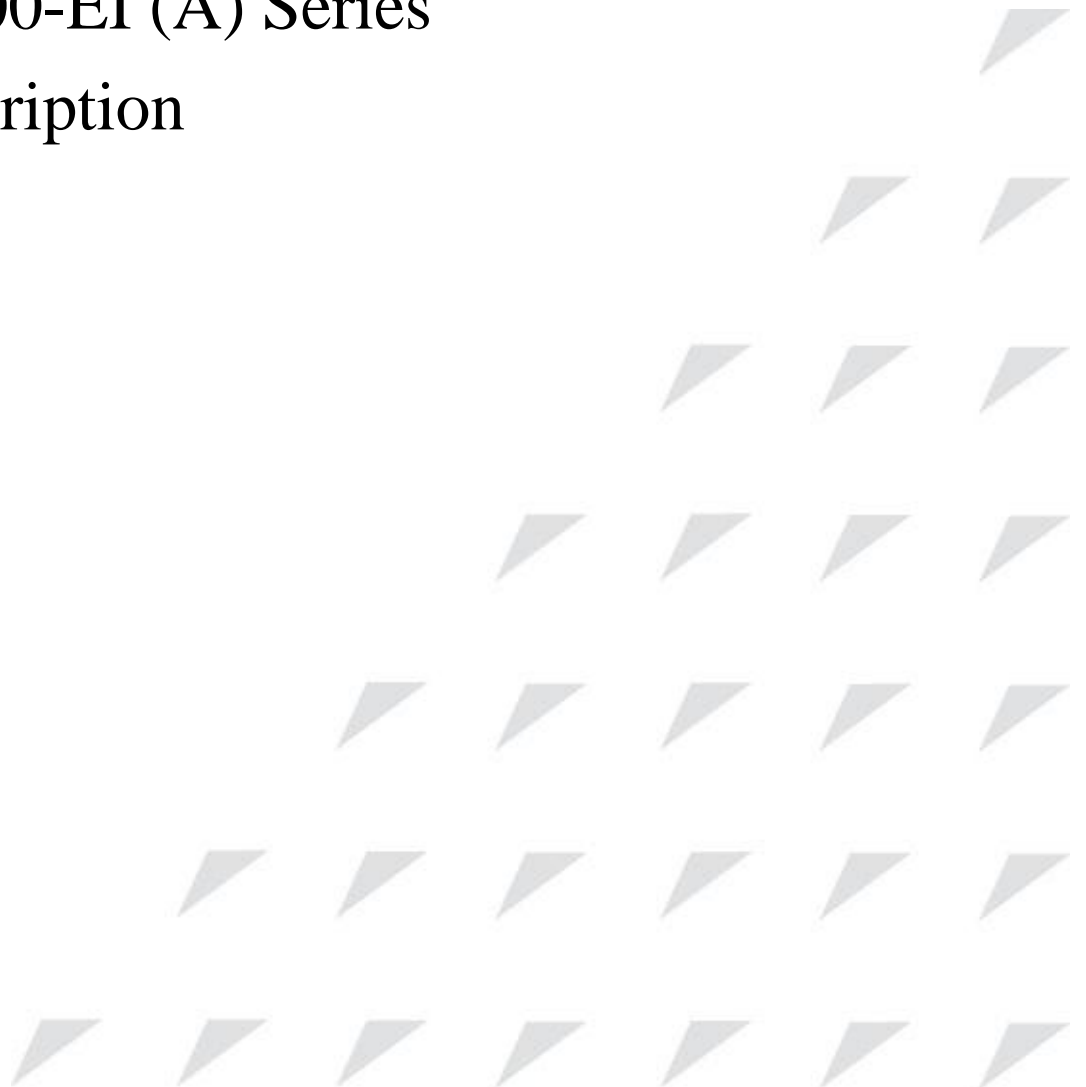


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ISCOM S5600-EI (A) Series
Product Description
(Rel_01)



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Preface

Objectives

This document describes the Layer 3 ISCOM S5600-EI (A) series switch (hereinafter referred to as the ISCOM S5600-EI series switch) in terms of overview, system structure, device installation, and technical specifications.

The appendix describes cables and SFP modules, and lists terms, acronyms, and abbreviations involved in this document.

Versions



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



Product name	Hardware version	Software version
ISCOM S5600-52C-EI	A.00	V3.50
ISCOM S5600-28C-EI-24F	A.00	V3.50
ISCOM S5600-52C-EI-48F	A.00	V3.50

Conventions

Symbol conventions

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

Symbol	Description
 Warning	Indicate a hazard with a medium or low level of risk which, if not avoided, could result in minor or moderate injury.
 Caution	Indicate a potentially hazardous situation that, if not avoided, could cause equipment damage, data loss, and performance degradation, or unexpected results.

Symbol	Description
 Note	Provide additional information to emphasize or supplement important points of the main text.
 Tip	Indicate a tip that may help you solve a problem or save time.

General conventions

Convention	Description
Times New Roman	Normal paragraphs are in Times New Roman.
Arial	Paragraphs in Warning, Caution, Notes, and Tip are in Arial.
Boldface	Buttons and navigation path are in Boldface .
<i>Italic</i>	Book titles are in <i>italics</i> .
Lucida Console	Terminal display is in Lucida Console .
Book Antiqua	Heading 1, Heading 2, Heading 3, and Block are in Book Antiqua.

Change history

Updates between document versions are cumulative. Therefore, the latest document version contains all updates made to previous versions.

Issue 01 (2018-01-15)

Initial commercial release

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1 Overview

This chapter is an overview of the ISCOM S5600-EI series switch, including the following sections:

- Introduction
- Features
- Networking applications
- Ordering information

1.1 Introduction

The Layer 3 ISCOM S5600-EI series switch, developed by Raisecom, is an aggregation device designed for enterprises, campuses, residences, and carrier Customer Premises Network (CPN). It provides 1000 Mbit/s or 10 Gbit/s Layer 2 or Layer 3 wire-speed forwarding capabilities and 40 Gbit/s expanded interfaces.

The ISCOM S5600-EI series switch is integrated with advanced features, such as user authentication, access control, and bandwidth management. It features flexible networking, individualized Quality of Service (QoS), sound access control, complete network management, and high stability, thus fully meeting the requirements of carriers.

1.2 Features

Table 1-1 lists features of the ISCOM S5600-EI series switch.

Table 1-1 Features

Feature	Description
Basic features	<ul style="list-style-type: none"> • Logging in to the device (Console/Telnet/SSHv2) • User management • CLI • File management (BootROM/system file/configuration file) • Loading and upgrading (automatic loading through TFTP, upgrading through BootROM, FTP, or TFTP) • Time management • Interface management • Basic information about the device (name, language mode, saving or deleting configurations, and restarting the device) • Task scheduling • Watchdog
ISF	ISF virtualization through service interfaces
Ethernet	<ul style="list-style-type: none"> • MAC address management • VLAN (4094) • MAC and subnet-based VLAN • Private VLAN • Super VLAN • VLANIF interface • Basic QinQ and selective QinQ • VLAN mapping • Loop detection • Interface protection • Port mirroring • Interface isolation • STP • L2CP transparent transmission • GVRP • Voice VLAN
Ring protection	G.8032
IP service	<ul style="list-style-type: none"> • ARP • IPv6 • NDP • DHCP Client • DHCP Server • DHCP Relay • DHCP Snooping • DHCP Option 82/DHCP Option 61/IPv6 DHCP Option 18 • DHCPv6 Client • DHCPv6 • DHCPv6 Snooping • ND Snooping

Feature	Description
IP routing	<ul style="list-style-type: none"> • Static route • Route management • RIP • RIPng • OSPF • OSPFv3 • ISIS • BGP • BGP4+ • Routing policy
QoS	<ul style="list-style-type: none"> • Priority mapping • Priority trust • Bandwidth guarantee • Interface shaping • Queue scheduling • WRED • Filter • Traffic policy
Multicast	<ul style="list-style-type: none"> • Static Layer 2 multicast • Route multicast management • IGMP • IGMP Snooping • IGMP MVR • IGMP filtering • MLD • VLAN Copy
Security	<ul style="list-style-type: none"> • Port security MAC • ACL • Dynamic ARP detection • Anti-ARP attacks • RADIUS authentication • TACACS+ • 802.1X • PPPoE+ • Storm control • IP Source Guard • CPU protection
Reliability	<ul style="list-style-type: none"> • Link aggregation • Link-state tracking • Interface backup • UDLD • mLACP • VRRP
OAM	<ul style="list-style-type: none"> • IEEE 802.3ah • BFD • EFM • CFM • Y.1731

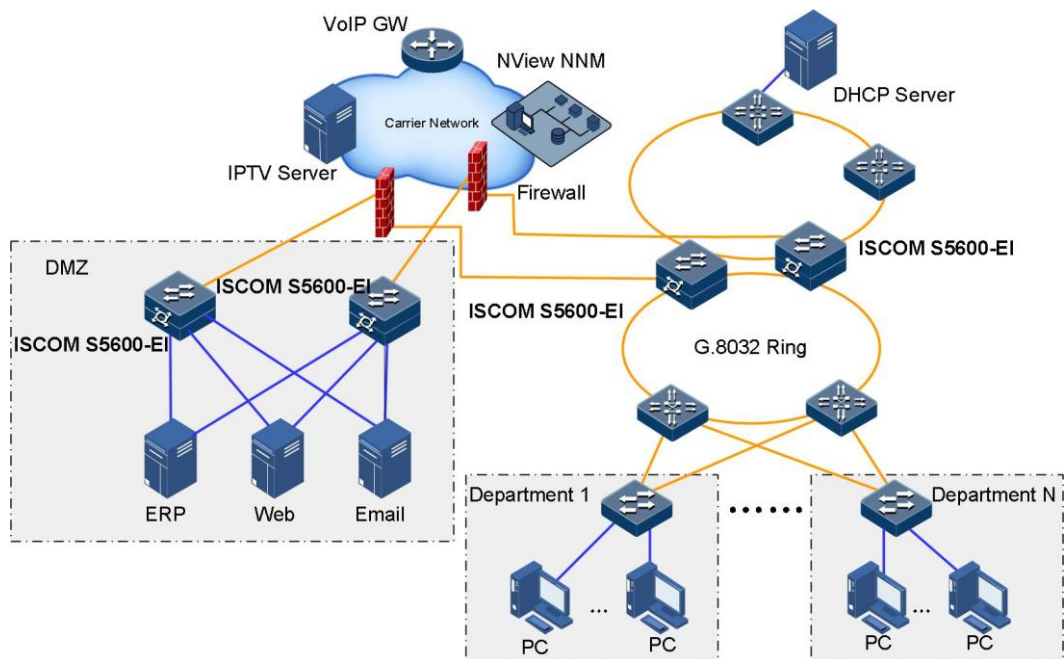
Feature	Description
System management	<ul style="list-style-type: none"> • SNMP • RMON • LLDP • Optical module DDM • System log • Alarm management • Fan monitoring • Cable diagnosis • Hardware monitoring • CPU monitoring • Dual system • Ping and Traceroute • Performance statistics

1.3 Networking applications

1.3.1 Campus

As shown in Figure 1-1, in a campus with high reliability requirements, the ISCOM S5600-EI series switches are deployed in the Demilitarized Zone (DMZ) or internal server zone to provide trunk tunnels for servers.

Figure 1-1 Campus networking



1.3.2 Data center networking

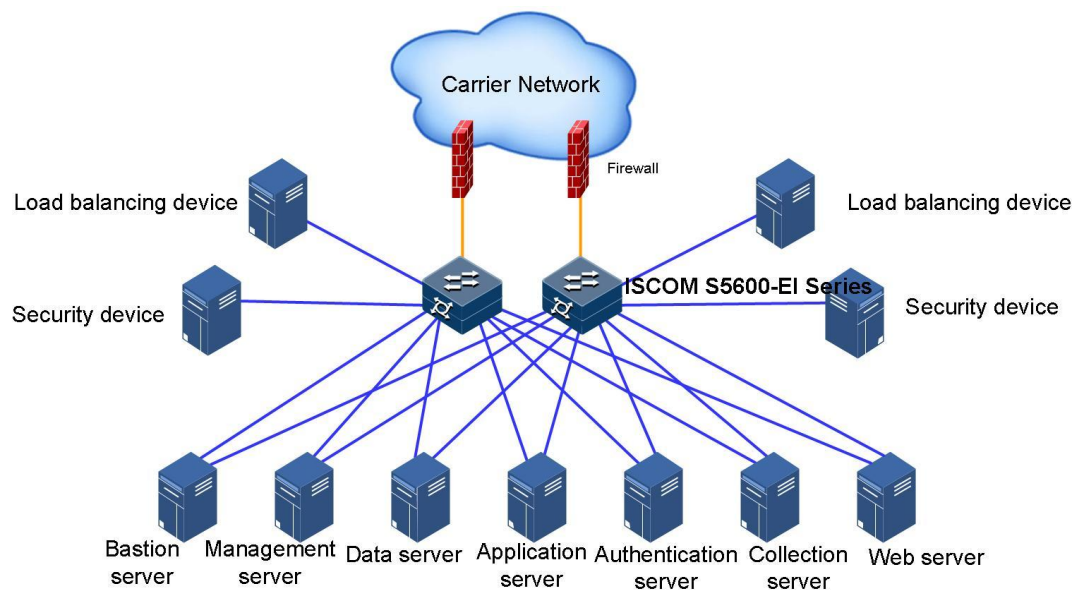
The enterprise-level uniform IT security monitoring and service platform constructed by carriers provides centralized monitoring, uniform analyses, and uniform service management

for the secure and routine operation, maintenance, and management. It implements uniform monitoring and analysis on security of the infrastructure, network, devices, and subsystems of the enterprise-level IT system, enhances system access control, implements control over accounts, access, authorization oriented to maintenance of the system software and hardware, and provides professional security service for system maintenance personnel, administrators, and leaders of the company.

The server cluster includes the database server, application server, collection server, bastion host, Web server, authentication server, and management server. The network devices include switches, firewall, load balancing device, remote security assessment system, and network security inspection platform.

As shown in Figure 1-2, the ISCOM S5600-EI series switch, as the core switch in the security monitoring cloud, provides service, heartbeat, and management channel, and meanwhile controls access to servers through ACL.

Figure 1-2 Data center networking



1.4 Ordering information

1.4.1 Naming convention

Figure 1-3 and Table 1-2 show the naming convention of the ISCOM S5600-EI series switch.

Figure 1-3 Naming convention of ISCOM S5600-EI series switch

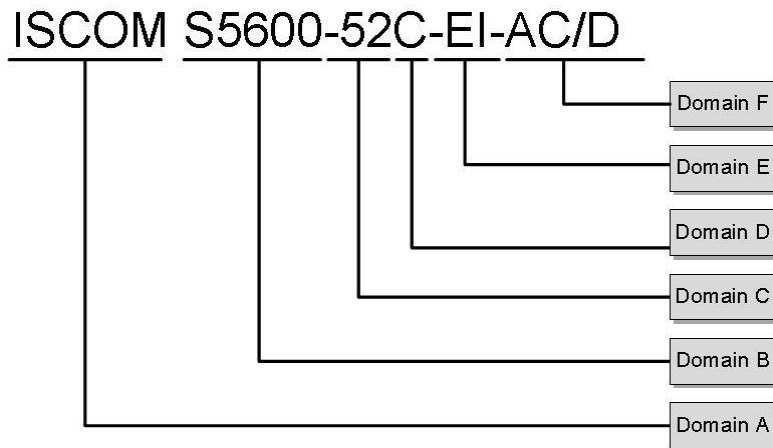


Table 1-2 Naming convention of ISCOM S5600-EI series switch

Domain	Indication	Value	Description
A	Product ID	ISCOM	Raisecom ISCOM series device
B	Subtype	S	It is a switch.
		5x	GE downlink Layer 2/Layer 3 switches
		00	Different series
C	Maximum number of available interfaces	28	The maximum number of available interfaces is 28.
		52	The maximum number of available interfaces is 52.
D	Type of uplink interfaces	C	The uplink interfaces are 10GE optical interfaces and the device supports expansion slots.
E	Level of products (the same series)	LI	Simplified version
		SI	Standard version
		EI	Enhanced version
		HI	Advanced version
F	Power type	<ul style="list-style-type: none"> • AC: AC power supply • DC: DC power supply • /D: dual power supplies • /S: single power supply (it also indicates single power supply even though there is no "/") 	

1.4.2 Ordering information about device

Table 1-3 lists ordering information about the ISCOM S5600-EI series switch.

