RAISECOM

ISCOM6820 (A)

Hardware Description

(Rel_03)

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Preface

Objectives

This document describes the chassis, hardware components, and cables of the ISCOM6820, including hardware features, components, supported functions of each component, and appearance and technical specifications of cables.

Versions

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

Product name	Hardware version	Software version
ISCOM6820	A	V3.23

Related manuals

The following table lists manuals and their contents related to the ISCOM6820.

Name	Description
ISCOM6820 (A) Hardware Description	This guide describes the hardware structure and cards, including product overview, components, fiber and cables, pluggable optical module, lookup table of LEDs, lookup table of weight and power consumption.
ISCOM6820 (A) Configuration Guide	This guide describes supported services of the ISCOM6820 from aspects of service introduction, default configurations, configuration methods, and configuration examples, including basic configuration, xPON service configuration, multicast service configuration, MAC address table configuration, VLAN configuration, Spanning Tree configuration, routing configuration, DHCP configuration, QoS configuration, system security configuration, link security configuration, and system management configuration.

Name	Description
ISCOM6820 (A) Installation Guide	This guide describes the precautions before installation, installation methods, and post-installation check, including safety instruction, installation instruction, chassis installation, installation of fan and air exhaust plenum, cards installation, cabling, hardware installation check, power-on test, device initialization, and installation reference.
ISCOM6820 (A) Quick Installation Guide	This guide describes the installation process after unpacking the device, including installation tools, precautions, installation scenarios, installation conditions, and installation steps.

Conventions

Symbol conventions

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

Symbol	Description
Warning	Indicate a hazard with a medium or low level of risk which, if not avoided, could result in minor or moderate injury.
Caution	Indicate a potentially hazardous situation that, if not avoided, could cause equipment damage, data loss, and performance degradation, or unexpected results.
Note	Provide additional information to emphasize or supplement important points of the main text.
Tip	Indicate a tip that may help you solve a problem or save time.

General conventions

Convention	Description
Times New Roman	Normal paragraphs are in Times New Roman.
Arial	Paragraphs in Warning, Caution, Notes, and Tip are in Arial.
Boldface	Buttons and navigation path are in **Boldface**.
Italic	Book titles are in *italics*.
Lucida Console	Terminal display is in Lucida Console.

Convention	Description
Book Antiqua	Heading 1, Heading 2, Heading 3, and Block are in Book Antiqua.

Change history

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

Issue 03 (2024-04-03)

Third commercial release

- Added descriptions of the ISCOM6800-XGHA.
- Upgraded the software version to V3.23.

Issue 02 (2023-08-03)

Second commercial release

- Added descriptions of the ISCOM6800-GPHA and ISCOM6800-XCHA.
- Upgraded the software version to V3.21.

Issue 01 (2023-03-31)

Initial commercial release

Contents

1 Overview

This chapter describes market orientation, appearance, and physical parameters of the ISCOM6820, including the following sections:

- Introduction
- Appearance and slots
- Physical parameters

1.1 Introduction

The ISCOM6820, developed by Raisecom, is a next-generation, compact, 2U, and plug-in Optical Line Terminal (OLT) which supports Gigabit Passive Optical Network (GPON) cards and XG(S)-PON cards. It is oriented to industrial customers, providing rich features and flexible networking schemes to meet low-density and long-distance requirements for optical fiber access. It can be applicable to these scenarios of non-dense coverage areas, outdoor deployment, limited installation space, and extended distance, and increased coverage ratio.

The ISCOM6820 has a high backplane bandwidth and powerful switching capability, featuring all-service non-blocking forwarding capability and high reliability. The cards and fans are designed with green and energy-saving thoughts.

- Act as an OLT in GPON and XG(S)-Combo PON and work with the Optical Network Unit (ONU).
- Meet the requirements of FTTx networking, such as Fiber to The Home (FTTH) and Fiber to The Building (FTTB).
- Support automatically collecting information about the power grid, meeting requirements on building the intelligent community.
- Support providing Triple Play services using the single-fiber.
- Provide high-bandwidth and long-distance access to solve the problem of small and medium-scale network fiber access.

The ISCOM6820 can be installed in the following scenarios:

- ETSI 600-mm cabinet
- 19-inch 450-mm cabinet
- 19-inch 600-mm cabinet
- Open rack

- Workbench

![Note]

When installing the chassis to the 19-inch 600-mm cabinet, you need to purchase brackets applicable to the cabinet.

1.2 Appearance and slots

1.2.1 Appearance of chassis

The ISCOM6820 is a cartridge device, which is flexible to deploy. Dimensions of the chassis are: 442 mm (Width) $\times$ 250 mm (Depth) $\times$ 88 mm (Height) (without brackets).

Figure 1-1 shows the appearance of the ISCOM6820 chassis.

Figure 1-1 Appearance of the ISCOM6820 chassis

1.2.2 Distribution of slots

The ISCOM6820 provides the following 7 slots:

- 2 slots for main control uplink cards
- 2 service card slots
- 1 fan card slot
- 2 power supply card slots

Table 1-1 shows distribution of slots on the ISCOM6820.

Table 1-1 Distribution of slots on the ISCOM6820

Fan module (slot 5)	Service card (slot 4)			
	Service card (slot 3)			
	Power supply card (slot 7)	Power supply card (slot 6)	Main control uplink card (slot 2)	Main control uplink card (slot 1)

1.3 Physical parameters

Table 1-2 lists physical parameters of the ISCOM6820.

Table 1-2 Physical parameters of the ISCOM6820

Parameter		Description
Dimensions		442 mm (Width) $\times$ 250 mm (Depth) $\times$ 88 mm (Height) (excluding brackets)
Weight	Full configuration	10 kg
Power consumption	Full configuration	500 W
DC power	Rated voltage	-48 VDC
	Voltage range	-38.4 to -57.6 VDC

2 Cards and components

This chapter describes the appearances, dimensions, and technical specifications of components of the ISCOM6820, including the following sections:

- Overview
- Main control uplink card ISCOM6820-SMUA
- Service card ISCOM6800-XCOA
- Service card ISCOM6800-GPHA
- Service card ISCOM6800-XCHA
- Service card ISCOM6800-XGHA
- DC power module (RPD1601)
- Fan module FANS385

2.1 Overview

2.1.1 Classification

The ISCOM6820 is composed of the following 6 types of components:

- Main control uplink card
- Service card
- Power supply card
- Fan card

Table 2-1 lists components of the ISCOM6820.

Table 2-1 Components of the ISCOM6820

Component	Name	Description
Main control uplink card	ISCOM6820-SMUA	For control, management, aggregation, and switching Provide six 10GE optical interfaces.
Service card	ISCOM6820-XCOA	8-way XG(S)-PON Combo service card

	ISCOM6800-GPHA	16-way GPON service card
	ISCOM6800-XCHA	8-way XG(S)-PON Combo service card
Power supply card	RPD1601-48S48	DC power input Provide a -48 VDC interface for the service frame. Support two power modules inserted concurrently for backup.
Fan card	FANS385	Fan card

2.1.2 Appearances

Appearance of main control uplink card

Figure 2-1 shows the appearance of the main control uplink card.

Figure 2-1 Appearance of the main control uplink card
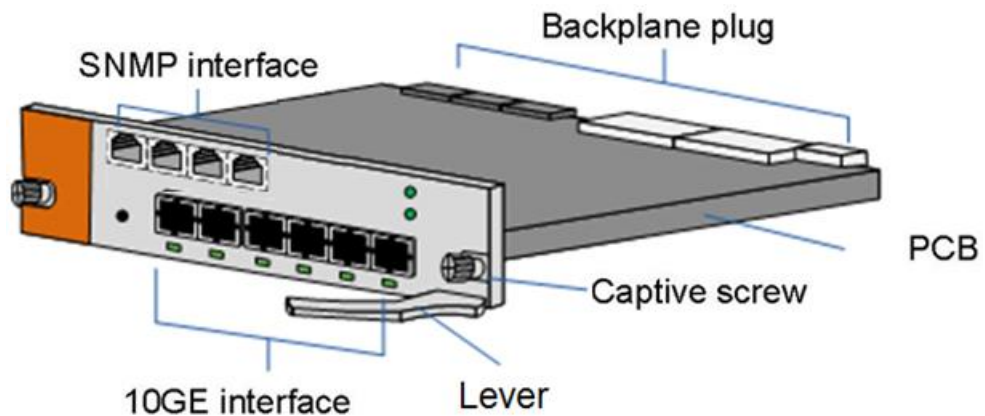
Appearance of service cards

- ISCOM6800-XCOA

Figure 2-2 shows the appearance of the ISCOM6800-XCOA.

