Ruijie Transceiver Modules

Installation and Reference Guide V3.0

Preface

Thank you for using our products. This manual will guide you through the installation of the device.

This manual describes the functional and physical features and provides the device installation steps, hardware troubleshooting, module technical specifications, and specifications and usage guidelines for cables and connectors.

Audience

It is intended for the users who have some experience in installing and maintaining network hardware. At the same time, it is assumed that the users are already familiar with the related terms and concepts.

Obtaining Technical Assistance

- Ruijie Networks Website: http://www.ruijienetworks.com/
- Service Email: service_rj@ruijienetworks.com
- Technical Support: http://www.ruijienetworks.com/service.aspx
- Technical Support Hotline: +86-4008-111-000

Related Documents

Documents	Description
Configuration Guide	Describes network protocols and related mechanisms that supported by the product, with configuration examples.
Command Reference	Describes the related configuration commands, including command modes, parameter descriptions, usage guides, and related examples.

Symbol Conventions

Note   Means reader take note. Notes contain helpful suggestions or references.

Caution   Means reader be careful. In this situation, you might do something that could result in equipment damage or loss of data.

Mini-GBIC and SFP Modules

Overview

The SFP (Small Form-Factor Pluggable) transceiver modules are classified into two models: optical SFP modules including duplex SFP modules shown in Figure 1-1 and BIDI SFP modules in Figure 1-2, and copper SFP modules in Figure 1-3. The BIDI SFP module applies different wavelengths in transmission and reception. In such way, the optical signal gets bidirectional transmission in the same optical fiber. The SFP module is an input/output device that supports hot swapping. When installed into the Ethernet port, the SFP is responsible for connecting the port and optical fiber network. The SFP module can be described as a smaller version of the Giga Bitrate Interface Converter (GBIC), also referred to as a mini-GBIC. In addition to applications to the Gigabit Ethernet port, the SFP also supports transceiver applications on FE ports and STM-1 SDH ports. 1000Base-T SFP uses existing copper wires to implement the full-duplex Gigabit connections between high-end workstations and power distribution rooms.
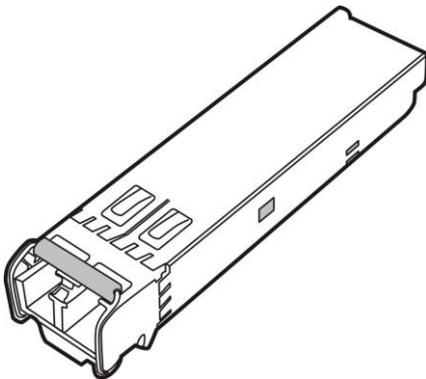
Figure 1-1 Dual-fiber SFP Module
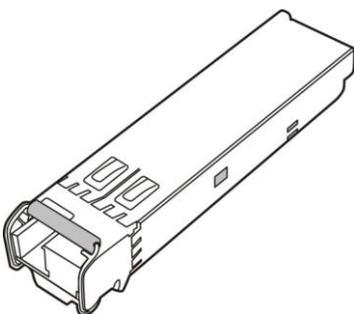

Figure 1-2 BIDI SFP Module
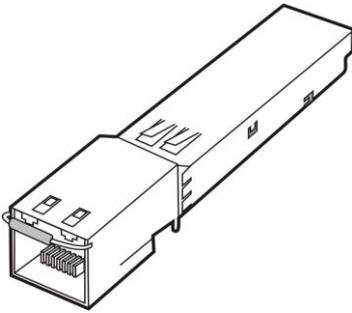

Figure 1-3 Copper SFP Module

Figure 1-4 Dual-fiber SFP(SGMII) Module
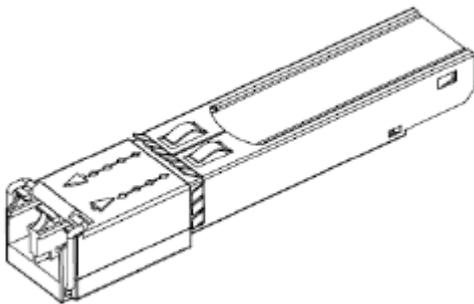
Note   The schematic diagrams are for your reference only. The product appearance is subject to the actual model.

Models and Specifications

Table 1-1 Existing Models of the Optical SFP Module.

Rate	Standard	SFP Product Model
Ethernet FE	Long wavelength / long distance 100Base-FX	FE-SFP-LX-MM1310 FE-SFP-LX-MM1310-SGMII FE-SFP-LH15-SM1310 FE-eSFP-LH15-SM1310 FE-SFP-LH20-SM1310-SGMII FE-SFP-LX20-SM1310-BIDI FE-SFP-LX20-SM1550-BIDI
Ethernet GE	Short wavelength 1000Base-SX	SFP-MM850 MINI-GBIC-SX-MM850 GE-eSFP-SX-MM850 GE-SFP-SX GE-SX-MM850 GE-SFP-SX-SM1550-BIDI GE-SFP-SX-SM1310-BIDI
	Long wavelength / long distance 1000Base-LX/LH	SFP-SM1310 MINI-GBIC-LX-SM1310

		GE-SFP-LX
		GE-LX-SM1310
		GE-eSFP-LX-SM1310
		SFP-S4-R1000P1 v1
		MINI-GBIC-LH40-SM1310
		GE-SFP-LX20-SM1310-BIDI
		GE-SFP-LX20-SM1550-BIDI
	Long wavelength / extended distance 1000Base-ZX	MINI-GBIC-ZX50-SM1550
		MINI-GBIC-ZX80-SM1550
		MINI-GBIC-ZX100-SM1550
		GE-SFP-ZX
		GE-SFP-ZX V2
SDH interface 155.52Mbps	Short wavelength	SDH155-SFP-SX-MM850
		SDH155-SFP-SX-MM1310
	Long wavelength / long distance	SDH155-SFP-LH15-SM1310
	Long wavelength / extended distance	SDH155-SFP-LH40-SM1310
		SDH155-SFP-LH80-SM1550

Table 1-2 Models of the Copper SFP Module.

Standard	1000Base-T SFP Product Model
1000Base-T	MINI-GBIC-GT
1000Base-T	GE-SFP-GT

Note   The types/models of MINI-GBIC and SFP modules are being updated. If more accurate models of the module are required, please contact Ruijie marketing staff or technical support engineers.

Table 1-3 Pairing Models of the SFP BIDI Module

Rate/Distance	Paring Models
100M/20km	FE-SFP-LX20-SM1310-BIDI
	FE-SFP-LX20-SM1550-BIDI
1000M/500m	GE-SFP-SX-SM1310-BIDI
	GE-SFP-SX-SM1550-BIDI
1000M/20km	GE-SFP-LX20-SM1310-BIDI
	GE-SFP-LX20-SM1550-BIDI

Note   BIDI modules must be used in pairs. If FE-SFP-LX20-SM1310-BIDI is used at one end, then FE-SFP-LX20-SM1550-BIDI must be applied to the other end.

Table 1-4 Temperature/Humidity Requirements of Dual-fiber SFP Modules and Copper SFP Modules

Operating Temperature	0ºC to 70ºC
Storage Temperature	-40ºC to 85ºC
Relative Humidity	10% to 90%

Table 1-5 Temperature/Humidity Requirements of BIDI SFP Modules

Operating Temperature	-40ºC to 85ºC
Storage Temperature	-40ºC to 85ºC
Relative Humidity	5% to 95%

Models and Technical Specifications

Table 1-6 Models and Technical Specifications of the SFP Module

SFP Model	Wavelength (nm)	Optical Fiber Type	DDM (Yes/No)	Intensity of Transmitted Light / dBm		Intensity of Received Light / dBm	
				MIN	MAX	MAX	MIN
FE-SFP-LX-MM1310	1310	MMF	Yes	-22	-14	-30	-14
FE-SFP-LX-MM1310-SGMII	1310	MMF	No	-20	-15	-28	-8
FE-SFP-LH15-SM1310	1310	SMF	Yes	-15	-8	-28	-8
FE-SFP-LH20-SM1310-SGMII	1310	SMF	No	-15	-8	-28	-8
FE-SFP-LX20-SM1310-BIDI	1310TX/1550RX	SMF	Yes	-15	-7	-28	-8
FE-SFP-LX20-SM1550-BIDI	1550TX/1310RX	SMF	Yes	-15	-7	-28	-8
FE-eSFP-LH15-SM1310	1310	SMF	Yes	-15	-8	-28	-8
MINI-GBIC-SX-MM850	850	MMF	No	-9.5	0	-17	0
SFP-MM850	850	MMF	No	-9.5	0	-17	0
GE-SX-MM850	850	MMF	No	-9.5	0	-17	0
GE-eSFP-SX-MM850	850	MMF	Yes	-9.5	-3	-17	0
GE-eSFP-LX-SM1310	1310	SMF	Yes	-9.5	-3	-20	-3
SFP-S4-R1000P1 v1	1310	SMF	Yes	-9.5	-3	-20	-3
MINI-GBIC-LX-SM1310	1310	SMF	No	-9	-3	-19	-3
SFP-SM1310	1310	SMF	No	-9	-3	-19	-3
GE-LX-SM1310	1310	SMF	No	-9	-3	-19	-3
MINI-GBIC-LH40-SM1310	1310	SMF	Yes	-5	0	-23	-3
GE-SFP-SX-SM1310-BIDI	1310	MMF	No	-10	-5	-17	-3

GE-SFP-SX-SM1550-BIDI	1550	MMF	No	-10	-5	-17	-3
GE-SFP-LX20-SM1310-BIDI	1310TX/1550RX	SMF	Yes	-9	-3	-20	-3
GE-SFP-LX20-SM1550-BIDI	1550TX/1310RX	SMF	Yes	-9	-3	-20	-3
MINI-GBIC-ZX50-SM1550	1550	SMF	Yes	-5	0	-22	-3
MINI-GBIC-ZX80-SM1550	1550	SMF	Yes	-2	5	-23	-1
MINI-GBIC-ZX100-SM1550	1550	SMF	Yes	0	5	-30	-9
SDH155-SFP-SX-MM850	850	MMF	No	-10	-4	-25	0
SDH155-SFP-SX-MM1310	1310	MMF	No	-20	-14	-30	-14
SDH155-SFP-LH15-SM1310	1310	SMF	No	-15	-8	-28	-8
SDH155-SFP-LH40-SM1310	1310	SMF	No	-5	0	-34	-8
SDH155-SFP-LH80-SM1550	1550	SMF	No	-5	0	-34	-8
Mini-GBIC-GT	NA	RJ45 cable	No	NA	NA	NA	NA
GE-SFP-SX	850	MMF	No	-9.5	-3	-17	0
GE-SFP-ZX	850	MMF	Yes	-9.5	0	-17	0
GE-SFP-ZX V2	1310	SMF	No	-9	-3	-19	-3
GE-SFP-LX	1310	SMF	No	-9.5	-3	-20	-3
GE-SFP-GT	NA	RJ45 cable	No	NA	NA	NA	NA

⚠️ **Caution**   Based on the specifications of received light intensity, install an attenuator at the link to avoid damage to the following optical modules when using short optical fibers: FE-SFP-LX20-SM1310-BIDI, FE-SFP-LX20-SM1550-BIDI, MINI-GBIC-LH40, MINI-GBIC-ZX50-SM1550, MINI-GBIC-ZX80-SM1550, MINI-GBIC-ZX100-SM1550, SDH155-SFP-LH40-SM1310 and SDH155-SFP-LH80-SM1550

⚠️ **Caution**   The optical module is a laser device. Please take care of your eyes and do not look into the laser beam directly.

⚠️ **Caution**   To keep the optical module clean, please make sure that the dust cap is mounted when it is not connected to a fiber cable.

⚠️ **Caution**   The SFP module does not support auto-negotiation to 100Mbps.

Table 1-7 Module Cabling Specifications

SFP Model	Connector Type	Optical Fiber Type	Core Specification (um)	Maximum Cabling Distance
FE-SFP-LX-MM1310	LC	MMF	62.5/125	2km

FE-SFP-LX-MM1310-SGMII	LC	MMF	62.5/125	2km
FE-SFP-LH15-SM1310	LC	SMF	9/125	15km
FE-SFP-LH20-SM1310-SGMII	LC	SMF	9/125	20km
FE-SFP-LX20-SM1310-BIDI	LC	SMF	9/125	20km
FE-SFP-LX20-SM1550-BIDI	LC	SMF	9/125	20km
FE-eSFP-LH15-SM1310	LC	SMF	9/125	15km
MINI-GBIC-SX-MM850	LC	MMF	50/125	500m
SFP-MM850	LC	MMF	50/125	500m
GE-SX-MM850	LC	SMF	50/125	500m
GE-eSFP-SX-MM850	LC	MMF	62.5/125	275m
			50/125	550m
GE-eSFP-LX-SM1310	LC	SMF	9/125	10km
SFP-S4-R1000P1 v1	LC	SMF	9/125	10km
MINI-GBIC-LX-SM1310	LC	SMF	9/125	10km
SFP-SM1310	LC	SMF	9/125	10km
GE-LX-SM1310	LC	SMF	9/125	10km
MINI-GBIC-LH40-SM1310	LC	SMF	9/125	40km
GE-SFP-SX-SM1310-BIDI	LC	MMF	50/125	500m
GE-SFP-SX-SM1550-BIDI	LC	MMF	50/125	500m
GE-SFP-LX20-SM1310-BIDI	LC	SMF	9/125	20km
GE-SFP-LX20-SM1550-BIDI	LC	SMF	9/125	20km
MINI-GBIC-ZX50-SM1550	LC	SMF	9/125	50km
MINI-GBIC-ZX80-SM1550	LC	SMF	9/125	80km
MINI-GBIC-ZX100-SM1550	LC	SMF	9/125	100km
SDH155-SFP-SX-MM850	LC	MMF	62.5/125	500m
SDH155-SFP-SX-MM1310	LC	MMF	62.5/125	2km
SDH155-SFP-LH15-SM1310	LC	SMF	9/125	15km
SDH155-SFP-LH40-SM1310	LC	SMF	9/125	40km
SDH155-SFP-LH80-SM1310	LC	SMF	9/125	80km
GE-SFP-SX	LC	MMF	62.5/125	275m
			50/125	550m
GE-SFP-LX	LC	SMF	9/125	10km
GE-SFP-ZX	LC	MMF	50/125	500m
GE-SFP-ZX V2	LC	SMF	9/125	10km
MINI-GBIC-GT	RJ45 cable	Standard Cat-5 and above unshielded or shielded twist pairs		100m
GE-SFP-GT	RJ45 cable	Standard Cat-5 and above unshielded or shielded twist pairs		100m

Module Specifications

Wavelength

Wavelength means the optical wave band for transmission of light signal. Currently, the commonly used XFP optical modules have three centre wavelengths: 850 nm, 1310 nm and 1550 nm. Usually, the wave band of 850 nm is for short-distance transmission and the wave bands of 1310 nm and 1550 nm are for long-distance transmission.

