Ruijie Optical Module

Hardware Installation and Reference Guide

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Preface

Intended Audience

This document is intended for:

- Network engineers

- Technical support and servicing engineers

- Network administrators

Technical Support

- Ruijie Networks website: https://www.ruijienetworks.com/

- Technical support website: https://ruijienetworks.com/support

- Case portal: https://caseportal.ruijienetworks.com

- Community: https://community.ruijienetworks.com

- Technical support email: service_rj@ruijienetworks.com

- Live chat: https://www.ruijienetworks.com/rita

Conventions

1. Signs

The signs used in this document are described as follows:

⊘ **Warning**

An alert that calls attention to important rules and information that if not understood or followed can result in data loss or equipment damage.

⚠ **Caution**

An alert that calls attention to essential information that if not understood or followed can result in function failure or performance degradation.

ⓘ **Note**

An alert that contains additional or supplementary information that if not understood or followed will not lead to serious consequences.

✅ **Specification**

An alert that contains a description of product or version support.

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2. Note

The manual offers configuration information (including model, port type and command line interface) for indicative purpose only. In case of any discrepancy or inconsistency between the manual and the actual version, the actual version prevails.

Contents

1 Overview

As an industry-leading ICT infrastructure and industry solution provider, Ruijie Networks offers customers a wide variety of high-density and low-power optical modules. Optical transceivers are used to transmit optical signals over optical cables, featuring low loss over long-distance transmission. Active Optical Cables (AOCs) are suitable for short-distance transmission. An AOC consists of two optical transceivers and an optical cable.

The following types of form factors are available currently: XFP, SFP, SFP+, SFP28, QSFP+, QSFP28, QSFP-DD, and QSFP56.

> **ⓘ Note**
> - Products support different types of optical modules. For more details, see the hardware installation instructions that come with your Ruijie device.
> - The optical module information is subject to the change without prior notification. Please contact Ruijie Networks for the latest information.

2 Preparation

To avoid ESD damage to transceivers, cables, or electronic components, take anti-ESD measures before installation. Attach an anti-ESD wrist strap to your wrist and connect the other end to the grounding lug connected to the chassis.

The following figure shows the anti-ESD wrist strap with a coiled cable.

Figure 2-1   Wearing Anti-ESD Wrist Strap with a Coiled Cable
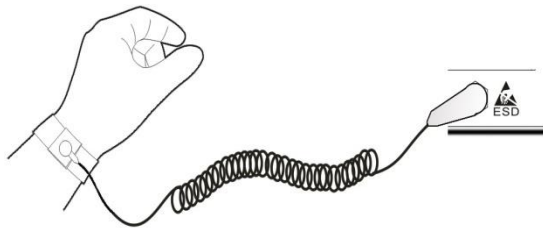
If you have an anti-ESD glove, you are advised to wear the anti-ESD glove before attaching the anti-ESD wrist strap to your wrist.

3 Precautions

3.1 Installation Precautions

- Do not remove dust plugs from transceiver optical bores until you are ready to make a connection.

- Disconnect optical cables from transceivers before installing transceivers.

- Proceed with caution during installation and removal. Do not touch edge connectors with your bare hands.

- Line up the transceiver with the socket opening and slide it into the socket before firmly pushing it into place.

- Do not stare into open apertures because invisible laser radiation may be emitted from the aperture of the optical port when no optical cable is connected.

- Do not bend, twist, or push optical cables. Otherwise, system performance deterioration or data loss may occur.

3.2 Removal Precautions

- Disconnect optical cables from transceivers before removing transceivers.

- For the optical transceiver equipped with a bail clasp, do not release the optical transceiver with force before pivoting the bail clasp down.

- Immediately reinstall the dust plugs in the optical connectors and in the transceiver optical bores after removing transceivers.

4 Installing and Removing the Optical Module

Optical modules come into three broad types based on form factors:

- XFP module: <u>4.1   Installing and Removing the XFP Module</u>

- SFP, SFP+, and SFP28 modules: <u>4.2   Installing and Removing the SFP, SFP+, or SFP28 Module</u>

- QSFP+, QSFP28, QSFP-DD, and QSFP56 modules: <u>4.3   Installing and Removing the QSFP+, QSFP28, QSFP-DD, or QSFP56 Module</u>

The following sections introduce installation and removal steps of each module type.