Figure 2-2 Appearance of the ISCOM6800-XCOA
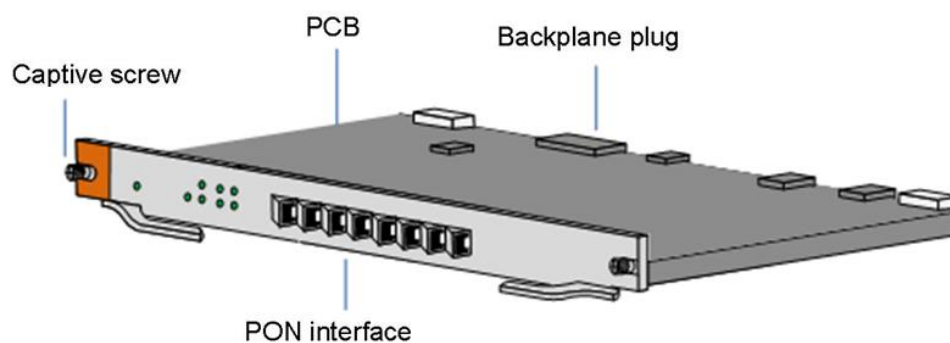
- ISCOM6800-GPHA

Figure 2-3 shows the appearance of the ISCOM6800-GPHA.

Figure 2-3 Appearance of the ISCOM6800-GPHA
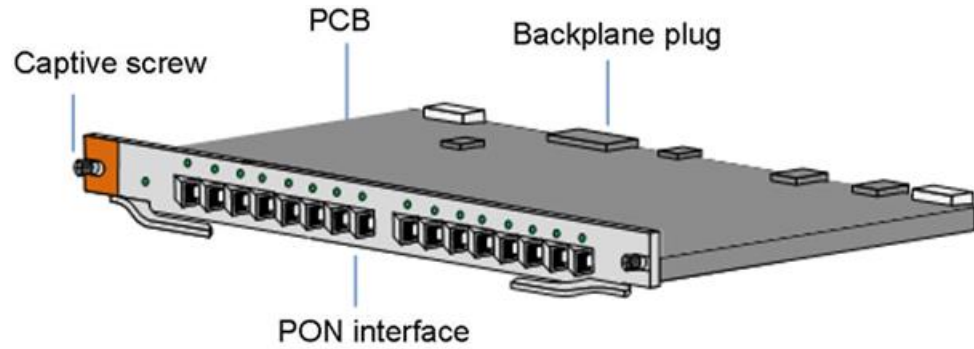
- ISCOM6800-XCHA

Figure 2-4 shows the appearance of the ISCOM6800-XCHA.

Figure 2-4 Appearance of the ISCOM6800-XCHA
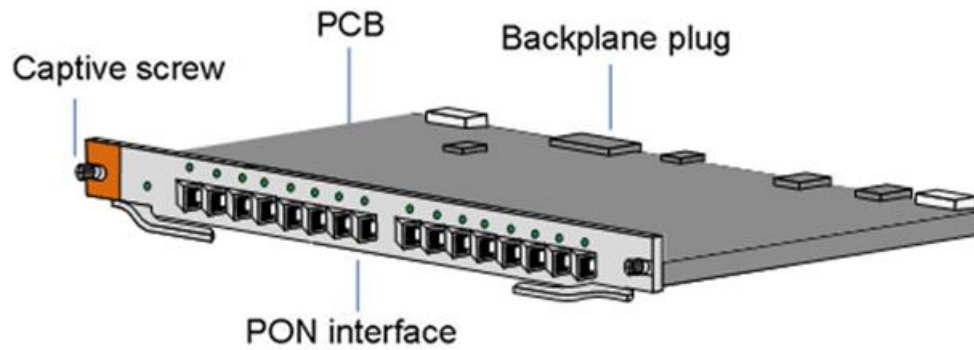
Appearance of the power module

Figure 2-5 shows the appearance of the power module.

Figure 2-5 Appearance of the power module
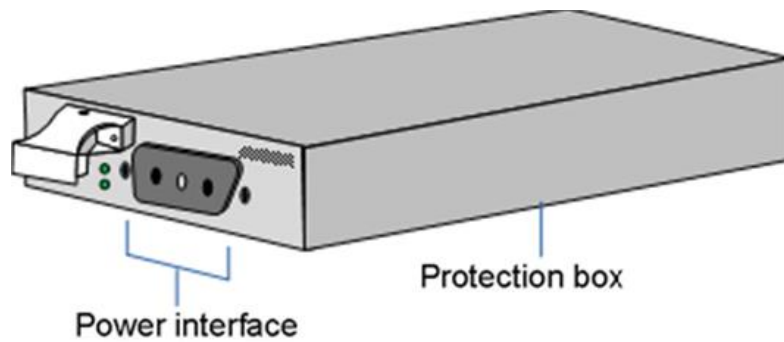
Appearance of the fan module

Figure 2-6 shows the appearance of the fan module.

Figure 2-6 Appearance of the fan module
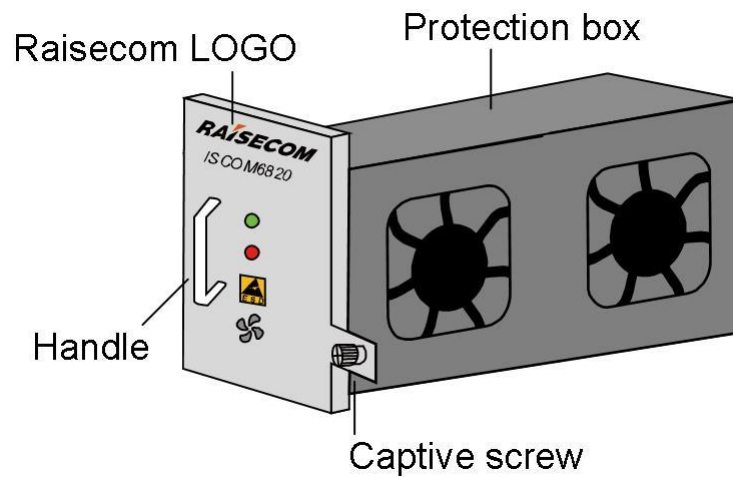
2.1.3 Hardware information label

Hardware information about ISCOM6820 components is pasted on the eye-catching position of the Printed Circuit Board (PCB), as shown in Figure 2-7.

Figure 2-7 Hardware information label on the ISCOM6820

P/N: ISCOM6820-XCOA

REV: A.00

10907000212B11804B0003F
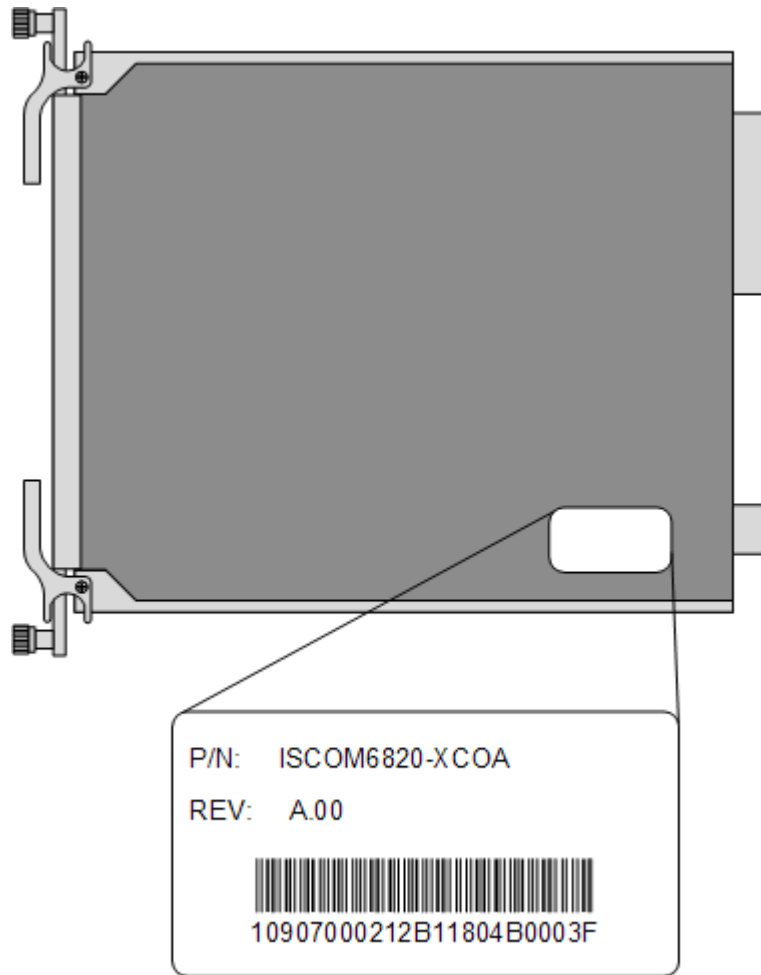
Note

The position of hardware information labels may be different because the layouts of elements are different, so search for it carefully.