Optical Fiber Type

Optical fibers are classified into two types: single-mode and multimode fibers according to the transmission mode of light in fibers.

A multimode fiber (MMF) has a larger core and transmits light of various modes. But it has a higher modal dispersion. The modal dispersion grows with the increase of transmission distance. The transmission distance of multimode fibers is associated with the transmission rate, core diameter, and modal bandwidth.

A single-mode fiber (SMF) has a smaller core and can transmit one mode of light. Therefore, it has a lower modal dispersion and is applicable to remote communication.

Connector Type

Optical fibers are joined by optical fiber connectors to form fiber jumpers. A fiber jumper is connected to optical modules through an optical fiber connector, so that the optical channel is detachable for the convenience of debugging and maintenance of the optical system. Fiber connectors are in many types. The commonly used lucent connectors (LCs) are shown in Figure 1-5 and Figure1- 6
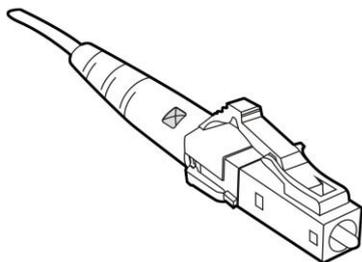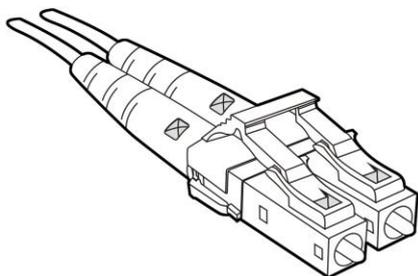
Figure 1-5 Single-core LC Connector

Figure 1-6 Dual-core LC Connector

DDM

Digital Diagnostic Monitor (DDM) is widely used in optical modules to dynamically measure the temperature, intensity of transmitted and received light, voltage, and laser bias current of the module. You can run commands to get the monitoring result in the host system that supports display of DDM information.

Intensity of Transmitted Light

Intensity of transmitted light refers to the optical output power transmitted from the optical module. The unit is dBm.

Intensity of Received Light

Intensity of received light refers to the optical input power received by the optical module. The unit is dBm. If the actual received light intensity is less than the minimum value, the module may fail in connection or lose many frames. If the actual received light intensity is greater than the maximum value, the module may be damaged.

Module Installation Precautions

Preparation before Installation

Before installation, electron static discharge (ESD) protection is needed. To avoid damages to the SFP modules and electronic devices in the equipment caused by the static electricity generated during the installation, please wear the anti-static wrist strap around the wrist and tighten the lock; make sure that the anti-static wrist strap has a good contact with the skin and is well grounded.

Wearing jack type anti-static wrist strap, for example, is as shown in Figure 1-7:

Figure 1-7 Schematic Diagram for Wearing Jack Type Anti-static Wrist Strap
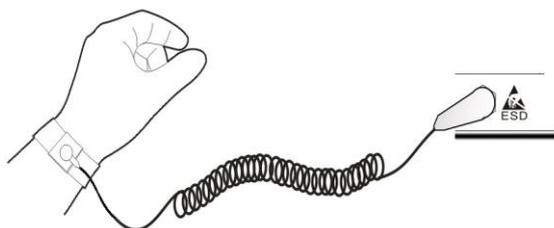
Installing the SFP Module

1. Reveal the handle of the SFP module to lock against the snap on top of the module, and pinch the both sides of the SFP module to push it levelly and slowly into the optical module slot until the optical module firmly connects to the slot (there would be a click sound if the optical module is correctly connected to the slot), as shown in Figure 1-8:

Figure 1-8 Installing the SFP Optical Module
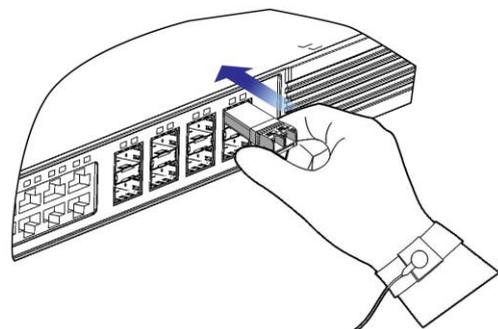
2. When you connect the SFP module to the optical fiber network, use the optical fiber jumper. Based on the connector type of the interconnecting ports, choose the jumper with corresponding connectors.
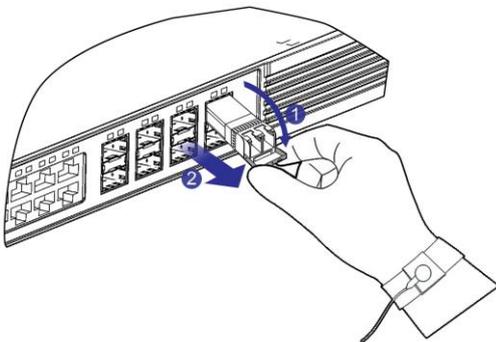
3. After installing the module of the optical fiber jumper, the switch port indicator "LINK/ACT" will be on; otherwise, check that the optical fiber jumper is correctly connected.

4. If the optical fiber jumper is correctly connected, check whether the connected SFP modules are properly matched.

5. Precautions during installing:

- The optical module cannot be inserted inversely. If the optical module cannot be inserted to the end along one direction, do not forcibly to push it in and please try another direction.
- It is recommended that before installing the fiber-optic lines, not remove the protecting rubber on the optical port of optical modules.
- It is recommended not insert the fiber SFP module with optical fiber directly into the slot. Please proceed with the installation after the optical fiber is pulled out.
- In the process of installing the SFP module, please do not directly touch the connecting finger part of the SFP modules by hand.
- Please do not crush, twist, fold fiber or over bend the fiber, otherwise it may lead to reduced system performance or loss of transmitted data.
- BIDI SFP modules must be used in pairs. For instance, If FE-SFP-LX20-SM1310-BIDI is used at one end, and then FE-SFP-LX20-SM1550-BIDI must be applied to the other end.

Removing the SFP Module

1. Pull out the optical fiber line.

2. Pull the SFP module handle downward to the horizontal position, gently pull the snap, and then pull out the SFP module smoothly. As shown in the Figure 1-9.

Figure 1-9 Schematic Diagram for Pulling out the SFP Optical Module


Precautions for removing

- Please pull out the optical fiber before removing the optical module.
- Please do not forcibly pull out the module without pulling down the handle of the optical module first so as not to cause any damage.
- Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.

10G XFP Modules

Overview

Ruijie Networks provides the following 10G XFP transceiver modules: 10GBASE-SR-XFP. The 10G XFP transceiver is an input/output device that supports hot swapping. When installed into the 10G Ethernet XFP port or slot, the 10G XFP transceiver is responsible for connecting the port and optical fiber network. The appearance of XFP module is shown in Figure 2-1.

Figure 2-1 XFP Modules
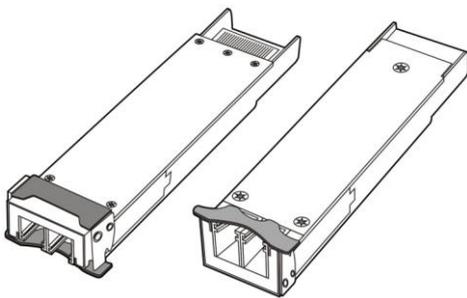
![Note]
Note   The schematic diagrams are for your reference only. The product appearance is subject to the actual model.

Models and Technical Specifications

Table 2-1 XFP Module Models

Model	Wavelength (nm)	Optical Fiber Type	DDM (Yes/No)	Intensity of Transmitted Light/dBm		Intensity of Received Light/dBm	
				Min	Max	Min	Max
10GBASE-SR-XFP	850	MMF	Yes	-5	-1	-7.5	0.5

The optical module is a laser device. Please take care of your eyes and do not look into the laser beam directly.

To keep the optical module clean, please make sure that the dust cap is mounted when it is not connected to a fiber cable.

Table 2-2 Module Cabling Specifications

Model	Connector Type	Optical Fiber Type	Core Specification (um)	Modal Bandwidth (MHz.km)	Maximum Cabling Distance

10GBASE-SR-XFP	LC	MMF	62.5 /125	200(OM1)	33m
				160	22m
			50/125	2000(OM3)	300m
				500(OM2)	82m
				400(OM1)	66m

Module Specifications

Wavelength

Wavelength means the wave band for transmission of light signal. Currently, the commonly used XFP optical modules have three centre wavelengths: 850 nm, 1310 nm and 1550 nm. Usually, the wave band of 850 nm is for short-distance transmission and the wave bands of 1310 nm and 1550 nm are for long-distance transmission.

Optical Fiber Type

Optical fibers are classified into two types: single-mode and multimode fibers according to the transmission mode of light in fibers.

A multimode fiber (MMF) has a larger core and transmits light of various modes. But it has a higher modal dispersion. The modal dispersion grows with the increase of transmission distance. The transmission distance of multimode fibers is associated with the transmission rate, core diameter, and modal bandwidth.

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Connector Type

Optical fibers are joined by optical fiber connectors to form fiber jumpers. A fiber jumper is connected to optical modules through an optical fiber connector, so that the optical channel is detachable for the convenience of debugging and maintenance of the optical system. Fiber connectors are in many types. The commonly used lucent connectors (LCs) are shown in Figure 2-2 and Figure 2-3.
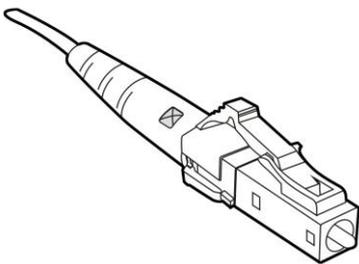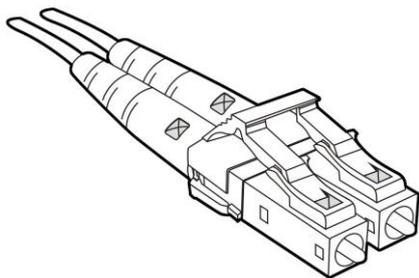
Figure 2-2 Single-core LC Connector

Figure 2-3 Dual-core LC Connector

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Digital Diagnostic Monitor (DDM) is widely used in optical modules to dynamically measure the temperature, intensity of transmitted and received light, voltage, and laser bias current of the module. You can run commands to get the monitoring result in the host system that supports display of DDM information.

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Module Installation Precautions

Preparation before Installation

Before installation, electron static discharge (ESD) protection is needed. To avoid damages to the XFP modules and electronic devices in the equipment caused by the static electricity generated during the installation, please wear the anti-static wrist strap around the wrist and tighten the lock; make sure that the anti-static wrist strap has a good contact with the skin and is well grounded.

Wearing jack type anti-static wrist strap, for example, is as shown in Figure 2-4:

Figure 2-4 Schematic Diagram for Wearing Jack Type Anti-static Wrist Strap
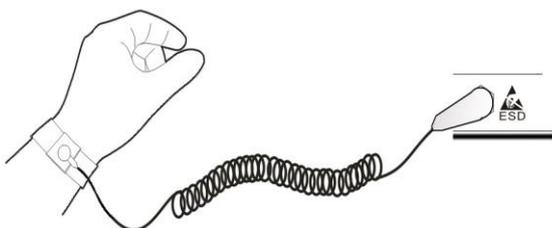
Installing the XFP Module

1. Reveal the handle of the XFP module to lock against the snap on top of the module, and pinch the both sides of the XFP module to push it levelly and slowly into the optical module slot until the optical module firmly connects to the slot (there would be a click sound if the optical module is correctly connected to the slot), as shown in Figure 2-5:

Figure 2-5 Installing the XFP Optical Module
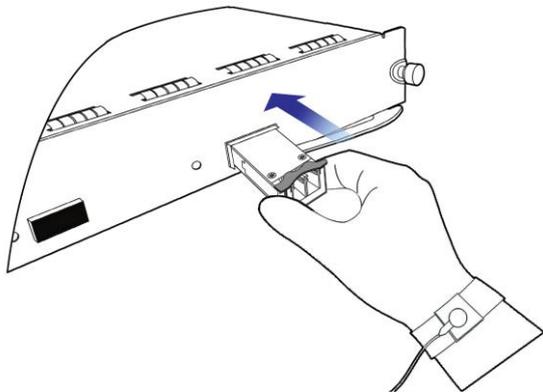
2 When you connect the XFP module to the optical fiber network, use the optical fiber jumper. Based on the connector type of the interconnecting ports, choose the jumper with corresponding connectors.

3. After installing the module of the optical fiber jumper, the switch port indicator "LINK/ACT" will be on; otherwise, check that the optical fiber jumper is correctly connected.