4.1 Installing and Removing the XFP Module

4.1.1 Installing the XFP Transceiver Module

(1) Keep the bail clasp aligned in a vertical position. Grasp the XFP transceiver module between your thumb and index fingers and slide the module into the slot until you feel the module snap into place, as shown in the following figure.

Figure 4-1   Installing the XFP Transceiver Module
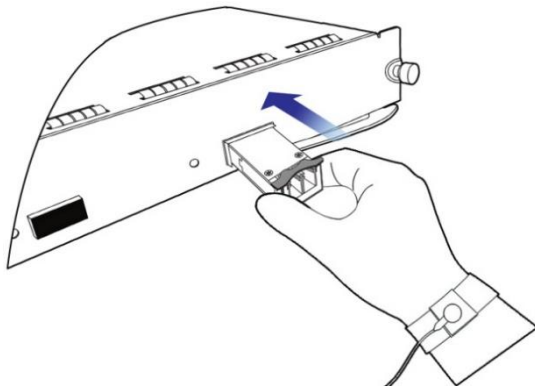
(2) Connect the XFP transceiver module to the network using an optical cable. Select the optical cable with the connector corresponding to the optical port.

(3) After the optical cable is plugged into the transceiver, the **LINK/ACT** LED on the switch turns on. Otherwise, check whether the optical cable is properly connected.

4.1.2 Removing the XFP Transceiver Module

(1) Disconnect the optical cable from the XFP transceiver module.

(2) Pivot the bail clasp down to the horizontal position. Grasp the XFP transceiver module between your thumb and index fingers and slide the module out of the socket, as shown in the following figure.

Figure 4-2   Removing the XFP Transceiver Module

4.2 Installing and Removing the SFP, SFP+, or SFP28 Module

This section elaborates on how to install optical transceivers and AOC modules respectively.

4.2.1 Installing the SFP, SFP+, or SFP28 Transceiver Module

Follow the same steps to install the SFP, SFP+, or SFP28 transceiver module. The following section takes the SFP28 transceiver module as an example.

(1) Keep the bail clasp aligned in a vertical position. Grasp the SFP28 transceiver module between your thumb and index fingers and slide the module into the socket until you feel the module snap into place, as shown in the following figure.
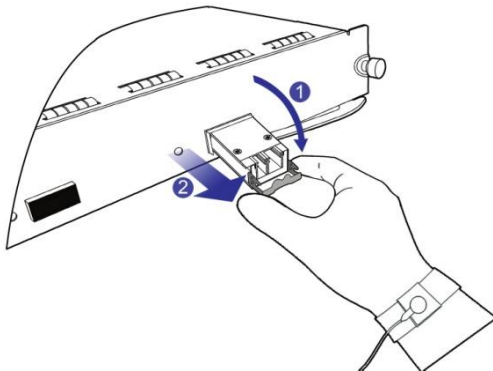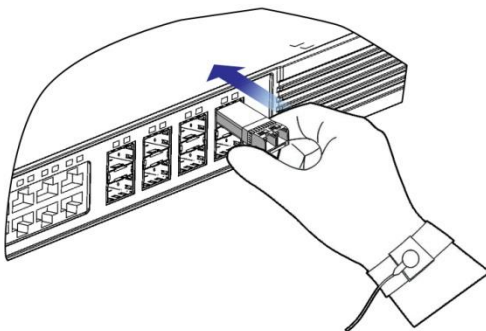
Figure 4-3   Installing the SFP28 Transceiver Module

(2) Connect the SFP28 transceiver module to the network using an optical cable. Select the optical cable with the connector corresponding to the optical port.

(3) After the optical cable is plugged into the transceiver, the **LINK/ACT** LED on the switch turns on. Otherwise, check whether the optical cable is properly connected.

⚠️ **Caution**
- The BIDI modules must be used in pairs. For example, if you install the GE-SFP-SX-SM1310-BIDI in the local port, you must install the GE-SFP-SX-SM1550-BIDI in the peer port.
- When using the following optical transceiver modules with short-distance SMF cables, insert an optical attenuator at one end or the other of the link to avoid damage to the optical transceivers: GE-SFP-LH40-

SM1310-BIDI & GE-SFP-LH40-SM1550-BIDI, MINI-GBIC-LH40-SM1310, MINI-GBIC-ZX80-SM1550, MINI-GBIC-ZX100-SM1550, SDH155-SFP-LH40-SM1310, and SDH155-SFP-LH80-SM1550.