Table 2-2 lists items on the hardware information label.

Table 2-2 Items on the hardware information label

Parameter	Description
P/N	Name and type of the component
REV	Hardware version of the component, where "A" means a release version and "00" means a build
Bar code	Bar code of the component

2.2 Main control uplink card ISCOM6820-SMUA

2.2.1 Introduction

The main control uplink card ISCOM6820-SMUA is the main service uplink unit of the ISCOM6820. It provides six 10GE optical interfaces (SFP+) and supports managing and maintaining the ISCOM6820 through the SNMP interface, alarm interface, and Console interface.

2.2.2 Panel and slots

The MCUA card can be inserted into slot 1 and slot 2 only. Figure 2-8 shows the panel of the main control uplink card.

Figure 2-8 Panel of the main control uplink card
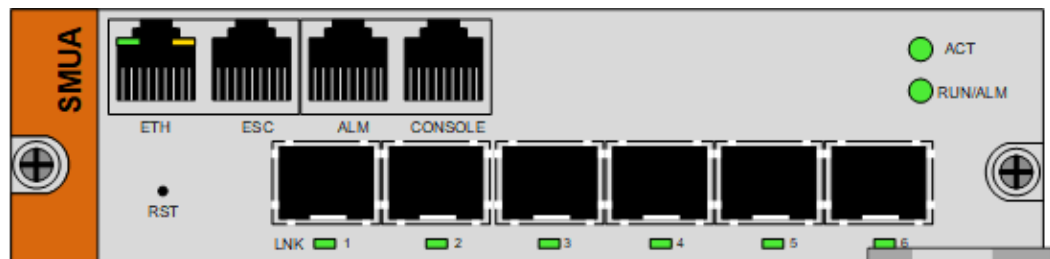
When the ISCOM6820-SMUA is inserted into slot 1 or 2, it supports the 1000 Mbit/s optical module (1000base-X) and 10 Gbit/s optical module (10Gbase-X).

2.2.3 Interfaces

There are 10 interfaces on the ISCOM6820-SMUA.

Table 2-3 lists interfaces on the ISCOM6820-SMUA.

Table 2-3 Interfaces on the ISCOM6820-SMUA

Interface	Type	Usage	Description
CONSOLE	RJ45	Local management interface	RS-232 serial interface
ETH	RJ45	Remote network management interface	10/100/1000BASE-T adaptive electrical interface
ESC	RJ45	Environment monitoring interface	RS-485 interface
ALM	RJ45	Alarm interface	3 ways of input alarms and 1 way of output alarms

Interface	Type	Usage	Description
1/2	SFP+	10 Gbit/s Ethernet service interface	Available optical module: • 10GBASE-LX/SX • 1000BASE-X

Table 2-4 lists parameters of the Console interface.

Table 2-4 Parameters of the Console interface

Parameter	Description
Connector	RJ45
Working mode	Duplex UART
Electrical features	RS-232
Baud rate	115200
Cable specifications	4-core shielded cable

2.2.4 LEDs

There are 4 LEDs on the ISCOM6820-SMUA. Table 2-5 lists LEDs on the ISCOM6820-SMUA.

Table 2-5 LEDs on the ISCOM6820-SMUA

LED	Status	Description
ACT	Green	Active/Backup LED • On: the card is the active card. • Blinking (every 1s): the card is the backup card.
RUN/ALM	Two colors	System working LED • Blinking green every 1s: the card is working properly. • Blinking green every 0.25s: the card is being initialized and loading. • Red (On): the system fails (the backplane fails). • Orange (Off): the system is working improperly.
LNK	Green	Line working LED • Green: the interface is connected properly. • Blinking green: the interface is transmitting data. • Off: the interface is disconnected or connected improperly.
Eth	Yellow	Line working LED • Green: the interface is connected properly and no data is being transmitted. • Blinking green: the interface is transmitting data. • Off: the interface is disconnected or connected improperly.

LED	Status	Description
ETH	Green	Electrical interface working rate LED • Yellow: the electrical interface is working at 1000 Mbit/s. • Off: the electrical interface is working at 100 Mbit/s

2.2.5 Technical specifications

Table 2-6 lists technical specifications of the ISCOM6820-SMUA

Table 2-6 Technical specifications of the ISCOM6820-SMUA

Parameter	Description
Dimensions	141.25 mm (Width) $\times$ 222 mm (Depth) $\times$ 37.30 mm (Height)
Weight	0.4 kg
Power consumption	$<$ 50 W

2.3 Service card ISCOM6800-XCOA

2.3.1 Introduction

The ISCOM6800-XCOA is a XG(S)-PON Combo interface card of the ISCOM6820, providing 8 XG(S)-PON Combo interfaces.

2.3.2 Panel and slots

The ISCOM6800-XCOA can be only inserted into slots 3 are 4 of the ISCOM6820.

Figure 2-9 shows the panel of the ISCOM6800-XCOA.

Figure 2-9 Panel of the ISCOM6800-XCOA

2.3.3 Interfaces

There are 8 interfaces on the ISCOM6800-XCOA.

Table 2-7 lists interfaces on the ISCOM6800-XCOA.

Table 2-7 Interfaces on the ISCOM6800-XCOA

Interface	Type	Usage	Description
1–8	PON SFP	XG(S)-PON Combo service interface	Available optical module type: XG(S)-Combo PON N1/N2 standard rate optical modules

2.3.4 LEDs

There are 9 LEDs on the ISCOM6800-XCOA-XCOA. Table 2-8 lists LEDs on the ISCOM6800-XCOA-XCOA.

Table 2-8 LEDs on the ISCOM6800-XCOA-XCOA

LED	Status	Description
SYS/ALM	Two colors	System working LED • Blinking green every 1s: the card is working properly. • Blinking green every 0.25s: the card is being initialized and loading. • Steadily red: the card fails (the backplane communication fails). • Off: the system is working improperly.
LNK/ACT 1–8	Green	PON interface working LED • Green: the PON interface is connected properly and there is a registered ONU working on the interface. • Off: the PON interface is disconnected or there is no registered ONU working on the interface.

2.3.5 Technical specifications

Table 2-9 lists technical specifications of the ISCOM6800-XCOA.

Table 2-9 Technical specifications of the ISCOM6800-XCOA

Parameter	Description
Dimensions	391.50 mm (Width) $\times$ 222 mm (Depth) $\times$ 22.56 mm (Height)
Weight	1.3 kg
Power consumption	< 85 W

2.4 Service card ISCOM6800-GPHA

2.4.1 Introduction

The ISCOM6800-GPHA is a GPON interface card of the ISCOM6820, providing 16 GPON interfaces.

2.4.2 Panel and slots

The ISCOM6800-GPHA can be only inserted into slots 3 are 4 of the ISCOM6820.

Figure 2-10 shows the panel of the ISCOM6800-GPHA.

Figure 2-10 Panel of the ISCOM6800-GPHA

2.4.3 Interfaces

There are 16 interfaces on the ISCOM6800-GPHA.

Table 2-10 lists interfaces on the ISCOM6800-GPHA.

Table 2-10 Interfaces on the ISCOM6800-GPHA

Interface	Type	Usage	Description
1–16	PON SFP	GPON service interface	Available optical module type: CLASS B+/C+/C++ standard rate optical modules

2.4.4 LEDs

There are 17 LEDs on the ISCOM6800-GPHA. Table 2-11 lists LEDs on the ISCOM6800-GPHA.

Table 2-11 LEDs on the ISCOM6800-GPHA

LED	Status	Description
SYS/ALM	Two colors	System working LED • Blinking green every 1s: the card is working properly. • Blinking green every 0.25s: the card is being initialized and loading. • Steadily red: the card fails (the backplane communication fails). • Off: the system is working improperly.
LNK/ACT 1–16	Green	PON interface working LED • Green: the PON interface is connected properly and there is a registered ONU working on the interface. • Off: the PON interface is disconnected or there is no registered ONU working on the interface.

2.4.5 Technical specifications

Table 2-12 lists technical specifications of the ISCOM6800-GPHA.

Table 2-12 Technical specifications of the ISCOM6800-GPHA

Parameter	Description
Dimensions	391.50 mm (Width) $\times$ 222 mm (Depth) $\times$ 22.56 mm (Height)
Weight	1.3 kg
Power consumption	< 55 W

2.5 Service card ISCOM6800-XCHA

2.5.1 Introduction

The ISCOM6800-XCHA is a XG(S)-PON Combo interface card of the ISCOM6820, providing 16 XG(S)-PON Combo interfaces.

2.5.2 Panel and slots

The ISCOM6800-XCHA can be only inserted into slots 3 are 4 of the ISCOM6820.

