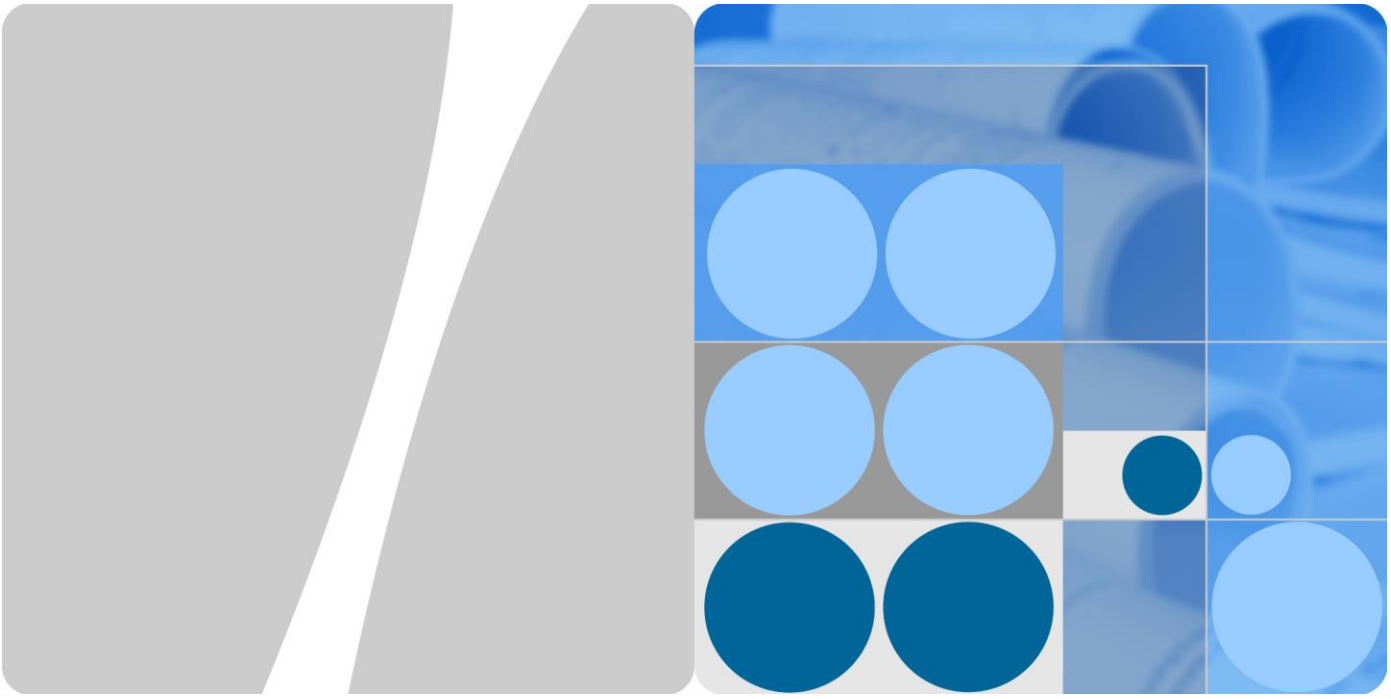

HUAWEI NE40E-M2 Series Universal Service Router

Hardware Description

Issue

Date

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1 About This Document

Purpose

This document provides the Hardware supported by the NE40E device.

NOTE
The pictures in this document are for your reference only, the hardware components please make the object as the standard.

Related Version

The following table lists the product version related to this document.

Product Name	Version
NE40E-M2	V800R010C00
U2000	V200R017C60

Intended Audience

This document is intended for:

- Data configuration engineers
- Commissioning engineers
- Network monitoring engineers
- System maintenance engineers

Security Declaration

- Encryption algorithm declaration

  The encryption algorithms DES/3DES/SKIPJACK/RC2/RSA (RSA-1024 or lower)/MD2/MD4/MD5 (in digital signature scenarios and password encryption)/SHA1 (in digital signature scenarios) have a low security, which may bring security risks. If protocols allowed, using more secure encryption algorithms, such as AES/RSA (RSA-2048 or higher)/SHA2/HMAC-SHA2 is recommended.
- Password configuration declaration

  - Do not set both the start and end characters of a password to "%^%#". This causes the password to be displayed directly in the configuration file.
  - To further improve device security, periodically change the password.
- Personal data declaration

  Your purchased products, services, or features may use users' some personal data during service operation or fault locating. You must define user privacy policies in compliance with local laws and take proper measures to fully protect personal data.
- Feature declaration
  - The NetStream feature may be used to analyze the communication information of terminal customers for network traffic statistics and management purposes. Before enabling the NetStream feature, ensure that it is performed within the boundaries permitted by applicable laws and regulations. Effective measures must be taken to ensure that information is securely protected.
  - The mirroring feature may be used to analyze the communication information of terminal customers for a maintenance purpose. Before enabling the mirroring function, ensure that it is performed within the boundaries permitted by applicable laws and regulations. Effective measures must be taken to ensure that information is securely protected.
  - The packet header obtaining feature may be used to collect or store some communication information about specific customers for transmission fault and error detection purposes. Huawei cannot offer services to collect or store this information unilaterally. Before enabling the function, ensure that it is performed within the boundaries permitted by applicable laws and regulations. Effective measures must be taken to ensure that information is securely protected.
- Reliability design declaration

  Network planning and site design must comply with reliability design principles and provide device- and solution-level protection. Device-level protection includes planning principles of dual-network and inter-board dual-link to avoid single point or single link of failure. Solution-level protection refers to a fast convergence mechanism, such as FRR and VRRP.

Special Declaration

- This document serves only as a guide. The content is written based on device information gathered under lab conditions. The content provided by this document is intended to be taken as general guidance, and does not cover all scenarios. The content provided by this document may be different from the information on user device interfaces due to factors such as version upgrades and differences in device models, board restrictions, and configuration files. The actual user device information takes precedence over the content provided by this document. The preceding differences are beyond the scope of this document.
- The maximum values provided in this document are obtained in specific lab environments (for example, only a certain type of board or protocol is configured on a tested device). The actually obtained maximum values may be different from the maximum values provided in this document due to factors such as differences in hardware configurations and carried services.
- Interface numbers used in this document are examples. Use the existing interface numbers on devices for configuration.
- The pictures of hardware in this document are for reference only.

Symbol Conventions

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

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

Change History

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

- **Changes in Issue 01 (2017-09-10)**

  This issue is the first official release. The software version of this issue is V800R010C00.

2 Technical Specifications

Item	NE40E-M2E	NE40E-M2F	NE40E-M2H
Dimensions (H x W x D)	88.1 mm x 220 mm x 442 mm (3.47 in. x 8.66 in. x 8.66 in.)(2U)	88.1 mm x 220 mm x 442 mm (3.47 in. x 8.66 in. x 8.66 in.)(2U)	88.1 mm x 220 mm x 442 mm (3.47 in. x 8.66 in. x 8.66 in.)(2U)
Weight (empty)	2.2 kg (4.85 lb)	2.2 kg (4.85 lb)	2.2 kg (4.85 lb)
Weight (full configuration)	• DC:9.4 kg (20.73 lb) • AC:10.4 kg (22.93 lb)	• DC:9.5 kg (20.95 lb) • AC:10.5 kg (23.15 lb)	• DC:10.7 kg (23.59 lb) • AC:11.9 kg (26.24 lb)
Cabinet installation standard	ETSI 21-inch; IEC 19-inch	ETSI 21-inch; IEC 19-inch	ETSI 21-inch; IEC 19-inch
Typical power consumption	• DC:175 W • AC:199 W	• DC:259 W • AC:285 W	• DC:499 W • AC:537 W
Typical heat dissipation	• DC:567.8 BTU/hour • AC:645.6 BTU/hour	• DC:840.3 BTU/hour • AC:924.7 BTU/hour	• DC:1619 BTU/hour • AC:1742.3 BTU/hour
DC input voltage	• input voltage range: -40V to -72V • input rated voltage: -48V/-60V	• input voltage range:-40V to -72V • input rated voltage: -48V/-60V	• input voltage range:-40V to -72V • input rated voltage: -48V/-60V
AC input voltage	• input voltage range: 180V-264V • input rated voltage: 200V-240V	• input voltage range:180V-264V • input rated voltage:200V-240V	• input voltage range:180V-264V • input rated voltage:200V-240V
MTBF	59.2 years	59.2 years	59.2 years
MTTR	2 hours	2 hours	2 hours

Item	NE40E-M2E	NE40E-M2F	NE40E-M2H
Availability	0.9999996143	0.9999996143	0.9999996143
Slot quantity	2	2	2
Processing unit	1.2 GHz	1.5 GHz	2.0 GHz
Flash	32 MB	32 MB	128 MB
SDRAM	4 GB	8 GB	16 GB
Storage	2 GB	2 GB	4G NAND FLASH
Fixed ports support	2*10GE (SFP+) + 24*GE (SFP)	4*10GE (SFP+) + 40*GE (SFP)	26*10GE(SFP+) and 2*10GE(SFP+)/18*GE (SFP)
Redundant MPUs	Integrated	Integrated	Integrated
Redundant NPUs	Integrated	Integrated	Integrated
Redundant fans	The device can work properly for a short time at 40 ℃ if a single fan fails.	The device can work properly for a short time at 40 ℃ if a single fan fails.	The device can work properly for a short time at 40 ℃ if a single fan fails.
Redundant power supply	1+1	1+1	1+1
Forwarding performance	70 Mpps	150 Mpps	360 Mpps
Switching capacity	80 Gbps	320 Gbps	960 Gbps
Operating temperature	• Long-term:DC: -5 ℃ to 65 ℃ (23 ℉ to 149 ℉) AC: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) • Short-term:AC: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉) • Remark:Restriction on the temperature variation rate: 30 ℃/hour	• Long-term:DC: -5 ℃ to 65 ℃ (23 ℉ to 149 ℉) AC: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) • Short-term:AC: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉) • Remark:Restriction on the temperature variation rate: 30 ℃/hour	• Long-term:0 ℃ to 45 ℃ (32 ℉ to 113 ℉) • Short-term:AC: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉) • Remark:Restriction on the temperature variation rate: 30 ℃/hour
Storage temperature	-40 ℃ to 70 ℃ (-40 ℉ to 158 ℉)	-40 ℃ to 70 ℃ (-40 ℉ to 158 ℉)	-40 ℃ to 70 ℃ (-40 ℉ to 158 ℉)
Relative operating humidity	• Long-term:5% to 85% RH, non-condensing	• Long-term:5% to 85% RH, non-condensing	• Long-term:5% to 85% RH, non-condensing

Item	NE40E-M2E	NE40E-M2F	NE40E-M2H
	• Short-term:5% to 95% RH, non-condensing	• Short-term:5% to 95% RH, non-condensing	• Short-term:5% to 95% RH, non-condensing
Relative storage humidity	5% to 95% RH, non-condensing	5% to 95% RH, non-condensing	5% to 95% RH, non-condensing
Long-term operating altitude	3000m @ 40℃	3000m @ 40℃	3000m @ 40℃
Storage altitude	Lower than 5000 m (16404 ft)	Lower than 5000 m (16404 ft)	Lower than 5000 m (16404 ft)

3 Product Compatibility

The supported items of boards list in the Table 3-1 ("●" indicates supported items, "-" indicates unsupported items).

Table 3-1 Mapping products and versions

BOM	Module	Description	NE40E-M2E	NE40E-M2F	NE40E-M2H
03032AMN	CR5D00E1NC79	7.1.3 1-Port 100GBase-CFP2 Physical Interface Card(PIC)	-	-	●
03032AMK	CR5D00LAXF71	7.1.4 10-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)	-	-	●
03031KYS	CR5D00E1MF70	7.1.19 1-Port 40GBase-CFP Physical Interface Card(PIC)	-	●	●
03031DJM	CR5D00L4XF72	7.1.22 4-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)	-	●	●
03031DJS	CR5DL1XE8G71	7.1.23 1-Port 10GBase LAN/WAN-SFP+ + 8-Port 100/1000Base-X-SFP Physical	●	●	●

BOM	Module	Description	NE40E-M2E	NE40E-M2F	NE40E-M2H
		Interface Card(PIC)			
03030WEE	CR5D00L2XF71	7.1.24 2-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)	●	●	●
03032CRJ	CR5D0L2XFH72	7.1.34 2-Port 10GBase LAN/WAN-SFP+ Physical Interface Card H (PIC-H)	-	●	●
03031DGY	CR5D00E8GE71	7.1.20 8-Port 100/1000Base-RJ45 Physical Interface Card(PIC)	●	●	●
03031DJR	CR5D00EAGF70	7.1.21 10-Port 100/1000Base-X-SFP Physical Interface Card(PIC)	●	●	●
03032CRK	CR5D0E8GFH70	7.1.35 8-Port 100/1000Base-X-SFP Physical Interface Card H (PIC-H)	-	●	●
03030RJQ	CR5D08CWDM70	7.1.33 8-Channel CWDM Multiplexing & Demultiplexing (1471/1491/1511/1531/1551/1571/1591/1611nm) Physical Interface	●	●	●

BOM	Module	Description	NE40E-M2E	NE40E-M2F	NE40E-M2H
		Card(PIC)			
03032EEY	CR5D1DMD1M01	7.1.5 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1471nm) Physical Interface Card(PIC)	●	●	●
03032EFA	CR5D1DMD1M02	7.1.6 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1491nm) Physical Interface Card(PIC)	●	●	●
03032EFB	CR5D1DMD1M03	7.1.7 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1511nm) Physical Interface Card(PIC)	●	●	●
03032EFC	CR5D1DMD1M04	7.1.8 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1531nm) Physical Interface Card(PIC)	●	●	●
03032EFD	CR5D1DMD1M05	7.1.9 Bidirectional 1-Channel CWDM	●	●	●

BOM	Module	Description	NE40E-M2E	NE40E-M2F	NE40E-M2H
		Optical Add/Drop Multiplexing (1551nm) Physical Interface Card(PIC)			
03032EFE	CR5D1DMD1M06	7.1.10 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1571nm) Physical Interface Card(PIC)	●	●	●
03032EFF	CR5D1DMD1M07	7.1.11 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1591nm) Physical Interface Card(PIC)	●	●	●
03032EFG	CR5D1DMD1M08	7.1.12 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1611nm) Physical Interface Card(PIC)	●	●	●
03032EFH	CR5D2DMD2M01	7.1.13 Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1471/1491nm) Physical	●	●	●

BOM	Module	Description	NE40E-M2E	NE40E-M2F	NE40E-M2H
		Interface Card(PIC)			
03032EFJ	CR5D2DMD2M02	7.1.14 Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1511/1531nm) Physical Interface Card(PIC)	●	●	●
03032EFK	CR5D2DMD2M03	7.1.15 Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1551/1571nm) Physical Interface Card(PIC)	●	●	●
03032EFL	CR5D2DMD2M04	7.1.16 Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1591/1611nm) Physical Interface Card(PIC)	●	●	●
03030QBM	CR5D00C4CF71	7.1.25 4-Port Channelized STM-1c POS-SFP Physical Interface Card(PIC)	●	●	●
03031HRN	CR5DP2C1HF70	7.1.31 2-Port OC-3c/STM-1c (or 1-Port OC-12c/STM-4C) POS-SFP Physical	●	●	●

BOM	Module	Description	NE40E-M2E	NE40E-M2F	NE40E-M2H
		Interface Card(PIC)			
03030MER	CR5D00AUXQ10	7.1.32 Auxiliary Flexible Interface Card with 4-Port 100Base-RJ45 (FIC,Supporting 1588v2)	●	●	●

4 Chassis

About This Chapter

4.1 NE40E-M2E

Overview

Table 4-1 Device attributes

Product Type	Description	BOM	Model	Earliest Software Version
NE40E-M2E	NE40E-M2E Integrated Chassis Components	02350BUQ	CR5B0BKP0371	V800R006C20

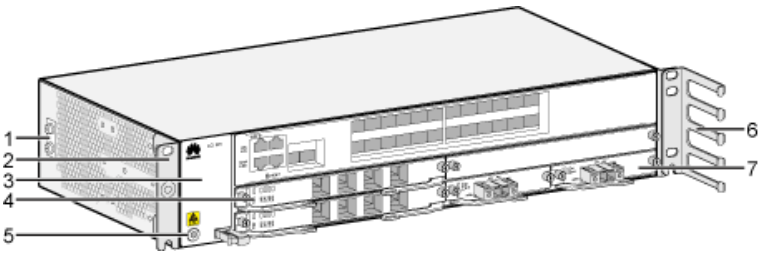
Appearance

Figure 4-1 Appearance (DC)

Figure 4-2 Appearance (AC)

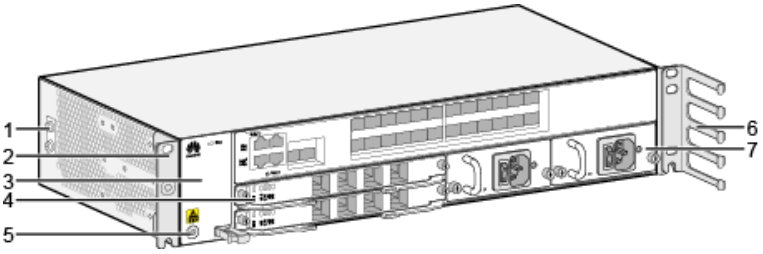
Components

Figure 4-3 Components



1. Ground terminal	2. Mounting ear	3. Fan module	4. PIC
5. ESD jack	6. Cable tray	7. Power supply module	-

Figure 4-4 Components



1. Ground terminal	2. Mounting ear	3. Fan module	4. PIC

5. ESD jack	6. Cable tray	7. Power supply module	-

Slot Layout

Figure 4-5 Slot layout

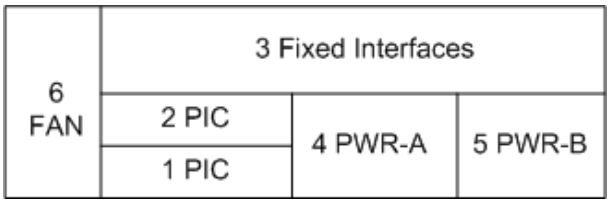


Table 4-2 Description of slot layout

Slot Name	Slot Quantity	Slot ID	Remarks
Slots for PICs	2	1 and 2	including high-speed, low-speed cards and other PICs that support hot swap
Fixed interfaces	1	3	-
Slot for PSUs	2	4 and 5	-
Slot for fans	1	6	-

Fixed Interface Board

Table 4-3 Buttons

Button	Description
RESET	This button is used to reset the MPU. Press and hold the button for 3 seconds or longer, the board is reset, and the SYS-STAT indicator keeps blinking.

Table 4-4 Indicators

Indicator	Status Description
SYS-STAT	If this indicator is steady green, the board is working properly. If this indicator is steady red, the hardware on the board is faulty. If this indicator is off, the board is not powered on or not registered.

Indicator	Status Description
MGMT-ETH	If this indicator is steady green, the link is Up. If this indicator blinks, data is being received and transmitted. If this indicator is steady off, the link is Down.

Table 4-5 Management interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
0/0-0/1	10GE	SFP+	Interface for 10GE optical signal input and output	Optical fiber
0/2-0/25	GE	SFP	Interface for GE optical signal input and output	Optical fiber
MGMT-ETH	Ethernet interface (10M/100M/1000M Base-TX autonegotiation)	RJ45	It connects to an NMS.	Super category 5 shielded twisted pair
Console/AUX	Console/AUX hybrid interface	RJ45	It connects to the console for on-site system configuration. Baud rate: 9600 bit/s (default value).	8-core shielded cable
TOD	TOD interface	RJ45	One-channel 1PPS+TOD time signal input or output/one-channel DCLS input and output	(Shielded or unshielded) straight-through cables
CLK	CLK/1PPS interface	RJ45	Used to input or output 2-Mbit/s clock signals, 2-MHz clock signals, or 1 PPS	120-ohm clock cable

Interface Name	Interface Type	Connector Type	Description	Cable
			signals.	

NOTE

HUAWEI NE40E-M2 Series does not support the OTN mode or FEC function. If a colored optical module is used and does not support optical amplifier insertion, the board supports only point-to-point optical transmission.