Table 1-3 Ordering information about device

Model	Description
ISCOM S5600-52C-EI-AC/S	<ul style="list-style-type: none"> • Provide forty-eight 10/100/1000 Mbit/s RJ45 downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support single 220 VAC power supply. • Support one service expansion slot.
ISCOM S5600-52C-EI-AC/D	<ul style="list-style-type: none"> • Provide forty-eight 10/100/1000 Mbit/s RJ45 downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support dual 220 VAC power supplies. • Support one service expansion slot.
ISCOM S5600-52C-EI-DC/S	<ul style="list-style-type: none"> • Provide forty-eight 10/100/1000 Mbit/s RJ45 downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support single -48 VDC power supply. • Support one service expansion slot.
ISCOM S5600-52C-EI-DC/D	<ul style="list-style-type: none"> • Provide forty-eight 10/100/1000 Mbit/s RJ45 downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support dual -48 VDC power supplies. • Support one service expansion slot.
ISCOM S5600-52C-EI-AC_DC	<ul style="list-style-type: none"> • Provide forty-eight 10/100/1000 Mbit/s RJ45 downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support one AC + one DC power supplies. • Support one service expansion slot.

Model	Description
ISCOM S5600-28C-EI-24F-AC/S	<ul style="list-style-type: none"> • Support twenty-four 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support single 220 VAC power supply. • Support one service expansion slot.
ISCOM S5600-28C-EI-24F-AC/D	<ul style="list-style-type: none"> • Support twenty-four 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support dual 220 VAC power supplies. • Support one service expansion slot.
ISCOM S5600-28C-EI-24F-DC/S	<ul style="list-style-type: none"> • Support twenty-four 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support single -48 VDC power supply. • Support one service expansion slot.
ISCOM S5600-28C-EI-24F-DC/D	<ul style="list-style-type: none"> • Support twenty-four 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support dual -48 VDC power supplies. • Support one service expansion slot.
ISCOM S5600-28C-EI-24F-AC_DC	<ul style="list-style-type: none"> • Support twenty-four 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support one AC + one DC power supplies. • Support one service expansion slot.

Model	Description
ISCOM S5600-52C-EI-48F-AC/S	<ul style="list-style-type: none"> • Provide forty-eight 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support single 220 VAC power supply. • Support one service expansion slot.
ISCOM S5600-52C-EI-48F-AC/D	<ul style="list-style-type: none"> • Provide forty-eight 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support dual 220 VAC power supplies. • Support one service expansion slot.
ISCOM S5600-52C-EI-48F-DC/S	<ul style="list-style-type: none"> • Provide forty-eight 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support single -48 VDC power supply. • Support one service expansion slot.
ISCOM S5600-52C-EI-48F-DC/D	<ul style="list-style-type: none"> • Provide forty-eight 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support dual -48 VDC power supplies. • Support one service expansion slot.
ISCOM S5600-52C-EI-48F-AC_DC	<ul style="list-style-type: none"> • Provide forty-eight 100/1000 Mbit/s SFP downlink interfaces. • Provide four 1000 Mbit/s or 10 Gbit/s SFP+ uplink interfaces. • Provide the RJ45 Console interface. • Provide the MiniUSB Console interface. • Provide the SNMP interface which supports out-of-band management. • Support one AC + one DC power supplies. • Support one service expansion slot.

1.4.3 Ordering information about subcards

ESW-SUB-8GF

Table 1-4 lists ordering information about the ESW-SUB-8GF.

Table 1-4 Ordering information about ESW-SUB-8GF

Model	Description
ESW-SUB-8GF	An expansion card which can provide eight 1000 Mbit/s SFP optical interfaces, designed for accessing services and switching services at wire speed

ESW-SUB-2Q

Table 1-5 shows ordering information about the ESW-SUB-2Q.

Table 1-5 Ordering information about ESW-SUB-2Q

Model	Description
ESW-SUB-2Q	An expansion card which can provide two 40GE QSFP+ optical interfaces, designed for accessing services and switching services at wire speed. Each 40GE interface can be split into four GE interfaces.

1.4.4 Ordering information about optical modules

- 100 Mbit/s SFP optical module
- 100 Mbit/s SFP electrical module
- 1000 Mbit/s SFP optical module
- 1000 Mbit/s SFP electrical module
- 10 Gbit/s SFP+ optical module
- 40 Gbit/s QSFP+ optical module

100 Mbit/s SFP optical module

Table 1-6 lists ordering information about the 100 Mbit/s SFP optical module.

Table 1-6 Ordering information about 100 Mbit/s SFP optical module

Model	Description
USFP-03/M-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 2 km • Tx wavelength: 1310 nm • Dual-fiber multi-mode SFP optical module

Model	Description
USFP-03/S1-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 15 km • Tx wavelength: 1310 nm • Dual-fiber single-mode SFP optical module
USFP-03/S2-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 40 km • Tx wavelength: 1310 nm • Dual-fiber single-mode SFP optical module
USFP-03/S3-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 80 km • Tx wavelength: 1550 nm • Dual-fiber single-mode SFP optical module
USFP-03/SS13-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 15 km • Tx wavelength: 1310 nm • Rx wavelength: 1550 nm • Single-fiber single-mode SFP optical module
USFP-03/SS15-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 15 km • Tx wavelength: 1550 nm • Rx wavelength: 1310 nm • Single-fiber single-mode SFP optical module
USFP-03/SS23-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 40 km • Tx wavelength: 1310 nm • Rx wavelength: 1550 nm • Single-fiber single-mode SFP optical module
USFP-03/SS25-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 40 km • Tx wavelength: 1550 nm • Rx wavelength: 1310 nm • Single-fiber single-mode SFP optical module
USFP-03/SS34-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 80 km • Tx wavelength: 1490 nm • Rx wavelength: 1550 nm • Single-fiber single-mode SFP optical module
USFP-03/SS35-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 155 Mbit/s • Transmission distance: 80 km • Tx wavelength: 1550 nm • Rx wavelength: 1490 nm • Single-fiber single-mode SFP optical module

100 Mbit/s SFP electrical module

Table 1-7 lists ordering information about the 100 Mbit/s SFP electrical module.

Table 1-7 Ordering information about 100 Mbit/s SFP electrical module

Model	Description
USFP-FE/AN-R/SW	<ul style="list-style-type: none"> • Transmission rate: 125 Mbit/s • Transmission distance: 100 m • Enabled with auto-negotiation • SerDes interface

1000 Mbit/s SFP optical module

Table 1-8 lists ordering information about the 1000 Mbit/s SFP optical module.

Table 1-8 Ordering information about 1000 Mbit/s SFP optical module

Model	Description
USFP-Gb/M-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 550 m • Tx wavelength: 850 nm • Dual-fiber multi-mode SFP optical module
USFP-Gb/S1-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 15 km • Tx wavelength: 1310 nm • Dual-fiber single-mode SFP optical module
USFP-Gb/S2-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 40 km • Tx wavelength: 1550 nm • Dual-fiber single-mode SFP optical module
USFP-Gb/S3-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 100 km • Tx wavelength: 1550 nm • Dual-fiber single-mode SFP optical module
USFP-Gb/LH1-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 40 km • Tx wavelength: 1310 nm • Dual-fiber single-mode SFP optical module
USFP-Gb/ZX-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 80 km • Tx wavelength: 1550 nm • Dual-fiber single-mode SFP optical module
USFP-Gb/EX-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 120 km • Tx wavelength: 1550 nm • Dual-fiber single-mode SFP optical module
USFP-Gb/SS13-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 15 km • Tx wavelength: 1310 nm • Rx wavelength: 1550 nm • Single-fiber single-mode SFP optical module

Model	Description
USFP-Gb/SS15-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 15 km • Tx wavelength: 1550 nm • Rx wavelength: 1550 nm • Single-fiber single-mode SFP optical module
USFP-Gb/SS13-4/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 15 km • Tx wavelength: 1310 nm • Rx wavelength: 1490 nm • Single-fiber single-mode SFP optical module
USFP-Gb/SS14-3/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 15 km • Tx wavelength: 1490 nm • Rx wavelength: 1310 nm • Single-fiber single-mode SFP optical module
USFP-Gb/SS24-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 40 km • Tx wavelength: 1490 nm • Rx wavelength: 1550 nm • Single-fiber single-mode SFP optical module
USFP-Gb/SS25-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 40 km • Tx wavelength: 1550 nm • Rx wavelength: 1490 nm • Single-fiber single-mode SFP optical module
USFP-Gb/SS34-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 80 km • Tx wavelength: 1490 nm • Rx wavelength: 1550 nm • Single-fiber single-mode SFP optical module
USFP-Gb/SS35-D-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1.25 Gbit/s • Transmission distance: 80 km • Tx wavelength: 1550 nm • Rx wavelength: 1490 nm • Single-fiber single-mode SFP optical module

1000 Mbit/s SFP electrical module

Table 1-9 lists ordering information about the 1000 Mbit/s SFP electrical module.

Table 1-9 Ordering information about 1000 Mbit/s SFP electrical module

Model	Description
USFP-GE-R/SW	<ul style="list-style-type: none"> • Transmission rate: 1000 Mbit/s • Transmission distance: 100 m • SerDes interface
USFP-GE/AN-R/SW	<ul style="list-style-type: none"> • Transmission rate: 10/100/1000 Mbit/s • Transmission distance: 100 m • SGMII interface

10 Gbit/s SFP+ optical module

Table 1-10 lists ordering information about the 10 Gbit/s SFP+ optical module.

Table 1-10 Ordering information about 10 Gbit/s SFP+ optical module

Model	Description
USFP+-192/M/SW	<ul style="list-style-type: none"> • Transmission rate: 10 Gbit/s • Transmission distance: 300 m • Tx wavelength: 850 nm • Dual-fiber multi-mode SFP+ optical module
USFP+-192/S1/SW	<ul style="list-style-type: none"> • Transmission rate: 10 Gbit/s • Transmission distance: 10 km • Tx wavelength: 1310 nm • Dual-fiber single-mode SFP+ optical module

40 Gbit/s QSFP+ optical module

Table 1-11 lists ordering information about the 40 Gbit/s QSFP+ optical module and integrated cable.

Table 1-11 Ordering information about 40 Gbit/s QSFP+ optical module

Model	Description
UQSP-40G/S1/SW	<ul style="list-style-type: none"> • QSFP+ optical module • Rate: 41.25 Gbit/s, dual LCs • Tx wavelength: CWDM (1271 nm/1291 nm/1311 nm/1331 nm) • Target distance: 10 km • DDM • RoHS-compliant • Applicable to switches
UQSP-40G/M3/SW	<ul style="list-style-type: none"> • QSFP+ optical module • Rate: 41.25 Gbit/s • Tx wavelength: multi-mode 850 nm • Target distance: 300 m • DDM • RoHS-compliant • Applicable to switches
EQP-4/1-C	DAC integrated cable-40GE QSFP-1 m
EQP-4/2-C	DAC integrated cable-40GE QSFP-3 m
EQP-4/3-C	DAC integrated cable-40GE QSFP-5 m
EQP4-4/1-C	DAC integrated cable-40GE QSFP-to-four 10GE SFP+-1 m
EQP4-4/2-C	DAC integrated cable-40GE QSFP-to-four 10GE SFP+-3 m
EQP4-4/3-C	DAC integrated cable-40GE QSFP-to-four 10GE SFP+-5 m

2 System structure

This chapter describes system structure of the ISCOM S5600-EI series switch, including the following sections:

- Panels
- Subcards
- Interfaces
- Buttons
- LEDs

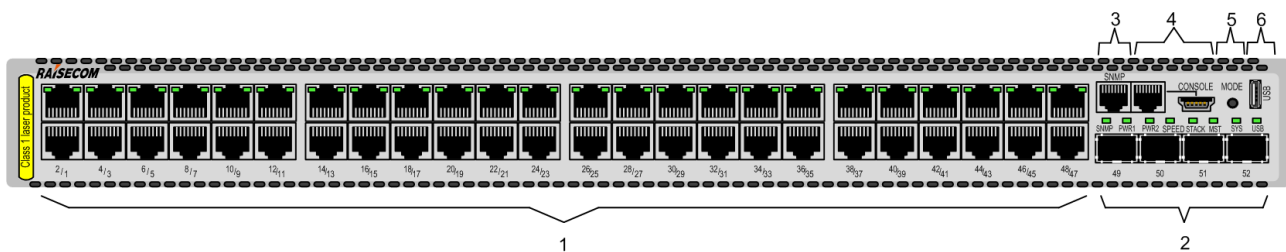
2.1 Panels

2.1.1 Front panels

ISCOM S5600-52C-EI

Figure 2-1 shows the front panel of the ISCOM S5600-52C-EI.

Figure 2-1 Front panel of ISCOM S5600-52C-EI

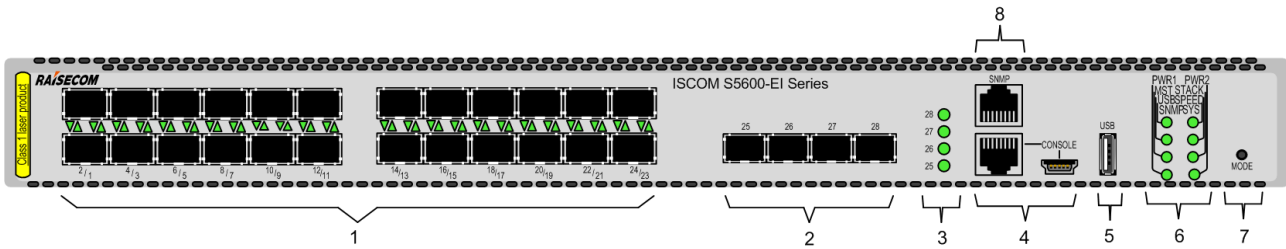


1	Service downlink interfaces (1–48) and LEDs	2	Service uplink interfaces (49–52) and LEDs
3	SNMP interface	4	RJ45 and MiniUSB Console interface
5	MODE button	6	USB interface

ISCOM S5600-28C-EI-24F

Figure 2-2 shows the front panel of the ISCOM S5600-28C-EI-24F.

Figure 2-2 Front panel of ISCOM S5600-28C-EI-24F

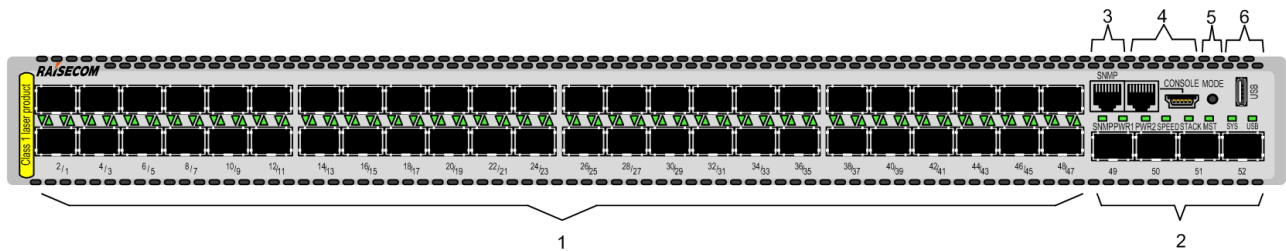


1	Service downlink interfaces (1–24) and LEDs	2	Service uplink interfaces (25–28)
3	Service uplink interface (25–28) LEDs	4	RJ45 and MiniUSB Console interface
5	USB interface	6	PWR, MST, SPEED, and SYS LEDs
7	MODE button	8	SNMP interface

ISCOM S5600-52C-EI-48F

Figure 2-3 shows the front panel of the ISCOM S5600-52C-EI-48F.

Figure 2-3 Front panel of ISCOM S5600-52C-EI-48F

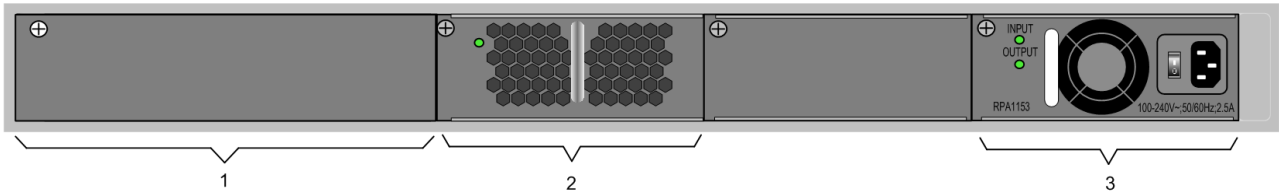


1	Service downlink interfaces (1–48) and LEDs	2	Service uplink interfaces (49–52) and LEDs
3	SNMP interface	4	RJ45 and MiniUSB Console interface
5	MODE button	6	USB interface

2.1.2 Rear panels

Figure 2-4 shows the rear panel of the ISCOM S5600-EI with single AC power supply.

