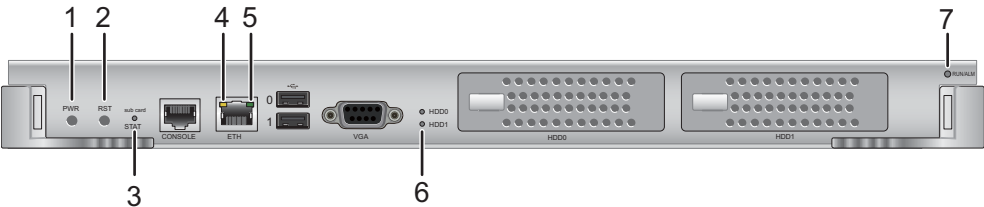


Table 6-43 describes the buttons and indicators on the ES1D2PS00P00 panel.

Table 6-43 Buttons and indicators on the ES1D2PS00P00 panel

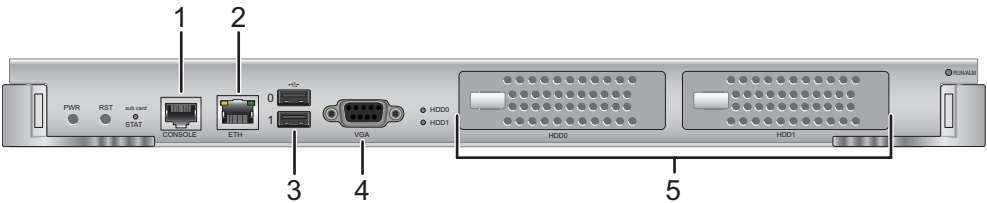
Number	Indicator/ Button	Color	Description
1	PWR button	-	Press for 0.5s to power on or off the card. Hold down the button for more than 4s forcibly to power off the card. This operation is performed when the card stops responding.
2	RST button	-	Press this button to reset the operating system and application 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.

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 6-33 shows the ports on the ES1D2PS00P00 panel.

Figure 6-33 Ports on the ES1D2PS00P00 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 [7.5 Ethernet Cable](#). [Table 6-44](#) describes the attributes of an ETH management port.

Table 6-44 ETH management port attributes

Attribute	Description
Connector type	RJ45
Standards compliance	IEEE802.3

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 6-45](#) describes the attributes of an console management port.

Table 6-45 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 6-46](#) describes specifications of the ES1D2PS00P00.

Table 6-46 Specifications of the ES1D2PS00P00

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)

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 6-47 provides the ordering information.

Table 6-47 ES1D2PS00P00 ordering information

Part Number	Card Description	Card Model
03030PFN	Open Service Platform (OSP) unit	ES1D2PS00P00

6.6 100M Interface Card

6.6.1 ES0D0F48T-48-Port 10/100BASE-T Interface Card (RJ45)

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

- ES0D0F48TA00: 48-Port 10/100BASE-T interface card (EA, RJ45)
- ES0D0F48TC00: 48-Port 10/100BASE-T interface card (EC, RJ45)
- ES0DF48TFA00: 48-Port 10/100BASE-T interface card (FA, RJ45)

Introduction

The ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00 provide 48 FE electrical ports for data transmission and line-speed switching. [Table 6-48](#) lists the their differences.

Table 6-48 Differences among the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00

Card Name	MAC Address Table Size
ES0D0F48TA00	32K
ES0D0F48TC00	128K
ES0DF48TFA00	32K

NOTE

The ES0D0F48TA00 and ES0DF48TFA00 both support 32K MAC addresses, but the ES0DF48TFA00 consumes less power than the ES0D0F48TA00.

The ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-34](#) shows the ES0D0F48TA00.

Figure 6-34 ES0D0F48TA00



Figure 6-35 shows the ES0D0F48TC00.

Figure 6-35 ES0D0F48TC00



Figure 6-36 shows the ES0DF48TFA00.

Figure 6-36 ES0DF48TFA00



Version Mapping

Table 6-49 lists the switch chassis and software versions matching the ES0D0F48T.

Table 6-49 Switch chassis and software versions matching the ES0D0F48T

Card Name	S7700 Chassis
ES0D0F48TA00	Supported in V100R003C01 and later versions
ES0D0F48TC00	Supported in V100R003C01 and later versions
ES0DF48TFA00	Supported in V100R003C01 and later versions

Functions and Features

Table 6-50 describes the functions and features of the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00.

Table 6-50 Functions and features of the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00

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	● ES0D0F48TA00 and ES0D0F48TC00: 4 MB ● ES0DF48TFA00: 2 MB
Software feature	ES0D0F48TA00 and ES0D0F48TC00: NetStream.
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the jumboframe enable command.
MAC table size	● ES0D0F48TA00: 32K ● ES0D0F48TC00: 128K ● ES0DF48TFA00: 32K
IPv4 ACL	● ES0D0F48TA00: 6K for inbound traffic; 1K for outbound traffic ● ES0D0F48TC00: 38K for inbound traffic; 1K for outbound traffic ● ES0DF48TFA00: 1.5K for inbound traffic; 256 for outbound traffic
IPv4 FIB	● ES0D0F48TA00: 16K ● ES0D0F48TC00: 128K ● ES0DF48TFA00: 12K
IPv6 ACL	● ES0D0F48TA00: 3K for inbound traffic; 256 for outbound traffic ● ES0D0F48TC00: 35K for inbound traffic; 256 for outbound traffic ● ES0DF48TFA00: 512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	● ES0D0F48TA00: 8K ● ES0D0F48TC00: 64K ● ES0DF48TFA00: 6K

Function and Feature	Description
ARP	● ES0D0F48TA00: 16K ● ES0D0F48TC00: 16K ● ES0DF48TFA00: 8K

Indicators and Ports

Indicator Description

Figure 6-37 shows the indicators on the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00 panels.

Figure 6-37 Indicators on the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00 panels

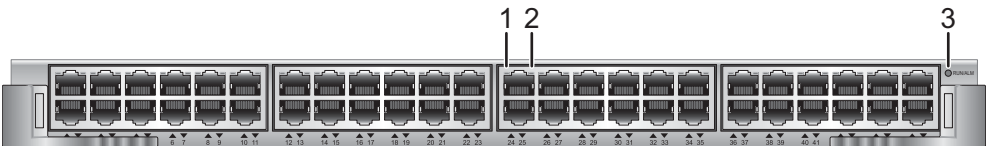


Table 6-51 describes the indicators on the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00 panels.

Table 6-51 Indicators on the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00 panels

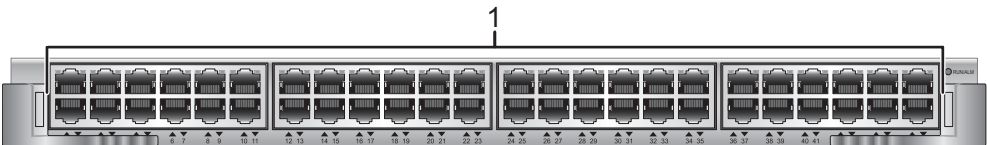
Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of lower electrical port		
3	RUN/ALM: running status indicator	Green	Steady on: The card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

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 6-38 shows the ports on the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00 panels.

Figure 6-38 Ports on the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00 panels



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

10M/100M BASE-T electrical ports

Table 6-52 lists the attributes of a 10M/100M BASE-T electrical port.

Table 6-52 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
Network protocol	IP

Specifications

Table 6-53 lists specifications of the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00.

Table 6-53 Specifications of the ES0D0F48TA00, ES0D0F48TC00, and ES0DF48TFA00

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: - ES0D0F48TA00: 2.50 kg - ES0D0F48TC00: 2.66 kg - ES0DF48TFA00: 2.30 kg ● Maximum power consumption: - ES0D0F48TA00: 59 W - ES0D0F48TC00: 70 W - ES0DF48TFA00: 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)
EMC compliance	● CISPR22 Class A ● CISPR24 ● EN55022 Class A ● EN50024 ● ETSI EN 300 386 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 6-54 provides the ordering information.

Table 6-54 ES0D0F48T ordering information

Part Number	Card Description	Card Model
03030LXL	48-port 10/100BASE-T interface card (EA, RJ45)	ES0D0F48TA00
03030MQV	48-port 10/100BASE-T interface card (EC, RJ45)	ES0D0F48TC00
03030MQW	48-port 10/100BASE-T interface card (FA, RJ45)	ES0DF48TFA00

6.7 1000M Interface Card

6.7.1 ES0D0G24S 24-Port 100/1000BASE-X Interface Card (SFP)

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

- ES0D0G24SA00: 24-port 100/1000BASE-X interface card (SA, SFP)
- ES0D0G24SC00: 24-port 100/1000BASE-X interface card (EC, SFP)
- ES1D2G24SED0: 24-port 100/1000BASE-X interface card (ED, SFP)

Introduction

The ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0 provide twenty-four GE optical ports for data transmission and line-speed switching. **Table 6-55** lists the their differences.

Table 6-55 Differences among the ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0

Card Name	MAC Address Table Size
ES0D0G24SA00	32K
ES0D0G24SC00	128K
ES1D2G24SED0	512K

The ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-39](#) shows the ES0D0G24SA00.

Figure 6-39 ES0D0G24SA00



[Figure 6-40](#) shows the ES0D0G24SC00.

Figure 6-40 ES0D0G24SC00



[Figure 6-41](#) shows the ES1D2G24SED0.

Figure 6-41 ES1D2G24SED0



Version Mapping

[Table 6-56](#) lists the switch chassis and software versions matching the ES0D0G24S.

Table 6-56 Switch chassis and software versions matching the ES0D0G24S

Card Name	S7700 Chassis
ES0D0G24SA00	Supported in V100R003C01 and later versions
ES0D0G24SC00	Supported in V100R003C01 and later versions
ES1D2G24SED0	Supported in V200R002C00 and later versions

Functions and Features

Table 6-57 describes the functions and features of the ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0.

Table 6-57 Functions and features of the ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0

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	● ES0D0G24SA00: 2 MB ● ES0D0G24SC00 and EH1D2G24SED0: 4 MB
Software feature	ES0D0G24SC00 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	● ES0D0G24SA00: 32K ● ES0D0G24SC00: 128K ● ES1D2G24SED0: 512K

Function and Feature	Description
IPv4 ACL	● ES0D0G24SA00: 3K for inbound traffic; 512 for outbound traffic ● ES0D0G24SC00: 38K for inbound traffic; 1K for outbound traffic ● ES1D2G24SED0: 70K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● ES0D0G24SA00: 12K ● ES0D0G24SC00: 128K ● ES1D2G24SED0: 512K
IPv6 ACL	● ES0D0G24SA00: 1K for inbound traffic; 128 for outbound traffic ● ES0D0G24SC00: 35K for inbound traffic; 256 for outbound traffic ● ES1D2G24SED0: 70K for inbound traffic; 1K for outbound traffic
IPv6 FIB	● ES0D0G24SA00: 6K ● ES0D0G24SC00: 64K ● ES1D2G24SED0: 256K
ARP	● ES0D0G24SA00: 8K ● ES0D0G24SC00 and ES1D2G24SED0: 16K

Indicators and Ports

Indicator Description

Figure 6-42 shows the indicators on the ES0D0G24SA00 panel.

Figure 6-42 Indicators on the ES0D0G24SA00 panel

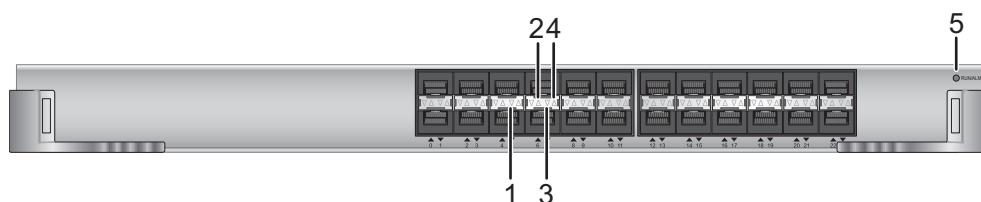


Figure 6-43 shows the indicators on the ES0D0G24SC00 and ES1D2G24SED0 panels.

Figure 6-43 Indicators on the ES0D0G24SC00 and ES1D2G24SED0 panels

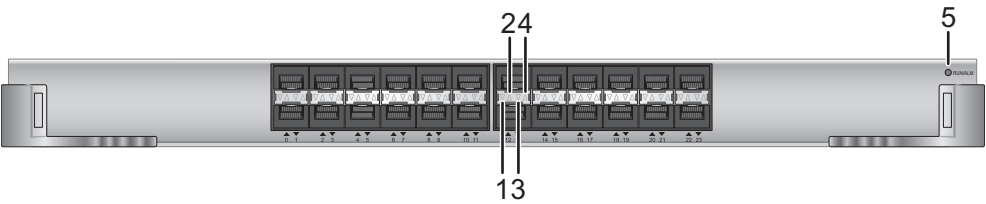


Table 6-58 describes the indicators on the ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0 panels.

Table 6-58 Indicators on the ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0 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		
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 6-44 shows the ports on the ES0D0G24SA00 panel.

Figure 6-44 Ports on the ES0D0G24SA00 panel

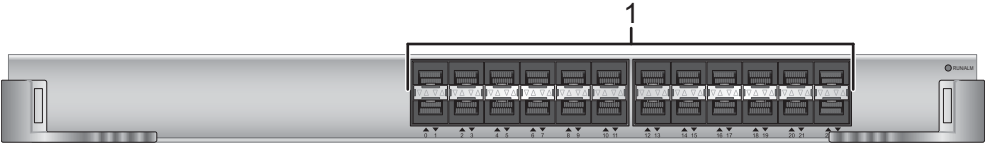
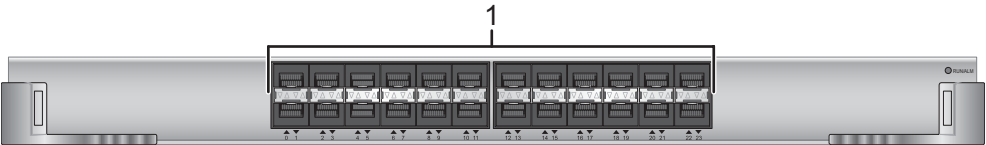


Figure 6-45 shows the ports on the ES0D0G24SC00 and ES1D2G24SED0 panels.

Figure 6-45 Ports on the ES0D0G24SC00 and ES1D2G24SED0 panels



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

100M/1000M BASE-X optical ports

Table 6-59 lists the attributes of a 100M/1000M BASE-X optical port with an optical module installed.

Table 6-59 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 ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0 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 6-60 lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-60 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 6-61 lists specifications of the ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0.

Table 6-61 Specifications of the ES0D0G24SA00, ES0D0G24SC00, and ES1D2G24SED0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: ES0D0G24SA00: 2.22 kg ES0D0G24SC00: 2.66 kg ES1D2G24SED0: 2.66 kg ● Maximum power consumption: ES0D0G24SA00: 45 W ES0D0G24SC00: 63 W ES1D2G24SED0: 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)

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 6-62 provides the ordering information.

Table 6-62 ES0D0G24S ordering information

Part Number	Card Description	Card Model
03030MQP	24-port 100/1000BASE-X interface card (SA, SFP)	ES0D0G24SA00
03030MQN	24-port 100/1000BASE-X interface card (EC, SFP)	ES0D0G24SC00
03030QJQ	24-port 100/1000BASE-X interface card (ED, SFP)	ES1D2G24SED0

6.7.2 ES0D0G24CA00-24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card (SA, SFP/RJ45)

Introduction

The ES0D0G24CA00 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 ES0D0G24CA00 card provides line-speed switching on sixteen GE optical ports and eight GE combo ports.

The ES0D0G24CA00 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-46](#) shows the ES0D0G24CA00.

Figure 6-46 ES0D0G24CA00



Version Mapping

Table 6-63 lists the switch chassis and software versions matching the ES0D0G24CA00.

Table 6-63 Switch chassis and software versions matching the ES0D0G24CA00

Card Name	S7700 Chassis
ES0D0G24CA00	Supported in V100R003C01 and later versions

Functions and Features

Table 6-64 describes the functions and features of the ES0D0G24CA00.

Table 6-64 Functions and features of the ES0D0G24CA00

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 ES0D0G24CA00.
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.

Function and Feature	Description
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	8K

Indicators and Ports

Indicator Description

Figure 6-47 shows the indicators on the ES0D0G24CA00 panel.

Figure 6-47 Indicators o the ES0D0G24CA00 panel

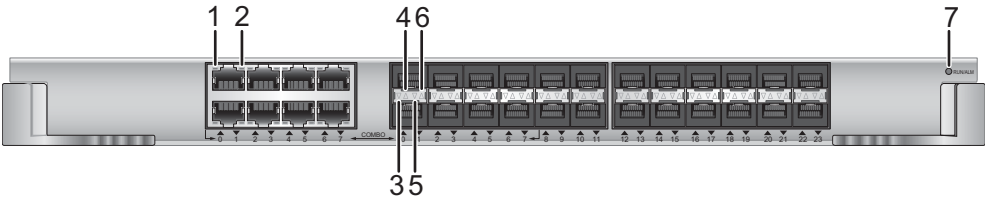


Table 6-65 describes the indicators on the ES0D0G24CA00 panel.

Table 6-65 Indicators on the ES0D0G24CA00 panel

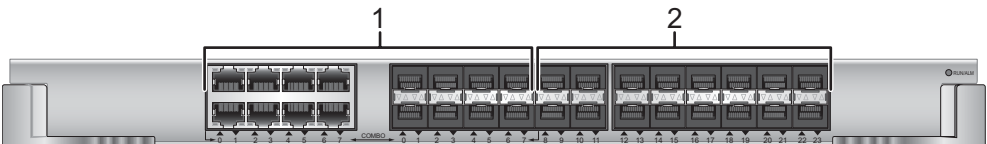
Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of lower electrical port		

Number	Indicator	Color	Description
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.)

Port Description

Figure 6-48 shows the ports on the ES0D0G24CA00 panel.

Figure 6-48 Ports on the ES0D0G24CA00 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.

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 6-66 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-66 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 6-67 lists the attributes of a 100M/1000M BASE-X optical port.

100M/1000M BASE-X optical ports

Table 6-67 lists the attributes of a 100M/1000M BASE-X optical port.

Table 6-67 100M/1000M BASE-X optical port attributes

Attribute	Description
Connector type	SFP

Attribute	Description
Optical port attribute	Depends on the SFP optical module used. For details about optical modules supported by the ES0D0G24CA00 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 6-68](#) describes specifications of the ES0D0G24CA00

Table 6-68 Specifications of the

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)

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 6-69 provides the ordering information.

Table 6-69 ES0D0G24CA00 ordering information

Part Number	Card Description	Card Model
03030LGK	24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (SA, SFP/RJ45)	ES0D0G24CA00

6.7.3 ES0DG48CEAT0-36-Port 10/100/1000BASE-T and 12-Port 100/1000BASE-X Interface Card (EA, RJ45/SFP)

Introduction

The ES0DG48CEAT0 provides thirty-six 10M/100M/1000M Ethernet electrical ports and twelve 100M/1000M Ethernet optical ports for data transmission and line-speed switching.