Technical Specifications

Item	Specification
Dimensions (H x W x D)	88.1 mm x 220 mm x 442 mm (3.47 in. x 8.66 in. x 8.66 in.)(2U)
Weight (empty)	2.2 kg (4.85 lb)
Weight (full configuration)	• DC:9.4 kg (20.73 lb) • AC:10.4 kg (22.93 lb)
Cabinet installation standard	ETSI 21-inch; IEC 19-inch
Typical power consumption	• DC:175 W • AC:199 W
Typical heat dissipation	• DC:567.8 BTU/hour • AC:645.6 BTU/hour
DC input voltage	• input voltage range: -40V to -72V • input rated voltage: -48V/-60V
AC input voltage	• input voltage range: 180V-264V • input rated voltage: 200V-240V
MTBF	59.2 years
MTTR	2 hours
Availability	0.9999996143
Slot quantity	2
Processing unit	1.2 GHz
Flash	32 MB
SDRAM	4 GB
Storage	2 GB
Fixed ports support	2*10GE (SFP+) + 24*GE (SFP)
Redundant MPUs	Integrated

Item	Specification
Redundant NPUs	Integrated
Redundant fans	The device can work properly for a short time at 40 ℃ if a single fan fails.
Redundant power supply	1+1
Forwarding performance	70 Mpps
Switching capacity	80 Gbps
Operating temperature	• Long-term:DC: -5 ℃ to 65 ℃ (23 ℉ to 149 ℉) AC: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) • Short-term:AC: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉) • Remark:Restriction on the temperature variation rate: 30 ℃/hour
Storage temperature	-40 ℃ to 70 ℃ (-40 ℉ to 158 ℉)
Relative operating humidity	• Long-term:5% to 85% RH, non-condensing • Short-term:5% to 95% RH, non-condensing
Relative storage humidity	5% to 95% RH, non-condensing
Long-term operating altitude	3000m @ 40 ℃
Storage altitude	Lower than 5000 m (16404 ft)

4.2 NE40E-M2F

Overview

Table 4-6 Device attributes

Product Type	Description	BOM	Model	Earliest Software Version
NE40E-M2F	NE40E-M2F Integrated Chassis Components	02350BUR	CR5B0BKP0372	V800R007C00

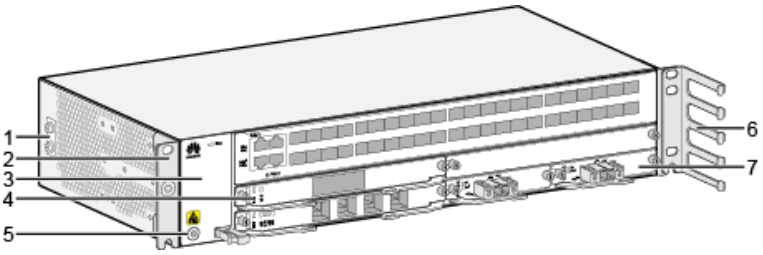
Appearance

Figure 4-6 Appearance (DC)

Figure 4-7 Appearance (AC)

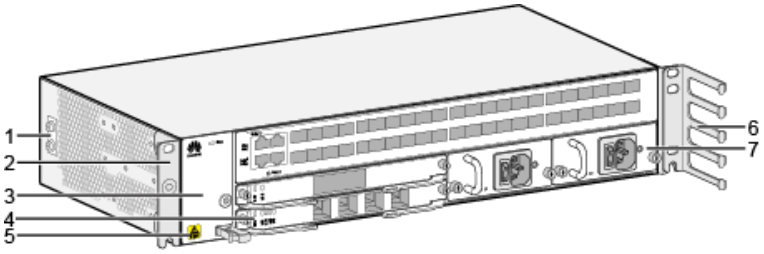
Components

Figure 4-8 Components



1. Ground terminal	2. Mounting ear	3. Fan module	4. PIC
5. ESD jack	6. Cable tray	7. Power supply module	-

Figure 4-9 Components



1. Ground terminal	2. Mounting ear	3. Fan module	4. PIC
5. ESD jack	6. Cable tray	7. Power supply module	-

Slot Layout

Figure 4-10 Slot layout

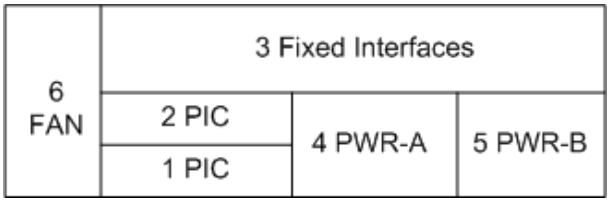


Table 4-7 Description of slot layout

Slot Name	Slot Quantity	Slot ID	Remarks
Slots for PICs	2	1 and 2	including high-speed, low-speed cards and other PICs that support hot swap
Fixed interfaces	1	3	The fourth and fifth port support GE mode(The current version do not support 10GE mode).
Slot for PSUs	2	4 and 5	-
Slot for a fan module	1	6	-

Fixed Interface Board

Table 4-8 Buttons

Button	Description
RESET	This button is used to reset the MPU. Press and hold the button for 3 seconds or longer, the board is reset, and the SYS-STAT indicator keeps blinking.

Table 4-9 Indicators

Indicator	Status Description
SYS-STAT	If this indicator is steady green, the board is working properly. If this indicator is steady red, the hardware on the board is faulty. If this indicator is off, the board is not powered on or not registered.
MGMT-ETH	If this indicator is steady green, the link is Up. If this indicator blinks, data is being received and transmitted. If this indicator is steady off, the link is Down.

Table 4-10 Management interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
0/0-0/3	10GE	SFP+	Interface for 10GE optical signal input and output	Optical fiber
0/4-0/43	GE	SFP	Interface for GE optical signal input and output	Optical fiber
MGMT-ETH	Ethernet interface (10M/100M/1000M Base-TX autonegotiation)	RJ45	It connects to an NMS.	Super category 5 shielded twisted pair
Console/AUX	Console/AUX hybrid interface	RJ45	It connects to the console for on-site system configuration.	8-core shielded cable

Interface Name	Interface Type	Connector Type	Description	Cable
			Baud rate: 9600 bit/s (default value).	
TOD	TOD interface	RJ45	One-channel 1PPS+TOD time signal input or output/one-channel DCLS input and output	(Shielded or unshielded) straight-through cables
CLK	CLK/1PPS interface	RJ45	Used to input or output 2-Mbit/s clock signals, 2-MHz clock signals, or 1 PPS signals.	120-ohm clock cable

NOTE

HUAWEI NE40E-M2 Series does not support the OTN mode or FEC function. If a colored optical module is used and does not support optical amplifier insertion, the board supports only point-to-point optical transmission.

Technical Specifications

Item	Specification
Dimensions (H x W x D)	88.1 mm x 220 mm x 442 mm (3.47 in. x 8.66 in. x 8.66 in.)(2U)
Weight (empty)	2.2 kg (4.85 lb)
Weight (full configuration)	• DC:9.5 kg (20.95 lb) • AC:10.5 kg (23.15 lb)
Cabinet installation standard	ETSI 21-inch; IEC 19-inch
Typical power consumption	• DC:259 W • AC:285 W
Typical heat dissipation	• DC:840.3 BTU/hour • AC:924.7 BTU/hour
DC input voltage	• input voltage range:-40V to -72V • input rated voltage: -48V/-60V
AC input voltage	• input voltage range:180V-264V

Item	Specification
	• input rated voltage:200V-240V
MTBF	59.2 years
MTTR	2 hours
Availability	0.9999996143
Slot quantity	2
Processing unit	1.5 GHz
Flash	32 MB
SDRAM	8 GB
Storage	2 GB
Fixed ports support	4*10GE (SFP+) + 40*GE (SFP)
Redundant MPUs	Integrated
Redundant NPUs	Integrated
Redundant fans	The device can work properly for a short time at 40 ℃ if a single fan fails.
Redundant power supply	1+1
Forwarding performance	150 Mpps
Switching capacity	320 Gbps
Operating temperature	• Long-term:DC: -5 ℃ to 65 ℃ (23 ℉ to 149 ℉) AC: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) • Short-term:AC: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉) • Remark:Restriction on the temperature variation rate: 30 ℃/hour
Storage temperature	-40 ℃ to 70 ℃ (-40 ℉ to 158 ℉)
Relative operating humidity	• Long-term:5% to 85% RH, non-condensing • Short-term:5% to 95% RH, non-condensing
Relative storage humidity	5% to 95% RH, non-condensing
Long-term operating altitude	3000m @ 40 ℃
Storage altitude	Lower than 5000 m (16404 ft)

4.3 NE40E-M2H

Overview

Table 4-11 Device attributes

Product Type	Description	BOM	Model	Earliest Software Version
NE40E-M2H	NE40E-M2H Integrated Chassis Components	02350UVD	CR5B0BKP0377	V800R009C00

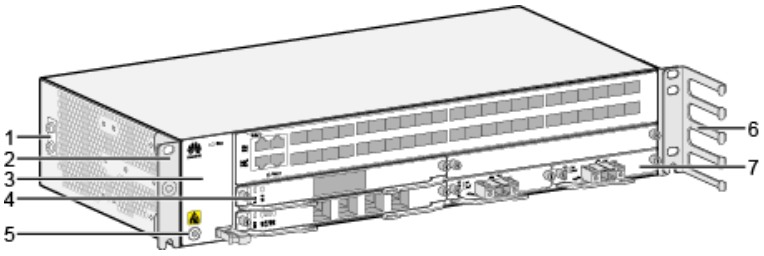
Appearance

Figure 4-11 Appearance (DC)

Figure 4-12 Appearance (AC)

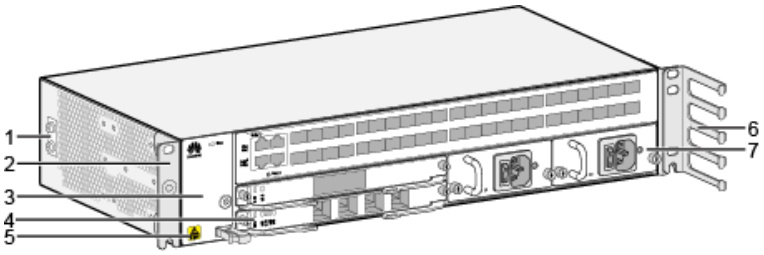
Components

Figure 4-13 Components



1. Ground terminal	2. Mounting ear	3. Fan module	4. PIC
5. ESD jack	6. Cable tray	7. Power supply module	-

Figure 4-14 Components



1. Ground terminal	2. Mounting ear	3. Fan module	4. PIC
5. ESD jack	6. Cable tray	7. Power supply module	-

Slot Layout

Figure 4-15 Slot layout

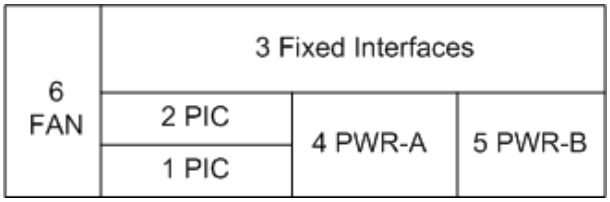


Table 4-12 Description of slot layout

Slot Name	Slot Quantity	Slot ID	Remarks
Slots for PICs	2	1 and 2	including high-speed, low-speed cards and

Slot Name	Slot Quantity	Slot ID	Remarks
			other PICs that support hot swap
Fixed interfaces	1	3	-
Slot for PSUs	2	4 and 5	-
Slot for a fan module	1	6	-

Fixed Interface Board

Table 4-13 Buttons

Button	Description
RESET	This button is used to reset the MPU. Press and hold the button for 3 seconds or longer, the board is reset, and the SYS-STAT indicator keeps blinking.

Table 4-14 Indicators

Indicator	Status Description
SYS-STAT	If this indicator is steady green, the board is working properly. If this indicator is steady red, the hardware on the board is faulty. If this indicator is off, the board is not powered on or not registered.
MGMT-ETH	If this indicator is steady green, the link is Up. If this indicator blinks, data is being received and transmitted. If this indicator is steady off, the link is Down.

Table 4-15 Management interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
0/0-0/27	10GE	SFP+	Interface for 10GE optical signal input and output	Optical fiber
0/28-0/43	GE	SFP	Interface for GE optical signal input and output	Optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
MGMT-ETH	Ethernet interface (10M/100M/1000M Base-TX autonegotiation)	RJ45	It connects to an NMS.	Super category 5 shielded twisted pair
Console/AUX	Console/AUX hybrid interface	RJ45	It connects to the console for on-site system configuration. Baud rate: 9600 bit/s (default value).	8-core shielded cable
TOD	TOD interface	RJ45	One-channel 1PPS+TOD time signal input or output/one-channel DCLS input and output	(Shielded or unshielded) straight-through cables
CLK	CLK/1PPS interface	RJ45	Used to input or output 2-Mbit/s clock signals, 2-MHz clock signals, or 1 PPS signals.	120-ohm clock cable

NOTE

HUAWEI NE40E-M2 Series does not support the OTN mode or FEC function. If a colored optical module is used and does not support optical amplifier insertion, the board supports only point-to-point optical transmission.

Technical Specifications

Item	Specification
Dimensions (H x W x D)	88.1 mm x 220 mm x 442 mm (3.47 in. x 8.66 in. x 8.66 in.)(2U)
Weight (empty)	2.2 kg (4.85 lb)
Weight (full configuration)	• DC:10.7 kg (23.59 lb) • AC:11.9 kg (26.24 lb)

Item	Specification
Cabinet installation standard	ETSI 21-inch; IEC 19-inch
Typical power consumption	• DC:499 W • AC:537 W
Typical heat dissipation	• DC:1619 BTU/hour • AC:1742.3 BTU/hour
DC input voltage	• input voltage range:-40V to -72V • input rated voltage: -48V/-60V
AC input voltage	• input voltage range:180V-264V • input rated voltage:200V-240V
MTBF	59.2 years
MTTR	2 hours
Availability	0.9999996143
Slot quantity	2
Processing unit	2.0 GHz
Flash	128 MB
SDRAM	16 GB
Storage	4G NAND FLASH
Fixed ports support	26*10GE(SFP+) and 2*10GE(SFP+)/18*GE(SFP)
Redundant MPUs	Integrated
Redundant NPUs	Integrated
Redundant fans	The device can work properly for a short time at 40 ℃ if a single fan fails.
Redundant power supply	1+1
Forwarding performance	360 Mpps
Switching capacity	960 Gbps
Operating temperature	• Long-term:0 ℃ to 45 ℃ (32 ℉ to 113 ℉) • Short-term:AC: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉) • Remark:Restriction on the temperature variation rate: 30 ℃/hour
Storage temperature	-40 ℃ to 70 ℃ (-40 ℉ to 158 ℉)
Relative operating humidity	• Long-term:5% to 85% RH, non-condensing • Short-term:5% to 95% RH, non-condensing
Relative storage humidity	5% to 95% RH, non-condensing

Item	Specification
Long-term operating altitude	3000m @ 40℃
Storage altitude	Lower than 5000 m (16404 ft)

5 Power

About This Chapter

5.1 NE40E-M2E Power Supply System

5.1.1 Architecture of the Power Supply System

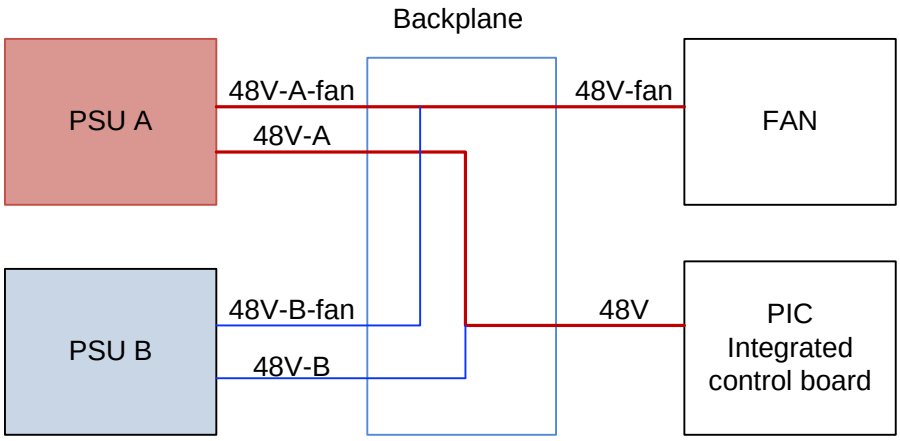
The system supports DC and AC power supply in 1+1 backup mode.

The power supply system provides the fault monitoring and alarming function.

5.1.2 Power Supply Architecture

The two power modules work in 1+1 backup mode. The two DC power supply channels in backup mode are converted by two independent power supply modules and then provided for subcards and fan modules.

Figure 5-1 NE40E-M2 power supply architecture



5.1.3 DC Power System

Overview

Table 5-1 Power attributes

Attribute	Description
Description	DC power
BOM	02311BHJ
Model	CR5B2PWRDC00

Table 5-2 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 4 to 5	V800R006C20
NE40E-M2F	slot 4 to 5	V800R007C00

The device uses two DC power supply modules, which work in 1+1 backup mode, for power supply.

Figure 5-2 Appearance

Table 5-3 Description of the indicators on the DC power module

Component	Status
OUT	When the indicator is steady green, the power supply modules work normally and provide stable power. When the indicator is steady red, the power supply modules encounter hardware faults, no -48 V or -60 V power input, or under-voltage or over-voltage. When the indicator is off, the power supply modules are powered off or the hardware of the power supply modules is faulty.
IN	When the indicator is steady green, the power input is normal. When the indicator is off, there is no -48 V or -60 V power input.

- The DC power monitoring channel can implement real-time monitoring on power supply. In addition, the DC power monitoring channel allows you to query the manufacturing ID, input voltage, and temperature of the power supply modules in real time, and supports real-time reporting of power supply alarms.
- You do not need to connect protection ground cables to the power supply modules, but the protection ground cable for the chassis must be properly grounded. DC power cables include a -48 V power cable and an RTN ground cable. The required cable length depends on the distance between the cabinet and the power distribution cabinet for the device. The DC power cables need to be prepared according to the required lengths on site.

Technical Specifications

Item	Specification
Dimensions (H x D x W)	19.8mm x 211.8mm x 96.5mm (0.77 in. x 8.33 in. x 3.79 in.)

Item	Specification
Weight	0.4 kg (0.88 lb)
Rated DC input voltage	-48V/-60V DC
DC input voltage range	-40V to -72V DC
Maximum current	10.5 A
Circuit breaker of each channel	32 A
Typical power consumption	13 W

5.1.4 AC Power System

Overview

Table 5-4 Power attributes

Attribute	Description
Description	AC power
BOM	02311BLJ
Model	CR5B2PWRAC00

Table 5-5 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 4 to 5	V800R007C00
NE40E-M2F	slot 4 to 5	V800R007C00

The device uses two AC power supply modules, which work in 1+1 backup mode, for power supply.

Figure 5-3 Appearance of AC power supply module

Table 5-6 Indicator description

Indicator	Color	Normal Status	Abnormal Status	Remarks
Input indicator IN	Green	On	Off	The indicator is On when power input is normal.
Output indicator OUT	Green	On	Off	The indicator is On when power input is normal and Off when power input is abnormal.
Fault indicator	Red	Off	Blinking	Communications are interrupted for 60s. Power output is severely uneven. The device is remotely reset (the alarm indicator is On but no alarm is reported).
			On	Protection against overtemperature A fan module fails.

Technical Specifications

Item	Specification
Dimensions (H x D x W)	19.8mm x 211.8mm x 96.5mm (0.77 in. x 8.33 in. x 3.79 in.)
Weight	0.89 kg (1.96 lb)
Number of AC power input channels	200V to 240V
Rated AC input voltage	180V to 264V
Maximum current	2.8 A
Typical power consumption	26 W
Maximum output power	500 W

5.2 NE40E-M2F Power Supply System

5.2.1 Architecture of the Power Supply System

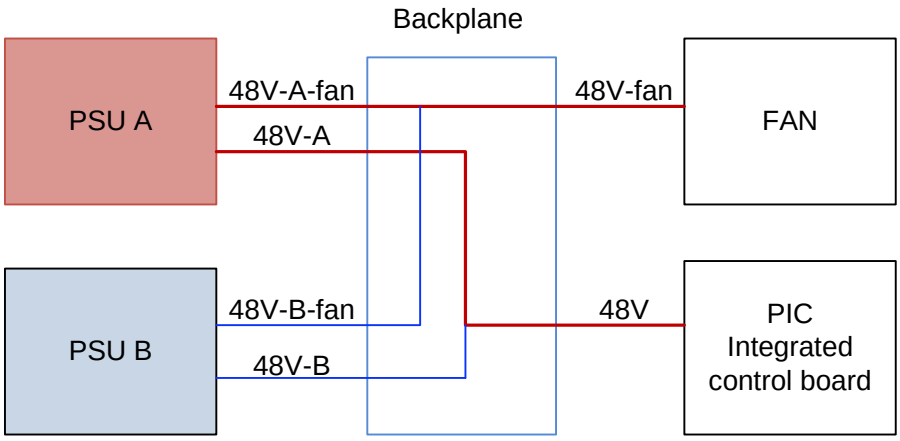
The system supports DC and AC power supply in 1+1 backup mode.

The power supply system provides the fault monitoring and alarming function.

5.2.2 Power Supply Architecture

The two power modules work in 1+1 backup mode. The two DC power supply channels in backup mode are converted by two independent power supply modules and then provided for subcards and fan modules.

Figure 5-4 NE40E-M2 power supply architecture



5.2.3 DC Power System

Overview

Table 5-7 Power attributes

Attribute	Description
Description	DC power
BOM	02311BHJ
Model	CR5B2PWRDC00

Table 5-8 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 4 to 5	V800R006C20
NE40E-M2F	slot 4 to 5	V800R007C00

The device uses two DC power supply modules, which work in 1+1 backup mode, for power supply.

Figure 5-5 Appearance

Table 5-9 Description of the indicators on the DC power module

Component	Status
OUT	When the indicator is steady green, the power supply modules work normally and provide stable power. When the indicator is steady red, the power supply modules encounter hardware faults, no -48 V or -60 V power input, or

Component	Status
	under-voltage or over-voltage. When the indicator is off, the power supply modules are powered off or the hardware of the power supply modules is faulty.
IN	When the indicator is steady green, the power input is normal. When the indicator is off, there is no -48 V or -60 V power input.

