RAISECOM

ISCOM2924GF-4GE_4C Hardware Description

A_01

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You can access the most current Raisecom product information on the World Wide Web at the following URL:

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Comments and questions about how the ISCOM2924GF-4GE_4C device works are welcomed. Please review the FAQ in the related manual, and if your question is not covered, send email by using the following web page:

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If you have comments on the ISCOM2924GF-4GE_4C specification, instead of the web page above, please send comments to:

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We hope to hear from you!

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Release Notes

Date of Release	Manual Version	Revisions
20111017	A_01	First release

Preface

About This Manual

The munal mainly introduces device, power module and cable of ISCOM2924GF-4GE_4C enhanced aggregation Ethernet switch, and include characteristics, appearance, interface, indicator of device and fuction, appearance, interface, specifications of DC power module and AC power module, etc. at the same time, it introduces appearance and technical specification of cable used in device.

Version of products

Name of products	Version of products
ISCOM2924GF-4GE_4C enhanced aggregation Ethernet switch	A

Stipulations in This Manual

Symbol

Symbol	Description
⚡Warning	The text starts with this symbol means potential danger. People had better to avoid the danger in case of being hurt.
⚠Caution	The text starts with this symbol means potential risk. The device may be damaged, loss of data, degrade device performance or other unpredictable results if user ignore this text.
✎Note	The text starts with this symbol means subjoin contents, which is complementary and emphasize of the document text.
🔍Tip	The text starts with this symbol means tips to solve some question or save users' time.

Format

Format	Description
SimSun	The main body is expressed by SimSun.
SimHei	Title, subtitle and Block are expressed by SimHei.
Regular script	Alarm and note are expressed by regular script.
"Lucida CONSLOE" format	Use "Lucida CONSLOE" format to output information from screen. The block fonts are used in input information from terminal side by users.

Format of command line

Format	Meaning

Block fonts	Key words in command line (remained unchanged parts in command which input according to original text) are expressed by block fonts.
italic	Parameters in command lines (the part in command must be replaced by actual value) are expressed by italic.
[ ]	The part in "[]" in configuration of command is optional.
{ x | y | ... }	Choose one of two or many options.
[x | y | ...]	Choose one or none of two or many options.
{ x | y | ... } *	Choose many options and one option at least, all options at most.
[x | y | ...] *	Choose one or none of two or many options.

Graphics interface element referencing

Format	Meaning
< >	The format with < > stands for names of buttons and keypad, such as click <Enter>.
[/]	The format with [] stands for name of windows and menus. Multilevel of menus are separated by "/". For example, selecting [file / new folder] stands for selecting [folder] menu item of [new] sub-menu under [file] menu.

Keyboard operation

Format	Meaning
Byte with ""	Name of key. For example, "Enter", "Alt", "Ctrl", "a" respectively stands for enter, shift, control, letter a.
"key 1 + key 2"	Press several keys on the keyboard at the same time. For example, "Ctrl + Alt + Delete" means pressing "Ctrl", "Alt", "Delete" at the same time.
"key 1, key 2"	Press the first key, release, and then press the second key. For example, "Alt, B" means pressing "Alt", release it, and then press "B".

Mouse action

Format	Meaning
Click	Press rapidly and release a mouse button.
Double click	Press rapidly with two times continuously and release a key of mouse.
Drag	Hold down a key of mouse for a while, and move mouse.

Revision record

Version of document 01 (2011-09-01)

First release.

General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

Safety Symbols

⚠ Warning	This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.

⚡	Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.
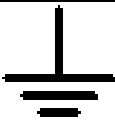
⏚	Protective earth: the marked lug or terminal should be connected to the building protective earth bus. Some products have terminals which are permanently protective earthing conductors. Please be sure well connected to earthing before equipment connected to supply.

☀ Warning	Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached. Please observe the following precautions: • Before turning on the chassis with optic module, make sure that the fiber optic cable is intact and is connected to the transmitter.

• Do not attempt to adjust the laser drive current.
• Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.

• The use of optical devices with the equipment will increase eye hazard.
• Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure.
ATTENTION: The laser beam may be invisible!

Always observe standard safety precautions during installation, operation and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

Some products have more than one power supply cord. Disconnect 2 power supply cords before servicing to avoid electric shock.

Before operating modules in the electricity conditions, please be noticed that optical modules shall be connected with optical fiber wires or shield with optical module cover for fear that laser light harms to operator's eyes.

It is suggested to apply optical module CLASS1 as laser.

Handling Energized Products

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may

be present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective earth terminal. If an earth lug is provided on the product, it should be connected to the protective earth at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in earthed racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Connection of AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

Connection of DC Mains

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC mains systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC supply is electrically isolated from any AC source and that the installation complies with the local codes.

Before connecting the DC supply wires, ensure that power is removed from the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position. When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation.

Preventing Electrostatic Discharge Damage

Modules which can be plugged into chassis are sensitive to damage from static electricity. Conversely, static voltages as high as 35,000V can be generated just by handling plastic or foam packing material, or by sliding assemblies across plastic and carpets. Not exercising the proper electrostatic discharge (ESD) precautions can result in intermittent or complete component failures. To minimize the potential for ESD damage, observe the following guidelines:

• Always use an ESD-preventive antistatic wrist strap or ankle strap and ensure that it makes good skin contact.

• When removing or installing a component, make sure the equipment end of your antistatic strap leash is connected to the ESD connection sockets on the front of the chassis or to a bare metal surface on the chassis. Avoid contact between the component and your clothing. The wrist strap only protects the component from ESD voltages on the body; ESD voltages on your clothing can still cause component damage.

• Always place a card component-side-up on an antistatic surface, in an antistatic card rack, or in a static shielding bag. If you are returning the item to the factory, immediately place it in a static shielding bag.

• Handle Modules by the metal card carrier edges only; Avoid touching the board or any connector pins.