The ES0DG48CEAT0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-49](#) shows the ES0DG48CEAT0.

Figure 6-49 ES0DG48CEAT0



Version Mapping

[Table 6-70](#) lists the switch chassis and software versions matching the ES0DG48CEAT0.

Table 6-70 Switch chassis and software versions matching the ES0DG48CEAT0

Card Name	S7700 Chassis
ES0DG48CEAT0	Supported in V100R003C01 and later versions

Functions and Features

Table 6-71 describes the functions and features of the ES0DG48CEAT0.

Table 6-71 Functions and features of the ES0DG48CEAT0

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	16K

Indicators and Ports

Indicator Description

Figure 6-50 shows the indicators on the ES0DG48CEAT0 panel.

Figure 6-50 Indicators on the ES0DG48CEAT0 panel

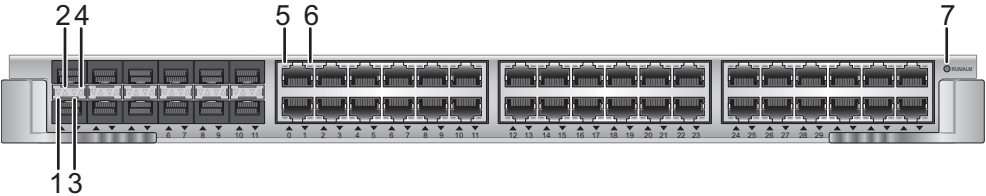


Table 6-72 describes the indicators on the ES0DG48CEAT0 panel.

Table 6-72 Indicators on the ES0DG48CEAT0 panel

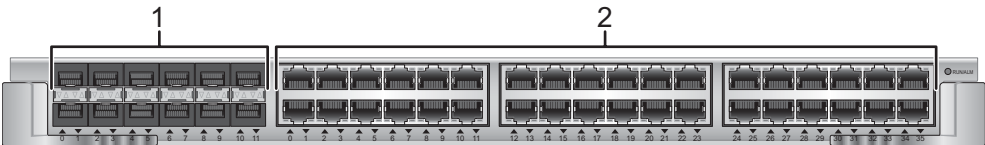
Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of upper optical port		
3	LINK indicator of lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of upper optical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

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 6-51 shows the ports on the ES0DG48CEAT0 panel.

Figure 6-51 Ports on the ES0DG48CEAT0 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 6-73 lists the attributes of a 100M/1000M BASE-X optical port.

Table 6-73 100M/1000M BASE-X optical port attributes

Attribute	Description
Connector type	SFP

Attribute	Description
Optical port attribute	Depends on the SFP optical module used. For details about optical modules supported by the ES0DG48CEAT0 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 6-74](#) lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-74 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 6-75](#) describes specifications of the ES0DG48CEAT0.

Table 6-75 Specifications of the ES0DG48CEAT0

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)

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 6-76 provides the ordering information.

Table 6-76 ES0DG48CEAT0 ordering information

Part Number	Card Description	Card Model
03030JFH	36-port 10/100/1000BASE-T and 12-port 100/1000BASE-X interface card (EA, RJ45/SFP)	ES0DG48CEAT0

6.7.4 ES0D0G48VA00-48-Port 10/100/1000BASE-T PoE Interface Card (EA, RJ45, POE)

Introduction

The ES0D0G48VA00 provides forty-eight GE electrical ports and integrates the data switching unit and PoE management unit. This card provides the following functions:

- Line-speed forwarding on 48 10/100/1000M Ethernet PoE electrical ports
- DC power supply for directly connected devices such as IP phones, wireless access points (APs), and network cameras

The ES0D0G48VA00 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-52](#) shows the ES0D0G48VA00.

Figure 6-52 ES0D0G48VA00

Version Mapping

[Table 6-77](#) lists the switch chassis and software versions matching the ES0D0G48VA00.

Table 6-77 Switch chassis and software versions matching the ES0D0G48VA00

Card Name	S7700 Chassis
ES0D0G48VA00	Supported in V100R003C01 and later versions

Functions and Features

Table 6-78 describes the functions and features of the ES0D0G48VA00.

Table 6-78 Functions and features of the ES0D0G48VA00

Function and Feature	Description
Basic function	The ES0D0G48VA00 has two units: ● Data switching unit: consists of the CPU, switching chip, and physical layer (PHY). ● PoE management unit: consists of the CPU and the Dual Inline Memory Module (DIMM). The ES0D0G48VA00 provides: ● 48 GE electrical ports for data transmission and line-speed switching ● Power over Ethernet (PoE) function
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, IP session
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

Function and Feature	Description
IPv6 FIB	8K
ARP	16K

Usage Constraints

NOTICE

To start and register the ES0D0G48VA00, the following conditions must be met:

- The DIMM has been installed in the DIMM slot on the ES0D0G48VA00.
- The chassis must be a PoE chassis.
- A PoE power module has been installed and is working normally.

Indicators and Ports

Indicator Description

Figure 6-53 shows the indicators on the ES0D0G48VA00 panel.

Figure 6-53 Indicators on the ES0D0G48VA00 panel

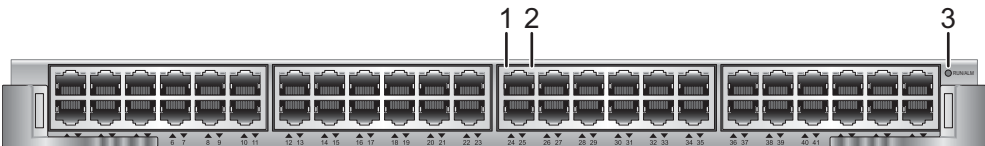


Table 6-79 describes the indicators on the ES0D0G48VA00 panel.

Table 6-79 Indicators on the ES0D0G48VA00 panel

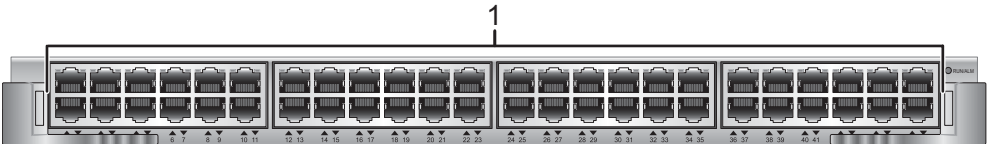
Number	Indicator	Color	Description
1	LINK/ACT indicator of upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.

Number	Indicator	Color	Description
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 6-54 shows the ports on the ES0D0G48VA00 panel.

Figure 6-54 Ports on the ES0D0G48VA00 panel



1	Forty-eight 10M/100M/1000M BASE-T electrical ports. The electrical ports support the PoE function and can provide DC power for the directly connected devices such as IP phones, wireless access points (APs), and network cameras.
---	---

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

Table 6-80 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-80 10M/100M/1000M BASE-T electrical port attributes

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

Specifications

Table 6-81 describes specifications of the ES0D0G48VA00.

Table 6-81 Specifications of the ES0D0G48VA00

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: 64 W (The PoE power supply is not included.) ● Maximum power: 30 W for each port and 1440 W for the whole 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)

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 6-82 provides the ordering information.

Table 6-82 ES0D0G48VA00 ordering information

Part Number	Card Description	Card Model
03030KQT	48-port 10/100/1000BASE-T PoE interface card (EA, RJ45, PoE)	ES0D0G48VA00

6.7.5 ES0DG24TFA00-24-Port 10/100/1000BASE-T Interface Card (FA, RJ45)

Introduction

The ES0DG24TFA00 provides twenty-four 10M/100M/1000M Ethernet electrical ports for data transmission and line-speed switching, and supports Energy Efficient Ethernet (EEE).

The ES0DG24TFA00 can be installed in:

Figure 6-55 shows the ES0DG24TFA00.

Figure 6-55 ES0DG24TFA00

Version Mapping

Table 6-83 lists the switch chassis and software versions matching the ES0DG24TFA00.

Table 6-83 Switch chassis and software versions matching the ES0DG24TFA00

Card Name	S7700 Chassis
ES0DG24TFA00	Supported in V100R006C00 and later versions

Functions and Features

Table 6-84 describes the functions and features of the ES0DG24TFA00.

Table 6-84 Functions and features of the ES0DG24TFA00

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	8K

Indicators and Ports

Indicator Description

Figure 6-56 shows the indicators on the ES0DG24TFA00 panel.

Figure 6-56 Indicators on the ES0DG24TFA00 panel

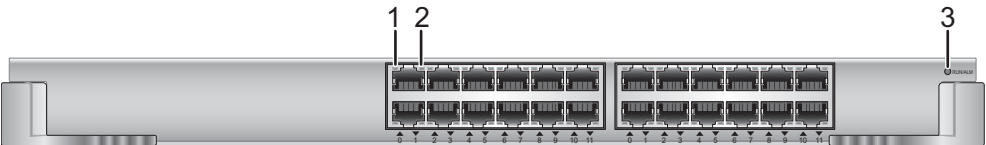


Table 6-85 describes the indicators on the ES0DG24TFA00 panel.

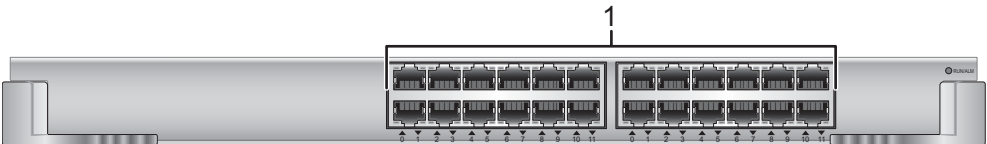
Table 6-85 Indicators on the ES0DG24TFA00 panel

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 6-57 shows the ports on the ES0DG24TFA00 panel.

Figure 6-57 Ports on the ES0DG24TFA00 panel



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

Table 6-86 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-86 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 6-87 describes specifications of the ES0DG24TFA00.

Table 6-87 Specifications of the ES0DG24TFA00

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)

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 6-88 provides the ordering information.

Table 6-88 ES0DG24TFA00 ordering information

Part Number	Card Description	Card Model
03030NGA	24-port 10/100/1000BASE-T interface card (FA, RJ45)	ES0DG24TFA00

6.7.6 ES0D0G48T-48-Port 10/100/1000BASE-T Interface Card (RJ45)

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

- ES0D0G48TA00: 48-port 10/100/1000BASE-T interface card (EA, RJ45)
- ES0D0G48TC00: 48-port 10/100/1000BASE-T interface card (EC, RJ45)
- ES1D2G48TED0: 48-port 10/100/1000BASE-T interface card (ED, RJ45)
- ES0DG48TFA00: 48-port 10/100/1000BASE-T interface card (FA, RJ45)

Introduction

The ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00 provide forty-eight GE electrical ports for data transmission and line-speed switching. [Table 6-89](#) lists their differences.

Table 6-89 Differences among the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00

Card Name	MAC Address Table Size
ES0D0G48TA00	32K
ES0D0G48TC00	128K
ES1D2G48TED0	512K
ES0DG48TFA00	32K

NOTE

The ES0D0G48TA00 and ES0DG48TFA00 both support 32K MAC addresses, but the ES0DG48TFA00 consumes less power than the ES0D0G48TA00.

The ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).

- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-58](#) shows the ES0D0G48TA00.

Figure 6-58 ES0D0G48TA00



[Figure 6-59](#) shows the ES0D0G48TC00.

Figure 6-59 ES0D0G48TC00



[Figure 6-60](#) shows the ES0D0G48TC00 and ES1D2G48TED0.

Figure 6-60 ES1D2G48TED0



[Figure 6-61](#) shows the ES0DG48TFA00.

Figure 6-61 ES0DG48TFA00



Version Mapping

Table 6-90 lists the switch chassis and software versions matching the ES0D0G48T.

Table 6-90 Switch chassis and software versions matching the ES0D0G48T

Card Name	S7700 Chassis
ES0D0G48TA00	Supported in V100R003C01 and later versions
ES0D0G48TC00	Supported in V100R003C01 and later versions
ES1D2G48TED0	Supported in V200R002C00 and later versions
ES0DG48TFA00	Supported in V100R003C01 and later versions

Functions and Features

Table 6-91 describes the functions and features of the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00.

Table 6-91 Functions and features of the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00

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	● ES0D0G48TA00, ES0D0G48TC00, and ES1D2G48TED0: 4 MB ● ES0DG48TFA00: 2 MB
Software feature	ES0D0G48TA00, ES0D0G48TC00, and ES1D2G48TED0: NetStream
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the jumboframe enable command.

Functions and Features	Description
MAC table size	● ES0D0G48TA00 and ES0DG48TFA00: 32K ● ES0D0G48TC00: 128K ● ES1D2G48TED0: 512K
IPv4 ACL	● ES0D0G48TA00: 6K for inbound traffic; 1K for outbound traffic ● ES0D0G48TC00: 38K for inbound traffic; 1K for outbound traffic ● ES1D2G48TED0: 70K for inbound traffic; 1K for outbound traffic ● ES0DG48TFA00: 1.5K for inbound traffic; 256 for outbound traffic
IPv4 FIB	● ES0D0G48TA00: 16K ● ES0D0G48TC00: 128K ● ES1D2G48TED0: 512K ● ES0DG48TFA00: 12K
IPv6 ACL	● ES0D0G48TA00: 3K for inbound traffic; 256 for outbound traffic ● ES0D0G48TC00: 35K for inbound traffic; 256 for outbound traffic ● ES1D2G48TED0: 67K for inbound traffic; 256 for outbound traffic ● ES0DG48TFA00: 512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	● ES0D0G48TA00: 8K ● ES0D0G48TC00: 64K ● ES1D2G48TED0: 256K ● ES0DG48TFA00: 6K
ARP	● ES0D0G48TA00, ES0D0G48TC00 and, ES1D2G48TED0: 16K ● ES0DG48TFA00: 8K

Indicators and Ports

Indicator Description

Figure 6-62 shows the indicators on the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00 panels.

Figure 6-62 Indicators on the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00 panels

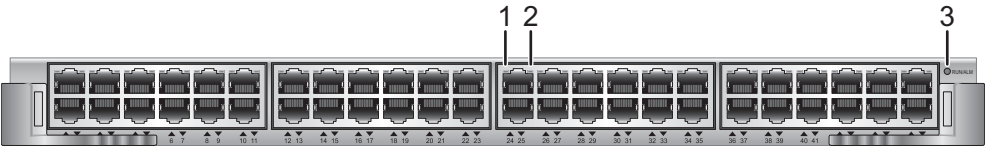


Table 6-92 describes the indicators on the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00 panels.

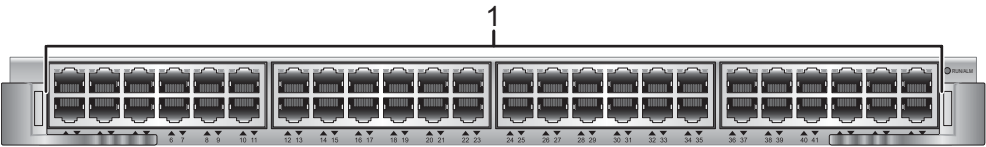
Table 6-92 Indicators on the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00 panels

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 6-63 shows the ports on the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00 panels.

Figure 6-63 Ports on the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00 panels



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

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

Table 6-93 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-93 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 6-94 lists specifications of the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00.

Table 6-94 Specifications of the ES0D0G48TA00, ES0D0G48TC00, ES1D2G48TED0, and ES0DG48TFA00

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: - ES0D0G48TA00: 2.50 kg - ES0D0G48TC00: 2.66 kg - ES1D2G48TED0: 2.66 kg - ES0DG48TFA00: 2.50 kg ● Maximum power consumption: - ES0D0G48TA00: 62 W - ES0D0G48TC00: 68 W - ES1D2G48TED0: 98 W - ES0DG48TFA00: 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)
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

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 6-95 provides the ordering information.

Table 6-95 ES0D0G48T ordering information

Part Number	Card Description	Card Model
03030MQM	48-port 10/100/1000BASE-T interface card (EA, RJ45)	ES0D0G48TA00
03030MQL	48-port 10/100/1000BASE-T interface card (EC, RJ45)	ES0D0G48TC00
03030QJR	48-port 10/100/1000BASE-T interface card (ED, RJ45)	ES1D2G48TED0
03030MQX	48-port 10/100/1000BASE-T interface card (FA, RJ45)	ES0DG48TFA00

6.7.7 ES1D2G48TX1E-48-Port 10/100/1000BASE-T Interface Card (X1E, RJ45)

Introduction

The ES1D2G48TX1E 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 ES1D2G48TX1E can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).

- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

Figure 6-64 shows an ES1D2G48TX1E card.

Figure 6-64 ES1D2G48TX1E card



Version Mapping

Table 6-96 lists the switch chassis and software versions matching the interface card.

Table 6-96 Switch chassis and software versions matching the interface card

Card Name	S7700 Chassis
ES1D2G48TX1E	Supported in V200R005C00 and later versions

Functions and Features

The ES1D2G48TX1E 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 6-97 describes functions and features of the ES1D2G48TX1E.

Table 6-97 Functions and features of the ES1D2G48TX1E

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

Function and Feature	Description
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	512K
IPv6 ACL	16K for inbound and outbound traffic
IPv6 FIB	512K
ARP	64K

Indicators and Ports

Indicator Description

Figure 6-65 shows indicators on the ES1D2G48TX1E panel.

Figure 6-65 Indicators on the ES1D2G48TX1E panel

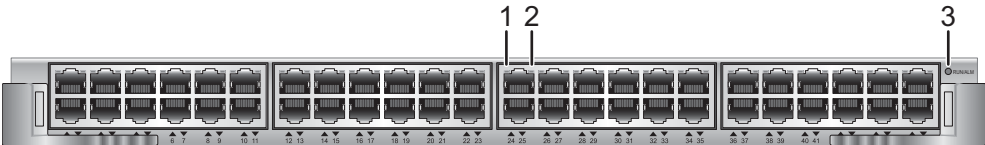


Table 6-98 describes indicators on the ES1D2G48TX1E panel.

Table 6-98 Indicators on the ES1D2G48TX1E panel

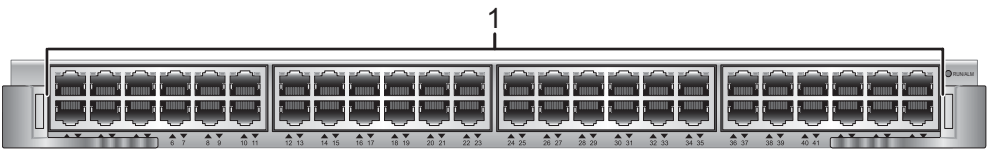
Number	Indicator	Color	Description
1	LINK/ACT indicator of an upper electrical port	Green	Steady on: A link has been established on the port. Blinking: The port is transmitting and receiving data.
2	LINK/ACT indicator of a lower electrical port		

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 6-66 shows ports on the ES1D2G48TX1E panel.

Figure 6-66 Ports on the ES1D2G48TX1E panel



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

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

Table 6-99 describes the attributes of a 10M/100M/1000M BASE-T port.

Table 6-99 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 6-100 lists specifications of the ES1D2G48TX1E.

Table 6-100 Specifications of the ES1D2G48TX1E

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)
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

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 6-101 provides ES1D2G48TX1E ordering information.