- The DC power monitoring channel can implement real-time monitoring on power supply. In addition, the DC power monitoring channel allows you to query the manufacturing ID, input voltage, and temperature of the power supply modules in real time, and supports real-time reporting of power supply alarms.
- You do not need to connect protection ground cables to the power supply modules, but the protection ground cable for the chassis must be properly grounded. DC power cables include a -48 V power cable and an RTN ground cable. The required cable length depends on the distance between the cabinet and the power distribution cabinet for the device. The DC power cables need to be prepared according to the required lengths on site.

Technical Specifications

Item	Specification
Dimensions (H x D x W)	19.8mm x 211.8mm x 96.5mm (0.77 in. x 8.33 in. x 3.79 in.)
Weight	0.4 kg (0.88 lb)
Rated DC input voltage	-48V/-60V DC
DC input voltage range	-40V to -72V DC
Maximum current	10.5 A
Circuit breaker of each channel	32 A
Typical power consumption	13 W

5.2.4 AC Power System

Overview

Table 5-10 Power attributes

Attribute	Description
Description	AC power

Attribute	Description
BOM	02311BLJ
Model	CR5B2PWRAC00

Table 5-11 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 4 to 5	V800R007C00
NE40E-M2F	slot 4 to 5	V800R007C00

The device uses two AC power supply modules, which work in 1+1 backup mode, for power supply.

Figure 5-6 Appearance of AC power supply module

Table 5-12 Indicator description

Indicator	Color	Normal Status	Abnormal Status	Remarks
Input indicator IN	Green	On	Off	The indicator is On when power input is normal.
Output indicator OUT	Green	On	Off	The indicator is On when power input is normal and Off when power input is abnormal.
Fault indicator	Red	Off	Blinking	Communications are interrupted for 60s. Power output is

Indicator	Color	Normal Status	Abnormal Status	Remarks
				severely uneven. The device is remotely reset (the alarm indicator is On but no alarm is reported).
			On	Protection against overtemperature A fan module fails.

Technical Specifications

Item	Specification
Dimensions (H x D x W)	19.8mm x 211.8mm x 96.5mm (0.77 in. x 8.33 in. x 3.79 in.)
Weight	0.89 kg (1.96 lb)
Number of AC power input channels	200V to 240V
Rated AC input voltage	180V to 264V
Maximum current	2.8 A
Typical power consumption	26 W
Maximum output power	500 W

5.3 NE40E-M2H Power Supply System

5.3.1 Architecture of the Power Supply System

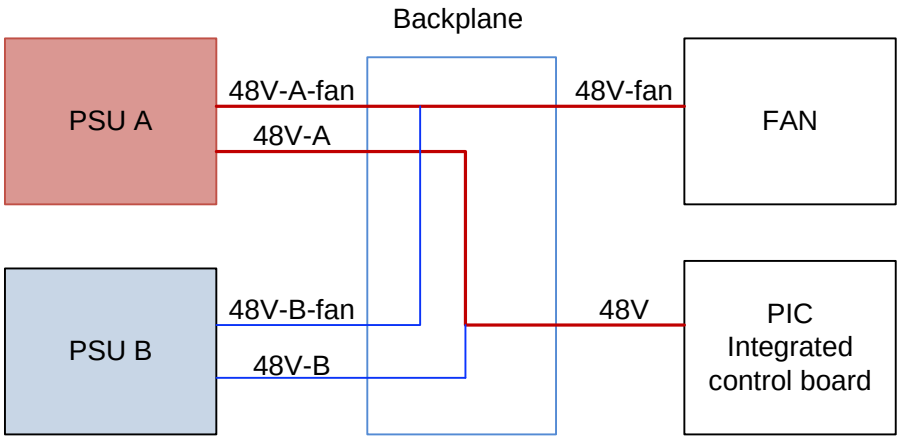
The system supports DC and AC power supply in 1+1 backup mode.

The power supply system provides the fault monitoring and alarming function.

5.3.2 Power Supply Architecture

The two power modules work in 1+1 backup mode. The two DC power supply channels in backup mode are converted by two independent power supply modules and then provided for subcards and fan modules.

Figure 5-7 NE40E-M2 power supply architecture



5.3.3 DC Power System

Overview

Table 5-13 Power attributes

Attribute	Description
Description	DC Power Supply Unit F
BOM	02311QUG
Model	CR5B2PWRDC01
Component	Power
Component Type	DC power

Table 5-14 Mapping products and versions

Product	Slot ID	Earliest Software Version	End Software Version
NE40E-M2H	slot 4 to 5	V800R009C00	-

The device uses two DC power supply modules, which work in 1+1 backup mode, for power supply.

Figure 5-8 Appearance

Table 5-15 Description of the indicators on the DC power module

Component	Status
OUT	When the indicator is steady green, the power supply modules work normally and provide stable power. When the indicator is steady red, the power supply modules encounter hardware faults, no -48 V or -60 V power input, or under-voltage or over-voltage. When the indicator is steady orange, the power supply modules are not communicating with the MPU. When the indicator is off, the power supply modules are powered off or the hardware of the power supply modules is faulty.
IN	When the indicator is steady green, the power input is normal. When the indicator is steady red, the power input is revdrse. When the indicator is off, there is no -48 V or -60 V power input.

- The DC power monitoring channel can implement real-time monitoring on power supply. In addition, the DC power monitoring channel allows you to query the manufacturing ID,

input voltage, and temperature of the power supply modules in real time, and supports real-time reporting of power supply alarms.

- You do not need to connect protection ground cables to the power supply modules, but the protection ground cable for the chassis must be properly grounded. DC power cables include a -48 V power cable and an RTN ground cable. The required cable length depends on the distance between the cabinet and the power distribution cabinet for the device. The DC power cables need to be prepared according to the required lengths on site.

Technical Specifications

Item	Specification
Dimensions (H x D x W)	19.8mm x 211.8mm x 96.5mm (0.77 in. x 8.33 in. x 3.79 in.)
Weight	0.4 kg (0.88 lb)
Rated DC input voltage	-48V/-60V DC
DC input voltage range	-40V~-72V DC
Maximum current	18 A
Circuit breaker of each channel	32 A
Typical power consumption	32 W

5.3.4 AC Power System

Overview

Table 5-16 Power attributes

Attribute	Description
Description	AC Power Supply Unit 700W
BOM	02311PFH
Model	CR5B2PWRAC01

Table 5-17 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2H	slot 4 to 5	V800R009C00

The device uses two AC power supply modules, which work in 1+1 backup mode, for power supply.

Figure 5-9 Appearance of AC power supply module

Table 5-18 Indicator description

Indicator	Color	Normal Status	Abnormal Status	Remarks
Input indicator IN	Green	On	Off	The indicator is On when power input is normal.
Output indicator OUT	Green	On	Off	The indicator is On when power input is normal and Off when power input is abnormal.
Fault indicator	Red	Off	Blinking	Communications are interrupted for 60s. Power output is severely uneven. The device is remotely reset (the alarm indicator is On but no alarm is reported).
			On	Protection

Indicator	Color	Normal Status	Abnormal Status	Remarks
				against overtemperature A fan module fails.

Technical Specifications

Item	Specification
Dimensions (H x D x W)	40.1mm x 211.8mm x 96.5mm (1.57 in. x 8.33 in. x 3.79 in.)
Weight	1.5 kg (3.31 lb)
Number of AC power input channels	200V to 240V
Rated AC input voltage	180V to 264V
Maximum current	5.4 A
Typical power consumption	70 W
Maximum output power	700 W

6 Fan

About This Chapter

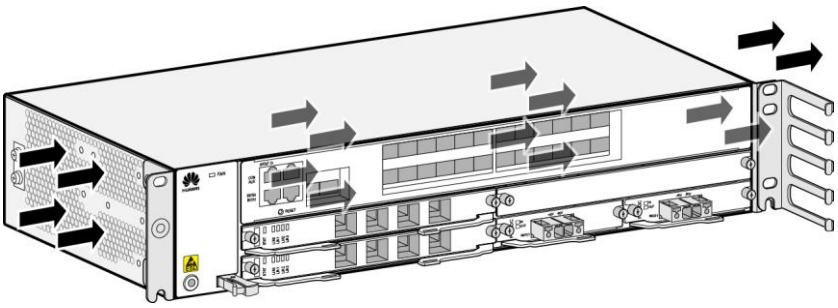
This section describes the appearance, functions, and technical specifications of the fan module.

6.1 NE40E-M2E Heat Dissipation System

6.1.1 System Air Channel

The system air channel allows air to flow from left to right.

Figure 6-1 Airflow of the NE40E-M2E



6.1.2 NE40E-M2E/NE40E-M2F Fan Module

Overview

Table 6-1 Fan attributes

Attribute	Description
Description	NE40E-M2E/NE40E-M2F Fan Module
BOM	02311BQR
Model	CR5B0BKP0371

Table 6-2 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 6	V800R006C20
NE40E-M2F	slot 6	V800R007C00

Appearance

Indicators

Table 6-3 Description of indicators on the fan module

Indicator	Status Description
FAN	The indicator is off when the fan module is powered off, or has a hardware fault. If the indicator is steady green, it indicates that the fan module works normally. If the indicator is steady orange, it indicates that the fan

Indicator	Status Description
	module is unregistered. If the indicator is steady red, it indicates that the fan module fails.

Technical Specifications

Table 6-4 Fan specifications

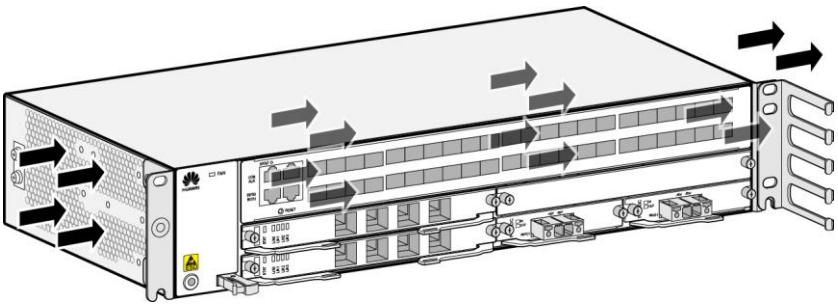
Item	Specification
Dimensions (H x W x D)	47.5mm x 221.4mm x 85.5mm
Weight	0.75kg
Fan quantity	3
Power consumption	• NE40E-M2E:12W • NE40E-M2F:17W
Noise	• NE40E-M2E:55dB,<72dB(Meet ETSI 72dBA) • NE40E-M2F:63dB,<72dB(Meet ETSI 72dBA)

6.2 NE40E-M2F Heat Dissipation System

6.2.1 System Air Channel

The system air channel allows air to flow from left to right.

Figure 6-2 Airflow of the NE40E-M2F



6.2.2 NE40E-M2E/NE40E-M2F Fan Module

Overview

Table 6-5 Fan attributes

Attribute	Description
Description	NE40E-M2E/NE40E-M2F Fan Module
BOM	02311BQR
Model	CR5B0BKP0371

Table 6-6 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 6	V800R006C20
NE40E-M2F	slot 6	V800R007C00

Appearance

Indicators

Table 6-7 Description of indicators on the fan module

Indicator	Status Description
FAN	The indicator is off when the fan module is powered off, or has a hardware fault. If the indicator is steady green, it indicates that the fan module works normally. If the indicator is steady orange, it indicates that the fan

Indicator	Status Description
	module is unregistered. If the indicator is steady red, it indicates that the fan module fails.

Technical Specifications

Table 6-8 Fan specifications

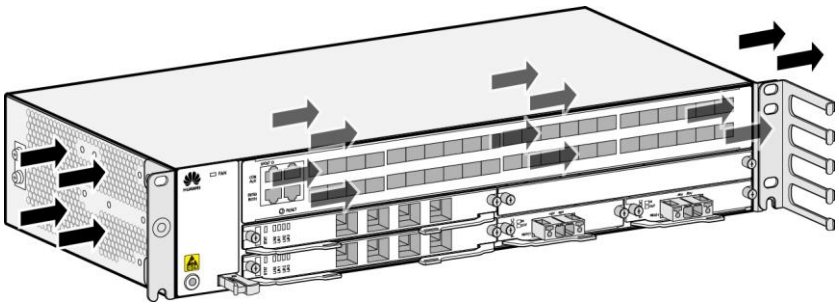
Item	Specification
Dimensions (H x W x D)	47.5mm x 221.4mm x 85.5mm
Weight	0.75kg
Fan quantity	3
Power consumption	• NE40E-M2E:12W • NE40E-M2F:17W
Noise	• NE40E-M2E:55dB,<72dB(Meet ETSI 72dBA) • NE40E-M2F:63dB,<72dB(Meet ETSI 72dBA)

6.3 NE40E-M2H Heat Dissipation System

6.3.1 System Air Channel

The system air channel allows air to flow from left to right.

Figure 6-3 Airflow of the NE40E-M2H



6.3.2 NE40E-M2H Fan Module

Overview

Table 6-9 Fan attributes

Attribute	Description
Description	NE40E-M2H Fan Module
BOM	02311PBL
Model	CR5M0M2HBX70

Table 6-10 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2H	slot 6	V800R009C00

Appearance

Indicators

Table 6-11 Description of indicators on the fan module

Indicator	Status Description
FAN	The indicator is off when the fan module is powered off, or has a hardware fault. If the indicator is steady green, it indicates that the fan module works normally. If the indicator is steady orange, it indicates that the fan module is unregistered.

Indicator	Status Description
	If the indicator is steady red, it indicates that the fan module fails.

Technical Specifications

Table 6-12 Fan specifications

Item	Specification
Dimensions (H x W x D)	47.5mm x 221.4mm x 85.5mm
Weight	0.75kg
Fan quantity	3
Power consumption	23.7W
Noise	63dB,<72dB(Meet ETSI 72dBA)

7 Boards

About This Chapter

This chapter describes the boards of the device.

7.1 Interface Card

7.1.1 2-Port 50GBase/1-Port 100GBase-QSFP28 Physical Interface Card(PIC)

Overview

Table 7-1 Board attributes

Attribute	Description
Board name silkscreen	2x50GE-QSFP28
Description	2-Port 50GBase/1-Port 100GBase-QSFP28 Physical Interface Card(PIC)
BOM	03032RNP
Model	CR5D0E5XMF90

Appearance

Panel

Table 7-2 Indicators

Indicator	Status Description
STAT	Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A 0-1	Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-3 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0 OUT1 IN1	IN0：50GE/100GE IN1：50GE	QSFP28	Interfaces for 2-channel QSFP28 optical signal input and output	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Both interfaces support 50GE, and the first interface also supports 100GE.
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-4 Interface specifications

Attribute	Description
Optical type supported	100Gbps QSFP28 Optical Module 50Gbps QSFP28 Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-5 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	~45W (assessed value）
Typical heat dissipation	~146 Btu/h (assessed value）
Weight	0.6 kg
Ambient temperature	• Long-term：0℃～45℃ • Short-term：-5 ℃ to 55 ℃

7.1.2 20-Port 100/1000Base-X-CSFP Physical Interface Card(PIC)

Overview

Table 7-6 Board attributes

Attribute	Description
Board name silkscreen	20xGE-CSFP
Description	20-Port 100/1000Base-X-CSFP Physical Interface Card(PIC)
BOM	03032JLB
Model	CR5D00EEGF71

Table 7-7 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2F	slot 1 to 2	V800R009C10
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-8 Indicators

Indicator	Status Description
STATUS	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty.

Indicator	Status Description
	Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
0-19	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-9 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
0-19	GE/FE	SFP/CSFP	Interfaces for 20-channel optical/electrical signal input and output	Optical fiber/network cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports FE/GE interfaces.
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-10 Interface specifications

Attribute	Description
Optical type supported	• 8.3 155Mbps eSFP Optical Module • 8.4 155Mbps eSFP BIDI Optical Module • 8.9 1.25Gbps eSFP Optical Module • 8.11 1.25Gbps eSFP CWDM Optical Module

Attribute	Description
	• 8.10 1.25Gbps eSFP BIDI Optical Module • 8.7 1.25Gbps CSFP BIDI Optical Module • 8.8 125M-1.25Gbps CSFP BIDI Optical Module • 8.12 125M~2.67Gbps eSFP DWDM Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-11 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	51.5 W
Typical heat dissipation	167.1 BTU/hour
Weight	0.8 kg (1.76 lb)
Ambient temperature	Long terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.3 1-Port 100GBase-CFP2 Physical Interface Card(PIC)

Overview

Table 7-12 Board attributes

Attribute	Description
Board name silkscreen	1x100GE-CFP2
Description	1-Port 100GBase-CFP2 Physical Interface Card(PIC)
BOM	03032AMN
Model	CR5D00E1NC79

Table 7-13 Mapping products and versions

Product	Slot ID	Earliest Software Version

Product	Slot ID	Earliest Software Version
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-14 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
100G L/A0	100G running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-15 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0	Interface for 100GE	100GE	CFP2	Optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
	optical signal input and output			

Functional Specifications

Features and Functions	Remarks
Basic function	1-port 100GBase-CFP2 physical interface card (PIC), supporting 100GE optical signal input and output.
Reliability and availability	Support for hot swap
Restrictions and Remarks	Not applicable to outdoor scenarios.

Technical Specifications

Table 7-16 Interface specifications

Attribute	Description
Optical type supported	• 8.19 100Gbps CFP2 Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-17 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	52.5 W
Typical heat dissipation	170.3 BTU/hour
Weight	0.8 kg (1.76 lb)

Item	Specification
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.4 10-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)

Overview

Table 7-18 Board attributes

Attribute	Description
Board name silkscreen	10x10GE-SFP+
Description	10-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)
BOM	03032AMK
Model	CR5D00LAXF71

Table 7-19 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-20 Indicators

Indicator	Status Description

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A 0-9	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-21 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0-OUT9 IN9	10GE/GE	SFP+/SFP	10 interfaces for 10GE/GE optical signal input and output	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Support for optical signal input and output of 10 10GE/GE interfaces.
Reliability and availability	Support for hot swap
Restrictions and Remarks	• Not applicable to outdoor scenarios. • The board does not support the OTN mode or FEC function. If a colored optical module is used and does not support optical amplifier insertion, the board supports only point-to-point optical transmission.

Technical Specifications

Table 7-22 Interface specifications

Attribute	Description
Optical type supported	• 8.14 10Gbps SFP+ Optical Module • 8.15 10Gbps SFP+ CWDM Optical Module • 8.16 10Gbps SFP+ BIDI Optical Module • 8.17 10Gbps SFP+ DWDM Optical Module • 8.13 1.25/9.953/10.3125Gbps SFP+ Optical Module • 8.9 1.25Gbps eSFP Optical Module • 8.11 1.25Gbps eSFP CWDM Optical Module • 8.10 1.25Gbps eSFP BIDI Optical Module • 8.12 125M~2.67Gbps eSFP DWDM Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-23 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	58.8 W
Typical heat dissipation	190.8 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.5 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1471nm) Physical Interface Card(PIC)

Overview

Table 7-24 Board attributes

Attribute	Description

Attribute	Description
Board name silkscreen	DMD1-CWDM
Description	Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1471nm) Physical Interface Card(PIC)
BOM	03032EEY
Model	CR5D1DMD1M01

Table 7-25 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-26 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-27 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Optical fiber adapter Westbound input/output interface (8-channel wavelength)	LC optical fiber
wA1 wD1 1471	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping (single wavelength)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1471	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (wavelength 1471 nm).
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-28 Interface specifications

Attribute	Description
Center wavelength	1471nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw /23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-29 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.6 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1491nm) Physical Interface Card(PIC)

Overview

Table 7-30 Board attributes

Attribute	Description

Attribute	Description
Board name silkscreen	DMD1-CWDM
Description	Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1491nm) Physical Interface Card(PIC)
BOM	03032EFA
Model	CR5D1DMD1M02

Table 7-31 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-32 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-33 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber
wA1 wD1 1491	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1491	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (wavelength 1491 nm).
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-34 Interface specifications

Attribute	Description

Attribute	Description
Center wavelength	1491nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw/23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-35 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.7 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1511nm) Physical Interface Card(PIC)

Overview

Table 7-36 Board attributes

Attribute	Description
Board name silkscreen	DMD1-CWDM
Description	Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1511nm) Physical Interface Card(PIC)

Attribute	Description
BOM	03032EFB
Model	CR5D1DMD1M03

Table 7-37 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-38 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-39 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber
wA1 wD1 1511	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1511	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (wavelength 1511 nm).
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-40 Interface specifications

Attribute	Description
Center wavelength	1511nm
Single-channel insertion	The insertion loss of

Attribute	Description
loss	wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw/23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-41 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.8 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1531nm) Physical Interface Card(PIC)

Overview

Table 7-42 Board attributes

Attribute	Description
Board name silkscreen	DMD1-CWDM
Description	Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1531nm) Physical Interface Card(PIC)
BOM	03032EFC
Model	CR5D1DMD1M04

Table 7-43 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-44 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-45 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
			(8-channel wavelength)	
wA1 wD1 1531	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1531	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-droppingchannel (single wavelength)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (wavelength 1531 nm).
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-46 Interface specifications

Attribute	Description
Center wavelength	1531nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.

