RG-S2900G-E Series Switch

Hardware Installation and Reference Guide V1.23

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Preface

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

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

Audience

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

Obtaining Technical Assistance

- Ruijie Networks website: http://www.ruijienetworks.com/
- Online customer services: http://webchat.ruijie.com.cn
- Customer service center: http://www.ruijie.com.cn/service.aspx
- Customer services hotline: +86-4008-111-000
- BBS: http://support.ruijie.com.cn
- Customer services email: Consulting@ruijienetworks.com

Related Documents

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

Symbol Conventions

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

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

Product Overview

RG-S2900G-E Series switch is a next-generation security and intelligent switch that features high performance, high security, multiple services and ease of use to meet the needs of the current networks. The RG-S2900G-E switch can provide the complete end-to-end Quality of Service (QoS), flexible and abundant security policies and policy-based network management for various networks. They are the desired access devices for such applications as campus network, enterprise network, government network, service network, residential broadband access and business building network, providing high-speed, high-efficiency, secure and intelligent access solutions.

■ Table 1-1 RG-S2900G-E Series

Model	10/100/1000 Base-T Adaptive Ethernet Port	SFP Port	Console Port	Extension Module Slot
RG-S2928G-E	24	4	1	N/A
RG-S2952G-E	48	4	1	N/A
RG-S2928G-12P	24	4	1	N/A
RG-S2928G-24P	24	4	1	N/A

Note

The four SFP ports support 100Base-FX/1000Base-X/1000Base-T, and the two SFP ports with larger port number (27F and 28F for the S2928G Series, and 51F and 52F for the S2952 Series) also support 2.5 G stack modules.

Only the four SFP ports of the RG-S2928G-E V2.00 and RG-S2952G-E V2.00 and later, RG-S2928G-12P and RG-S2928G-24P support 100Base-FX.

RG-S2928G-E

Technical Specifications

Model	RG-S2928G-E
Supported SFP Type	■ Gigabit Ethernet: Mini-GBIC-SX Mini-GBIC-LX Mini-GBIC-LH40 Mini-GBIC-ZX50 Mini-GBIC-ZX80 Mini-GBIC-ZX100 ■ Fast Ethernet: FE-SFP-LX-MM1310 FE-SFP-LH15-SM1310 ■ 1000Base-T: Mini-GBIC-GT ■ 2.5G stack module:

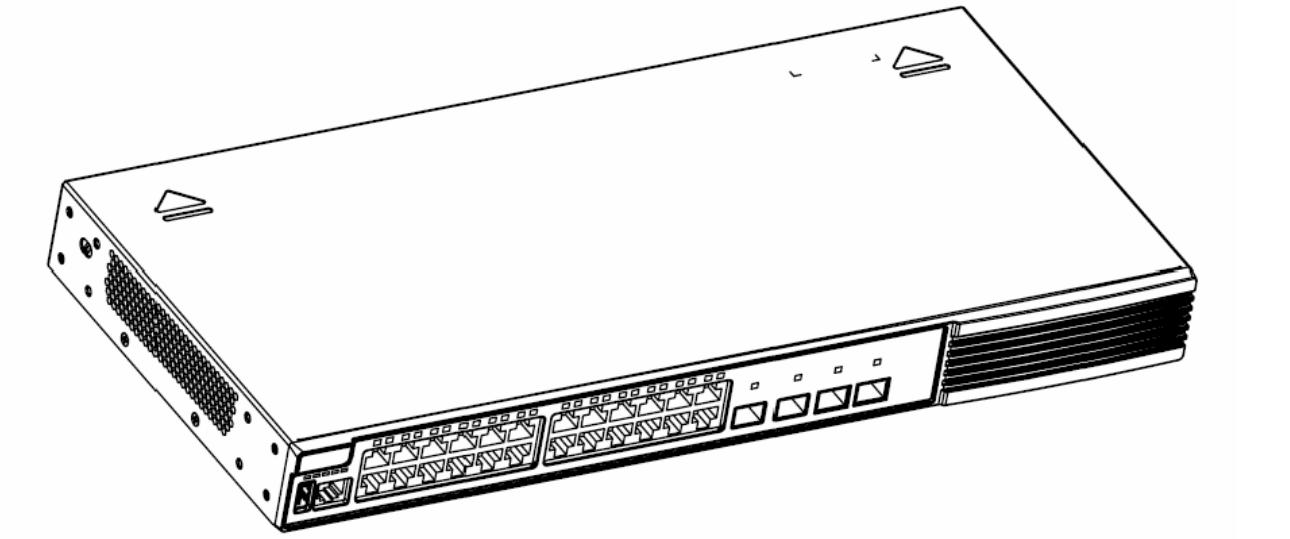
	GE-SFP-STACK1.6M  Note The supported module type may change at any time. Consult us for the detailed change information. Only the four SFP ports of the RG-S2928G-E V2.00 and later support fast Ethernet SFP modules.
SFP Port	Support 1000Base-X, 1000Base-T and 2.5 G stacked SFP module  Note Only the four SFP ports of the RG-S2928G-E V2.00 and later support 100Base-FX.
USB Port	One Type-A USB2.0 interface
Power Supply	■ AC input: Rated voltage range: 100 V to 240 V Maximum voltage range: 90 V to 264 V Frequency: 50 Hz to 60 Hz Rated current: 0.6 A ■ HVDC input: Maximum voltage range: 192 V to 290 V Rated current: 0.2 A to 0.12 A
EEE	Not supported on the RG-S2928G-E V1.00 and later. Supported on the RG-S2928G-E V2.00 and later.
PoE	Not supported.
Power Consumption	Less than 33 W on the RG-S2928G-E V1.00 and later. Less than 27 W on the RG-S2928G-E V2.00 and later.
Working Temperature	0ºC to 50ºC
Storage Temperature	-40ºC to 70ºC
Working Humidity	10% to 90% RH
Storage Humidity	5% to 90% RH
Fan	N/A
Temperature Warning	Supported
EMC Standards	GB9254-1998
Safety Standards	GB4943-2001
Dimensions (W x D x H)	RG-S2928G-E V1.00 and later: 440 mm x 200 mm x 43.6 mm RG-S2928G-E V2.00 and later: 440 mm x 260 mm x 43.6 mm
Weight	Less than 3.5 kg

Caution RG-S2928G-E switch is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Product Appearance

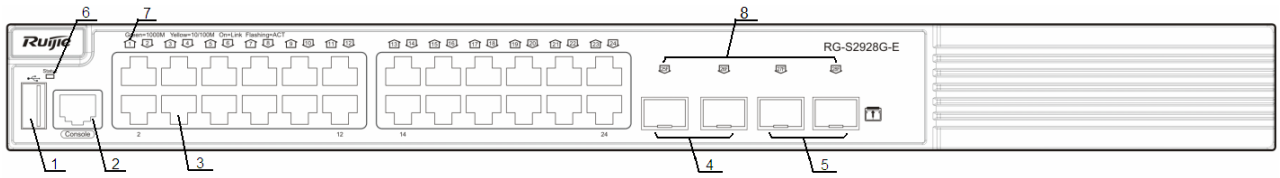
The front panel of the RG-S2928G-E full gigabit Ethernet switch provides one Type-A USB2.0 interface, one RJ45 console port, 24 RJ45 10/100/1000Base-T Ethernet adaptive ports and four SFP ports. Figure 1-1 shows the appearance of the RG-S2928G-E.

Figure 1-1 Appearance of the RG-S2928G-E



Front Panel

Figure 1-2 Front Panel of the RG-S2928G-E

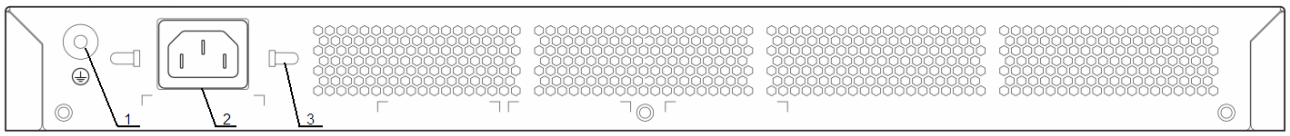


Note:	1. USB2.0 port	5. 100Base-FX/1000Base-X SFP/2.5 G stack port
	2. RJ45 console port	6. Switch system status indicator
	3. RJ45 10/100/1000Base-T adaptive Ethernet port	7. 10/100/1000Base-T adaptive Ethernet port indicator
	4. 100Base-FX/1000Base-X SFP port	8. 100Base-FX/1000Base-X SFP/2.5 G stack port indicator

Note Only the four SFP ports of the RG-S2928G-E V2.00 and later support 100Base-FX.

Back Panel

Figure 1-3 Back Panel of the RG-S2928G-E



Note:	1. Grounding pole	3. Power cord retention clips
	2. Three-hole AC power receptacle	

Power Supply

The RG-S2928G-E switch can be powered either with AC power or DC power.

- AC input:

Rated voltage range: 100 V to 240 V

Maximum voltage range: 90 V to 264 V

Frequency: 50 Hz to 60 Hz

Rated current: 0.6 A

Power cord: 10A power cord

HVDC input:
Maximum voltage range: 192 V to 290 V

Rated current: 0.2 A to 0.12 A

Power cord: 10A power cord

Heat Dissipation

The RG-S2928G-E full gigabit switch is designed with no fans. To ensure good dissipation, sufficient space (10 cm distance from both sides and the back panel of the chassis) should be reserved for ventilation. Dust the device every three months to avoid blocking the ventilation openings.

Note When installing the device, sufficient ventilation space (1 U (44.45 mm) distance from the adjacent device) should be reserved for the purpose of heat dissipation.