Chapter 1 Product Overview

The chapter introduces performance, appearance, interface and indicator, etc.

- ✧ Overwiew
- ✧ Performance introduction
- ✧ Appearance
- ✧ Interface
- ✧ Indicator

1.1 Overview

The manual will introduce two products: ISCOM2924GF-4GE and ISCOM2924GF-4C.

ISCOM2924GF-4GE is a full gigabit trunk switch which is produced by Raisecom and located in park trunk of access layer in the MAN. Uplink service interface of ISCOM2924GF-4GE is 4 gigabit Combo port and its downlink service interface is 24 100BASE-FX/1000BASE-X SFP (Small Form-factor Pluggable).

ISCOM2924GF-4C is a trunk ten-gigabit optical switch which is produced by Raisecom and located in 10 GE trunk Ethernet switch. It can be achieved that full optical switch + EDD networking (Ethernet Demarcation Device). Uplink service interface of ISCOM2924GF-4C is 4 10G SFP + port and its downlink service interface is 24 100BASE-FX/1000BASE-X SFP.

ISCOM2924GF-4GE_4C device can be installed in conditions as below:

- ➢ In ETSI 600mm chassis
- ➢ 19-inch 450mm chassis
- ➢ 19-inch 600mm chassis
- ➢ Open chassis
- ➢ On worktable

1.2 Performance introduction

1.2.1   System function

The main system functions are as following:

- ➢ Support storage and forwarding mode, size of default frame is 1526 bytes, the max. size of frame is 9250 bytes, in support of Jumbo frame.
- ➢ Support adding, deleting, checking, searching, auto-learning and auto-aging functions of MAC address table, capacity of MAC address table is 32KB.
- ➢ Support 802.1Q protocol, 4094 forwarding VLAN and double TAG.
- ➢ Support flexible QinQ and 1:1 VLAN conversion.
- ➢ Support rate limit over port and VLAN.
- ➢ Support storm control for broadcast, multicast and DLF storms.
- ➢ Support Link trunk function, at most in support of 8 trunk group, each group with 8 ports at most.
- ➢ Support LACP.

- ➢ Support flow control and back pressure control over IEEE 802.3X protocol.
- ➢ Support transmit transparently BPDU message, DOT1X message, LACP message, CDP, VTP, UDLD, PAGP message.
- ➢ Support DHCP.
- ➢ Support time management.
- ➢ Support IGMP Snooping (V1, V2).
- ➢ Support digital diagnostics of optical module.
- ➢ Support loopback check of port.
- ➢ Support Ethernet production, G.8031 linear protection and G.8032 ring network protection.
- ➢ Support system management, command configuration, Telnet remote configuration and configuration through Console port, etc.
- ➢ Support LLDP.
- ➢ Support loading and updating.
- ➢ Support OAM.
- ➢ Support CFM, SLA, ACL, QoS.
- ➢ Support cluster management, extending OAM.
- ➢ Support alarm management, security feature, statistics, interface mirror.

1.2.2 Physical parameter

Physical parameters of ISCOM2924GF-4GE_4C:

Table 1-1 Physical parameters of ISCOM2924GF-4GE_4C

Item		Parameter
Dimension		440mm (W)×360mm (D)×44mm (H)
Power Consumption		55W
Weight		7kg
Working temperature		-5℃~50℃
Working humidity		10% RH~90% RH, non-condensation
DC input voltage	Rated voltage	-48V
	Voltage range	-36V~-72V
AC input voltage	Rated voltage	220V
	Voltage range	100V~240V (50Hz/60Hz)
Lightning proof level	AC power	differential mode 6kV, common mode 6kV
	DC power	differential mode 1kV, common mode 2kV

1.3 Appearance

1.3.1 Chassis appearance

Dimension of ISCOM2924GF-4GE_4C chassis is 440mm (W)×360mm (D)×44mm (H).

We can see chassis appearance of ISCOM2924GF-4GE device in figure 1-1.
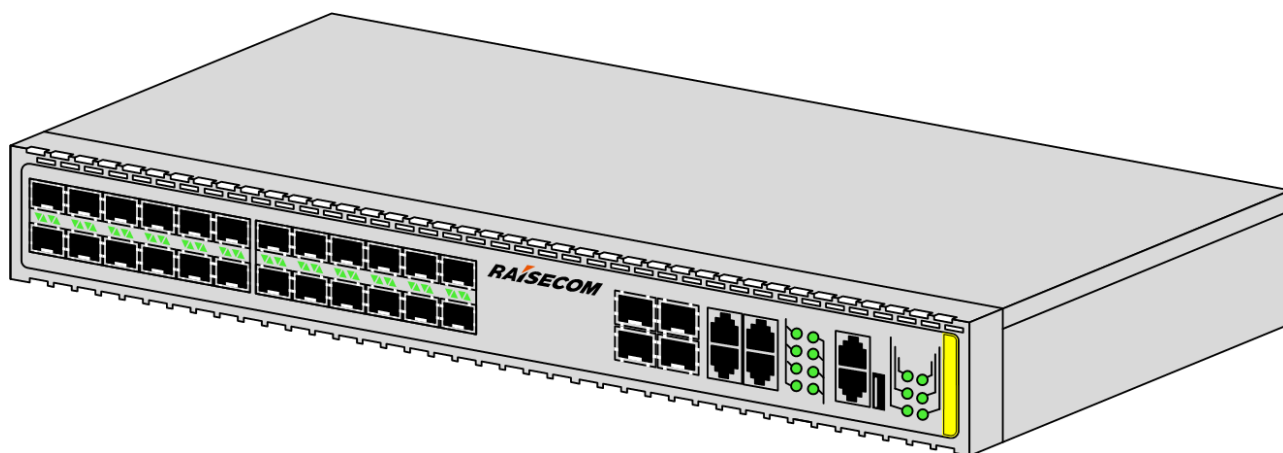
Figure 1-1 Chassis appearance of ISCOM2924GF-4GE device