Attribute	Description
Maximum input optical power	500 mw/23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-47 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.9 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1551nm) Physical Interface Card(PIC)

Overview

Table 7-48 Board attributes

Attribute	Description
Board name silkscreen	DMD1-CWDM
Description	Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1551nm) Physical Interface Card(PIC)
BOM	03032EFD
Model	CR5D1DMD1M05

Table 7-49 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-50 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-51 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
wA1 wD1 1551	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1551	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (wavelength 1551 nm).
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-52 Interface specifications

Attribute	Description
Center wavelength	1511nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw/23 dBm

Attribute	Description
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-53 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.10 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1571nm) Physical Interface Card(PIC)

Overview

Table 7-54 Board attributes

Attribute	Description
Board name silkscreen	DMD1-CWDM
Description	Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1571nm) Physical Interface Card(PIC)
BOM	03032EFE
Model	CR5D1DMD1M06

Table 7-55 Mapping products and versions

Product	Slot ID	Earliest Software Version

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Table 7-56 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-57 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-58 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber
wA1 wD1 1571	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping (single wavelength)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1571	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (wavelength 1571 nm).
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-59 Interface specifications

Attribute	Description
Center wavelength	1571nm
Single-channel insertion	The insertion loss of

Attribute	Description
loss	wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw/23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-60 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.11 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1591nm) Physical Interface Card(PIC)

Overview

Table 7-61 Board attributes

Attribute	Description
Board name silkscreen	DMD1-CWDM
Description	Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1591nm) Physical Interface Card(PIC)
BOM	03032EFF
Model	CR5D1DMD1M07

Table 7-62 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-63 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-64 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
			(8-channel wavelength)	
wA1 wD1 1591	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping (single wavelength)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1591	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (wavelength 1591 nm).
Reliability and availability	Support for hot swap.

Technical Specifications

Table 7-65 Interface specifications

Attribute	Description
Center wavelength	1591nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.

Attribute	Description
Maximum input optical power	500 mw/23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-66 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.12 Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1611nm) Physical Interface Card(PIC)

Overview

Table 7-67 Board attributes

Attribute	Description
Board name silkscreen	DMD1-CWDM
Description	Bidirectional 1-Channel CWDM Optical Add/Drop Multiplexing (1611nm) Physical Interface Card(PIC)
BOM	03032EFG
Model	CR5D1DMD1M08

Table 7-68 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-69 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-70 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
wA1 wD1 1611	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping (single wavelength)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1611	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (single wavelength)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (wavelength 1611 nm).
Reliability and availability	Support for hot swap.

Technical Specifications

Table 7-71 Interface specifications

Attribute	Description
Center wavelength	1611 nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw/23 dBm

Attribute	Description
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-72 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.13 Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1471/1491nm) Physical Interface Card(PIC)

Overview

Table 7-73 Board attributes

Attribute	Description
Board name silkscreen	DMD2-CWDM
Description	Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1471/1491nm) Physical Interface Card(PIC)
BOM	03032EFH
Model	CR5D2DMD2M01

Table 7-74 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-75 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-76 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
wA1 wD1 1471	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (wavelength 1471 nm)	LC optical fiber
wA1 wD1 1491	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (wavelength 1471 nm)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1471	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (wavelength 1471 nm)	LC optical fiber
eA1 eD1 1491	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (wavelength 1491 nm)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional 2-channel CWDM optical add/drop multiplexing (wavelength 1471 nm/1491 nm).
Reliability and availability	Support for hot swap.

Technical Specifications

Table 7-77 Interface specifications

Attribute	Description
Center wavelength	1471 nm/1491 nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw/23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-78 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.7 kg (1.54 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.14 Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1511/1531nm) Physical Interface Card(PIC)

Overview

Table 7-79 Board attributes

Attribute	Description

Attribute	Description
Board name silkscreen	DMD2-CWDM
Description	Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1511/1531nm) Physical Interface Card(PIC)
BOM	03032EFJ
Model	CR5D2DMD2M02

Table 7-80 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-81 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic.

Indicator	Status Description
	If the indicator is off, the PIC is powered off or is not registered.

Table 7-82 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber
wA1 wD1 1511	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (wavelength 1511 nm)	LC optical fiber
wA1 wD1 1531	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (wavelength 1531 nm)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1511	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (wavelength 1511 nm)	LC optical fiber
eA1 eD1 1531	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (wavelength 1531 nm)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional 2-channel CWDM optical add/drop multiplexing (wavelength 1511 nm/1531 nm).
Reliability and availability	Support for hot swap.

Technical Specifications

Table 7-83 Interface specifications

Attribute	Description
Center wavelength	1511nm/1531nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw/23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-84 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.7 kg (1.54 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.15 Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1551/1571nm) Physical Interface Card(PIC)

Overview

Table 7-85 Board attributes

Attribute	Description
Board name silkscreen	DMD2-CWDM
Description	Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1551/1571nm) Physical Interface Card(PIC)
BOM	03032EFK
Model	CR5D2DMD2M03

Table 7-86 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-87 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly.

Indicator	Status Description
	Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-88 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber
wA1 wD1 1551	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (wavelength 1551 nm)	LC optical fiber
wA1 wD1 1571	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (wavelength 1571 nm)	LC optical fiber
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1551	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (wavelength 1551 nm)	LC optical fiber
eA1 eD1	GE/10GE	Optical	Eastbound	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
1571		fiber adapter	wavelength-adding/wavelength-dropping channel (wavelength 1571 nm)	

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional 2-channel CWDM optical add/drop multiplexing (wavelength 1551 nm/1571 nm).
Reliability and availability	Support for hot swap.

Technical Specifications

Table 7-89 Interface specifications

Attribute	Description
Center wavelength	1551nm/1571nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw/23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-90 Board specifications

Item	Specification

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.7 kg (1.54 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.16 Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1591/1611nm) Physical Interface Card(PIC)

Overview

Table 7-91 Board attributes

Attribute	Description
Board name silkscreen	DMD2-CWDM
Description	Bidirectional 2-Channel CWDM Optical Add/Drop Multiplexing (1591/1611nm) Physical Interface Card(PIC)
BOM	03032EFL
Model	CR5D2DMD2M04

Table 7-92 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C00
NE40E-M2F	slot 1 to 2	V800R009C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-93 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-94 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
wIN wOUT	GE/10GE	Optical fiber adapter	Westbound input/output interface (8-channel wavelength)	LC optical fiber
wA1 wD1 1591	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping channel (wavelength 1591 nm)	LC optical fiber
wA1 wD1 1611	GE/10GE	Optical fiber adapter	Westbound wavelength-adding/wavelength-dropping	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
			channel (wavelength 1611 nm)	
eIN eOUT	GE/10GE	Optical fiber adapter	Eastbound input/output interface (8-channel wavelength)	LC optical fiber
eA1 eD1 1591	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (wavelength 1591 nm)	LC optical fiber
eA1 eD1 1611	GE/10GE	Optical fiber adapter	Eastbound wavelength-adding/wavelength-dropping channel (wavelength 1611 nm)	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional 2-channel CWDM optical add/drop multiplexing (wavelength 1591 nm/1611 nm).
Reliability and availability	Support for hot swap.

Technical Specifications

Table 7-95 Interface specifications

Attribute	Description
Center wavelength	1591nm/1611nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or

Attribute	Description
	west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw /23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-96 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.7 kg (1.54 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.17 4-Channel CWDM Optical Add/Drop Multiplexing (1471/1491/1511/1531nm) Physical Interface Card(PIC)

Overview

Table 7-97 Board attributes

Attribute	Description
Board name silkscreen	MR4-CWDM
Description	4-Channel CWDM Optical Add/Drop Multiplexing (1471/1491/1511/1531nm) Physical Interface Card(PIC)
BOM	03032JKV
Model	CR5D3DMR4M01

Table 7-98 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C10
NE40E-M2F	slot 1 to 2	V800R009C10
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-99 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-100 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT IN	GE/10GE	Optical fiber adapter	Interface for input and output	LC optical fiber
A1 D1	GE/10GE	Optical	wavelength-add	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
1471		fiber adapter	ing/wavelength-dropping channel (1471 nm single wavelength)	
A1 D1 1491	GE/10GE	Optical fiber adapter	wavelength-adding/wavelength-dropping channel (1491 nm single wavelength)	LC optical fiber
A1 D1 1511	GE/10GE	Optical fiber adapter	wavelength-adding/wavelength-dropping channel (1511 nm single wavelength)	LC optical fiber
A1 D1 1531	GE/10GE	Optical fiber adapter	wavelength-adding/wavelength-dropping channel (1531 nm single wavelength)	LC optical fiber
MI MO	GE/10GE	Optical fiber adapter	Cascading channel for input and output	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (1471/1491/1511/1531 nm).
Reliability and availability	Support for hot swap.
Restrictions and Remarks	No applicable to outdoor scenarios.

Technical Specifications

Table 7-101 Interface specifications

Attribute	Description
Center wavelength	1471/1491/1511/1531 nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.3 dB

Table 7-102 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.7 kg (1.54 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.18 4-Channel CWDM Optical Add/Drop Multiplexing (1551/1571/1591/1611nm) Physical Interface Card(PIC)

Overview

Table 7-103 Board attributes

Attribute	Description

Attribute	Description
Board name silkscreen	MR4-CWDM
Description	4-Channel CWDM Optical Add/Drop Multiplexing (1551/1571/1591/1611nm) Physical Interface Card(PIC)
BOM	03032JKX
Model	CR5D3DMR4M02

Table 7-104 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R009C10
NE40E-M2F	slot 1 to 2	V800R009C10
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-105 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-106 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT IN	GE/10GE	Optical fiber adapter	Interface for input and output	LC optical fiber
A1 D1 1551	GE/10GE	Optical fiber adapter	wavelength-adding/wavelength-dropping channel (1551 nm single wavelength)	LC optical fiber
A1 D1 1571	GE/10GE	Optical fiber adapter	wavelength-adding/wavelength-dropping channel (1571 nm single wavelength)	LC optical fiber
A1 D1 1591	GE/10GE	Optical fiber adapter	wavelength-adding/wavelength-dropping channel (1591 nm single wavelength)	LC optical fiber
A1 D1 1611	GE/10GE	Optical fiber adapter	wavelength-adding/wavelength-dropping channel (1611 nm single wavelength)	LC optical fiber
MI MO	GE/10GE	Optical fiber adapter	Cascading channel for input and output	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Supports bidirectional single-channel CWDM optical add/drop multiplexing (1551/1571/1591/1611 nm).
Reliability and	Support for hot swap.

Features and Functions	Remarks
availability	
Restrictions and Remarks	No applicable to outdoor scenarios.

Technical Specifications

Table 7-107 Interface specifications

Attribute	Description
Center wavelength	1551/1571/1591/1611 nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.3 dB

Table 7-108 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.7 kg (1.54 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.19 1-Port 40GBase-CFP Physical Interface Card(PIC)

Overview

Table 7-109 Board attributes

Attribute	Description
Board name silkscreen	1x40GE-CFP
Description	1-Port 40GBase-CFP Physical Interface Card(PIC)
BOM	03031KYS
Model	CR5D00E1MF70

Table 7-110 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2F	slot 1 to 2	V800R007C10
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-111 Indicators

Indicator	Status Description
STAT	Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the

Indicator	Status Description
	logic. If the indicator is off, the PIC is powered off or is not registered.
L/A 0	Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-112 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0	40GE	CFP	Interface for 40GE optical signal input and output	MPO/LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	1-port 40GBase-CFP physical interface card (PIC), supporting 40GE optical signal input and output.
Reliability and availability	Support for hot swap
Restrictions and Remarks	Not applicable to outdoor scenarios.

Technical Specifications

Table 7-113 Interface specifications

Attribute	Description
Optical type supported	• 8.18 40Gbps CFP Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-114 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	23.0 W
Typical heat dissipation	74.6 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.20 8-Port 100/1000Base-RJ45 Physical Interface Card(PIC)

Overview

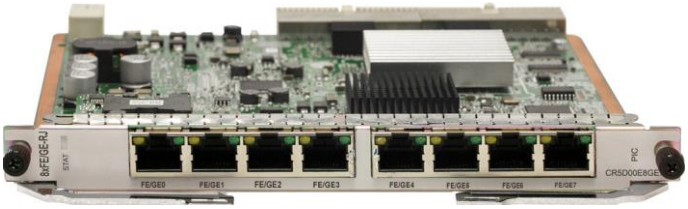
Table 7-115 Board attributes

Attribute	Description
Board name silkscreen	8xFE/GE-RJ
Description	8-Port 100/1000Base-RJ45 Physical Interface Card(PIC)
BOM	03031DGY
Model	CR5D00E8GE71

Table 7-116 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R006C20
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance



Panel

Table 7-117 Indicators

Indicator	Status Description
STAT	Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-118 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
FE/GE0-FE/GE7	FE	RJ45	Interfaces for 8-channel electrical signal input and output	Network cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports eight GE electrical interfaces.
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-119 Interface specifications

Attribute	Description
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-120 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	11.7 W
Typical heat dissipation	38.0 BTU/hour
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.21 10-Port 100/1000Base-X-SFP Physical Interface Card(PIC)

Overview

Table 7-121 Board attributes

Attribute	Description
Board name silkscreen	10xFE/GE-SFP
Description	10-Port 100/1000Base-X-SFP Physical Interface Card(PIC)
BOM	03031DJR
Model	CR5D00EAGF70

Table 7-122 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R007C00
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-123 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A(0-9)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-124 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0-OUT9 IN9	GE/FE	SFP	Interfaces for 8-channel optical/electrical signal input and output	Optical fiber/network cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports FE/GE interfaces.
Reliability and availability	Supports hot swap.

Technical Specifications

Table 7-125 Interface specifications

Attribute	Description
Optical type supported	• 8.2 155Mbps SFP Electrical Transceiver • 8.3 155Mbps eSFP Optical Module • 8.4 155Mbps eSFP BIDI Optical Module • 8.6 1Gbps Electrical Transceiver • 8.9 1.25Gbps eSFP Optical Module • 8.11 1.25Gbps eSFP CWDM Optical Module • 8.10 1.25Gbps eSFP BIDI Optical Module • 8.12 125M~2.67Gbps eSFP DWDM Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-126 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24

Item	Specification
	in.)
Typical power consumption	13.3 W
Typical heat dissipation	43.2 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.22 4-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)

Overview

Table 7-127 Board attributes

Attribute	Description
Board name silkscreen	4×10GE-SFP+
Description	4-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)
BOM	03031DJM
Model	CR5D00L4XF72

Table 7-128 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-129 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A(0-3)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-130 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0 -OUT3 IN3	10GE LAN/WAN	SFP+	Interfaces for 4-channel 10GE optical signal input and output	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	Provides 4 10GE SFP+ optical interfaces.
Reliability and availability	Supports hot swap.
Restrictions and Remarks	The board does not support the OTN mode or FEC function. If a colored optical module is used and does not support optical amplifier insertion, the board supports only point-to-point optical transmission.

Technical Specifications

Table 7-131 Interface specifications

Attribute	Description
Optical type supported	• 8.14 10Gbps SFP+ Optical Module • 8.15 10Gbps SFP+ CWDM Optical Module • 8.16 10Gbps SFP+ BIDI Optical Module • 8.17 10Gbps SFP+ DWDM Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-132 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	25.0 W
Typical heat dissipation	81.1 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.23 1-Port 10GBase LAN/WAN-SFP+ + 8-Port 100/1000Base-X-SFP Physical Interface Card(PIC)

Overview

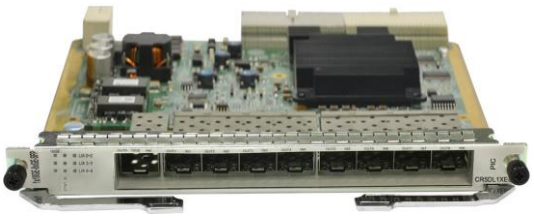
Table 7-133 Board attributes

Attribute	Description
Board name silkscreen	1x10GE-8xGE-SFP
Description	1-Port 10GBase LAN/WAN-SFP+ + 8-Port 100/1000Base-X-SFP Physical Interface Card(PIC)
BOM	03031DJS
Model	CR5DL1XE8G71

Table 7-134 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R007C00
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance



Panel

Table 7-135 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly.

Indicator	Status Description
	Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A(0-8)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-136 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 10GE IN0	10GE	SFP+	Interface for 1-channel SFP+ optical signal input and output	LC optical fiber
OUT1 IN1-OUT8 IN8	FE/GE	SFP	Interfaces for 8-channel SFP optical signal input and output	LC optical fiber/cable

Functional Specifications

Features and Functions	Remarks
Basic function	• Provides 10GBase LAN/WAN-SFP+ interfaces for 10GE SFP+ optical modules and supports 10GE optical interface features and synchronous Ethernet. • Provides 8 100/1000Base-X-SFP interfaces for GE optical modules and supports GE optical interface features. • Provides 8 100/1000Base-X-SFP interfaces for FE optical modules and supports FE optical interface features. • Provides 8 100/1000Base-X-SFP interfaces for SFP modules with electrical interfaces and supports 100M/1000M autonegotiation

Features and Functions	Remarks
	electrical interface features but not synchronous Ethernet. • Provides 8 100/1000Base-X-SFP interfaces for intermixing of GE optical modules, FE optical modules, and SFP modules with electrical interfaces.
Reliability and availability	Supports hot swap.
Restrictions and Remarks	The board does not support the OTN mode or FEC function. If a colored optical module is used and does not support optical amplifier insertion, the board supports only point-to-point optical transmission.

Technical Specifications

Table 7-137 Interface specifications

Attribute	Description
Optical type supported	• 8.14 10Gbps SFP+ Optical Module • 8.15 10Gbps SFP+ CWDM Optical Module • 8.16 10Gbps SFP+ BIDI Optical Module • 8.17 10Gbps SFP+ DWDM Optical Module • 8.2 155Mbps SFP Electrical Transceiver • 8.3 155Mbps eSFP Optical Module • 8.4 155Mbps eSFP BIDI Optical Module • 8.6 1Gbps Electrical Transceiver • 8.9 1.25Gbps eSFP Optical Module • 8.11 1.25Gbps eSFP CWDM Optical Module • 8.10 1.25Gbps eSFP BIDI Optical Module • 8.12 125M~2.67Gbps eSFP DWDM Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-138 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power	14.3 W

Item	Specification
consumption	
Typical heat dissipation	46.4 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.24 2-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)

Overview

Table 7-139 Board attributes

Attribute	Description
Board name silkscreen	2x10GE-SFP+
Description	2-Port 10GBase LAN/WAN-SFP+ Physical Interface Card(PIC)
BOM	03030WEE
Model	CR5D00L2XF71

Table 7-140 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R006C20
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-141 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A(0-1)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-142 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0 OUT1 IN1	10GE	SFP+	Interfaces for 2-channel SFP+ optical signal input and output	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	2-port 10GBase LAN/WAN-SFP+ physical interface card (PIC), supporting optical signal input and output of two 10GE interfaces.
Reliability and availability	Support for hot swap.
Restrictions and Remarks	The board does not support the OTN mode or FEC function. If a colored optical module is used and does not support optical amplifier

Features and Functions	Remarks
	insertion, the board supports only point-to-point optical transmission.

Technical Specifications

Table 7-143 Interface specifications

Attribute	Description
Optical type supported	• 8.14 10Gbps SFP+ Optical Module • 8.15 10Gbps SFP+ CWDM Optical Module • 8.16 10Gbps SFP+ BIDI Optical Module • 8.17 10Gbps SFP+ DWDM Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-144 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	10.0 W
Typical heat dissipation	32.4 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.25 4-Port Channelized STM-1c POS-SFP Physical Interface Card(PIC)

Overview

Table 7-145 Board attributes

Attribute	Description

Attribute	Description
Board name silkscreen	4xSTM1-cPOS
Description	4-Port Channelized STM-1c POS-SFP Physical Interface Card(PIC)
BOM	03030QBM
Model	CR5D00C4CF71

Table 7-146 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R006C20
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-147 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic.

Indicator	Status Description
	If the indicator is off, the PIC is powered off or is not registered.
L/A(0-3)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-148 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0-OUT3 IN3	CPOS	SFP	Interfaces for 4-channel 155M optical/electrical signal input and output	LC optical fiber/cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports 63 E1 links over one 155M SDH link.
Reliability and availability	Support for hot swap.
Link protocol	PPP, MP, TDM, ATM, and IMA

Technical Specifications

Table 7-149 Interface specifications

Attribute	Description
Optical type supported	• 8.2 155Mbps SFP Electrical Transceiver • 8.3 155Mbps eSFP Optical Module • 8.4 155Mbps eSFP BIDI Optical Module • 8.12 125M~2.67Gbps eSFP DWDM Optical Module
Working mode	Full-duplex

Attribute	Description
Compliant standard	IMA 1.1, RFC4717, RFC4385, RFC4816, RFC5086, RFC4553_SATOP, and RFC1662
Frame format	The 155M interface supports SDH; the channelized e1 supports non-framed, CRC4, and NO-CRC4.