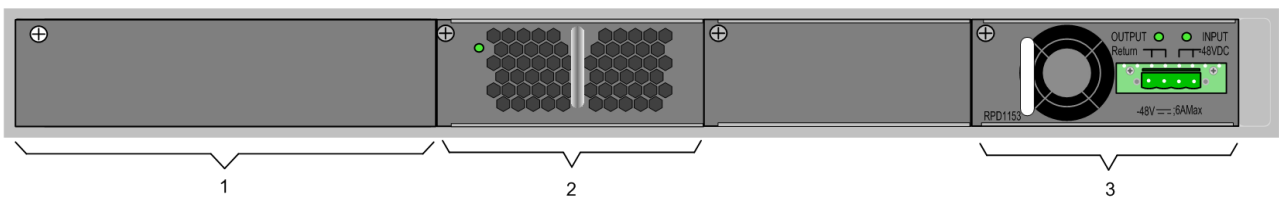
Figure 2-4 Rear panel of ISCOM S5600-EI with single AC power supply



1	Expansion slot	2	Fan
3	Power switch, AC power interface, and LEDs		

Figure 2-5 shows the rear panel of the ISCOM S5600-EI with single DC power supply

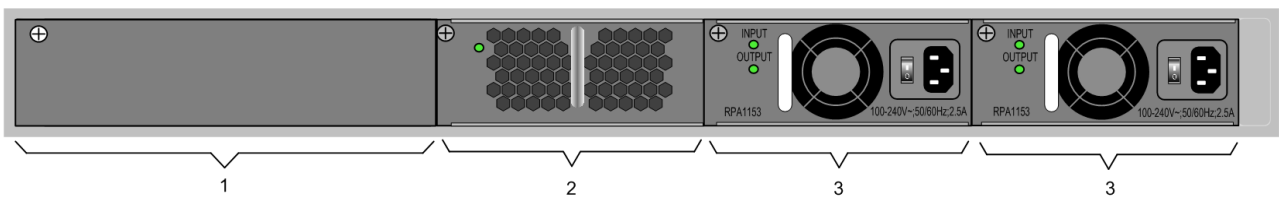
Figure 2-5 Rear panel of ISCOM S5600-EI with single DC power supply



1	Expansion slot	2	Fan
3	DC power interface and LEDs		

Figure 2-6 shows the rear panel of the ISCOM S5600-EI with dual AC power supplies.

Figure 2-6 Rear panel of ISCOM S5600-EI with dual AC power supplies



1	Expansion slot	2	Fan
3	Power switch, AC power interface, and LEDs		

Figure 2-7 shows the rear panel of the ISCOM S5600-EI with dual DC power supplies.

Figure 2-7 Rear panel of ISCOM S5600-EI with dual DC power supplies

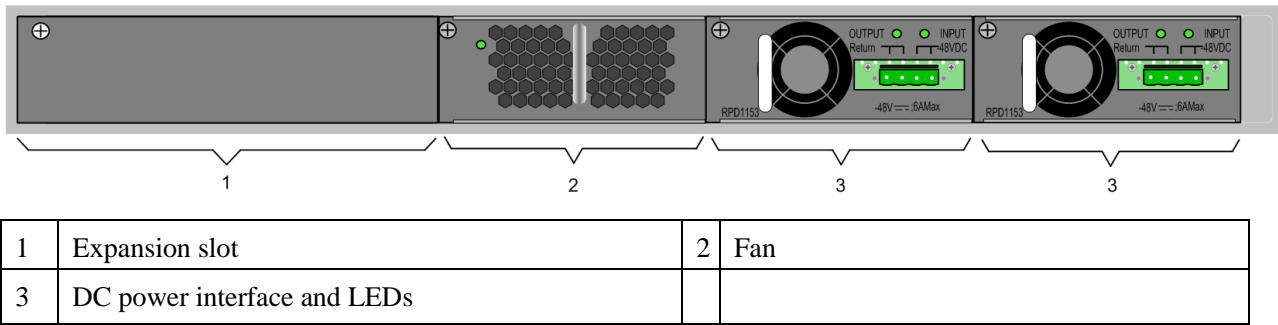
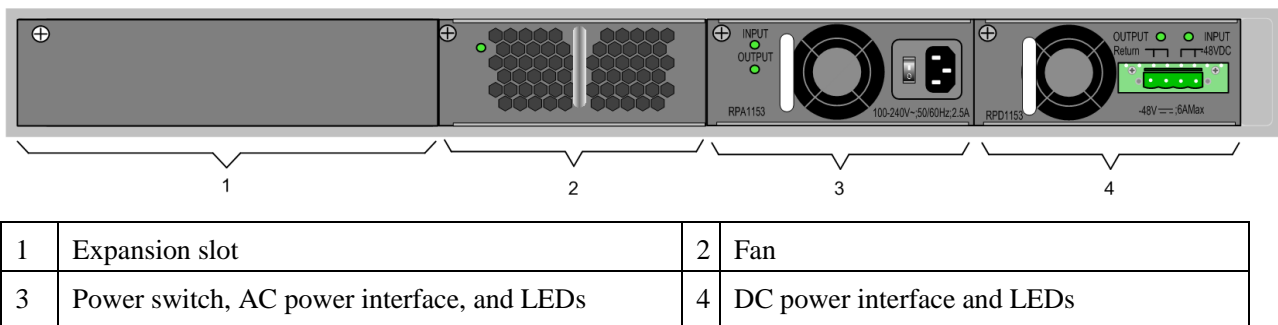


Figure 2-8 shows the rear panel of the ISCOM S5600-EI with one AC and one DC power supplies.

Figure 2-8 Rear panel of the ISCOM S5600-EI with one AC and one DC power supplies

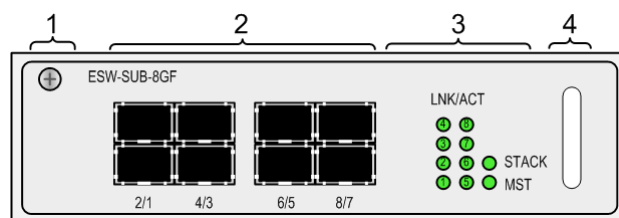


2.2 Subcards

2.2.1 ESW-SUB-8GF

Figure 2-9 shows the front appearance of the ESW-SUB-8GF.

Figure 2-9 Front appearance of ESW-SUB-8GF

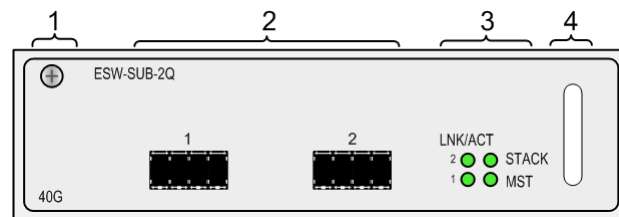


1	Captive screw	2	SFP+ optical interface
3	LEDs (LNK/ACT, STACK, and MST)	4	Handle

2.2.2 ESW-SUB-2Q

Figure 2-10 shows the appearance of the ESW-SUB-2Q.

Figure 2-10 Appearance of ESW-SUB-2Q



1	Captive screw	2	QSFP+ optical interface
3	LEDs (LNK/ACT, STACK, and MST)	4	Handle

2.3 Interfaces

2.3.1 Types

ISCOM S5600-52C-EI

Table 2-1 lists interfaces on the ISCOM S5600-52C-EI.

Table 2-1 Interfaces on ISCOM S5600-52C-EI

Interface	Usage	Type	Description
Interface 1 to Interface 48	Service downlink interface	RJ45	10/100/1000BASE-T adaptive electrical interface
Interface 49 to interface 52	Service uplink interface	SFP+	10 Gbit/s SFP+ optical interface, available SFP+ optical module: 10GBASE-X
		SFP	<ul style="list-style-type: none"> 1000 Mbit/s SFP optical interface, available SFP optical module: 1000BASE-X 1000 Mbit/s SFP electrical interface, available SFP electrical module: 1000BASE-T
SNMP	NMS interface	RJ45	10/100/1000BASE-TX adaptive electrical interface
CONSOLE	Console interface	MiniUSB	Connect the PC through MiniUSB cable.

Interface	Usage	Type	Description
	Console interface	RJ45	Connect the PC through DB9 serial interface.
–	–	USB	Reserved

ISCOM S5600-28C-EI-24F

Table 2-2 lists interfaces on the ISCOM S5600-28C-EI-24F.

Table 2-2 Interfaces on ISCOM S5600-28C-EI-24F

Interface	Usage	Type	Description
Interface 1 to Interface 24	Service downlink interface	SFP	<ul style="list-style-type: none"> • 1000 Mbit/s SFP optical interface, available SFP optical modules: 1000BASE-X and 100BASE-FX • 1000 Mbit/s SFP electrical interface, available SFP electrical module: 1000BASE-T
Interface 25 to Interface 28	Service uplink interface	SFP+	10 Gbit/s SFP+ optical interface, available SFP+ optical module: 10GBASE-X
		SFP	<ul style="list-style-type: none"> • 1000 Mbit/s SFP optical interface, available SFP optical module: 1000BASE-X • 1000 Mbit/s SFP electrical interface, available SFP electrical module: 1000BASE-T
SNMP	NMS interface	RJ45	10/100/1000BASE-TX adaptive electrical interface
CONSOLE	Console interface	MiniUSB	Connect the PC through MiniUSB cable.
	Console interface	RJ45	Connect the PC through DB9 serial interface.
–	–	USB	Reserved

ISCOM S5600-52C-EI-48F

Table 2-3 lists interfaces on the ISCOM S5600-52C-EI-48F.

Table 2-3 Interfaces on ISCOM S5600-52C-EI-48F

Interface	Usage	Type	Description
Interface 1 to Interface 48	Service downlink interface	SFP	<ul style="list-style-type: none"> • 1000 Mbit/s SFP optical interface, available SFP optical module: 1000BASE-X and 100BASE-FX • 1000 Mbit/s SFP electrical interface, available SFP electrical module: 1000BASE-T
Interface 49 to Interface 52	Service uplink interface	SFP+	10 Gbit/s SFP+ optical interface, available SFP+ optical module: 10GBASE-X
		SFP	<ul style="list-style-type: none"> • 1000 Mbit/s SFP optical interface, available SFP optical module: 1000BASE-X • 1000 Mbit/s SFP electrical interface, available SFP electrical module: 1000BASE-T
SNMP	NMS interface	RJ45	10/100/1000BASE-TX auto-negotiation electrical interface
CONSOLE	Console interface	MiniUSB	Connect the PC through MiniUSB cable.
	Console interface	RJ45	Connect the PC through DB9 serial interface.
–	–	USB	Reserved

2.3.2 Interface properties

40 Gbit/s QSFP+ interface

Table 2-4 lists parameters of the 40 Gbit/s QSFP+ optical interface.

Table 2-4 Parameters of 40 Gbit/s QSFP+ optical interface

Parameter	Description
Connector type	MPO/LC
Optical interface properties	Depend on the selected QSFP optical module.
Transmission rate	40 Gbit/s
Working mode	Full duplex

1000 Mbit/s SFP interface

Table 2-5 lists parameters of the 1000 Mbit/s SFP interface.

Table 2-5 Parameters of 1000 Mbit/s SFP interface

Parameter	Description
Connector type	LC/PC
Optical interface properties	Depend on the selected SFP optical module.
Coding type	8B/10B
Working mode	Full duplex
Standard	IEEE 802.3
Network protocol supported	IP

10 Gbit/s SFP+ optical interface

Table 2-6 lists parameters of the 10 Gbit/s SFP+ optical interface.

Table 2-6 Parameters of 10 Gbit/s SFP+ optical interface

Parameter	Description
Connector type	LC/PC
Optical interface properties	Depend on the selected SFP+ optical module.
Coding type	64B/66B
Transmission rate	10 Gbit/s
Working mode	Full duplex

1000 Mbit/s Ethernet electrical interface

Table 2-7 lists parameters of the 10/100/1000 Mbit/s Ethernet electrical interface.

Table 2-7 Parameters of 10/100/1000 Mbit/s Ethernet electrical interface

Parameter	Description
Connector type	RJ45
Working mode	<ul style="list-style-type: none"> Support 10/100/1000 Mbit/s auto-negotiation. Support half/full duplex mode, auto-negotiation.
Cable specification	<ul style="list-style-type: none"> When the working mode is 10/100 Mbit/s, we recommend using the Cat 5 UTP cable. When the working mode is 1000 Mbit/s, we recommend using super Cat 5 UTP or STP cable.
Standard	IEEE 802.3-compliant
Network protocol supported	IP

Management interface

Table 2-8 lists parameters of the management interface.

Table 2-8 Parameters of the management interface

Parameter		Description	Quantity
Console	MiniUSB Console	Local management control interface You can log in to the device through the Hyper Terminal for local management and configuration. If these two interfaces are enabled concurrently, the MiniUSB Console interface will be preferentially used by default.	2
	RJ45 Console		
SNMP		10/100/1000BASE-T auto-negotiation electrical interface, through which out-of-band management can be implemented	1

RJ45 Console interface

Table 2-9 lists parameters of the RJ45 Console interface.

Table 2-9 Parameters of RJ45 Console interface

Parameter	Description
Connector type	RJ45
Working mode	Duplex UART
Electrical feature	RS-232
Baud rate	9600 baud by default Other baud rates are also supported.

MiniUSB Console interface

Table 2-10 lists parameters of the MiniUSB Console.

Table 2-10 Parameters of the MiniUSB Console

Parameter	Description
Connector type	MiniUSB
Working mode	Duplex UART
Electrical feature	USB
Baud rate	9600 baud by default Other baud rates are also supported.

Parameter	Description
Cable specification	5-core cable

SNMP interface

Table 2-11 lists parameters of the SNMP interface.

Table 2-11 Parameters of SNMP interface

Parameter	Description
Connector type	RJ45
Transmission rate	10/100BASE-T auto-negotiation
Wiring	Adapt to straight-through cable and crossover cable in host mode.
Standard	IEEE 802.3-compliant

AC interface

Figure 2-11 shows the appearance of the AC interface.

Figure 2-11 Appearance of AC interface

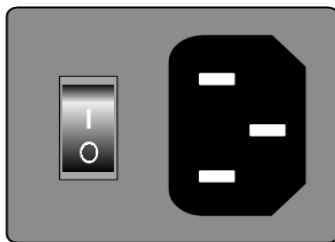


Table 2-12 lists parameters of the AC interface

Table 2-12 Parameters of AC interface

Parameter	Description
Connector type	3-pin C13 connector
Voltage	220 VAC
Voltage range	100–240 VAC
Frequency	50/60 Hz
Maximum input current	2.5 A

DC interface

Figure 2-12 shows the appearance of the DC interface.

Figure 2-12 Appearance of DC interface

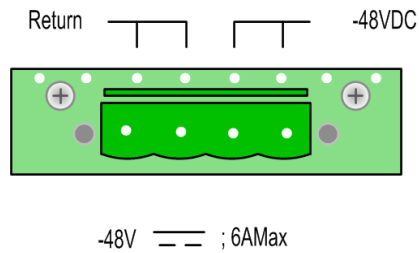


Table 2-13 lists parameters of the DC power interface.

Table 2-13 Parameters of DC interface

Power interface	Type	Print	Usage
DC interface	Barrier terminal	Return	GND power input terminal
		-48 VDC	-48V power input terminal

Table 2-14 lists technical specifications about the DC interface.

Table 2-14 Technical specifications about DC interface

Parameter	Description
Rated input voltage	-48 VDC
Voltage range	-36 to -72 VDC

2.4 Buttons

Table 2-15 lists button on the ISCOM S5600-EI.

Table 2-15 Button on ISCOM S5600-EI

Interface type	Description
Mode switching button (MODE)	<ul style="list-style-type: none"> • Factory status • Pressed once, it will be switched to SPEED mode in which the service interface LED indicates the actual speed of the interface and the SPEED LED is on. • Pressed twice, it will be switched to STACK mode in which the service interface LED indicates the stacking ID and the STACK LED is on. • Pressed once more, it will be switched to the default state in which the SPEED LED and STACK LED are off. • If the button is not operated within 45s, the mode LED will be automatically switched to the default state.

2.5 LEDs

2.5.1 ISCOM S5600-52C-EI

Table 2-16 lists LEDs on the ISCOM S5600-52C-EI.