Table 6-101 ES1D2G48TX1E ordering information

Part Number	Card Name	Card Model
03030RFY	48-port 10/100/1000BASE-T interface card (X1E, RJ45)	ES1D2G48TX1E

6.7.8 ES1D2G48TBC0-48-Port 10/100/1000BASE-T Interface Card (BC, RJ45)

Introduction

The ES1D2G48TBC0 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 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

Figure 6-67 shows the ES1D2G48TBC0.

Figure 6-67 ES1D2G48TBC0



Version Mapping

Table 6-102 lists the switch chassis and software versions matching the ES1D2G48TBC0.

Table 6-102 Switch chassis and software versions matching the ES1D2G48TBC0

Card Name	S7700 Chassis
ES1D2G48TBC0	Supported in V200R002C00 and later versions

Application

The ES1D2G48TBC0 and ES1D2G48SBC0 of the S7700 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.

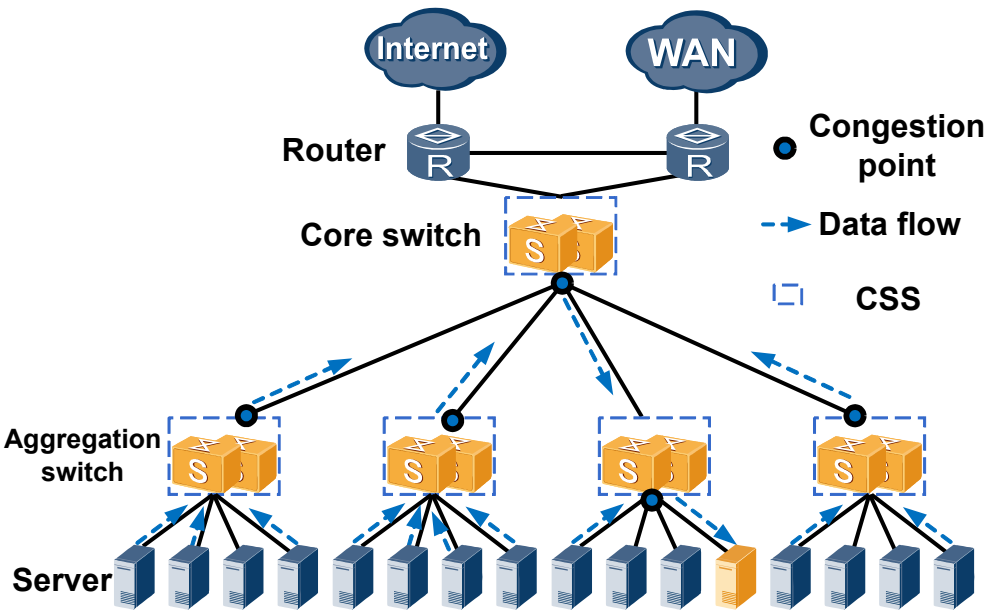
The large-buffer cards apply to data center networks and video networks:

- 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.

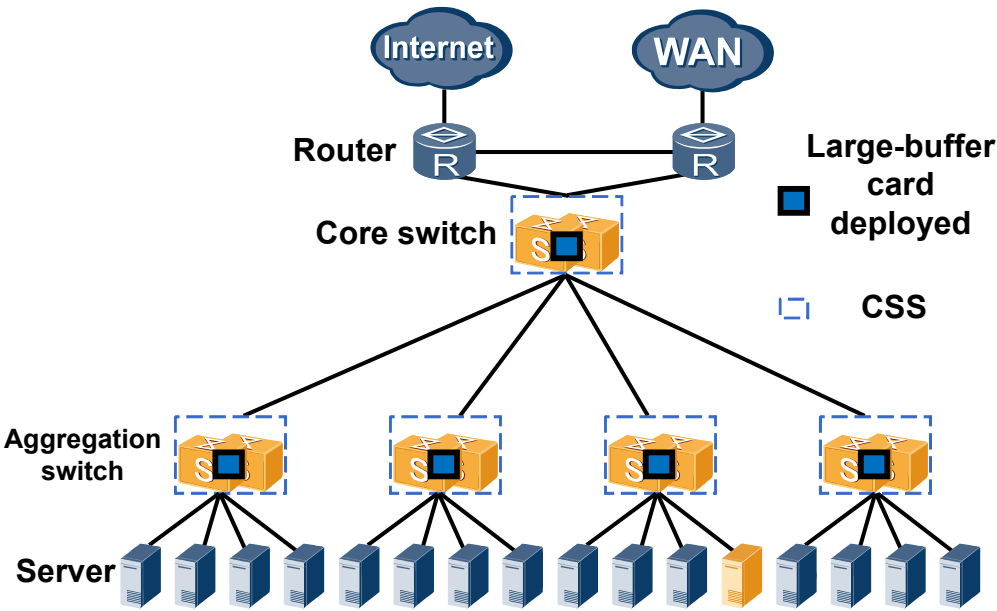
Complicated computing tasks, such as search engine computing, oil exploration computing, and meteorological computing, must be carried out by multiple servers simultaneously. In this situation, the servers perform collaborative computing, which results in fast transmission of data flows on a network 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 6-68. Packets are dropped on congested network nodes.

Figure 6-68 Traffic bursts caused by collaborative computing in EoR deployment



As shown in Figure 6-69, 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 6-69 Large-buffer cards deployed in a data center



Functions and Features

Table 6-103 describes the functions and features of the ES1D2G48TBC0.

Table 6-103 Functions and features of the ES1D2G48TBC0

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
IPv6 ACL	35K for inbound traffic; 256 for outbound traffic
IPv6 FIB	64K
ARP	16K

Indicators and Ports

Indicator Description

Figure 6-70 shows the indicators on the ES1D2G48TBC0 panel.

Figure 6-70 Indicators on the ES1D2G48TBC0 panel

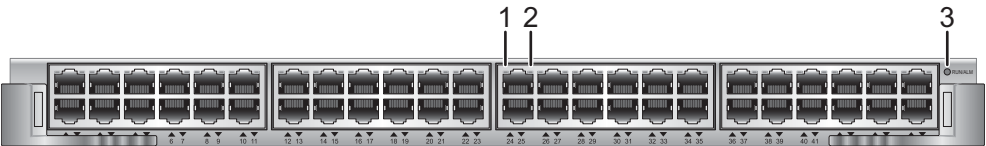


Table 6-104 describes the indicators on the ES1D2G48TBC0 panel.

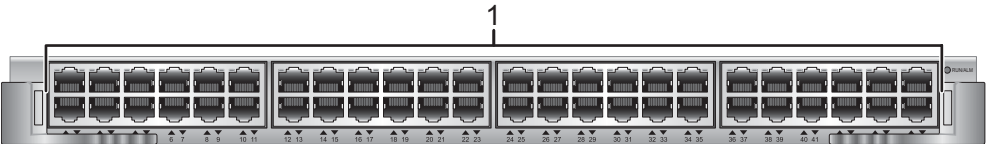
Table 6-104 Indicators on the ES1D2G48TBC0 panel

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 6-71 shows the ports on the ES1D2G48TBC0 panel.

Figure 6-71 Ports on the ES1D2G48TBC0 panel



1	Forty-eight 10M/100M/1000M BASE-T electrical ports
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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 ES1D2G48TBC0.

Table 6-106 Specifications of the ES1D2G48TBC0

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)

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.

Table 6-107 ES1D2G48TBC0 ordering information

Part Number	Card Description	Card Model
03030QJT	48-port 10/100/1000BASE-T interface card (BC, RJ45)	ES1D2G48TBC0

6.7.9 ES0D0G48S-48-Port 100/1000BASE-X Interface Card (SFP)

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

- ES0D0G48SA00: 48-port 100/1000BASE-X interface card (EA, SFP)
- ES0D0G48SC00: 48-port 100/1000BASE-X interface card (EC, SFP)
- ES1D2G48SED0: 48-port 100/1000BASE-X interface card (ED, SFP)
- ES1D2G48SFA0: 48-port 100/1000BASE-X interface card (FA, SFP)

Introduction

The ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 provide forty-eight GE optical ports for data transmission and line-speed switching. [Table 6-108](#) lists their differences.

Table 6-108 Differences among the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0

Card Name	MAC Address Table Size
ES0D0G48SA00	32K
ES0D0G48SC00	128K
ES1D2G48SED0	512K
ES1D2G48SFA0	32K

NOTE

The ES0D0G48SA00 and ES1D2G48SFA0 both support 32K MAC addresses, but the ES1D2G48SFA0 consumes less power than the ES0D0G48SA00.

The ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).

- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-72](#) shows the ES0D0G48SA00.

Figure 6-72 ES0D0G48SA00



[Figure 6-73](#) shows the ES0D0G48SC00.

Figure 6-73 ES0D0G48SC00



[Figure 6-74](#) shows the ES1D2G48SED0.

Figure 6-74 ES1D2G48SED0



[Figure 6-75](#) shows the ES1D2G48SFA0.

Figure 6-75 ES1D2G48SFA0



Version Mapping

Table 6-109 lists the switch chassis and software versions matching the ES0D0G48S.

Table 6-109 Switch chassis and software versions matching the ES0D0G48S

Card Name	S7700 Chassis
ES0D0G48SA00	Supported in V100R003C01 and later versions
ES0D0G48SC00	Supported in V100R003C01 and later versions
ES1D2G48SED0	Supported in V200R001C00 and later versions
ES1D2G48SFA0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-110 describes the functions and features of the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, ES1D2G48SED0, and ES1D2G48SFA0.

Table 6-110 Functions and features of the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0

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
Buffer	● ES0D0G48SA00, ES0D0G48SC00, and ES1D2G48SED0: 4 MB ● ES1D2G48SFA0: 2 MB
Software feature	ES0D0G48SA00, ES0D0G48SC00, and ES1D2G48SED0: NetStream
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the jumboframe enable command.

Function and Feature	Description
MAC table size	● ES0D0G48SA00 and ES1D2G48SFA0: 32K ● ES0D0G48SC00: 128K ● ES1D2G48SED0: 512K
IPv4 ACL	● ES0D0G48SA00: 6K for inbound traffic; 1K for outbound traffic ● ES0D0G48SC00: 38K for inbound traffic; 1K for outbound traffic ● ES1D2G48SED0: 70K for inbound traffic; 1K for outbound traffic ● ES1D2G48SFA0: 1.5K for inbound traffic; 256 for outbound traffic
IPv4 FIB	● ES0D0G48SA00: 16K ● ES0D0G48SC00: 128K ● ES1D2G48SED0: 512K ● ES1D2G48SFA0: 12K
IPv6 ACL	● ES0D0G48SA00: 3K for inbound traffic; 256 for outbound traffic ● ES0D0G48SC00: 35K for inbound traffic; 256 for outbound traffic ● ES1D2G48SED0: 67K for inbound traffic; 256 for outbound traffic ● ES1D2G48SFA0: 512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	● ES0D0G48SA00: 8K ● ES0D0G48SC00: 64K ● ES1D2G48SED0: 256K ● ES1D2G48SFA0: 6K
ARP	● ES0D0G48SA00, ES0D0G48SC00, and ES1D2G48SED0: 16K ● ES1D2G48SFA0: 8K

Indicators and Ports

Indicator Description

Figure 6-76 shows the indicators on the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 panels.

Figure 6-76 Indicators on the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 panels

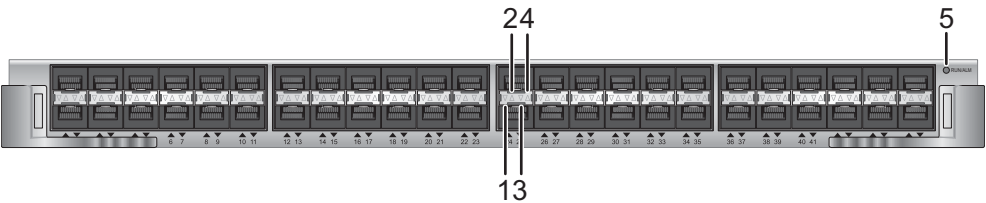


Table 6-111 describes the indicators on the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 panels.

Table 6-111 Indicators on the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 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		
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 6-77 shows the ports on the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 panels.

Figure 6-77 Ports on the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 panels



1	Forty-eight 100M/1000M BASE-X optical ports
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100M/1000M BASE-X optical ports

Table 6-112 lists the attributes of a 100M/1000M BASE-X optical port with an optical module installed.

Table 6-112 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 ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0 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 6-113 lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-113 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 6-114 lists specifications of the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0.

Table 6-114 Specifications of the ES0D0G48SA00, ES0D0G48SC00, ES1D2G48SED0, and ES1D2G48SFA0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: ES0D0G48SA00: 2.54 kg ES0D0G48SC00: 2.66 kg ES1D2G48SED0: 2.66 kg ES1D2G48SFA0: 2.60 kg ● Maximum power consumption: ES0D0G48SA00: 75 W ES0D0G48SC00: 92 W ES1D2G48SED0: 110 W ES1D2G48SFA0: 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)

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 6-115 provides the ordering information.

Table 6-115 ES0D0G48S ordering information

Part Number	Card Description	Card Model
03030MHB	48-port 100/1000BASE-X interface card (EA, SFP)	ES0D0G48SA00
03030MQK	48-port 100/1000BASE-X interface card (EC, SFP)	ES0D0G48SC00
03030PGN	48-port 100/1000BASE-X interface card (ED, SFP)	ES1D2G48SED0
03030PGM	48-port 100/1000BASE-X interface card (FA, SFP)	ES1D2G48SFA0

6.7.10 ES1D2G48SBC0-48-Port 100/1000BASE-X Interface Card (BC, SFP)

Introduction

The ES1D2G48SBC0 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 ES1D2G48SBC0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-78](#) shows the ES1D2G48SBC0.

Figure 6-78 ES1D2G48SBC0



Version Mapping

Table 6-116 lists the switch chassis and software versions matching the ES1D2G48SBC0.

Table 6-116 Switch chassis and software versions matching the ES1D2G48SBC0

Card Name	S7700 Chassis
ES1D2G48SBC0	Supported in V200R002C00 and later versions

Functions and Features

Table 6-117 describes the functions and features of the ES1D2G48SBC0.

Table 6-117 Functions and features of the ES1D2G48SBC0

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
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	16K

Application

The ES1D2G48TBC0 and ES1D2G48SBC0 of the S7700 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.

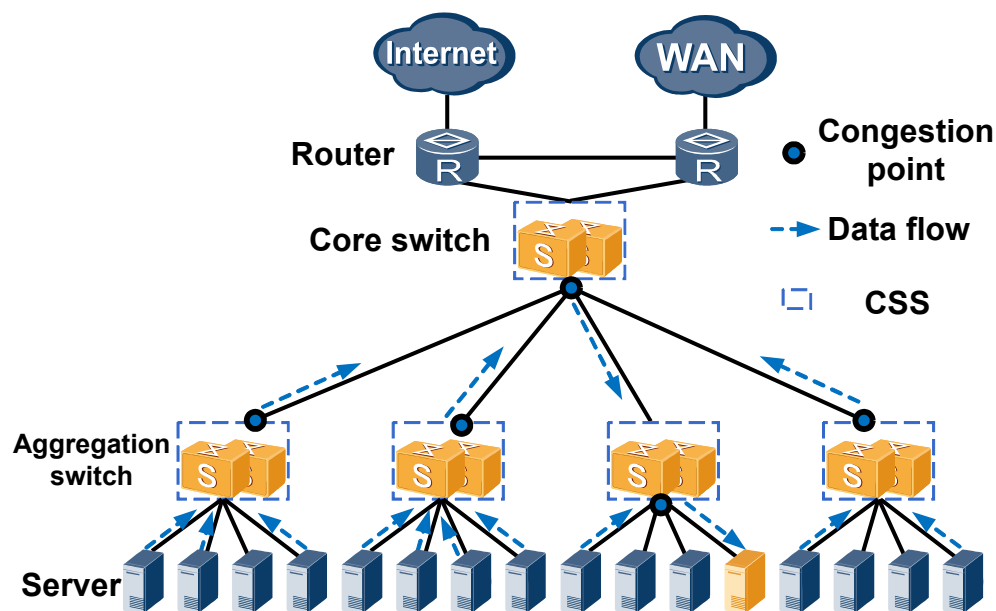
The large-buffer cards apply to data center networks and video networks:

- 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.

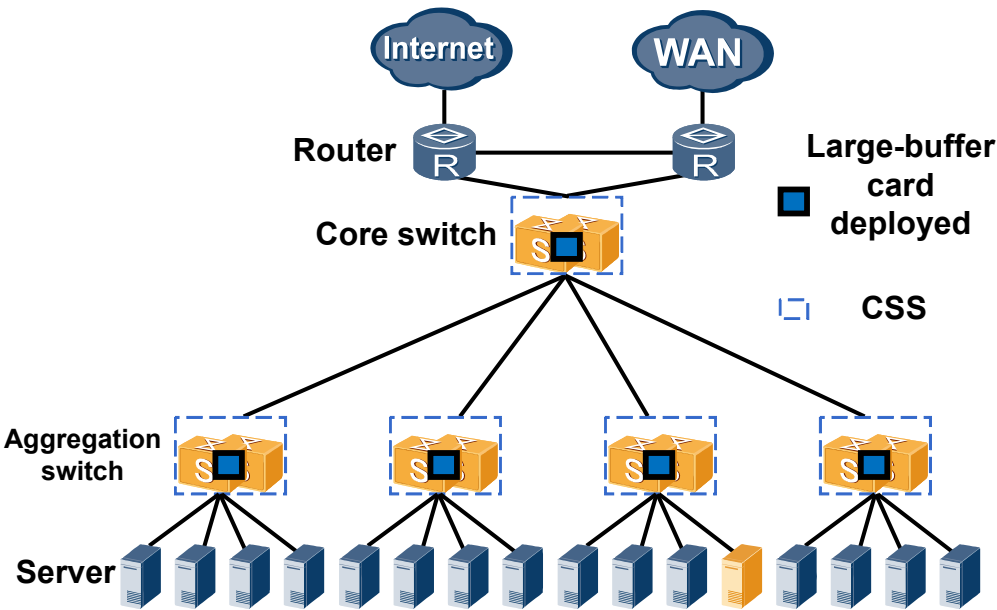
Complicated computing tasks, such as search engine computing, oil exploration computing, and meteorological computing, must be carried out by multiple servers simultaneously. In this situation, the servers perform collaborative computing, which results in fast transmission of data flows on a network 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 6-79](#). Packets are dropped on congested network nodes.

Figure 6-79 Traffic bursts caused by collaborative computing in EoR deployment



As shown in [Figure 6-80](#), 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 6-80 Large-buffer cards deployed in a data center



Indicators and Ports

Indicator Description

Figure 6-81 shows the indicators on the ES1D2G48SBC0 panel.