- Do not use short-distance optical cables to connect the XG-SFP-ER-SM1550 or XG-SFP-ZR-SM1550 module. Otherwise, optical receiver overload may occur. If the optical power at the receiving end of the optical transceiver is greater than or equal to –1 dBm, insert an optical attenuator at the receiving end to keep the optical power smaller than –1 dBm.
- The 10G SFP+ transceiver module does not support auto-negotiation to 1G.
- The 25G SFP28 transceiver module does not support auto-negotiation to 10G.

4.2.2 Removing the SFP, SFP+, or SFP28 Transceiver Module

Follow the same steps to remove the SFP, SFP+, or SFP28 transceiver module. The following section takes the SFP28 transceiver module as an example.

(1) Disconnect the optical cable from the SFP28 transceiver module.

(2) Pivot the bail clasp down to the horizontal position to release the SFP28 transceiver module from the socket, as shown in the following figure.
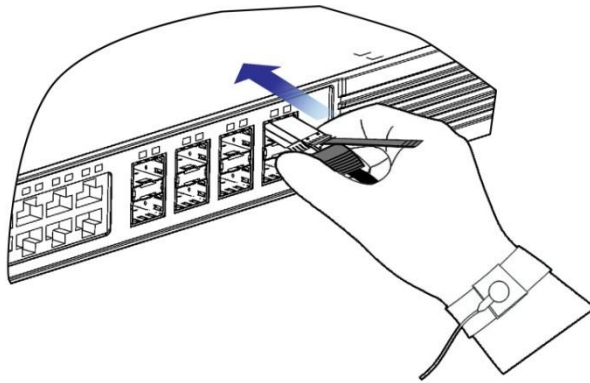
Figure 4-4   Removing the SFP28 Transceiver Module
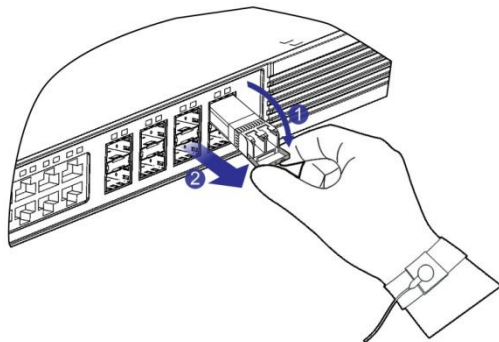
4.2.3 Installing the SFP, SFP+, or SFP28 AOC Module

Follow the same steps to installing the SFP, SFP+, or SFP28 AOC module. The following section takes the SFP28 AOC module as an example.

(1) You can install the SFP28 AOC module with power supply. Hold the connector of the SFP28 AOC module with one hand and hold the cable perpendicular to the front panel of the switch with the other hand. Push the module gently into the socket until you feel the module snap into place, as shown in the following figure.

Figure 4-5   Installing the SFP28 AOC Module

(2) After the transceivers on both ends of the SFP28 AOC module are connected, the **LINK/ACT** LED on the switch turns on. Otherwise, check whether the transceivers on both ends of the SFP28 AOC module are properly connected.

4.2.4 Removing the SFP, SFP+, or SFP28 AOC Module

Follow the same steps to remove the SFP, SFP+, or SFP28 AOC module. The following section takes the SFP28 AOC module as an example.

Hold the cable with one hand, and grasp the pull-tab and gently pull to release the transceiver from the socket with the other hand. Slide the transceiver out of the socket, as shown in the following figure.

Figure 4-6   Removing the SFP28 AOC Module
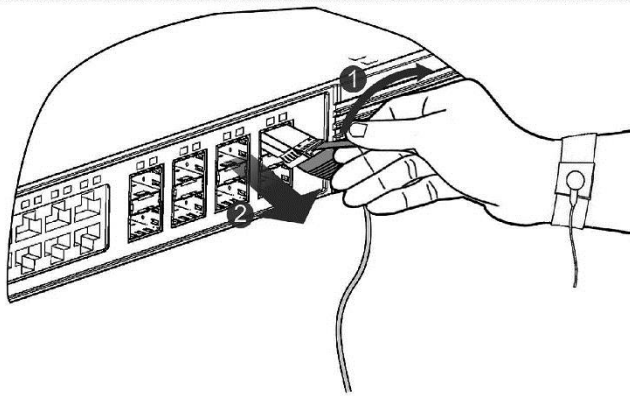
4.3 Installing and Removing the QSFP+, QSFP28, QSFP-DD, or QSFP56 Module

This section elaborates on how to install and remove optical transceivers and AOC modules respectively.