LED Indicators

Indicator	Faceplate Marker	Status	Indication
Status indicator	Status	Blinking green	The system is being initialized.
		Solid green	The system is in normal operation. .
		Solid yellow	System over-temperature warning.
		Solid red	Serious over-temperature, the system will stop working forcibly by itself.
10/100/1000 Mbps RJ-45 port indicator	1~24	Off	The port is NOT connected.
		Solid green	The port is connected at 1000Mbps.
		Solid yellow	The port is connected at 100/10Mbps.
		Blinking	The port is transmitting or receiving data.
100Base-FX/1000Base-X/Stack port indicator (Note: Only the four SFP ports of the RG-S2928G-E V2.00 and later support 100Base-FX.)	25F~28F	Off	The port is NOT connected.
		Solid green	The port is connected.
		Blinking	The port is transmitting or receiving data.

RG-S2952G-E

Technical Specifications

Model	RG-S2952G-E
Supported SFP Type	■ Gigabit Ethernet: Mini-GBIC-SX Mini-GBIC-LX Mini-GBIC-LH40 Mini-GBIC-ZX50 Mini-GBIC-ZX80 Mini-GBIC-ZX100 ■ Fast Ethernet: FE-SFP-LX-MM1310 FE-SFP-LH15-SM1310 ■ 1000Base-T: Mini-GBIC-GT ■ 2.5 G stack module: GE-SFP-STACK1.6M

	 Note The supported module type may change at any time. Contact us for the detailed change information. Only the four SFP ports of the RG-S2952G-E V2.00 and later support fast Ethernet SFP modules.
SFP Port	Support 1000 Base-X, 1000 Base-T, 100 Base-FX and 2.5 G stacked SFP module  Note Only the four SFP ports of the RG-S2952G-E V2.00 and later support 100Base-FX.
USB Port	One Type-A USB2.0 interface
Power Supply	■ AC input: Rated voltage range: 100 V to 240 V Maximum voltage range: 90 V to 264 V Frequency: 50 Hz to 60 Hz Rated current: 1.5 A ■ HVDC input: Maximum voltage range: 192 V to 290 V Rated current: 0.3 A to 0.17 A
EEE	Not supported on the RG-S2952G-E V1.00 and later Supported on the RG-S2952G-E V2.00 and later
PoE	Not supported.
Power Consumption	Less than 59 W on the RG-S2952G-E V1.00 and later Less than 49 W on the RG-S2952G-E V2.00 and later
Working Temperature	0ºC to 50ºC
Storage Temperature	-40ºC to 70ºC
Working Humidity	10% RH to 90% RH
Storage Humidity	5% RH to 90% RH
Fan	Support adjustment of fan speed and warning of fan troubles.
Temperature Warning	Supported
EMC Standards	GB9254-1998
Safety Standards	GB4943-2001
Dimensions (W x D x H)	440 mm x 260 mm x 43.6 mm

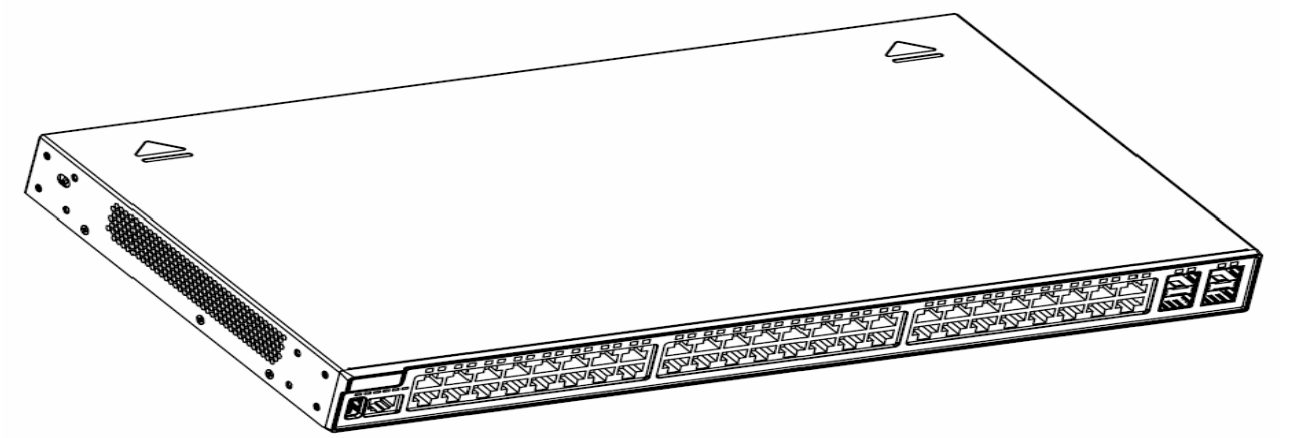
Weight	Less than 4 kg

Caution RG-S2952G-E switch is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Product Appearance

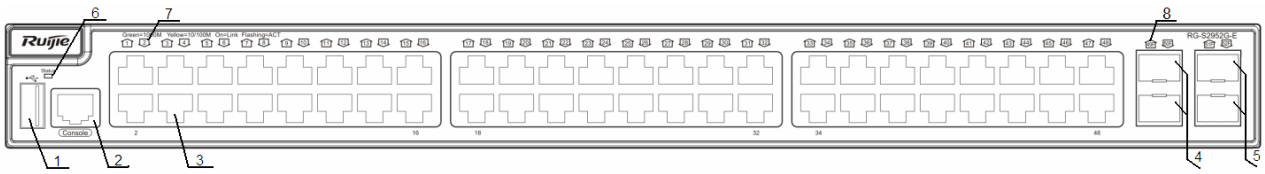
The front panel of the RG-S2952G-E full gigabit Ethernet switch provides one Type-A USB2.0 port, one RJ45 console port, 48 RJ45 10/100/1000Base-T adaptive Ethernet ports and four SFP ports. Figure 1-4 shows the appearance of the RG-S2952G-E.

Figure 1-4 Appearance of the RG-S2952G-E



Front Panel

Figure 1-5 Front Panel of the RG-S2952G-E



Note:	1. USB2.0 port	5. 100 Base-FX/1000 Base-X SFP/2.5 G stack port
	2. RJ45 console port	6. System status indicator
	3. RJ45 10/100/1000Base-T adaptive Ethernet port	7. 10/100/1000 Base-T adaptive Ethernet port indicator
	4. 100 Base-FX/1000 Base-X SFP port	8. 100Base-FX/1000Base-X SFP/2.5 G stack port indicator

Note Only the four SFP ports of the RG-S2952G-E V2.00 and later support 100 Base-FX.

Back Panel

Figure 1-6 Back Panel of the RG-S2952G-E V1.00 and Later

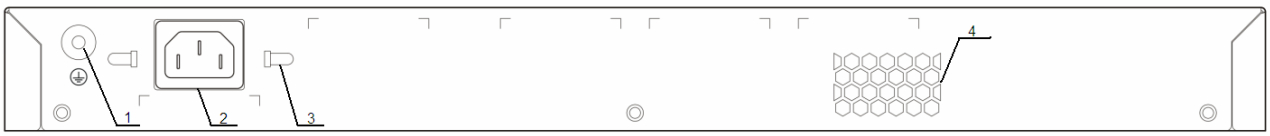
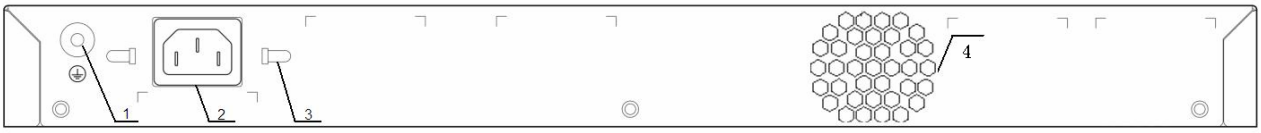


Figure 1-7 Back Panel of the RG-S2952G-E V2.00 and Later



Note:	1. Grounding pole	3. Power cord retention clips
	2. Three-hole AC power receptacle	4. Fan outlet

Power Supply

The RG-S2952G-E can be powered either with AC power or DC power.

- AC input:

Rated voltage range: 100 V to 240 V

Maximum voltage range: 90 to 264 V

Frequency: 50 Hz to 60 Hz

Rated current: 1.5 A

Power cord: 10A power cord

- HVDC input:

Maximum voltage range: 192 V to 290 V

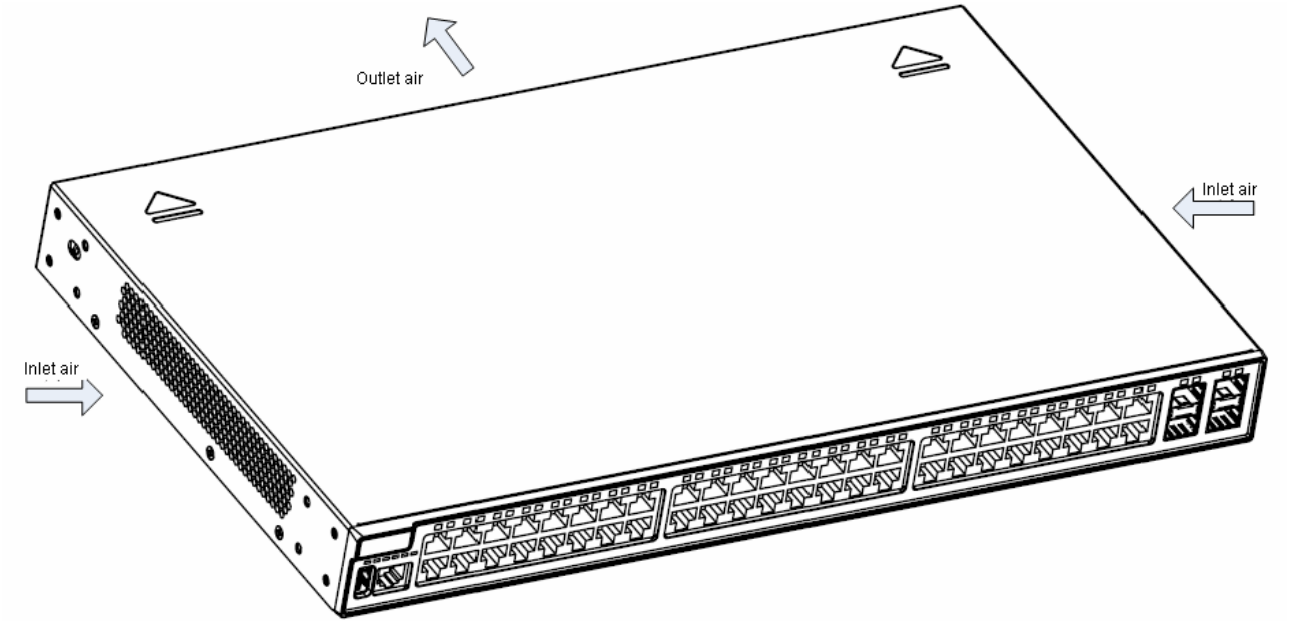
Rated current: 0.3 A to 0.17 A

Power cord: 10A power cord

Heat Dissipation

The RG-S2952G-E full gigabit switch adopts fans for heat dissipation, thereby ensuring the device to function normally in the specified environment. Sufficient space (10 cm distance from both sides and the back panel of the chassis) should be reserved for ventilation. Dust the device every three months to avoid blocking the ventilation openings.

Figure 1-8 Heat Dissipation of the RG-S2952G-E



LED Indicators

Indicator	Faceplate Marker	Status	Indication
Status indicator	Status	Blinking green	The system is being initialized.
		Solid green	The system is in normal operation.
		Solid yellow	System over-temperature warning.
		Solid red	Serious over-temperature, the system will stop working forcibly by itself. Or the fan fault occurs.
10/100/1000Mbps RJ-45 port indicator	1~48	Off	The port is NOT connected.
		Solid green	The port is connected at 1000Mbps.
		Solid yellow	The port is connected at 100/10Mbps.
		Blinking	The port is transmitting or receiving data.
100 Base-FX/1000 Base-X/Stack port indicator (Note: Only the four SFP ports of the RG-S2952G-E V2.00 and later support 100Base-FX.)	49F~52F	Off	The port is NOT connected.
		Solid green	The port is connected.
		Blinking	The port is transmitting or receiving data.

RG-S2928G-12P

Technical Specifications

Model	RG-S2928G-12P
Supported SFP Type	■ Gigabit Ethernet: Mini-GBIC-SX Mini-GBIC-LX

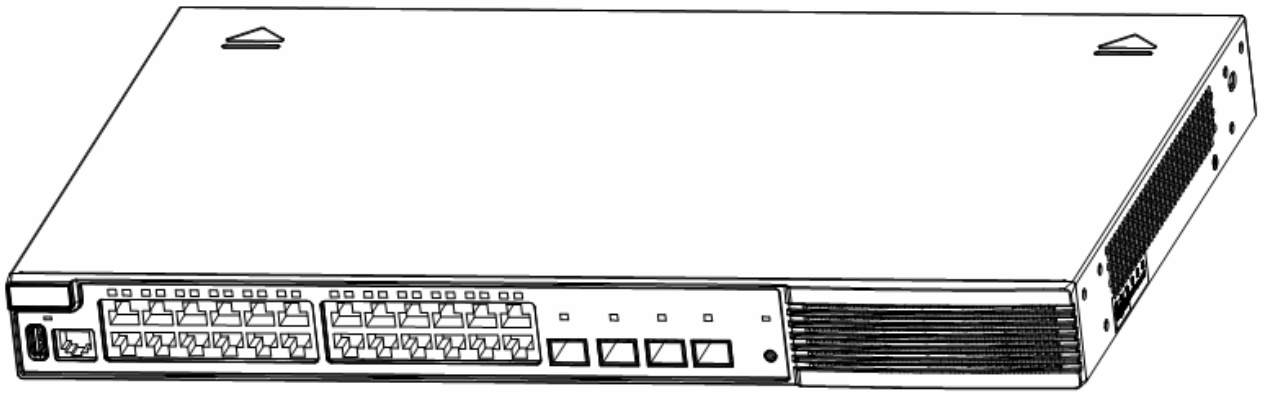
	Mini-GBIC-LH40 Mini-GBIC-ZX50 Mini-GBIC-ZX80 Mini-GBIC-ZX100 ■ Fast Ethernet: FE-SFP-LX-MM1310 FE-SFP-LH15-SM1310 ■ 1000 Base-T: Mini-GBIC-GT ■ 2.5 G stack module: GE-SFP-STACK1.6M  Note The supported module type may change at any time. Contact us for the detailed change information.
SFP Port	Support 1000 Base-X, 1000 Base-T, 100 Base-FX and 2.5 G stacked SFP module
USB Port	One Type-A USB2.0 interface
Power Supply	■ AC input: Rated voltage range: 100 V to 240 V Maximum voltage range: 90 V to 264 V Frequency: 50 Hz to 60 Hz Rated current: 3 A ■ HVDC input: Maximum voltage range: 192 V to 290 V Rated current: 2 A to 1.5 A
EEE	Supported.
PoE	Supported standards: IEEE 802.3af and 802.3at Maximum output power of a single port: 30 W Maximum PoE/PoE + output power: 185 W
Power Consumption	Less than 252 W with PoE full load. Less than 39 W without PoE
Working Temperature	0ºC to 50ºC
Storage Temperature	-40ºC to 70ºC
Working Humidity	10% RH to 90% RH
Storage Humidity	5% RH to 90% RH
Fan	Support adjustment of fan speed and warning of fan troubles.
Temperature Warning	Supported
EMC Standards	GB9254-1998
Safety Standards	GB4943-2001
Dimensions (W x D x H)	440 mm x 260 mm x 43.6 mm

Weight	Less than 4.5 kg

Caution RG-S2928G-12P switch is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

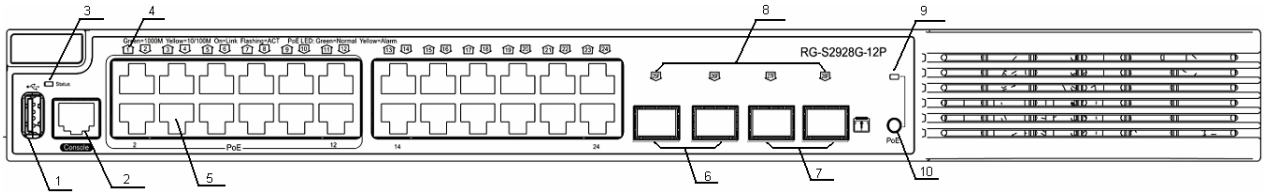
Product Appearance

Figure 1-9 Appearance of the RG-S2928G-12P



Front Panel

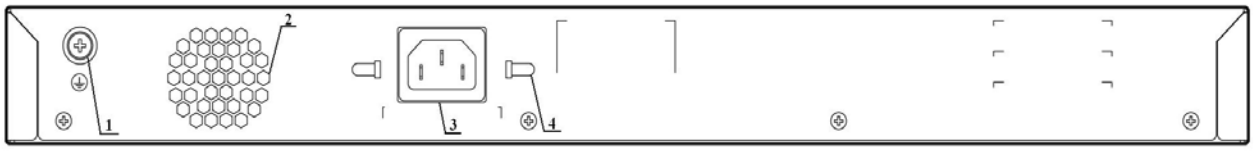
Figure 1-10 Front Panel of the RG-S2928G-12P



Note:	1. USB2.0 port	6. 100Base-FX/1000Base-X SFP port
	2. RJ45 console port	7. 100Base-FX/1000Base-X SFP/2.5 G stack port
	3. System status indicator	8. 100Base-FX/1000Base-X SFP/2.5 G stack port indicator
	4. 10/100/1000Base-T adaptive Ethernet port indicator	9. PoE mode indicator
	5. RJ45 10/100/1000Base-T adaptive Ethernet port (only the 12 ports in the yellow frame support 802.3af and 802.3at PoE)	10. PoE/switched mode indicator switchover button (By default, the switch port indicator indicates the switched mode. You can press this button to switch the status of indicator between switched mode and PoE mode.)

Back Panel

Figure 1-11 Back Panel of the RG-S2928G-12P



Note:	1. Grounding pole	3. Three-hole AC power receptacle
	2. Fan outlet	4. Power cord retention clips

Power Supply

The RG-S2928G-12P can be powered either with AC power or DC power.

- AC input:

Rated voltage range: 100 V to 240 V

Maximum voltage range: 90 V to 264 V

Frequency: 50 Hz to 60 Hz

Rated current: 3 A

Power cord: 10A power cord.