4. Precautions during installing:

■ The optical module cannot be inserted inversely. If the optical module cannot be inserted to the end along one direction, do not forcibly push it in and please try another direction.

■ It is recommended that before installing the fiber-optic lines, not remove the protecting rubber on the optical port of optical modules.

■ It is recommended not insert the fiber XFP module with optical fiber directly into the slot. Please proceed with the installation after the optical fiber is pulled out.

■ In the process of installing the XFP module, please do not directly touch the connecting finger part of the XFP modules by hand.

■ Please do not crush, twist, fold fiber or over bend the fiber, otherwise it may lead to reduced system performance or loss of transmitted data.

Removing the XFP Module

1. Pull out the optical fiber line.

2. Pull the XFP module handle downward to the horizontal position, gently pull the snap, and then pull out the XFP module smoothly. As shown in the Figure 2-6.

Figure 2-6 Schematic Diagram for Pulling out the XFP Optical Module
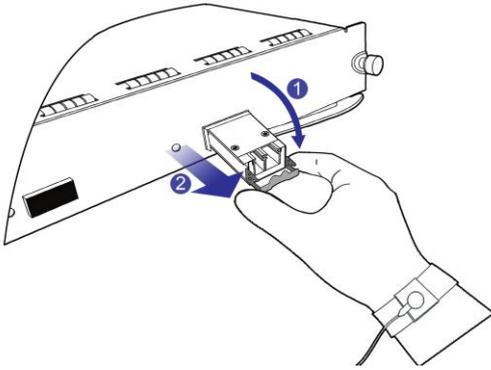
Precautions for removing

- Please pull out the optical fiber before removing the optical module.
- Please do not forcibly pull out the module without pulling down the handle of the optical module first so as not to cause any damage.
- Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.

10G SFP+ Modules

Overview

The 10G SFP+ transceiver module of Ruijie Networks is composed of an SFP+ optical module, an SFP+ copper cable module or an SFP+ AOC cable, as shown in Figure 3-1 and Figure 3-2. The XG-SFP-SR-MM850, XG-SFP-LR-SM1310, XG-SFP-ER-SM1550 and XG-SFP-ZR-SM1550 are optical modules. The XG-SFP-CU1/3/5M are passive copper cable modules. The XG-SFP-AOC1/3/5/10/20M are active copper cable modules. XG-SFP-SR-MM850-I and XG-SFP-LR-SM131-I are industrial-specific optical modules. The 10G SFP+ transceiver is an input/output device that supports hot swapping. When connected to a 10G SFP+ Ethernet port or slot through the optical fiber or copper cable, the 10G SFP+ transceiver implements 10G Ethernet transmission.
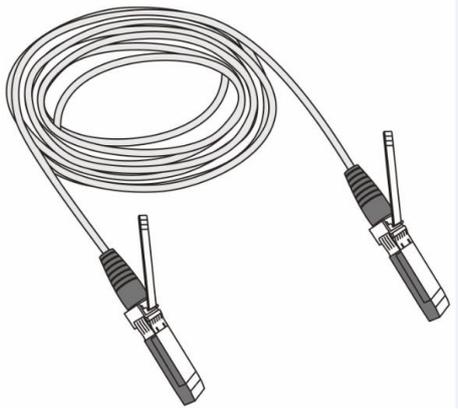
Figure 3-1 SFP+ Optical Module
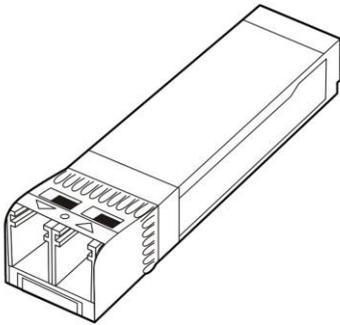
Figure 3-2 SFP+ Copper Cable Module

Figure 3-3 SFP+ AOC Cable Module

> **Note**   The schematic diagrams are for your reference only. The product appearance is subject to the actual model.

Models and Technical Specifications

Table 3-1 SFP+ Optical Module

Model	Wavelength (nm)	DDM (Yes/No)	Optical Fiber Type	Intensity of Transmitted Light/dBm		Intensity of Received Light/dBm	
				Min	Max	Min	Max
XG-SFP-SR-MM850	850	Yes	MMF	-7.3	-1	-9.9	-1
XG-SFP-SR-MM850-I	850	Yes	MMF	-7.3	-1	-9.9	-1
XG-SFP-ZR V1	850	Yes	MMF	-7.3	-1	-9.9	-1
XG-SR-MM850	850	Yes	MMF	-7.3	-1	-9.9	-1
SFP+MM850	850	Yes	MMF	-7.3	-1	-9.9	-1
SFP-M3-R1000P1	850	Yes	MMF	-7.3	-1	-9.9	-1
XG-SFP-LR-SM1270-BIDI	1270	No	SMF	-6.5	0.5	-14.4	0.5
XG-SFP-LR-SM1330-BIDI	1330	No	SMF	-6.5	0.5	-14.4	0.5
XG-LR-SM1310	1310	Yes	SMF	-8.2	0.5	-14.4	0.5
XG-SFP-LR-SM1310	1310	Yes	SMF	-8.2	0.5	-14.4	0.5
SFP+SM1310	1310	Yes	SMF	-8.2	0.5	-14.4	0.5
XG-SFP-LR-SM1310-I	1310	Yes	SMF	-8.2	0.5	-14.4	0.5
SFP-S1-R1000P1	1310	Yes	SMF	-8.2	0.5	-14.4	0.5
SFP-S4-R1000P1 v2	1310	Yes	SMF	-8.2	0.5	-14.4	0.5
XG-SFP-ER-SM1550	1550	Yes	SMF	-4.7	4	-11.3	-1
XG-SFP-ZR-SM1550	1550	Yes	SMF	0	4	-24	-7
XS-SFP-SR	850	Yes	MMF	-7.3	-1	-9.9	-1
XS-SFP-LR	1310	Yes	SMF	-8.2	0.5	-14.4	0.5

⚠ Caution   Do not use short-distance optical fiber connection for the XG-SFP-ER-SM1550 and XG-SFP-ZR-SM1550 to avoid overloading on the optical transceiver. If the optical power of the module receiver end is greater than or equal to -1 dBm, install an attenuator at the receiver end so that the optical power can be less than -1 dBm.

⚠ Caution   The optical module is a laser device. Please take care of your eyes and do not look into the laser beam directly.

⚠ Caution   To keep the optical module clean, please make sure that the dust cap is mounted when it is not connected to a fiber cable.

⚠ Caution   The 10G SFP+ optical module does not support auto-negotiation to 1000Mbps.

Table 3-2 10G SFP+ Module Cabling Specifications

Model	Connect or Type	Optical Fiber Type	Core Specification (um)	Modal Bandwidth (MHz.km)	Maximum Cabling Distance
XG-SFP-SR-MM850	LC	MMF	50/125	2000(OM3)	300m
XG-SFP-SR-MM850-I	LC	MMF	50/125	2000(OM3)	300m
XG-SFP-ZR V1	LC	MMF	50/125	2000(OM3)	300m
XG-SR-MM850	LC	MMF	50/125	2000(OM3)	300m
SFP+MM850	LC	MMF	50/125	2000(OM3)	300m
SFP-M3-R1000P1	LC	MMF	50/125	2000(OM3)	300m
XG-SFP-LR-SM1270-BIDI	LC	SMF	9/125	N/A	10km
XG-SFP-LR-SM1330-BIDI	LC	SMF	9/125	N/A	10km
XG-SFP-LR-SM1310	LC	SMF	9/125	N/A	10km
SFP+SM1310	LC	SMF	9/125	N/A	10km
XG-SFP-LR-SM1310-I	LC	SMF	9/125	N/A	10km
SFP-S1-R1000P1	LC	SMF	9/125	N/A	10km
SFP-S4-R1000P1 v2	LC	SMF	9/125	N/A	10km
XG-SFP-ER-SM1550	LC	SMF	9/125	N/A	40km
XG-SFP-ZR-SM1550	LC	SMF	9/125	N/A	80km
XS-SFP-SR	LC	MMF	62.5/125	200(OM1)	33m
				160	26m
			50/125	2000(OM3)	300m
				500(OM2)	82m
				400(OM1)	66m
XS-SFP-LR	LC	SMF	9/125	N/A	10km

Table 3-3 10G SFP+ Copper Module Model

Model	Module Type	Connector Type	Copper Cable Length (M)	Conductor Wire Diameter (AWG)	Data Rate (Gb/s)	DDM Supported (Yes/No)
XG-SFP-CU1M	Passive	SFP+	1	28	10.3125	No
XG-SFP-CU3M	Passive	SFP+	3	28	10.3125	No
XG-SFP-CU5M	Passive	SFP+	5	26	10.3125	No
XG-SFP-AOC1M	Active	SFP+	1	\	10.3125	Yes
XG-SFP-AOC3M	Active	SFP+	3	\	10.3125	Yes
XG-SFP-AOC5M	Active	SFP+	5	\	10.3125	Yes
XG-SFP-AOC10M	Active	SFP+	10	\	10.3125	Yes

Note   The types/models of the SFP+ modules are being updated. If more accurate models of the module are required, please contact Ruijie marketing staff or technical support engineers.

Note   Additional connecting cables are not needed. You just need to plug the cable ends into the appropriate device ports for interconnection.

Note   The TX power of AOC cable can be displayed as "N/A"

Table 3-4 Temperature/Humidity Requirements of 10G SFP+ Modules

Application	Commercial-Specific	Industrial-Specific
Operating Temperature	0ºC to 70ºC	-40ºC-85ºC
Storage Temperature	-40ºC to 85ºC	-40ºC-85ºC
Relative Humidity	10% to 90%	10%-90%

Module Specifications

Wavelength

Wavelength means the optical wave band for transmission of light signal. Currently, the commonly used SFP optical modules have three central wavelengths: 850 nm, 1310 nm and 1550 nm. Usually, the wave band of 850 nm is for short-distance transmission and the wave bands of 1310 nm and 1550 nm are for long-distance transmission.

Optical Fiber Type

Optical fibers are classified into two types: single-mode and multimode fibers according to the transmission mode of light in fibers.

A multimode fiber (MMF) has a larger core and transmits light of various modes. But it has a higher modal dispersion. The modal dispersion grows with the increase of transmission distance. The transmission distance of multimode fibers is associated with the transmission rate, core diameter, and modal bandwidth.

A single-mode fiber (SMF) has a smaller core and can transmit one mode of light. Therefore, it has a lower modal dispersion and is applicable to remote communication.

Connector Type

Optical fibers are joined by optical fiber connectors to form fiber jumpers. A fiber jumper is connected to optical modules through an optical fiber connector, so that the optical channel is detachable for the convenience of debugging and maintenance of the optical system. Fiber connectors are in many types. The commonly used lucent connectors (LCs) are shown in Figure 3-4 and Figure 3-5.

Figure 3-4 Single-core LC Connector
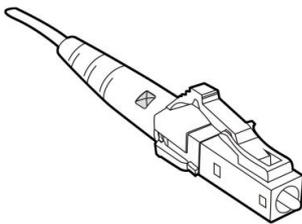
Figure 3-5 Dual-core LC Connector

DDM

Digital Diagnostic Monitor (DDM) is widely used in optical modules to dynamically measure the temperature, intensity of transmitted and received light, voltage, and laser bias current of the module. You can run commands to get the monitoring result in the host system that supports display of DDM information.

Intensity of Transmitted Light

Intensity of transmitted light refers to the optical output power transmitted from the optical module. The unit is dBm.

Intensity of Received Light

Intensity of received light refers to the optical input power received by the optical module. The unit is dBm. If the actual received light intensity is less than the minimum value, the module may fail in connection or lose many frames. If the actual received light intensity is greater than the maximum value, the module may be damaged.

Module Installation Precautions

Preparation before Installation

Before installation, electron static discharge (ESD) protection is needed. To avoid damages to the electronic devices in the SFP+ optical and copper cable modules caused by the static electricity generated during the installation, please wear

the anti-static wrist strap around the wrist and tighten the lock; make sure that the anti-static wrist strap has a good contact with the skin and is well grounded.

Wearing jack type anti-static wrist strap, for example, is as shown in Figure 3-6:
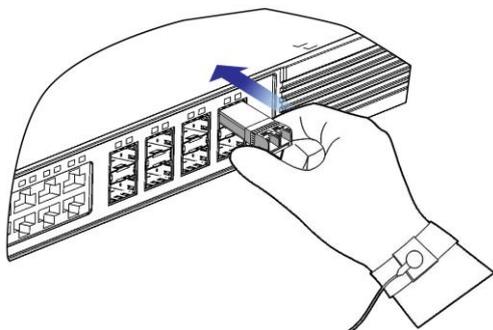
Figure 3-6 Schematic Diagram for Wearing Jack Type Anti-static Wrist Strap
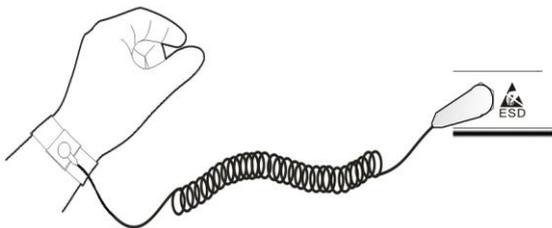
Installing the 10G SFP+ Optical Module

1. Reveal the handle of the SFP + module to lock against the snap on top of the module, and pinch the both sides of the SFP + module to push it levelly and slowly into the optical module slot until the optical module firmly connects to the slot (there would be a click sound if the optical module is correctly connected to the slot), as shown in Figure 3-7:

Figure 3-7 Installing the SFP+ Optical Module

2. When you connect the SFP+ module to the optical fiber network, use the optical fiber jumper. Based on the connector type of the Interconnecting ports, choose the jumper with corresponding connectors.