4.3.1 Installing the QSFP+, QSFP28, QSFP-DD, or QSFP56 Transceiver Module

Follow the same steps to install the QSFP+, QSFP28, QSFP-DD, or QSFP56 transceiver module. The following section takes the QSFP+ transceiver module as an example.

(1) For the QSFP+ transceiver module equipped with a bail clasp, keep the bail clasp aligned in a vertical position, grasp the module between your thumb and index fingers, and slide the module into the socket until you feel the module snap into place. For the QSFP+ transceiver module equipped with a pull-tab, grasp the pull-tab,

line up the module with the socket opening, and gently slide the module into the socket until you feel the module snap into place.

Figure 4-7   Installing the QSFP+ Transceiver Module with a Bail Clasp
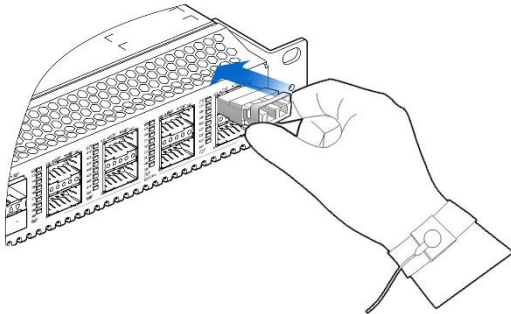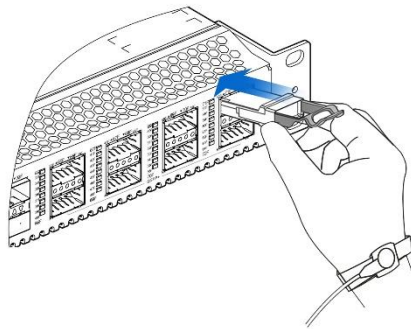

Figure 4-8   Installing the QSFP+ Transceiver Module with a Pull-Tab

(2) Connect the QSFP+ transceiver module to the network using an optical cable. Select the optical cable with the connector corresponding to the optical port.

(3) After the optical cable is plugged into the transceiver, the **LINK/ACT** LED on the switch turns on. Otherwise, check whether the optical cable is properly connected.

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

4.3.2   Removing the QSFP+, QSFP28, QSFP-DD, or QSFP56 Transceiver Module

Follow the same steps to remove the QSFP+, QSFP28, QSFP-DD, or QSFP56 transceiver module. The following section takes the QSFP+ transceiver module as an example.

(1) Disconnect the optical cable from the QSFP+ transceiver module.

(2) For the QSFP+ transceiver module equipped with a bail clasp, pivot the bail clasp down to the horizontal position to release the QSFP+ transceiver module from the socket. For the QSFP+ transceiver module equipped with a pull-tab, grasp the pull-tab and gently pull to release the QSFP+ transceiver module from the socket.

Figure 4-9   Removing the QSFP+ Transceiver Module with a Bail Clasp
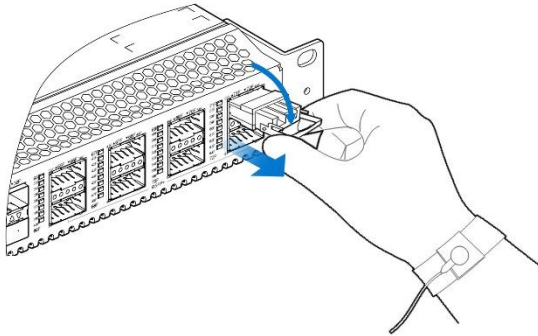
Figure 4-10 Removing the QSFP+ Transceiver Module with a Pull-Tab
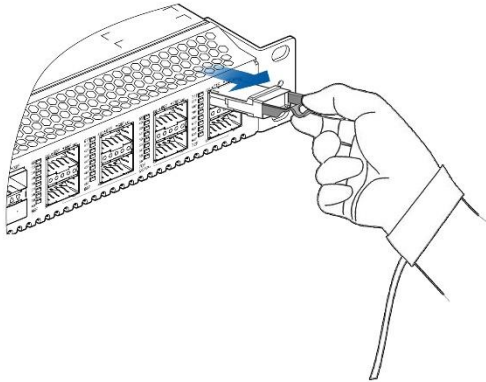
4.3.3 Installing the QSFP+, QSFP28, QSFP-DD, or QSFP56 AOC Module

Follow the same steps to install the QSFP+, QSFP28, QSFP-DD, or QSFP56 AOC module. The following section takes the QSFP+ AOC module as an example.