- HVDC input:

Maximum voltage range: 192 V to 290 V

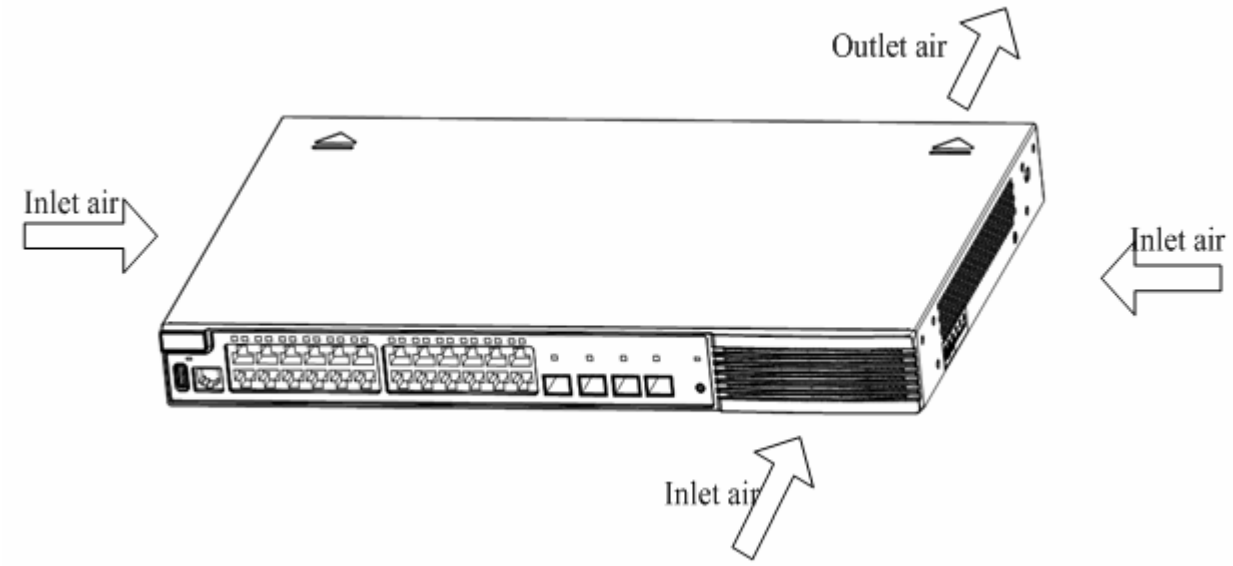
Rated current: 2 A to 1.5 A

Power cord: 10A power cord

Heat Dissipation

The RG-S2928G-12P switch adopts axial fans for heat dissipation, thereby ensuring the device to function normally in the specified environment. Sufficient space (10 cm distance from both sides and the back panel of the chassis) should be reserved for ventilation. Dust the device every three months to avoid blocking the ventilation openings.

Figure 1-12 Heat Dissipation of the RG-S2928G-12P



Note

When installing the device, sufficient ventilation space (1 U (44.45 mm) distance from the adjacent device) should be reserved for the purpose of heat dissipation.

PoE

The PoE power supply of the RG-S2928G-12P switch is designed to support the IEEE802.3af and 802.3at standards. It uses Alternative A, that is, uses pins 1&2 and 3&6 to transmit power.

LED Indicators

Indicator	Faceplate Marker	Status	Meaning
PoE/switching mode indicator	PoE	Solid green	Switching mode.
		Solid yellow	PoE mode.
Status indicator	Status	Blinking green	The system is being initialized.
		Solid green	The system is operational.
		Solid yellow	System over-temperature warning.
		Solid red	Serious over-temperature, the system will stop working forcibly by itself. Or the fan fault occurs.
10/100/1000 Mbps RJ-45 port indicator	1~24	Off	The port is NOT connected.
		Solid green	The port is connected at 1000Mbps.
		Solid yellow	The port is connected at 100/10Mbps.
		Blinking	The port is transmitting or receiving data.
PoE status indicator	1~12	Off	No PoE power supply.
		Solid green	PoE is operational.
		Solid yellow	Abnormal PoE power supply
100 Base-FX/1000 Base-X/Stack port	25F to 28F	Off	The port is NOT connected.
		Solid green	The port is connected.

Indicator	Faceplate Marker	Status	Meaning
indicator		Blinking	The port is transmitting or receiving data.

RG-S2928G-24P

Technical Specifications

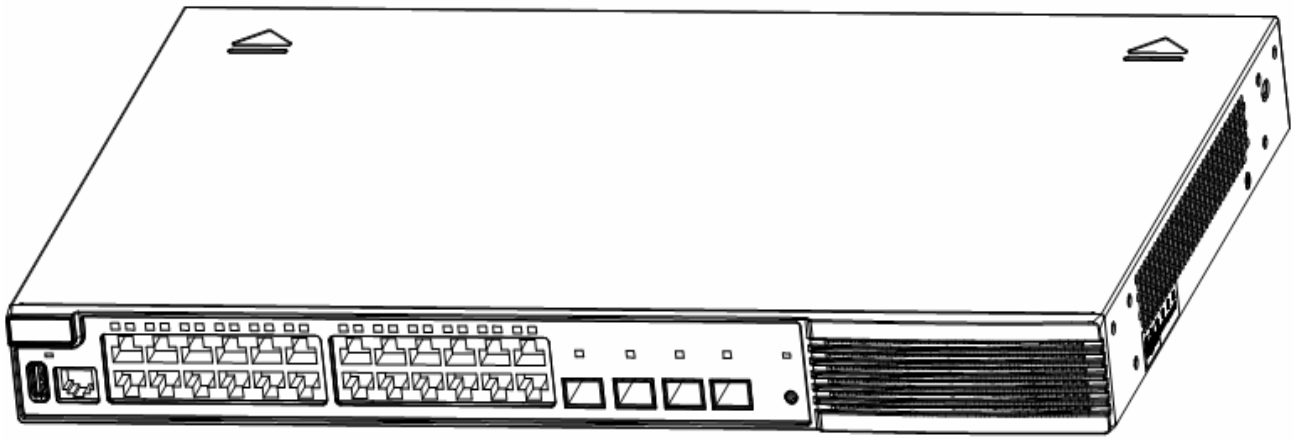
Model	RG-S2928G-24P
Supported SFP Type	■ Gigabit Ethernet: Mini-GBIC-SX Mini-GBIC-LX Mini-GBIC-LH40 Mini-GBIC-ZX50 Mini-GBIC-ZX80 Mini-GBIC-ZX100 ■ Fast Ethernet: FE-SFP-LX-MM1310 FE-SFP-LH15-SM1310 ■ 1000 Base-T: Mini-GBIC-GT ■ 2.5 G stack module: GE-SFP-STACK1.6M Note The supported module type may change at any time. Contact us for the detailed change information.
SFP Port	Support 1000 Base-X, 1000 Base-T , 100 Base-FX and 2.5 G stacked SFP module
USB Port	One Type-A USB2.0 interface
Power Supply	■ AC input: Rated voltage range: 100 V to 240 V Maximum voltage range: 90 V to 264 V Frequency: 50 Hz to 60 Hz Rated current: 6.8 A (Max) ■ HVDC input: Maximum voltage range: 192 V to 290 V Rated current: 3.5 A to 2.5 A
PoE	Supported standards: IEEE 802.3af and 802.3at Maximum output power of a single port: 30 W Maximum PoE/PoE + output power: 370 W
EEE	Supported.

Power Consumption	Less than 480 W with PoE full load. Less than 45 W without PoE
Working Temperature	0ºC to 50ºC
Storage Temperature	-40ºC to 70ºC
Working Humidity	10% RH to 90% RH
Storage Humidity	5% RH to 90% RH
Fan	Support adjustment of fan speed and warning of fan troubles.
Temperature Warning	Supported
EMC Standards	GB9254-1998
Safety Standards	GB4943-2001
Dimensions (W x D x H)	440 mm x 260 mm x 43.6 mm
Weight	Less than 4.5 kg

Caution RG-S2928G-24P switch is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

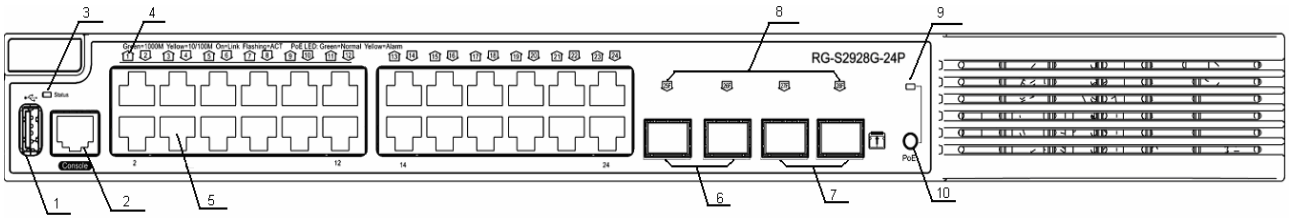
Product Appearance

Figure 1-13 Appearance of the RG-S2928G-24P



Front Panel

Figure 1-14 Front Panel of the RG-S2928G-24P



Note:	1. USB2.0 port	6. 100 Base-FX/1000 Base-X SFP port
	2. RJ45 console port	7. 100 Base-FX/1000 Base-X SFP/2.5 G stack port
	3. System status indicator	8. 100 Base-FX/1000 Base-X SFP/2.5 G stack port indicator
	4. 10/100/1000 Base-T adaptive Ethernet port indicator	9. PoE mode indicator
	5. RJ45 10/100/1000 Base-T adaptive Ethernet port (all of the 24 ports support 802.3af and 802.3at PoE)	10. PoE/switched mode indicator switchover button (By default, the switch port indicator indicates the switched mode. You can press this button to switch the status of indicator between switched mode and PoE mode.)

Back Panel

Figure 1-15 Back Panel of the RG-S2928G-24P

Note:	1. Grounding pole	3. Three-hole AC power receptacle
	2. Fan outlet	4. Power cord retention clips

Power Supply

The RG-S2928G-24P can be powered either with AC power or DC power.