3. After installing the module of the optical fiber jumper, the switch port indicator "LINK/ACT" will be on; otherwise, check that the optical fiber jumper is correctly connected.

4. Precautions during installing:

■   The optical module cannot be inserted inversely. If the optical module cannot be inserted to the end along one direction, do not forcibly push it in and please try another direction.

■   It is recommended that before installing the fiber-optic lines, not remove the protecting rubber on the optical port of optical modules.

■   It is recommended not insert the fiber SFP + module with optical fiber directly into the slot. Please proceed with the installation after the optical fiber is pulled out.

■   In the process of installing the SFP + module, please do not directly touch the connecting finger part of the QSFP + modules by hand.

■   Please do not crush, twist, fold fiber or over bend the fiber, otherwise it may lead to reduced system performance or loss of transmitted data.

Removing the 10G SFP+ Optical Module

1. Pull out the optical fiber line.

2. Pull the SFP + module handle downward to the horizontal position, gently pull the snap, and then pull out the SFP + module smoothly. As shown in the Figure 3-8

Figure 3-8 Schematic Diagram for Pulling out the SFP+ Optical Module
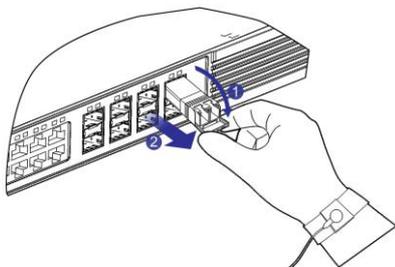

Precautions for removing

■   Please pull out the optical fiber before removing the optical module.
■   Please do not forcibly pull out the module without pulling down the handle of the optical module first so as not to cause any damage.
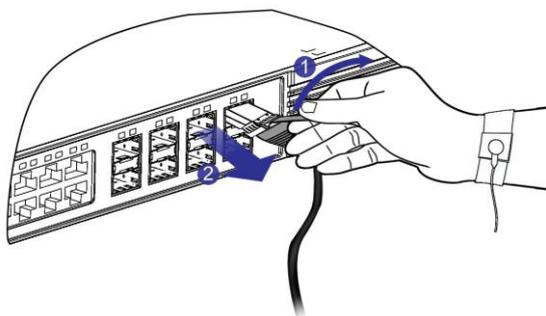■   Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.

Installing the 10G SFP+ Cable Module

10G SFP+ cables include copper cables and AOC cables. This chapter takes 10G SFP+ copper cables as an example.

1. When installing the plug of the 10G SFP+ copper cable module (with power-on), users can use one hand to hold the plug of the copper cable module, and the other hand to lift the copper cable to the direction that is vertical with the front panel of the switch port to make sure the installation direction of the SFP+ module at the end of the copper cable is correct and then gently and smoothly insert it into the 10G SFP+ slot until a click sound is heard. This indicates that the 10G SFP+ copper cable module is correctly installed. As shown in the Figure 3-9:

Figure 3-9 Schematic Diagram for Installing the SFP+ Copper Cable
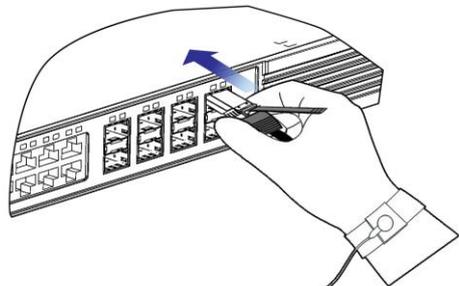
2. After installing the plug of the copper cable module, connect the copper cable to the Ethernet network, and the switch port indicator "LINK/ACT" will be on; otherwise, check that the connector of the copper cable is correctly connected;

Precautions during installing

- The 10G SFP+ connector at the end of the copper cable cannot be inserted inversely. If the optical module cannot be inserted to the end along one direction, do not forcibly push it in and please try another direction.
- In the process of installing copper cable module, please do not directly touch the connecting finger part on the top of the module by hand.
- Please do not crush, twist, fold fiber or over bend the copper cable, otherwise it may lead to reduced system performance or loss of transmitted data.

4. After installing the copper cable interface, please make sure that the bending radius of the copper cable wiring is greater than five times of the outside diameter of the copper cable. Otherwise, the core wires within the copper cable may be pulled too much, causing damage to the copper cable. Assume that the outside diameter of the copper cable is 4.9 mm, and then the minimum bending radius is 24.5 mm, as shown in Figure 3-10.

Figure 3-10 Schematic Diagram of Bending Radius of the Copper Cable
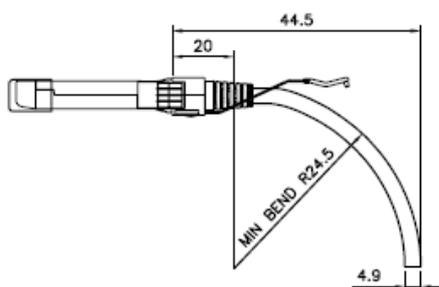
Removing the 10G SFP+ Cable Module

10G SFP+ cables include copper cables and AOC cables. This chapter takes 10G SFP+ copper cables as an example.

1. When pulling out the 10G SFP+ copper cable module, pull out the pull ring to unlock and then pull out the module smoothly. As shown in the Figure 3-11.

Figure 3-11 Schematic Diagram for Pulling out the 10G SFP+ Copper Cable

Precautions for removing

- When removing the 10G SFP+ copper cable, please pull the pull ring of the module levelly, otherwise it would result in the difficulty of pulling out the copper cable and even the damage to the module and slot.
- Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.

25G SFP28 Modules

Overview

The 25G SFP28 transceiver module of Ruijie Networks is composed of an SFP28 optical module and an SFP28 AOC cable, as shown in Figure 4-1 and Figure 4-2. VG-SFP-SR-MM850 and VG-SFP-LR-SM1310 are optical modules. The VG-SFP-AOC1/3/5/7/10/20M are active copper cable modules. The 25G SFP transceiver is an input/output device that supports hot swapping. When connected to a 25G SFP28 Ethernet port or slot through the optical fiber or AOC cable, the 25G SFP transceiver implements 25G Ethernet transmission.

Figure 4-1 VG-SFP-LR-SM1310/VG-SFP-SR-MM850
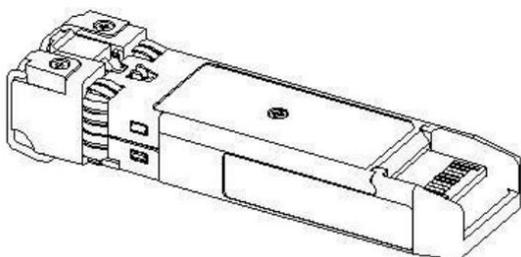
Figure 4-2 VG-SFP-AOC1/3/5/7/10/20M
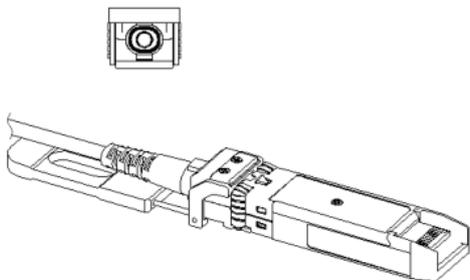
Note   The schematic diagrams are for your reference only. The product appearance is subject to the actual model.

Models and Technical Specifications

Table 4-1 25G SFP28 Transceiver Modules

Model	Wavelength	DDM	Optical	Intensity of	Intensity of Received

	(nm)	(Yes/No)	Fiber Type	Transmitted Light/dBm		Light/dBm	
				Min	Max	Rate Min	Max
VG-SFP-SR-MM850	(840,860)	Yes	MMF	-8.4	2.4	-10.3	2.4
VG-SFP-LR-SM1310	(1295,1325)	Yes	SMF	-4.5	3	-11.4	2

⚠️ **Caution**   The transceiver module is a laser device. Please take care of your eyes and do not look into the laser beam directly.

⚠️ **Caution**   To keep the transceiver module clean, please make sure that the dust cap is mounted when it is not connected to a fiber cable.

⚠️ **Caution**   The 25G SFP28 optical module does not support auto-negotiation to 10G.

Table 4-2 25G SFP28 Transceiver Module Cabling Specifications

Model	Wavelength (nm)	Connector Type	Optical Fiber Type	Core Specification (um)	Modal Bandwidth (MHz.km)	Maximum Cabling Distance
VG-SFP-SR-MM850	(840,860)	LC	MMF	50/125	4700	100m (OM4)
VG-SFP-LR-SM1310	(1295,1325)	LC	SMF	9/125	N/A	10km

Table 4-3 25G SFP28 AOC Cable Models

Model	Type	Connector Type	Color	Cable Length (m)	Data Rate (Gb/s)	DDM Supported (Yes/No)
VG-SFP-AOC1M	Active	SFP28 to SFP28	Green	1	25.78	Yes

VG-SFP-AOC3M	Active	SFP28 to SFP28	Green	3	25.78	Yes
VG-SFP-AOC5M	Active	SFP28 to SFP28	Green	5	25.78	Yes
VG-SFP-AOC7M	Active	SFP28 to SFP28	Green	7	25.78	Yes
VG-SFP-AOC10M	Active	SFP28 to SFP28	Green	10	25.78	Yes
VG-SFP-AOC20M	Active	SFP28 to SFP28	Green	20	25.78	Yes
VG-SFP-AOC5M-G	Active	SFP28 to SFP28	Green	5	25.78	Yes
VG-SFP-AOC7M-G	Active	SFP28 to SFP28	Green	7	25.78	Yes
VG-SFP-AOC10M-G	Active	SFP28 to SFP28	Green	10	25.78	Yes
VG-SFP-AOC20M-G	Active	SFP28 to SFP28	Green	20	25.78	Yes

⚠️ Caution   The types/models of the SFP28 modules are being updated. If more accurate models of the module are required, please contact Ruijie marketing staff or technical support engineers.

⚠️ Caution   Additional connecting cables are not needed. You just need to plug the cable ends into the appropriate device ports for interconnection.

⚠️ Caution   The 25G AOC cable module does not support auto-negotiation to 10G.

Table 4-4 Temperature/Humidity Requirements for 25G SFP28 Modules

Operating Temperature	0ºC to 70ºC
Storage Temperature	-40ºC to 85ºC
Relative Humidity	10% to 90%

Module Specifications

Wavelength

Wavelength means the optical wave band for transmission of light signal. Currently, the commonly used SFP28 optical modules have the following two main central wavelengths: 850 nm,1310 nm and 1550 nm. Usually, the wave band of 850 nm is for short-distance transmission and the wave band of 1310 nm and 1550 nm is for long-distance transmission.

Optical Fiber Type

Optical fibers are classified into two types: single-mode and multimode fibers according to the transmission mode of light in fibers.

A multimode fiber (MMF) has a larger core and transmits light of various modes. But it has a higher modal dispersion. The modal dispersion grows with the increase of transmission distance. The transmission distance of multimode fibers is associated with the transmission rate, core diameter, and modal bandwidth.

A single-mode fiber (SMF) has a smaller core and can transmit one mode of light. Therefore, it has a lower modal dispersion and is applicable to remote communication.

Connector Type

Optical fibers are joined by optical fiber connectors to form fiber jumpers. A fiber jumper is connected to optical modules through an optical fiber connector, so that the optical channel is detachable for the convenience of debugging and maintenance of the optical system. Fiber connectors are in many types. The commonly used lucent connectors (LCs) are shown in Figure 4-4 and Figure 4-5.

Figure 4-4 Single-core LC Connector
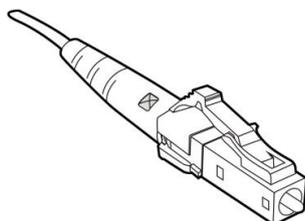
Figure 4-5 Dual-core LC Connector

DDM

Digital Diagnostic Monitor (DDM) is widely used in optical modules to dynamically measure the temperature, intensity of transmitted and received light, voltage, and laser bias current of the module. You can run commands to get the monitoring result in the host system that supports display of DDM information.

Intensity of Transmitted Light

Intensity of transmitted light refers to the optical output power transmitted from the optical module. The unit is dBm.

Intensity of Received Light

Intensity of received light refers to the optical input power received by the optical module. The unit is dBm. If the actual received light intensity is less than the minimum value, the module may fail in connection or lose many frames. If the actual received light intensity is greater than the maximum value, the module may be damaged.

Module Installation Precautions

Preparation before Installation

Before installation, electron static discharge (ESD) protection is needed. To avoid damages to the electronic devices in the 25G SFP28 optical modules and 25G SFP28 cables caused by the static electricity generated during the installation, please wear the anti-static wrist strap around the wrist and tighten the lock; make sure that the anti-static wrist strap has a good contact with the skin and is well grounded.

Wearing jack type anti-static wrist strap, for example, is as shown in Figure 4-6:

Figure 4-6 Schematic Diagram for Wearing Jack Type Anti-static Wrist Strap
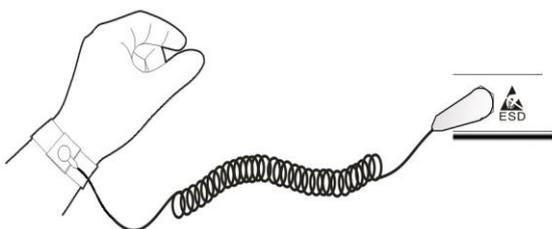
Installing the 25G SFP28 Optical Module

1. Reveal the handle of the 25G SFP28 transceiver module to lock against the snap on top of the module, and pinch the both sides of the 25G SFP28 optical module to push it levelly and slowly into the optical module slot until the optical module firmly connects to the slot (there would be a click sound if the optical module is correctly connected to the slot), as shown in Figure 4-7:

Figure 4-7 Installing the 25G SFP28 Optical Module
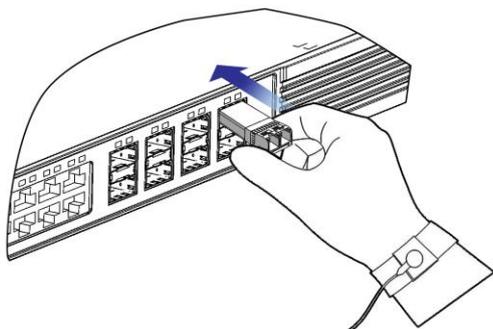
2. When you connect the 25G SFP28 optical module to the optical fiber network, use the optical fiber jumper. Based on the connector type of the Interconnecting ports, choose the jumper with corresponding connectors.