Table 2-16 LEDs on ISCOM S5600-52C-EI

LED	Status	Description
LNK/ACT Interface 1– Interface 48	Green	GE interface working status LED <ul style="list-style-type: none"> • On: the link is properly connected. • Blinking: the link is transmitting data. • Off: the link is disconnected.
LNK/ACT Interface 49– Interface 52	Green	10GE SFP+ interface working status LED <ul style="list-style-type: none"> • On: the link is working at 1000 Mbit/s or 10 Gbit/s. • Blinking: the link is transmitting data. • Off: the link is disconnected.
PWR1	Green	Power 1 status LED <ul style="list-style-type: none"> • Off: power supply 1 is not in place. • On: power supply 1 works properly. • Blinking: power supply 1 is in place but the device is not powered on or the module fails.
PWR2	Green	Power 2 status LED <ul style="list-style-type: none"> • Off: power supply 2 is not in place. • On: power supply 2 works properly. • Blinking: power supply 2 is in place but the device is not powered on or the module fails.
STACK	Green	Stacking mode status LED <ul style="list-style-type: none"> • On: the device is in STACK mode and the interface LED indicates the device stacking ID. • Off: the STACK mode is not selected and the interface LED does not indicates the stacking ID.

LED	Status	Description
SPEED	Green	<p>SPEED mode status LED</p> <ul style="list-style-type: none"> • Off: SPEED mode is not selected. • On: the device is in SPEED mode and the service interface LED indicates the maximum speed of the interface.
SNMP	Green	<p>SNMP interface working status LED</p> <ul style="list-style-type: none"> • On: the SNMP interface is properly connected. • Blinking: there is data being transmitted. • Off: the SNMP interface is not connected or connected improperly.
SYS	Green	<p>System running status LED</p> <ul style="list-style-type: none"> • Off: the device is not restarted, being restarted, or malfunctions. • Blinking: the device works properly or the device is being restarted. • On: the device works improperly.
MST	Green	<p>Stacking active/standby mode LED</p> <ul style="list-style-type: none"> • On: the device is the active stacking device or the device is not stacked. • Off: the device is not the active stacking device.
USB	Green	<p>USB LED</p> <ul style="list-style-type: none"> • Off: the U disk is not deployed. • On: the U disk is successfully deployed. • Fast blinking: the device is reading the U disk. • Slow blinking: the U disk fails to be deployed.

2.5.2 ISCOM S5600-28C-EI-24F

Table 2-17 lists LEDs on the ISCOM S5600-28C-EI-24F.

Table 2-17 LEDs on ISCOM S5600-28C-EI-24F

LED	Status	Description
LNK/ACT Interface 1–Interface 28	Green	<p>Link working status LED</p> <ul style="list-style-type: none"> • On: the link is properly connected. • Blinking: the link is transmitting data. • Off: the link is not connected or connected but not working.
SPEED Interface 1–Interface 24 (SFP optical module interface)	Green	<p>Optical interface working speed LED</p> <ul style="list-style-type: none"> • On: the optical interface works at 1000 Mbit/s. • Off: the optical interface works at 100 Mbit/s or does not work.

LED	Status	Description
PWR1	Green	Power 1 status LED <ul style="list-style-type: none"> • Off: power supply 1 is not in place. • On: power supply 1 works properly. • Blinking: power supply 1 is in place but the device is not powered on or the module fails.
PWR2	Green	Power 2 status LED <ul style="list-style-type: none"> • Off: power supply 2 is not in place. • On: power supply 2 works properly. • Blinking: power supply 2 is in place but the device is not powered on or the module fails.
MST	Green	Stacking active/standby mode LED <ul style="list-style-type: none"> • On: the device is the active stacking device or the device is not stacked. • Off: the device is not the active stacking device.
STACK	Green	Stacking mode status LED <ul style="list-style-type: none"> • On: the device is in STACK mode and the interface LED indicates the device stacking ID. • Off: the STACK mode is not selected and the interface LED does not indicates the stacking ID.
SPEED	Green	SPEED mode status LED <ul style="list-style-type: none"> • Off: SPEED mode is not selected. • On: the device is in SPEED mode and the service interface LED indicates the maximum speed of the interface.
USB	Green	USB LED <ul style="list-style-type: none"> • Off: the U disk is not deployed. • On: the U disk is successfully deployed. • Fast blinking: the device is reading the U disk. • Slow blinking: the U disk fails to be deployed.
SNMP	Green	SNMP interface working status LED <ul style="list-style-type: none"> • On: the SNMP interface is properly connected. • Blinking: there is data being transmitted. • Off: the SNMP interface is not connected or connected improperly.
SYS	Green	System running status LED <ul style="list-style-type: none"> • Off: the device is not restarted, being restarted, or malfunctions. • Blinking: the device works properly or the device is being restarted. • On: the device works improperly.

2.5.3 ISCOM S5600-52C-EI-48F

Table 2-18 lists LEDs on the ISCOM S5600-52C-EI-48F.

Table 2-18 LEDs on ISCOM S5600-52C-EI-48F

LED	Status	Description
LNK/ACT Interface 1–Interface 48	Green	link working status LED <ul style="list-style-type: none"> • On: the link is properly connected. • Blinking: the link is transmitting data. • Off: the link is not connected or connected but not working.
SPEED Interface 1–Interface 48 (SFP optical module interface)	Green	Optical interface working speed LED <ul style="list-style-type: none"> • On: the optical interface works at 1000 Mbit/s. • Off: the optical interface works at 100 Mbit/s or does not work.
PWR1	Green	Power 1 status LED <ul style="list-style-type: none"> • Off: power supply 1 is not in place. • On: power supply 1 works properly. • Blinking: power supply 1 is in place but the device is not powered on or the module fails.
PWR2	Green	Power 2 status LED <ul style="list-style-type: none"> • Off: power supply 2 is not in place. • On: power supply 2 works properly. • Blinking: power supply 2 is in place but the device is not powered on or the module fails.
MST	Green	Stacking active/standby mode LED <ul style="list-style-type: none"> • On: the device is the active stacking device or the device is not stacked. • Off: the device is not the active stacking device.
STACK	Green	Stacking mode status LED <ul style="list-style-type: none"> • On: the device is in STACK mode and the interface LED indicates the device stacking ID. • Off: the STACK mode is not selected and the interface LED does not indicates the stacking ID.
SPEED	Green	SPEED mode status LED <ul style="list-style-type: none"> • Off: SPEED mode is not selected. • On: the device is in SPEED mode and the service interface LED indicates the maximum speed of the interface.
USB	Green	USB LED <ul style="list-style-type: none"> • Off: the U disk is not deployed. • On: the U disk is successfully deployed. • Fast blinking: the device is reading the U disk. • Slow blinking: the U disk fails to be deployed.
SNMP	Green	SNMP interface working status LED <ul style="list-style-type: none"> • On: the SNMP interface is properly connected. • Blinking: there is data being transmitted. • Off: the SNMP interface is not connected or connected improperly.

LED	Status	Description
SYS	Green	System running status LED <ul style="list-style-type: none">• Off: the device is not restarted, being restarted, or malfunctions.• Blinking: the device works properly or the device is being started.• On: the device works improperly.

3 Device installation

This chapter describes how to install the ISCOM S5600-EI series switch, including the following sections:

- Installing hardware
- Installing software

3.1 Installing hardware



Note

The following sections take the ISCOM S5600-52C-EI for example.

3.1.1 Preparing for installation

Environment conditions

Table 3-1 lists requirements on the environment for installing the ISCOM S5600-EI series switch.

Table 3-1 Requirements on operation environment

Parameter	Description
Operating temperature	0–45 °C
Operating humidity	5%–95%, RH (non-condensing)
Storage temperature	-25 to 60 °C
Air pressure	86–106 kPa

Power supply conditions

Table 3-2 lists power supply requirements for operating the ISCOM S5600-EI series switch.

Table 3-2 Power supply requirements for operating the ISCOM S5600-EI series switch

Parameter	Description
Power supply	AC power <ul style="list-style-type: none"> • Rated voltage: 220 VAC • Voltage range: 100–240 VAC DC power <ul style="list-style-type: none"> • Rated voltage: -48 VDC • Voltage range: -36 to -72 VDC
Maximum power consumption	<ul style="list-style-type: none"> • ISCOM S5600-52C-EI-AC/S: 51 W • ISCOM S5600-52C-EI-AC/D: 56 W • ISCOM S5600-52C-EI-DC/S: 51 W • ISCOM S5600-52C-EI-DC/D: 56 W • ISCOM S5600-52C-EI-AC_DC: 56 W • ISCOM S5600-28C-EI-24F-AC/S: 59 W • ISCOM S5600-28C-EI-24F-AC/D: 63 W • ISCOM S5600-28C-EI-24F-DC/S: 59 W • ISCOM S5600-28C-EI-24F-DC/D: 63 W • ISCOM S5600-28C-EI-24F-AC_DC: 63 W • ISCOM S5600-52C-EI-48F-AC/S: 86 W • ISCOM S5600-52C-EI-48F-AC/D: 90 W • ISCOM S5600-52C-EI-48F-DC/S: 86 W • ISCOM S5600-52C-EI-48F-DC/D: 90 W • ISCOM S5600-52C-EI-48F-AC_DC: 90 W

Grounding conditions

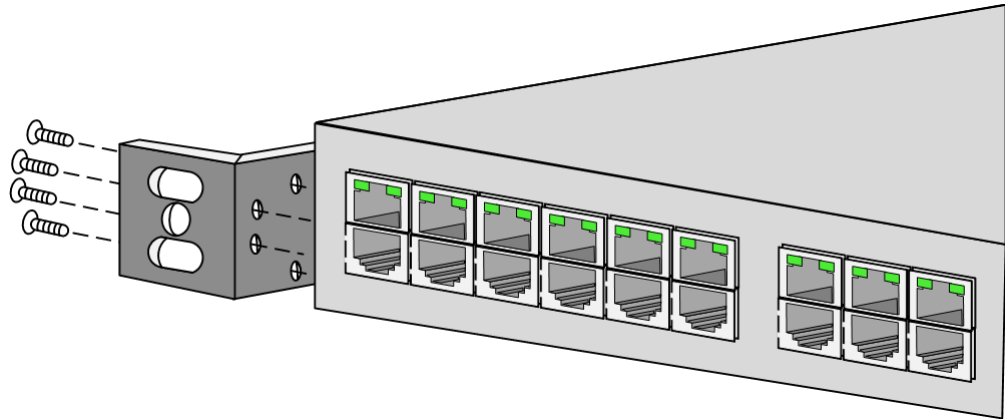
The ISCOM S5600-EI series switch adopts common earthing mode with the ground resistance not greater than 1 Ω. Well grounding is an important guarantee for lightning protection and anti-interference.

3.1.2 Installing device

The ISCOM S5600-EI supports being installed in the rack, with steps as below:

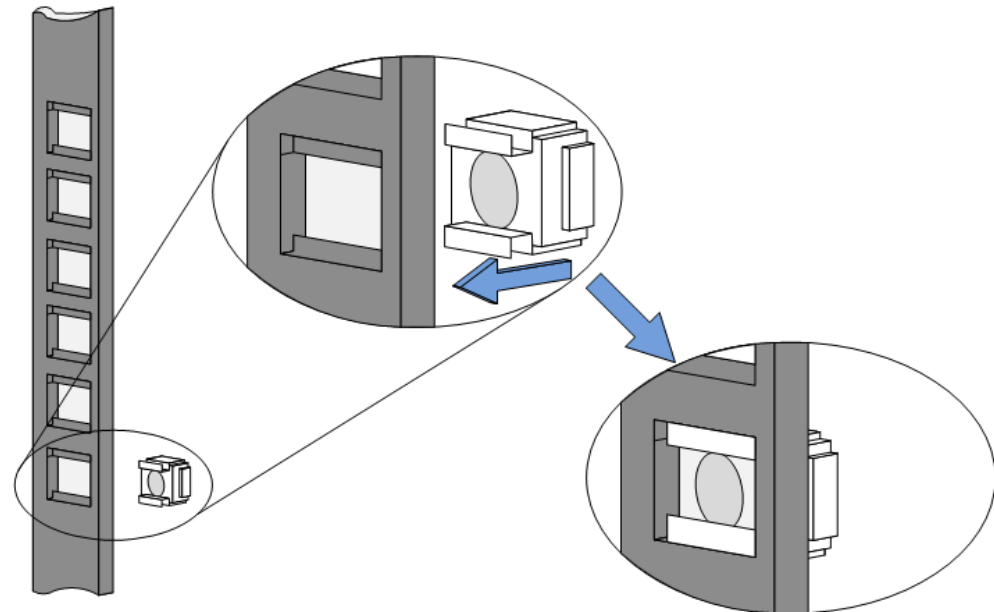
- Step 1 Ensure that the rack is stable.
- Step 2 Install two brackets on the two sides of the ISCOM S5600-EI series switch respectively, and fix them with screws, as shown in Figure 3-1.

Figure 3-1 Installing brackets



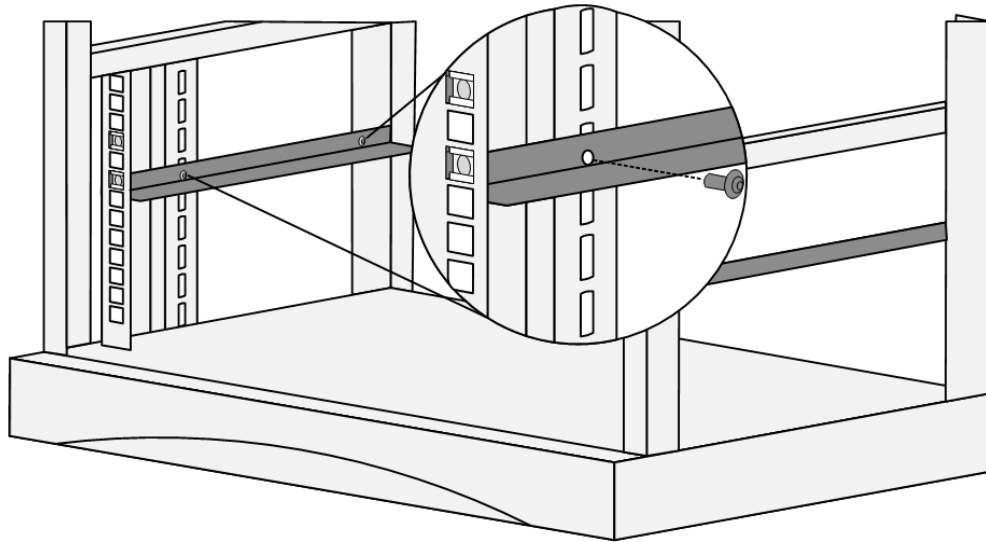
Step 3 Install floating nuts on the rack, as shown in Figure 3-2.

Figure 3-2 Installing floating nuts



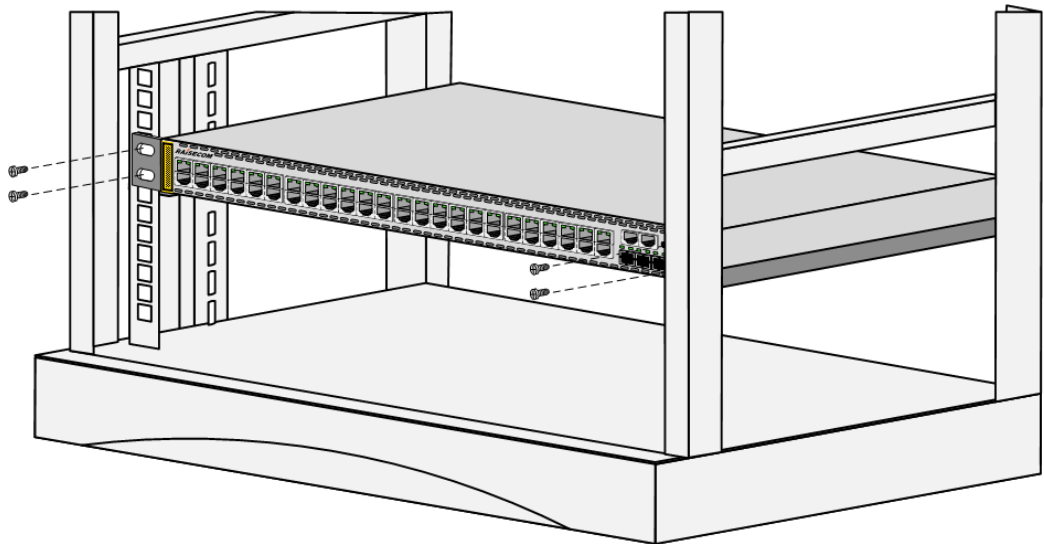
Step 4 Install guide rails in the rack, as shown in Figure 3-3.