- AC input:

Rated voltage range: 100 V to 240 V

Maximum voltage range: 90 V to 264 V

Frequency: 50 Hz to 60 Hz

Rated current: 6.8 A (Max)

Power cord: 10A power cord

- HVDC input:

Maximum voltage range: 192 V to 290 V

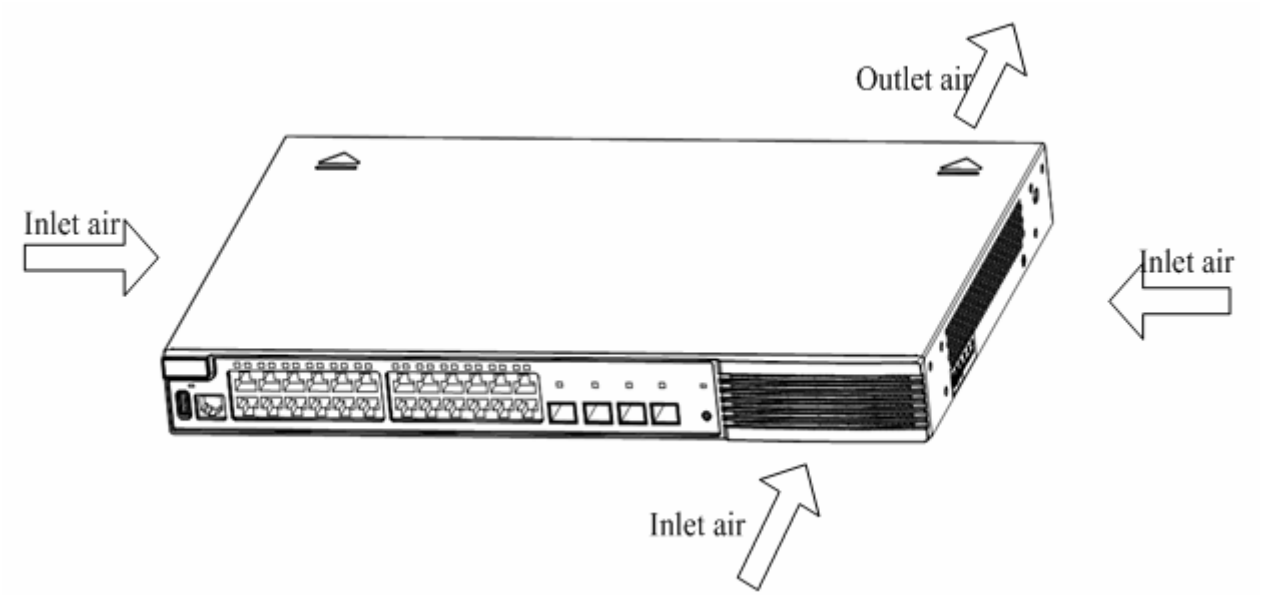
Rated current: 3.5 A to 2.5 A

Power cord: 10A power cord

Heat Dissipation

The RG-S2928G-24P switch adopts axial fans for heat dissipation, thereby ensuring the device to function normally in the specified environment. Sufficient space (10 cm distance from both sides and the back panel of the chassis) should be reserved for ventilation. Dust the device every three months to avoid blocking the ventilation openings.

Figure 1-16 Heat Dissipation of the RG-S2928G-24P



Note

When installing the device, sufficient ventilation space (1 U (44.45 mm) distance from the adjacent device) should be reserved for the purpose of heat dissipation.

PoE

The PoE power supply of the RG-S2928G-24P switch is designed to support the IEEE802.3af and 802.3at standards. It uses Alternative A, that is, uses pins 1&2 and 3&6 to transmit power.

LED Indicators

Indicator	Faceplate Marker	Status	Indication
PoE/switching mode indicator	PoE	Solid green	Switching mode.
		Solid yellow	PoE mode.
Status indicator	Status	Blinking green	The system is being initialized.
		Solid green	The system is operational.
		Solid yellow	System over-temperature warning.
		Solid red	Serious over-temperature, the system will stop working forcibly by itself. Or the fan fault occurs.
10/100/1000Mbps RJ-45 port	1~24	Off	The port is NOT connected.

Indicator	Faceplate Marker	Status	Indication
indicator		Solid green	The port is connected at 1000Mbps.
		Solid yellow	The port is connected at 100/10Mbps.
		Blinking	The port is transmitting and receiving data.
PoE status indicator	1~24	Off	No PoE power supply.
		Solid green	PoE is operational.
		Solid yellow	Abnormal PoE power supply
100Base-FX/1000Base-X/Stack port indicator	25F~28F	Off	The port is NOT connected.
		Solid green	The port is connected.
		Blinking	The port is transmitting and receiving data.

Preparation before Installation

Safety Suggestions

Note

To avoid personal injury and equipment damage, please carefully read the safety suggestions before you install the RG-S2900G-E series.

The following safety suggestions do not cover all possible dangers.

Safety Precautions for Installing the System

- Keep the chassis clean and free from any dust.
- Do not place the equipment in a walking area.
- Do not wear loose clothes or accessories that may be hooked or caught by the device during installation and maintenance.
- Turn off all power supplies and remove the power sockets and cables before installing or uninstalling the device.

Movement Safety

- Do not frequently move the device.
- When moving the device, note the balance and avoid hurting legs and feet or straining the back.
- Before moving the device, turn off all power supplies and dismantle all power modules.

Electric Safety

- Observe local regulations and specifications when performing electric operations. Relevant operators must be qualified.
- Before installing the device, carefully check any potential danger in the surroundings, such as ungrounded power supply, and damp/wet ground or floor.
- Before installing the device, find out the location of the emergency power supply switch in the room. First cut off the power supply in the case of an accident.
- Try to avoid maintaining the switch that is powered-on alone.
- Be sure to make a careful check before you shut down the power supply.
- Do not place the equipment in a damp location. Do not let any liquid enter the chassis.

Caution

1. Any nonstandard and inaccurate electric operation may cause an accident such as fire or electrical shock, thus causing severe even fatal damages to human bodies and equipment.

2. Direct or indirect touch through a wet object on high-voltage and mains supply may bring a fatal danger.

Static Discharge Damage Prevention

To prevent damage from static electricity, pay attention to the following:

- Proper grounding of grounding screws on the back panel of the device. Use of a three-wire single-phase socket with protective earth wire (PE) as the AC power socket.
- Indoor dust prevention
- Proper humidity conditions

Laser Safety

The RG-S2900G-E series switch supports varying models of optical modules sold on the market which are Class I laser products. Improper use of optical modules may cause damage. Therefore, pay attention to the following when you use them:

- When a fiber transceiver works, ensure that the port has been connected with an optical fiber or is covered with a dust cap, to keep out dust and avoid burning your eyes.
- When the optical module is working, do not pull out the fiber cable and stare into the transceiver interface or you may hurt your eyes.

Caution Do not stare into any optical port under any circumstances, as this may cause permanent damage to your eyes.

Installation Site Requirements

To ensure the normal working and a prolonged durable life of the equipment, the installation site must meet the following requirements.

Ventilation Requirements

For the RG-S2900G-E series, you must ensure that sufficient space (10 cm distance from both sides and the back panel of the cabinet) is reserved at the ventilation openings to ensure the normal ventilation. During the jumper process of the device, prevent the cables from blocking the cellular heat dissipation holes around the device. Be especially careful for the RG-S2928G-E device. This high-speed forwarding device adopts the fan-free design; therefore, it has high requirement for heat dissipation of the operating environment. Dust the device every three months to avoid blocking the ventilation openings.

Temperature and Humidity Requirements

To ensure the normal operation and prolong the service life of RG-S2900G-E series, you should keep proper temperature and humidity in the equipment room.

If the equipment room has temperature and humidity that do not meet the requirements for a long time, the equipment may be damaged.

- In an environment with high relative humidity, the insulating material may have bad insulation or even leak electricity. Sometimes the materials may suffer from mechanical performance change and metallic parts may get rusted.
- In an environment with low relative humidity, however, the insulating strip may dry and shrink. Static electricity may occur easily and endanger the circuit on the equipment.
- In an environment with high temperature, the equipment is subject to even greater harm, as its performance may degrade significantly and various hardware faults may occur. .

Therefore, the ambient temperature and humidity of the RG-S2900G-E must meet the requirements listed in Table 2-1:

Table 2-1 Temperature and Humidity Requirements of the RG-S2900G-E Series

Temperature	**Relative Humidity**
0ºC to 50ºC	10% RH to 90% RH

Note

The requirements for the sampling site of the temperature and humidity in the operating environment of the device are as follows:

There is no protective plate at the front or back of the equipment rack.

The vertical height is 1.5 m above the floor.

The distance from the front panel of the equipment is 0.4 m.

Cleanness Requirements

Dust poses a severe threat to the running of the equipment. The indoor dust falling on the equipment may be adhered by the static electricity, causing bad contact of the metallic joint. Such electrostatic adherence may occur more easily when the relative humidity is low, not only affecting the useful life of the equipment, but also causing communication faults. Table 2-2 shows the requirements for the dust content and granularity in the equipment room.

Table 2-2 Requirements for the Dust Content and Granularity in the Equipment Room

Substance	Concentration Limit (particles/m^3)
Dust particles (diameter ≥0.5 μm)	≤3.5×10^6
Dust particles (diameter ≥5 μm)	≤3×10^4

Apart from dust, the salt, acid and sulfide in the air in the equipment room must also meet strict requirements; as such poisonous substances may accelerate the corrosion of the metal and the aging of some parts. The equipment room should be protected from the intrusion of harmful gases (for example, SO_2, H_2S, NO_2 and Cl_2), whose requirements are listed in the following table.

Table 2-3 Requirements for Harmful Gases in the Equipment Room

Gas	Average (mg/m^3)	Maximum (mg/m^3)

Gas	Average (mg/m^3)	Maximum (mg/m^3)
SO_2	0.3	1.0
H_2S	0.1	0.5
NO_2	0.5	1.0
Cl_2	0.1	0.3

Note The **Average** refers to the average limit of harmful gas in one week. The **Maximum** value is the upper limit of the harmful gas measured in one week for up to 30 minutes every day.