3. After installing the module of the optical fiber jumper, the switch port indicator "LINK/ACT" will be on; otherwise, check that the optical fiber jumper is correctly connected.

4. Precautions during installing:

■   The optical module cannot be inserted inversely. If the optical module cannot be inserted to the end along one direction, do not forcibly push it in and please try another direction.

- It is recommended that before installing the fiber-optic lines, not remove the protecting rubber on the optical port of optical modules.
- It is recommended not insert the 25G SFP28 optical module with fiber optics directly into the slot. Please proceed with the installation after the optical fiber is pulled out.
- In the process of installing the 25G SFP28 optical module, please do not directly touch the connecting finger part of the 25G SFP28 optical module by hand.
- Please do not crush, twist, fold fiber or over bend the fiber, otherwise it may lead to reduced system performance or loss of transmitted data.

Removing the 25G SFP28 Optical Module

1. Pull out the optical fiber line.

2. Pull the 25G SFP28 optical module handle downward to the horizontal position, gently pull the snap, and then pull out the 25G SFP28 transceiver module smoothly. As shown in the Figure 4-8

Figure 4-8 Schematic Diagram for Pulling out the 25G SFP28 Optical Module
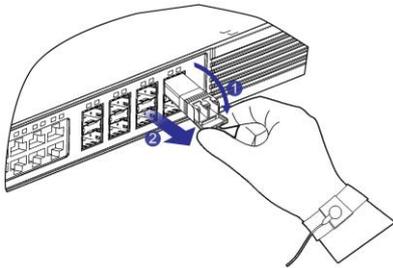
Precautions for removing

- Please pull out the optical fiber before removing the optical module.
- Please do not forcibly pull out the module without pulling down the handle of the optical module first so as not to cause any damage.
- Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.

Installing the 25G SFP28 Cable Module

25G SFP28 cables include copper cables and AOC cables. This chapter takes SFP28 copper cables as an example.

1. When installing the plug of the 25G SFP28 copper cable module (with power-on), users can use one hand to hold the plug of the copper cable module, and the other hand to lift the copper cable to the direction that is vertical with the front panel of the switch port to make sure the installation direction of the 25G SFP28 module at the end of the copper cable is correct and then gently and smoothly insert it into the 25G SFP28 slot until a click sound is heard. This indicates that the 25G SFP28 copper cable module is correctly installed. As shown in the Figure 4-9:

Figure 4-9 Schematic Diagram for Installing the 25G SFP28 Copper Cable
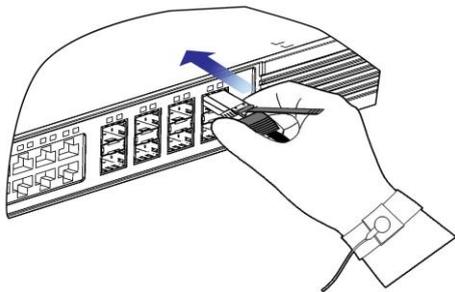
2. After installing the plug of the copper cable module, connect the copper cable to the Ethernet network, and the switch port indicator "LINK/ACT" will be on; otherwise, check that the connector of the copper cable is correctly connected;

Precautions during installing

■ The 25G SFP28 connector at the end of the copper cable cannot be inserted inversely. If the optical module cannot be inserted to the end along one direction, do not forcibly push it in and please try another direction.

■ In the process of installing copper cable module, please do not directly touch the connecting finger part on the top of the module by hand.

■ Please do not crush, twist, fold fiber or over bend the copper cable, otherwise it may lead to reduced system performance or loss of transmitted data.

Caution   After installing the copper cable interface, please make sure that the bending radius of the copper cable wiring is greater than five times of the outside diameter of the copper cable. Otherwise, the core wires within the copper cable may be pulled too much, causing damage to the copper cable. Assume that the outside diameter of the copper cable is 4.9 mm, and then the minimum bending radius is 24.5 mm, as shown in Figure 4-10.

Figure 4-10 Schematic Diagram of Bending Radius of the Copper Cable
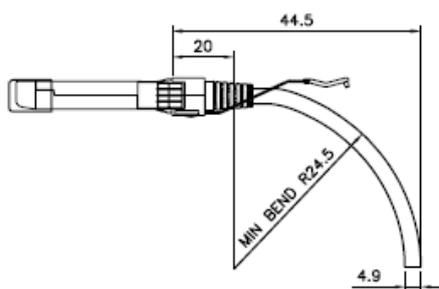
Removing the 25G SFP28 Cable Module

25G SFP28 cables include copper cables and AOC cables. This chapter takes 25G SFP28 copper cables as an example.

1. When pulling out the 25G SFP28 copper cable module, pull out the pull ring to unlock and then pull out the module smoothly. As shown in the Figure 4-11.

Figure 4-11 Schematic Diagram for Pulling out the 25G SFP28 Copper Cable
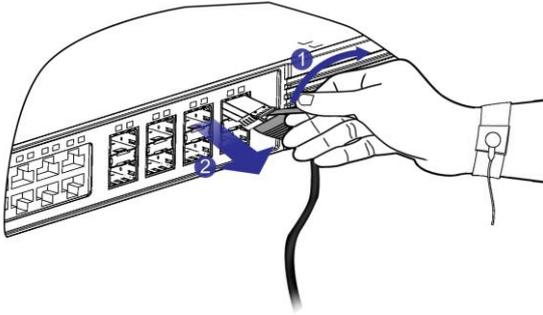
Precautions for removing

- When removing the 25G SFP28 copper cable, please pull the pull ring of the module levelly, otherwise it would result in the difficulty of pulling out the copper cable and even the damage to the module and slot.

- Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.

40G QSFP+ Modules

Overview

The 40G QSFP+ transceiver module of Ruijie Networks is composed of a 40G QSFP+ module, copper cables and AOC cables, as shown in Figure 5-1, Figure 5-2 and Figure 5-3. The 40G QSFP+ module is hot-swappable input/output device that plugs into a 40-Gigabit Ethernet QSFP+ switch port through fiber or copper cables.

Figure 5-1
40G-QSFP-SR-MM850/40G-QSFP-LR4-PSM-SM1310/40G-QSFP-LR4-SM1310/40G-QSFP-iLR4-SM1310/40G-QSFP-ER4-SM1310
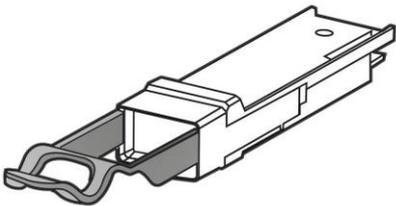
Figure 5-2 40G-QSFP-SR-MM850/40G-QSFP-LSR-MM850/40G-QSFP-LR4-PSM-SM1310
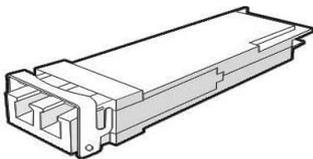
Figure 5-3 40G QSFP+_QSFP+ Copper Cables

Figure 5-4 40G QSFP+_QSFP+ AOC Cables
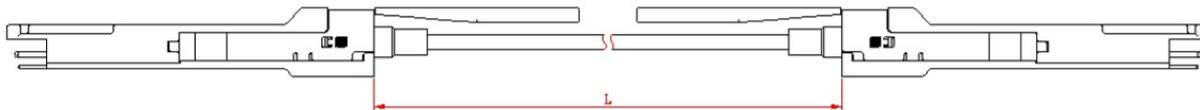
Note   The schematic diagrams are for your reference only. Product appearance is subject to the actual model.

Models and Technical Specifications

Table 5-1 Models and Technical Specifications of 40G QSFP+ Modules

Models	Wavelength (nm)	Fiber Type	DDM Supported (Yes/No)	Transmit (dbm)		Receive (dbm)	
				MIN	MAX	MIN	MAX
40G-QSFP-SR-MM850	(840 ,860)	MMF[1] (MPO connector)	Yes	-7.6	2.4	-9.5	2.4
40G-QSFP-SR-MM850-BIDI	(840 ,900)	MMF[1] (LC connector)	No	-4.0	5.0	-4.5	5.0
40G-QSFP-LSR-MM850	(840 ,860)	MMF[1] (MPO connector)	Yes	-7.5	1.0	-9.9	2.4
40G-QSFP-LR4-SM1310	(1264.5,1277.5) (1284.5,1297.5) (1304.5,1317.5) (1324.5,1337.5)	SMF[2] (LC connector)	Yes	-7.0	2.3	13.7	2.3
40G-QSFP-iLR4-SM1310	(1264.5,1277.5) (1284.5,1297.5) (1304.5,1317.5) (1324.5,1337.5)	SMF[2] (LC connector)	Yes	-7.0	2.3	-13.7	2.3
40G-QSFP-ER4-SM1310	(1264.5,1277.5) (1284.5,1297.5) (1304.5,1317.5) (1324.5,1337.5)	SMF[2] (LC connector)	Yes	-2.7	4.5	-21.2	-4.5
40G-QSFP-LR4-PSM-SM1310	(1260,1355)	SMF[2] (MPO/APC connector)	Yes	-6.2	0.5	-14.4	2.3

[1] MMF=Multimode fiber

[2] SMF=Single mode fiber

Table 5-2 Cabling Specifications

Models	Wavelength (nm)	Fiber Type	Core Size	Modal Bandwidth	Cable Distance

			(um)	(MHz/km)	
40G-QSFP-SR-MM850	(840 ,860)	MMF[1] (MPO connector)	50	2000	100m(OM3)
			50	4700	150m(OM4)
40G-QSFP-SR-MM850-BIDI	(840 ,900)	MMF[1] (LC connector)	50	2000	100m(OM3)
			50	4700	150m(OM4)
40G-QSFP-LSR-MM850	(840 ,860)	MMF[1] (MPO connector)	50	2000	300m(OM3)
			50	4700	400m(OM4)
40G-QSFP-LR4-SM1310	(1264.5,1277.5) (1284.5,1297.5) (1304.5,1317.5) (1324.5,1337.5)	SMF[2] (LC connector)	9	N/A	10km
40G-QSFP-iLR4-SM1310	(1264.5,1277.5) (1284.5,1297.5) (1304.5,1317.5) (1324.5,1337.5)	SMF[2] (LC connector)	9	N/A	2km
40G-QSFP-ER4-SM1310	(1264.5,1277.5) (1284.5,1297.5) (1304.5,1317.5) (1324.5,1337.5)	SMF[2] (LC connector)	9	N/A	40km
40G-QSFP-LR4-PSM-SM1310	(1260,1355)	SMF[2](MPO/APC connector)	9	N/A	10km

⚠️
Caution   The optical module is a laser device. Please take care of your eyes and do not look into the laser beam directly.

⚠️
Caution   To keep the optical module clean, please make sure that the dust cap is mounted when it is not connected to cables.

Table 5-3 Models of 40G QSFP+ Copper Cables

Model	Type	Connector Type	Cable Length (m)	Conductor size (AWG)	Data Rate (Gb/s)	DDM Supported (Yes/No)
40G-QSFP-STACK1M	Passive	QSFP+ to QSFP+	1	28	4lanes x 10.3125G (Perlane)	No
40G-QSFP-STACK3M	Passive	QSFP+ to QSFP+	3	28	4lanes x 10.3125G (Perlane)	No
40G-AOC-3M	Active	QSFP+ to	3	\	4lanes x 10.3125G	QSFP+ to

		QSFP+			(Perlane)	QSFP+
40G-AOC-5M	Active	QSFP+ to QSFP+	5	\	4lanes x 10.3125G (Perlane)	No
40G-AOC10M	Active	QSFP+ to QSFP+	10	\	4lanes x 10.3125G (Perlane)	No
40G-AOC-20M	Active	QSFP+ to QSFP+	20	\	4lanes x 10.3125G (Perlane)	No
40G-AOC-30M	Active	QSFP+ to QSFP+	30	\	4lanes x 10.3125G (Perlane)	No

Note The TX power of 40G-AOC-XM cable can be displayed as "N/A". You can monitor the local TX power via the peer TX power.

Note Additional connecting cables are not needed. You just need to plug the cable ends into the appropriate device ports for interconnection.

Table 5-4 Temperature/Humidity Requirements for the Modules

Operating Temperature	0ºC to 70ºC
Storage Temperature	-40ºC to 85ºC
Relative Humidity	10% to 90%

Note The types/models of QSFP+ modules are being updated. If more accurate models of the module are required, please contact Ruijie marketing staff or technical support engineers.

Module Specifications

Wavelength

Wavelength means the wave band for transmission of light signal.

Optical Fiber Type

Optical fibers are classified into two types: single-mode and multimode fibers according to the transmission mode of light in fibers.

A multimode fiber (MMF) has a larger core and can transmit light of various modes. But it has a higher modal dispersion. The modal dispersion grows with the increase of transmission distance. The transmission distance of multimode fibers is associated with the transmission rate, core diameter, and modal bandwidth. Please read the instructions for reference.

A single-mode fiber (SMF) has a smaller core and can transmit one mode of light. Therefore, it has a lower modal dispersion and is applicable to remote communication.