Table 7-150 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	14.5 W
Typical heat dissipation	47.0 BTU/hour
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.26 32-Port E1 Physical Interface Card(PIC,75ohm)

Overview

Table 7-151 Board attributes

Attribute	Description
Board name silkscreen	32xE1-75
Description	32-Port E1 Physical Interface Card(PIC,75ohm)
BOM	03030QBN
Model	CR5D000IE170

Table 7-152 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R006C20
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-153 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-154 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
E1(0-15) E1(16-31)	E1	DB32	32 E1 interfaces	Cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports a maximum of 32 E1 interfaces. Services on each interface can be configured.
Reliability and	Support for hot swap

Features and Functions	Remarks
availability	
Link protocol	PPP, MP, TDM, ATM, and IMA

Technical Specifications

Table 7-155 Interface specifications

Attribute	Description
Working mode	Full-duplex
Compliant standard	IMA 1.1, RFC4717, RFC4385, RFC4816, RFC5086, RFC4553_SATOP, and RFC1662
Frame format	Non-framed, CRC4, and NO-CRC4
Interface code	HDB3
Stated bit rate	2048 kbit/s

Table 7-156 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	13.5 W
Typical heat dissipation	43.8 BTU/hour
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.27 32-Port E1 Physical Interface Card(PIC,120ohm)

Overview

Table 7-157 Board attributes

Attribute	Description
Board name silkscreen	32xE1-120

Attribute	Description
Description	32-Port E1 Physical Interface Card(PIC,120ohm)
BOM	03030QBP
Model	CR5D000IE171

Table 7-158 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R006C20
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-159 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-160 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
E1(0-15) E1(16-31)	E1	DB32	32 E1 interfaces	Cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports a maximum of 32 E1 interfaces. Services on each interface can be configured.
Reliability and availability	Support for hot swap
Link protocol	PPP, MP, TDM, ATM, and IMA

Technical Specifications

Table 7-161 Interface specifications

Attribute	Description
Working mode	Full-duplex
Compliant standard	IMA 1.1, RFC4717, RFC4385, RFC4816, RFC5086, RFC4553_SATOP, and RFC1662
Frame format	Non-framed, CRC4, and NO-CRC4
Interface code	HDB3
Stated bit rate	2048 kbit/s

Table 7-162 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	13.5 W
Typical heat dissipation	43.8 BTU/hour

Item	Specification
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.28 16-Port E1 Physical Interface Card(PIC,75ohm)

Overview

Table 7-163 Board attributes

Attribute	Description
Board name silkscreen	16xE1-75
Description	16-Port E1 Physical Interface Card(PIC,75ohm)
BOM	03030REX
Model	CR5D000DE170

Table 7-164 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R007C00
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-165 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-166 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
E1(0-15)	E1	DB16	16 E1 interfaces	Cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports a maximum of 16 E1 interfaces. Services on each interface can be configured.
Reliability and availability	Support for hot swap
Link protocol	PPP, MP, TDM, ATM, and IMA

Technical Specifications

Table 7-167 Interface specifications

Attribute	Description
Working mode	Full-duplex

Attribute	Description
Compliant standard	IMA 1.1, RFC4717, RFC4385, RFC4816, RFC5086, RFC4553_SATOP, and RFC1662
Frame format	Non-framed, CRC4, and NO-CRC4
Interface code	HDB3
Stated bit rate	2048 kbit/s

Table 7-168 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	9.5 W
Typical heat dissipation	30.7 BTU/hour
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.29 16-Port E1 Physical Interface Card(PIC,120ohm)

Overview

Table 7-169 Board attributes

Attribute	Description
Board name silkscreen	16xE1-120
Description	16-Port E1 Physical Interface Card(PIC,120ohm)
BOM	03030REW
Model	CR5D000DE171

Table 7-170 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R007C00

Product	Slot ID	Earliest Software Version
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-171 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-172 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
E1(0-15)	E1	DB16	16 E1 interfaces	Cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports a maximum of 16 E1 interfaces. Services on each interface can be configured.
Reliability and availability	Support for hot swap
Link protocol	PPP, MP, TDM, ATM, and IMA

Technical Specifications

Table 7-173 Interface specifications

Attribute	Description
Working mode	Full-duplex
Compliant standard	IMA 1.1, RFC4717, RFC4385, RFC4816, RFC5086, RFC4553_SATOP, and RFC1662
Frame format	Non-framed, CRC4, and NO-CRC4
Interface code	HDB3
Stated bit rate	2048 kbit/s

Table 7-174 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	9.5 W
Typical heat dissipation	30.7 BTU/hour
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.30 4-Port OC-3c/STM-1c POS-SFP Flexible Interface Card(FIC)

Overview

Table 7-175 Board attributes

Attribute	Description
Board name silkscreen	4xOC3-POS
Description	4-Port OC-3c/STM-1c POS-SFP Flexible Interface Card(FIC)
BOM	03030PCB
Model	CR5D00P4CF70

Table 7-176 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R006C20
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-177 Indicators

Indicator	Status Description
STAT	Status indicator Green:

Indicator	Status Description
	• If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A(0-3)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-178 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0-OUT3 IN3	POS	SFP	Interfaces for 4-channel 155M optical/electrical signal input and output	LC optical fiber/PC cable

Functional Specifications

Features and Functions	Remarks
Basic function	Provides four 155M POS interfaces.
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-179 Interface specifications

Attribute	Description

Attribute	Description
Optical type supported	• 8.2 155Mbps SFP Electrical Transceiver • 8.3 155Mbps eSFP Optical Module • 8.4 155Mbps eSFP BIDI Optical Module • 8.12 125M~2.67Gbps eSFP DWDM Optical Module
Working mode	Full-duplex
Compliant standard	ITU-T G707
Frame format	HDLC and PPP

Table 7-180 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	14.5 W
Typical heat dissipation	47.0 BTU/hour
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.31 2-Port OC-3c/STM-1c (or 1-Port OC-12c/STM-4C) POS-SFP Physical Interface Card(PIC)

Overview

Table 7-181 Board attributes

Attribute	Description
Board name silkscreen	2xSTM1/1xSTM4-POS
Description	2-Port OC-3c/STM-1c (or 1-Port OC-12c/STM-4C) POS-SFP Physical Interface Card(PIC)
BOM	03031HRN
Model	CR5DP2C1HF70

Table 7-182 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R007C00
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-183 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A(0-1)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-184 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0–OUT1 IN1	POS	SFP	Interfaces for 2-channel 155M optical/electrical signal input and output	LC optical fiber/PC cable

Functional Specifications

Features and Functions	Remarks
Basic function	Provides two 155 Mbit/s POS interfaces (default configuration) or one 622 Mbit/s POS interface.
Reliability and availability	Support for hot swap
Restrictions and Remarks	Support for configuration of the interface rate on the board using the set service-mode port-rate command to allow interface rate switching between 2 x 155M POS and 1 x 622M POS. The board automatically power cycles after interface rate switching.

Technical Specifications

Table 7-185 Interface specifications

Attribute	Description
Optical type supported	• 8.2 155Mbps SFP Electrical Transceiver • 8.3 155Mbps eSFP Optical Module • 8.4 155Mbps eSFP BIDI Optical Module • 8.12 125M~2.67Gbps eSFP DWDM Optical Module • 8.5 622Mbps eSFP Optical Module
Working mode	Full-duplex
Compliant standard	ITU G.707
Frame format	HDLC and PPP

Table 7-186 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	14.5 W
Typical heat dissipation	47.0 BTU/hour
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.32 Auxiliary Flexible Interface Card with 4-Port 100Base-RJ45 (FIC,Supporting 1588v2)

Overview

Table 7-187 Board attributes

Attribute	Description
Board name silkscreen	AUX/4xFE-A
Description	Auxiliary Flexible Interface Card with 4-Port 100Base-RJ45 (FIC,Supporting 1588v2)
BOM	03030MER
Model	CR5D00AUXQ10

Table 7-188 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R006C20
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-189 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-190 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
F1	FE	RJ45	Interface for 1-channel service transparent transmission	Network cable
PHONE	FE	RJ45	Interface for orderwires	Network cable
ALMO	FE	RJ45	Interface for enabling and disabling status alarm output	Network cable
ALMI	FE	RJ45	Interface for	Network cable

Interface Name	Interface Type	Connector Type	Description	Cable
			enabling and disabling status alarm input	
FE0-FE3	FE	RJ45	Reserved	Network cable

Functional Specifications

Features and Functions	Remarks
Basic function	Provides four FE electrical interfaces. The ALM interfaces on the board can be connected to the burglarproof sensor (on the cabinet door) and smoke sensor to implement on-site ambinet monitoring.
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-191 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	10.0 W
Typical heat dissipation	32.4 BTU/hour
Weight	0.4 kg (0.88 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.33 8-Channel CWDM Multiplexing & Demultiplexing (1471/1491/1511/1531/1551/1571/1591/1611nm) Physical Interface Card(PIC)

Overview

Table 7-192 Board attributes

Attribute	Description
Board name silkscreen	MD8A-CWDM
Description	8-Channel CWDM Multiplexing & Demultiplexing (1471/1491/1511/1531/1551/1571/1591/1611nm) Physical Interface Card(PIC)
BOM	03030RJQ
Model	CR5D08CWDM70

Table 7-193 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R006C20
NE40E-M2F	slot 1 to 2	V800R007C00
NE40E-M2H	slot 1 to 2	V800R009C00

Appearance

Panel

Table 7-194 Indicators

Indicator	Status Description

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Table 7-195 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT IN LINE	GE/10GE	Optical fiber adapter	Interface for 8-channel wavelength multiplexer input and output	LC optical fiber
OUT0 IN0	GE/10GE	Optical fiber adapter	Interface for 1471 nm wavelength demultiplexer input and output	LC optical fiber
OUT0 IN1	GE/10GE	Optical fiber adapter	Interface for 1491 nm wavelength demultiplexer input and output	LC optical fiber
OUT0 IN2	GE/10GE	Optical fiber adapter	Interface for 1511 nm wavelength demultiplexer input and output	LC optical fiber
OUT0 IN3	GE/10GE	Optical fiber adapter	Interface for 1531 nm wavelength demultiplexer input and	LC optical fiber

Interface Name	Interface Type	Connector Type	Description	Cable
			output	
OUT0 IN4	GE/10GE	Optical fiber adapter	Interface for 1551 nm wavelength demultiplexer input and output	LC optical fiber
OUT0 IN5	GE/10GE	Optical fiber adapter	Interface for 1571 nm wavelength demultiplexer input and output	LC optical fiber
OUT0 IN6	GE/10GE	Optical fiber adapter	Interface for 1591 nm wavelength demultiplexer input and output	LC optical fiber
OUT0 IN7	GE/10GE	Optical fiber adapter	Interface for 1611 nm wavelength demultiplexer input and output	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	8-channel wavelength multiplexer/demultiplexer (1471/1491/1511/1531/1551/1571/1591/1611 nm)
Reliability and availability	Support for hot swap
Restrictions and Remarks	No applicable to outdoor scenarios.

Technical Specifications

Table 7-196 Interface specifications

Attribute	Description
Center wavelength	1471/1491/1511/1531/1551/1571/1591/1611nm
Single-channel insertion loss	The insertion loss of wavelength-dropping/wavelength-adding channels is less than 1.2 dB, and the insertion loss of east-in-and-west-out or west-in-and-east-out is less than 1.4 dB, with no optical fiber insertion loss being taken into consideration.
Maximum input optical power	500 mw /23 dBm
Return loss	>= 40 dB
Optical fiber type	Single-mode
PMD	Single-mode
PDL	<= 0.2 dB

Table 7-197 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	1.0 W
Typical heat dissipation	3.2 BTU/hour
Weight	0.7 kg (1.54 lb)
Ambient temperature	Long terms: 0 ℃ to 45 ℃ (32 ℉ to 113 ℉) Short terms: -5 ℃ to 55 ℃ (23 ℉ to 131 ℉)

7.1.34 2-Port 10GBase LAN/WAN-SFP+ Physical Interface Card H (PIC-H)

Overview

Table 7-198 Board attributes

Attribute	Description

Attribute	Description
Board name silkscreen	2x10GE-SFP+-H
Description	2-Port 10GBase LAN/WAN-SFP+ Physical Interface Card H (PIC-H)
BOM	03032CRJ
Model	CR5D0L2XFH72

Table 7-199 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2F	slot 1 to 2	V800R008C10
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-200 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.

Indicator	Status Description
L/A(0-1)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-201 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0-OUT1 IN1	10GE	SFP+	Interfaces for 2-channel SFP+ optical signal input and output	LC optical fiber

Functional Specifications

Features and Functions	Remarks
Basic function	2-port 10GBase LAN/WAN-SFP+ physical interface card (PIC), supporting optical signal input and output of two 10GE interfaces.
Reliability and availability	Support for hot swap.
Restrictions and Remarks	The board does not support the OTN mode or FEC function. If a colored optical module is used and does not support optical amplifier insertion, the board supports only point-to-point optical transmission.

Technical Specifications

Table 7-202 Interface specifications

Attribute	Description
Optical type supported	• 8.14 10Gbps SFP+ Optical Module • 8.15 10Gbps SFP+ CWDM Optical Module • 8.16 10Gbps SFP+ BIDI Optical Module • 8.17 10Gbps SFP+ DWDM Optical Module
Working mode	Full-duplex

Attribute	Description
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-203 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	10.0 W
Typical heat dissipation	32.4 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.35 8-Port 100/1000Base-X-SFP Physical Interface Card H (PIC-H)

Overview

Table 7-204 Board attributes

Attribute	Description
Board name silkscreen	8xFE/GE-SFP-H
Description	8-Port 100/1000Base-X-SFP Physical Interface Card H (PIC-H)
BOM	03032CRK
Model	CR5D0E8GFH70

Table 7-205 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2F	slot 1 to 2	V800R008C10
NE40E-M2H	slot 1 to 2	V800R009C10

Appearance

Panel

Table 7-206 Indicators

Indicator	Status Description
STAT	Status indicator Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty. Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A(0-7)	Running status indicator Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-207 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0-OUT7 IN7	FE/GE	SFP	Interfaces for 8-channel optical/electrical signal input and output	fiber/network cable

Functional Specifications

Features and Functions	Remarks
Basic function	Supports GE/FE interfaces. 100M/1000M autonegotiation is supported on FE interfaces.
Reliability and availability	Support for hot swap

Technical Specifications

Table 7-208 Interface specifications

Attribute	Description
Optical type supported	• 8.2 155Mbps SFP Electrical Transceiver • 8.3 155Mbps eSFP Optical Module • 8.4 155Mbps eSFP BIDI Optical Module • 8.6 1Gbps Electrical Transceiver • 8.9 1.25Gbps eSFP Optical Module • 8.11 1.25Gbps eSFP CWDM Optical Module • 8.10 1.25Gbps eSFP BIDI Optical Module • 8.12 125M~2.67Gbps eSFP DWDM Optical Module
Working mode	Full-duplex
Compliant standard	IEEE 802.3
Frame format	Ethernet_II, Ethernet_SAP, and Ethernet_SNAP

Table 7-209 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	11.0 W
Typical heat dissipation	35.7 BTU/hour
Weight	0.6 kg (1.32 lb)
Ambient temperature	Long terms: -40 ℃ to 65 ℃ (-40 ℉ to 149 ℉)

7.1.36 2-Port OC-3c/STM-1c ATM-SFP Physical Interface Card(PIC)

Overview

Table 7-210 Board attributes

Attribute	Description
Board name silkscreen	2xSTM1-ATM
Description	2-Port OC-3c/STM-1c ATM-SFP Physical Interface Card(PIC)
BOM	03031WDE
Model	CR5D00A2CF70

Table 7-211 Mapping products and versions

Product	Slot ID	Earliest Software Version
NE40E-M2E	slot 1 to 2	V800R008C10
NE40E-M2F	slot 1 to 2	V800R008C10

Appearance

Panel

Table 7-212 Indicators

Indicator	Status Description
STATUS	Green: • If the indicator is steady on, the PIC is working properly. Red: • If the indicator is steady on, the hardware on the PIC is faulty.

Indicator	Status Description
	Yellow: • If the indicator is steady on, the PIC is installed in a slot for a HIC and an alarm is reported or the PIC is not loaded with the logic. If the indicator is off, the PIC is powered off or is not registered.
L/A(0-1)	Green: • If the indicator is steady on, the link is normal. • If the indicator is off, the link is Down. • If the indicator blinks, data is being transmitted.

Table 7-213 Service interfaces

Interface Name	Interface Type	Connector Type	Description	Cable
OUT0 IN0-OUT1 IN1	ATM	SFP	Interfaces for 2-channel 155M optical/electrical signal input and output	LC optical fiber/PC cable

Functional Specifications

Features and Functions	Remarks
Basic function	Support for 2-port 155M ATM service
Reliability and availability	Support for hot swap
Link protocol	ATM

Technical Specifications

Table 7-214 Interface specifications

Attribute	Description
Optical type supported	• 8.2 155Mbps SFP Electrical Transceiver • 8.3 155Mbps eSFP Optical Module • 8.4 155Mbps eSFP BIDI Optical Module

Attribute	Description
	• 8.12 125M~2.67Gbps eSFP DWDM Optical Module
Working mode	Full-duplex
Compliant standard	RFC1483, RFC2225, RFC2514, RFC4717, and ITU-I I.610
Frame format	SDH and SONET

Table 7-215 Board specifications

Item	Specification
Dimensions (H x W x D)	19.8mm x 193.8mm x 209.3 mm (0.78 in. x 7.63 in. x 8.24 in.)
Typical power consumption	25.6 W
Typical heat dissipation	83.1 BTU/hour
Weight	0.8 kg (1.76 lb)
Ambient temperature	Long terms: -5 ℃ to 65 ℃ (23 ℉ to 149 ℉)

8 Optical Module

About This Chapter

This chapter presents the optical module.

8.1 Instructions on How to Use an Optical Module

NOTE

Only optical modules matching Huawei products can be used. These optical modules are strictly tested by Huawei. If non-matching optical modules are used, device requirements may fail to be met, and services may fail to run properly. To replace optical modules, see Parts Replacement-Replacing an Optical Module.

Precautions for the loosened optical module

- When installing an optical module, force it into position. If a click is heard or a slight tremor is felt, it indicates that the latch is secured. When the latch is not secured, the connecting finger is not properly connected to the board, and the link may become Up. In the rare event where the optical modulecollides with another object or is made to tremor, the optical module will be loosened or the optical signals will be temporarily cut off.
- When inserting the optical module, make sure that the tab is closed. (At this time, the latch locks the optical module.) After the optical module is inserted, try pulling it out to see whether it is installed properly. If the optical module cannot be pulled out, it is secured.

The tab is closed

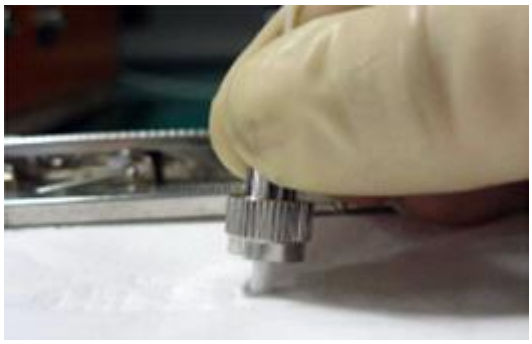
The tab is open

Precautions for receptacle contamination

- Clean tissues must be prepared for deployment on site. You need to clean the optical connector before inserting it in the receptacle. This protects the receptacle against the contamination.

NOTE

Use at least three cleaning tissues. Wipe the end of an optical connector horizontally in one direction, and then move the connector end to the unused part of the cleaning tissue to continue. Generally, one cleaning tissue is used for cleaning an optical connector.



- To prevent contamination, the optical module should be covered with either a dust cap or an optical connector.

  Cover an optical module with a dust cap

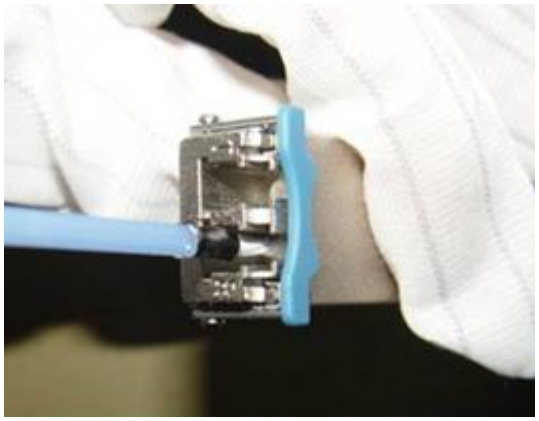
Cover an optical module with an optical connector

- Lay the optical fibers on the Optical-fiber Distribution Frame (ODF) or coil them up in a fiber management tray. Make sure that the optical fibers are not squeezed.

- If a receptacle or an optical connector has not been used for a long time and has not been covered with a dust cap, you should clean it before using it. A cotton swab is used to clean a receptacle, and a cleaning tissue is used to clean an optical connector.

NOTE

During the cleaning process, insert the cotton swab and turn it slowly in the receptacle. Do not use too much force, because the receptacle may be damaged.



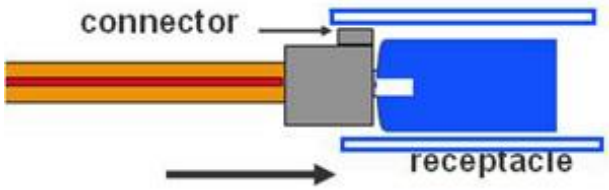
- If, for no apparent reason, optical signals are lost during the operation of a device, use the preceding method to clean the receptacle or the optical connector. This will eliminate contamination as the cause of the signal loss.