We can see chassis appearance of ISCOM2924GF-4C device in figure 1-2.
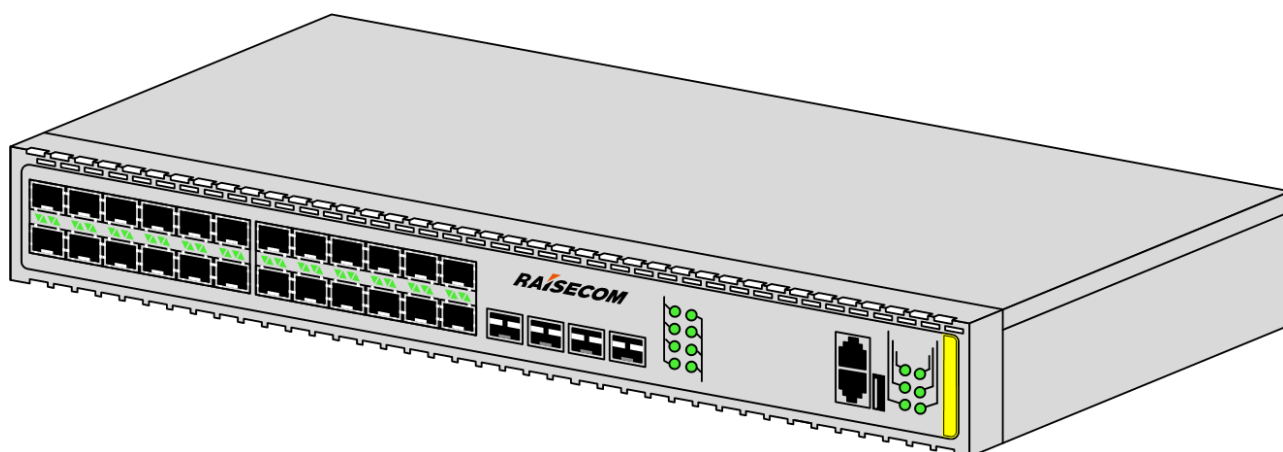
Figure 1-2 Chassis appearance of ISCOM2924GF-4C device

1.3.2 Front panel

We can see front panel of ISCOM2924GF-4GE device in figure 1-3.
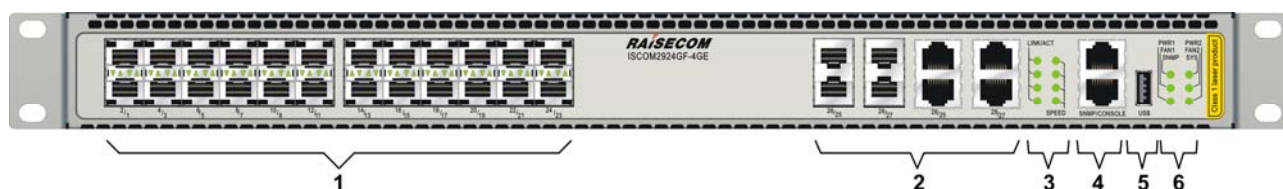
Figure 1-3 Panel of ISCOM2924GF-4GE device

1: downlink service interface 1~24 (SFP);

2: uplink service interface 25~28 (Combo);

3: LINK/ACT, SPEED indicator;

4: SNMP, Console interface (RJ45);

5: Console interface (USB);

6: PWR, FAN, SYS indicator;

We can see panel of ISCOM2924GF-4C device in figure 1-4.
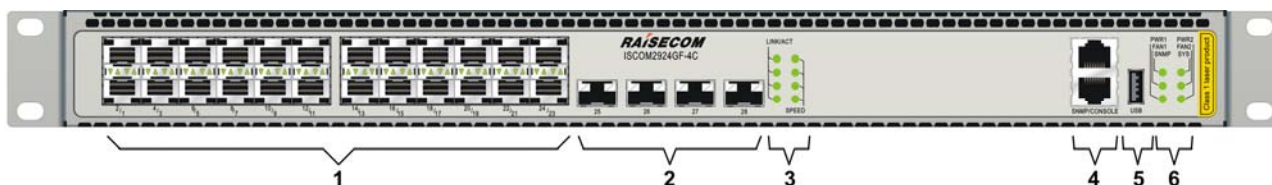
Figure 1-4 Panel of ISCOM2924GF-4C device

1: downlink service interface 1~24 (SFP);

2: uplink service interface 25~28 (SFP+);

3: LINK/ACT, SPEED indicator;

4: SNMP, Console interface (RJ45);

5: Console interface (USB);

6: PWR, FAN, SYS indicator;

1.3.3 Rear panel

We can see rear panel of ISCOM2924GF-4C device in figure 1-5.

Figure 1-5 Rear panel of ISCOM2924GF-4C device

Note: power configuration of ISCOM2924GF-4C device supports: dual DC, dual AC or hybrid power source (1 DC + 1 AC).

1.4 Interface

1.4.1 Type and purpose of interface

ISCOM2924GF-4GE: downlink service interface is 24 100BASE-FX/1000BASE-X SFP, uplink service interface is 4 gigabit Combo port.

ISCOM2924GF-4C: downlink service interface is 24 100BASE-FX/1000BASE-X SFP, uplink service interface is 4 SFP+10G port.