Connector Type

Optical fibers are joined by optical fiber connectors to form fiber patch cord. A fiber patch cord is connected to optical modules through an optical fiber connector, so that the optical channel is detachable for the convenience of debugging and maintenance of optical system. The 40G QSFP+ optical fiber connectors have many types. You can select one to fit the interface type of your optical module. Generally, the 40G QSFP+ optical fiber connectors have the following types.

Patch cords for the 40G-QSFP-SR-MM850 module

The 40G-QSFP-SR-MM850 module can be used with multi-mode female MPO connectors only. The coupling end face of the MPO connectors is the physical contact (PC) or ultra physical contact (UPC) patch cord, of which the core wires must be multi-mode. Twelve channels can be used. Only 8 among the 12 MPO patch cords are recommended to be applied, namely, Tx1-Tx4 and Rx1-Rx4.

Figure 5-5 Single-Row 12-Fiber Female MPO Connector
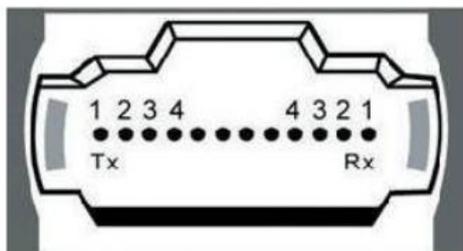
Figure 5-6 Male and Female MPO Connectors
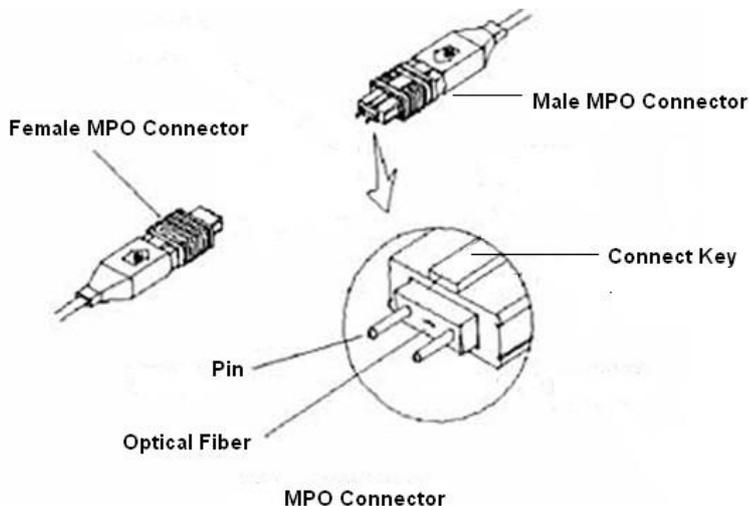
Only Tx1-Tx4 and Rx1-Rx4 are applied to the 40G-QSFP-SR-MM850 module, as shown in Figure 5-5.

MPO connectors feature male and female connector design. A male connector has solid pins while a female connector has a center conductor with holes in it to accept male pins, as shown in Figure 5-6.

Patch cords for the 40G-QSFP-LR4-PSM-SM1310 module

The 40G-QSFP-LR4-PSM-SM1310 module can be used with single-mode female MPO connectors only. The coupling end face of the MPO connectors is the angled physical contact (APC) patch cord, of which the core wires must be single-mode. Twelve channels can be used. Only 8 among the 12 MPO patch cords are recommended to be applied, namely, Tx1-Tx4 and Rx1-Rx4.

Differences between the single-mode MPO and multi-mode MPO:

The MPO end face can be coupled in multiple modes. MPO connectors can be classified into PC connectors, super physical contact (SPC) connectors, UPC connectors, and APC connectors based on the return loss. The return losses of the PC, SPC, UPC, and APC connectors specified in industrial standards are -35 dB, -40 dB, -50 dB, and -60 dB respectively. The end faces of the PC, SPC, and UPC connectors are all flat, and the only difference lies in the polish quality, which results in different return losses. The end face of the APC connector is polished to have an angle of 8 degrees to reduce the return loss.

The APC end face can be connected to an APC connector only. The APC connector is usually green and the inclination of the end face can be observed with naked eyes.

The coupling end face of the single-mode MPO is APC, as shown in Figure 5-7. The coupling end face of the multi-mode MPO is PC or UPC, as shown in Figure 5-8.

Figure 5-7 APC

APC: end face with an inclination

Figure 5-8 UPC

UPC
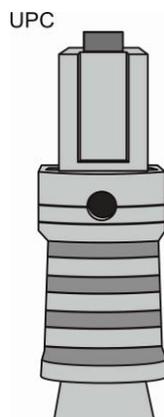
Dual-core LC connector for the 40G-QSFP-LR4-SM1310 module.

Figure 5-9 Dual-core LC Connector
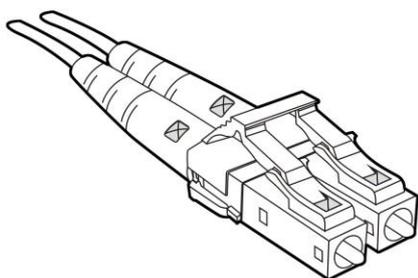
For devices supporting splitting 40G into 4 *10G, you can use MPO-4*LC fiber patch cords to convert 40G to 4 *10G.

Figure 5-10 MPO-4*LC Fibers
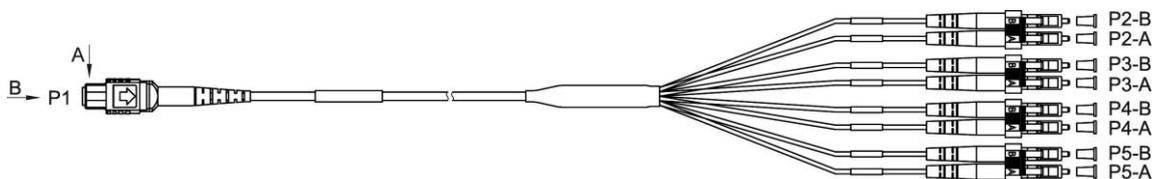
DDM

Digital Diagnostic Monitor (DDM) is widely used in optical modules to dynamically measure the temperature, intensity of transmitted and received light, voltage, and laser bias current of the module. You can run commands to get the monitoring result on the host system that supports display of DDM information. Different 40G optical modules support different testing items of DDM. Please refer to the instructions on the specific module model.

Intensity of Transmitted Light

Intensity of transmitted light refers to the optical output power transmitted from the optical module. The unit is dBm.

Intensity of Received Light

Intensity of received light refers to the optical input power received by the optical module. The unit is dBm. Before connecting optical modules, please pay attention to the specification of received light intensity. If the actual received light intensity is less than the minimum value, the module may fail in connection or lose many frames. If the actual received light intensity is greater than the maximum value, the module may be damaged.

Module Installation Precautions

Preparation before Installation

Before installation, electron static discharge (ESD) protection is needed. To avoid damage to the QSFP + modules and electronic devices in the equipment by the static electricity generated during the installation, please set the anti-static wrist strap on the wrist and tighten the lock; make sure that the anti-static wrist strap has a good contact with the skin and is well grounded.

Wearing jack type anti-static wrist strap, for example, is as shown in Figure 5-11:

Figure 5-11 Schematic Diagram for Wearing Jack Type Anti-static Wrist Strap
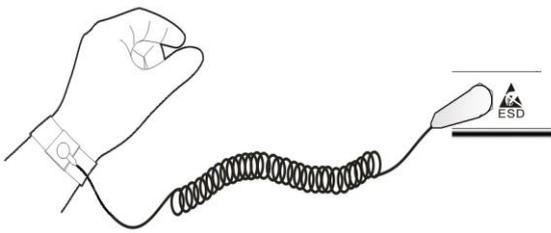
Installing the 40G QSFP+ Optical Module

1. For the snap-in module, reveal the handle of the QSFP + module to lock against the snap on top of the module, and use hand to pinch on both sides of the QSFP + module to push it levelly and slowly into the optical module slot until the optical module connects to the slot (there would be a click sound if the optical module is correctly connected to the slot). For the pull-tab module, direct it to the optical module slot and push it slowly into the slot until the optical module connects to the slot (there would be a click sound if the optical module is correctly connected to the slot). The snap-in module is shown in Figure 5-12, and the pull-tab module is shown in Figure 5-13:

Figure 5-12 Installing the Snap-in QSFP+ Module
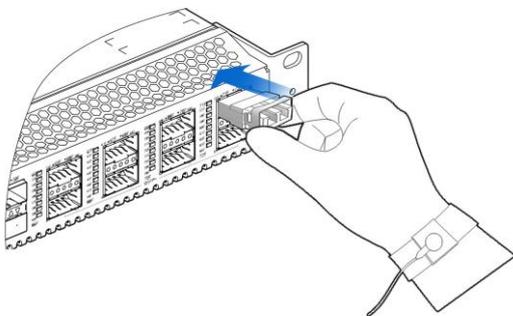
Figure 5-13 Installing the Pull-tab QSFP+ Module
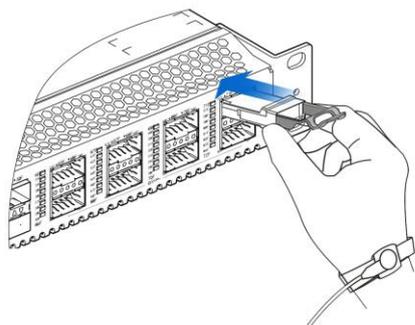
2. When you connect the 40G QSFP+ module to the optical fiber network, use the optical fiber patch cord. Based on the interface type of the Internet ports, choose the jumper with corresponding interfaces.

3.. After installing the module of the optical fiber patch cord, the switch port indicator "LINK/ACT" will be on; otherwise, check that the optical fiber patch cord is correctly connected.

Precautions during installing

■   The optical module cannot be inserted backwards. The correct method of inserting QSFP+ optical module is shown in Figure 5-14 and Figure 5-15; the method of inserting QSFP+ cable is shown in Figure 5-16. If the optical module cannot be inserted to the end from one direction, do not force to push it in and please try another direction.

■   It is recommended that before installing the fiber-optic lines, the protecting rubber plug on the optical port of optical modules shall not be pulled out.

■   It is recommended that users shall not insert the fiber QSFP + module into which optical fiber has already been inserted directly into the slot. Please proceed with installation after the optical fiber is pulled out.

■   In the process of installing QSFP + module, please do not directly touch the connecting finger part of the QSFP + modules by hand.

■   Please do not crush, bend, fold fiber or overbend the fiber, otherwise it may lead to reduced system performance or loss of transmitted data.

Removing the 40G QSFP+ Optical Module

1. Pull out the optical fiber line.

2. For the snap-in module, pull the QSFP + module handle downward to the horizontal position, gently pull the snap, and then pull out the QSFP + module smoothly. As shown in the Figure 5-14. For the pull-tab module, directly pull the tab to remove the QSFP + module steadily. As shown in the Figure 5-15.

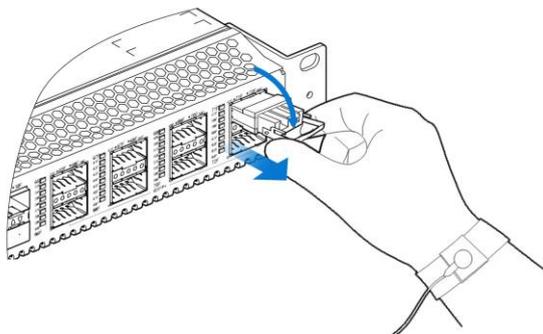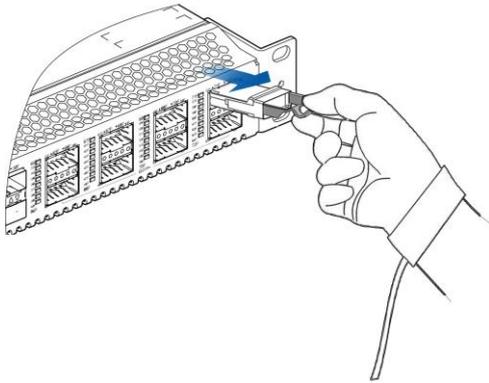Figure 5-14 Schematic Diagram for Pulling out the Snap-in QSFP+ Module

Figure 5-15 Schematic Diagram for Pulling out the pull-tab QSFP+ Optical Module

Precautions for removing

◼ Please pull out the optical fiber before removing the optical module.

◼ Please do not forcibly pull out the module without pulling down the handle of the optical module first so as not to cause any damage.

◼ Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.

Installing the 40G QSFP+ Cable Module

40G QSFP+ cables include copper cables and AOC cables.