Precautions for the overload-caused burnt optical module

- When using an OTDR to test the connectivity or the attenuation of optical signals, disconnect the optical connector from the optical module. Otherwise, the optical module may be burnt.
- When performing a self-loop test, use an optical attenuator. Do not loosen the optical connector.
- It is required that a long-distance optical module have an input optical power of less than -7 dBm. If the input optical power is larger than -7 dBm, you need to add an optical attenuator. For example, if the transmiting optical power is X dBm and the optical attenuation is Y dB, the receiving optical power is X-Y, which must be smaller than -7dBm (X-Y<-7 dBm).

Other precautions

- The optical connector should be horizontally inserted in the receptacle to avoid damages to the receptacle.



- Mixed use of multi-mode and single-mode optical fibers is prohibited. Otherwise, faults such as signal loss may occur.

8.2 155Mbps SFP Electrical Transceiver

Figure 8-1 155Mbps SFP Electrical Transceiver

8.2.1 155Mbps-SFP-120m-extended

Table 8-1 Technical specifications

Item	Specification
BOM	34100104
Model	STM1E-SFP02
Encapsulation mode	SFP
Interface standard	ITU-T G.703/G.783, STM-1e
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-20 ℃ to 85 ℃ (-4 ℉ to 185 ℉)
Digital diagnosis	-
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M
Connector type	SMB
Transmission distance (km)	0.1

8.3 155Mbps eSFP Optical Module

Figure 8-2 155Mbps eSFP Optical Module

8.3.1 155Mbps-eSFP-MMF-1310nm-2km-commercial

Table 8-2 Technical specifications

Item	Specification
BOM	S4015731
Model	SFP-FE-SX-MM1310
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-1
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	-
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M
Connector type	LC
Transmission distance (km)	2
Optical fiber type	MMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1270-1380

Item	Specification
Maximum sending optical power (AVG) (dBm)	-14
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-19
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1270-1380
Receiving sensitivity (AVG) (dBm)	-30
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-14
Minimum extinction ratio (dB)	10

8.3.2 155Mbps-eSFP-SMF-1310nm-15km-commercial

Table 8-3 Technical specifications

Item	Specification
BOM	S4015755
Model	eSFP-FE-LX-SM1310
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-1
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M
Connector type	LC
Transmission distance (km)	15
Optical fiber type	SMF

Item	Specification
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1261-1360
Maximum sending optical power (AVG) (dBm)	-8
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-15
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1580
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.3.3 155Mbps-eSFP-SMF-1310nm-40km-commercial

Table 8-4 Technical specifications

Item	Specification
BOM	S4015715
Model	eSFP-FE-LH40-SM1310
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-1
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M

Item	Specification
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1263-1360
Maximum sending optical power (AVG) (dBm)	0
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-5
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1263-1360
Receiving sensitivity (AVG) (dBm)	-34
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-10
Minimum extinction ratio (dB)	10.5

8.3.4 155Mbps-eSFP-SMF-1550nm-80km-commercial

Table 8-5 Technical specifications

Item	Specification
BOM	34060282
Model	eSFP-FE-LH80-SM1550
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-1
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS

Item	Specification
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1480-1580
Maximum sending optical power (AVG) (dBm)	0
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-5
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1263-1580
Receiving sensitivity (AVG) (dBm)	-34
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-10
Minimum extinction ratio (dB)	10.5

8.4 155Mbps eSFP BIDI Optical Module

Figure 8-3 155Mbps eSFP BIDI Optical Module

8.4.1 155Mbps-eSFP-SM-1310nm-15km-commercial

Table 8-6 Technical specifications

Item	Specification
BOM	02310QNG
Model	OSC015B01
Encapsulation mode	eSFP
Interface standard	IEEE 802.3, 100BASE-BX10-U
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M
Connector type	LC
Transmission distance (km)	15
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1260-1360

Item	Specification
Maximum sending optical power (AVG) (dBm)	-8
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-14
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1480-1580
Receiving sensitivity (AVG) (dBm)	-32
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.5

8.4.2 155Mbps-eSFP-SM-1550nm-15km-commercial

Table 8-7 Technical specifications

Item	Specification
BOM	02310QNH
Model	OSC015B02
Encapsulation mode	eSFP
Interface standard	IEEE 802.3, 100BASE-BX10-D
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M
Connector type	LC
Transmission distance (km)	15
Optical fiber type	SMF

Item	Specification
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1480-1580
Maximum sending optical power (AVG) (dBm)	-8
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-14
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-32
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.5

8.5 622Mbps eSFP Optical Module

Figure 8-4 622Mbps eSFP Optical Module

8.5.1 622Mbps-eSFP-SMF-1310nm-15km-commercial

Table 8-8 Technical specifications

Item	Specification
BOM	S4015760
Model	OSH015N05
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	622M
Connector type	LC
Transmission distance (km)	15
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1274-1356
Maximum sending optical power (AVG) (dBm)	-8
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-15
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1580
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.5

8.5.2 622Mbps-eSFP-SMF-1310nm-40km-commercial

Table 8-9 Technical specifications

Item	Specification
BOM	34060280
Model	eSFP-1310nm-L-4.1
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	622M
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1296-1330
Maximum sending optical power (AVG) (dBm)	2
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1296-1330
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8

Item	Specification
Minimum extinction ratio (dB)	10.5

8.5.3 622Mbps-eSFP-SMF-1550nm-80km-commercial

Table 8-10 Technical specifications

Item	Specification
BOM	34060284
Model	eSFP-1550nm-L-4.2
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	622M
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1480-1580
Maximum sending optical power (AVG) (dBm)	2
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1580

Item	Specification
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	10.5

8.6 1Gbps Electrical Transceiver

Figure 8-5 1Gbps Electrical Transceiver

8.6.1 1Gbps-SFP-100m-industry

Table 8-11 Technical specifications

Item	Specification
BOM	02310RAV
Model	OEGD01N01
Encapsulation mode	SFP
Interface standard	IEEE 802.3, 1000Base-T
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-40 ℃ to 85 ℃ (-40 ℉ to 185 ℉)
Digital diagnosis	-
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1

Item	Specification
ESD(HBM1) (V)	500
Transmission rate (bit/s)	10M/100M/1000M
Connector type	RJ45
Transmission distance (km)	0.1

8.7 1.25Gbps CSFP BIDI Optical Module

Figure 8-6 1.25Gbps CSFP BIDI Optical Module

8.7.1 1.25Gbps-CSFP-SMF-1490nm-10km-industry

Table 8-12 Technical specifications

Item	Specification
BOM	34060525
Model	O00CSFP25
Encapsulation mode	CSFP
Interface standard	IEEE 802.3ah, 1000BASE-BX10-D
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-40 ℃ to 85 ℃ (-40 ℉ to 185 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1

Item	Specification
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1490
Working wavelength range of the optical transmitter (nm)	1480-1500
Maximum sending optical power (AVG) (dBm)	-3
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-9
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-19.5
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	6

8.7.2 1.25Gbps-CSFP-SMF-1310(Tx)/1490(Rx)nm-10km-industry

Table 8-13 Technical specifications

Item	Specification
BOM	34061329
Model	OSG010007
Encapsulation mode	CSFP
Interface standard	IEEE 802.3ah 1000BASE-BX
Bit Error Ratio (BER)	<1x10E–12

Item	Specification
Working case temperature (℃)	-40 ℃ to 85 ℃ (-40 ℉ to 185 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1310(Tx)/1490(Rx)
Working wavelength range of the optical transmitter (nm)	1260-1360
Maximum sending optical power (AVG) (dBm)	-3
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-9
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1480-1500
Receiving sensitivity (AVG) (dBm)	-24
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	6.6

8.7.3 1.25Gbps-CSFP-SMF-1490(Tx)/1310(Rx)nm-40km-industry

Table 8-14 Technical specifications

Item	Specification
BOM	34060894

Item	Specification
Model	OSG040008
Encapsulation mode	CSFP
Interface standard	IEEE 802.3ah 1000BASE-BX
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-40 ℃ to 85 ℃ (-40 ℉ to 185 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1490(Tx)/1310(Rx)
Working wavelength range of the optical transmitter (nm)	1480-1500
Maximum sending optical power (AVG) (dBm)	-5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-25
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	0
Minimum extinction ratio (dB)	6.6

8.8 125M-1.25Gbps CSFP BIDI Optical Module

Figure 8-7 125M-1.25Gbps CSFP BIDI Optical Module

8.8.1 125M~1.25Gbps-CSFP-SMF-1490(Tx)/1310(Rx)nm-10km-industry

Table 8-15 Technical specifications

Item	Specification
BOM	34060803
Model	OSG010005
Encapsulation mode	CSFP
Interface standard	IEEE 802.3ah 1000BASE-BX
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-40 ℃ to 85 ℃ (-40 ℉ to 185 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	125M~1.25G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1490(Tx)/1310(Rx)

Item	Specification
Working wavelength range of the optical transmitter (nm)	1480-1500
Maximum sending optical power (AVG) (dBm)	-9
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-24
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	6.6

8.8.2 125M~1.25Gbps-CSFP-SMF-1490(Tx)/1310(Rx)nm-10km-commercial

Table 8-16 Technical specifications

Item	Specification
BOM	34060805
Model	OSG010006
Encapsulation mode	CSFP
Interface standard	IEEE 802.3ah 1000BASE-BX
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 to 70 (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	125M~1.25Gbps

Item	Specification
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1490(Tx)/1310(Rx)
Working wavelength range of the optical transmitter (nm)	1480-1500
Maximum sending optical power (AVG) (dBm)	-9
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	6.6

8.8.3 125M~1.25Gbps-CSFP-SMF-1490(Tx)/1310(Rx)nm-20km-commercial

Table 8-17 Technical specifications

Item	Specification
BOM	34060900
Model	OSG020007
Encapsulation mode	CSFP
Interface standard	IEEE 802.3ah 1000BASE-BX
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 to 70 (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472

Item	Specification
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	125M~1.25Gbps
Connector type	LC
Transmission distance (km)	20
Optical fiber type	SMF
Center wavelength (nm)	1490(Tx)/1310(Rx)
Working wavelength range of the optical transmitter (nm)	1480-1500
Maximum sending optical power (AVG) (dBm)	-9
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	6.6

8.9 1.25Gbps eSFP Optical Module

Figure 8-8 1.25Gbps eSFP Optical Module

8.9.1 1.25Gbps-eSFP-MMF-850nm-500m-extended

Table 8-18 Technical specifications

Item	Specification
BOM	34060286
Model	eSFP-850nm-1000Base-Sx/FC200MM
Encapsulation mode	eSFP
Interface standard	IEEE 802.3, 1000BASE-SX
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-20 ℃ to 85 ℃ (-4 ℉ to 185 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	0.5(OM1)
Optical fiber type	MMF
Center wavelength (nm)	850
Working wavelength range of the optical transmitter (nm)	770-860

Item	Specification
Maximum sending optical power (AVG) (dBm)	0
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-9.5
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	760-860
Receiving sensitivity (AVG) (dBm)	-17
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	0
Minimum extinction ratio (dB)	9

8.9.2 1.25Gbps-eSFP-SMF-1310nm-10km-commercial

Table 8-19 Technical specifications

Item	Specification
BOM	S4016067
Model	OSG010N05
Encapsulation mode	eSFP
Interface standard	IEEE 802.3, 1000BASE-LX10
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF

Item	Specification
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1270-1355
Maximum sending optical power (AVG) (dBm)	-3
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-9
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1270-1355
Receiving sensitivity (AVG) (dBm)	-20
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	9.5

8.9.3 1.25Gbps-eSFP-SMF-1310nm-40km-commercial

Table 8-20 Technical specifications

Item	Specification
BOM	S4016954
Model	OSG040002
Encapsulation mode	eSFP
Interface standard	IEEE 802.3, 1000BASE-EX
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G

Item	Specification
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1275-1350
Maximum sending optical power (AVG) (dBm)	0
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-5
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1580
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	9.5

8.9.4 1.25Gbps-eSFP-SMF-1550nm-80km-commercial

Table 8-21 Technical specifications

Item	Specification
BOM	34060360
Model	eSFP-1550nm-1000Base-Zx/FC100
Encapsulation mode	eSFP
Interface standard	IEEE 802.3, 1000BASE-ZX
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS

Item	Specification
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1500-1580
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-2
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1580
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	9
Note	The interface standard is Huawei-specific.

8.9.5 1.25Gbps-eSFP-SMF-1550nm-100km-commercial

Table 8-22 Technical specifications

Item	Specification
BOM	34060295
Model	eSFP-GE-ZX100-SM1550
Encapsulation mode	eSFP
Interface standard	IEEE 802.3, 1000BASE-ZX

Item	Specification
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	100
Optical fiber type	SMF
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1500-1580
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1580
Receiving sensitivity (AVG) (dBm)	-30
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	9.5
Note	The interface standard is Huawei-specific.

8.10 1.25Gbps eSFP BIDI Optical Module

Figure 8-9 1.25Gbps eSFP BIDI Optical Module

8.10.1 1.25Gbps-eSFP-SMF-1310nm-10km-commercial

Table 8-23 Technical specifications

Item	Specification
BOM	34060470
Model	SFP-GE-LX-SM1310-BIDI
Encapsulation mode	eSFP
Interface standard	IEEE 802.3ah, 1000Base-BX10-U
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1260-1360

Item	Specification
Maximum sending optical power (AVG) (dBm)	-3
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-9
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1480-1500
Receiving sensitivity (AVG) (dBm)	-19.5
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	6

8.10.2 1.25Gbps-eSFP-SMF-1490nm-10km-commercial

Table 8-24 Technical specifications

Item	Specification
BOM	34060475
Model	SFP-GE-LX-SM1490-BIDI
Encapsulation mode	eSFP
Interface standard	IEEE 802.3ah, 1000Base-BX10-D
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF

Item	Specification
Center wavelength (nm)	1490
Working wavelength range of the optical transmitter (nm)	1480-1500
Maximum sending optical power (AVG) (dBm)	-3
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-9
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-19.5
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	6

8.10.3 1.25Gbps-eSFP-SMF-1310nm-40km-commercial

Table 8-25 Technical specifications

Item	Specification
BOM	34060638
Model	eSFP-1310/1550-L1.1-BIDI
Encapsulation mode	eSFP
Interface standard	IEEE 802.3ah, 1000Base-BX40-U
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-5 ℃ to 70 ℃ (23 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G

Item	Specification
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1260-1360
Maximum sending optical power (AVG) (dBm)	2
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1480-1580
Receiving sensitivity (AVG) (dBm)	-25
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	9

8.10.4 1.25Gbps-eSFP-SMF-1550nm-40km-commercial

Table 8-26 Technical specifications

Item	Specification
BOM	34060639
Model	eSFP-1550/1310-L1.1-BIDI
Encapsulation mode	eSFP
Interface standard	IEEE 802.3ah, 1000Base-BX40-D
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-5 ℃ to 70 ℃ (23 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS

Item	Specification
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1530-1580
Maximum sending optical power (AVG) (dBm)	2
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-25
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	9

8.10.5 1.25Gbps-eSFP-SMF-1490nm-40km-commercial

Table 8-27 Technical specifications

Item	Specification
BOM	34060540
Model	OGEBIDI40
Encapsulation mode	eSFP
Interface standard	IEEE 802.3ah, 1000Base-BX40-D
Bit Error Ratio (BER)	<1x10E–12

Item	Specification
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1490
Working wavelength range of the optical transmitter (nm)	1480-1500
Maximum sending optical power (AVG) (dBm)	3
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-2
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1360
Receiving sensitivity (AVG) (dBm)	-
Receiving sensitivity (OMA) (dBm)	-23
Saturated optical power (dBm)	-3 -3(Stressed OMA, EOL)
Minimum extinction ratio (dB)	9

8.10.6 1.25Gbps-eSFP-SMF-1310nm-40km-commercial

Table 8-28 Technical specifications

Item	Specification
BOM	34060539

Item	Specification
Model	OGEBIDI41
Encapsulation mode	eSFP
Interface standard	IEEE 802.3ah, 1000Base-BX40-U
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1260-1360
Maximum sending optical power (AVG) (dBm)	3
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-2
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1480-1500
Receiving sensitivity (AVG) (dBm)	-
Receiving sensitivity (OMA) (dBm)	-23
Saturated optical power (dBm)	-3 -3(Stressed OMA, EOL)
Minimum extinction ratio (dB)	9

8.10.7 1.25Gbps-eSFP-SMF-1570nm-80km-commercial

Table 8-29 Technical specifications

Item	Specification
BOM	34060595
Model	OGEBIDI80
Encapsulation mode	eSFP
Interface standard	IEEE 802.3ah, 1000Base-BX80-D
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1570
Working wavelength range of the optical transmitter (nm)	1560-1580
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-2
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1480-1500
Receiving sensitivity (AVG) (dBm)	-26
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3
Minimum extinction ratio (dB)	9

8.10.8 1.25Gbps-eSFP-SMF-1490nm-80km-commercial

Table 8-30 Technical specifications

Item	Specification
BOM	34060596
Model	OGEBIDI81
Encapsulation mode	eSFP
Interface standard	IEEE 802.3ah, 1000Base-BX80-U
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1490
Working wavelength range of the optical transmitter (nm)	1480-1500
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-2
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1560-1580
Receiving sensitivity (AVG) (dBm)	-26
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-3

Item	Specification
Minimum extinction ratio (dB)	9

8.11 1.25Gbps eSFP CWDM Optical Module

Figure 8-10 1.25Gbps eSFP CWDM Optical Module

8.11.1 1.25Gbps-eSFP-SMF-1571nm-80km-commercial

Table 8-31 Technical specifications

Item	Specification
BOM	34060476
Model	eSFP-LH80-SM1571
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-16
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC

Item	Specification
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1571
Working wavelength range of the optical transmitter (nm)	1564.5-1577.5
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1620
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	8.5

8.11.2 1.25Gbps-eSFP-SMF-1591nm-80km-commercial

Table 8-32 Technical specifications

Item	Specification
BOM	34060477
Model	eSFP-LH80-SM1591
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-16
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1

Item	Specification
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1591
Working wavelength range of the optical transmitter (nm)	1584.5-1597.5
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1620
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	8.5

8.11.3 1.25Gbps-eSFP-SMF-1551nm-80km-commercial

Table 8-33 Technical specifications

Item	Specification
BOM	34060478
Model	eSFP-LH80-SM1551
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-16
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)

Item	Specification
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1551
Working wavelength range of the optical transmitter (nm)	1544.5-1557.5
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1620
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	8.5

8.11.4 1.25Gbps-eSFP-SMF-1511nm-80km-commercial

Table 8-34 Technical specifications

Item	Specification
BOM	34060479
Model	eSFP-LH80-SM1511
Encapsulation mode	eSFP

Item	Specification
Interface standard	ITU-T G.957, STM-16
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1511
Working wavelength range of the optical transmitter (nm)	1504.5-1517.5
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1620
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	8.5

8.11.5 1.25Gbps-eSFP-SMF-1611nm-80km-commercial

Table 8-35 Technical specifications

Item	Specification

Item	Specification
BOM	34060480
Model	eSFP-LH80-SM1611
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-16
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1611
Working wavelength range of the optical transmitter (nm)	1604.5-1617.5
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1620
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	8.5

8.11.6 1.25Gbps-eSFP-SMF-1491nm-80km-commercial

Table 8-36 Technical specifications

Item	Specification
BOM	34060481
Model	eSFP-LH80-SM1491
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-16
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1491
Working wavelength range of the optical transmitter (nm)	1484.5-1497.5
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1620
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	8.5

8.11.7 1.25Gbps-eSFP-SMF-1531nm-80km-commercial

Table 8-37 Technical specifications

Item	Specification
BOM	34060482
Model	eSFP-LH80-SM1531
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-16
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1531
Working wavelength range of the optical transmitter (nm)	1524.5-1537.5
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1620
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9

Item	Specification
Minimum extinction ratio (dB)	8.5

8.11.8 1.25Gbps-eSFP-SMF-1471nm-80km-commercial

Table 8-38 Technical specifications

Item	Specification
BOM	34060483
Model	eSFP-LH80-SM1471
Encapsulation mode	eSFP
Interface standard	ITU-T G.957, STM-16
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1471
Working wavelength range of the optical transmitter (nm)	1464.5-1477.5
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1620

Item	Specification
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	8.5

8.12 125M~2.67Gbps eSFP DWDM Optical Module

Figure 8-11 125M~2.67Gbps eSFP DWDM Optical Module

8.12.1 125M~2.67Gbps-eSFP-SMF-1560.61nm-120km-commercial

Table 8-39 Technical specifications

Item	Specification
BOM	34060366
Model	eSFP-LH120-SM192.10
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS

Item	Specification
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1560.61
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.2 125M~2.67Gbps-eSFP-SMF-1559.79nm-120km-commercial

Table 8-40 Technical specifications

Item	Specification
BOM	34060372
Model	eSFP-LH120-SM192.20
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet

Item	Specification
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1559.79
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.3 125M~2.67Gbps-eSFP-SMF-1558.98nm-120km-commercial

Table 8-41 Technical specifications

Item	Specification

Item	Specification
BOM	34060373
Model	eSFP-LH120-SM192.30
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1558.98
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.4 125M~2.67Gbps-eSFP-SMF-1558.17nm-120km-commercial

Table 8-42 Technical specifications

Item	Specification
BOM	34060374
Model	eSFP-LH120-SM192.40
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1558.17
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8