Figure 6-81 Indicators on the ES1D2G48SBC0 panel

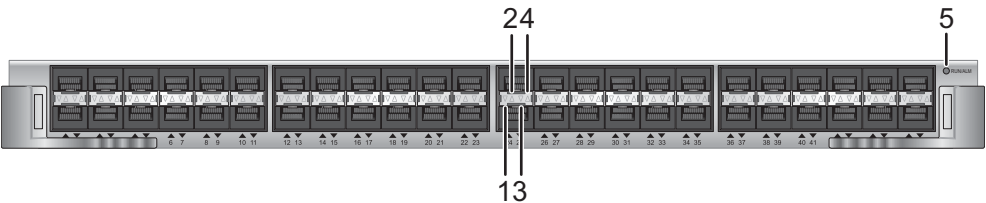


Table 6-118 describes the indicators on the ES1D2G48SBC0 panel.

Table 6-118 Indicators on the ES1D2G48SBC0 panel

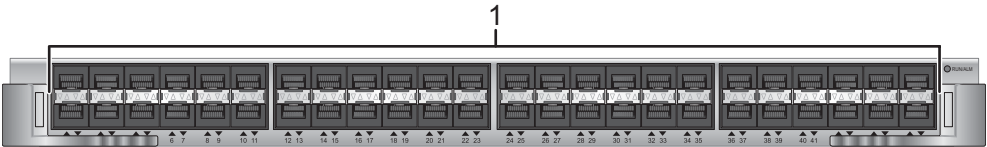
Number	Indicator	Color	Description
1	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of upper optical port		

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 6-82 shows the ports on the ES1D2G48SBC0 panel.

Figure 6-82 Ports on the ES1D2G48SBC0 panel



1	Forty-eight 100M/1000M BASE-X optical ports
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100M/1000M BASE-X optical ports

Table 6-119 lists the attributes of a 100M/1000M BASE-X optical port with an optical module installed.

Table 6-119 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 ES1D2G48SBC0 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 6-120 lists the attributes of a 100M/1000M BASE-X optical port.

Table 6-120 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 6-121 describes specifications of the ES1D2G48SBC0.

Table 6-121 Specifications of the ES1D2G48SBC0

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)
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 6-122](#) provides the ordering information.

Table 6-122 ES1D2G48SBC0 ordering information

Part Number	Card Description	Card Model
03030QJS	48-port 100/1000BASE-X interface card (BC, SFP)	ES1D2G48SBC0

6.7.11 ES1D2G48SX1E-48-Port 100/1000BASE-X Interface Card (X1E, SFP)

Introduction

The ES1D2G48SX1E 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 ES1D2G48SX1E can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-83](#) shows an ES1D2G48SX1E card.

Figure 6-83 ES1D2G48SX1E card



Version Mapping

[Table 6-123](#) lists the switch chassis and software versions matching the interface card.

Table 6-123 Switch chassis and software versions matching the interface card

Card Name	S7700 Chassis
ES1D2G48SX1E	Supported in V200R005C00 and later versions

Functions and Features

The ES1D2G48SX1E 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 6-124 describes functions and features of the ES1D2G48SX1E.

Table 6-124 Functions and features of the ES1D2G48SX1E

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	512K
IPv6 ACL	16K for inbound and outbound traffic
IPv6 FIB	512K
ARP	64K

Indicators and Ports

Indicator Description

Figure 6-84 shows indicators on the ES1D2G48SX1E panel.

Figure 6-84 Indicators on the ES1D2G48SX1E panel

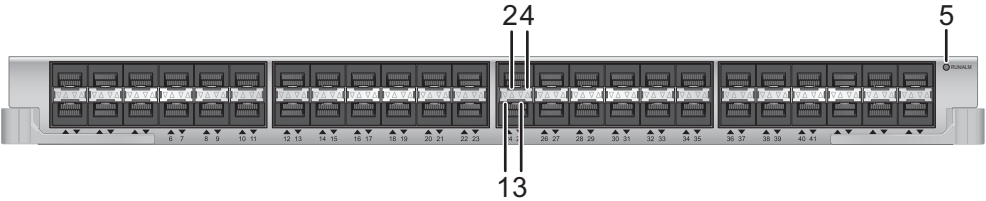


Table 6-125 describes indicators on the ES1D2G48SX1E panel.

Table 6-125 Indicators on the ES1D2G48SX1E panel

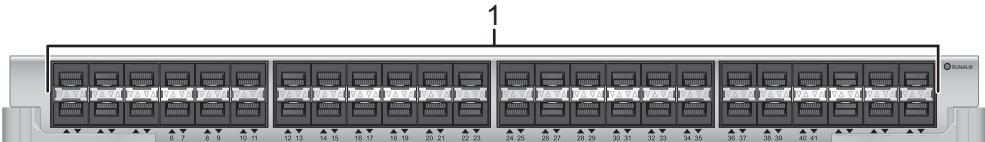
Number	Indicator	Color	Description
1	ACT indicator of a lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	ACT indicator of an upper optical port		
3	LINK indicator of a lower optical port	Green	Steady on: A link has been established on the port.
4	LINK indicator of an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

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 6-85 shows ports on the ES1D2G48SX1E panel.

Figure 6-85 Ports on the ES1D2G48SX1E panel



1	Forty-eight 100M/1000M BASE-X ports
---	-------------------------------------

100M/1000M BASE-X port

Table 6-126 describes the attributes of a 100M/1000M BASE-X port with an optical module installed.

Table 6-126 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 ES1D2G48SX1E 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 6-127 describes the attributes of a 100M/1000M BASE-X port with a copper module installed.

Table 6-127 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 6-128 lists specifications of the ES1D2G48SX1E.

Table 6-128 Specifications of the ES1D2G48SX1E

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)

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 6-129 provides ES1D2G48SX1E ordering information.

Table 6-129 ES1D2G48SX1E ordering information

Part Number	Card Name	Card Model
03030RHB	48-port 100/1000BASE-X interface card (X1E SFP)	ES1D2G48SX1E

6.8 GE/10GE Interface Card

6.8.1 ES0D0T24XA00-24-Port 10/100/1000BASE-T and 2-Port 10GBASE-X Interface Card (EA, RJ45/XFP)

Introduction

The ES0D0T24XA00 provides twenty-four GE electrical ports and two 10GE optical ports for data transmission and line-speed switching.

The ES0D0T24XA00 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-86](#) shows the ES0D0T24XA00.

Figure 6-86 ES0D0T24XA00



Version Mapping

[Table 6-130](#) lists the switch chassis and software versions matching the ES0D0T24XA00.

Table 6-130 Switch chassis and software versions matching the ES0D0T24XA00

Card Name	S7700 Chassis
ES0D0T24XA00	Supported in V100R003C01 and later versions

Functions and Features

Table 6-131 describes the functions and features of the ES0D0T24XA00.

Table 6-131 Functions and features of the ES0D0T24XA00

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	16K

Indicators and Ports

Indicator Description

Figure 6-87 shows the indicators on the ES0D0T24XA00 panel.

Figure 6-87 Indicators on the ES0D0T24XA00 panel

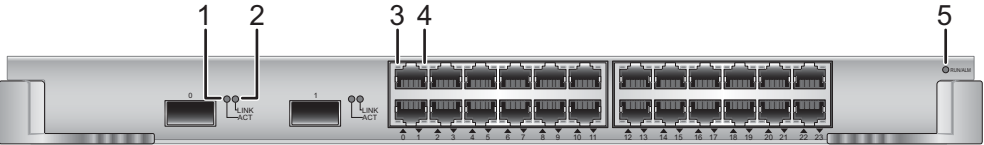


Table 6-132 describes the indicators on the ES0D0T24XA00 panel.

Table 6-132 Indicators on the ES0D0T24XA00 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.)

Port Description

Figure 6-88 shows the ports on the ES0D0T24XA00 panel.

Figure 6-88 Ports on the ES0D0T24XA00 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 6-133 lists the attributes of a 10M/100M/1000M BASE-T electrical port.

Table 6-133 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 6-134 lists the attributes of a 10GE BASE-XFP optical port.

Table 6-134 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 ES0D0T24XA00 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

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-135 lists specifications of the ES0D0T24XA00.

Table 6-135 Specifications of the ES0D0T24XA00

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

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 6-136 lists provides the ordering information.

Table 6-136 ES0D0T24XA00 ordering information

Part Number	Card Description	Card Model
03030LMU	24-port 10/100/1000BASE-T and 2-port 10GBASE-X interface card (EA, RJ45/XFP)	ES0D0T24XA00

6.8.2 ES0D0S24X-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:

- ES0D0S24XA00: 24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)
- ES1D2S24XEC0: 24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)

Introduction

The ES0D0S24XA00 and ES1D2S24XEC0 provide twenty-four GE optical ports and two 10GE optical ports for data transmission and line-speed switching. **Table 6-137** lists the differences between the two cards.

Table 6-137 Differences between the ES0D0S24XA00 and ES1D2S24XEC0

Card Name	MAC Address Table Size
ES0D0S24XA00	32K
ES1D2S24XEC0	128K

The ES0D0S24XA00 and ES1D2S24XEC0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-89](#) shows the ES0D0S24XA00.

Figure 6-89 ES0D0S24XA00



[Figure 6-90](#) shows the ES1D2S24XEC0.

Figure 6-90 ES1D2S24XEC0



Version Mapping

[Table 6-138](#) lists the switch chassis and software versions matching the ES0D0S24X.

Table 6-138 Switch chassis and software versions matching the ES0D0S24X

Card Name	S7700 Chassis
ES0D0S24XA00	Supported in V100R003C01 and later versions NOTE The ES0D0S24XA00 is supported.
ES1D2S24XEC0	Supported in V200R002C00 and later versions

Functions and Features

Table 6-139 describes the functions and features of the ES0D0S24XA00 and ES1D2S24XEC0.

Table 6-139 Functions and features of the ES0D0S24XA00 and ES1D2S24XEC0

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	ES0D0S24XA00: 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	● ES0D0S24XA00: 32K ● ES1D2S24XEC0: 128K
IPv4 ACL	● ES0D0S24XA00: 6K for inbound traffic; 1K for outbound traffic ● ES1D2S24XEC0: 38K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● ES0D0S24XA00: 16K ● ES1D2S24XEC0: 128K

Function and Feature	Description
IPv6 ACL	● ES0D0S24XA00: 3K for inbound traffic; 256 for outbound traffic ● ES1D2S24XEC0: 35K for inbound traffic; 256 for outbound traffic
IPv6 FIB	● ES0D0S24XA00: 8K ● ES1D2S24XEC0: 64K
ARP	16K

Indicators and Ports

Indicator Description

Figure 6-91 shows the indicators on the ES0D0S24XA00 and ES1D2S24XEC0 panels.

Figure 6-91 Indicators on the ES0D0S24XA00 and ES1D2S24XEC0 panels

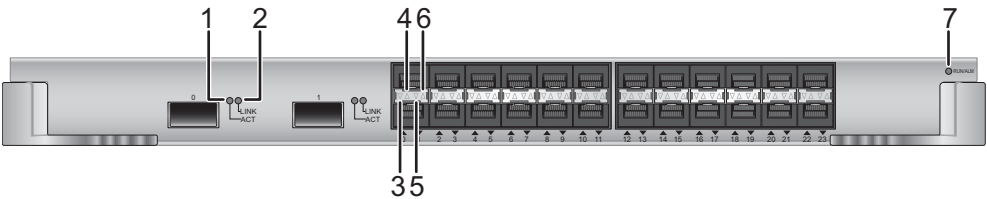


Table 6-140 describes the indicators on the ES0D0S24XA00 and ES1D2S24XEC0 panels.

Table 6-140 Indicators on the ES0D0S24XA00 and ES1D2S24XEC0 panels

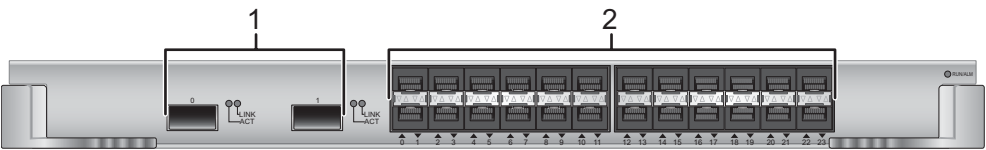
Number	Indicator	Color	Description
1	ACT indicator	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator	Green	Steady on: A link has been established on the port.
3	ACT indicator of lower optical port	Yellow	Blinking: The port is transmitting and receiving data.
4	ACT indicator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

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 6-92 shows the ports on the ES0D0S24XA00 and ES1D2S24XEC0 panels.

Figure 6-92 Ports on the ES0D0S24XA00 and ES1D2S24XEC0 panels



1	Two 10GE BASE-XFP optical ports
2	Twenty-four 100M/1000M BASE-X optical ports

100M/1000M BASE-X optical port

Table 6-141 lists the attributes of a 100M/1000M BASE-X optical port with an optical module installed.

Table 6-141 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 ES0D0S24XA00 or ES1D2S24XEC0 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 6-142 lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-142 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 6-143 lists the attributes of a 10GE BASE-XFP optical port.

Table 6-143 10GE BASE-XFP optical port attributes

Attribute	XFP Description
Connector type	XFP

Attribute	XFP Description
Optical port attribute	Depends on the XFP optical module used. For details about the optical modules supported by the ES0D0S24XA00 and ES1D2S24XEC0 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 6-144 lists specifications of the ES0D0S24XA00 and ES1D2S24XEC0.

Table 6-144 Specifications of the ES0D0S24XA00 and ES1D2S24XEC0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: ES0D0S24XA00: 2.40 kg ES1D2S24XEC0: 2.50 kg ● Maximum power consumption: ES0D0S24XA00: 65 W ES1D2S24XEC0: 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)

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 6-145 provides the ordering information.

Table 6-145 ES0D0S24X ordering information

Part Number	Card Description	Card Model
03030KAR	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EA, SFP/XFP)	ES0D0S24XA00
03030QJU	24-port 100/1000BASE-X and 2-port 10GBASE-X interface card (EC, SFP/XFP)	ES1D2S24XEC0

6.8.3 ES1D2S04SX1E-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 ES1D2S04SX1E 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 ES1D2S04SX1E can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-93](#) shows an ES1D2S04SX1E card.

Figure 6-93 ES1D2S04SX1E card



Version Mapping

[Table 6-146](#) lists the switch chassis and software versions matching the interface card.

Table 6-146 Switch chassis and software versions matching the interface card

Card Name	S7700 Chassis
ES1D2S04SX1E	Supported in V200R005C00 and later versions

Functions and Features

The ES1D2S04SX1E 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 6-147 describes functions and features of the ES1D2S04SX1E.

Table 6-147 Functions and features of the ES1D2S04SX1E

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	512K
IPv6 ACL	16K for inbound and outbound traffic
IPv6 FIB	512K
ARP	64K

Indicators and Ports

Indicator Description

Figure 6-94 shows indicators on the ES1D2S04SX1E panel.

Figure 6-94 Indicators on the ES1D2S04SX1E panel

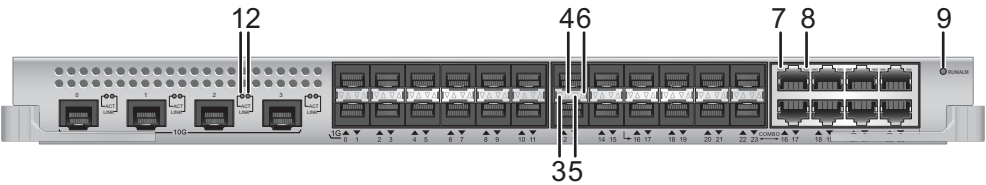


Table 6-148 describes indicators on the ES1D2S04SX1E panel.

Table 6-148 Indicators on the ES1D2S04SX1E panel

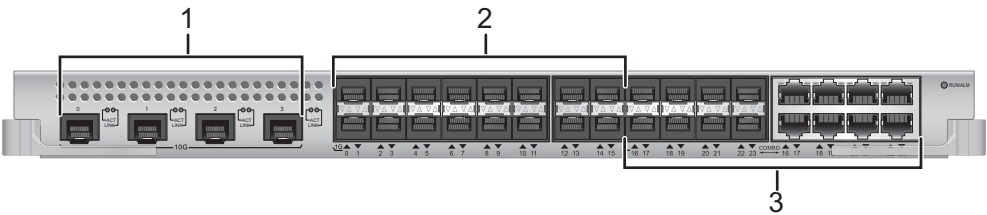
Number	Indicator	Color	Description
1	ACT indicator of a 10GE optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator of a 10GE optical port	Green	Steady on: A link has been established on the port.
3	ACT indicator of a lower GE optical port	Yellow	Blinking: The port 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.

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 6-95 shows ports on the ES1D2S04SX1E panel.

Figure 6-95 Ports on the ES1D2S04SX1E 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 6-149 describes the attributes of a 10GBASE-X port.

Table 6-149 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 ES1D2S04SX1E 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 6-150 describes the attributes of a 100/1000BASE-X port.

Table 6-150 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 ES1D2S04SX1E 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

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 6-151 describes the attributes of a 10/100/1000BASE-T port.

Table 6-151 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 6-152 describes the attributes of a 100/1000BASE-X port.

Table 6-152 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 ES1D2S04SX1E 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 6-153 lists specifications of the ES1D2S04SX1E.

Table 6-153 Specifications of the ES1D2S04SX1E

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

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 6-154 provides ES1D2S04SX1E ordering information.

Table 6-154 ES1D2S04SX1E ordering information

Part Number	Card Name	Card Model
03030RGX	4-port 10GBASE-X and 24-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)	ES1D2S04SX1E

6.8.4 ES1D2S08SX1E-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 ES1D2S08SX1E 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 ES1D2S08SX1E can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

Figure 6-96 shows an ES1D2S08SX1E card.

Figure 6-96 ES1D2S08SX1E card

Version Mapping

Table 6-155 lists the switch chassis and software versions matching the interface card.

Table 6-155 Switch chassis and software versions matching the interface card

Card Name	S7700 Chassis
ES1D2S08SX1E	Supported in V200R005C00 and later versions

Functions and Features

The ES1D2S08SX1E 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 6-156 describes functions and features of the ES1D2S08SX1E.

Table 6-156 Functions and features of the ES1D2S08SX1E

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

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	512K
IPv6 ACL	16K for inbound and outbound traffic
IPv6 FIB	512K
ARP	64K

Indicators and Ports

Indicator Description

Figure 6-97 shows indicators on the ES1D2S08SX1E panel.

Figure 6-97 Indicators on the ES1D2S08SX1E panel

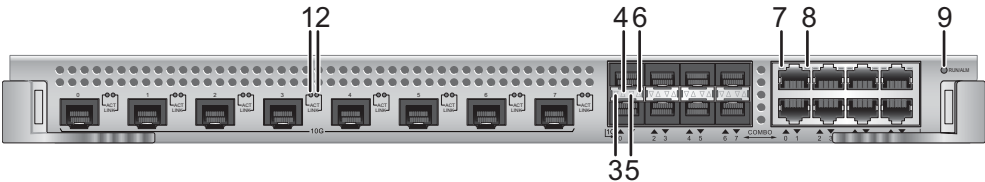


Table 6-157 describes indicators on the ES1D2S08SX1E panel.