Figure 2-11 shows the panel of the ISCOM6800-XCHA.

Figure 2-11 Panel of the ISCOM6800-XCHA

2.5.3 Interfaces

There are 16 interfaces on the ISCOM6800-XCHA.

Table 2-13 lists interfaces on the ISCOM6800-XCHA.

Table 2-13 Interfaces on the ISCOM6800-XCHA

Interface	Type	Usage	Description
1–16	PON SFP	XG(S)-PON Combo service interface	Available optical module type: CLASS B+/C+/C++ and XG(S)-Combo PON N1/N2 standard rate optical modules

2.5.4 LEDs

There are 9 LEDs on the ISCOM6800-XCHA. Table 2-14 lists LEDs on the ISCOM6800-XCHA.

Table 2-14 LEDs on the ISCOM6800-XCHA

LED	Status	Description
SYS/ALM	Two colors	System working LED • Blinking green every 1s: the card is working properly. • Blinking green every 0.25s: the card is being initialized and loading. • Steadily red: the card fails (the backplane communication fails). • Off: the system works abnormally.
LNK/ACT 1–8	Green	PON interface working LED • Green: the PON interface is connected properly and there is a registered ONU working on the interface. • Off: the PON interface is disconnected or there is no registered ONU working on the interface.

2.5.5 Technical specifications

Table 2-15 lists technical specifications of the ISCOM6800-XCHA.

Table 2-15 Technical specifications of the ISCOM6800-XCHA

Parameter	Description
Dimensions	391.50 mm (Width) $\times$ 222 mm (Depth) $\times$ 22.56 mm (Height)
Weight	1.3 kg
Power consumption	< 125 W

2.6 Service card ISCOM6800-XGHA

2.6.1 Introduction

The ISCOM6800-XGHA is a XGS-PON service card of the ISCOM6820, providing 16 SFP+ XGS-PON interfaces. The SFP module is inserted with a degree of 30 ℃.

Table 2-16 lists features of the ISCOM6800-XGHA.

Table 2-16 Features of the ISCOM6800-XGHA

Feature	Description
Basic functions	Provide standard XG(S)-PON services.

Interface specifications	Support XGS-PON N1/N2 optical modules, SC/UPC, and single-fiber single-mode.
Wavelength	• Uplink: 1270 nm • Downlink: 1577 nm
Interface rate	• Uplink: 9.953 Gbit/s • Downlink: 9.953 Gbit/s
Number of ONUs	Up to 2048
Optical splitting ratio	Up to 1:256
Protection	Support the trunk fiber protection (Type B).
Encryption	Support AES encryption.
FEC	Support bidirectional FEC in both the uplink and downlink.
Security	Support PON interface Layer 2 isolation.

2.6.2 Panel and slots

The ISCOM6800-XGHA can be only inserted into slots 3 are 4 of the ISCOM6820.

Figure 2-12 shows the panel of the ISCOM6800-XGHA.

Figure 2-12 Panel of the ISCOM6800-XGHA

2.6.3 Interfaces

There are 16 interfaces on the ISCOM6800-XGHA. Table 2-17 lists interfaces on the ISCOM6800-XGHA.

Table 2-17 Interfaces on the ISCOM6800-XGHA

Interface	Type	Usage	Description
1–16	SFP+ XG(S)-PON	Service interface	Available optical module type: XGS-PON N1/N2 optical modules

2.6.4 LEDs

There are 17 LEDs on the ISCOM6800-XGHA. Table 2-18 lists LEDs on the ISCOM6800-XGHA.

Table 2-18 LEDs on the ISCOM6800-XGHA

LED	Quantity	Status	Description
SYS/ALM	1	Green	System working LED • Blinking green (every 0.25s): the card is being initialized. • Blinking green (every 1s): the card is working properly. • Blinking green: the system is working improperly. • Off: the system is working improperly.
		Red	Card alarm LED • Blinking red: the card is inserted improperly. • Steadily red: the card fails. • Off: the card is working properly.
		Orange	Standby LED • Steadily orange: the card is in the standby status. • Off: the card is not in the standby status. 📝 **Note** When the card is in the standby status (the LED is orange), other LEDs are off.
LNK/ACT 1–16	16	Green	PON interface working LED • Green: the PON interface is connected properly and there is a registered ONU working on the interface. • Off: the PON interface is disconnected or there is no registered ONU working on the interface.

2.6.5 Technical specifications

Table 2-19 lists technical specifications of the ISCOM6800-XGHA.

Table 2-19 Technical specifications of the ISCOM6800-XGHA

Parameter	Description
Dimensions	392 mm (Width) $\times$ 222 mm (Depth) $\times$ 22.5 mm (Height)
Weight	1.35 kg
Power consumption	< 82 W

2.7 DC power module (RPD1601)

2.7.1 Introduction

The RPD1601-48S48 (hereinafter referred to as the RPD1601) module is the DC power module of the ISCOM6820. It has the following features:

- Wide voltage input: -38.4 to -57.6 VDC
- Rated output voltage: -48 V
- Output overvoltage protection, overcurrent protection, and reverse polarity protection
- Power status LED
- Operating temperature: -20 to +65 ℃

Note

You can insert one DC power module in Slot 5 and one in Slot 7 concurrently for mutual backup.

2.7.2 Panel and slots

The RPD1601 power module can be inserted into slot 6 and slot 7 only.

Figure 2-13 shows the panel of the RPD1601 power module.

Figure 2-13 Panel of the RPD1601 power module
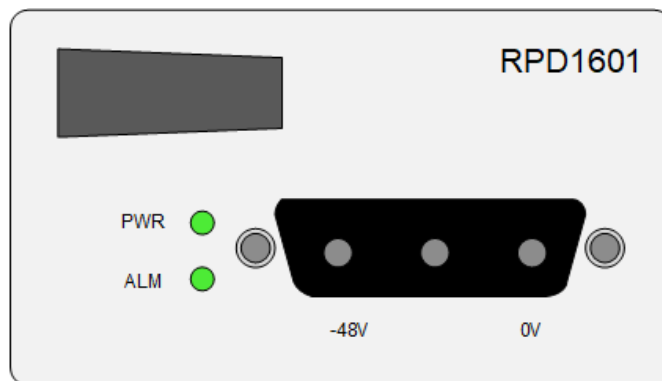
2.7.3 Interfaces

There is 1 interface on the RPD1601 power module.

Table 2-20 lists the interface on the RPD1601 power module.

Table 2-20 Interface on the RPD1601 power module

Interface	Usage
0V	Ground interface
-48V	-48 V power input interface

2.7.4 LEDs

There are 2 LEDs on the RPD1601 power module.

Table 2-21 lists LEDs on the RPD1601 power module.

Table 2-21 LEDs on the RPD1601 power module

LED print	Status	Description
PWR	Green	Power LED • Green: the power supply is working properly. • Off: the device is not powered on or powered on improperly.
ALM	Red	Alarm LED • Red: the power supply is working improperly. • Off: the device is powered off or powered on properly.

2.7.5 Technical specifications

Table 2-22 lists technical specifications of the RPD1601 power module.

Table 2-22 Technical specifications of the RPD1601 power module

Parameter		Description
Dimensions		72.5 mm (Width) $\times$ 162.7 mm (Depth) $\times$ 36.6 mm (Height)
Weight		0.31 kg
DC power	Rated voltage	-48 VDC
	Voltage range	-38.4 to -57.6 VDC
Maximum power		600 W
Lightning protection level		• Differential mode:500 V • Common mode: 1 kV

2.8 Fan module FANS385

2.8.1 Introduction

The FANS385 is the fan module of the ISCOM6820. It supports the following features:

- Support fan monitoring. The system monitors the working status of the fan and an alarm is generated when the fan fails.
- Support adjusting the rotational speed of the fan manually or automatically.
- Support hot swapping.

2.8.2 Panel and slots

The FANS385 module can be inserted into slot 5 of the ISCOM6820.

Figure 2-14 shows the panel of the FANS385 module.

Figure 2-14 Panel of the FANS385 module
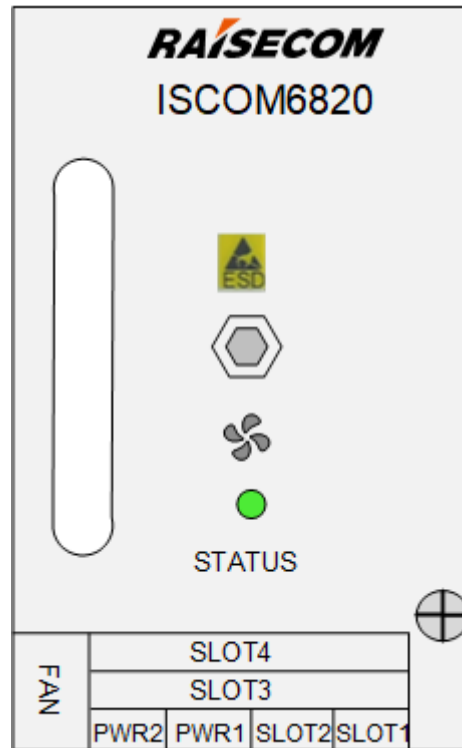
2.8.3 LEDs

There is 1 LED on the FANS385 module.