Item	Specification
Minimum extinction ratio (dB)	8.2

8.12.5 125M~2.67Gbps-eSFP-SMF-1557.36nm-120km-commercial

Table 8-43 Technical specifications

Item	Specification
BOM	34060375
Model	eSFP-LH120-SM192.50
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1557.36
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical	1520-1570

Item	Specification
receiver (nm)	
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.6 125M~2.67Gbps-eSFP-SMF-1556.55nm-120km-commercial

Table 8-44 Technical specifications

Item	Specification
BOM	34060376
Model	eSFP-LH120-SM192.60
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1556.55
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-

Item	Specification
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.7 125M~2.67Gbps-eSFP-SMF-1555.75nm-120km-commercial

Table 8-45 Technical specifications

Item	Specification
BOM	34060377
Model	eSFP-LH120-SM192.70
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1555.75
Working wavelength range of the optical	-

Item	Specification
transmitter (nm)	
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.8 125M~2.67Gbps-eSFP-SMF-1554.94nm-120km-commercial

Table 8-46 Technical specifications

Item	Specification
BOM	34060378
Model	eSFP-LH120-SM192.80
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, igabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC

Item	Specification
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1554.94
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.9 125M~2.67Gbps-eSFP-SMF-1554.13nm-120km-commercial

Table 8-47 Technical specifications

Item	Specification
BOM	34060379
Model	eSFP-LH120-SM192.90
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS

Item	Specification
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1554.13
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.10 125M~2.67Gbps-eSFP-SMF-1553.33nm-120km-commercial

Table 8-48 Technical specifications

Item	Specification
BOM	34060380
Model	eSFP-LH120-SM193.00
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet

Item	Specification
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1553.33
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.11 125M~2.67Gbps-eSFP-SMF-1552.52nm-120km-commercial

Table 8-49 Technical specifications

Item	Specification

Item	Specification
BOM	34060381
Model	eSFP-LH120-SM193.10
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1552.52
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.12 125M~2.67Gbps-eSFP-SMF-1551.72nm-120km-commercial

Table 8-50 Technical specifications

Item	Specification
BOM	34060382
Model	eSFP-LH120-SM193.20
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1551.72
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8

Item	Specification
Minimum extinction ratio (dB)	8.2

8.12.13 125M~2.67Gbps-eSFP-SMF-1550.92nm-120km-commercial

Table 8-51 Technical specifications

Item	Specification
BOM	34060383
Model	eSFP-LH120-SM193.30
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1550.92
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical	1520-1570

Item	Specification
receiver (nm)	
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.14 125M~2.67Gbps-eSFP-SMF-1550.12nm-120km-commercial

Table 8-52 Technical specifications

Item	Specification
BOM	34060384
Model	eSFP-LH120-SM193.40
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1550.12
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-

Item	Specification
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.15 125M~2.67Gbps-eSFP-SMF-1549.32nm-120km-commercial

Table 8-53 Technical specifications

Item	Specification
BOM	34060385
Model	eSFP-LH120-SM193.50
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1549.32
Working wavelength range of the optical	-

Item	Specification
transmitter (nm)	
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.16 125M~2.67Gbps-eSFP-SMF-1548.51nm-120km-commercial

Table 8-54 Technical specifications

Item	Specification
BOM	34060386
Model	eSFP-LH120-SM193.60
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC

Item	Specification
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1548.51
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.17 125M~2.67Gbps-eSFP-SMF-1547.72nm-120km-commercial

Table 8-55 Technical specifications

Item	Specification
BOM	34060387
Model	eSFP-LH120-SM193.70
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS

Item	Specification
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1547.72
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.18 125M~2.67Gbps-eSFP-SMF-1546.92nm-120km-commercial

Table 8-56 Technical specifications

Item	Specification
BOM	34060388
Model	eSFP-LH120-SM193.80
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet

Item	Specification
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1546.92
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.19 125M~2.67Gbps-eSFP-SMF-1546.12nm-120km-commercial

Table 8-57 Technical specifications

Item	Specification

Item	Specification
BOM	34060389
Model	eSFP-LH120-SM193.90
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1546.12
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.20 125M~2.67Gbps-eSFP-SMF-1545.32nm-120km-commercial

Table 8-58 Technical specifications

Item	Specification
BOM	34060390
Model	eSFP-LH120-SM194.00
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1545.32
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8

Item	Specification
Minimum extinction ratio (dB)	8.2

8.12.21 125M~2.67Gbps-eSFP-SMF-1544.53nm-120km-commercial

Table 8-59 Technical specifications

Item	Specification
BOM	34060391
Model	eSFP-LH120-SM194.10
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1544.53
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical	1520-1570

Item	Specification
receiver (nm)	
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.22 125M~2.67Gbps-eSFP-SMF-1543.73nm-120km-commercial

Table 8-60 Technical specifications

Item	Specification
BOM	34060392
Model	eSFP-LH120-SM194.20
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1543.73
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-

Item	Specification
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.23 125M~2.67Gbps-eSFP-SMF-1542.94nm-120km-commercial

Table 8-61 Technical specifications

Item	Specification
BOM	34060393
Model	eSFP-LH120-SM194.30
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1542.94
Working wavelength range of the optical	-

Item	Specification
transmitter (nm)	
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.24 125M~2.67Gbps-eSFP-SMF-1542.14nm-120km-commercial

Table 8-62 Technical specifications

Item	Specification
BOM	34060394
Model	eSFP-LH120-SM194.40
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC

Item	Specification
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1542.14
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.25 125M~2.67Gbps-eSFP-SMF-1541.35nm-120km-commercial

Table 8-63 Technical specifications

Item	Specification
BOM	34060395
Model	eSFP-LH120-SM194.50
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS

Item	Specification
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1541.35
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.26 125M~2.67Gbps-eSFP-SMF-1540.56nm-120km-commercial

Table 8-64 Technical specifications

Item	Specification
BOM	34060396
Model	eSFP-LH120-SM194.60
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet

Item	Specification
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1540.56
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.27 125M~2.67Gbps-eSFP-SMF-1539.77nm-120km-commercial

Table 8-65 Technical specifications

Item	Specification

Item	Specification
BOM	34060397
Model	eSFP-LH120-SM194.70
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1539.77
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.28 125M~2.67Gbps-eSFP-SMF-1538.98nm-120km-commercial

Table 8-66 Technical specifications

Item	Specification
BOM	34060398
Model	eSFP-LH120-SM194.80
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1538.98
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8

Item	Specification
Minimum extinction ratio (dB)	8.2

8.12.29 125M~2.67Gbps-eSFP-SMF-1538.19nm-120km-commercial

Table 8-67 Technical specifications

Item	Specification
BOM	34060399
Model	eSFP-LH120-SM194.90
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1538.19
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical	1520-1570

Item	Specification
receiver (nm)	
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.30 125M~2.67Gbps-eSFP-SMF-1537.40nm-120km-commercial

Table 8-68 Technical specifications

Item	Specification
BOM	34060400
Model	eSFP-LH120-SM195.00
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1537.4
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-

Item	Specification
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.31 125M~2.67Gbps-eSFP-SMF-1536.61nm-120km-commercial

Table 8-69 Technical specifications

Item	Specification
BOM	34060401
Model	eSFP-LH120-SM195.10
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1536.61
Working wavelength range of the optical	-

Item	Specification
transmitter (nm)	
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.32 125M~2.67Gbps-eSFP-SMF-1535.82nm-120km-commercial

Table 8-70 Technical specifications

Item	Specification
BOM	34060402
Model	eSFP-LH120-SM195.20
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC

Item	Specification
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1535.82
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.33 125M~2.67Gbps-eSFP-SMF-1535.04nm-120km-commercial

Table 8-71 Technical specifications

Item	Specification
BOM	34060403
Model	eSFP-LH120-SM195.30
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS

Item	Specification
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1535.04
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.34 125M~2.67Gbps-eSFP-SMF-1534.25nm-120km-commercial

Table 8-72 Technical specifications

Item	Specification
BOM	34060404
Model	eSFP-LH120-SM195.40
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet

Item	Specification
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1534.25
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.35 125M~2.67Gbps-eSFP-SMF-1533.47nm-120km-commercial

Table 8-73 Technical specifications

Item	Specification

Item	Specification
BOM	34060405
Model	eSFP-LH120-SM195.50
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1533.47
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.36 125M~2.67Gbps-eSFP-SMF-1532.68nm-120km-commercial

Table 8-74 Technical specifications

Item	Specification
BOM	34060406
Model	eSFP-LH120-SM195.60
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1532.68
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8

Item	Specification
Minimum extinction ratio (dB)	8.2

8.12.37 125M~2.67Gbps-eSFP-SMF-1531.90nm-120km-commercial

Table 8-75 Technical specifications

Item	Specification
BOM	34060407
Model	eSFP-LH120-SM195.70
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1531.9
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical	1520-1570

Item	Specification
receiver (nm)	
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.38 125M~2.67Gbps-eSFP-SMF-1531.12nm-120km-commercial

Table 8-76 Technical specifications

Item	Specification
BOM	34060408
Model	eSFP-LH120-SM195.80
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1531.12
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-

Item	Specification
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.39 125M~2.67Gbps-eSFP-SMF-1530.33nm-120km-commercial

Table 8-77 Technical specifications

Item	Specification
BOM	34060409
Model	eSFP-LH120-SM195.90
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1530.33
Working wavelength range of the optical	-

Item	Specification
transmitter (nm)	
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.12.40 125M~2.67Gbps-eSFP-SMF-1529.55nm-120km-commercial

Table 8-78 Technical specifications

Item	Specification
BOM	34060410
Model	eSFP-LH120-SM196.00
Encapsulation mode	eSFP
Interface standard	SONET OC-48 LR-2, Gigabit Ethernet
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	155M~2.67G
Connector type	LC

Item	Specification
Transmission distance (km)	120
Optical fiber type	SMF
Center wavelength (nm)	1529.55
Working wavelength range of the optical transmitter (nm)	-
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1520-1570
Receiving sensitivity (AVG) (dBm)	-28
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-8
Minimum extinction ratio (dB)	8.2

8.13 1.25/9.953/10.3125Gbps SFP+ Optical Module

Figure 8-12 1.25/9.953/10.3125Gbps SFP+ Optical Module

8.13.1 1.25/9.953/10.3125Gbps-SFP+-MMF-850nm-0.3km-commercial

Table 8-79 Technical specifications

Item	Specification
BOM	34061041
Model	OSXD50N00
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-SR/SW
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G/9.953G/10.3125G
Connector type	LC
Transmission distance (km)	0.3(OM3)
Optical fiber type	MMF
Center wavelength (nm)	850
Working wavelength range of the optical transmitter (nm)	840-860
Maximum sending optical power (AVG) (dBm)	-1
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-7.3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	840-860
Receiving sensitivity (AVG) (dBm)	-9.8
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-1

Item	Specification
Minimum extinction ratio (dB)	3

8.13.2 1.25/9.953/10.3125Gbps-SFP+-SMF-1310nm-10km-commercial

Table 8-80 Technical specifications

Item	Specification
BOM	34061042
Model	OSX010N13
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-LR/LW
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G/9.953G/10.3125G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1260-1355
Maximum sending optical power (AVG) (dBm)	0.5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-8.2
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical	1260-1355

Item	Specification
receiver (nm)	
Receiving sensitivity (AVG) (dBm)	-14.4
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	0.5
Minimum extinction ratio (dB)	3

8.13.3 1.25/9.953/10.3125Gbps-SFP+-SMF-1550nm-40km-commercial

Table 8-81 Technical specifications

Item	Specification
BOM	34061043
Model	OSX040N12
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-ER/EW
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	1.25G/9.953G/10.3125G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1530-1565
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-

Item	Specification
Minimum sending optical power (AVG) (dBm)	-4.7
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1530-1565
Receiving sensitivity (AVG) (dBm)	-15.8
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	3
Minimum extinction ratio (dB)	3

8.14 10Gbps SFP+ Optical Module

Figure 8-13 10Gbps SFP+ Optical Module

8.14.1 10Gbps-SFP+-MMF-850nm-0.3km-commercial

Table 8-82 Technical specifications

Item	Specification
BOM	S4017482
Model	OSX040N03
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-SR/SW
Bit Error Ratio (BER)	<1x10E–12

Item	Specification
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	0.3(OM3)
Optical fiber type	MMF
Center wavelength (nm)	850
Working wavelength range of the optical transmitter (nm)	840-860
Maximum sending optical power (AVG) (dBm)	-1
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-7.3
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	840-860
Receiving sensitivity (AVG) (dBm)	-9.9
Receiving sensitivity (OMA) (dBm)	-11.1
Saturated optical power (dBm)	-1
Minimum extinction ratio (dB)	3

8.14.2 10Gbps-SFP+-SMF-1310nm-10km-commercial

Table 8-83 Technical specifications

Item	Specification
BOM	S4017483
Model	OSX001002

Item	Specification
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-LR/LW
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1310
Working wavelength range of the optical transmitter (nm)	1260-1355
Maximum sending optical power (AVG) (dBm)	0.5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-8.2
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1355
Receiving sensitivity (AVG) (dBm)	-14.4
Receiving sensitivity (OMA) (dBm)	-12.6
Saturated optical power (dBm)	0.5
Minimum extinction ratio (dB)	3.5

8.14.3 10Gbps-SFP+-SMF-1550nm-40km-commercial

Table 8-84 Technical specifications

Item	Specification
BOM	S4017484
Model	OMXD30002
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-ER/EW
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1530-1565
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-4.7
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1530-1565
Receiving sensitivity (AVG) (dBm)	-15.8
Receiving sensitivity (OMA) (dBm)	-14.1
Saturated optical power (dBm)	-1
Minimum extinction ratio (dB)	3

Item	Specification
Note	Self-loop is not supported. An optical attenuator must be added if self-loop is required.

8.14.4 10Gbps-SFP+-SMF-1550nm-80km-commercial

Table 8-85 Technical specifications

Item	Specification
BOM	02310PVU
Model	OSX080N04
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-ZR/ZW
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1550
Working wavelength range of the optical transmitter (nm)	1530-1565
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical	1260-1565

Item	Specification
receiver (nm)	
Receiving sensitivity (AVG) (dBm)	-24
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	9
Note	The interface standard is Huawei-specific. Self-loop is not supported. An optical attenuator must be added if self-loop is required.

8.15 10Gbps SFP+ CWDM Optical Module

Figure 8-14 10Gbps SFP+ CWDM Optical Module

8.15.1 10Gbps-SFP+-SMF-1511nm-70km-commercial

Table 8-86 Technical specifications

Item	Specification
BOM	34060686
Model	OSX070001
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-X
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)

Item	Specification
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	70
Optical fiber type	SMF
Center wavelength (nm)	1511
Working wavelength range of the optical transmitter (nm)	1504.5-1517.5
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1460-1620
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	8.2

8.15.2 10Gbps-SFP+-SMF-1471nm-70km-commercial

Table 8-87 Technical specifications

Item	Specification
BOM	34060687
Model	OSX070002
Encapsulation mode	SFP+

Item	Specification
Interface standard	IEEE 802.3ae, 10GBASE-X
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	70
Optical fiber type	SMF
Center wavelength (nm)	1471
Working wavelength range of the optical transmitter (nm)	1464.5-1477.5
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1460-1620
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	8.2

8.15.3 10Gbps-SFP+-SMF-1491nm-70km-commercial

Table 8-88 Technical specifications

Item	Specification

Item	Specification
BOM	34060688
Model	OSX070003
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-X
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	70
Optical fiber type	SMF
Center wavelength (nm)	1491
Working wavelength range of the optical transmitter (nm)	1484.5-1497.5
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1460-1620
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	8.2

8.15.4 10Gbps-SFP+-SMF-1531nm-70km-commercial

Table 8-89 Technical specifications

Item	Specification
BOM	34060689
Model	OSX070004
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-X
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	70
Optical fiber type	SMF
Center wavelength (nm)	1531
Working wavelength range of the optical transmitter (nm)	1524.5-1537.5
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1460-1620
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	8.2

8.15.5 10Gbps-SFP+-SMF-1551nm-70km-commercial

Table 8-90 Technical specifications

Item	Specification
BOM	34060690
Model	OSX070005
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-X
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	70
Optical fiber type	SMF
Center wavelength (nm)	1551
Working wavelength range of the optical transmitter (nm)	1544.5-1557.5
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1460-1620
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7

Item	Specification
Minimum extinction ratio (dB)	8.2

8.15.6 10Gbps-SFP+-SMF-1571nm-70km-commercial

Table 8-91 Technical specifications

Item	Specification
BOM	34060691
Model	OSX070006
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-X
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	70
Optical fiber type	SMF
Center wavelength (nm)	1571
Working wavelength range of the optical transmitter (nm)	1564.5-1577.5
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1460-1620

Item	Specification
Receiving sensitivity (AVG) (dBm)	-23
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	8.2

8.15.7 10Gbps-SFP+-SMF-1591nm-70km-commercial

Table 8-92 Technical specifications

Item	Specification
BOM	34060692
Model	OSX070007
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-X
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	70
Optical fiber type	SMF
Center wavelength (nm)	1591
Working wavelength range of the optical transmitter (nm)	1584.5-1597.5
Maximum sending optical power (AVG) (dBm)	4
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0

Item	Specification
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1460-1620
Receiving sensitivity (AVG) (dBm)	-21
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	8.2

8.15.8 10Gbps-SFP+-SMF-1611nm-70km-commercial

Table 8-93 Technical specifications

Item	Specification
BOM	34060693
Model	OSX070008
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-X
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	70
Optical fiber type	SMF
Center wavelength (nm)	1611
Working wavelength range of the optical transmitter (nm)	1604.5-1617.4
Maximum sending optical power (AVG) (dBm)	4

Item	Specification
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1460-1620
Receiving sensitivity (AVG) (dBm)	-21
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	8.2

8.16 10Gbps SFP+ BIDI Optical Module

Figure 8-15 10Gbps SFP+ BIDI Optical Module

8.16.1 10Gbps-SFP+-SMF-1270nm-10km-industry

Table 8-94 Technical specifications

Item	Specification
BOM	34060544-002
Model	OSX010B10
Encapsulation mode	SFP+

Item	Specification
Interface standard	IEEE 802.3ae, 10GBASE-BX10-U
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-40 ℃ to 85 ℃ (-40 ℉ to 185 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1270
Working wavelength range of the optical transmitter (nm)	1260-1280
Maximum sending optical power (AVG) (dBm)	0.5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-8.2
Minimum sending optical power (OMA) (dBm)	-5.2
Working wavelength range of the optical receiver (nm)	1320-1340
Receiving sensitivity (AVG) (dBm)	-14.4
Receiving sensitivity (OMA) (dBm)	-10.3
Saturated optical power (dBm)	0.5
Minimum extinction ratio (dB)	3.5

8.16.2 10Gbps-SFP+-SMF-1330nm-10km-industry

Table 8-95 Technical specifications

Item	Specification

Item	Specification
BOM	34060546-002
Model	OSX010B11
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-BX10-D
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	-40 ℃ to 85 ℃ (-40 ℉ to 185 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1330
Working wavelength range of the optical transmitter (nm)	1320-1340
Maximum sending optical power (AVG) (dBm)	0.5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-8.2
Minimum sending optical power (OMA) (dBm)	-5.2
Working wavelength range of the optical receiver (nm)	1260-1280
Receiving sensitivity (AVG) (dBm)	-14.4
Receiving sensitivity (OMA) (dBm)	-12.6
Saturated optical power (dBm)	0.5
Minimum extinction ratio (dB)	3.5

8.16.3 10Gbps-SFP+-SMF-1330nm-40km-commercial

Table 8-96 Technical specifications

Item	Specification
BOM	02311JNQ
Model	OSX040B11
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-BX40-D
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1330
Working wavelength range of the optical transmitter (nm)	1320-1340
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1280
Receiving sensitivity (AVG) (dBm)	-18
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9
Minimum extinction ratio (dB)	3.5

8.16.4 10Gbps-SFP+-SMF-1270nm-40km-commercial

Table 8-97 Technical specifications

Item	Specification
BOM	02311JNF
Model	OSX040B10
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-BX-U
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1270
Working wavelength range of the optical transmitter (nm)	1260-1280
Maximum sending optical power (AVG) (dBm)	5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1320-1340
Receiving sensitivity (AVG) (dBm)	-18
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-9

Item	Specification
Minimum extinction ratio (dB)	3.5

8.17 10Gbps SFP+ DWDM Optical Module

Figure 8-16 10Gbps SFP+ DWDM Optical Module

8.17.1 10Gbps-SFP+-SMF-1528nm~1568nm-80km-commercial

Table 8-98 Technical specifications

Item	Specification
BOM	02311GSA
Model	OSX080C00
Encapsulation mode	SFP+
Interface standard	IEEE 802.3ae, 10GBASE-ZR/ZW, ITUT G.709
Bit Error Ratio (BER)	<1x10E–12(10GE) <1x10E-4(OTU2, OTU2e)
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8472
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	9.953G/10.3125G/11.1G

Item	Specification
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	-
Working wavelength range of the optical transmitter (nm)	1529.163-1560.606
Maximum sending optical power (AVG) (dBm)	3
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	-1
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1260-1600
Receiving sensitivity (AVG) (dBm)	-24(10GE 1e-12); -26(OTU2,OTU2e,1e-4)
Receiving sensitivity (OMA) (dBm)	-
Saturated optical power (dBm)	-7
Minimum extinction ratio (dB)	9
Note	The interface standard is Huawei-specific.