Figure 3-3 Installing guide rails



Step 5 Use screws to fix two brackets to the guide rail, and install the ISCOM S5600-EI horizontally on the rack, as shown in Figure 3-4.

Figure 3-4 Installing device horizontally on rack



 **Caution**

Do not lay heavy objects or covering objects on the ISCOM S5600-EI series switch.

3.1.3 Connecting cables

Connecting fiber

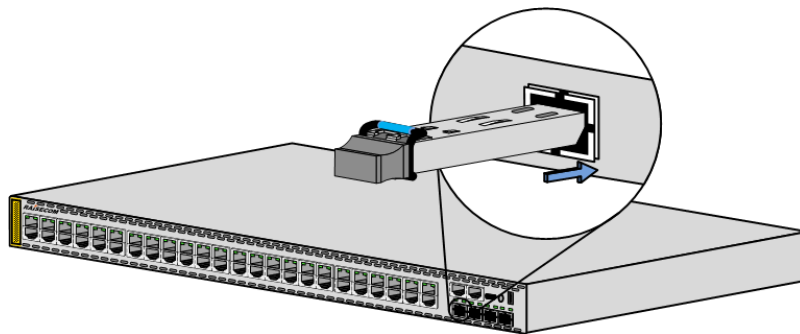


There is invisible laser which harms eyes inside the ISCOM S5600-EI series switch. Do not directly look into the optical interface, fiber connector, or breakage of fiber during installation.

Connect fiber as below:

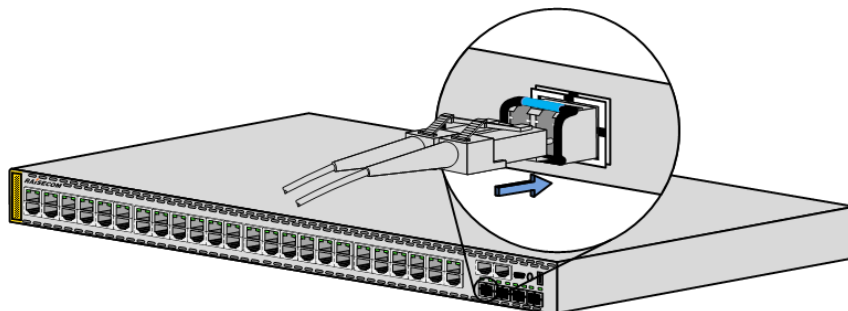
- Step 1 Remove the dustproof cover from the SFP optical interface and SFP optical module, and insert the SFP optical module into the SFP optical interface on the ISCOM S5600-EI series switch, as shown in Figure 3-5.

Figure 3-5 Inserting SFP optical module



- Step 2 Remove the dustproof cover from the LC/PC fiber, align the fiber with the SFP optical interface, and insert the fiber slightly into the SFP optical interface, as shown in Figure 3-6.

Figure 3-6 Connecting fiber



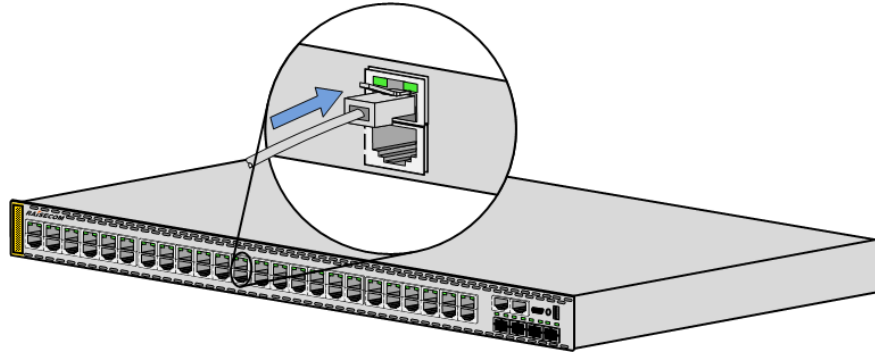
When the optical interface is idle, cover it with the dustproof cover to prevent dust and dirt which may cause the ISCOM S5600-EI series switch to work improperly.

Connecting Ethernet cable

Connect the Ethernet cable as below:

- Step 1 Choose a proper length for the Ethernet cable according to cabling path, and make an Ethernet cable accordingly.
- Step 2 Insert the RJ45 connector of the Ethernet cable into the Ethernet interface of the ISCOM S5600-EI series switch, and insert the other RJ45 connector of the Ethernet cable into the Ethernet interface of the peer device, as shown in Figure 3-7.

Figure 3-7 Connecting Ethernet cable



Connecting ground cable



Connecting the ground cable properly is an important guarantee for lightning protection, shock proof, and anti-interference. When installing and using the device, ensure that the ground cable is properly connected; otherwise, personnel injury or device damage may occur.

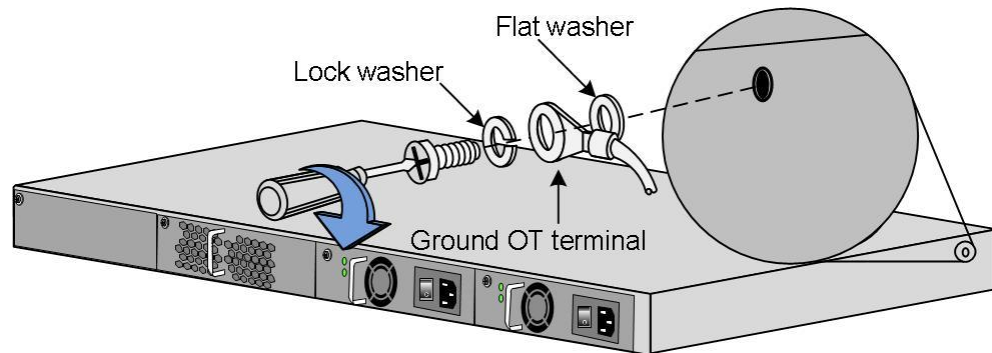


The ISCOM S5600-EI can be grounded through two locations on itself. One is one the bracket while the other is at the side of the chassis. The following installation takes grounding the ISCOM S5600-EI from the side for example.

Connect the ground cable as below:

- Step 1 Unscrew the ground terminal counterclockwise, and remove the screws and washers.
- Step 2 Put the flat washer, ground OT terminal, and lock washer over the screw according to the figure below.
- Step 3 Re-install the screw to the ground terminal, and tighten the screws clockwise, as shown in Figure 3-8.

Figure 3-8 Connecting ground cable

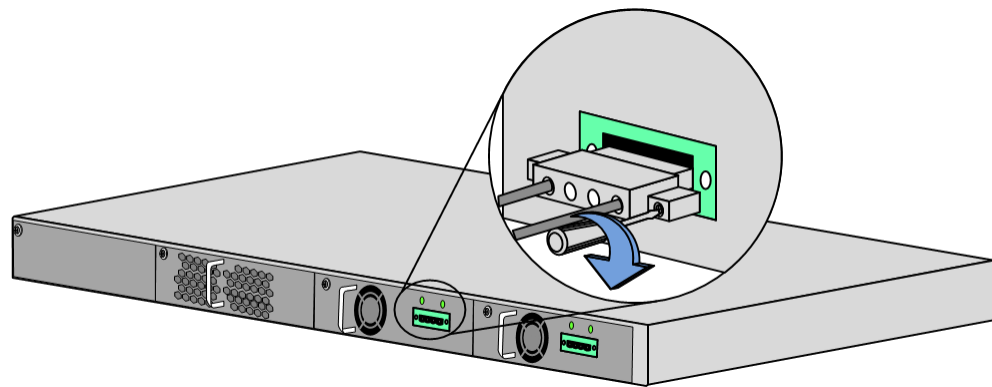


Connecting DC power cable

Install the DC power cable as below:

- Step 1 Ensure that the ISCOM S5600-EI series switch is well grounded.
- Step 2 Full insert the 3-pin Phoenix connector to the DC power interface on the front panel.
- Step 3 Insert one end of the DC power stripped cable into the Phoenix connector and tighten the screw on both sides of the Phoenix connector, as shown in Figure 3-9.
- Step 4 Connect the other end of the DC power cable to the power sourcing equipment in the equipment room.

Figure 3-9 Connecting DC power cable

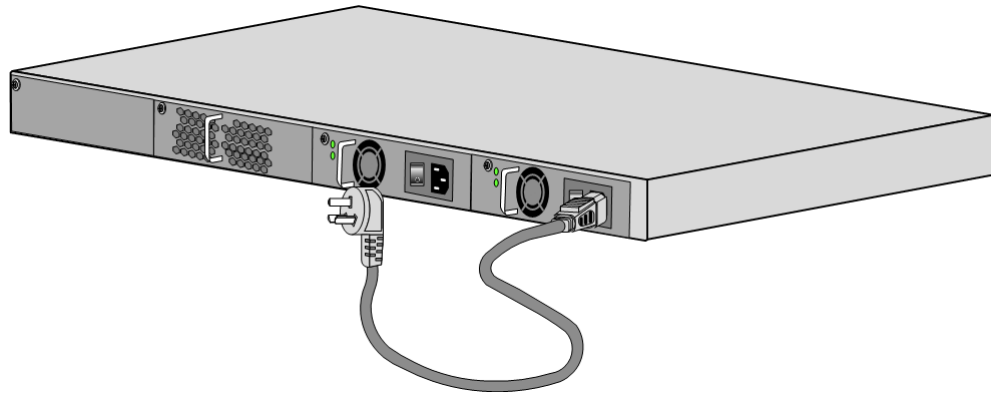


Connecting AC power cable

Install the AC power cable as below:

- Step 1 Ensure that the ISCOM S5600-EI series switch is well grounded. Insert the C13 connector of the AC power cable into the AC power interface on the rear panel tightly in case it falls off.
- Step 2 Insert the other end of the AC power cable into the AC power socket of the power sourcing equipment, as shown in Figure 3-10.

Figure 3-10 Connecting AC power cable

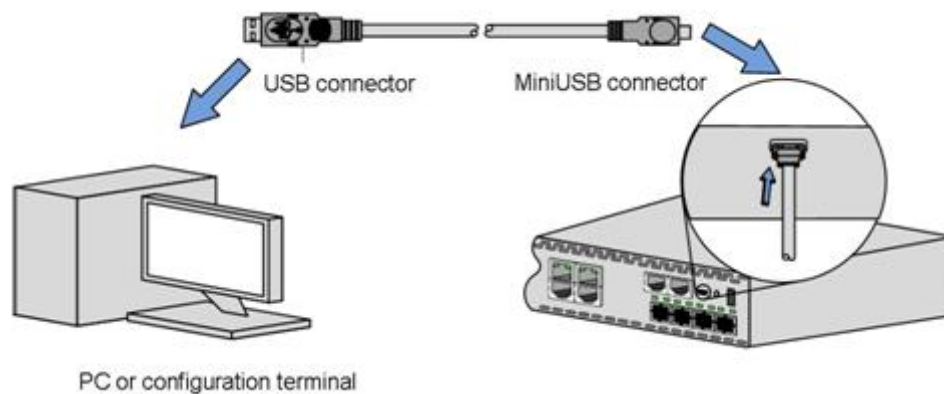


Connecting MiniUSB Console cable

Connect the Console (USB) cable as below:

- Step 1 Insert the MiniUSB end of the serial cable into the Console interface on the ISCOM S5600-EI.
- Step 2 Insert the other end of the serial cable into the USB interface of the PC (configuration terminal), as shown in Figure 3-11.

Figure 3-11 Connecting serial cable

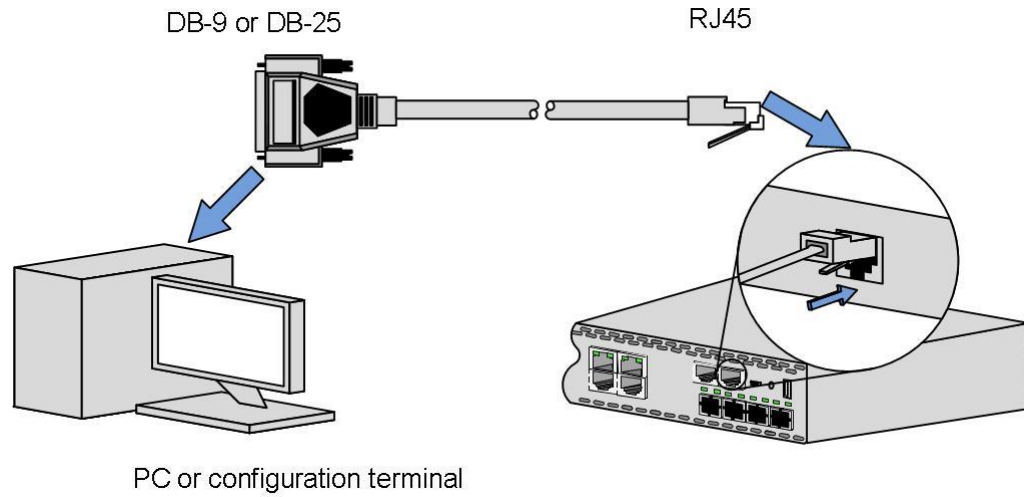


Connecting RJ45 Console cable

Connect the Console (RJ45) cable as below:

- Step 1 Insert the RJ45 connector of the Console cable into the Console interface on the ISCOM S5600-EI.
- Step 2 Insert the other end of the Console cable into the RS-232 serial interface on a PC (or configuration terminal), as shown in Figure 3-12.

Figure 3-12 Connecting RJ45 Console cable



3.2 Installing software

The ISCOM S5600-EI series switch is installed with all necessary software before delivery so that it can be powered on immediately for use after hardware installation is complete.

For upgrading software of the ISCOM S5600-EI series switch, see *ISCOM S5600-EI (A) Series Configuration Guide*. For installing NView NNM software, see *NView NNM Operation Guide*.

4 Technical specifications

This chapter describes overall parameters, system parameters, card parameters, and technical specifications, including the following sections:

- Overall parameters
- Laser safety class
- Reliability specifications
- Safety standards
- Environmental requirements
- Standards and protocols

4.1 Overall parameters

Table 4-1 lists overall parameters of the ISCOM S5600-EI series switch.

Table 4-1 Overall parameters

Parameter	Description
Dimensions (mm)	444 (Width) × 420 (Depth) × 44.4 (Height)
Dimensions of subcards (mm)	128.8 (Width) × 39.8 (Height) × 175.3 (Depth)
Overall maximum power consumption (W) (excluding subcards)	<ul style="list-style-type: none"> • ISCOM S5600-52C-EI-AC/S: 51 • ISCOM S5600-52C-EI-AC/D: 56 • ISCOM S5600-52C-EI-DC/S: 51 • ISCOM S5600-52C-EI-DC/D: 56 • ISCOM S5600-52C-EI-AC_DC: 56 • ISCOM S5600-28C-EI-24F-AC/S: 59 • ISCOM S5600-28C-EI-24F-AC/D: 63 • ISCOM S5600-28C-EI-24F-DC/S: 59 • ISCOM S5600-28C-EI-24F-DC/D: 63 • ISCOM S5600-28C-EI-24F-AC_DC: 63 • ISCOM S5600-52C-EI-48F-AC/S: 86 • ISCOM S5600-52C-EI-48F-AC/D: 90 • ISCOM S5600-52C-EI-48F-DC/S: 86 • ISCOM S5600-52C-EI-48F-DC/D: 90 • ISCOM S5600-52C-EI-48F-AC_DC: 90

Parameter		Description
Power consumption of subcards (W)		<ul style="list-style-type: none"> • ESW-SUB-2Q: 14 • ESW-SUB-8GF: 8
Maximum weight of the entire device (kg)		<ul style="list-style-type: none"> • ISCOM S5600-52C-EI-AC/S: 6.4 • ISCOM S5600-52C-EI-AC/D: 7.2 • ISCOM S5600-52C-EI-DC/S: 6.4 • ISCOM S5600-52C-EI-DC/D: 7.2 • ISCOM S5600-52C-EI-AC_DC: 7.2 • ISCOM S5600-28C-EI-24F-AC/S: 6.2 • ISCOM S5600-28C-EI-24F-AC/D: 7 • ISCOM S5600-28C-EI-24F-DC/S: 6.2 • ISCOM S5600-28C-EI-24F-DC/D: 7 • ISCOM S5600-28C-EI-24F-AC_DC: 7 • ISCOM S5600-52C-EI-48F-AC/S: 6.3 • ISCOM S5600-52C-EI-48F-AC/D: 7.1 • ISCOM S5600-52C-EI-48F-DC/S: 6.3 • ISCOM S5600-52C-EI-48F-DC/D: 7.1 • ISCOM S5600-52C-EI-48F-AC_DC: 7.1
Operating temperature (°C)		0–45
Operating humidity		5%–95% RH, non-condensing
AC power	Rated voltage (V)	220
	Voltage range (V)	100–240 (50/60Hz)
DC power	Rated voltage (V)	-48
	Voltage range (V)	-36 to -72
Lightning protection level	AC power (kV)	<ul style="list-style-type: none"> • Differential mode: 6 • Common mode: 6
	DC power (kV)	<ul style="list-style-type: none"> • Differential mode: 6 • Common mode: 6
	Ethernet electrical interface (kV)	Common mode: 6

4.2 Laser safety class

According to the Tx power of Laser, the ISCOM S5600-EI series switch laser is Class 1 in safety class.