Table 2-23 lists LEDs on the FANS385 module.

Table 2-23 LEDs on the FANS385 module

LED	Status	Description
STATUS	Two colors	Fan LED • Steadily green: the fan is working properly. • Steadily red: the fan is working improperly (the fan module is not registered, or the fan speed is abnormal). • Off: the fan is working improperly.

2.8.4 Technical specifications

Table 2-24 lists technical specifications of the FANS385 module.

Table 2-24 Technical specifications of the FANS385 module

Parameter	Description
Dimensions	37.0 mm (Width) ×221.5 mm (Depth) ×85.5 mm (Height)
Weight	0.7 kg
Power consumption	30 W

3 Fiber and cables

This chapter describes fiber and cables of the ISCOM6820, including the following sections:

- Fiber
- Ethernet cable
- Configuration cable
- DC power cable
- Ground cable

3.1 Fiber

3.1.1 Introduction

The ISCOM6820 supports the Single-Mode Fiber (SMF) and Multi-Mode Fiber (MMF). These two kinds of fiber are different in color. The yellow one is the single-mode fiber and the orange one is the multi-mode fiber.

The ISCOM6820 can be connected to the Optical Distribution Frame (ODF) or optical interfaces of other devices through fiber.

Table 3-1 lists the type and usage of the fiber.

Table 3-1 Type and usage of the fiber

Usage	Local connector	Remote connector	Type	Standard
• Connect the ISCOM6820 to the ODF through the Ethernet optical interface. • Connect the Ethernet optical interface on the ISCOM6820 to optical interfaces on other devices.	LC/PC	LC/PC	2 mm SMF	ITU-T G.652
			2 mm MMF	
	LC/PC	FC/PC	2 mm SMF	
			2 mm MMF	
	LC/PC	SC/PC	2 mm SMF	
			2 mm MMF	
Connect the ISCOM6820 to	SC/PC	LC/PC	2 mm SMF	

Usage	Local connector	Remote connector	Type	Standard
the ODF through the PON interface.	SC/PC	FC/PC	2 mm SMF	
	SC/PC	SC/PC	2 mm SMF	

✎ Note

- Choose the connector type and jumper cable length reasonably based on the on-site requirements.
- The supported connector of the optical interface depends on the optical module.
- Choose a connector suitable for the optical interface. Otherwise, it may increase additional loss of fiber links, reduce transmission quality of services, or even damage the connector and optical interface.

3.1.2 Connector

Fiber connectors are different in shape, ferrule end-face, and pigtail sheath color, as shown in Table 3-2.

Table 3-2 Fiber connectors

Connector	Description	Pigtail sheath color
LC/PC	Clamping square fiber connector/micro-convex grinding-and-polishing ferrule end-face	Blue
SC/PC	Square fiber connector/ micro-convex grinding-and-polishing ferrule end-face	Blue

LC/PC fiber connector

Figure 3-1 shows the appearance of the LC/PC fiber connector.

Figure 3-1 LC/PC fiber connector
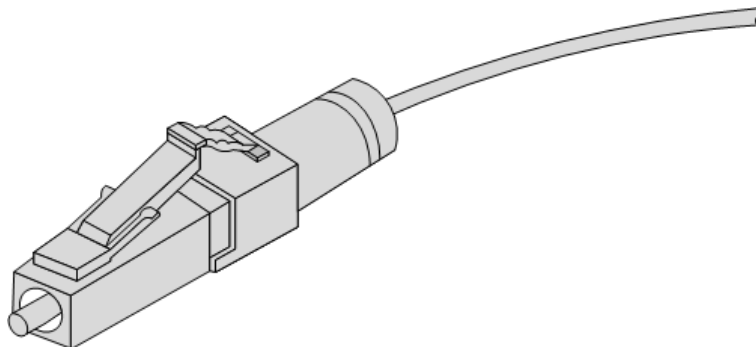
When connecting or removing the LC/PC fiber connector, align the connector with the optical interface, and do not rotate the fiber. Do as below:

- To connect the fiber, align the head of the fiber with the optical interface and insert the fiber into the interface gently.
- To remove the fiber, press down the clamping connector, and push the fiber head inwards, and then pull the fiber out.

SC/PC fiber connector

Figure 3-2 shows the appearance of the SC/PC fiber connector.
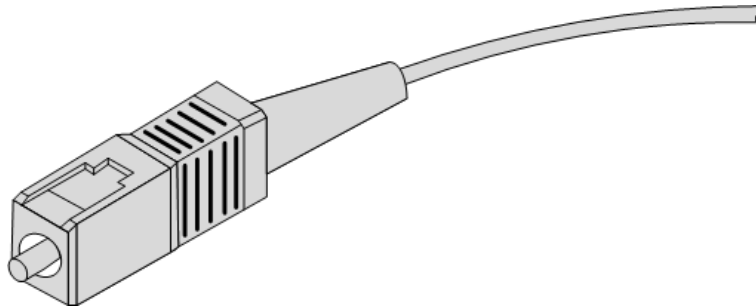
Figure 3-2 SC/PC fiber connector

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

- To connect the fiber, align the head of the fiber with the optical interface and insert the fiber into the interface gently.
- To remove the fiber, push the fiber head inwards, and then pull the fiber out.

3.1.3 Wiring

Table 3-3 lists the wiring of the fiber.

Table 3-3 Wiring of the fiber

Wiring	Local optical interface	Direction of optical signals	Peer optical interface
Single-fiber connection	Optical interface	<->	Optical interface
Dual-fiber connection	Optical interface Tx	->	Optical interface Rx
	Optical interface Rx	<-	Optical interface Tx

3.2 Ethernet cable

3.2.1 Introduction

The Ethernet cable of the ISCOM6820 can be used to:

- Connect the Ethernet electrical interface of the ISCOM6820 to other devices.

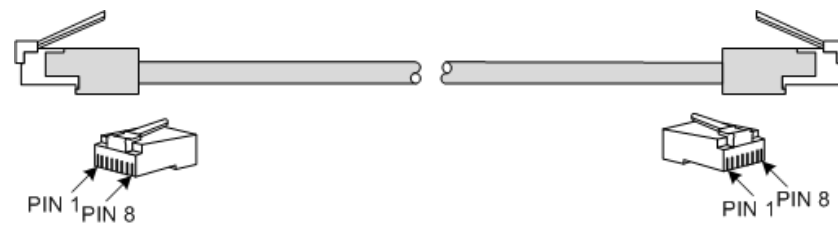- Connect the SNMP of the ISCOM6820 to the NView NMS system.

The Ethernet interface on the ISCOM6820 is adaptive to straight-through cable mode and crossover cable mode. So both kinds of Ethernet cables can be used.

The Ethernet cable needs to be made on site.

3.2.2 Appearance

Figure 3-3 shows the appearance of the Ethernet cable.

Figure 3-3 Ethernet cable

3.2.3 Technical specifications

The Ethernet cable can be divided into two types:

- Straight-through cable: both two RJ45 connectors of the straight-through cable follow EIA/TIA 568B wiring.
- Crossover cable: one RJ45 connector of the crossover cable follows EIA/TIA568A wiring; the other RJ45 connector follows EIA/TIA568B wiring.

Straight-through cable

Table 3-4 lists wiring of the straight-through cable.

Table 3-4 Wiring of the straight-through cable

Connector 1 (RJ45)	EIA/TIA568B	Connector 2 (RJ45)	EIA/TIA568B
PIN 1	White/Orange	PIN 1	White/Orange
PIN 2	Orange	PIN 2	Orange
PIN 3	White/Green	PIN 3	White/Green
PIN 4	Blue	PIN 4	Blue
PIN 5	White/Blue	PIN 5	White/Blue
PIN 6	Green	PIN 6	Green
PIN 7	White/Brown	PIN 7	White/Brown
PIN 8	Brown	PIN 8	Brown

Figure 3-4 shows the wiring of the straight-through cable.