1. When installing the plug of the 40G QSFP+ cable module (with power-on), users can use one hand to hold the plug of the cable module, and the other hand to lift the cable to the direction that is vertical with the front panel of the switch port to make sure the installation direction of the QSFP+ module at the end of the cable is correct and then gently and smoothly insert it into the QSFP+ slot until a click sound is heard. This indicates that the 40G QSFP+ cable module is correctly installed. As shown in the Figure 5-16:

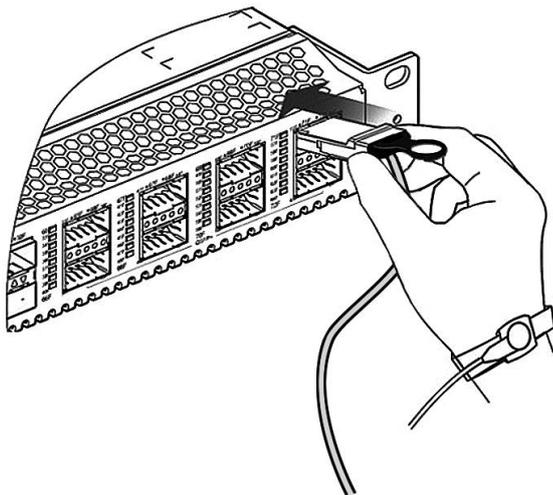Figure 5-16 Schematic Diagram for Installing the QSFP+ Copper Cable
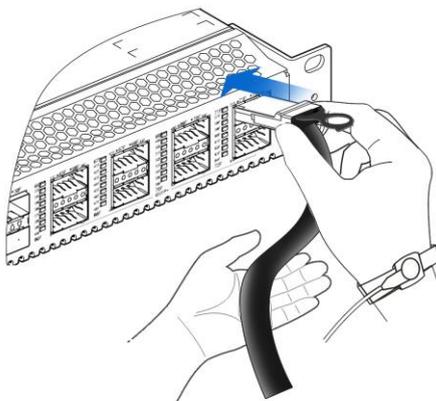
Figure 5-17 Schematic Diagram for Installing the QSFP+ AOC Cable

2.After installing the plug of the cable module, connect the cable to the Ethernet network, and the switch port indicator "LINK/ACT" will be on; otherwise, check that the connector of the cable is correctly connected;

3. Precautions during installing:

- The QSFP+ connector at the end of the cable cannot be inserted backwards, if it is inserted in one direction and cannot be inserted in the end or forced to be pushed in, please change the direction of installation to verify.
- In the process of installing cable module, please do not directly touch the connecting finger part on the top of the module by hand.
- Please do not crush, bend, fold fiber or overbend the cable, otherwise it may lead to reduced system performance or loss of transmitted data.

⚠️
Caution   After installing the cable interface, please make sure that the bending radius of the cable wiring is greater than five times of outside diameter of the cable. Otherwise, the core wires within the cable may be pulled too much, causing damage of the cable. Assume that the outside diameter of the cable is 7.4 mm, and then the minimum bending radius is 35 mm, as shown in Figure 5-18.

Figure 5-18 Schematic Diagram of Bending Radius of the Cable
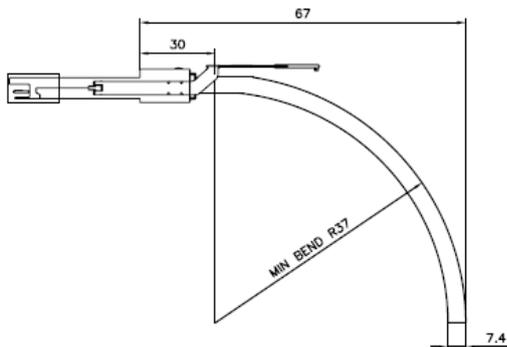
Removing the 40G QSFP+ Cable Module

40G QSFP+ cables include copper cables and AOC cables.

1. When pulling out the 40G QSFP+ cable module, you can hold the cable in the hand while pulling out the module pull ring levelly and then the module itself smoothly. As shown in Figure 5-19.

Figure 5-19 Schematic Diagram for Pulling out the QSFP+ Copper Cable
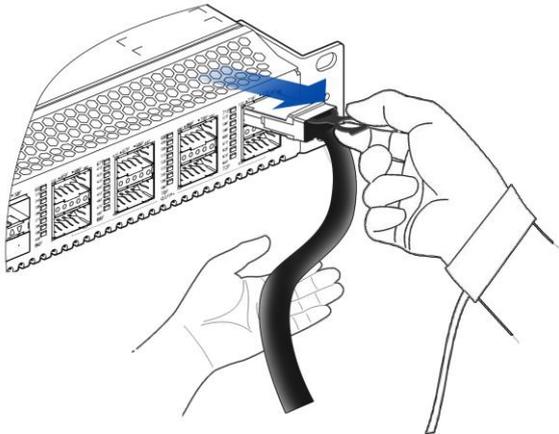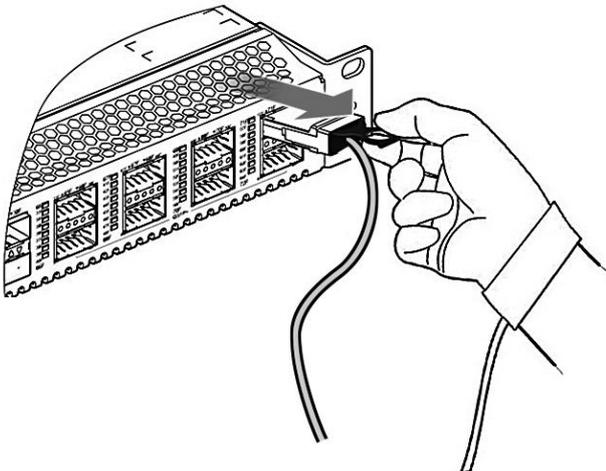

Figure 5-20 Schematic Diagram for Pulling out the AOC Cable

Precautions for removing

■ When removing the QSFP+ cable, please pull the pull ring of the module levelly, otherwise it would result in the difficulty of pulling out the cable and even the damage to the module and slot.

■ Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.

100G QSFP28 Modules

Overview

The 100G QSFP28 transceiver module of Ruijie Networks is composed of a 100G QSFP28 module , copper cables and AOC cables, as shown in Figure 6-1 and Figure 6-2. The 100G QSFP28 module is hot-swappable input/output device that plugs into a 100-Gigabit Ethernet QSFP28 switch port through fiber or copper cables.

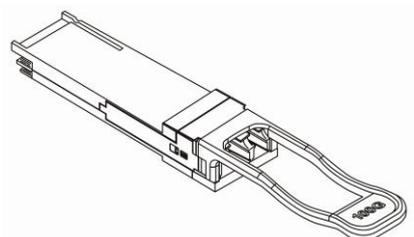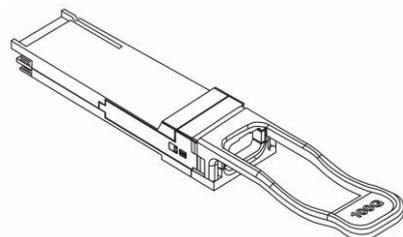Figure 6-1 100G-QSFP-SR-MM850-SWDM4/100G-QSFP-LR4-SM1310/100G-QSFP-iLR4-SM1310

Figure 6-2 100G-QSFP-SR-MM850/100G-QSFP-iLR4-PSM-SM1310

Note The schematic diagrams are for your reference only. Product appearance is subject to the actual model.

Models and Technical Specifications

Table 6-1 Models and Technical Specifications of 100G QSFP28 Modules

Models	Wavelength (nm)	Fiber Type	DDM Supported (Yes/No)	Transmit (dbm)		Receive (dbm)	
				MIN	MAX	MIN	MAX
100G-QSFP-SR-MM850	(840 ,860)	MMF[1] (MPO connector)	Yes	-8.4	2.4	-10.3	2.4
100G-QSFP-SR-MM850-SWDM4	850	MMF[1] (LC connector)	Yes	-5.5	-3	-9.3	3.4
	880			-5.5	-3	-9.5	3.4
	910			-5.5	-3	-9.7	3.4
	940			-5.5	-2.9	-10.0	3.4

100G-QSFP-LR4-SM1310	(1294.53,1296.59) (1299.02,1301.09) (1303.54,1305.63) (1308.09,1310.19)	SMF[1] (LC connector)	Yes	-4.3	4.5	-10.6	4.5
100G-QSFP-iLR4-SM1310	(1264.5-1277.5) (1284.5-1297.5) (1304.5-1317.5) (1324.5-1337.5)	SMF[1] (LC connector)	Yes	-6.5	2.5	-11.5	2.5
100G-QSFP-ER4-SM1310	(1294.53,1296.59) (1299.02,1301.09) (1303.54,1305.63) (1308.09,1310.19	SMF[1] (LC connector)	Yes	-2.5	6.5	-20.5	-3.5
100G-QSFP-iLR4-PSM-SM1310	(1295,1325)	SMF[1] (MPO/APC connector)	Yes	-5.5	2	-10.2	2

[1] MMF=Multimode fiber

[2] SMF=Single mode fiber

Table 6-2 Cabling Specifications

Models	Wavelength (nm)	Fiber Type	Core Size (um)	Modal Bandwidth (MHz/km)	Cable Distance
100G-QSFP-SR-MM850	(840 ,860)	MMF[1] (MPO connector)	50	2000	70m(OM3)
			50	4700	100m(OM4)
100G-QSFP-SR-MM850-SWDM4	850 880 910 940	MMF[1] (LC connector)	50	4700	100m(OM4)
100G-QSFP-LR4-SM1310	(1294.53,1296.59) (1299.02,1301.09) (1303.54,1305.63) (1308.09,1310.19)	SMF[1] (LC connector)	9	N/A	10km
			50	4700	150m(OM4)
100G-QSFP-iLR4-SM1310	(1264.5,1277.5) (1284.5,1297.5) (1304.5,1317.5) (1324.5,1337.5)	SMF[1] (LC connector)	9	N/A	2km
100G-QSFP-ER4-SM1310	(1294.53,1296.59) (1299.02,1301.09) (1303.54,1305.63) (1308.09,1310.19	SMF[1] (LC connector)	9	N/A	40km
100G-QSFP-iLR4-PSM-SM1310	(1295,1325)	SMF[1] (MPO/APC connector)	9	N/A	2km

⚠️ Caution   The optical module is a laser device. Please take care of your eyes and do not look into the laser beam directly.

⚠️ Caution   To keep the optical module clean, please make sure that the dust cap is mounted when it is not connected to cables.

⚠️ Caution   The 100G QSFP+ module does not support auto-negotiation to 40G. The four split 25G channels of a 100G QSFP+ module cannot be used with 10G modules or 1G modules.

Table 6-3 Models of 100G QSFP28 Copper Cables

Model	Type	Connector Type	Cable Length (m)	Color	Data Rate (Gb/s)	DDM Supported (Yes/No)
100G-AOC-1M	Active	QSFP28	1	Green	4lanes*25.78125 (Perlane)	No
100G-AOC-5M	Active	QSFP28	5	Green	4lanes*25.78125 (Perlane)	No
100G-AOC-10M	Active	QSFP28	10	Green	4lanes*25.78125 (Perlane)	No

📝 Note   The TX power of 100G-AOC-XM cable can be displayed as "N/A". You can monitor the local TX power via the peer TX power.

📝 Note   The 100G AOC-XM module does not support auto-negotiation to 40G. The four split 25G channels of a 100G QSFP+ module cannot be used with 10G modules or 1G modules.

Table 6-4 Temperature/Humidity Requirements for the Modules

Operating Temperature	0ºC to 70ºC
Storage Temperature	-40ºC to 85ºC
Relative Humidity	10% to 90%

Note   The types/models of 100G QSFP28 modules are being updated. If more accurate models of the module are required, please contact Ruijie marketing staff or technical support engineers.

Module Specifications

Wavelength

Wavelength means the wave band for transmission of light signal.

Optical Fiber Type

Optical fibers are classified into two types: single-mode and multimode fibers according to the transmission mode of light in fibers.

A multimode fiber (MMF) has a larger core and can transmit light of various modes. But it has a higher modal dispersion. The modal dispersion grows with the increase of transmission distance. The transmission distance of multimode fibers is associated with the transmission rate, core diameter, and modal bandwidth. Please read the instructions for reference.

A single-mode fiber (SMF) has a smaller core and can transmit one mode of light. Therefore, it has a lower modal dispersion and is applicable to remote communication.

Connector Type

Optical fibers are joined by optical fiber connectors to form fiber patch cord. A fiber patch cord is connected to optical modules through an optical fiber connector, so that the optical channel is detachable for the convenience of debugging and maintenance of optical system. The 100G QSFP28 optical fiber connectors have many types. You can select one to fit the interface type of your optical module. Generally, the 100G QSFP28 optical fiber connectors have the following types.

Patch cords for the 100G-QSFP-SR-MM850 module

The 100G-QSFP-SR-MM850 module can be used with multi-mode female MPO connectors only. The coupling end face of the MPO connectors is the physical contact (PC) or ultra physical contact (UPC) patch cord, of which the core wires must be multi-mode. Twelve channels can be used. Only 8 among the 12 MPO patch cords are recommended to be applied, namely, Tx1-Tx4 and Rx1-Rx4.
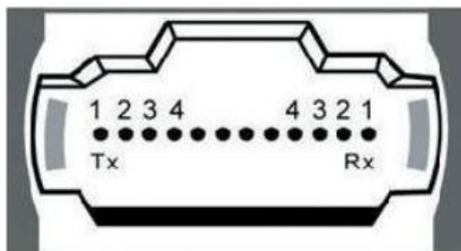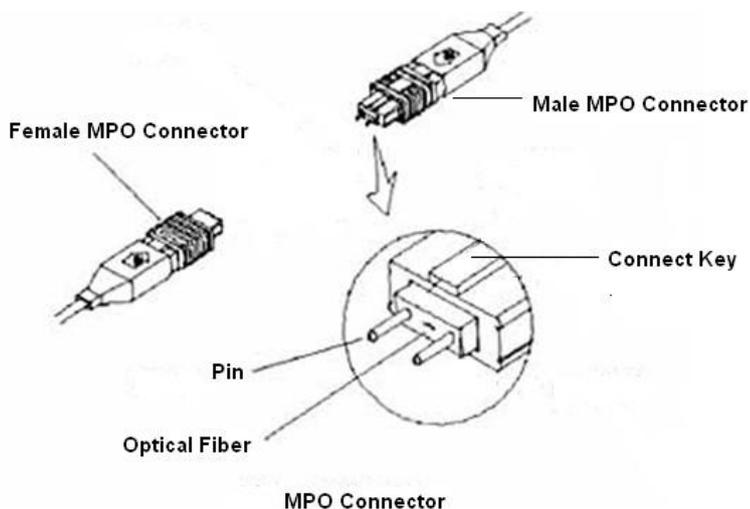
Figure 6-3 Single-Row 12-Fiber Female MPO Connector

Figure 6-4 Male and Female MPO Connectors

MPO Connector

Only Tx1-Tx4 and Rx1-Rx4 are applied to the 100G-QSFP-SR-MM850 module, as shown in Figure 6-3.