Table 6-157 Indicators on the ES1D2S08SX1E panel

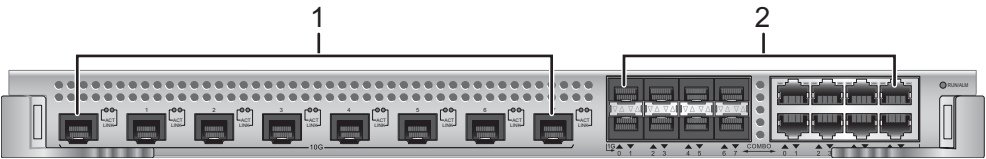
Number	Indicator	Color	Description
1	ACT indicator of a 10GE optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator of a 10GE optical port	Green	Steady on: A link has been established on the port.

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 6-98 shows ports on the ES1D2S08SX1E panel.

Figure 6-98 Ports on the ES1D2S08SX1E 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 6-158 describes the attributes of a 10GBASE-X port.

Table 6-158 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 ES1D2S08SX1E 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.

 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 6-159 describes the attributes of a 10/100/1000BASE-T port.

Table 6-159 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 6-160 describes the attributes of a 100/1000BASE-X port.

Table 6-160 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 ES1D2S08SX1E 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 6-161 lists specifications of the ES1D2S08SX1E.

Table 6-161 Specifications of the ES1D2S08SX1E

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

Ordering Information

To place an order, contact the Huawei local office.

Table 6-162 provides ES1D2S08SX1E ordering information.

Table 6-162 ES1D2S08SX1E ordering information

Part Number	Card Name	Card Model
03030RFX	8-port 10GBASE-X and 8-port 100/1000BASE-X and 8-port 10/100/1000BASE-T combo interface card (X1E, RJ45/SFP/SFP+)	ES1D2S08SX1E

6.9 10GE Interface Card

6.9.1 ES0D0X2UX-2-Port 10GBASE-X Interface Card (XFP)

The 2-port 10GBASE-X interface cards are available in the following models:

- ES0D0X2UXA00: 2-port 10GBASE-X interface card (EA, XFP)
- ES0D0X2UXC00: 2-port 10GBASE-X interface card (EC, XFP)
- ES1D2X02XEC1: 2-port 10GBASE-X interface card (EC, XFP), FCC

 NOTE

The ES0D0X2UXC00 and ES1D2X02XEC1 are the same, except that the ES1D2X02XEC1 has gained an FCC certificate but the ES0D0X2UXC00 has not.

Introduction

The ES0D0X2UXA00 and ES0D0X2UXC00/ES1D2X02XEC1 provide two 10GE optical ports for data transmission and line-speed switching. **Table 6-163** lists the differences between the two cards.

Table 6-163 Differences between the ES0D0X2UXA00 and ES0D0X2UXC00/ES1D2X02XEC1

Card Name	MAC Address Table Size
ES0D0X2UXA00	32K
ES0D0X2UXC00/ES1D2X02XEC1	128K

The ES0D0X2UXA00 and ES0D0X2UXC00/ES1D2X02XEC1 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-99](#) shows the ES0D0X2UXA00.

Figure 6-99 ES0D0X2UXA00



[Figure 6-100](#) shows the ES0D0X2UXC00/ES1D2X02XEC1.

Figure 6-100 ES0D0X2UXC00/ES1D2X02XEC1



Version Mapping

[Table 6-164](#) lists the switch chassis and software versions matching the ES0D0X2UX.

Table 6-164 Switch chassis and software versions matching the ES0D0X2UX

Card Name	S7700 Chassis
ES0D0X2UXA00	Supported in V100R003C01 and later versions
ES0D0X2UXC00	Supported in V100R003C01 and later versions
ES1D2X02XEC1	Supported in V200R003C00 and later versions

Functions and Features

Table 6-165 describes the functions and features of the ES0D0X2UXA00 and ES0D0X2UXC00/ES1D2X02XEC1.

Table 6-165 Functions and features of the ES0D0X2UXA00 and ES0D0X2UXC00/ES1D2X02XEC1

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	● ES0D0X2UXA00: 32K ● ES0D0X2UXC00/ES1D2X02XEC1: 128K
IPv4 ACL	● ES0D0X2UXA00: 6K for inbound traffic; 1K for outbound traffic ● ES0D0X2UXC00/ES1D2X02XEC1: 38K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● ES0D0X2UXA00: 16K ● ES0D0X2UXC00/ES1D2X02XEC1: 128K
IPv6 ACL	● ES0D0X2UXA00: 3K for inbound traffic; 256 for outbound traffic ● ES0D0X2UXC00/ES1D2X02XEC1: 35K for inbound traffic; 256 for outbound traffic
IPv6 FIB	● ES0D0X2UXA00: 8K ● ES0D0X2UXC00/ES1D2X02XEC1: 64K
ARP	16K

Indicators and Ports

Indicator Description

Figure 6-101 shows the indicators on the ES0D0X2UXA00 or ES0D0X2UXC00/ES1D2X02XEC1 panel.

Figure 6-101 Indicators on the ES0D0X2UXA00 or ES0D0X2UXC00/ES1D2X02XEC1 panel

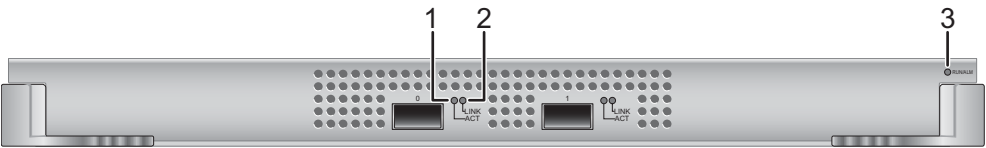


Table 6-166 describes the indicators on the ES0D0X2UXA00 or ES0D0X2UXC00/ES1D2X02XEC1 panel.

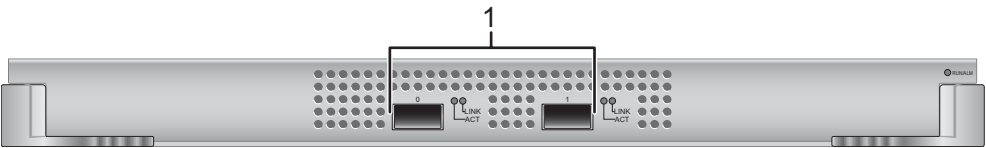
Table 6-166 Indicators on the ES0D0X2UXA00 or ES0D0X2UXC00/ES1D2X02XEC1 panel

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 6-102 shows the ports on the ES0D0X2UXA00 or ES0D0X2UXC00/ES1D2X02XEC1 panel.

Figure 6-102 Ports on the ES0D0X2UXA00 or ES0D0X2UXC00/ES1D2X02XEC1 panel



1	Two 10GE BASE-XFP optical ports
---	---------------------------------

10GE BASE-XFP optical port

Table 6-167 lists the attributes of a 10GE BASE-XFP optical port.

Table 6-167 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 ES0D0X2UXA00 and ES0D0X2UXC00/ES1D2X02XEC1 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 6-168 lists specifications of the ES0D0X2UXA00 and ES0D0X2UXC00/ES1D2X02XEC1.

Table 6-168 Specifications of the ES0D0X2UXA00 and ES0D0X2UXC00/ES1D2X02XEC1

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: ES0D0X2UXA00: 2.14 kg ES0D0X2UXC00/ES1D2X02XEC1: 2.26 kg ● Maximum power consumption: ES0D0X2UXA00: 52 W ES0D0X2UXC00/ES1D2X02XEC1: 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

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 6-169 provides the ordering information.

Table 6-169 ES0D0X2UX ordering information

Part Number	Card Description	Card Model
03030LWF	2-port 10GBASE-X interface card (EA, XFP)	ES0D0X2UXA00
03030LKV	2-port 10GBASE-X interface card (EC, XFP)	ES0D0X2UXC00
03030RCV	2-port 10GBASE-X interface card (EC, XFP), FCC	ES1D2X02XEC1

6.9.2 ES0D0X4UX-4-Port 10GBASE-X Interface Card (XFP)

The 4-port 10GBASE-X interface cards are available in the following models:

- ES0D0X4UXA00: 4-port 10GBASE-X interface card (EA, XFP)
- ES0D0X4UXC00: 4-port 10GBASE-X interface card (EC, XFP)
- ES1D2X04XEC1: 4-port 10GBASE-X interface card (EC, XFP), FCC
- ES1D2X04XED0: 4-port 10GBASE-X interface card (ED, XFP)

NOTE

The ES0D0X4UXC00 and ES1D2X04XEC1 are the same, except that the ES1D2X04XEC1 has gained an FCC certificate but the ES0D0X4UXC00 has not.

Introduction

The ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, and ES1D2X04XED0 provide four 10GE optical ports for data transmission and line-speed switching. **Table 6-170** lists their differences.

Table 6-170 Differences among the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, and ES1D2X04XED0

Card Name	MAC Address Table Size
ES0D0X4UXA00	32K
ES0D0X4UXC00/ES1D2X04XEC1	128K
ES1D2X04XED0	512K

The ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, and ES1D2X04XED0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

Figure 6-103 shows the ES0D0X4UXA00.

Figure 6-103 ES0D0X4UXA00



Figure 6-104 shows the ES0D0X4UXC00/ES1D2X04XEC1.

Figure 6-104 ES0D0X4UXC00/ES1D2X04XEC1



Figure 6-105 shows the ES1D2X04XED0.

Figure 6-105 ES1D2X04XED0



Version Mapping

Table 6-171 lists the switch chassis and software versions matching the ES0D0X4UX.

Table 6-171 Switch chassis and software versions matching the ES0D0X4UX

Card Name	S7700 Chassis
ES0D0X4UXA00	Supported in V100R003C01 and later versions
ES0D0X4UXC00	Supported in V100R003C01 and later versions
ES1D2X04XEC1	Supported in V200R003C00 and later versions
ES1D2X04XED0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-172 describes the functions and features of the ES0D0X4UXA00, ES0D0X4UXC00/ ES1D2X04XEC1, and ES1D2X04XED0.

Table 6-172 Functions and features of the ES0D0X4UXA00, ES0D0X4UXC00/ ES1D2X04XEC1, and ES1D2X04XED0

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

Function and Feature	Description
Buffer	4 MB
Software feature	ES0D0X4UXA00, ES0D0X4UXC00/ ES1D2X04XEC1 support NetStream.
Jumbo frame	A maximum of 12 Kbytes The jumbo frame size can be set using the jumboframe enable command.
MAC table size	● ES0D0X4UXA00: 32K ● ES0D0X4UXC00/ES1D2X04XEC1: 128K ● ES1D2X04XED0: 512K
IPv4 ACL	● ES0D0X4UXA00: 6K for inbound traffic; 1K for outbound traffic ● ES0D0X4UXC00/ES1D2X04XEC1: 38K for inbound traffic; 1K for outbound traffic ● ES1D2X04XED0: 70K for inbound traffic; 1K for outbound traffic
IPv4 FIB	● ES0D0X4UXA00: 16K ● ES0D0X4UXC00/ES1D2X04XEC1: 128K ● ES1D2X04XED0: 512K
IPv6 ACL	● ES0D0X4UXA00: 3K for inbound traffic; 256 for outbound traffic ● ES0D0X4UXC00/ES1D2X04XEC1: 35K for inbound traffic; 256 for outbound traffic ● ES1D2X04XED0: 67K for inbound traffic; 256 for outbound traffic
IPv6 FIB	● ES0D0X4UXA00: 8K ● ES0D0X4UXC00/ES1D2X04XEC1: 64K ● ES1D2X04XED0: 256K
ARP	16K

Indicators and Ports

Indicator Description

Figure 6-106 shows the indicators on the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, or ES1D2X04XED0 panels.

Figure 6-106 Indicators on the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, or ES1D2X04XED0 panels



Table 6-173 describes the indicators on the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, or ES1D2X04XED0 panels.

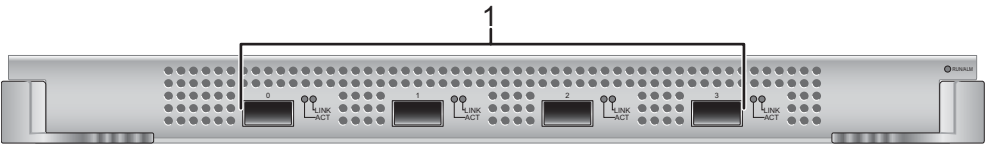
Table 6-173 Indicators on the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, or ES1D2X04XED0 panels

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 6-107 shows the ports on the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, or ES1D2X04XED0 panels.

Figure 6-107 Ports on the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, or ES1D2X04XED0 panels



1	Four 10GE BASE-XFP optical ports
---	----------------------------------

10GE BASE-XFP optical port

Table 6-174 lists the attributes of a 10GE BASE-XFP optical port.

Table 6-174 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 ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, and ES1D2X04XED0 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 6-175 lists specifications of the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, and ES1D2X04XED0.

Table 6-175 Specifications of the ES0D0X4UXA00, ES0D0X4UXC00/ES1D2X04XEC1, and ES1D2X04XED0

Item	Description
Physical specifications	● Dimensions (W x D x H): 394.7 mm x 426.8 mm x 35.1 mm ● Weight: ES0D0X4UXA00: 2.16 kg ES0D0X4UXC00/ES1D2X04XEC1: 2.28 kg ES1D2X04XED0: 2.30 kg ● Maximum power consumption: ES0D0X4UXA00: 64 W ES0D0X4UXC00/ES1D2X04XEC1: 75 W ES1D2X04XED0: 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

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 6-176 provides the ordering information.

Table 6-176 ES0D0X4UX order information

Part Number	Card Description	Card Model
03030KSM	4-port 10GBASE-X interface card (EA, XFP)	ES0D0X4UXA00
03030KAP	4-port 10GBASE-X interface card (EC, XFP)	ES0D0X4UXC00
03030RCX	4-port 10GBASE-X interface card (EC, XFP), FCC	ES1D2X04XEC1
03030PGL	4-port 10GBASE-X interface card (ED, XFP)	ES1D2X04XED0

6.9.3 ES1D2X08SED4/ES1D2X08SED5-8-Port 10GBASE-X Interface Card (ED, SFP+)

NOTE

The ES1D2X08SED4 and ES1D2X08SED5 are the same, except that the ES1D2X08SED5 has gained an FCC certificate but the ES1D2X08SED4 has not.

Introduction

The ES1D2X08SED4/ES1D2X08SED5 provides eight 10GE BASE-X optical ports for data transmission and line-speed switching.

The ES1D2X08SED4/ES1D2X08SED5 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-108](#) shows the ES1D2X08SED4/ES1D2X08SED5.

Figure 6-108 ES1D2X08SED4/ES1D2X08SED5



Version Mapping

[Table 6-177](#) lists the switch chassis and software versions matching the ES1D2X08SED4/ES1D2X08SED5.

Table 6-177 Switch chassis and software versions matching the ES1D2X08SED4/ES1D2X08SED5

Card Name	S7700 Chassis
ES1D2X08SED4	Supported in V200R002C00 and later versions
ES1D2X08SED5	Supported in V200R002C00 and later versions

Functions and Features

[Table 6-178](#) describes the functions and features of the ES1D2X08SED4/ES1D2X08SED5.

Table 6-178 Functions and features of the ES1D2X08SED4/ES1D2X08SED5

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	16K

Usage Constraints



NOTICE

When ports on an ES1D2X08SED4/ES1D2X08SED5 card need to be used to set up a CSS, the card can only be installed on S7712 or S7706 chassis and must use **10G optical modules or 10G cables**.

Indicators and Ports

Indicator Description

Figure 6-109 shows the indicators on the ES1D2X08SED4/ES1D2X08SED5 panel.

Figure 6-109 Indicators on the ES1D2X08SED4/ES1D2X08SED5 panel

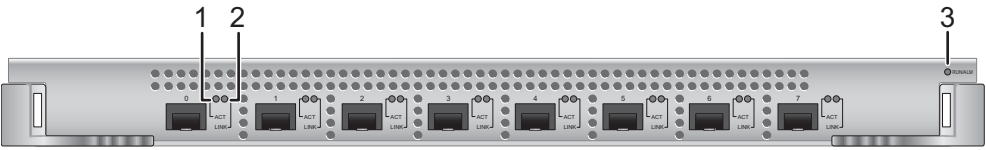


Table 6-179 describes the indicators on the ES1D2X08SED4/ES1D2X08SED5 panel.

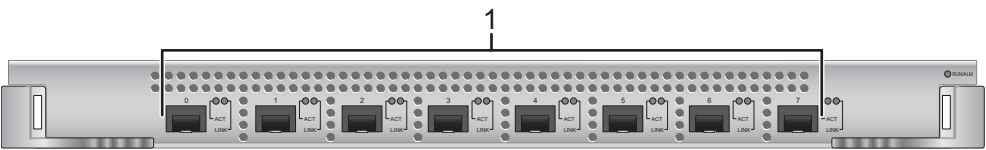
Table 6-179 Indicators on the ES1D2X08SED4/ES1D2X08SED5 panel

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 6-110 shows the ports on the ES1D2X08SED4/ES1D2X08SED5 panel.

Figure 6-110 Ports on the ES1D2X08SED4/ES1D2X08SED5 panel



1	Eight 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 6-180](#) lists the attributes of a 1000M BASE-X optical port, and [Table 6-181](#) lists the attributes of a 10GE BASE-SFP+ optical port. [Table 6-182](#) lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-180 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 ES1D2X08SED4/ES1D2X08SED5, see Attributes of a GE optical module , Attributes of a CWDM optical module , and Attributes of a DWDM optical module .
Standards compliance	IEEE802.3z
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-181 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 ES1D2X08SED4/ES1D2X08SED5, 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

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Table 6-182 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 6-183 lists specifications of the ES1D2X08SED4/ES1D2X08SED5.

Table 6-183 Specifications of the ES1D2X08SED4/ES1D2X08SED5

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
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)

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 6-184 provides the ordering information.

Table 6-184 ES1D2X08SED4/ES1D2X08SED5 ordering information

Part Number	Card Description	Card Model
03030PQB	8-port 10GBASE-X interface card (ED, SFP+)	ES1D2X08SED4
03030PQD	8-port 10GBASE-X interface card (ED, SFP+), FCC	ES1D2X08SED5

6.9.4 ES0D0X12SA00-12-Port 10GBASE-X Interface Card (SA, SFP+)

Introduction

The ES0D0X12SA00 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 ES0D0X12SA00 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-111](#) shows the ES0D0X12SA00.

Figure 6-111 ES0D0X12SA00



Version Mapping

[Table 6-185](#) lists the switch chassis and software versions matching the ES0D0X12SA00.

Table 6-185 Switch chassis and software versions matching the ES0D0X12SA00

Card Name	S7700 Chassis
ES0D0X12SA00	Supported in V100R006C00 and later versions

Functions and Features

Table 6-186 describes the functions and features of the ES0D0X12SA00.

Table 6-186 Functions and features of the ES0D0X12SA00

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	8K

Usage Constraints

 NOTICE

When ports on an ES0D0X12SA00 card need to be used to set up a CSS, the card can only be installed on S7712 or S7706 chassis.