In Class 1, the maximum Tx power on the optical interface is smaller than 10 dBm (10 mW).



Warning

The laser inside the fiber may hurt your eyes. Do not look into the laser beam through the interface directly during installation and maintenance.

4.3 Reliability specifications

Table 4-2 lists reliability specifications of the ISCOM S5600-EI series switch.

Table 4-2 Reliability specifications

Parameter	Description
System availability	99.999% The annual failure time for the ISCOM S5600-EI series switch should be no longer than 5 minutes.
Annually system mean repair rate	< 1.5%
MTTR	< 2 hours

4.4 Safety standards

The ISCOM S5600-EI series switch complies with the following safety standards:

- EN 60950
- UL 60950

4.5 Environmental requirements

The ISCOM S5600-EI series switch complies with the following environmental requirements:

- NEBS GR-63-CORE: Network Equipment-Building System (NEBS) Requirements: Physical Protection
- European Telecommunication Standards Institute (ETSI) EN 300 019

4.5.1 Storage environment

Atmosphere environment

Table 4-3 lists environment requirements for the ISCOM S5600-EI series switch during storage.

Table 4-3 Environment requirements during storage

Parameter	Description
Air pressure (kPa)	86–106
Temperature (°C)	-25 to 60
Relative humidity	5%–95% RH
Solar radiation (W/s ²)	≤ 1120

Parameter	Description
Heat radiation (W/s ³)	≤ 600
Wind speed (m/s)	≤ 20

Waterproof requirement

Requirements on the storage of customer devices: put them indoor.

Keep the ISCOM S5600-EI series switch indoor with the following requirements:

- No ponding in the room
- No water dropping above
- Away from any water leakage area, such as the fire-fighting equipment or central heating facility

If you put the ISCOM S5600-EI series switch outdoor, ensure the following four prerequisites:

- The package box is intact.
- Rainproof measures are taken so that rain will not leak into the package box.
- No ponding is around the package box.
- The package box is not directly exposed to the sun.

Biotic environment

Keep the ISCOM S5600-EI series switch away from:

- Microorganism, such as fungus and mould
- Rodent animals, such as rats

Air environment

Ensure that the ISCOM S5600-EI series switch is put in an environment without explosive, conductive, magnetic, and corrosive dust.

Table 4-4 lists concentration requirements on mechanical active substance.

Table 4-4 Concentration requirements on mechanical active substance

Mechanical active substance	Content
Suspended dust (mg/m ³)	≤ 5.00
Degradable dust (mg/m ² h)	≤ 20.0
Gravel (mg/m ³)	≤ 300

Table 4-5 lists concentration requirements on chemical active substance.

Table 4-5 Concentration requirements on chemical active substance

Chemical active substance	Content
SO ₂ (mg/m ³)	≤ 0.30
H ₂ S (mg/m ³)	≤ 0.10
NO ₂ (mg/m ³)	≤ 0.50
NH ₃ (mg/m ³)	≤ 1.00
Cl ₂ (mg/m ³)	≤ 0.10
HCl (mg/m ³)	≤ 0.10
HF (mg/m ³)	≤ 0.01
O ₃ (mg/m ³)	≤ 0.05

4.5.2 Transport environment

Atmosphere environment

Table 4-6 lists atmosphere requirements for the ISCOM S5600-EI series switch during transportation.

Table 4-6 Atmosphere requirements during transportation

Parameter	Description
Air pressure (kPa)	86–106
Temperature (°C)	-25 to 60
Temperature change rate (°C/min)	≤ 1
Operating humidity	5%–95% RH
Solar radiation (W/s ³)	≤ 1120
Heat radiation (W/s ³)	≤ 600
Wind speed (m/s)	≤ 20

Waterproof environment

When transporting the ISCOM S5600-EI series switch, ensure the following prerequisites:

- The package box is intact.
- Rainproof measures are taken that rain will not leak into the package box.
- No ponding is inside the transport vehicle.

Biotic environment

Keep the ISCOM S5600-EI series switch away from:

- Microorganism, such as fungus and mould
- Rodent animals, such as rats

Air environment

Ensure that the ISCOM S5600-EI series switch is put in an environment without explosive, conductive, magnetic, and corrosive dust.

Table 4-7 lists concentration requirements on mechanical active substance.

Table 4-7 Concentration requirements on mechanical active substance

Mechanical active substance	Content
Suspended dust (mg/m ³)	No requirement
Degradable dust (mg/m ² h)	≤ 3.0
Gravel (mg/m ³)	≤ 100

Table 4-8 lists concentration requirements on chemical active substance.

Table 4-8 Concentration requirements on chemical active substance

Chemical active substance	Content
SO ₂ (mg/m ³)	≤ 0.30
H ₂ S (mg/m ³)	≤ 0.10
NO ₂ (mg/m ³)	≤ 0.50
NH ₃ (mg/m ³)	≤ 1.00
Cl ₂ (mg/m ³)	≤ 0.10
HCl (mg/m ³)	≤ 0.10
HF (mg/m ³)	≤ 0.01
O ₃ (mg/m ³)	≤ 0.05

4.5.3 Operation environment

Atmosphere environment

Table 4-9 lists atmosphere requirements for the ISCOM S5600-EI series switch during operation.



The temperature and humidity referred to are measured 1.5 m above or 0.4 m in front of the ISCOM S5600-EI series switch.

Table 4-9 Atmosphere requirements during operation

Parameter	Description
Air pressure (kPa)	86–106
Temperature (°C)	0–45
Relative humidity	5%–95% (non-condensing)
Temperature change rate (°C/min)	≤ 0.5
Solar radiation (W/s ³)	≤ 700
Heat radiation (W/s ³)	≤ 600
Wind speed (m/s)	≤ 5

Biotic environment

Keep the ISCOM S5600-EI series switch away from:

- Microorganism, such as fungus and mould
- Rodent animals, such as rats

Air environment

Ensure that the ISCOM S5600-EI series switch is put in an environment without explosive, conductive, magnetic, and corrosive dust.

Table 4-10 lists concentration requirements on mechanical active substance.

Table 4-10 Concentration requirements on mechanical active substance

Mechanical active substance	Content
Dust particles (particle/ m ³)	≤ 3×10 ⁵
Suspended dust (mg/m ³)	≤ 0.2
Degradable dust (mg/m ²h)	≤ 15
Gravel (mg/m ³)	≤ 100

Table 4-11 lists concentration requirements on chemical active substance.

Table 4-11 Concentration requirements on chemical active substance

Chemical active substance	Content
SO ₂ (mg/m ³)	≤ 0.30
H ₂ S (mg/m ³)	≤ 0.10
NH ₃ (mg/m ³)	≤ 3.00
Cl ₂ (mg/m ³)	≤ 0.10
HCl (mg/m ³)	≤ 0.10
HF (mg/m ³)	≤ 0.01
O ₃ (mg/m ³)	≤ 0.05

4.6 Standards and protocols

The ISCOM S5600-EI series switch complies with the following standards and protocols:

- IEEE802.1AB Station and Media Access Control Connectivity Discovery
- IEEE 802.1D-2004 Part 3: Media Access Control (MAC) Bridges
- IEEE 802.1Q-2005 - Standard for Local and Metropolitan Area Networks - Virtual Bridged Local Area Networks
- IEEE 802.1d
- IEEE 802.1s-2002 - Amendment to 802.1Q Virtual Bridged Local Area Networks: Multiple Spanning Trees
- IEEE 802.1w-Rapid Reconfiguration of Spanning Tree
- IEEE 802.3-2005 Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications
- IEEE 802.1ag: Virtual Bridged Local Area Networks Amendment 5: Connectivity Fault Management
- IEEE 802.1ad Provider Bridges
- IEEE 802.1x -2004 - Port Based Network Access Control
- IEEE802.3ab 1000BASE-T
- IEEE802.3ad Link Aggregation
- IEEE802.3ae-2002, 10 Gb/s Ethernet
- IEEE802.3z Gigabit Ethernet
- IEEE802.3ah Ethernet in the First Mile
- MEF Technical Specification MEF 6.1 Ethernet Services Definitions - Phase 2
- MEF Technical Specification, MEF 9 Abstract Test Suite for Ethernet Services at the UNI
- MEF Technical Specification, MEF 10.2 Ethernet Services Attributes - Phase 2
- MEF Technical Specification, MEF 10.2.1 Performance Attributes Amendment to MEF 10.2

- MEF Technical Specification, MEF 11 User Network Interface (UNI) Requirements and Framework
- MEF Technical Specification, MEF 12.1 Carrier Ethernet Network Architecture Framework Part 2: Ethernet Services Layer - Basic Elements
- MEF Technical Specification, MEF 13 User Network Interface (UNI) Type 1 Implementation Agreement
- MEF Technical Specification, MEF 14 Abstract Test Suite for Traffic Management Phase 1
- MEF Technical Specification, MEF 16 Ethernet Local Management Interface
- MEF Technical Specification, MEF 17 Service OAM Requirements & Framework
- MEF Technical Specification, MEF 19 Abstract Test Suite for UNI Type 1
- MEF Technical Specification, MEF 20 User Network Interface (UNI) Type 2 Implementation Agreement
- MEF Technical Specification, MEF 21 Abstract Test Suite for UNI Type 2 Part 1 Link OAM
- MEF Technical Specification, MEF 23.1 Class of Service Phase 2 Implementation Agreement
- MEF Technical Specification, MEF 24 Abstract Test Suite for UNI Type 2 Part 2 E-LMI
- MEF Technical Specification, MEF 25 Abstract Test Suite for UNI Type 2 Part 3 Service OAM
- MEF Technical Specification, MEF 26.1 External Network Network Interface (ENNI)–Phase 2
- MEF Technical Specification, MEF30.1 Service OAM Fault Management Implementation Agreement Phase 2
- MEF Technical Specification, MEF33 Ethernet Access Services Definition
- MEF Technical Specification, MEF34 ATS for Ethernet Access Services
- MEF Technical Specification, MEF35 Service OAM Performance Monitoring Implementation Agreement
- MEF Technical Specification, MEF36 Service OAM SNMP MIB for Performance Monitoring
- MEF Technical Specification, MEF37 Abstract Test Suite for ENNI
- ITU-T Y.1541 Network Performance Objectives For IP-Based Services
- ITU-T Y.1731 OAM Functions and Mechanisms for Ethernet based networks
- ITU-T G.8031 Ethernet linear protection switching
- ITU-T G.8032 Ethernet ring protection switching
- RFC1349 Type of Service in the Internet Protocol Suite
- RFC2131 Dynamic Host Configuration Protocol
- RFC2132 DHCP Options and BOOTP Vendor Extensions
- RFC2819 Remote Network Monitoring Management Information Base
- RFC2863 The Interfaces Group MIB
- RFC2474 Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers
- RFC2475 An Architecture for Differentiated Services
- RFC2678
- RFC2598 An Expedited Forwarding PHB

- RFC2698 A Two Rate Three Color Marker
- RFC4115 A Differentiated Service Two-Rate, Three-Color Marker with Efficient Handling of in-Profile Traffic
- RFC4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual LAN Extensions
- SFF-8472

5 Appendix

The appendix lists cables, SFP modules, terms, acronyms, and abbreviations, including the following sections:

- Cables
- SFP modules
- Terms
- Acronyms and abbreviations

5.1 Cables

When connecting the ISCOM S5600-EI series switch, you need to use the following cables:

- Fiber
- Ethernet cable
- Ground cable
- DC power cable
- AC power cable
- RJ45 Console cable
- MiniUSB Console cable

5.1.1 Fiber

Introduction

The ISCOM S5600-EI series switch supports Single-mode Fiber (SMF) and Multi-mode Fiber (MMF).

Table 5-1 lists fiber connectors available for the ISCOM S5600-EI series switch.

Table 5-1 Fiber connectors

Local connector	Remote connector	Fiber
LC/PC	LC/PC	2-mm SMF

Local connector	Remote connector	Fiber
	FC/PC	2-mm MMF
		2-mm SMF
		2-mm MMF
	SC/PC	2-mm SMF
		2-mm MMF
MPO (QSFP+ optical module)	MPO	2-mm SMF
		2-mm MMF
	LC/PC	2-mm MMF
		2-mm MMF
	FC/PC	2-mm SMF
		2-mm MMF
	SC/PC	2-mm SMF
		2-mm MMF



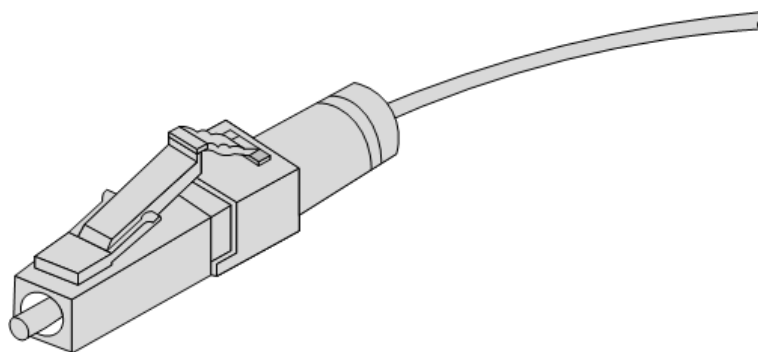
Note

- Choose the fiber connector properly as required on site.
- Choose a fiber connector which matches the optical interface. Otherwise, more loss will be caused to the fiber, service transmission will be deteriorated, and even the fiber connector and interface may be damaged.
- All QSFP+ optical interfaces can be split into four interfaces. One 40 Gbit/s QSFP+ interface can be connected to four 10 Gbit/s SFP+ interfaces. Ensure that the specifications of the QSFP+ module matches its connected SFP+ modules and use the dedicated MMF.

Appearance

Figure 5-1 shows the LC/PC fiber connector.

Figure 5-1 LC/PC fiber connector

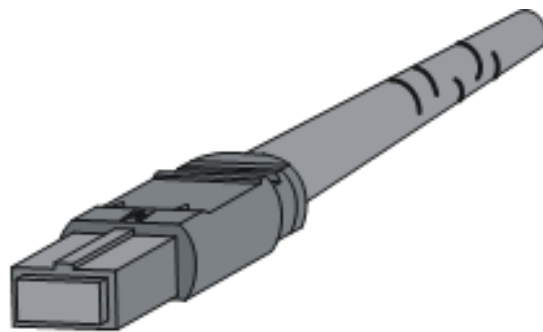


When connecting or removing the LC/PC optical connector, align the connector with the optical interface, and do not rotate the fiber. Operate the fiber as below:

- Align the head of the fiber jumper with the optical interface and insert the optical fiber into the interface gently.
- To remove the fiber, press the latch on the connector, press the fiber head inwards slightly, and pull the fiber out.

Figure 5-2 shows the appearance of the MPO fiber connector used by the ISCOM S5600 series switch.

Figure 5-2 MPO fiber connector



The QSFP+ optical module can be equipped with a plastic handle or a metal handle. The two types of handle are similar in function. Operate the QSFP+ optical module as below:

- For the OSFP+ optical module with a plastic handle,
 - To install the optical module, directly insert it into the interface.
 - To remove it, pinch the plastic handle and pull the optical module out after pulling the fiber out. The plastic handle is for unlocking the optical module from the device.
- For the OSFP+ optical module with a metal handle,
 - To install the optical module, make the metal handle upright before inserting it into the interface.
 - To remove it, spin the metal handle to the horizontal level before pulling it out. Spinning the metal handle to the horizontal level is for unlocking the optical module from the device.

Wiring

Table 5-2 lists wiring of the fiber.