8.18 40Gbps CFP Optical Module

Figure 8-17 40Gbps CFP Optical Module

8.18.1 40Gbps(4*10.3)-CFP-MMF-850nm-0.1km-commercial

Table 8-99 Technical specifications

Item	Specification
BOM	02310WUV
Model	OSMD10N02
Encapsulation mode	CFP
Interface standard	IEEE 802.3ba, 40GBASE-SR4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	CFP MSA
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	41.25G
Connector type	MPO-12
Transmission distance (km)	0.1(OM3) 0.15(OM4)
Optical fiber type	MMF
Center wavelength (nm)	850
Working wavelength range of the optical transmitter (nm)	840-860

Item	Specification
Maximum sending optical power (AVG) (dBm)	-
Maximum sending optical power (OMA) (dBm)	per lane:3
Minimum sending optical power (AVG) (dBm)	-
Minimum sending optical power (OMA) (dBm)	per lane:-5.6
Working wavelength range of the optical receiver (nm)	840-860
Receiving sensitivity (AVG) (dBm)	-
Receiving sensitivity (OMA) (dBm)	per lane:-5.4
Saturated optical power (dBm)	per lane:3.4
Minimum extinction ratio (dB)	3

8.18.2 40Gbps(4*10.3)-CFP-SMF-1271~1331nm-10km-commercial

Table 8-100 Technical specifications

Item	Specification
BOM	S4017471
Model	OSM010C02
Encapsulation mode	CFP
Interface standard	IEEE 802.3ba, 40GBASE-LR4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	CFP MSA
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	41.25G
Connector type	LC
Transmission distance (km)	10

Item	Specification
Optical fiber type	SMF
Center wavelength (nm)	1271 1291 1311 1331
Working wavelength range of the optical transmitter (nm)	1264.5-1277.5 1284.5-1297.5 1304.5-1317.5 1324.5-1337.5
Maximum sending optical power (AVG) (dBm)	per lane:2.3
Maximum sending optical power (OMA) (dBm)	per lane:3.5
Minimum sending optical power (AVG) (dBm)	per lane:-7
Minimum sending optical power (OMA) (dBm)	per lane:-4
Working wavelength range of the optical receiver (nm)	1264.5-1277.5 1284.5-1297.5 1304.5-1317.5 1324.5-1337.5
Receiving sensitivity (AVG) (dBm)	-
Receiving sensitivity (OMA) (dBm)	per lane:-11.5
Saturated optical power (dBm)	per lane:2.3
Minimum extinction ratio (dB)	3.5
Note	The optical power calculation is based on the OMA value.

8.18.3 40Gbps(4*10.3)-CFP-SMF-1531.12~1550.12nm-80km-commercial

Table 8-101 Technical specifications

Item	Specification
BOM	02311AYS
Model	OSX080N05

Item	Specification
Encapsulation mode	CFP
Interface standard	IEEE 802.3bm, 40GBASE-ZR4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	CFP MSA
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	41.25G
Connector type	LC
Transmission distance (km)	80
Optical fiber type	SMF
Center wavelength (nm)	1531.12 1537.4 1543.73 1550.12
Working wavelength range of the optical transmitter (nm)	1530.09-1532.15 1536.37-1538.43 1542.7-1544.75 1549.09-1551.15
Maximum sending optical power (AVG) (dBm)	per lane:4.5
Maximum sending optical power (OMA) (dBm)	-
Minimum sending optical power (AVG) (dBm)	per lane:0
Minimum sending optical power (OMA) (dBm)	-
Working wavelength range of the optical receiver (nm)	1530.09-1532.15 1536.37-1538.43 1542.7-1544.75 1549.09-1551.15
Receiving sensitivity (AVG) (dBm)	per lane:-20
Receiving sensitivity (OMA) (dBm)	-

Item	Specification
Saturated optical power (dBm)	per lane:4.5
Minimum extinction ratio (dB)	9
Note	The interface standard is Huawei-specific.

8.19 100Gbps CFP2 Optical Module

Figure 8-18 100Gbps CFP2 Optical Module

8.19.1 100Gbps(4*25.7)-CFP2-SMF-1295.56~1309.14nm-10km-commercial

Table 8-102 Technical specifications

Item	Specification
BOM	02310WUR
Model	OSN010N09
Encapsulation mode	CFP2
Interface standard	IEEE 802.3ba, 100GBASE-LR4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	CFP MSA
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1

Item	Specification
ESD(HBM1) (V)	500
Transmission rate (bit/s)	103.125G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1295.56 1300.05 1304.58 1309.14
Working wavelength range of the optical transmitter (nm)	1294.53-1296.59 1299.02-1301.09 1303.54-1305.63 1308.09-1310.19
Maximum sending optical power (AVG) (dBm)	per lane:4.5
Maximum sending optical power (OMA) (dBm)	per lane:4.5
Minimum sending optical power (AVG) (dBm)	per lane:-4.3
Minimum sending optical power (OMA) (dBm)	per lane:-1.3
Working wavelength range of the optical receiver (nm)	1294.53-1296.59 1299.02-1301.09 1303.54-1305.63 1308.09-1310.19
Receiving sensitivity (AVG) (dBm)	-
Receiving sensitivity (OMA) (dBm)	per lane:-8.6
Saturated optical power (dBm)	per lane:4.5
Minimum extinction ratio (dB)	4
Note	The optical power calculation is based on the OMA value.

8.19.2 100Gbps(4*25.7)-CFP2-SMF-1295.56~1309.14nm-40km-commercial

Table 8-103 Technical specifications

Item	Specification
BOM	02311FAP
Model	OSN040N03
Encapsulation mode	CFP2
Interface standard	IEEE 802.3ba, 100GBASE-ER4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	CFP MSA
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	103.125G
Connector type	LC
Transmission distance (km)	40
Optical fiber type	SMF
Center wavelength (nm)	1295.56 1300.05 1304.58 1309.14
Working wavelength range of the optical transmitter (nm)	1294.53-1296.59 1299.02-1301.09 1303.54-1305.63 1308.09-1310.19
Maximum sending optical power (AVG) (dBm)	per lane:2.9
Maximum sending optical power (OMA) (dBm)	per lane:4.5
Minimum sending optical power (AVG) (dBm)	per lane:-2.9
Minimum sending optical power (OMA) (dBm)	per lane:0.1

Item	Specification
Working wavelength range of the optical receiver (nm)	1294.53-1296.59 1299.02-1301.09 1303.54-1305.63 1308.09-1310.19
Receiving sensitivity (AVG) (dBm)	-
Receiving sensitivity (OMA) (dBm)	per lane:-21.4
Saturated optical power (dBm)	per lane:4.5
Minimum extinction ratio (dB)	8
Note	The optical power calculation is based on the OMA value.

8.20 100Gbps QSFP28 Optical Module

Figure 8-19 100Gbps QSFP28 Optical Module

8.20.2 100Gbps(4*25.7)-QSFP28-MMF-850nm-0.07km-commercial

Table 8-104 Technical specifications

Item	Specification
BOM	02311NTY
Model	OMND10N13
Encapsulation mode	QSFP28
Interface standard	IEEE 802.3bm, 100GBASE-SR4
Bit Error Ratio (BER)	<5x10E–5
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)

Item	Specification
Digital diagnosis	SFF-8636
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	103.125G
Connector type	MPO-12
Transmission distance (km)	0.07(OM3) 0.1(OM4)
Optical fiber type	MMF
Center wavelength (nm)	850
Working wavelength range of the optical transmitter (nm)	840-860
Maximum sending optical power (AVG) (dBm)	per lane:2.4
Maximum sending optical power (OMA) (dBm)	per lane:3
Minimum sending optical power (AVG) (dBm)	per lane:-8.4
Minimum sending optical power (OMA) (dBm)	per lane:-6.4
Working wavelength range of the optical receiver (nm)	840-860
Receiving sensitivity (AVG) (dBm)	-
Receiving sensitivity (OMA) (dBm)	per lane:-8.5
Saturated optical power (dBm)	per lane:2.4
Minimum extinction ratio (dB)	2
Note	The board FEC function must be enabled. The optical power calculation is based on the OMA value.

8.20.3 100Gbps(4*25.7)-QSFP28-SMF-1295.56~1309.14nm-10km-commercial

Table 8-105 Technical specifications

Item	Specification
BOM	02311NTX
Model	OSN010N23
Encapsulation mode	QSFP28
Interface standard	IEEE 802.3ba, 100GBASE-LR4
Bit Error Ratio (BER)	<1x10E–12
Working case temperature (℃)	0 ℃ to 70 ℃ (32 ℉ to 158 ℉)
Digital diagnosis	SFF-8636
Environment standard	RoHS
Security standard	FCC class B, IEC 60825-1 Class 1
ESD(HBM1) (V)	500
Transmission rate (bit/s)	103.125G
Connector type	LC
Transmission distance (km)	10
Optical fiber type	SMF
Center wavelength (nm)	1295.56 1300.05 1304.58 1309.14
Working wavelength range of the optical transmitter (nm)	1294.53-1296.59 1299.02-1301.09 1303.54-1305.63 1308.09-1310.19
Maximum sending optical power (AVG) (dBm)	per lane:4.5
Maximum sending optical power (OMA) (dBm)	per lane:4.5
Minimum sending optical power (AVG) (dBm)	per lane:-4.3
Minimum sending optical power (OMA) (dBm)	per lane:-1.3

Item	Specification
Working wavelength range of the optical receiver (nm)	1294.53-1296.59 1299.02-1301.09 1303.54-1305.63 1308.09-1310.19
Receiving sensitivity (AVG) (dBm)	-
Receiving sensitivity (OMA) (dBm)	per lane:-8.6
Saturated optical power (dBm)	per lane:4.5
Minimum extinction ratio (dB)	4
Note	The optical power calculation is based on the OMA value.

8.21 AE 905S Module

Description

Existing core network devices, which do not support 1588, cannot obtain clock signals from BITS servers. Upgrading core network devices to support 1588 is both complex and costly. To address this issue, the AE 905S module is developed. After having an AE 905S module equipped, the NE40E will be able to support 1588v2. Figure 8-20 and Figure 8-21 illustrate the appearance of an AE 905S module.

Figure 8-20 AE 905S module (front view)

Figure 8-21 AE 905S module (back view)

NOTE

An AE 905S module must be inserted into a GE optical interface of SFP type.

The AE 905S module has a STAT indicator under the **HUAWEI** logo. Table 8-106 describes STAT indicator states.

Table 8-106 Description of STAT indicator states

State	Description
On (green)	The AE 905S module is operating properly.
On (red)	The AE 905S module has experienced a hardware fault or is overheated.
Blinking green once every second	No connection has been established on the GE interface.
Blinking red every second	The GPS frequency or time is out of lock.
Off	The AE 905S module is powered off or not operating.

The AE 905S module meets industrial-grade requirements. Table 8-107 lists its interface specifications.

Table 8-107 AE 905S module interface specifications

Item	Specification
BOM Number	03031TUX
Board Name for Order	ANPM000GPS01

Item	Specification
Interface type	SMA
Encapsulation type	SFP
Input signal	An AE 905S module uses the SMA interface to receive GPS satellite signals.
Output signal	An AE 905S module uses the GE interface to provide synchronous Ethernet and 1588v2 for NE40E.

Installation

NOTICE

To meet heat dissipation requirements, leave interfaces around the AE 905S module empty. A maximum of two AE 905Smodules can be installed on a device.

Figure 8-22 illustrates connections between the AE 905S module, surge protector, and antenna.

Figure 8-22 Connections between the AE 905S module, surge protector, and antenna

NOTE

The AE 905S module must be used with the GPS antenna and GPS surge protector and is connected to the GPS antenna and GPS surge protector through the GPS feeder.

The GPS antenna receives satellite signals from the GPS. A GPS surge protector can protect a device against the lightning strikes inducted by the antenna feeder. Without the protection of a surge protector, a device may be damaged by surge currents or voltage in a lightning weather. The GPS feeder transmits GPS signals.

The image shown here is indicative only. If there is any inconsistency between the image and the actual product, the actual product shall govern.

Before inserting an AE 905S module into an interface, lock the latch. Before removing an AE 905S module from an optical interface, unlock the latch. For details, see Figure 8-23.

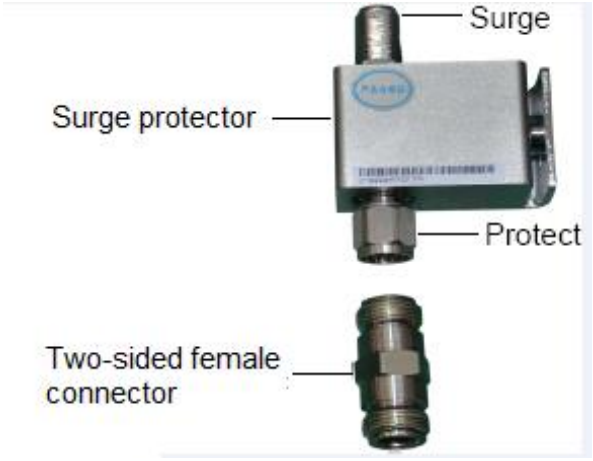
Figure 8-23 Latch

Installation Procedure

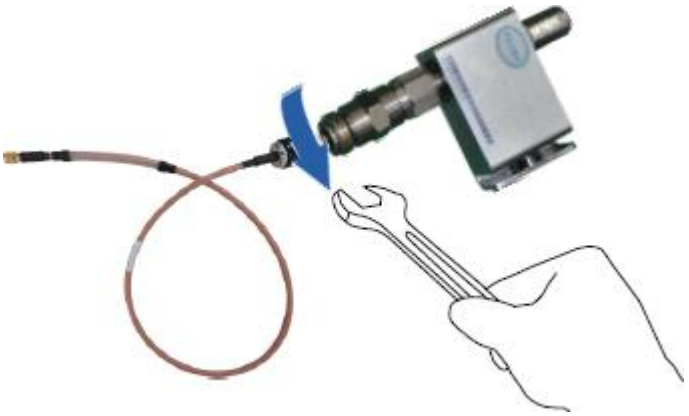
NOTE

For details about how to install the GPS satellite antenna system, see the GPS quick installation guide.

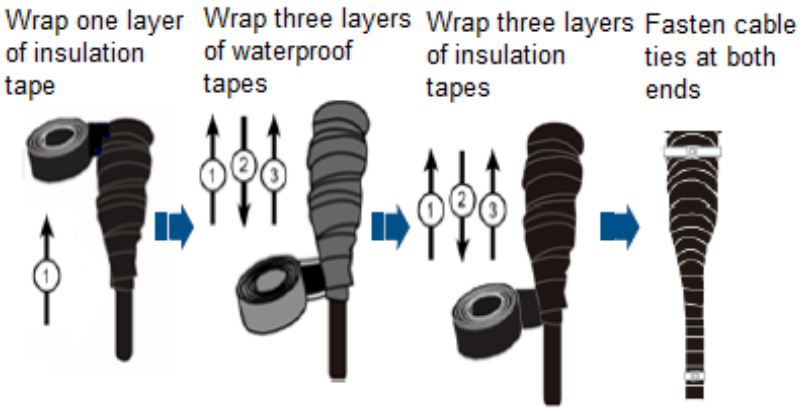
1. Connect a two-sided female connector to the Protect interface of the surge protector.



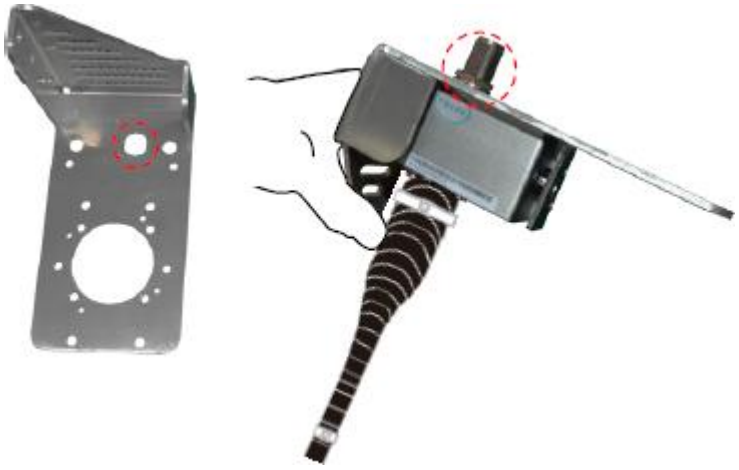
2. Connect one end of the coaxial cable to the Protect interface of the surge protector and fasten the joint with a wrench.



3. Implement 1+3+3 waterproof protection where the coaxial cable and the Protect interface of the surge protector are connected and fasten cable ties at both ends.



4. Fasten the surge protector to the GPS antenna support and use screws to secure it.



5. Fasten the GPS antenna support to the ground bar on the right of the device and use screws to secure it.

6. Install the ground cable of the surge protector. Connect one end of the ground cable to the GND interface of the surge protector and the other end of the cable to the ground bar.

NOTE

The surge protector must use OT M8 terminals.

7. Connect the GPS feeder to the AE 905S module.
8. Insert the AE 905S module into an optical interface of the NE40E with the latch of the AE 905S module locked.
9. Connect one end of the GPS feeder to the Surge interface of the surge protector and the other end of the GPS feeder to the GPS antenna. Fasten each connector with a wrench.
10. Implement 1+3+3 waterproof protection where the coaxial cable and the Protect interface of the surge protector are connected and fasten cable ties at both ends.
    - Implement waterproof protection where the feeder connector and the Surge interface of the surge protector are connected.

- Implement waterproof protection where the feeder connector and the N joint of the GPS antenna are connected.

NOTE

For details about how to make a GPS feeder connector, see the GPS quick installation guide.

9 Glossary

A

Asynchronization	Asynchronization does not use the exact data signals timed by the clock. The signals have different frequencies and phases. The asynchronizatioin usually encapsulates the bits into the control flag, which specifies the beginning and end of the bits.

D

DCE	Data Circuit-terminating Equipment is a network device composing the UNI. DCE provides the physical connection to the network, forwards the data, and provides the clock signals for the DTE.
DRAM	Dynamic Random Access Memory. The information stored in the RAM must be refreshed periodically. When the contents of the DRAM are being refreshed, a user cannot access it. Delay can thus occur.
DTE	Data terminal equipment is a user device composing the UNI. The DTE accesses the data network through the DCE equipment (for example, model) and usually uses the clock signals produced by DCE.

E

EMC	Electro magnetic compatibility is the condition which prevails when telecommunications equipment is performing its individually designed function in a common electromagnetic environment without causing or suffering unacceptable degradation due to unintentional electromagnetic interference to or from other equipment in the same environment.

F

Flash	Flash is a kind of special Erasable Programmable Read Only Memory (EEPROM), which can be completely erased and rewritten one time instead of only one byte.

N	
NVRAM	Nonvolatile Random Access Memory. The data in NVRAM cannot be lost when the system is Down.
R	
RAM	Random Access Memory is a memory that can be lost easily, and read and rewritten by the micro processor.
ROM	Read Only Memory is a memory that cannot be lost easily, and can only be read, but not written by the micro processor.
S	
SRAM	Static Random Access Memory is a type of random access memory. Its contents can be saved only if the SRAM is provided with the uninterrupted power supply. Unlike the DRAM, the SRAM does not need to be refreshed repeatedly.

10 Acronyms and Abbreviations

A	
AC	Alternating Current
ATM	Asynchronous Transfer Mode
AUX	Auxiliary (port)
C	
CAN	Control Area Network
CE1	Channelized E1
CF	Compact Flash
CLK	Clock Card
CPU	Central Processing Unit
CT1	Channelized T1
CTS	Clear to Send
D	
DC	Direct Current
DCE	Data Circuit-terminating Equipment
DSR	Data Set Ready
DTE	Data Terminal Equipments
DTR	Data Terminal Ready
E	
EMC	Electro Magnetic Compatibility

F	
FAD	Fabric Adaptor
FC	Patch Cord (Connector + Fiber)
FCB	Fan Control Board
FPIC	Flexible Plug-in Card
G	
GND	Ground
I	
IEC	International Electrotechnical Commission
L	
LC	Lucent Connector
LPU	Line Processing Unit
M	
MPU	Main Processing Unit
N	
NEG	Negative
NPU	Network Processing Unit
NVRAM	Non-Volatile Random Access Memory
O	
ODF	Optical Distribution Frame
OFL	Offline
P	
PC	Personal Computer
PCB	Printed Circuit Board
PCS	Physical Coding Sublayer
PGND	Protection Ground

PMD	Physical Medium Dependent
R	
RJ45	Registered Jack 45
RTS	Request to Send
RXD	Receive Data
S	
SC	Square Connector
SDRAM	Synchronous Dynamic Random Access Memory
SFU	Switch Fabric Unit
SMB	Sub-miniature B
T	
TXD	Transmit Data
U	
UART	Universal Asynchronous Receiver/Transmitter
UTP	Unshielded Twisted Pair
V	
VRP	Versatile Routing Platform

11 More Conference

- Basic Router Hardware Concept - Optical Fibers and Modules
- Quick Cable Conenction Guide