The ES0D0X12SA00 can be installed in any LPU slot on the S7703 and S7706 to provide line-speed switching. When an ES0D0X12SA00 card is installed in an S7712 chassis:

- If the S7712 uses ES0D00SRUB00, the ES0D0X12SA00 supports line-speed forwarding only when it is installed in slot 6 or slot 7.
- If the S7712 uses ES0D00SRUA00, the ES0D0X12SA00 does not support line-speed forwarding regardless of in which LPU slot it is installed.

Indicators and Ports

Indicator Description

Figure 6-112 shows the indicators on the ES0D0X12SA00 panel.

Figure 6-112 Indicators on the ES0D0X12SA00 panel

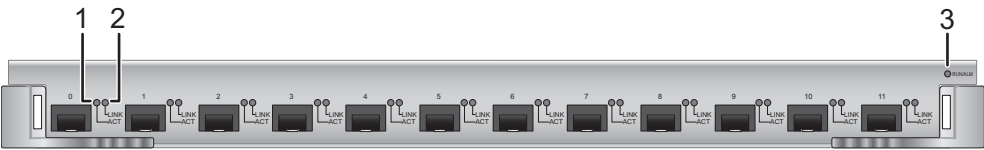


Table 6-187 describes the indicators on the ES0D0X12SA00 panel.

Table 6-187 Indicators on the ES0D0X12SA00 panel

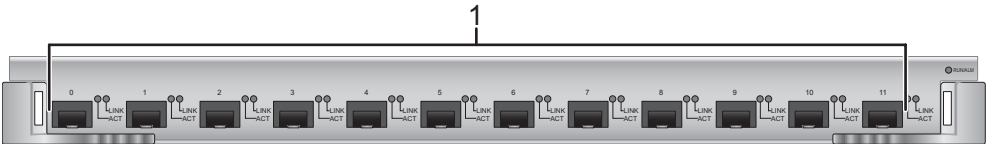
Number	Indicator	Color	Description
1	ACT indicator of an optical port	Yellow	Blinking: The port is transmitting and receiving data.
2	LINK indicator of an optical port	Green	Steady on: A link has been established on the port.
3	RUN/ALM: running status indicator	Green	Steady on: The card has been powered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

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 6-113 shows the ports on the ES0D0X12SA00 panel.

Figure 6-113 Ports on the ES0D0X12SA00 panel



1	Twelve 10GE BASE-SFP+ optical ports (can be used to set up a CSS)
---	---

10GE BASE-SFP+ optical port

Table 6-188 lists the attributes of a 10GE BASE-SFP+ optical port.

Table 6-188 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 ES0D0X12SA00 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

Attribute	Description
Frame format	Ethernet_II, Ethernet_SAP, Ethernet_SNAP
Network protocol	IP

Specifications

Table 6-189 lists specifications of the ES0D0X12SA00.

Table 6-189 Specifications of the ES0D0X12SA00.

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

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 6-190 provides the ordering information.

Table 6-190 ES0D0X12SA00 ordering information

Part Number	Card Description	Card Model
03030NFY	12-port 10GBASE-X interface card (SA, SFP+)	ES0D0X12SA00

6.9.5 ES1D2X16SFC0 16-Port 10GBASE-X Interface Card (FC, SFP+)

Introduction

The ES1D2X16SFC0 provides sixteen 1000M/10GE BASE-X optical ports for data transmission and switching.

The ES1D2X16SFC0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

Figure 6-114 shows the ES1D2X16SFC0.

Figure 6-114 ES1D2X16SFC0

Version Mapping

Table 6-191 lists the switch chassis and software versions matching the ES1D2X16SFC0.

Table 6-191 Switch chassis and software versions matching the ES1D2X16SFC0

Card Name	S7700 Chassis
ES1D2X16SFC0	Supported in V200R001C00 and later versions NOTE The ES1D2X16SFC0 is supported.

Functions and Features

Table 6-192 describes the functions and features of the ES1D2X16SFC0.

Table 6-192 Functions and features of the ES1D2X16SFC0

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.

Function and Feature	Description
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	8K

Usage Constraints

**NOTICE**

When ports on an ES1D2X16SFC0 card need to be used to set up a CSS, the card can only be installed on S7712 or S7706 chassis and must use **10G optical modules or 10G cables**.

Indicators and Ports

Indicator Description

Figure 6-115 shows the indicators on the ES1D2X16SFC0 panel.

Figure 6-115 Indicators on the ES1D2X16SFC0 panel

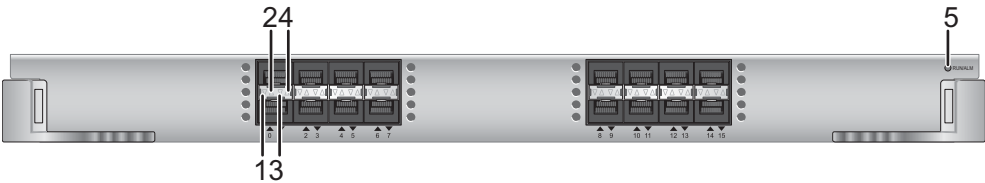


Table 6-193 describes the indicators on the ES1D2X16SFC0 panel.

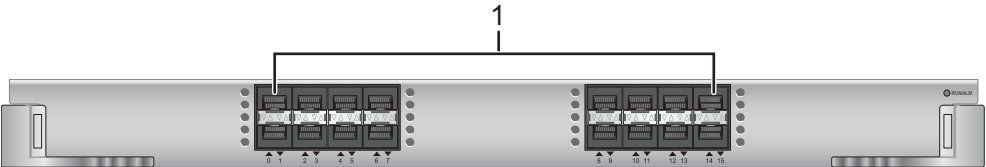
Table 6-193 Indicators on the ES1D2X16SFC0 panel

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 6-116 shows the ports on the ES1D2X16SFC0 panel.

Figure 6-116 Ports on the ES1D2X16SFC0 panel



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 6-194](#) lists the attributes of a 1000M BASE-X optical port, and [Table 6-195](#) lists the attributes of a 10GE BASE-SFP+ optical port. [Table 6-196](#) lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-194 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 ES1D2X16SFC0 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 6-195 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 ES1D2X16SFC0 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 6-196 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 6-197](#) lists specifications of the ES1D2X16SFC0.

Table 6-197 Specifications of the ES1D2X16SFC0

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)

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 6-198 provides the ordering information.

Table 6-198 ES1D2X16SFC0 ordering information

Part Number	Card Description	Card Model
03030PGP	16-port 10GBASE-X interface card (FC, SFP+)	ES1D2X16SFC0

6.9.6 ES1D2X40SFC0 40-Port 10GBASE-X Interface Card (FC, SFP+)

Introduction

The ES1D2X40SFC0 provides forty 10GE BASE-X optical ports for data transmission and switching.

This ES1D2X40SFC0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-117](#) shows the ES1D2X40SFC0.

Figure 6-117 ES1D2X40SFC0



Version Mapping

[Table 6-199](#) lists the switch chassis and software versions matching the ES1D2X40SFC0.

Table 6-199 Switch chassis and software versions matching the ES1D2X40SFC0

Card Name	S7700 Chassis
ES1D2X40SFC0	Supported in V200R001C00 and later versions

Functions and Features

Table 6-200 describes the functions and features of the ES1D2X40SFC0.

Table 6-200 Functions and features of the ES1D2X40SFC0

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	8K

Usage Constraints



When ports on an ES1D2X40SFC0 card need to be used to set up a CSS, the card can only be installed on S7712 or S7706 chassis and must use **10G optical modules or 10G cables**.

Indicators and Ports

Indicator Description

Figure 6-118 shows the indicators on the ES1D2X40SFC0 panel.

Figure 6-118 Indicators on the ES1D2X40SFC0 panel

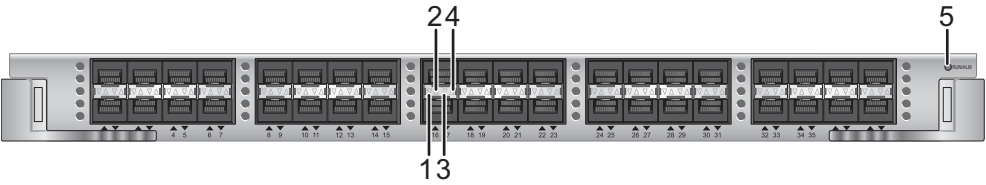


Table 6-201 describes the indicators on the ES1D2X40SFC0 panel.

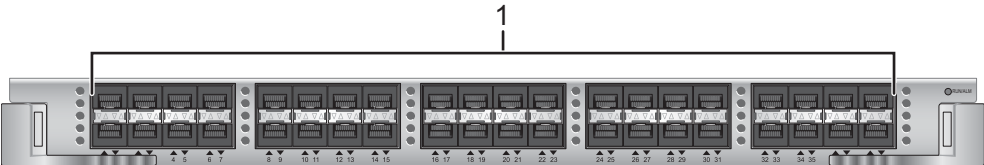
Table 6-201 Indicators on the ES1D2X40SFC0 panel

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 6-119 shows the ports on the ES1D2X40SFC0 panel.

Figure 6-119 Ports on the ES1D2X40SFC0 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 6-120. 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 6-121.

Figure 6-120 Three-layer cabling in cable management frame (side view)

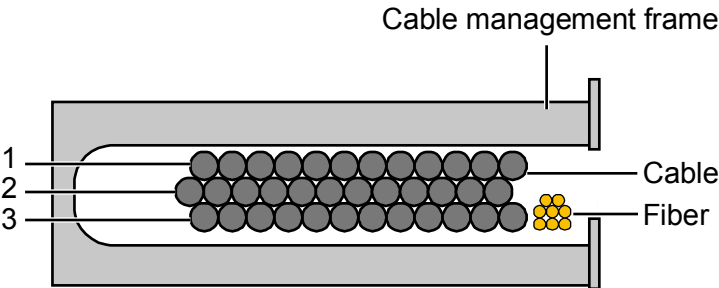


Figure 6-121 Arrangement of optical fibers and SFP+ cables



10GE BASE-SFP+/1000M BASE-X optical port

10GE BASE-SFP+/1000M BASE-X optical ports support 10GE and GE auto sensing. Table 6-202 lists the attributes of a 1000M BASE-X optical port, and Table 6-203 lists the attributes

of a 10GE BASE-SFP+ optical port. [Table 6-204](#) lists the attributes of a 100M/1000M BASE-X optical port with a copper module installed.

Table 6-202 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 ES1D2X40SFC0 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

Table 6-203 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 ES1D2X40SFC0 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 6-204 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 6-205 lists specifications of the ES1D2X40SFC0.

Table 6-205 Specifications of the ES1D2X40SFC0

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)

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 6-206 provides the ordering information.

Table 6-206 ES1D2X40SFC0 ordering information

Part Number	Card Description	Card Model
03030PGQ	40-port 10GBASE-X interface card (FC, SFP+)	ES1D2X40SFC0

6.10 40GE Interface Card

6.10.1 ES1D2L02QFC0-2-Port 40GBASE-X Interface Card (FC, QSFP+)

Introduction

The ES1D2L02QFC0 card provides two 40GE optical ports for data transmission and line-speed switching.

The ES1D2L02QFC0 can be installed in:

- Slots 01 to 03 in an S7703 chassis, as shown in [Slot layout on the S7703 chassis \(front\)](#).
- Slots 01 to 06 in an S7706 chassis, as shown in [Slot layout on the S7706 chassis \(front\)](#).
- Slots 01 to 12 in an S7712 chassis, as shown in [Slot layout on the S7712 chassis \(front\)](#).

[Figure 6-122](#) shows the ES1D2L02QFC0.

Figure 6-122 ES1D2L02QFC0



Version Mapping

[Table 6-207](#) lists the switch chassis and software versions matching the ES1D2L02QFC0.

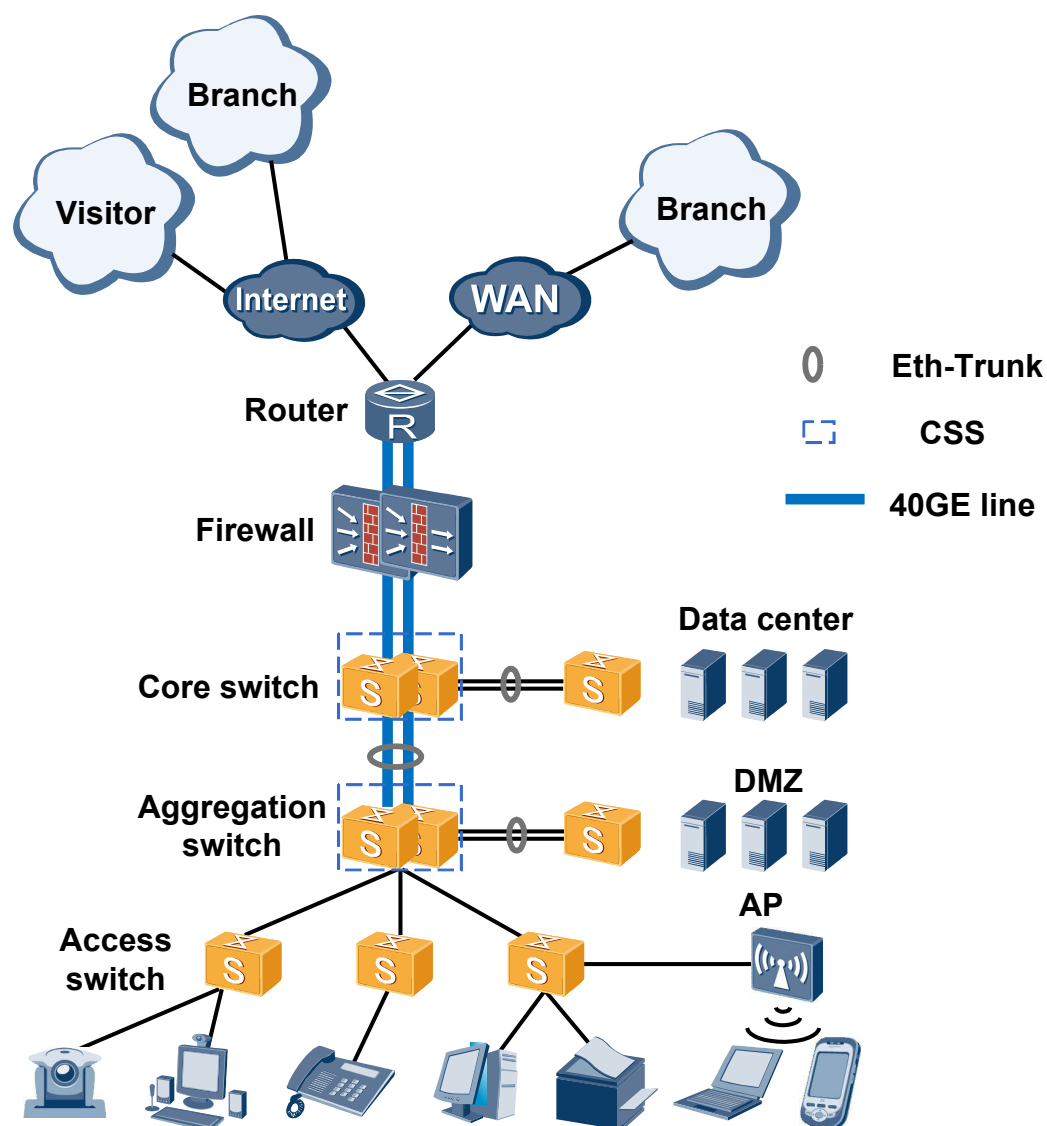
Table 6-207 Switch chassis and software versions matching the ES1D2L02QFC0

Card Name	S7700 Chassis
ES1D2L02QFC0	Supported in V200R002C00 and later versions

Application

A 40GE network can be established by installing 40GE cards on aggregation switches and core switches, as shown in [Figure 6-123](#).

Figure 6-123 40GE cards deployed on a campus network



The S7700 supports 40 GE card ES1D2L02QFC0. 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 the HD video conference bearer network. As shown in [Figure 6-123](#), 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 6-208](#) describes the functions and features of the ES1D2L02QFC0.

Table 6-208 Functions and features of the ES1D2L02QFC0

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
IPv4 ACL	1K for inbound traffic; 512 for outbound traffic
IPv4 FIB	16K

Function and Feature	Description
IPv6 ACL	512 for inbound traffic; 128 for outbound traffic
IPv6 FIB	8K
ARP	16K

Usage Constraints

 **NOTICE**

When ports on an ES1D2L02QFC0 card need to be used to set up a CSS, the card can only be installed on S7712 or S7706 chassis.

The ES1D2L02QFC0 can forward packets at line speed in any LPU slot on the S7703 and S7706. The ES1D2L02QFC0 can forward packets at line speed in only slot 6 and slot 7 of the S7712.

Indicators and Ports

Indicator Description

Figure 6-124 shows the indicators on the ES1D2L02QFC0 panel.

Figure 6-124 Indicators on the ES1D2L02QFC0 panel



Table 6-209 describes the indicators on the ES1D2L02QFC0 panel.

Table 6-209 Indicators on the ES1D2L02QFC0 panel

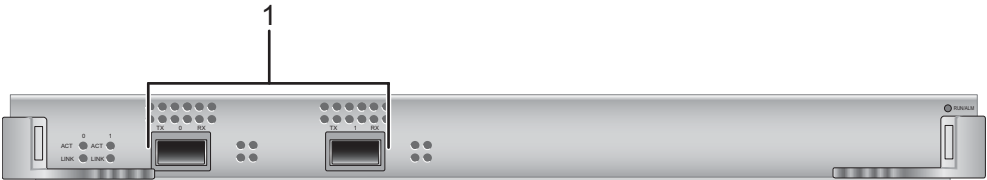
Number	Indicator	Color	Description
1	ACT	Yellow	Blinking: The port is transmitting and receiving data.

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 6-125 shows the ports on the ES1D2L02QFC0 panel.

Figure 6-125 Ports on the ES1D2L02QFC0 panel



1	Two 40GE BASE-X optical ports
---	-------------------------------

40GE BASE-X optical port

Table 6-210 lists the attributes of a 40GE BASE-X optical port.

Table 6-210 40GE BASE-X optical port attributes

Attribute	Description
Connector type	QSFP+

Attribute	Description
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 ES1D2L02QFC0 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 6-211](#) describes specifications of the ES1D2L02QFC0.

Table 6-211 Specifications of the ES1D2L02QFC0

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)

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 6-212 provides the ordering information.

Table 6-212 ES1D2L02QFC0 ordering information

Part Number	Card Description	Card Model
03030PFQ	2-port 40GBASE-X interface card (FC, QSFP+)	ES1D2L02QFC0

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 Ethernet Cable](#)
- [7.6 High-Speed Cable](#)
- [7.7 Optical Fiber](#)

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 OT or JG terminals are connected to power modules.