Table 5-2 Wiring of fiber

Wiring	Optical interface on local device	Direction of optical signals	Optical interface on peer device
Single-fiber wiring	Optical interface	<->	Optical interface
Dual-fiber wiring	Tx optical interface	->	Rx optical interface
	Rx optical interface	<-	Tx optical interface

5.1.2 Ethernet cable

Introduction

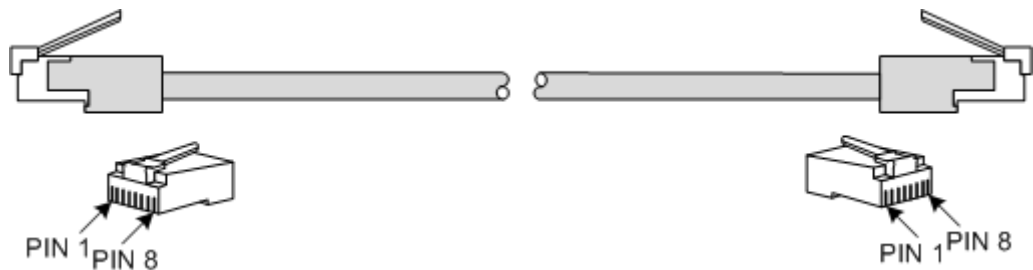
The Ethernet cable connects the Ethernet electrical interface and SFP electrical interface on the ISCOM S5600-EI series switch.

The Ethernet electrical interfaces and SFP electrical interfaces on the ISCOM S5600-EI series switch are adaptive to straight-through cable mode and crossover cable mode.

Appearance

Figure 5-3 shows the Ethernet cable.

Figure 5-3 Ethernet cable



Wiring

The Ethernet cables are divided into two types:

- Straight-through cable: used to connect devices of different types, such as between a PC and a switch, between a switch and a router
- Crossover cable: used to connect devices of the same type, such as between PCs, between switches, between routers, between a PC and a router (they are of the same type)

Table 5-3 lists wiring of EIA/TIA 568A and EIA/TIA 568B standards.

Table 5-3 Wiring of EIA/TIA 568A and EIA/TIA 568B standards

Connector (RJ45)	EIA/TIA 568A	EIA/TIA 568B
PIN 1	White/Green	White/Orange
PIN 2	Green	Orange
PIN 3	White/Orange	White/Green
PIN 4	Blue	Blue
PIN 5	White/Blue	White/Blue
PIN 6	Orange	Green
PIN 7	White/Brown	White/Brown
PIN 8	Brown	Brown

Both two RJ45 connectors of the 10/100/100 Mbit/s straight-through cable follow EIA/TIA568B standard wiring.

Figure 5-4 shows wiring of the 10/100/1000 Mbit/s straight-through cable.

Figure 5-4 Wiring of 10/100/1000 Mbit/s straight-through cable

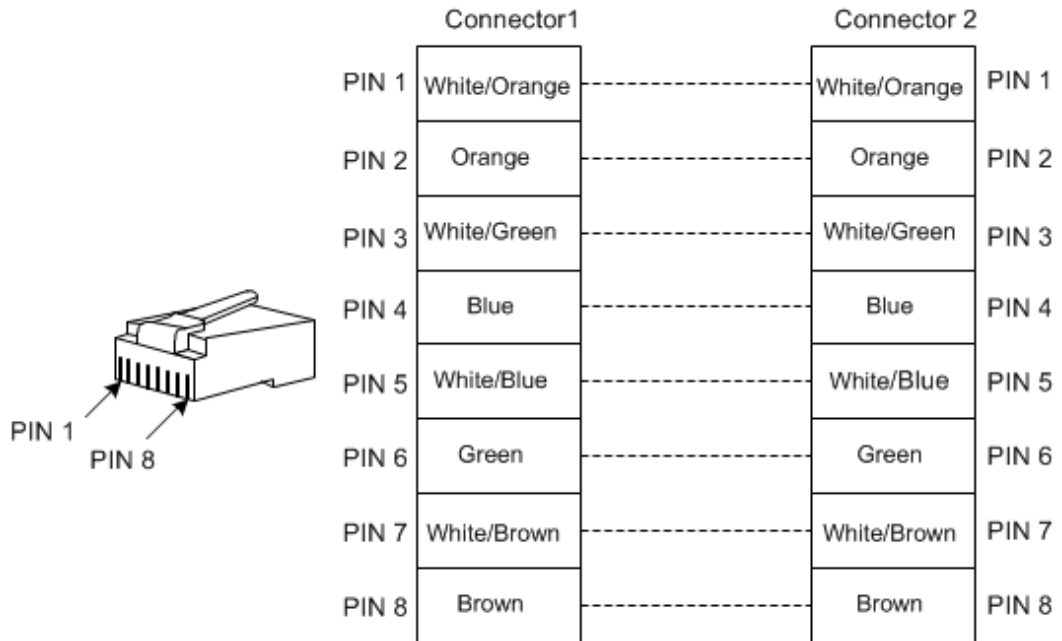


Figure 5-5 shows wiring of the 100 Mbit/s crossover cable.

Figure 5-5 Wiring of 100 Mbit/s crossover cable

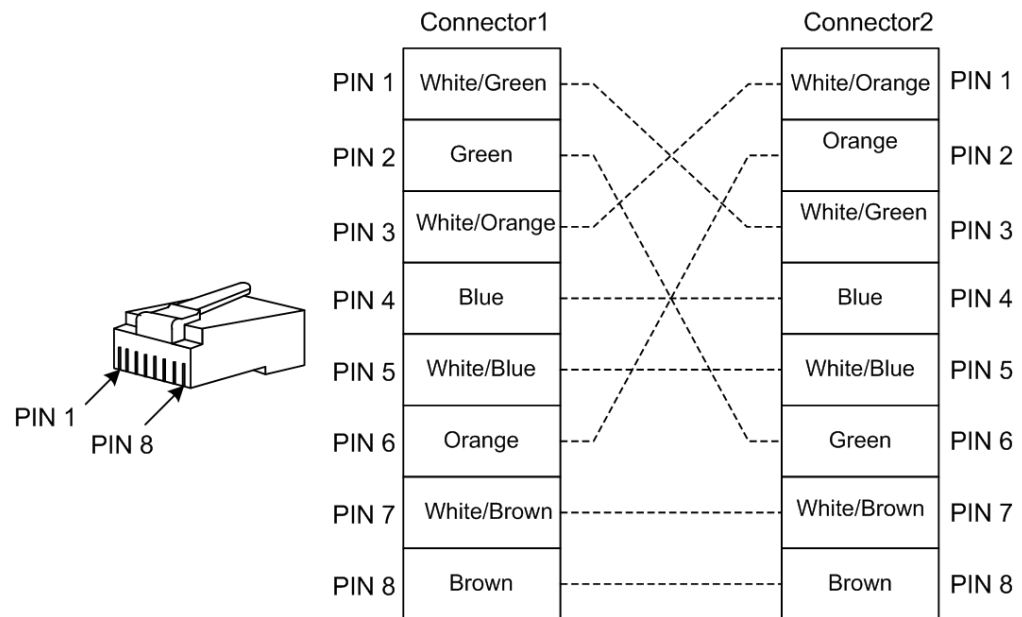
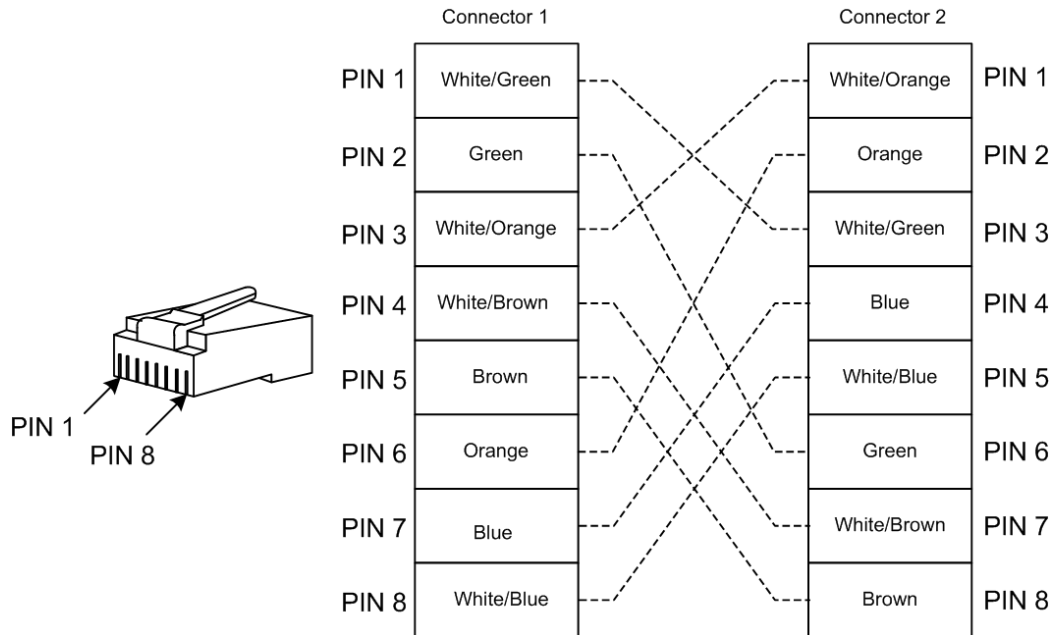


Figure 5-6 shows wiring of 1000 Mbit/s crossover cable.

Figure 5-6 Wiring of 1000 Mbit/s crossover cable



Technical specifications

Table 5-4 lists technical specifications of the Ethernet cable.

Table 5-4 Technical specifications of Ethernet cable

Parameter	Description
Name	CBL-ETH-RJ45/RJ45-D
Connector	RJ45 crystal header
Model	Cat 5 or better UTP (UTP-5 or UTP-5e) or Cat 5 STP cable
Number of cores	8
Length	The letter D is the length, which can be customized. For example, if the customer requires a 2-meter cable, you can name it CBL-ETH-RJ45/RJ45-2m.

5.1.3 Ground cable

Introduction

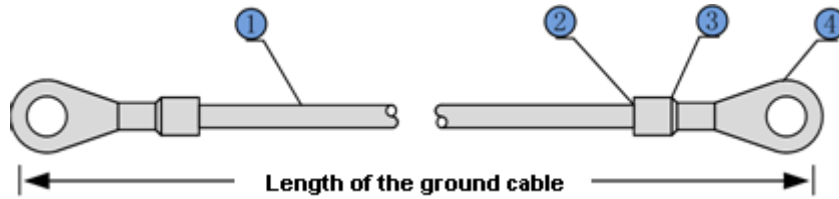
The ground cable is used to connect the ISCOM S5600-EI series switch to the ground.

Appearance

The ground cable is composed of ground terminals and the coaxial cable. The ground terminal is usually an OT non-insulated terminal. The coaxial cable is a yellow/green copper soft

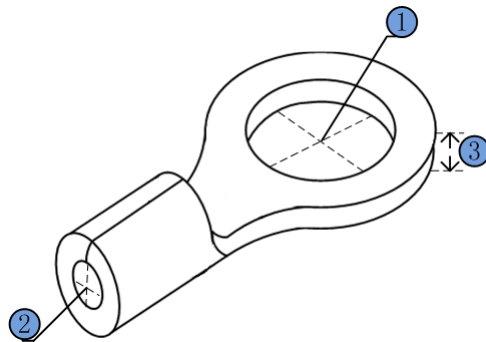
flame-retardant conducting wire. Figure 5-7 and Figure 5-8 show the ground cable and OT terminal.

Figure 5-7 Ground cable



1	Conducting wire	2	Stripped end (connected to the OT terminal)
3	Insulating sheath	4	OT terminal

Figure 5-8 OT terminal



1	Inner diameter of soldering lug	2	Inner diameter of sheath	3	Thickness of soldering terminal
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Technical specifications

Table 5-5 lists technical specifications of the ground cable.

Table 5-5 Technical specifications of ground cable

Parameter	Description
Model (recommended)	PIL-ground cable- Φ 4-1m.
Conducting wire	Yellow/Green multi-strand copper-core conducting wire 16 AWG (1.25 mm ²)
Model of OT terminal	Ground round pressed terminal (M4)
Cross-sectional area of the conducting wire	16-15AWG (1.2-1.5 mm ²)

Parameter	Description
Length	1 m



Note

The ground cable cannot be longer than 30 m and should be as short as possible; otherwise, a ground bar should be used.

5.1.4 DC power cable

Introduction

The DC power cable provides the ISCOM S5600-EI series switch with -48 VDC power.

Appearance

Figure 5-9 shows the appearance of the DC power cable.

Figure 5-9 DC power cable



Technical specifications

Table 5-6 lists technical specifications of the DC power cable.

Table 5-6 Technical specifications of DC power cable

Parameter	Description
Name	POL-DC-OT terminal/stripped-16AWG-4m/RoHS
Color	Red (+VIN) and black (-VIN)
Stripped	Stripped end, 5mm tinned
U-type terminal	Soldering lug 22-16KT
Wire gauge of the inner conductor	16 AWG
Cross-sectional area of the inner conductor	2×0.75 mm ²
Cable length	4 m

5.1.5 AC power cable

Introduction

The AC power cable transmits 220 VAC power to the power interface on the ISCOM S5600-EI series switch, and supplies power for the whole device.

The AC power cables of the ISCOM S5600-EI series switch vary with countries or regions, as lists in Table 5-7.

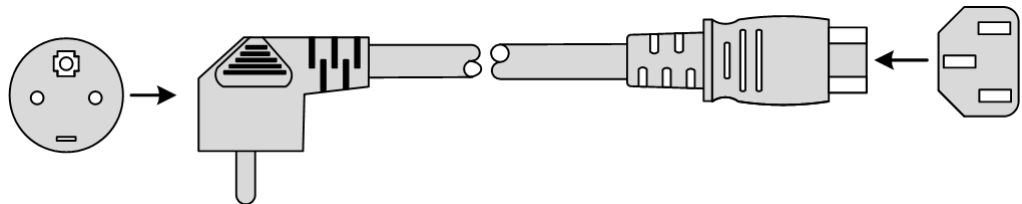
Table 5-7 AC power supply cable options

Regional standard	Cable
Europe	POL-AC-European-3-pin plug/C13 connector-0.75mm ² -1.5m/RoHS
America	POL-AC-American-3-pin plug/C13 connector-18AWG-1.5m/RoHS

Appearance

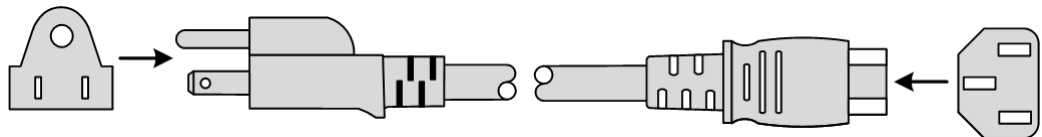
The AC power cable which meets European standard is composed of the European French mode 3-pin plug and C13 connector, as shown in Figure 5-10.

Figure 5-10 European AC power cable



The AC power cable which meets American standard is composed of the American 3-pin plug and C13 connector, as shown in Figure 5-11.

Figure 5-11 American AC power cable



Technical specifications

Table 5-8 lists specifications of the European AC power cable.

Table 5-8 Specifications of European AC power cable

Parameter		Description
Name		POL-AC-European-3-pin plug/C13 connector-0.75mm ² -1.5m/RoHS
Color	Outer	Black (PVC insulation layer)
	Inner	Blue (N), brown (L), and yellow/green stripe (E)
Connector 1		IEC60320-C13 connector
Connector 2		European 3-pin plug
Cross-sectional area of the inner conductor		3×0.75 mm ²
Length		1.5 m

Table 5-9 lists technical specifications of the American AC power cable.

Table 5-9 Technical specifications of American AC power cable

Parameter		Description
Name		POL-AC-American 3-pin plug/C13 connector-18AWG-1.5m/RoHS
Color	Outer	Black (PVC insulation layer)
	Inner	White (N), black (L), and green (E)
Connector 1		IEC60320-C13 connector
Connector 2		American 3-pin plug NEMA5-15
Inner conductor wire gauge		18 AWG
Length		1.5 m

5.1.6 RJ45 Console cable

Introduction

The RJ45 Console cable is used for connecting the ISCOM S5600-EI series switch through the Console interface to the Console through the RS-232 interface, thus implementing data transmission. The console debugs and maintains the device through the Console interface.

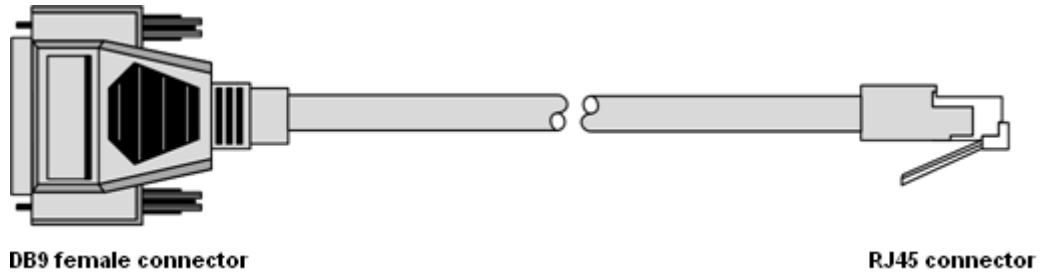
The connectors at the ends of the RJ45 Console cable include the following two types:

- RJ45 connector: connected to the Console interface on the ISCOM S5600-EI series switch
- DB9 female connector: connected to the serial interface on the console

Appearance

Figure 5-12 shows the RJ45 Console cable.