EMI

During applications, the switch may be subject to external interferences that affect the device through conduction manners such as capacitance coupling, inductive coupling, electromagnetic wave emission, common impedance (including grounding systems), and wires (power cables, signal cables and outgoing transmission cables). For that purpose, note that:

- For the AC power supply system TN, single-phase three-core power socket with protective earthing conductors (PE) should be adopted to effectively filter out interference from the power grid through the filtering circuit.
- The switch should be located at places free from large power radio launch pad, radar launch pad, and high-frequency large-current devices.
- If necessary, electromagnetic shielding should be adopted. For example, use interface cables to shield cables.
- Interface cables should be laid inside the equipment room. Outdoor cabling is prohibited, avoiding damages to device signal interfaces caused by over-voltage or over-current of lightning.

System Grounding Requirements

A good grounding system is the basis for the stable and reliable operation of the RG-S2900G-E series. It is the chief condition to prevent lightning stroke and resist interference. Please carefully check the grounding conditions on the installation site according to the grounding requirements, and perform grounding operations properly as required.

Caution Effective grounding of the switch is an important guarantee for lightning protection and interference resistance. Therefore, connect the grounding line of the switch properly..

Safety Grounding

The equipment using AC power supply must be grounded by using the yellow/green safety grounding cable. Otherwise, when the insulating resistance decreases the power supply and the enclosure in the equipment, electric shock may occur.

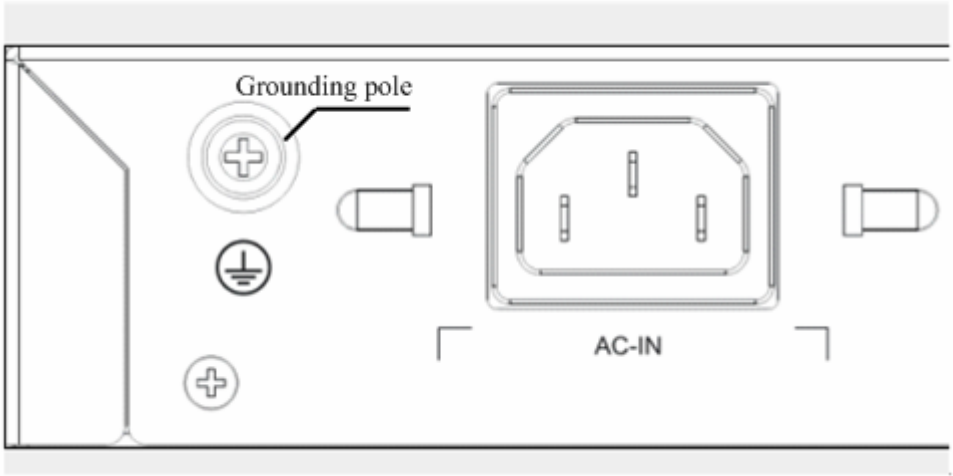
Lightning Grounding

The lightning protection system of a facility is an independent system that consists of the lightning rod, downlead conductor and the connector to the grounding system, which usually shares the power reference ground and yellow/green safety cable ground. The lightning discharge ground is for the facility only, irrelevant to the equipment.

EMC Grounding

The grounding required for EMC design includes shielding ground, filter ground, noise and interference suppression, and level reference. All the above constitute the comprehensive grounding requirements. The resistance of earth wires should be less than 1 ohm. The RG-S2900G-E backplane is reserved with one grounding pole, as shown in Figure 2-1.

Figure 2-1 Schematic Diagram of the RG-S2900G-E Grounding



Lightning Resistance Considerations

When the AC power cable is imported outdoors and directly connected to the power port of the switch, lightning line bank should be adopted to prevent the switch from being hit by lightning shocks. Usage of the lightning line bank: Connect the mains supply AC cable to the lightning line bank. Then, connect the switch to the lightning line bank. This can help to prevent the current of high-voltage lightning from passing the switch directly through the mains supply cable to a certain extent.

Note

The lightning line banks are not provided and should be purchased by users as required.
For the usage of lightning line banks, refer to their related manuals.

EMI Consideration

Electro-Magnetic Interference (EMI), from either outside or inside the equipment or application system, affects the system in the conductive ways such as capacitive coupling, inductive coupling, and electromagnetic radiation.

There are two types of electromagnetic interferences: radiated interference and conducted interference, depending on the type of the transmission path.

When the energy, often RF energy, from a component arrives at a sensitive component via the space, the energy is known as radiated interference. The interference source can be either a part of the interfered system or a completely electrically isolated unit. Conducted interference results from the electromagnetic wire or signal cable connection between

the source and the sensitive component, along which cable the interference conducts from one unit to another. Conducted interference often affects the power supply of the equipment, but can be controlled by a filter. Radiated interference may affect any signal path in the equipment and is difficult to shield.

- Effective measures should be taken for the power system to prevent the interference from the electric grid.
- The grounding device of the switch must not be used as the grounding device of the electrical equipment or anti-lightning grounding device. In addition, the grounding device of the switch must be deployed far away from the grounding device of the electrical equipment and anti-lightning grounding device.
- Keep the equipment away from high-power radio transmitter, radar transmitting station, and high-frequency large-current device.
- Measures must be taken to shield static electricity.

Requirements of Installation Tools

Table 2-4 List of Installation Tools

Common tools	Philips screwdriver, flathead screwdriver, related electric cables and optical cables, bolts, diagonal pliers, straps
Special tools	Anti-static tools
Meters	Multimeter

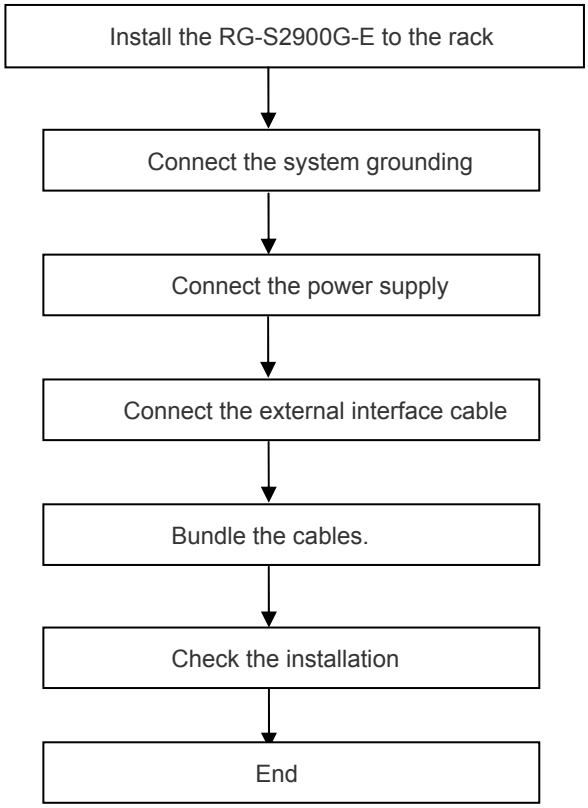
Note The tool kit is customer supplied.

Product Installation

Note

Please ensure that you have carefully read the section of “Preparation before Installation”.
Make sure that the requirements set forth in section of “Preparation before Installation” have been met.

Installation Procedure



Confirmations before Installation

Before installation, please confirm the following points:

- Whether ventilation requirements are met for the switch
- Whether the requirements of temperature and humidity are met for the switch
- Whether power cables are already laid out and whether the requirements of electrical current are met
- Whether related network adaption lines are already laid out

Installing the RG-S2900G-E Series

Precautions

During installation, note the following points:

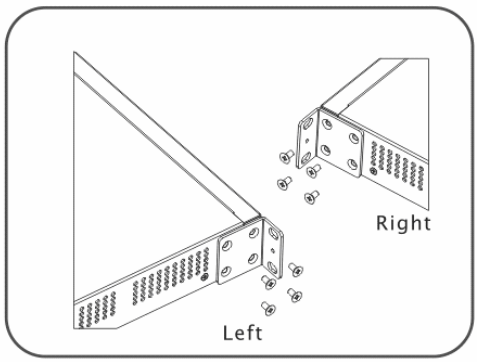
- Connect the power cables of different colors to the corresponding grounding posts.
- Ensure that the interface of the power supply cable is well connected to the power interface of the device. The power cables must be protected using power cable retention clips after they are connected to the device.
- Do not place any articles on the RG-S2900G-E series switch.
- Reserve a spacing of at least 10 cm around the chassis for good ventilation. Do not stack the devices.
- The switch should be located at places free from the large power radio launch pad, radar launch pad, and high-frequency large-current devices. If necessary, electromagnetic shielding should be adopted. For example, use interface cables to shield cables.
- 100-meter network cables should be laid inside the equipment room and outdoor cabling of such cables is prohibited. If outdoor cabling is necessary, take relevant measures for lightning protection..

Mounting the Switch in the Rack

The RG-S2900G-E series switches are designed with the EIA standard dimensions and can be installed in 19-inch rack.

Attach the mounting brackets to the switch with the supplied screws, as shown in Figure 3-2.

Figure 3-2 Attaching the Mounting Bracket to the Switch



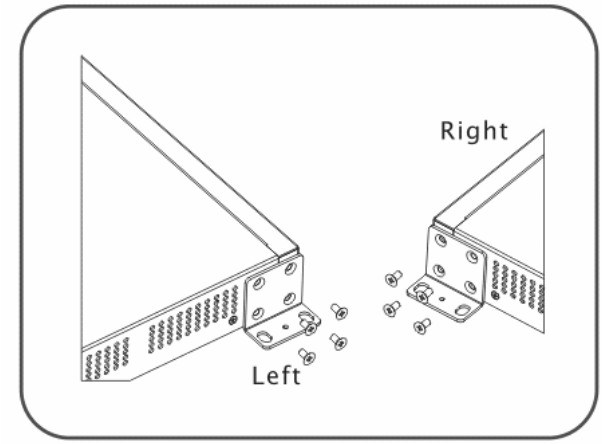
Fix on the 19inch-standards rack

Mounting the Switch on the Wall

The RG-S2900G-E series switches can be mounted on a wall.