- DC power cable with an OT terminal: as shown in [Figure 7-1](#)
- DC power cable with a JG terminal: as shown in [Figure 7-2](#)

Figure 7-1 DC power cable with an OT terminal

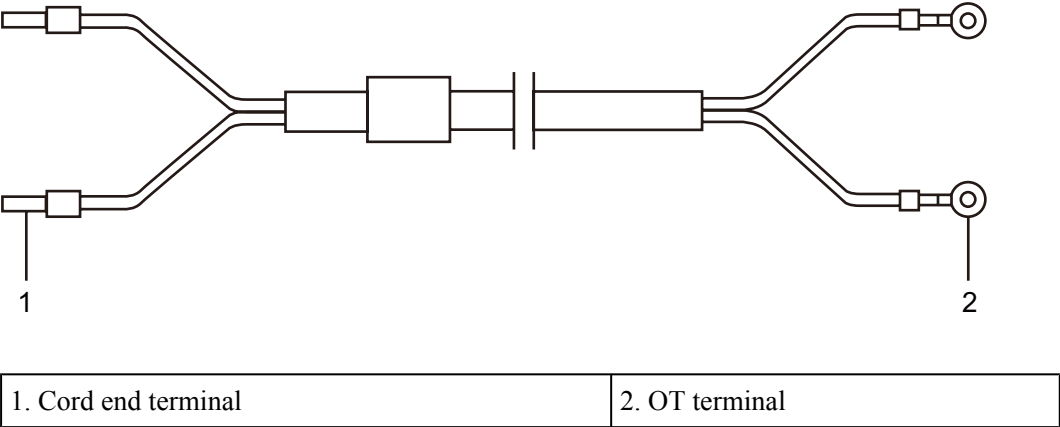
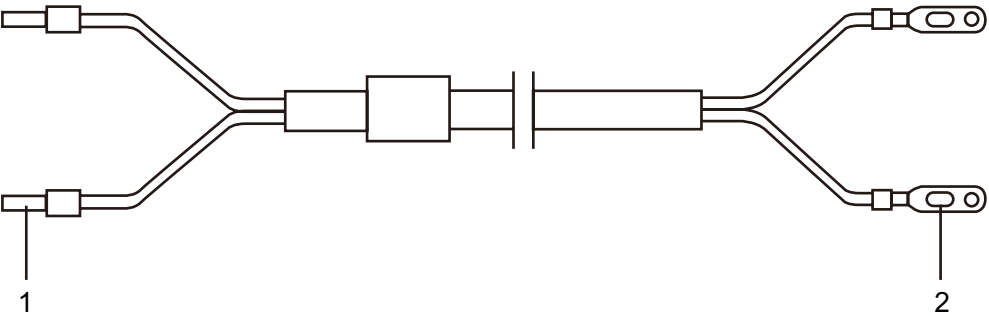


Figure 7-2 DC power cable with a JG terminal



Connection

Different DC power cables are connected as follows:

- DC power cables with OT terminals: The cord end terminal connects to a power distribution box or power distribution frame, and the OT terminal connects to a 1600 W DC power module.
- DC power cables with JG terminals: 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



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 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 7-3** shows the structure of a C13 straight female to C14 straight male AC power cable, and **Figure 7-4** shows the structure of a C19 straight female to C20 straight male 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, C13 straight female to PI angle male AC power cables (**Figure 7-5**) and C19 straight female to PI angle male AC power cables (**Figure 7-6**) are used in China.
- The AC power cables connected to a power distribution box must have cord end terminals. **Figure 7-7** shows the structure of C13 straight female to cord end AC power cable. **Figure 7-8** shows the structure of a C19 straight female to cord end AC power cable.

Figure 7-3 Structure of a C13 straight female to C14 straight male AC power cable

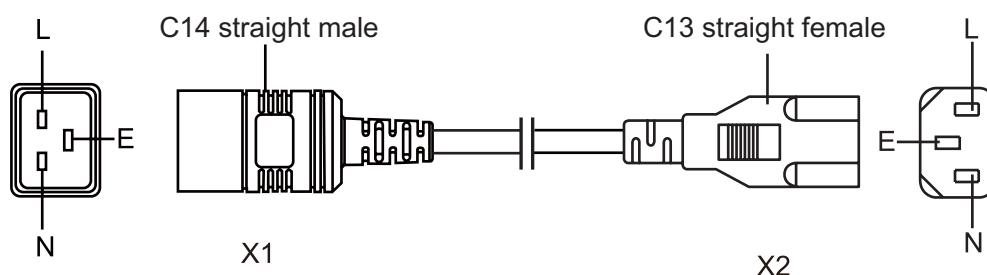


Figure 7-4 Structure of a C19 straight female to C20 straight male AC power cable

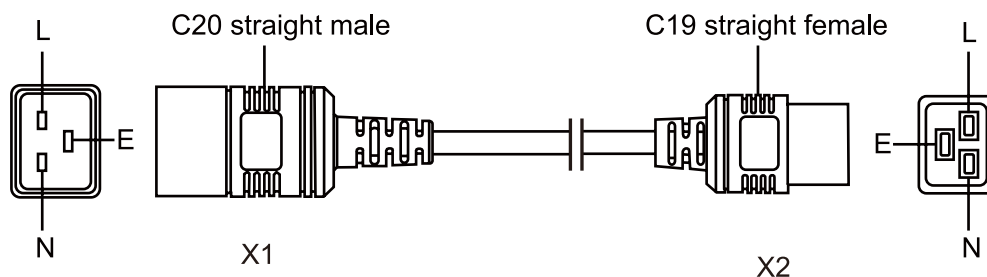


Figure 7-5 Structure of a C13 straight female to PI angle male AC power cable (used in China)

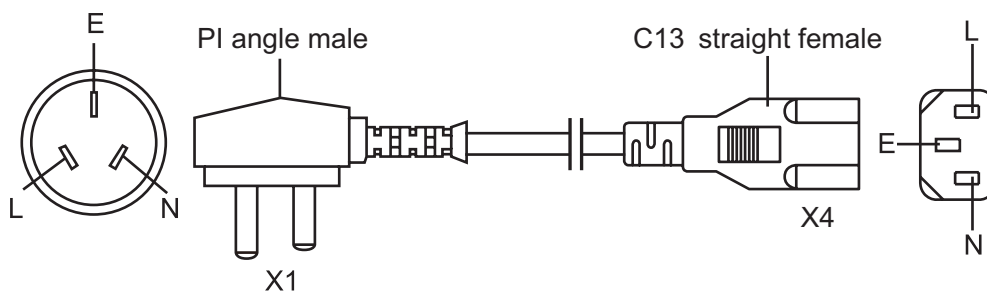


Figure 7-6 Structure of a C19 straight female to PI angle male AC power cable (used in China)

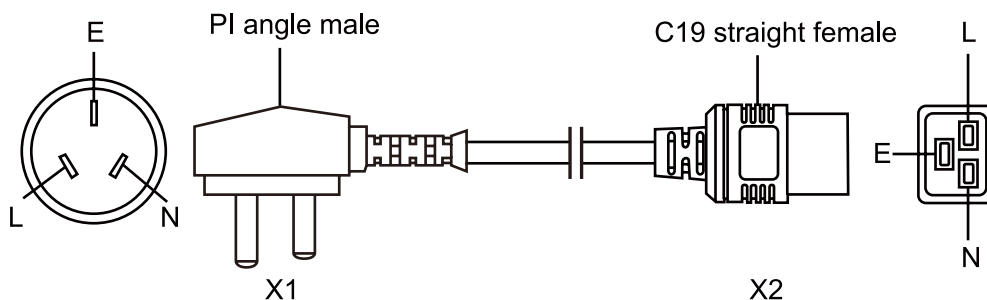


Figure 7-7 Structure of a C13 straight female to cord end AC power cable (used in China)

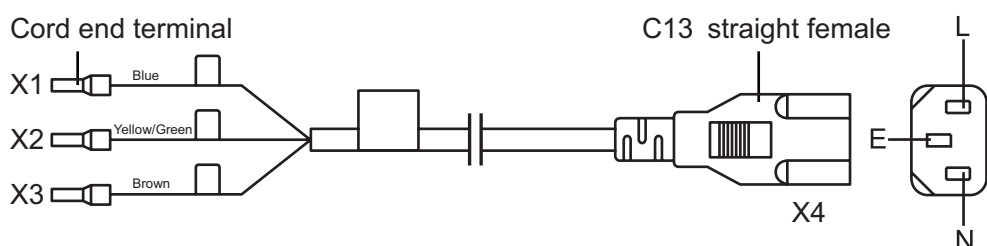
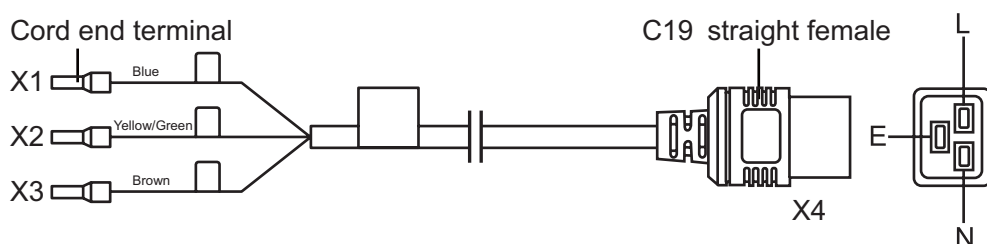


Figure 7-8 Structure of a C19 straight female to cord end AC power cable (used in China)



Connection

Different AC power cables are connected as follows:

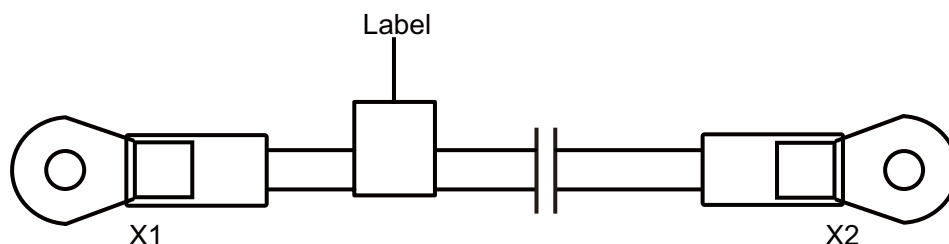
- Standard power cables: The C19 or C13 connector connects to the power socket on a power module, and the other end connects to a PDU.
- Country-specific power cables: The C19 or C13 connector connects to the power socket on a power module, and the other end connects to a country-specific power strip.
- AC power cables with cord end terminals: The C19 or C13 connector connects to the power socket on a power module, and the other end connects to a power distribution box or power distribution frame.

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.

Figure 7-9 shows the structure of a ground cable.

Figure 7-9 Structure of a ground cable



7.4 Console Cable

Console Cables Types

A console cable connects the S7700 console port to the serial port of a configuration terminal to transmit configuration data.

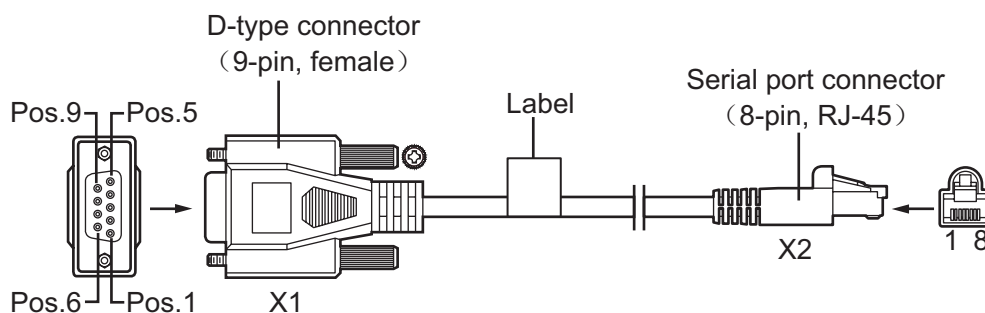
Console cables include the following types:

- Shielded console cable
- Unshielded console cable

Appearance and Structure

Figure 7-10 shows the structure of a console cable.

Figure 7-10 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.

7.5 Ethernet Cable

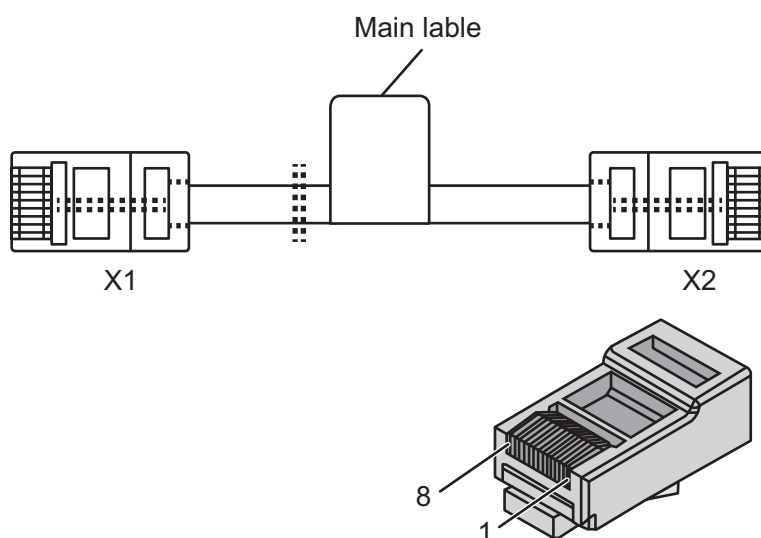
Types of Ethernet Cables

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 7-11](#).

Figure 7-11 Structure of a network cable



Pin Assignments

Table 7-1 lists pin assignments of a straight-through cable.

Table 7-1 Pin assignments of a straight-through cable

Connector X1	Connector X2	Color	Relationship
X1.2	X2.2	Orange	Twisted pair
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 7-2 lists pin assignments of a crossover cable.

Table 7-2 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
- A router and a computer
- Two hubs
- A hub and a switch
- Two switches
- Two computers

7.6 High-Speed Cable

Types of High-Speed Cable

High-speed cables are classified into three types, as described in [Table 7-3](#).

Table 7-3 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 ● 10 m QSFP+ - QSFP+ high-speed cable	● Minimum clearance for cable routing: 77.8 mm ● Minimum bend radius: 50.8 mm

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 7-12](#). Keep the top side down when inserting the QSFP+ cable plug to a port on a CSS card. Keep the top side up when inserting the QSFP+ cable plug into another port.

Both ends of a QSFP+ high-speed cable must be covered by ESD caps.

Figure 7-12 QSFP+ cable plug



Appearance and Structure

[Figure 7-13](#) shows an SFP+ - SFP+ high-speed cable.

Figure 7-13 SFP+ - SFP+ high-speed cable



Figure 7-14 shows a QSFP+ - QSFP+ high-speed cable.

Figure 7-14 QSFP+ - QSFP+ high-speed cable



Figure 7-15 shows a QSFP+ - 4*SFP+ high-speed cable.

Figure 7-15 QSFP+ - 4*SFP+ high-speed cable



Figure 7-16 shows the structure of an SFP+ - SFP+ high-speed cable.

Figure 7-16 Structure of an SFP+ - SFP+ high-speed cable

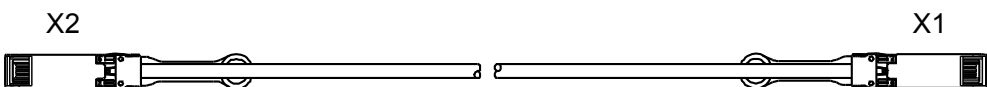
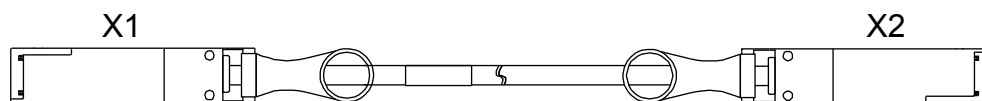


Figure 7-17 shows the structure of a QSFP+ - QSFP+ high-speed cable.

Figure 7-17 Structure of a QSFP+ - QSFP+ high-speed cable

Front view:



Rear view:

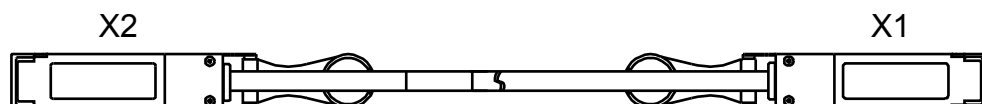
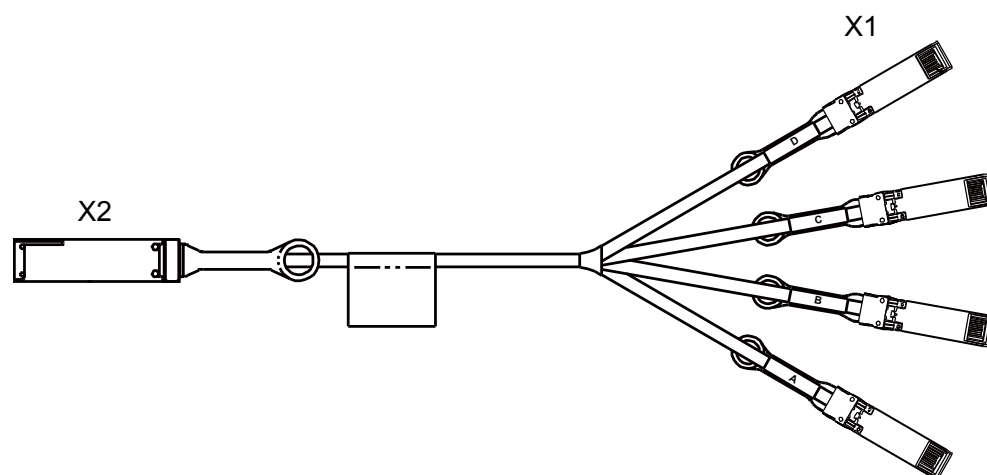


Figure 7-18 shows the structure of a QSFP+ - 4*SFP+ high-speed cable.

Figure 7-18 Structure of a QSFP+ - 4*SFP+ high-speed cable



7.7 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 7-19** shows an AOC cable.

Figure 7-19 AOC cable



Table 7-4 lists the models and attributes of AOC cables.

Table 7-4 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 7-20 shows a single-mode LC/PC fiber jumper.

Figure 7-20 Single-mode LC/PC fiber jumper



Figure 7-21 shows a multimode LC/PC fiber jumper.

Figure 7-21 Multimode LC/PC fiber jumper



Figure 7-22 shows a single-mode SC/PC fiber jumper.

Figure 7-22 Appearance of a single-mode SC/PC fiber jumper



Figure 7-23 shows an MPO-MPO fiber jumper.

Figure 7-23 MPO-MPO fiber jumper



Figure 7-24 shows an MPO-4*DLC fiber jumper.

Figure 7-24 MPO-4*DLC fiber jumper



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 7-25 shows the structure of an MPO-MPO fiber jumper.