Figure 3-4 Wiring of straight-through cable
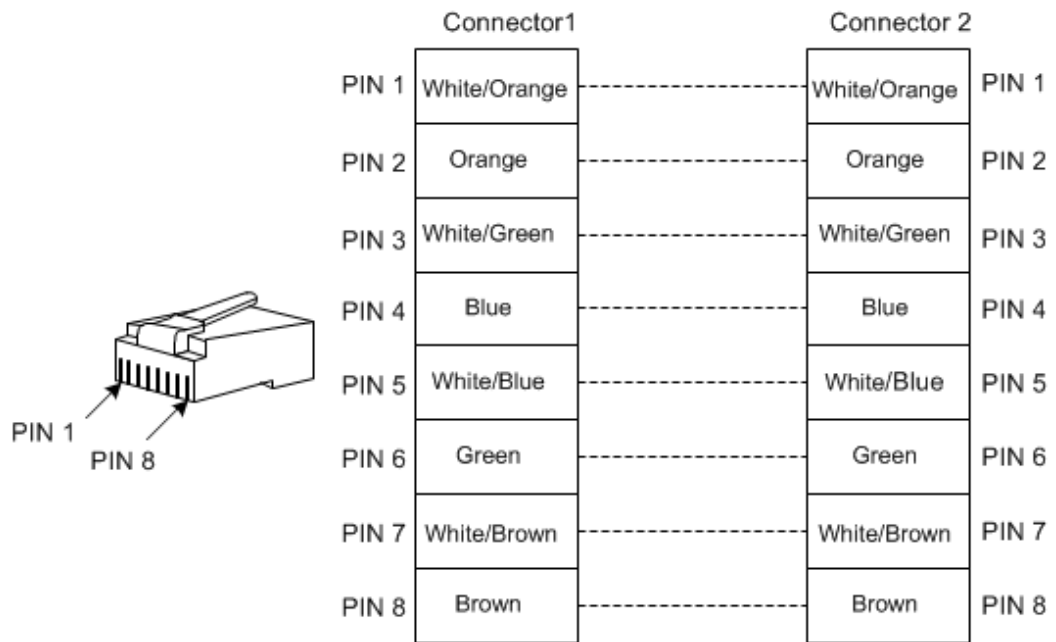
Crossover cable

Table 3-5 lists the wiring of the crossover cable.

Table 3-5 Wiring of crossover cable

Connector 1 (RJ45)	EIA/TIA568A	Connector 2 (RJ45)	EIA/TIA568B
PIN 1	White/Green	PIN 1	White/Orange
PIN 2	Green	PIN 2	Orange
PIN 3	White/Orange	PIN 3	White/Green
PIN 4	Blue	PIN 4	Blue
PIN 5	White/Blue	PIN 5	White/Blue
PIN 6	Orange	PIN 6	Green
PIN 7	White/Brown	PIN 7	White/Brown
PIN 8	Brown	PIN 8	Brown

Figure 3-5 shows wiring of the crossover cable.
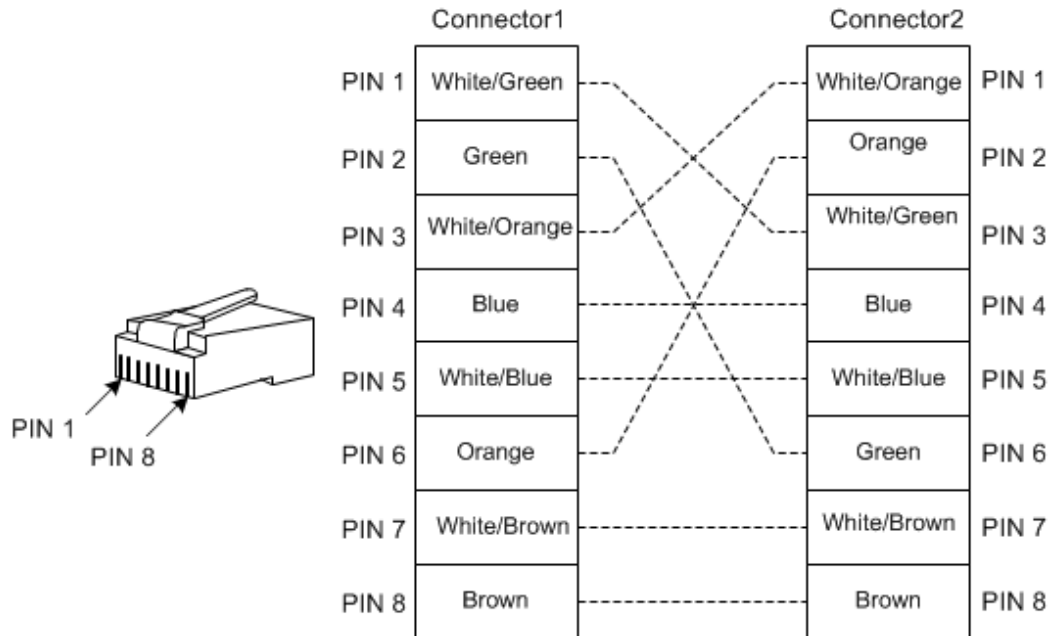
Figure 3-5 Wiring of crossover cable

Table 3-6 lists technical specifications of the Ethernet cable.

Table 3-6 Technical specifications of the Ethernet cable

Parameter	Description
Name	CBL-ETH-RJ45/RJ45-D
Color	Dark gray
Model	UTP-3, UTP-5, or STP
Connector	RJ45
Number of cores	8
Length	The letter D indicates the length, which can be customized. For example, if the customer requires 2-meter cables, they are named CBL-ETH-RJ45/RJ45-2m/RoHS.

3.3 Configuration cable

The configuration cable is used to connect the Console interface of the ISCOM6820 and the RS-232 serial interface of the maintenance console, and transmit configuration data signals. The maintenance console troubleshoots and maintains the ISCOM6820 through the Console interface.

The configuration cable is a 4-core UTP cable. Connectors at the two ends are:

- RJ45 connector: connect the Console interface of the ISCOM6820.
- DB9 female connector: connect the RS-232 serial interface of the maintenance console.

3.3.1 Appearance

Figure 3-6 shows the appearance of the configuration cable.

Figure 3-6 Configuration cable

DB9 female connector   RJ45 connector
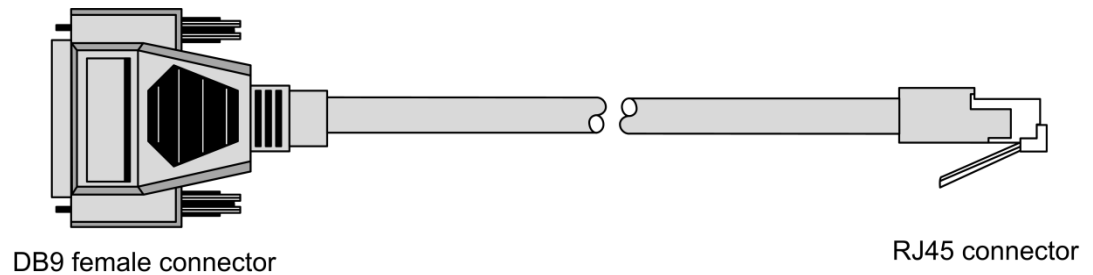
3.3.2 Wiring

Figure 3-7 shows the PINs and wiring of the RS-232 serial interface and RJ45 Ethernet interface.
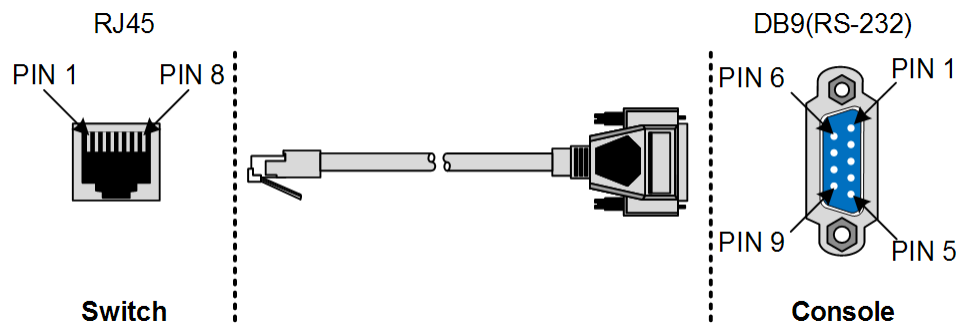
Figure 3-7 PINs and wiring

Table 3-7 lists PINs of the RS-232 interface.

Table 3-7 PINs of the RS-232 interface

PIN	Function	PIN	Function
PIN 1	DCD	PIN 6	DSR
PIN 2	RxD	PIN 7	RTS
PIN 3	TxD	PIN 8	CTS
PIN 4	DTR	PIN 9	RI
PIN 5	GND	–	–

Table 3-8 lists PINs of the RJ45 Ethernet interface.

Table 3-8 PINs of the RJ45 Ethernet interface

| PIN	Function	PIN	Function
PIN 1	NC	PIN 5	GND
PIN 2	NC	PIN 6	TxD
PIN 3	RxD	PIN 7	NC
PIN 4	GND	PIN 8	NC

3.4 DC power cable

3.4.1 Introduction

The DC power cable supplies -48 VDC power from the power souring equipment to the power interface on the RPD1601 module of the ISCOM6820, and then transmits power to the entire device.