Attach the mounting brackets to the switch with the supplied screws, as shown in Figure 3-3.

Figure 3-3 Attaching the Mounting Brackets to the Switch for Wall-Mounting



Rotate the fixed frames by 90 degree when it is mounted on the wall

Checking after Installation

Caution Before checking the installation, switch off the power supply so as to avoid any personal injury or damage to the component due to connection errors.

- Check that the ground line is connected.
- Check that the cables and power input cables are correctly connected.
- Check that the 100 meter cables are laid out inside the equipment room. In the case of external cabling, check that the lightning resistance socket or network interface lightning protector is connected.
- Check that sufficient ventilation space is available around the device (over 10 cm).

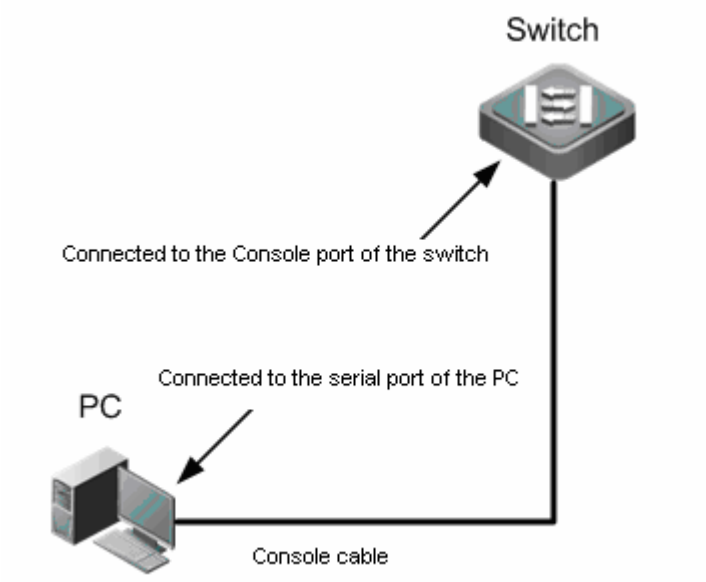
System Debugging

Establishing the Debugging Environment

Establishing the Debugging Environment

Connect the PC to the console port of the switch through the console cable, as shown in Figure 4-1.

Figure 4-1 Schematic Diagram of the Configuration Environment



Connecting the Console Cable

- Step 1: Connect the end of the console cable with DB-9 jack to the serial port of the PC.
- Step 2: Connect the end of the console cable with RJ45 to the console port of the switch.

Setting HyperTerminal Parameters

- Step 1: Start the PC and run the terminal simulation program on the PC, such as Terminal on Windows 3.1 or HyperTerminal on Windows 95/98/NT/2000/XP.
- Step 2: Set terminal parameters. The parameters are as follows: baud rate 9600, data bit 8, parity check none, stop bit 1, and flow control as none.

Choose Setup > Program > Attachment > Communication > Hyper Terminal.

Choose **Cancel**, the interface as shown in Figure 4-2 is displayed.

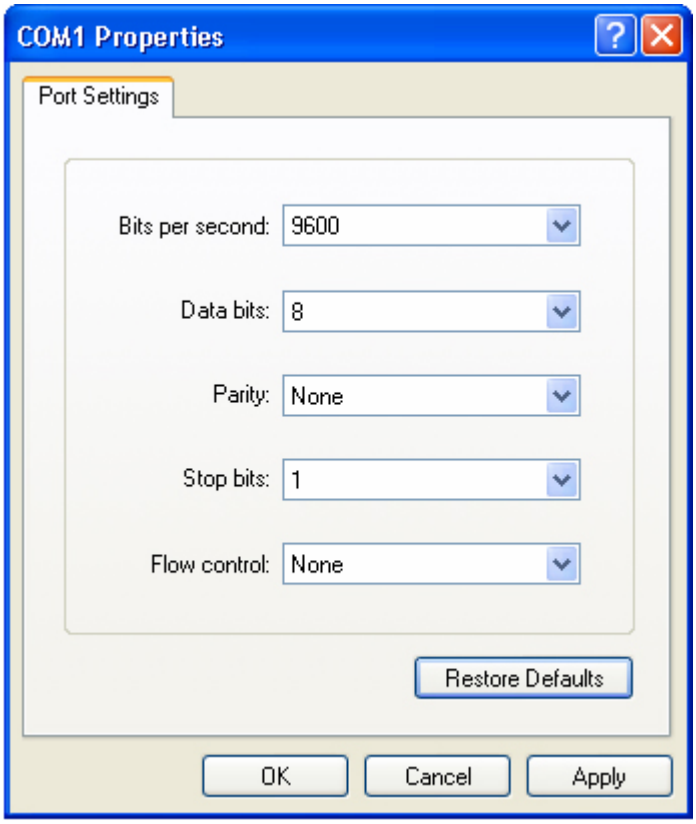
Figure 4-2

Enter the name of the new connection and click **OK**, the interface as shown in Figure 4-3 is displayed. Choose the serial port used currently in the column [use when connecting].

Figure 4-3

After choosing the serial port, click **OK** to display the serial port parameter setting interface, set the baud rate to 9600, data bit to 8, parity check to none, stop bit to 1 and flow control to none.

Figure 4-4



After setting the parameters, click **OK** to enter the hyper terminal interface.

Startup Check

Checking before the Device is Powered on

- The routing host is fully grounded.
- The power cable is correctly connected.
- The power supply voltage complies with the requirement of the switch.
- The control cable of the PC is properly connected to the console port of the switch. The hyper terminal is started and the parameter settings are correct.

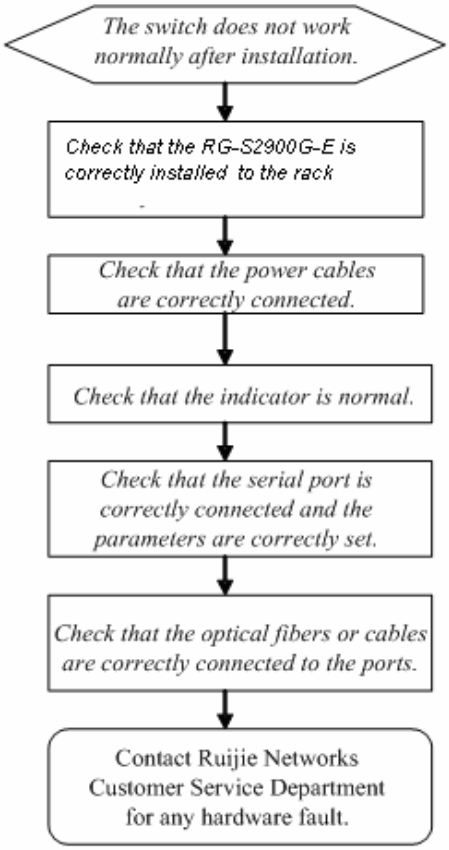
Checking after Program Startup (Recommended)

After power-on, you are recommended to perform the following checks to ensure the normal operation of follow-up configurations.

- Check whether information is displayed on the terminal interface.
- Check whether the status of the switch indicator is normal.
- Check whether the main program of the device is normally loaded.
- Check whether the time on the device is consistent with the current Beijing time.
- Check whether the gigabit Ethernet electrical interface forwards data normally.

Maintenance and Troubleshooting

General Troubleshooting Procedure



Troubleshooting Common Faults

Symptom	Possible Causes	Solution
Forgetting the management interface login password	A password is manually configured but it is forgotten.	Please contact Ruijie Networks Customer Service Department for technical support.
The status indicator is not on after the switch is started.	The power supply module does not supply power. The power cable is in loose contact.	Check whether the power socket at the equipment room is normal and whether the power cable of the switch is in good contact.
The status indicator is red.	Fan alarm Temperature alarm	Check whether the fan is blocked or damaged. At this time, the switch already stops the normal service exchanges. Check in time the working environment of the switch, clean the dust on the cabinet and reinforce the refrigeration effect.

Symptom	Possible Causes	Solution
The serial port console has no output or outputs illegible characters.	The serial port connected to the switch does not match that opened by the configuration software. The serial port is not configured correctly.	Change the serial port opened by the configuration software to be the one connected to the switch. Check that the parameter configuration of the serial port matches that specified in the instructions.
The RJ45 port is not in connectivity or it is erroneous in receiving/transmitting frames.	The connected twisted pair cable is faulty. The length of the cable exceeds 100 m. The port has special configuration that has no common working mode with the connected switch.	Replace the twisted pair cable. Check that the port configuration has the common working mode with the connected switch.
The fiber port cannot be connected.	The Rx and Tx ends are connected reversely. The interconnected optical module type does not match. The fiber type is not correct. The length of the optical fiber exceeds that rated of the optical module.	Switch the Rx and Tx ends of the optical fiber. Replace the optical module with one of the matched type. Replace the optical fiber with one of the appropriate type. Replace the optical fiber with one of the appropriate length.
The PoE port cannot be powered.	The PoE function is not enabled. The connected twisted pair is faulty. The PD (that is, the powered device, for example, AP) connected to the port does not comply with the 802.3af or 802.3at standard. The serial port control terminal connected to the PD is not properly grounded. The switch is not properly grounded.	Enter interface configuration mode and enable the PoE function. Replace the twisted pair. Replace the current PD with a PD that complies with the 802.3af or 802.3at standard. For the RG-S2928G-12P/24P switch, you can enable the PoE non-standard compatible function to power the PD. Ground the serial port control terminal properly and ensure that the switch is properly grounded. For the RG-S2928G-12P/24P switch, you can enable the PoE non-standard compatible function to power the PD. Ground the switch properly.
The PoE port indicator is yellow.	The PD is short-circuited or overloaded and its power exceeds the power value distributed to this port by the PoE switch. The total power of the PDs connected to the switch exceeds the rated power range provided by the PoE switch.	Check whether the rated power of the PD is within the output power range of the switch. If yes, set the power distributed to the port by the switch to a larger value. If the problem persists after the setting, the PD is damaged. In this case, replace the PD. Determine the total power of the PDs. To power a certain port preferentially, set the priority of this port to a higher value.