Figure 7-25 Structure of an MPO-MPO fiber jumper

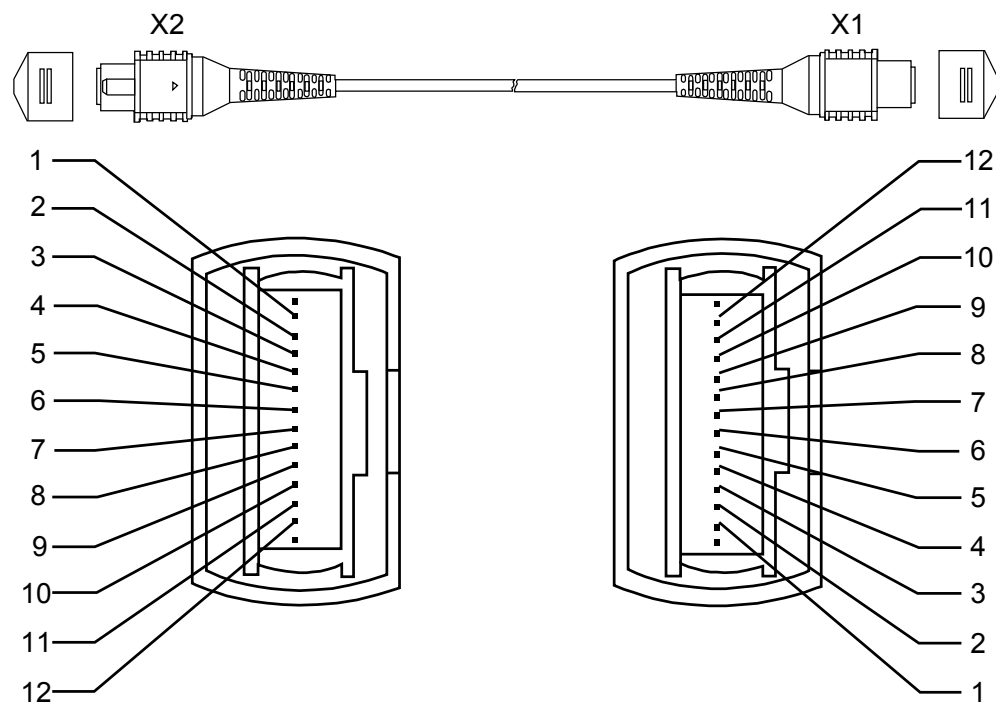


Figure 7-26 shows the structure of an MPO-4*DLC fiber jumper.

Figure 7-26 Structure of an MPO-4*DLC fiber jumper

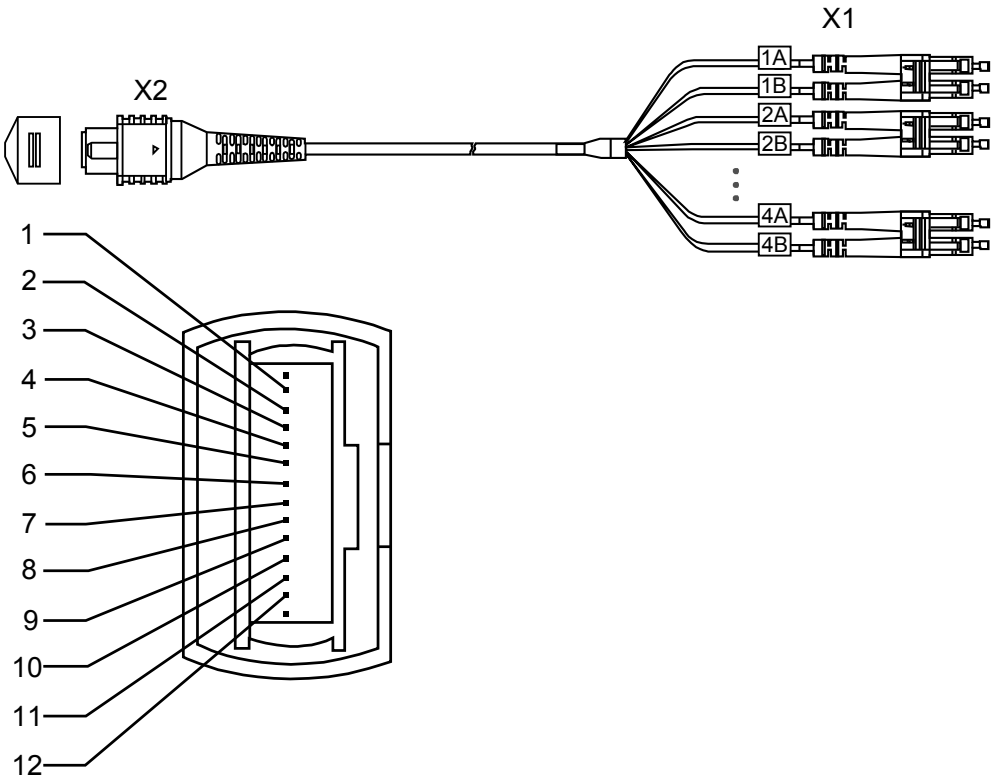


Table 7-5 lists the pin assignments of an MPO-MPO fiber jumper.

Table 7-5 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

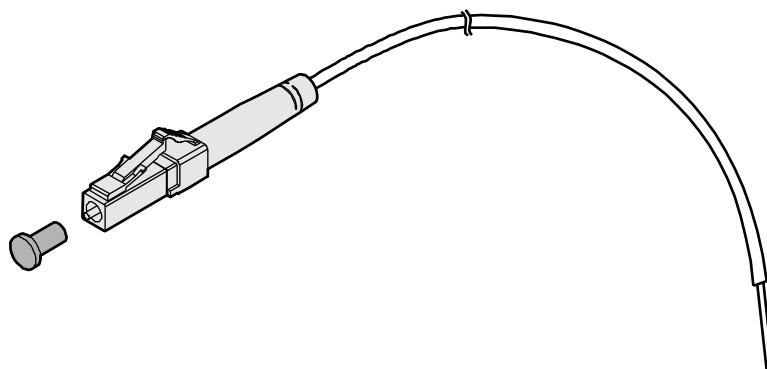
Table 7-6 lists the pin assignments of an MPO-4*DLC fiber jumper.

Table 7-6 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 7-27](#) shows the structure of a fiber pigtail.

Figure 7-27 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 μm 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 7-20](#).

- 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 7-21](#).

Optical Connector

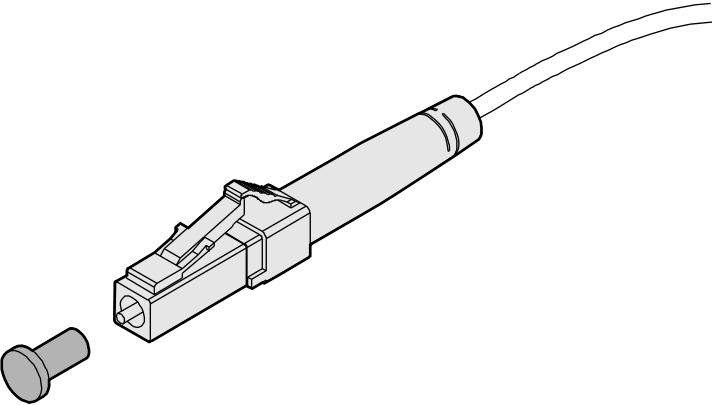
Optical connectors are used to connect optical fibers of the same type. [Table 7-7](#) lists common optical connectors.

Table 7-7 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 7-28](#) shows an LC/PC optical connector.

Figure 7-28 LC/PC optical connector





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. Fiber adapters are widely used in optical distribution frames (ODFs), fiber transmission equipment, and optical instruments.

8 Pluggable Modules for Interfaces

About This Chapter



- 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 Concepts](#)

[8.2 SFP/eSFP Modules](#)

[8.3 SFP+ Modules](#)

[8.4 XFP Modules](#)

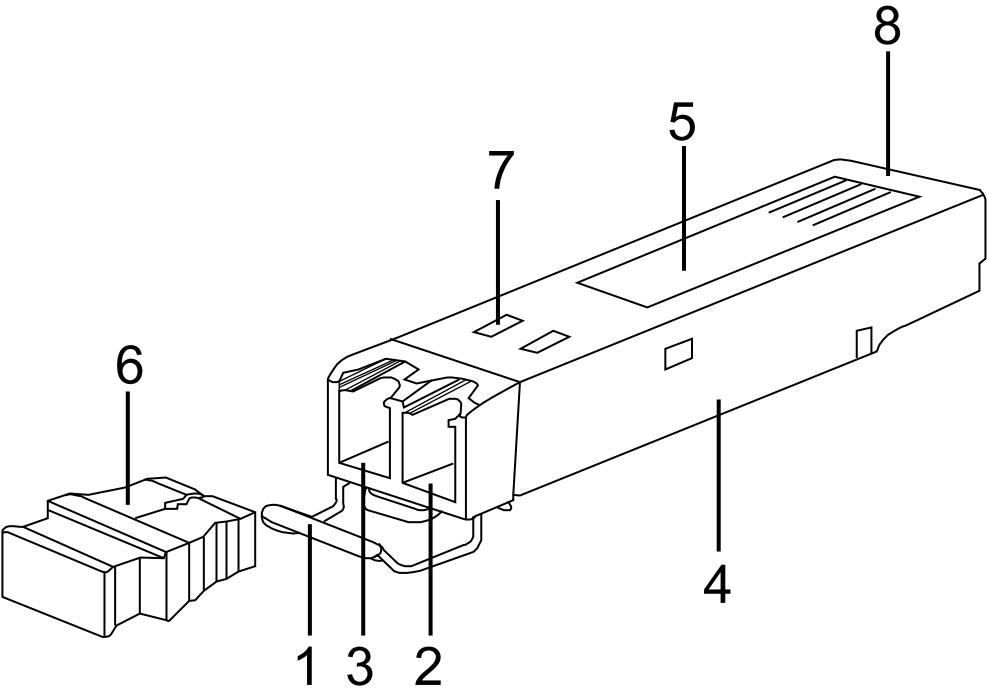
[8.5 QSFP+ Modules](#)

8.1 Concepts

Appearance and Structure

Figure 8-1 shows an optical module.

Figure 8-1 Optical module



1. Handle	2. Receiver	3. Transmitter
4. Shell	5. Label	6. Dust plug
7. Spring	8. Module connector	-

Terms

Encapsulation type

Encapsulation types of optical modules include SFP, eSFP, SFP+, XFP, QSFP+, CXP, and CFP, as described in [Table 8-1](#).

Table 8-1 Encapsulation types of optical modules

Encapsulation Type	Description	Optical Module
SFP	Small form-factor pluggable.	FE optical module
eSFP	Enhanced small form-factor pluggable. An eSFP module is an SFP module that monitors voltage, temperature, bias current, transmit optical power, and receive optical power. Sometimes, eSFP is called SFP.	FE optical module (including the single-fiber bidirectional optical module)
		GE optical module (including the single-fiber bidirectional optical module)
		POS optical module
		GE CWDM optical module
		GE DWDM optical module
SFP+	Small form-factor pluggable plus, SFP with a higher rate. SFP+ modules are more sensitive to electromagnetic interference (EMI) because they have a higher rate. To reduce EMI, SFP+ modules have more springs than SFP modules and the cages for SFP+ modules on a card are tighter.	GE copper module
		10GE optical module
XFP	10-Gb small form-factor pluggable transceiver, 10GE optical module. X (Roman numeral 10) means 10G. All XFP modules are 10GE optical modules.	10GE optical module
		10GE CWDM optical module
		10GE DWDM optical module
QSFP+	Quad SFP+, four-channel SFP+.	40GE optical module

Wavelength division multiplexing module	An O/E converter used on a multiplexed optical link. Compared with common optical modules, wavelength division multiplexing modules are available in more types. There are several dozens of wavelength division multiplexing modules with different central wavelengths. Wavelength division multiplexing modules are classified into two types: coarse wavelength division multiplexing (CWDM) module and dense wavelength division multiplexing (DWDM) module. There are more types of DWDM modules than CWDM modules within a wavelength range, so DWDM modules use spectrum resources more efficiently. Optical signals with different central wavelengths can transmit along the same fiber without interfering with each other. Optical outputs with different central wavelengths are combined into one input by an optical multiplexer, so fewer fibers are needed.
Transmission distance	Maximum distance over which optical signals can transmit. Optical signals sent from different types of sources can transmit over different distances due to negative effects of optical fibers, such as dispersion and attenuation.
Interface rate	Maximum rate of electrical signals that an optical device can transmit without bit errors. The interface rates defined in Ethernet standards include 125 Mbit/s, 1.25 Gbit/s, 10.3125 Gbit/s, and 41.25 Gbit/s.
Center wavelength	Wavelength measured at the midpoint of the half-amplitude line in the transmit spectrum.
Fiber mode	Attribute that differentiates fibers based on core diameters and features of optical fibers. Optical fibers are classified into single-mode fibers and multimode fibers. Generally, multimode fibers have large core diameters and heavy dispersion, so they transmit optical signals over short distances when working with multimode optical modules. Single-mode fibers have low dispersion and can transmit optical signals over long distances when working with single-mode optical modules.
Modal bandwidth	Bandwidth measured at a point with transmit power several dB lower than the peak center wavelength. Modal bandwidth reflects spectrum characteristics of an optical module.
Fiber diameter	Diameter of a fiber core. According to international standards for optical fibers, the diameter of a multimode fiber is 62.5 μm or 50 μm, and the diameter of a single-mode fiber is 9 μm.
Fiber class	Optical signals with different wavelengths have their best working windows in different optical fibers. To help efficiently adjust wavelengths or dispersion features of optical fibers and change their refractive indexes, the following classes are defined: 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.
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).

Transmit optical power	Output optical power of an optical module when it is working properly.
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).
Overload optical power	Maximum average input optical power that the receiver of an optical module can receive within a range of bit error rate (BER = 10 ⁻¹²).
Extinction ratio	Minimum ratio of the average optical power with signals transmitted against the average optical power without signals transmitted in complete modulation mode. The extinction ratio indicates the capability of an optical module to identify signal 0 and signal 1.

8.2 SFP/eSFP Modules

Appearance

Figure 8-2 shows an SFP/eSFP optical module.

Figure 8-2 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
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				

Model	Center Wavelength (nm)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Overload Optical Power (dBm)	Extinction Ratio (dB)
SFP-FE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	RX1550/ TX1310	-15.0 to -8.0	≤ -32.0	-8.0	> 8.5
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 - Pattern bandwidth: 160 MHz*km - Core diameter: 62.5 μm - Connector type: LC	≤ 0.22	0°C to 70°C
		- Fiber mode: multimode (OM1) - Connector type: LC	≤ 0.275	
		- Fiber mode: multimode - Pattern bandwidth: 400 MHz*km - Core diameter: 50 μm - Connector type: LC	≤ 0.5	
		- Fiber mode: multimode (OM2) - Connector type: LC	≤ 0.55	

Model	Standard	Fiber Type	Transmission Distance (km)	Operating Temperature
		- Fiber mode: multimode (OM3) - Connector type: LC	≤ 1	
SFP-GE-LX-SM1310	1000base-LX/LH	- Fiber mode: single-mode - Connector type: LC	≤ 10	
S-SFP-GE-LH40-SM1310	1000base-LX/LH		≤ 40	
S-SFP-GE-LH40-SM1550	1000base-LX/LH			
S-SFP-GE-LH80-SM1550	1000base-ZX		≤ 80	
eSFP-GE-ZX100-SM1550	1000base-ZX		≤ 100	
SFP-GE-LX-SM1310-BIDI (Single-fiber bidirectional optical module)	1000base-BX		≤ 10	
SFP-GE-LX-SM1490-BIDI (Single-fiber bidirectional optical module)	1000base-BX			
LE2MGSC40DE0 (Single-fiber bidirectional optical module)	1000base-BX		≤ 40	
LE2MGSC40ED0 (Single-fiber bidirectional optical module)	1000base-BX			
SFP-GE-BXU1-SC (Single-fiber bidirectional optical module)	1000base-BX	- Fiber mode: single-mode - Connector type: SC	≤ 10	

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.

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	

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.

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				

 **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

8.3 SFP+ Modules

Appearance

Figure 8-3 shows an SFP+ optical module.

Figure 8-3 SFP+ optical module



10GE Optical Module

[Table 8-11](#), [Table 8-12](#), [Table 8-13](#), [Table 8-14](#), and [Table 8-15](#) list the attributes of 10GE optical modules.

Table 8-11 Attributes of 10GE optical modules (1)

Model	Standard	Fiber Type	Transmission Distance (km)	Interface Optical Parameters	Operating Temperature
SFP-10G-USR	10Gb ase-USR	- Fiber mode: multimode (OM3) - Connector type: LC	≤ 0.1	- Center wavelength: 850 nm - Transmit power: -7.3 to -1.3 dBm - Receiver sensitivity: ≤ -11 dBm - Overload optical power: 0.5 dBm - Extinction ratio: > 3.0 dB	0°C to 70°C
OMXD3000	10Gb ase-SR	- Fiber mode: multimode - Pattern 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	
		- Fiber mode: multimode (OM1) - Connector type: LC	≤ 0.033	Overload optical power: -1.0 dBm	
		- Fiber mode: multimode - Pattern bandwidth: 400 MHz*km - Core diameter: 50 μm - Connector type: LC	≤ 0.066	Extinction ratio: > 3.0 dB	

Model	Standard	Fiber Type	Transmission Distance (km)	Interface Optical Parameters	Operating Temperature
		- 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		
OSX010000	10Gb ase-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	

Table 8-12 Attributes of 10GE optical modules (2)

Model	Standard	Fiber Type	Transmission Distance (km)	Interface Optical Parameters	Operating Temperature
OSXD22 N00 Linear	10Gbase-LRM	● Fiber mode: multimode ● Pattern 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: $\leq$ -6.5 dBm ● Overload optical power: 1.5 dBm ● Extinction ratio: > 3.5 dB	0°C to 70°C
		● Fiber mode: multimode ● Pattern bandwidth: 500 MHz*km ● Core diameter: 62.5 μm ● Connector type: LC	≤ 0.22		
		● Fiber mode: multimode (OM1, OM2, OM3) ● Connector type: LC			

Table 8-13 Attributes of 10GE optical modules (3)

Model	Transmission Distance (km)	Standard	Fiber Type	Interface Optical Parameters	Operating Temperature
OSX040N01	≤ 40	10Gb ase-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	10Gb ase-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	

Table 8-14 Attributes of 10GE optical modules (4)

Model	Transmission Distance (km)	Standard	Fiber Type	Interface Optical Parameters	Operating Temperature
LE2MXSC8 0FF0 Linear	≤ 80	10Gb ase- 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

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	10Gb ase-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.

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 XFP Modules

Appearance

Figure 8-4 shows an XFP module.

Figure 8-4 XFP optical module



10GE Optical Module

[Table 8-17](#) and [Table 8-18](#) list the attributes of 10GE optical modules.

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 - Pattern 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 - Pattern 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	

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.

Table 8-19 Attributes of CWDM optical modules

Center Wave length (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.

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.

8.5 QSFP+ Modules

Appearance

Figure 8-5 shows a QSFP+ optical module.

Figure 8-5 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 8-5](#). Keep the top side down when inserting the optical module to a port on a CSS card. Keep the top side up when inserting the optical module to another 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.

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 - Pattern bandwidth: 160 MHz*km - Core diameter: 62.5 μm - Connector type: LC	≤ 0.026	
		- Fiber mode: multimode (OM1) - Connector type: LC	≤ 0.033	
		- Fiber mode: multimode - Pattern 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	
QSFP-40G-LR4	40Gbase-LR4	- Fiber mode: single-mode - Connector type: LC	≤ 10	

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	-7.0 to 2.3	≤ -11.5	2.3	> 3.5