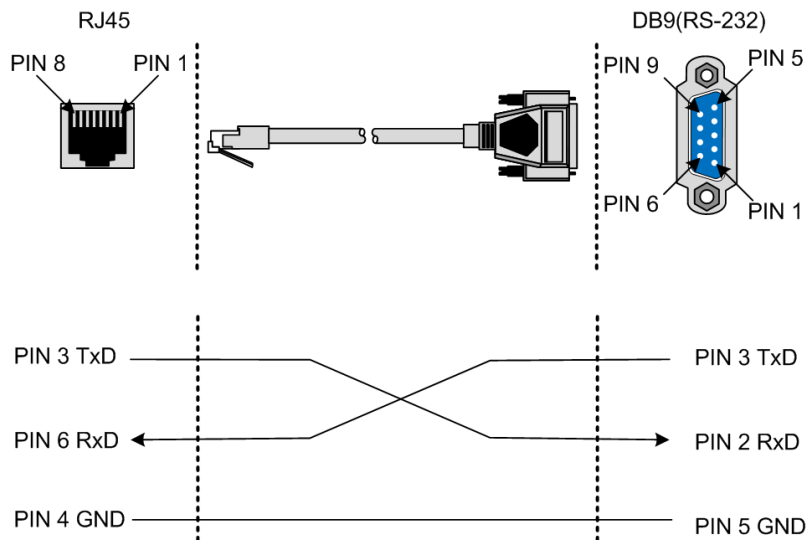
Figure 5-12 RJ45 Console cable



Wiring

Figure 5-13 shows PINs and wiring of the connectors at both ends of the cable.

Figure 5-13 PINs and wiring of the connectors at both ends of the cable



Technical specifications

Table 5-10 lists technical specifications of the RJ45 Console cable.

Table 5-10 Technical specifications of RJ45 Console cable

Parameter	Description
Name	CBL-RS232-DB9F/RJ45-B-2m/RoHS
Connector	RJ45 connector and DB9 female connector
Model	Cat 5 UTP cable
Length	2 m

5.1.7 MiniUSB Console cable

Introduction

The Console cable is used for connecting the Console interface on the device to the USB interface at the maintenance Console, thus implementing data transmission. The maintenance Console debugs and maintains the device through the Console interface.

The connectors at the ends of the Console cable include the following two types:

- MiniUSB: connected to the MiniUSB Console interface on the ISCOM S5600-EI series switch
- USB: connected to the USB interface on the maintenance Console

Appearance

Figure 5-14 shows the appearance of the MiniUSB Console cable.

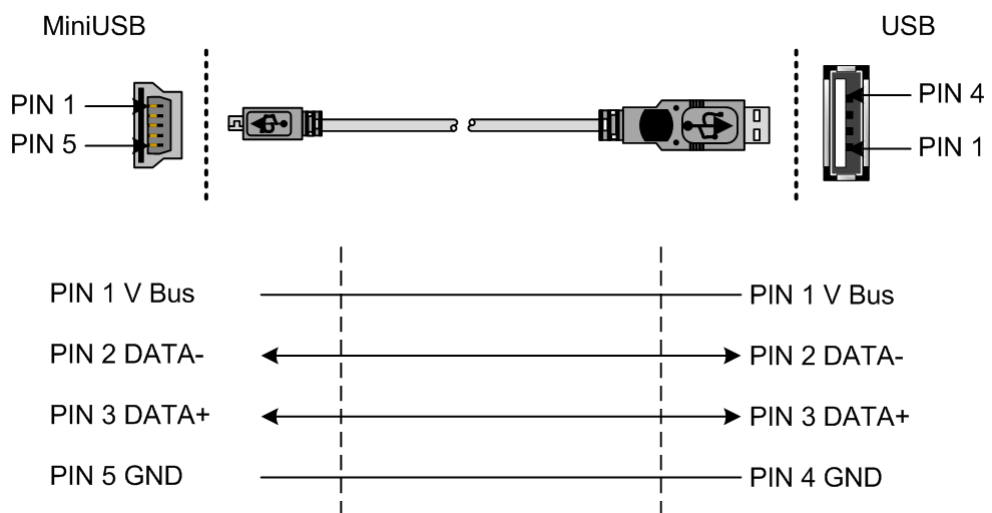
Figure 5-14 Appearance of MiniUSB Console cable



Wiring

Figure 5-15 shows PINs and wiring of the connectors at both ends of the cable.

Figure 5-15 PINs and wiring of the connectors at both ends of the cable



Technical specifications

Table 5-11 lists technical specifications of the USB Console cable.

Table 5-11 Technical specifications of USB Console cable

Parameter	Description
Name	CBL-USB-USB-AM/MINIUSB-BM-2m/RoHS
Connector	USB2.0 AM connector + MiniUSB connector
Model	UL2725
Length	2m

5.2 SFP modules

The ISCOM S5600-EI series switch supports the following SFP modules:

- 100 Mbit/s SFP optical module
- 100 Mbit/s SFP electrical module
- 1000 Mbit/s SFP optical module
- 1000 Mbit/s SFP electrical module
- 10 Gbit/s SFP+ optical module
- 40 Gbit/s QSFP+ optical module

100 Mbit/s SFP optical module

Table 5-12 lists parameters of the 100 Mbit/s SFP optical module.

Table 5-12 Parameters of 100 Mbit/s SFP optical module

Model	Wavelength (nm) (Laser type)	Rx type	Tx optical power (dBm)	Minimum overload point (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Transmission distance (km)
USFP-03/M-D-R/SW	1310 (LED/FP)	PIN	-20 to -10	-10	10	-29	2
USFP-03/S1-D-R/SW	1310 (FP)	PIN	-15 to -8	-8	10	-34	15
USFP-03/S2-D-R/SW	1310 (FP/DFB)	PIN	-5 to 0	-8	8.2	-34	40
USFP-03/S3-D-R/SW	1550 (DFB)	PIN	-5 to 0	-10	10	-34	80

Model	Wavelength (nm) (Laser type)	Rx type	Tx optical power (dBm)	Minimum overload point (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Transmission distance (km)
USFP-03/SS13-D-R/SW	TX1310/RX1 550 (FP)	PIN	-15 to -8	-8	8.2	-28	15
USFP-03/SS15-D-R/SW	TX1550/RX1 310 (FP/DFB)	PIN	-15 to -8	-8	8.2	-28	15
USFP-03/SS23-D-R/SW	TX1310/RX1 550 (FP/DFB)	PIN	-5 to 0	-8	8.2	-32	40
USFP-03/SS25-D-R/SW	TX1550/RX1 310 (DFB)	PIN	-5 to 0	-8	8.2	-32	40
USFP-03/SS34-D-R/SW	TX1490/RX1 550 (DFB)	PIN	-3 to 2	-8	8.2	-32	80
USFP-03/SS35-D-R/SW	TX1550/RX1 490 (DFB)	PIN	-3 to 2	-8	8.2	-32	80

100 Mbit/s SFP electrical module

Table 5-13 lists parameters of the 100 Mbit/s SFP electrical module.

Table 5-13 Parameters of 100 Mbit/s SFP electrical module

Model	Application code	Auto-negotiation	Data interface	LOS alarm	Transmission distance (m)
USFP-FE/AN-R/SW	10/100BASE-TX	Supported	SerDes	Supported	100

1000 Mbit/s SFP optical module

Table 5-14 lists parameters of the 1000 Mbit/s SFP optical module.

Table 5-14 Parameters of 1000 Mbit/s SFP optical module

Model	Wavelength (nm) (laser type)	Rx type	Tx optical power (dBm)	Minimum overload point (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Transmission distance (km)
USFP-Gb/M-D-R/SW	850 (VCSEL)	PIN	-9.5 to -3	0	9	-17	0.55
USFP-Gb/S1-D-R/SW	1310 (FP)	PIN	-10 to -3	-3	9	-21	15
USFP-Gb/LH1-D-R/SW	1310 (DFB)	PIN	-4 to 0	-3	9	-21	40
USFP-Gb/S2-D-R/SW	1550 (DFB)	PIN	-3 to 2	-3	9	-21	40
USFP-Gb/ZX-D-R/SW	1550 (DFB)	PIN	-2 to 3	-3	9	-22	80
USFP-Gb/S3-D-R/SW	1550 (DFB)	APD	-3 to 2	-9	9	-30	80
USFP-Gb/EX-D-R/SW	1550 (DFB)	APD	0-5	-9	9	-30	120
USFP-Gb/SS13-D-R/SW	TX1310/RX1550 (FP)	PIN	-10 to -3	-3	9	-21	15
USFP-Gb/SS15-D-R/SW	TX1550/RX1310 (DFB)	PIN	-10 to -3	-3	9	-21	15
USFP-Gb/SS13-4/SW	TX1310/RX1490 (FP)	PIN	-10 to -3	-3	9	-21	15
USFP-Gb/SS14-3/SW	TX1490/RX1310 (DFB)	PIN	-10 to -3	-3	9	-21	15
USFP-Gb/SS24-D-R/SW	TX1490/RX1550 (DFB)	PIN	-3 to 2	-3	9	-21	40
USFP-Gb/SS25-D-R/SW	TX1550/RX1490 (DFB)	PIN	-3 to 2	-3	9	-21	40

Model	Wavelength (nm) (laser type)	Rx type	Tx optical power (dBm)	Minimum overload point (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Transmission distance (km)
USFP-Gb/SS34-D-R/SW	TX1490/RX1550 (DFB)	APD	-2 to 3	-9	9	-30	80
USFP-Gb/SS35-D-R/SW	TX1550/RX1490 (DFB)	APD	-2 to 3	-9	9	-30	80

1000 Mbit/s SFP electrical module

Table 5-15 lists parameters of the 1000 Mbit/s SFP electrical module.

Table 5-15 Parameters of 1000 Mbit/s SFP electrical module

Model	Application code	Auto-negotiation	Data interface	LOS alarm	Transmission distance (m)
USFP-GE-R/SW	1000BASE-T	Not supported	SerDes	Supported	100

10 Gbit/s SFP+ optical module

Table 5-16 lists parameters of the 10 Gbit/s SFP+ optical module.

Table 5-16 Parameters of 10 Gbit/s SFP+ optical module

Model	Wavelength (nm)	Rx type	Tx optical power (dBm)	Maximum optical power (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Maximum transmission distance (km)
USFP+-192/M/SW	850	PIN	-7.3 to -1.0	-1.0	3.0	-11.1	0.3
USFP+-192/S1/SW	1310	PIN	-8.2 to 0.5	0.5	3.5	-12.6	10

40 Gbit/s QSFP+ optical module

Table 5-17 lists parameters of the 40 Gbit/s QSFP+ optical module.

Table 5-17 Parameters of 40 Gbit/s QSFP+ optical module

Model	Wavelength (nm)	Rx type	Tx optical power (dBm)	Maximum optical power (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Maximum transmission distance (km)
UQSP-40G/S1/SW	1310	PIN	-7.0 to 2.3	1.0	3.5	-12.6	10
UQSP-40G/M3/SW	850	PIN	-7.6 to 2.4	1.0	3.0	-9.9	0.3

5.3 Terms

A

Access Control List (ACL)

A series of ordered rules composed of permit | deny sentences. These rules are based on the source MAC address, destination MAC address, source IP address, destination IP address, interface ID, etc. The device decides to receive or refuse the packets based on these rules.

Auto-negotiation

The interface automatically chooses the rate and duplex mode according to the result of negotiation. The auto-negotiation process is: the interface adapts its rate and duplex mode to the highest performance according to the peer interface, that is, both ends of the link adopt the highest rate and duplex mode they both support after auto-negotiation.

B

Bracket

It is a component at the flank side of the device, used for installing the chassis into the rack.

D

Dynamic ARP Inspection (DAI)

A security feature that can be used to verify the ARP data packets in the network. With DAI, the administrator can intercept, record, and discard ARP packets with invalid MAC address/IP address to prevent common ARP attacks.

F

F
Full duplex In a communication link, both parties can receive and send data concurrently.

H

Half duplex In a communication link, both parties can receive or send data at a time.

L

L
Link Aggregation With link aggregation, multiple physical Ethernet interfaces are combined to form a logical aggregation group. Multiple physical links in one aggregation group are taken as a logical link. Link aggregation helps share traffic among member interfaces in an aggregation group. In addition to effectively improving the reliability on links between devices, link aggregation can help gain greater bandwidth without upgrading hardware.

Link-state tracking Link-state tracking provides an interface linkage scheme, extending the range of link backup. Through monitoring uplinks and synchronizing downlinks, faults of the upstream device can be transferred quickly to the downstream device, and primary/backup switching is triggered. In this way, it avoids traffic loss because the downstream device does not sense faults of the upstream link.

M

Multi-Mode Fiber (MMF) In this fiber, multi-mode optical signals are transmitted.

P

Protection Ground Wire It is generally a yellow-and-green coaxial cable used for connecting the device to the ground.

Q

Quality of Service (QoS) A network security mechanism, used to solve problems of network delay and congestion. When the network is overloaded or congested, QoS can ensure that packets of important services are not delayed or discarded and the network runs high efficiently. Depending on the specific system and service, it may relate to jitter, delay, packet loss ratio, bit error ratio, and signal-to-noise ratio.

R

RS232	It is an Asynchronous Transfer Mode (ATM), which does not contain hand-shaking signals. It can carry on point-to-point communication with RS232 and RS422 of other stations, featuring transparent transmission, with a maximum rate of 19.2 Kbit/s. Generally, the form of RS232 interface is DB9 or DB25.
Remote Authentication Dial In User Service (RADIUS)	RADIUS refers to a protocol used to authenticate and account users in the network. RADIUS works in client/server mode. The RADIUS server is responsible for receiving users' connection requests, authenticating users, and replying configurations required by all clients to provide services for users.
S	
Single-Mode Fiber (SMF)	In this fiber, single-mode optical signals are transmitted.

5.4 Acronyms and abbreviations

A

AC	Alternating Current
ACL	Access Control List
AN	Access Node
APS	Automatic Protection Switching
ARP	Address Resolution Protocol

C

CFM	Connectivity Fault Management
CoS	Class of Service
CPU	Central Processing Unit
CSMA/CD	Carrier Sense Multiple Access/Collision Detection

D

DAI	Dynamic ARP Inspection
DC	Direct Current
DFB	Distributed Feed Back
DHCP	Dynamic Host Configuration Protocol
DiffServ	Differentiated Service

DS	Differentiated Services
DSCP	Differentiated Services Code Point
E	
EFM	Ethernet in the First Mile
ELPS	Ethernet Linear Protection Switching
EMC	Electro Magnetic Compatibility
ERPS	Ethernet Ring Protection Switching
ETS	European Telecommunications Standards
ETSI	European Telecommunications Standards Institute
F	
FE	Fast Ethernet
FTP	File Transfer Protocol
G	
GE	Gigabit Ethernet
I	
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
IP	Internet Protocol
ITU-T	International Telecommunications Union - Telecommunication Standardization Sector
L	
LLDP	Link Layer Discovery Protocol
LOS	Loss of Signal
M	
MAC	Medium Access Control
MEF	Metro Ethernet Forum
MTBF	Mean Time Between Failure

MVR	Multicast VLAN Registration
N	
NNM	Network Node Management
NView NNM	NView Network Node Management
O	
OAM	Operation
OSPF	Open Shortest Path First
P	
PC	Personal Computer
PHB	Per-Hop Behavior
PPPoE	PPP over Ethernet
PVC	Permanent Virtual Circuit
Q	
QoS	Quality of Service
R	
RADIUS	Remote Authentication Dial In User Service
RH	Relative Humidity
RMON	Remote Network Monitoring
S	
SFP	Small Form-factor Pluggable
SLA	Service Level Agreement
SNMP	Simple Network Management Protocol
SSHv2	Secure Shell v2
STP	Spanning Tree Protocol
T	
TACACS+	Terminal Access Controller Access Control System

TFTP	Trivial File Transfer Protocol
U	
UART	Universal Asynchronous Receiver/Transmitter
UL	Underwriter Laboratories
UNI	User Network Interface
V	
VLAN	Virtual Local Area Network