Type and purpose of ISCOM2924GF-4GE interface:

Table 1-2 Interface of ISCOM2924GF-4GE

Name	Purpose	Type	Description
Port1~Port 24	Downlink service	SFP	Type of the optical module in use: 1000BASE-X;

			100BASE-FX;
	interface		Type of the electrical module in use:
			1000BASE-T;
			10/100/1000BASE-T;
			10/100BASE-T;
Port25~Port28	Uplink service interface	COMBO optical port	Type of the optical module in use: 1000BASE-X; Type of the electrical module which can be used by optical port: 1000BASE-T; 10/100/1000BASE-T;
		COMBO electrical port	10/100/1000BASE-T;
SNMP	NMS interface	RJ45	10/100BASE-T auto-negotiation electrical interface;
CONSOLE	Console interface	RJ45	DB9
		USB	-

Type and purpose of ISCOM2924GF-4C interface:

Table 1-3 Interface of ISCOM2924GF-4C

Name	Purpose	Type	Description
Port1~Port 24	Downlink service interface	SFP	Type of the optical module in use: 1000BASE-X; 100BASE-FX; Type of the electrical module in use: 1000BASE-T; 10/100/1000BASE-T; 10/100BASE-T;
Port25~Port28	Uplink service interface	SFP+	Type of the optical module in use: 10GE;
		SFP	Type of the optical module in use: 1000BASE-X; Type of the optical module in use: 1000BASE-T; 10/100/1000BASE-T;
SNMP	NMS interface	RJ45	10/100BASE-T auto-negotiation electrical interface;
CONSOLE	Console interface	RJ45	DB9
		USB	-

1.4.2 Attributes of interface

Attribute of 100BASE-FX/1000BASE-X SFP optical interface:

Table 1-4 Attribute of 100BASE-FX/1000BASE-X SFP optical interface

Attribute	Description
Type of connector	LC/PC
Attribute of optical interface	Defined by the SFP optical module;
Coding type	8B/10B
Transmission rate	support 100M/1000Mauto-negotiation;
Working mode	full-duplex

Attribute of SFP+ optical module interface:

Table 1-5 Attribute of SFP+ optical module interface

Attribute	Description
Type of connector	LC/PC
Attribute of optical interface	Defined by the SFP+ optical module;
Code type	64B/66B
Transmission rate	10Gbit/s
Working mode	full-duplex

Attribute of RJ45 electrical interface with 10/100/1000BASE-T standard in COMBO interface:

Table 1-6 Attribute of RJ45 electrical interface with 10/100/1000BASE-T standard

Attribute	Description
Type of connector	RJ45
Working mode	Support 10M/100M/1000Mauto-negotiation. Support two working ways: full-duplex and half-duplex.
Cable specification	Using CAT-5 UTP when works in 10M and 100M mode; Using super CAT-5 STP when works in 1000M mode.

Attribute of console interface:

Table 1-7 Attribute of console interface

Attribute	Description
Type of connector	RJ45
Working mode	Duplex UART (Universal Asynchronous Receiver Transmitter);
Electrical feature	RS-232
Band rate	9600 bit/s
Cable specification	8-pin cable

Attribute of USB interface:

Table 1-8 Attribute of USB interface

Attribute	Description
Type of connector	USB
Working mode	half-duplex
Electrical feature	USB
Band rate	USB1.1is 12Mbit/s, USB2.0 is 480Mbit/s.
Cable specification	4-pin cable

Attribute of SNMP interface:

Table 1-9 Attribute of SNMP interface

Attribute	Description
Type of connector	RJ45
Interface speed	10/100BASE-Tauto-negotiation;
Pin arrangement	Host mode, support straight-through cable, cross-over cable auto-negotiation;

1.4.3   Service interface module performance

Attribute of 1000BASE-X SFP optical module:

Table 1-10 Attribute of 1000BASE-X SFP optical module

Model	Wavelength (mm) (type of Laser)	Type of receiver	Tx optical power (dBm)	Min. overload point (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Distance (km)
USFP-Gb/M-D-R	850 (VCSEL)	PIN	-10~-3	-3	9	< -15	0.55
USFP-Gb/S1-D-R	1310 (FP)	PIN	-10~-3	-3	9	< -21	15

USFP-Gb/S2-D-R	1550 (DFB)	PIN	-3~2	-3	9	< -21	40
USFP-Gb/S3-D-R	1550 (DFB)	APD	-3~2	-9	9	< -30	80
USFP-Gb/LH1-D-R	1310 (DFB)	PIN	-4~-0	-3	9	< -21	40
USFP-Gb/ZX-D-R	1550 (DFB)	PIN	-2~3	-3	9	< -22	80
USFP-Gb/EX-D-R	1550 (DFB)	APD	0~5	-9	9	< -30	120
USFP-Gb/SS13-D-R	TX1310/RX1550 (FP/DFB)	PIN	-10~-3	-3	9	< -21	15
USFP-Gb/SS15-D-R	TX1550/RX1310 (FP/DFB)	PIN	-10~-3	-3	9	< -21	15
USFP-Gb/SS24-D-R	TX1490/RX1550 (DFB)	PIN	-3~2	-3	9	< -21	40
USFP-Gb/SS25-D-R	TX1550/RX1490 (DFB)	PIN	-3~2	-3	9	< -21	40
USFP-Gb/SS34-D-R	TX1490/RX1550 (DFB)	PIN	-3~2	-3	9	< -29	100
USFP-Gb/SS35-D-R	TX1550/RX1490 (DFB)	PIN	-3~2	-3	9	< -29	100
USFP-03/M-D-R	1310 (LED)	PIN	-20~-10	-14	9	< -29	2
USFP-03/S1-D-R	1310 (FP)	PIN	-15~-8	-8	9	< -34	15
USFP-03/S2-D-R	1310 (DFB)	PIN	-5~0	-8	9	< -34	40
USFP-03/S3-D-R	1550 (DFB)	PIN	-5~0	-10	9	< -34	80
USFP-03/SS13-D-R	TX1310/RX1550 (FP/DFB)	PIN	-15~-8	-8	9	< -28	15
USFP-03/SS15-D-R	TX1550/RX1310 (FP/DFB)	PIN	-15~-8	-8	9	< -28	15
USFP-03/SS23-D-R	TX1310/RX1550 (FP/DFB)	PIN	-5~0	-8	8.2	< -32	40
USFP-03/SS25-D-R	TX1550/RX1310 (FP/DFB)	PIN	-5~0	-8	8.2	< -32	40
USFP-03/SS34-D-R	TX1490/RX1550 (FP/DFB)	PIN	-3~2	-8	8.2	< -32	80
USFP-03/SS35-D-R	TX1550/RX1490 (FP/DFB)	PIN	-3~2	-8	8.2	< -32	80