(1) You can install the QSFP+ AOC module with power supply. Hold the connector of the QSFP+ AOC module with one hand and hold the cable perpendicular to the front panel of the switch with the other hand. Push the module gently into the socket until you feel the module snap into place, as shown in the following figure.

Figure 4-11 Installing the QSFP+ AOC Module
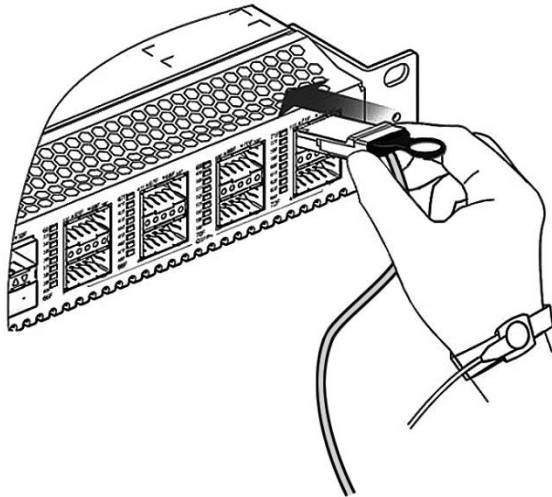
(2) After the transceivers on both ends of the QSFP+ AOC module are connected, the **LINK/ACT** LED on the switch turns on. Otherwise, check whether the transceivers on both ends of the QSFP+ AOC module are properly connected.

4.3.4 Removing the QSFP+, QSFP28, QSFP-DD, or QSFP56 AOC Module

Follow the same steps to remove the QSFP+, QSFP28, QSFP-DD, or QSFP56 AOC module. The following section takes the QSFP+ AOC module as an example.

Hold the cable with one hand, and grasp the pull-tab and gently pull to release the transceiver from the socket with the other hand. Slide the transceiver out of the socket, as shown in the following figure.

Figure 4-12 Removing the QSFP+ AOC Module
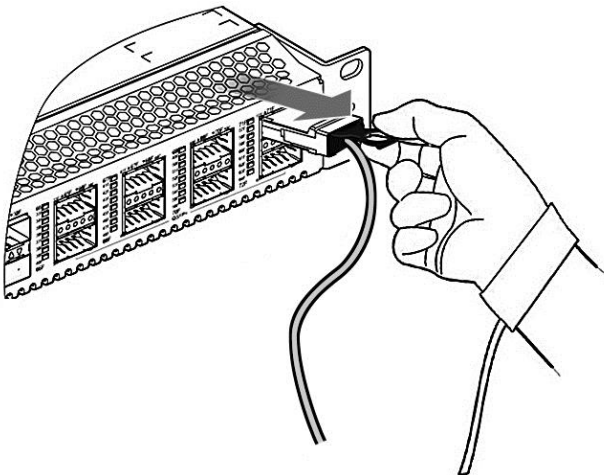
5 Verifying the Installation

After the installation, run the **show interfaces** [*interface-type interface-number*] **transceiver** command to display the optical module information.

- **Parameter Description**

interface-type interface-number: Type and number of the interface. If this parameter is not specified, the information about the optical modules in all interfaces is displayed.

- **Configuration Example**

The following example displays the information about the optical module in interface Gigabitethernet 5/4.

```
Hostname> enable
Hostname# show interfaces gigabitethernet 5/4 transceiver
Transceiver Type  : 100BASE-SX-SFP
Connector Type    : LC
Wavelength(nm)    : 850
Transfer Distance:
50/125 um 0M2 fiber
-- 550m
62.5/125 um 0M1 fiber
-- 270m
Digital Diagnostic Monitoring : YES
Vendor Serial Number : 101680093602489
```

Table 5-1   Output Fields of the show interface transceiver Command

Field	Description
Transceiver Type	Indicates the type of the transmit end.
Connector Type	Indicates the type of the connector.
Wavelength (nm)	Indicates the optical wavelength.
Transfer Distance	Indicates the transmission distance.
Digital Diagnostic Monitoring	Indicates self-diagnosis monitoring.
Vendor Serial Number	Indicates the serial number of the vendor.