Appendix A: Connectors and Connection Media

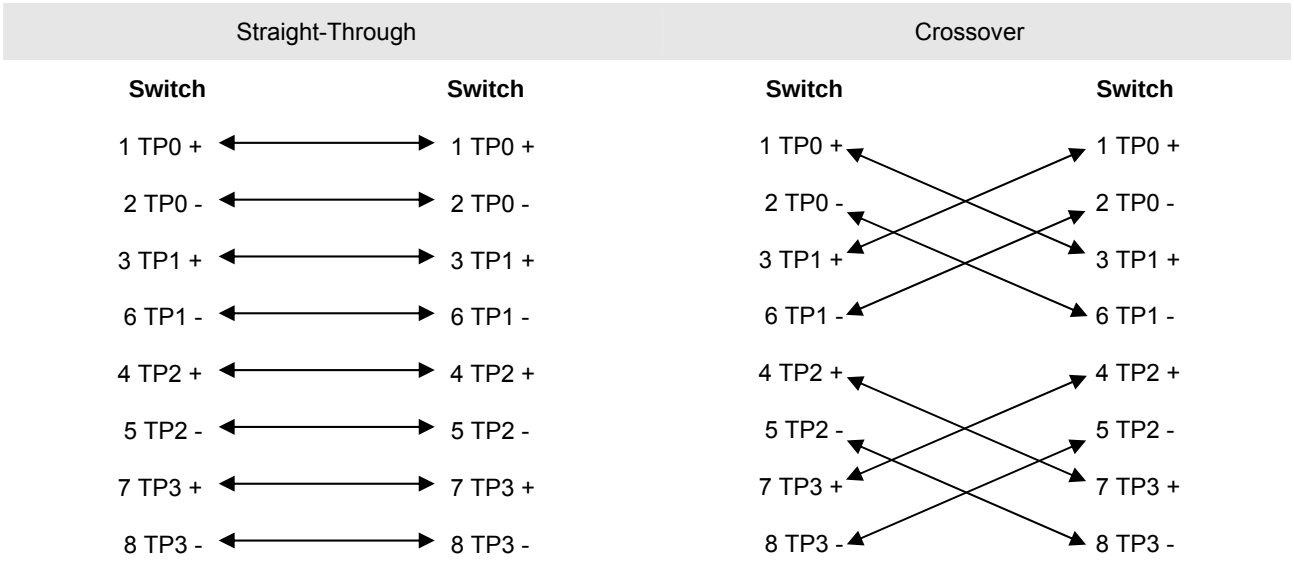
1000BASE-T/100BASE-TX/10BASE-T Ports

The 1000BASE-T/100BASE-TX/10BASE-T is a port that supports adaptation of three rates, and automatic MDI/MDIX Crossover at these three rates.

The 1000BASE-T complies with IEEE 802.3ab, and uses the cable of 100-ohm Category-5 or Supper Category-5 UTP or STP, which can be up to 100 m.

The 1000BASE-T port uses four pairs of wires for transmission, all of which must be connected. Figure A-1 shows the connections of the twisted pairs used by the 1000BASE-T port.

Figure A-1 Four Twisted Pairs of the 1000BASE-T



In addition to the above cables, the 100BASE-TX/10BASE-T can also use 100-ohm Category-3, 4, 5 cables for 10 Mbps, and 100-ohm Category-5 cables for 100 Mbps, both of which can be up to 100 m. Figure A-2 shows the pinouts of the 100BASE-TX/10BASE-T.

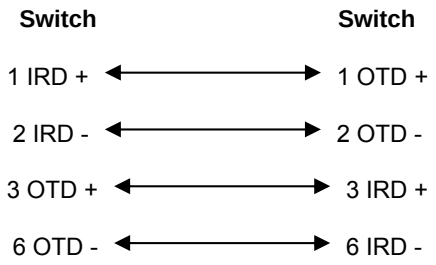
Figure A-2 Pinouts of the 100BASE-TX/10BASE-T

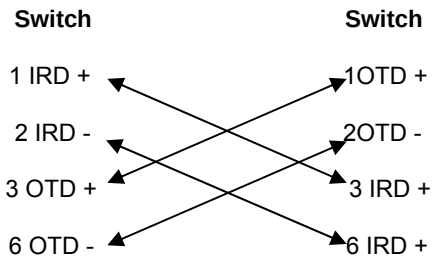
Pin	Socket	Plug
1	Input Receive Data+	Output Transmit Data+
2	Input Receive Data-	Output Transmit Data-
3	Output Transmit Data+	Input Receive Data+
6	Output Transmit Data-	Input Receive Data-
4、5、7、8	Not Used	Not Used

Figure A-3 shows the straight-through and crossover cable connections for the 100BASE-TX/10BASE-T.

Figure A-3 Connections of the Twisted Pairs of the 100BASE-TX/10BASE-T

Straight-Through	Crossover

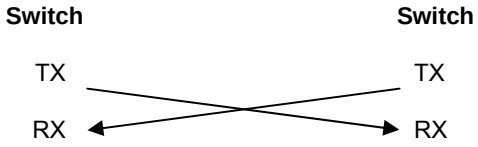




2. Optical Fiber Connection

For the optical fiber ports, select single-mode or multiple-mode optical fibers for connection according to the fiber module connected. The connection schematic diagram is shown in Figure A-4:

Figure A-4 Optical Fiber Connections



Appendix B Mini-GBIC Modules

We provide appropriate 1000M SFP modules (Mini-GBIC) modules according to the types of interfaces of the switch modules. You can select the SFP module to suit your specific needs. The following models and technical specifications of some 1000M SFP modules are listed for your reference.

Models and Technical Specifications of the Mini-GBIC (SFP) Module

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

Mini-GBIC (SFP)	Wavelength (nm)	Media Type	Core Size (μm)	Modal Bandwidth (MHz/km)	Cabling Distance	Intensity of Transmitted Light (dbm) MAX	Intensity of Received Light (dbm) MAX	Standard Compliance
Mini-GBIC-SX	850	Multi-mode fiber	62.5 62.5 50.0 50.0	160 200 400 500	220 m 275 m 500 m 550 m	-4	-17	IEEE802.3
Mini-GBIC-LX	1310	Multi-mode fiber	62.5 50.0 50.0	500 400 500	550 m 550 m 550 m	-3	-20	
		Single-mode fiber	9/10	N/A	10 km			
Mini-GBIC-LH40	1310	Single-mode fiber	9/125	N/A	40 km	3	-3	
Mini-GBIC-ZX50	1550	Single-mode fiber	N/A	N/A	50 km	0	-22	
Mini-GBIC-ZX80					80 km	4.7	-22	
Mini-GBIC-ZX100					100 km	5	-9	
Mini-GBIC-GT	N/A	CAT 5 UTP	N/A	N/A	100 m	N/A	N/A	

Caution For the optical module with transmission distance exceeding 40 km and more, one on-line optical attenuator should be added on the link to avoid the overload of the optical receiver when short single-mode optical fibers are used.

Appendix C Site Selection

- The machine room should be at least 5km away from the heavy pollution source such as the smelter, coal mine and thermal power plant, 3.7km away from the medium pollution source such as the chemical industry, rubber industry and electroplating industry, and 2km away from the light pollution source such as the food manufacturer and leather plant. If the pollution source is unavoidable, the machine room should be located on the windward side of the pollution source perennially with advanced protection.
- The machine room should be at least 3.7km away from the sea or salt lake. Otherwise, the machine room must be sealed, with air conditioner installed for temperature control. Saline soil cannot be used for construction. Otherwise, you should select devices with advanced protection against severe environment.
- Do not build the machine room in the proximity of livestock farms. Otherwise, the machine room should be located on the windward side of the pollution source perennially. The previous livestock house or fertilizer warehouse cannot be used as the machine room.
- The machine room should be firm enough to withstand severe weather conditions such as windstorm and heavy rain as well as away from dust. If the dust is unavoidable, keep the door and window away from the pollution source.
- The machine room should be away from the residential area. Otherwise, the machine room should meet the construction standard in terms of noise.
- Make sure the air vent of the machine room is away from the sewage pipe, septic tank, and sewage treatment tank. Keep the machine room under positive pressure to prevent corrosive gas from entering the machine room to corrode components and circuit boards. Keep the machine room away from industrial boiler and heating boiler.
- The machine room had better be on the second floor or above. Otherwise, the machine room floor should be 600mm higher than the highest flood level ever recorded.
- Make sure there are no cracks or holes in the wall and floor. If there are cable entries in the wall or window, take proper sealing measures. Ensure that the wall is flat, wear-resistant, and dust-free, which should be up to the standard for flame retarding, soundproofing, heat absorption, dust reduction, and electromagnetic shielding.
- Keep the door and the window closed to make the machine room sealed.
- The steel door is recommended for soundproofing.
- Sulfur-containing materials are forbidden.
- Pay attention to the location of the air conditioner. Keep the air conditioner from blowing wind straight toward the device or blowing water drops from the window or air vent toward the device.