Attribute of SFP electrical module:

Table 1-11 Attribute of SFP electrical module

Model	Application code	Auto-negotiation	Interface	LOS alarm	Distance (m)
USFP-GE-R	1000BASE-T	-	SerDes	support	100
USFP-GE/AN-R	10/100/1000BASE-T	support	SGMll	support	100
USFP-FE/AN-R	10/100BASE-T	support	SerDes	support	100

Attribute of SFP+ optical module:

Table 1-12 Attribute of SFP+ optical module

Type of fiber	Wavelength (nm)	Type of receiver	Tx optical power (dBm)	Max input power (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Distance (km)
multimode	850	PIN	-7.3 ~ -1.0	-1.0	3.0	-11.1	0.3
Single-mode	1310	PIN	-8.2 ~ 0.5	0.5	3.5	-12.6	10
Single-mode	1550	PIN	-4.7 ~ 4.0	-1.0	3.5	-14.1	40

1.5 Indicator

The panel of ISCOM2924GF-4GE mainboard has 62 indicators. The meaning of the indicators:

Table 1-13 Panel of ISCOM2924GF-4GE mainboard

Print	Status	Description
LINK/ACT Port1~Port 28	Green	Link working indicator. ● ON: line interface link up. ● Flashing: data is transmitting or receiving. ● OFF: line interface link down or fault in link.
SPEED Port1~Port 24 (SFP optical module interface) SPEED Port25~Port 28 (COMBO interface)	Green	Optical interface working speed indicator. ● ON: interface works at speed of 1000Mbit/s. ● OFF: interface works at speed of 100Mbit/s or not work.
PWR1/2	Green	Power supply indicator. ● ON: power supply works normally. ● OFF: loss power or power supply module is not installed properly.
FAN1/2	Green	Fan indicator. ● ON: fan works normally. ● Flashing: fan works abnormally. ● OFF: fan module has not been installed.

		SNMP interface working indicator.
SNMP	Green	● ON: SNMP interface link up.
		● Flashing: there is data packet to be transmitted.
		● OFF: SNMP interface link down or fault in link.
		System working indicator.
SYS	Green	● Flashing: system works in order.
		● OFF/ON: system works out of order.

The panel of ISCOM2924GF-4C mainboard has 62 indicators. The meaning of the indicators:

Table 1-14 The panel of ISCOM2924GF-4C mainboard

Print	Status	Description
LINK/ACT Port1~Port 28	Green	Link working indicator. ● ON: line interface link up. ● Flickering: data is transmitting or receiving. OFF: line interface link down or fault in link.
SPEED Port1~Port 24 (SFP optical module interface)	Green	● Optical interface working speed indicator. ● ON: interface works at speed of 1000Mbit/s. ● OFF: interface works at speed of 100Mbit/s or not work.
SPEED Port25~Port 28 (SFP+ optical module interface)	Green	Optical interface working speed indicator. ● ON: interface works at speed of 10 Gbit/s. ● OFF: interface works at speed of 1000Mbit/s or not work.
PWR1/2	Green	Power supply indicator。 ● ON: power supply works normally. ● OFF: loss power or power supply module is not installed properly.
FAN1/2	Green	Fan indicator. ● ON: fan works normally. ● Flashing: fan works abnormally. ● OFF: fan module has not been installed.
SNMP	Green	SNMP interface working indicator. ● ON: SNMP interface link up. ● Flashing: there is data packet to be transmitted. ● OFF: SNMP interface link down or fault in link.
SYS	Green	System working indicator. ● Flashing: system works in order. ● OFF/ON: system works out of order.

Chapter 2 Power Supply Module

The chapter introduces function, appearance, interface and specification of AC power supply module and DC power supply module of ISCOM2924GF-4GE_4C device.

✦   DC power supply module

✦   AC power supply module

2.1 DC power supply module

2.1.1   Function

The main functions of DC power supply module of ISCOM2924GF-4GE_4C":

➞   Provide -48V DC power supply access, support no existing of power alarm;

➞   Support redundant dual-power supply for backup and hot-swapping;

➞   Support over-high or over-low voltage detection;

➞   Integrate fan unit, support fan monitoring and automatic speed control.

2.1.2   Appearance

Panel of DC power supply module:

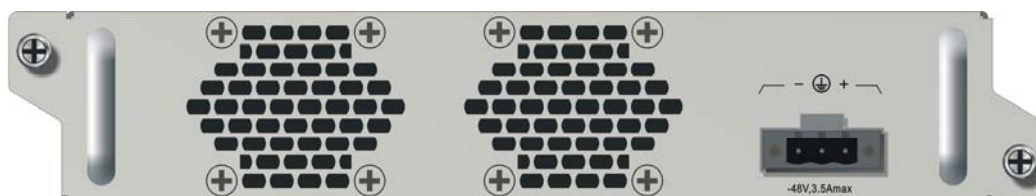**Figure 2-1 Panel of DC power supply module**

2.1.3   Interface

There is a interface in DC power supply module, and type and purpose of interface:

Table 2-1 RPD1121-48S12 power supply module module panel interface

Interface name	Purpose
+	BGND power input interface;
-	-48V power input interface;
⏚	Grounding interface;

2.1.4   Specification

Dimension: 224mm (W) ×161mm (D) ×41mm (H);

Power Consumption: 100 W;

Weight: 0.89kg;

Rated voltage : -48V;

Voltage range: -36V ~ -72V;

The maximum input DC curremt: 2A.