MPO connectors feature male and female connector design. A male connector has solid pins while a female connector has a center conductor with holes in it to accept male pins, as shown in Figure 6-4.

Dual-core LC connector for 100G-QSFP-SR-MM850-PAM4/100G-QSFP-SR-MM850-SWDM4/100G-QSFP-LR4-SM1310/100G-QSFP-iLR4-SM1310 /100G-QSFP-ER-SM1310

Figure 6-5 Dual-core LC Connector
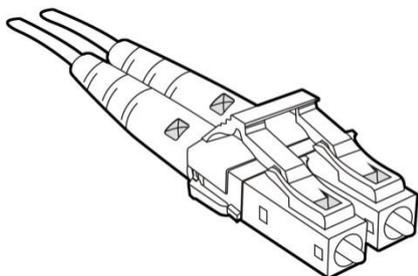
DDM

Digital Diagnostic Monitor (DDM) is widely used in optical modules to dynamically measure the temperature, intensity of transmitted and received light, voltage, and laser bias current of the module. You can run commands to get the monitoring result on the host system that supports display of DDM information. Different 100G optical modules support different testing items of DDM. Please refer to the instructions on the specific module model.

Intensity of Transmitted Light

Intensity of transmitted light refers to the optical output power transmitted from the optical module. The unit is dBm.

Intensity of Received Light

Intensity of received light refers to the optical input power received by the optical module. The unit is dBm. Before connecting optical modules, please pay attention to the specification of received light intensity. If the actual received light

intensity is less than the minimum value, the module may fail in connection or lose many frames. If the actual received light intensity is greater than the maximum value, the module may be damaged.

Module Installation Precautions

Preparation before Installation

Before installation, electron static discharge (ESD) protection is needed. To avoid damage to the QSFP28 modules and electronic devices in the equipment by the static electricity generated during the installation, please set the anti-static wrist strap on the wrist and tighten the lock; make sure that the anti-static wrist strap has a good contact with the skin and is well grounded.

Wearing jack type anti-static wrist strap, for example, is as shown in Figure 6-6:

Figure 6-6 Schematic Diagram for Wearing Jack Type Anti-static Wrist Strap
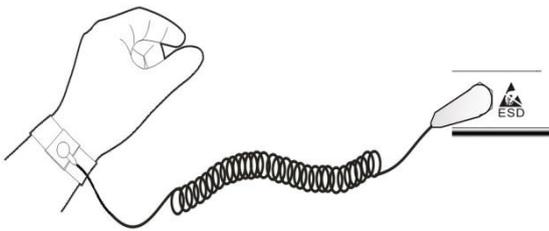
Installing the 100G QSFP28 Optical Module

1. For the snap-in module, reveal the handle of the QSFP28 module to lock against the snap on top of the module, and use hand to pinch on both sides of the QSFP28 module to push it levelly and slowly into the optical module slot until the optical module connects to the slot (there would be a click sound if the optical module is correctly connected to the slot). For the pull-tab module, direct it to the optical module slot and push it slowly into the slot until the optical module connects to the slot (there would be a click sound if the optical module is correctly connected to the slot). The snap-in module is shown in Figure 6-7, and the pull-tab module is shown in Figure 6-8:

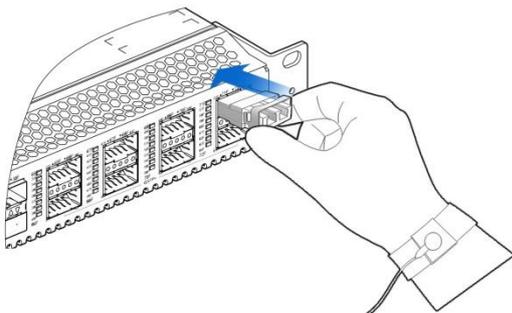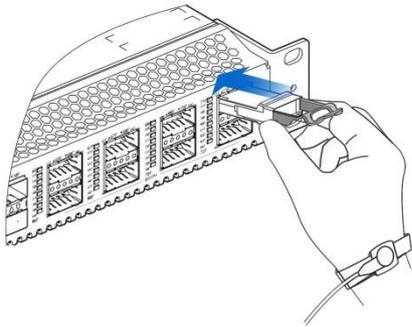Figure 6-7 Installing the Snap-in QSFP+ Module

Figure 6-8 Installing the Pull-tab QSFP+ Module

2. When you connect the 100G QSFP28 module to the optical fiber network, use the optical fiber patch cord. Based on the interface type of the Internet ports, choose the jumper with corresponding interfaces.

3.. After installing the module of the optical fiber patch cord, the switch port indicator "LINK/ACT" will be on; otherwise, check that the optical fiber patch cord is correctly connected.

Precautions during installing:

■ The optical module cannot be inserted backwards. The correct method of inserting QSFP28 optical module is shown in Figure 6-7 and Figure 6-8; the method of inserting QSFP28 cable is shown in Figure 6-11 and 6-12. If the optical module cannot be inserted to the end from one direction, do not force to push it in and please try another direction.

■ It is recommended that before installing the fiber-optic lines, the protecting rubber plug on the optical port of optical modules shall not be pulled out.

■ It is recommended that users shall not insert the fiber QSFP28 module into which optical fiber has already been inserted directly into the slot. Please proceed with installation after the optical fiber is pulled out.

■ In the process of installing QSFP28 module, please do not directly touch the connecting finger part of the QSFP28 modules by hand.

■ Please do not crush, bend, fold fiber or overbend the fiber, otherwise it may lead to reduced system performance or loss of transmitted data.

Removing the 100G QSFP28 Optical Module

1. Pull out the optical fiber line.

2. For the snap-in module, pull the QSFP28 module handle downward to the horizontal position, gently pull the snap, and then pull out the QSFP28 module smoothly. As shown in the Figure 6-9. For the pull-tab module, directly pull the tab to remove the QSFP28 module steadily. As shown in the Figure 6-10.

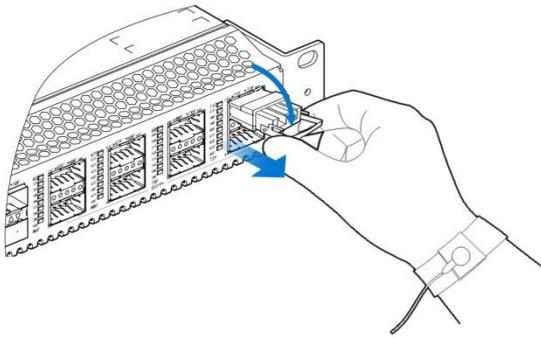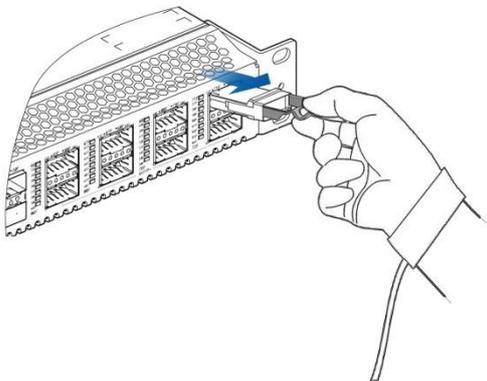Figure 6-9 Schematic Diagram for Pulling out the Snap-in QSFP28 Optical Module

Figure 6-10 Schematic Diagram for Pulling out the pull-tab QSFP28 Optical Module

Installing the 100G QSFP28 Cable Module

100G QSFP+ cables include copper cables and AOC cables.

1. When installing the plug of the 100G QSFP28 cable module (with power-on), users can use one hand to hold the plug of the cable module, and the other hand to lift the cable to the direction that is vertical with the front panel of the switch port to make sure the installation direction of the QSFP28 module at the end of the cable is correct and then gently and smoothly insert it into the QSFP28 slot until a click sound is heard. This indicates that the 100G QSFP28 cable module is correctly installed. As shown in the Figure 6-11 and Figure 6-12:

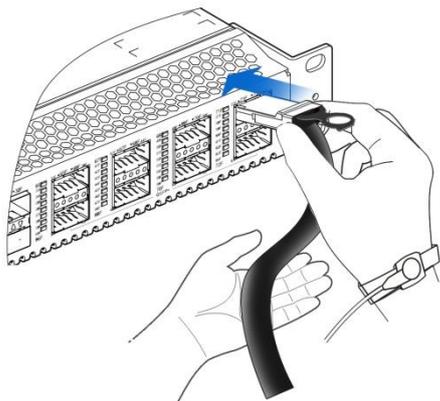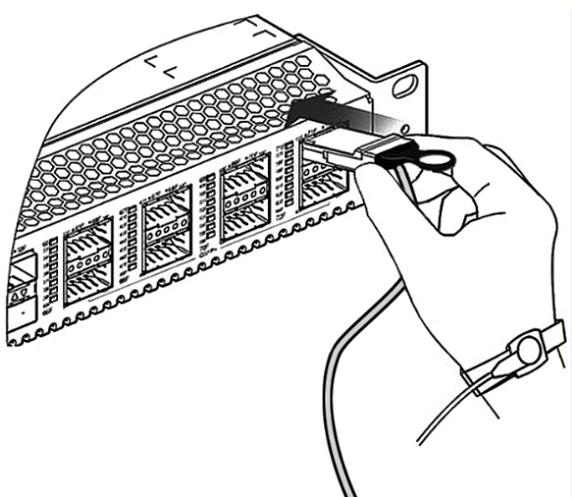Figure 6-11 Schematic Diagram for Installing the QSFP28 Copper Cable

Figure 6-12 Schematic Diagram for Installing the QSFP28 AOC Cable

2.After installing the plug of the cable module, connect the cable to the Ethernet network, and the switch port indicator "LINK/ACT" will be on; otherwise, check that the connector of the cable is correctly connected;

Precautions during installing:

■   The QSFP28 connector at the end of the cable cannot be inserted backwards, if it is inserted in one direction and cannot be inserted in the end or forced to be pushed in, please change the direction of installation to verify.

■   In the process of installing cable module, please do not directly touch the connecting finger part on the top of the module by hand.

■   Please do not crush, bend, fold fiber or overbend the cable, otherwise it may lead to reduced system performance or loss of transmitted data.

⚠
Caution   After installing the cable interface, please make sure that the bending radius of the cable wiring is greater than five times of outside diameter of the cable. Otherwise, the core wires within the cable may be pulled too much, causing damage of the cable. Assume that the outside diameter of the cable is 7.4 mm, and then the minimum bending radius is 35 mm, as shown in Figure 6-13.

Figure 6-13 Schematic Diagram of Bending Radius of the Cable
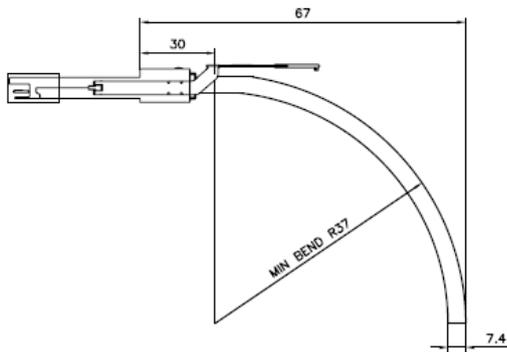
Removing the 100G QSFP28 Cable Module

100G QSFP+ cables include copper cables and AOC cables

1. When pulling out the 100G QSFP28 cable module, you can hold the cable in the hand while pulling out the module pull ring levelly and then the module itself smoothly. As shown in Figure 6-14 and Figure 6-15.

Figure 6-14 Schematic Diagram for Pulling out the QSFP28 Copper Cable
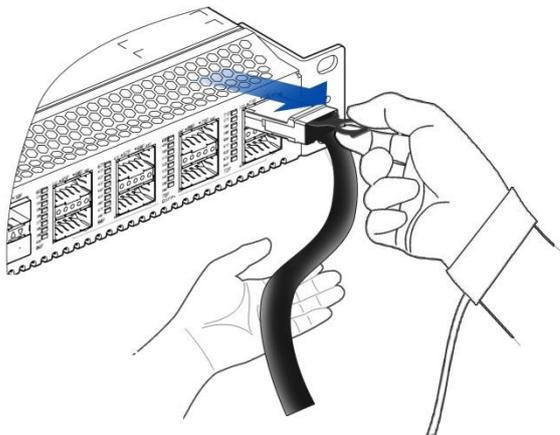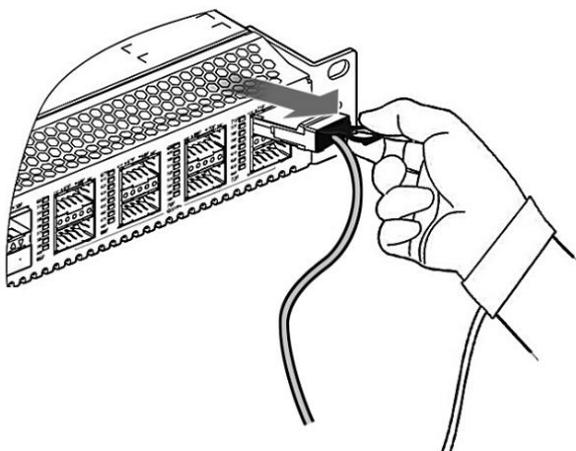

Figure 6-15 Schematic Diagram for Pulling out the QSFP28 AOC Cable

2. When removing the 100G QSFP28 cable, please pull the pull ring of the module levelly, otherwise it would result in the difficulty of pulling out the cable and even the damage to the module and slot.

Precautions for removing:

■　Please pull out the optical fiber before removing the optical module.

■　Please do not forcibly pull out the module without pulling down the handle of the optical module first so as not to cause any damage.

■　Please put the dust caps on the detached module and device optical ports immediately to avoid dirt.