3.4.2 POL-DC(2C)-DSUB/U-6.0mm2-6m/RoHS

Appearance

Figure 3-8 shows the DC power cable with one DSUB.

Figure 3-8 DC power cable with one DSUB
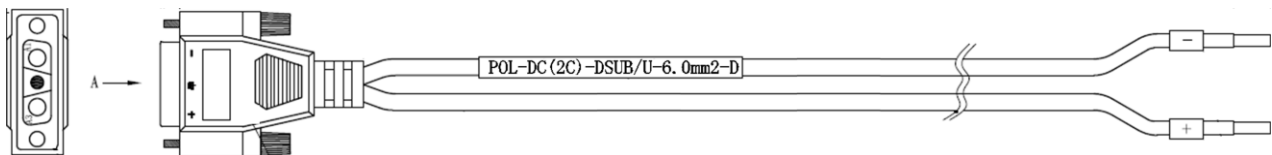
Technical specifications

Table 3-9lists technical specifications of the DC power cable with one DSUB.

Table 3-9 Technical specifications of the DC power cable with one DSUB

Parameter	Description
Name	POL-DC(2C)-DSUB/U-6.0mm^2-6m/RoHS
Connector A	DSUB power connector-weld line-3 core (hole + pin + hole)
Positive wire	60227 IEC 02 (RV) red (6mm^2) with flame retardant tube
Negative wire	60228 IEC 02 (RV) black (6mm^2) with flame retardant tube
Rated voltage (V)	450/750

Parameter	Description
Insulation and voltage resistance (cable)	2500 VAC, 5min
Certification	CCC
RoHS	Compliant
Length	The cable length is 6 m.

3.4.3 POL-DC(2C)-DSUB/U-6.0mm2-A-15m/RoHS

Appearance

Figure 3-8 shows the DC power cable with one DSUB.

Figure 3-9 DC power cable with one DSUB

Technical specifications

Table 3-9lists technical specifications of the DC power cable with one DSUB.

Table 3-10 Technical specifications of the DC power cable with one DSUB

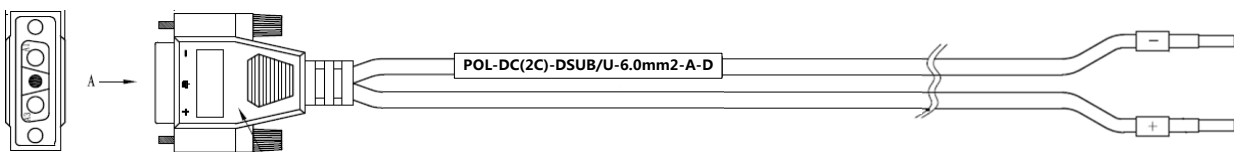| Parameter	Description
Name	POL-DC(2C)-DSUB/U-6.0mm^2-A-15m/RoHS
Connector A	DSUB power connector-weld line-3 core (hole + pin + hole)
Positive wire	60227 IEC 02 (RV) red (6mm^2) with flame retardant tube
Negative wire	60228 IEC 02 (RV) black (6mm^2) with flame retardant tube
Rated voltage (V)	450/750
Insulation and voltage resistance (cable)	2500 VAC, 5min
Certification	VDE
RoHS	Compliant
Customized length	The cable length is 15 m.

3.5 Ground cable

Connecting the ground cable properly is an important guarantee for lightning protection, anti-electric shock, and anti-interference. The ISCOM6820 must be connected to the ground cable correctly during installation, which helps avoid personal injury and equipment damage.

3.5.1 Introduction

The ground cable is used to ground the ISCOM6820.

3.5.2 Appearance

The ground cable is composed of the ground terminal and conductive wire. In general, ground terminals are OT bare-pressure terminals; and the conductive wire is a yellow/green copper soft flame-retardant conducting wire.

Figure 3-10 and Figure 3-11 shows the ground cable and OT terminal respectively.

Figure 3-10 Ground cable
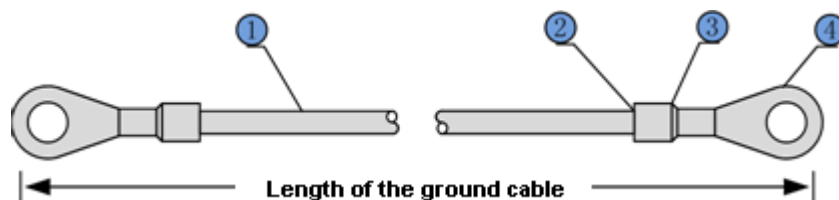
1	Conducting wire	2	Stripped end (connected to the OT terminal)
3	Insulating sheath	4	OT terminal

Figure 3-11 OT terminal
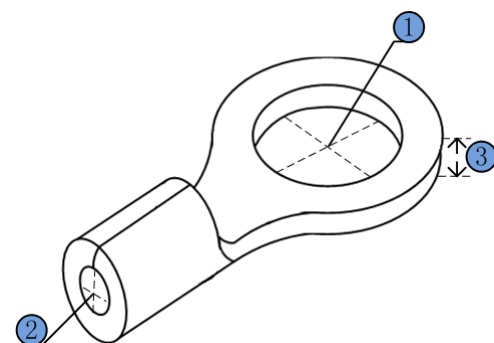
1	Inner diameter of soldering lug	2	Inner diameter of sheath	3	Thickness of soldering terminal

3.5.3 Technical specifications

Table 3-11 lists technical specifications of the ground cable.

Table 3-11 Technical specifications of the ground cable

Parameter	Description
Model	POL-ground cable-RNB22-6S/stripped wire-16mm^2-D/RoHS
Standard	Comply with the UL standard and meet RoHS requirements.
Conducting wire	60227 IEC 02 (RV) yellow/green copper-core conducting wire 5 AWG (1×16mm^2)
Stripped end	10 mm long, tinned
Cable length	4 m or customized, the D indicates the cable length which can be customized. For example, if the customer requires a 2-m cable, the cable name will be named POL-ground cable-RNB22-6S/stripped wire-16mm2-2m/RoHS.

![Note]

The letter D in the model indicates the length, which can be customized. For example, if the customer requires 2-meter cables, they are named POL-ground cable-RNB22-6S/stripped wire-16mm2-2m/RoHS.

Table 3-12 lists technical specifications of the OT terminal.

Table 3-12 Technical specifications of the OT terminal

Parameter	Description
Standard	RNB22-6S
Specifications	• Inner diameter of soldering lug: 6.5 mm • Outer diameter of soldering lug: ≤ 12.2 mm • Inner diameter of sheath: 7.7 mm • Thickness of soldering lug: ≥ 1.9 mm
Section area of conducting wire	5–4 AWG (16–25 mm^2)

![Note]

- The ISCOM6820 is delivered without the ground cable. If required, prepare or make the ground cable on site.
- The ground cable cannot be longer than 30 m and should be as short as possible; otherwise, a ground bar should be used.

4 Pluggable optical modules

This chapter describes pluggable optical modules (Raisecom SFP modules are recommended) that could be used by the ISCOM6820, including the following sections:

- 1000 Mbit/s SFP optical module
- 10 Gbit/s SFP+ optical module
- PON SFP optical module

4.1 1000 Mbit/s SFP optical module

4.1.1 Functions and appearance

The 1000 Mbit/s Small Form-factor Pluggables (SFP) optical module is applicable to the 1000 Mbit/s telecommunication or data communication networks. It is integrated with sending and receiving features.

Figure 4-1 shows the appearance of the 1000 Mbit/s SFP optical module.

Figure 4-1 1000 Mbit/s SFP optical module
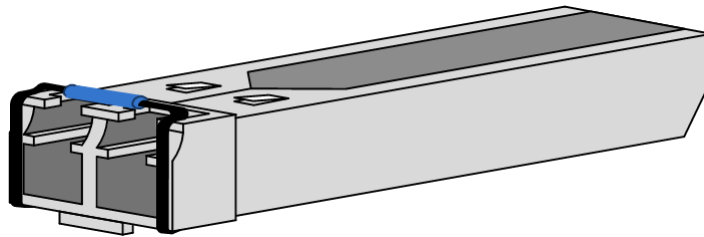
4.1.2 Technical specifications

Table 4-1 lists technical specifications of the 1000BASE-X SFP optical interface.

Table 4-1 Technical specifications of the 1000BASE-X SFP optical interface

Parameter	Description
Connector	LC/PC
Optical interface properties	Depend on the SFP optical module.
Working mode	Full duplex
Compliant standard	IEEE 802.3
Supported network protocol	IP

Table 4-2 lists technical specifications of the 1000BASE-X SFP optical module.