2.2 AC power supply module

2.2.1   Function

The main functions of AC power supply module of ISCOM2924GF-4GE_4C":

➢ Provide 220V AC power supply access, support no existing of power alarm;
➢ Support redundant dual-power supply for backup and hot-swapping;
➢ Support over-high or over-low voltage detection;
➢ Integrate fan unit, support fan monitoring and automatic speed control.

2.2.2   Appearance

Panel of AC power supply module:
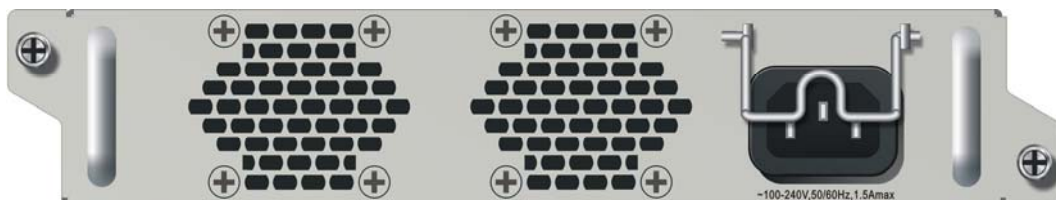
Figure 2-2 Panel of AC power supply module

2.2.3   Interface

There is a interface on panel of AC power supply module, and type and purpose of interface:

Table 2-2   Interface on panel of AC power supply module

Name	Purpose
~100V-240V	AC interface

2.2.4   Specification

Dimension: 224mm (W) ×161mm (D) ×41mm (H);

Power Consumption: 125 W;

Weight: 1.1kg;

Rated voltage : 220V;

Voltage range: 100V~-240V (50Hz/60Hz);

The maximum input DC curremt: 1.5A.

Chapter 3 Fibers and Cables

This chapter introduces the fibers and cables required by connecting device interfaces.

- ✧ Fibers
- ✧ Ethernet cables
- ✧ DC power supply cables
- ✧ AC power supply cables
- ✧ Grounding cables

3.1 Fibers

3.1.1   Overview

ISCOM2924GF-4GE_4C device can use both single mode fiber and multi-mode fiber.

Fiber connector types available by ISCOM2924GF-4GE_4C device show as below.

Table 3-1 Type of Fiber Connector

Local Connector	Remote Connector	Cable Type
LC/PC	LC/PC	2mm single mode fiber
		2mm multi-mode fiber
LC/PC	FC/PC	2mm single mode fiber
		2mm multi-mode fiber
LC/PC	SC/PC	2mm single mode fiber
		2mm multi-mode fiber

Note: Types of fiber connector and length of fiber are depended on networking condition.

3.1.2   Appearance

LC/PC fiber connector appearance of ISCOM2924GF-4GE_4C device shows as below.
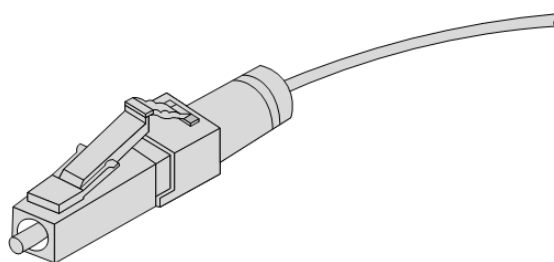
Figure 3-1 LC/PC Fiber Connector

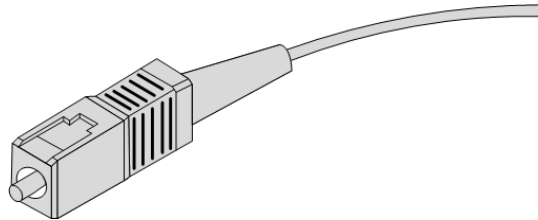User doesn't need to rotate when plugging in and pulling out LC/PC fiber connector, operating as below:

➢ When plugging fiber in, aligning optical interface with fiber head and plugging it in with suitable strength.
➢ When pulling fiber out, pressing the clip connector and push the plug in a little, and then pull the fiber out.

Appearance of SC/PC fiber connector used by ISCOM2924GF-4GE_4C device show as below.

Figure 3-2 SC/PC Fiber Connector

User doesn't need to rotate when plugging in and pulling out SC/PC fiber connector, operating as below:

➢ When plugging fiber in, aligning optical interface with fiber head and plugging it in with suitable strength.
➢ When pulling fiber out, pressing the clip connector and push the plug in a little, and then pull the fiber out.

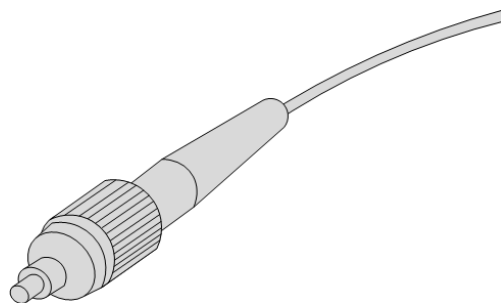Appearance of FC/PC fiber connector used by ISCOM2924GF-4GE_4C device show as below.

Figure 3-3 FC/PC Fiber Connector

User doesn't need to rotate when plugging in and pulling out FC/PC fiber connector, operating as below:

➢ When plugging fiber in, aligning fiber head to optical interface carefully, don't damnify the inner tube inside optical interface, rotate screw clockwise when the fiber touches bottom and then tighten optical interface.
➢ When pulling fiber out, contrarotate the screw at first, pull the fiber out when screw is loose enough.

3.2 Ethernet cables

3.2.1   Overview

Uses of Ethernet cable in ISCOM2924GF-4GE_4C device:

➢ To connect downlink electrical interface of ISCOM2924GF-4GE_4C device with other devices.
➢ To connect Console interface of ISCOM2924GF-4GE_4C device with network management

PC.

➢ To connect SNMP port of ISCOM2924GF-4GE_4C device with NMS network.

Ethernet service interface of ISCOM2924GF-4GE_4C device is in support of straight-through and cross-over connection cable auto-negotiation, so both kinds of network cables are available to connect Ethernet service interface.

Network cable needs to be made on site.

3.2.2   Appearance

Network cable appearance shows as below.
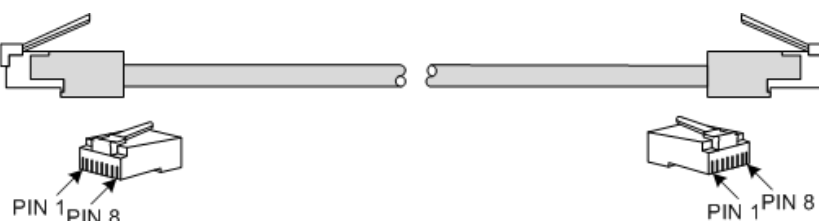
Figure 3-4 Network Cable

3.2.3   Technical specification

100M/1000M straight-through network cable connection shows as below.

Table 3-2 100M/1000M Straight-through network cable connection table

Starting from (RJ45)	Stopping at (RJ45)	Color	Remark
PIN 1	PIN 1	White/Orange	twisted pair
PIN 2	PIN 2	Orange	
PIN 3	PIN 3	White/Green	twisted pair
PIN 4	PIN 4	Blue	
PIN 5	PIN 5	White/Blue	twisted pair
PIN 6	PIN 6	Green	
PIN 7	PIN 7	White/Brown	twisted pair
PIN 8	PIN 8	Brown	

100M cross-over network cable connection shows as below.

Table 3-3 100M cross-over network cable connection table

Starting from (RJ45)	Stopping at (RJ45)	Color	Remark
PIN 1	PIN 3	White/Orange	twisted pair

PIN 2	PIN 6	Orange	
PIN 3	PIN 1	White/Green	twisted pair
PIN 6	PIN 2	Green	
PIN 4	PIN 4	Blue	twisted pair
PIN 5	PIN 5	White/Blue	
PIN 7	PIN 7	White/Brown	twisted pair
PIN 8	PIN 8	Brown	

1000M cross-over network cable connection shows as below.

Table 3-4 1000M cross-over network cable connection table

Starting from (RJ45)	Stopping at (RJ45)	Color	Remark
PIN 1	PIN 3	White/Orange	twisted pair
PIN 2	PIN 6	Orange	
PIN 3	PIN 1	White/Green	twisted pair
PIN 6	PIN 2	Green	
PIN 4	PIN 7	Blue	twisted pair
PIN 5	PIN 8	White/Blue	
PIN 7	PIN 4	White/Brown	twisted pair
PIN 8	PIN 5	Brown	

Technical specifications of network cable shows as below.

Table 3-5 Specification of network cable

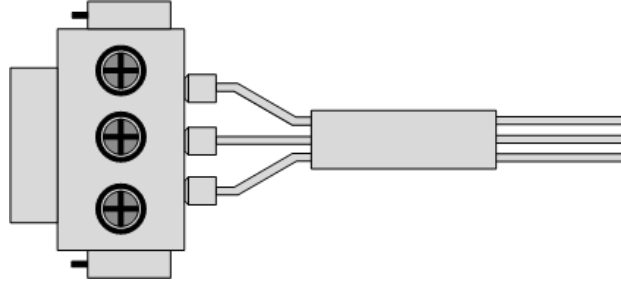| Item	Description
Connector	RJ45 crystal head;
Cable model	Symmetric twisted pair-100ohm- enhanced CAT5-0.52mm-24AWG-8 pins;
Pins	8-pin

3.3 DC power supply cables

3.3.1   Overview

DC power supply cable transmits -48V DC electricity from DC electrical equipment to terminal

17

block of ISCOM2924GF-4GE_4C device and supplies power for the whole device.

3.3.2 Appearance

DC power supply cable includes DC connector and co-axial cable, the appearance shows as below.

Figure 3-5 DC Power Supply Cable

3.3.3 Technical specification

Technical specification of ISCOM2924GF-4GE_4C DC power supply cable shows as below.

Table 3-6 Specification of DC Power Supply Cable

Item	Description
Cable name	POL-DC-unstrip cover/strip cover-1.5m;
Connector	DC connector-3-plug-head/UL/RoHS;
Cable model	Copper core multi-strand power supply cable 16AWG;
Length	1.5m

3.4 AC power supply cables

3.4.1 Overview

AC power supply cable transmits 220V AC electricity from AC electrical equipment to terminal block of ISCOM2924GF-4GE_4C device and supplies power for the whole device.

ISCOM2924GF-4GE_4C uses different AC power supply cable according to the different power wire standards of regions.

Table 3-7 ISCOM2924GF-4GE_4C AC Power Supply Cable Options

| Region standard	Cable name
China	POL-AC-three pins of Chinese standard-0.5mm2-1.5m;
Europe	French mode pins-10A/250V-1.5m/RoHS;
America	Three pins of American standard-10A/250V-1.5m/RoHS;

3.4.2 Appearance

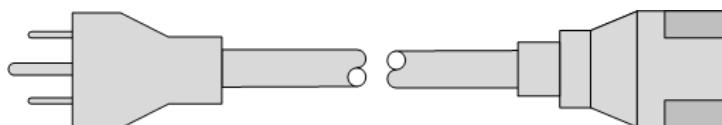GB standard three-plug connector and receptacle shows as below.
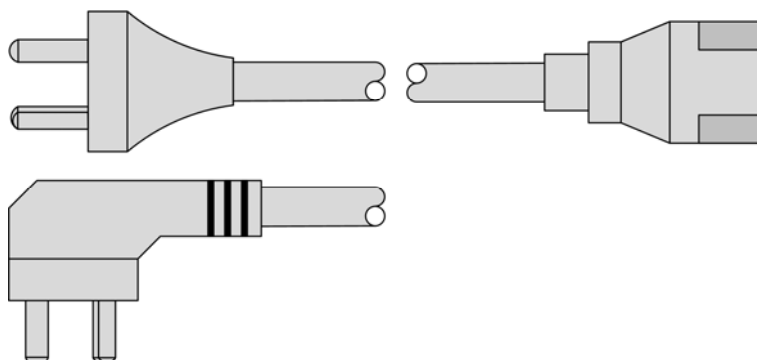
Figure 3-6 GB Standard AC Cable