Table 4-2 Technical specifications of the 1000BASE-X SFP optical module

Model	Tx wavelength (nm) Interface type	Mode	Tx optical power (dBm)	Min. overload point (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Transmission distance (km)
USFP-Gb/M-D-R	850 (LC/PC)	Dual-fiber MM	-9.5 to -3	0	9	-17	0.55
USFP-Gb/S1-D-R	1310 (LC/PC)	Dual-fiber SM	-10 to -3	-3	9	-21	15
USFP-Gb/S2-D-R	1550 (LC/PC)	Dual-fiber SM	-3 to 2	-3	9	-21	40
USFP-Gb/S3-D-R	1550 (LC/PC)	Dual-fiber SM	-3 to 2	-9	9	-30	80

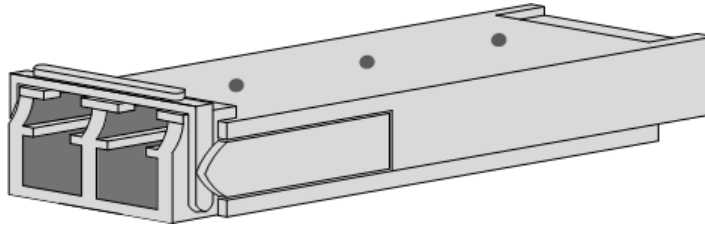# 4.2 10 Gbit/s SFP+ optical module

4.2.1 Functions and appearance

The SFP+ optical module can be applied to 10Gbit/s telecommunication or data communication networks. It is integrated with sending and receiving features.

Figure 4-2 shows the appearance of the SFP+ optical module.

Figure 4-2 SFP+ optical module

The 10GE service interface on the ISCOM6820 supports the optical module of the following types:

- 10GBASE-SX
- 10GBASE-LR

4.2.2 Technical specifications

Table 4-3 lists technical specifications of the SFP+ optical interface.

Table 4-3 Technical specifications of the SFP+ optical interface

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

Table 4-4 lists technical specifications of the SFP+ optical module.

Table 4-4 Technical specifications of the SFP+ optical module

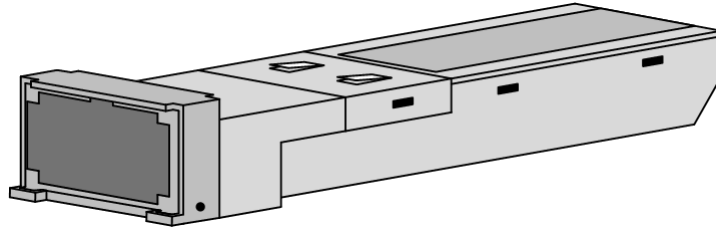| Model	Tx wavelength (nm) Laser type	Rx laser	Tx optical power (dBm)	Min. overload point (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Transmission distance (km)
USFP+-192/M	850 (VCSEL)	PIN	-8.2 to 1	1	4.5	-11.1	0.3
USFP+-192/S1	1310 (DFB)	PIN	-8.2 to 1	1	4.5	-14.4	10

4.3 PON SFP optical module

4.3.1 Functions and appearance

The PON SFP optical module can be applied to the PON system. It is integrated with sending and receiving features.

Figure 4-3 shows the appearance of the PON SFP optical module.

Figure 4-3 PON SFP optical module

4.3.2 Standard

The GPON interface on the ISCOM6820 supports the optical module compliant with the Class B+, Class C+, Class C++, GSFP+-XSCN2DM-R (XGS Combo PON), and GSFP+-XCN2DM-R (XG Combo PON) standards.

4.3.3 Technical specifications

Table 4-5 lists technical specifications of the PON SFP optical module.

Table 4-5 Technical specifications of the PON SFP optical module

Model	Rate (uplink/downlink) (Gbit/s)	Tx optical power (dBm)	Min. overload point (dBm)	Extinction ratio (dB)	Rx sensitivity (dBm)	Transmission distance (km)
GSFP-CLBDM-R	2.488/1.244	1.5－5	-8	8.2	-28	20
GSFP-CLCDM-R	2.488/1.244	3–7	-12	8.2	-30	60
GSFP-CLDDM-R	2.488/1.244	4.5–10	-12	8.2	-31	60
GSFP+-XSCN2DM-R	10/10 or 2.5/1.25	4–7	-7	8.2	-28	20
GSFP+-XCN2DM-R	10/2.5 or 2.5/1.25	4–7	-7	8.2	-30	20

5 Lookup table of LEDs

Table 5-1 lists LEDs of the ISCOM6820.

Table 5-1 LEDs of the ISCOM6820

LED	Status	Description
PWR	Green	Power LED • Green: the power supply is working properly. • Off: the power supply is working improperly.
SYS	Green	System working LED • Fast blinking green (4 Hz): the system is initializing. • Slow blinking green (0.5 Hz): the system is working properly. • Off: the system is working improperly.
LNK/ACT (SFP optical interface)	Green	Line working LED • Green: the interface is connected properly. • Blinking green: the interface is transmitting data. • Off: the interface is disconnected or connected improperly.
– (ETH interface LED)	Yellow	Line working LED • Yellow: the interface is connected properly. • Blinking yellow: the interface is transmitting data. • Off: the interface is disconnected or connected improperly.
– (ETH interface LED)	Green	Electrical interface rate LED • Green: the electrical interface is working at 1000 Mbit/s. • Off: the electrical interface is working at 100 Mbit/s.

LED	Status	Description
SYS/ALM	Two colors	System working LED • Blinking green every 1s: the card is working properly. • Blinking green every 0.25s: the card is being initialized and loading. • Steadily red: the system fails (the backplane fails). • Off: the system is working improperly. ![Note icon] **Note** When the card is in standby status (the orange LED On), all other LEDs will be Off.
LNK/ACT 1–8/1–16	Green	PON interface working LED • Green: the PON interface is connected properly and there is a registered ONU working on the interface. • Off: the PON interface is disconnected or there is no registered ONU working on the interface.
ALM	Red	Power alarm LED • Red: the power is working improperly and an alarm is generated. • Off: the power is working properly.
STATUS	Green	Fan status LED • Green: the fan is working properly. • Off: the fan is working improperly.

6 Lookup table of weight and power consumption

Table 6-1 lists weight and power consumption of the ISCOM6820.

Table 6-1 Weight and power consumption of the ISCOM6820

Component		Parameter
Weight	Full configuration	10 kg
Maximum power consumption	Full configuration	500 W
ISCOM6820-SMUA	Weight	0.5 kg
	Power consumption	< 50 W
ISCOM6800-XCOA	Weight	1.3 kg
	Power consumption	< 85 W
ISCOM6800-GPHA	Weight	1.3 kg
	Power consumption	< 55 W
ISCOM6800-XCHA	Weight	1.3 kg
	Power consumption	< 125 W
ISCOM6800-XGHA	Weight	1.35 kg
	Power consumption	82 W
RPD1601	Weight	0.31 kg
	Power consumption	< 2 W
FANS385	Weight	0.7 kg
	Power consumption	< 30 W

7 Appendix

This chapter lists terms, acronyms, and abbreviations involved in this document.

- Terms
- Acronyms and abbreviations

7.1 Terms

Numerics

1U	Unit of dimension, short for unit. It takes 44.45 mm as basic unit, namely, 1 U = 44.45 mm

B

Bracket	Small parts at the side of chassis, being used to install the chassis into the cabinet

E

ETSI 600 cabinet	Cabinet with width of 600 mm, depth of 600 mm, compliant with the ETSI standard

F

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

G

Ground cable	The cable to connect the device to ground, usually a yellow/green coaxial cable. Connecting the ground cable properly is an important guarantee to lightning protection, anti-electric shock, and anti-interference.

I

IEEE	American Institution of Electrical and Electronic Engineers
ITU-T	International Telecommunication Union Telecommunication Standardization Sector

L

Label	Signs for cable, chassis, and warnings
Laser security level	4 security levels for laser products in usual. Level 1 indicates the safest laser, power of which is usually limited at 1mW. It will neither cause fire nor generate harmful radiation under normal conditions.

M

Multi-mode fiber	In this fiber, multi-mode optical signals are transmitted.

P

PWE3	Pseudo-Wire Emulation Edge to Edge

R

RS232	In synchronization transfer mode, no handshaking signals, able to communicate with RS232 or RS422 devices point to point, in transparent transmission, with a maximum rate of 19.2 Kbit/s

S

Self-adaption	The Ethernet interface chooses the rate and duplex mode according to the result of auto-negotiation.
Single-mode fiber	In this fiber, single-mode optical signals are transmitted.

7.2 Acronyms and abbreviations

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
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
U	
UPS	Uninterruptible Power Supply

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