European french mode three-plug connector and receptacle shows as below.
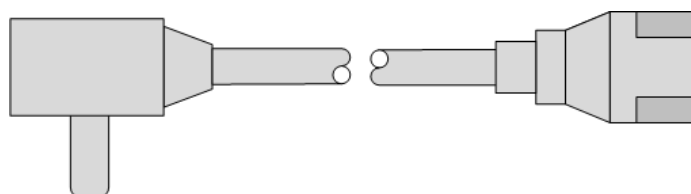
Figure 3-7 European Standard AC Cable

American standard three-plug connector and receptacle shows as below.

Figure 3-8 American Standard AC Cable

3.4.3 Technical specification

Specification of GB AC power supply cable shows as below.

Table 3-8 Specification of GB Standard AC Cable

Item	Description
Cable name	POL-AC-GB three-plug/receptacle -0.5 mm^2-1.5m;
Connector	GB three-plug, IEC60320-C13 receptacle;
Cable model	Copper core multi-strand power supply cable 20AWG (0.5mm^2);
Length	1.5m

Specification of European standard AC power supply cable shows as below.

Table 3-9 Specification of European Standard AC Cable

Item	Description
Cable name	French mode receptacle-10A/250V-1.5m/RoHS;
Connector	French mode three-plug, IEC60320-C13 receptacle;
Cable model	Copper core multi-strand power supply cable 18AWG (0.8mm^2);
Length	1.5m

Specification of American standard AC power supply cable shows as below.

Table 3-10 Specification of American Standard AC Cable

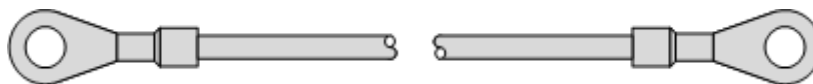| Item	Description
Cable name	American standard three-plug-10A/250V-1.5m/RoHS;
Connector	American standard three-plug connector NEMA5-15, IEC60320-C13 receptacle;
Cable model	Copper core multi-strand power supply cable 18AWG (0.8mm^2);
Length	1.5m

3.5 Grounding cables

3.5.1   Overview

Grounding cable is used to connect ISCOM2924GF-4GE_4C device to ground.

3.5.2   Appearance

ISCOM2924GF-4GE_4C device grounding cable contains OT terminal and co-axial cable, as figure shows below.

Figure 3-9 Grounding Cable

3.5.3   Technical specification

Specification of ISCOM2924GF-4GE_4C device grounding cable shows as below.

Table 3-11 Specification of Grounding Cable

Item	Description
Connector	Bare-press terminal-OT-2.5 mm^2-M4-tinning-round pre-insulation terminal-16~14AWG (1.3 ~ 2.0mm^2);

Cable model	Electron power cable-450V/750V-H07Z-K-2.5 mm^2-yellow/green-Low-smoke halogen-free burn-resistent cable;

Note: Grounding cable is not included in standard packing list of ISCOM2924GF-4GE_4C device, user please make one according to specification if needed.

Appendix

The chapter introduces glossary and acronyms in the manual.

✧   Glossary
✧   Acronyms

Glossary

B

Grounding cable   Cable to connect device to ground, usually it is co-axial cable in yellow and green.

Label   Signs for cable, chassis and warnings.

D

Single mode fiber Only a single mode can be transmitted in one fiber.

Multi-mode fiber   Multi-mode can be transmitted in one fiber.

E

ETSI 600   Chassis with width of 600mm, deep of 600mm, compliant to ETSI
standard chassis   standard.

G

Brackets   Small parts at the side of chassis, being used to install the chassis into device rack.

I

IEEE   The Institute of Electrical and Electronics Engineers.

ITU-T   International Telecommunication Union Telecommunication Standardization Sector.

J

Laser security   4 levels for laser products security in usual, level 1 with the safest laser,
level   power is usually limited at 1mW, which will neither cause fire or generate harmful radiate.

P

PWE3 — Pseudo-Wire Emulation Edge to Edge.

Q

Full-duplex — Communication link can transmit and receive data at the same time from both direction.

R

RS232 — Asynchronous transmission mode, no handshaking signal, point-to-point communication with other station RS232 or RS422, transparent transmission, speed up to 19.2kbit/s.

U

1U — Unit of dimension, U is short for unit, take 44.45mm as basic unit, namely 1U=44.45mm.

Z

Auto-negotiation — The auto negotiation procedure is: the port at one site adapts its bit rate and duplex mode according to the bit rate and duplex mode.

Acronyms

Numerics

A

AWG — American wire gauge

ACL — Access Control List

B

BPDU — Bridge Protocol Data Unit

C

CFM — Connectivity Fault Management

E

ESD — Electro Static Discharge

EDD — Ethernet Demarcation Device

ETSI	European Telecommunications Standards Institute

L

LLDP	Link Layer Discovery Protocol

M

MPLS	Multi-protocol label switching

O

ODF	Optical Distribution Frame
OAM	Operation Administration and Maintenance

P

PTN	Packet Transport Network
PTP	Precision Time Protocol

Q

QoS	Quality of Service

R

RH	Relative Humidity

S

SLA	Service-Level Agreement
SFP	Small Form-factor Pluggables

U

UPS	Uninterruptible Power Supply
UART	Universal Asynchronous Receiver/Transmitter