U9264H GPON

■ Installation Guide

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CONVERGENCE

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U9264H GPON

■ Installation Guide

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Preface

This preface provides the overview of U9264H installation guide, which describes guide conventions, and lists other publications that may be useful.

Introduction

This user guide describes how to install U9264H, the PON OLT of Ubiquoss.

- It describes how to install U9264H and connection it to other devices.
- Chapter 1 describes the name and function of each part of U9264H and Chapter 2 describes the necessary items and notes for the installation. The user is recommended to understand U9264H and remember notes through Chapter 1 before the installation because it will be very useful for the user to install and use U9264H safely.
- What are provided with this installation user guide (operation user guide, command user guide, and configuration user guide) describe the function, use, and setting of U9264H in details.
- This installation user guide is for the experts with the experience of installing and managing network devices. Consequently, see other network-related references for the professional terms that are not explained in this user guide.

Related Documents

For additional information on this equipment, refer to the following manuals.

Manual	Contents
Hardware Installation Guide	Switch hardware installation Initial operating environment configuration Trouble Shooting
User Guide	Operating configuration for services System operation, administration and maintenance

	Notice	You can download or request the latest documents and information on the products of Ubiquoss Inc. including U9264H from the website (http://www.ubiquoss.com). This document is the manual for all the U9264H.

Symbols in this Guide

The symbols below are used to indicate the product names and notes in the user guide.

Product Name

The name of the product (GPON OLT system) is U9264H.

Description of Symbols

The user guide uses the following icons and fonts to indicate special messages for the reader.

	Note	Presents the useful contents related to the user guide, the references and data related to the product use, etc.
	Caution	Describes the situation that data loss and incorrect product operation can occur, and provides the proper actions to take in the situation.
	Warning	Describes the situation that product damage and the user's injury can occur, and provides the proper actions to take in the situation.
	Warning	Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.
	Warning	Do not disassemble or assemble the product. The user must not remove/attach the product cover or disassemble/assemble the product when the power is on. Otherwise, it can cause personal injury or property loss.

Organization

This installation guide consists the following contents. The summary of each part is described below.

Chapter 1.   Introduction

This chapter introduces the product types and features of U9264H and the name and function of each part as well.

Chapter 2.   Installation Preparation

This chapter explains about the items necessary to install U9264H and notes for installing and using the product. The user should fully understand the notes in this chapter before installing the product to prevent any problem that may occur during the installation of product.

Chapter 3.   Installation

This chapter describes how to install U9264H to a rack and connect each port of the device.

Chapter 4.   Troubleshooting

This chapter describes the problems that can occur during the installation and use of U9264H and how to resolve them.

Appendix A.   Product Specification

Appendix A describes the product specifications of U9264H.

Appendix B.   Connector and Cable Specification

Appendix B describes the specifications of the connectors and cables used to connect the ports of U9264H.

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Chapter 1.   Introduction

This chapter introduces the product types and features of U9264H and the name and function of each part as well.

The chapter consists of the followings:

* Overview
* Features

Overview

This section describes the function and features of an GPON OLT U9264H.

Main function and features

Ubiquoss U9264H, adopted the state-of-the-art GPON technology, can accommodate both the downstream 2.5G and upstream 1.25G GPON optical line service(2.5G Line Card) In addition, U9264H provides 1G sfp ports and10G sfp+ ports for Uplink to connect to the Ethernet network.

The GPON Line Card is a modular type, giving flexibility in numbers of subscribers to be accommodated and bandwidth to be allocated the subscribers. The Uplink Line Cards also have modular type. U9264H provides scalability in PON OLT so that any PON Line Card can be plugged into any of 8 dedicated PON OLT slots.

Structure of PON OLT

Ubiquoss PON OLT system consists of;

- Optical Line Terminal(OLT) that is connected to the Internet Core Network in the Central Office, performs IP routing and Ethernet switching, and provides passive optical subscriber line

- Remote Nodes (RN) that consists passive optical distribution network and splits an optical line up to 64 without any electric power feed and management.

- Optical Network Terminal (ONT) that provides the passive optical subscriber line interface.

U9264H supports various functions exceeding those expected in the existing Ethernet switches, including Quality of Service(QoS) function, Management function that allows to take prompt actions against the problems with the system and a subscriber line, Security function that secures subscriber information safely, and Subscriber Management function that secures a user's right from illegal users such as cracker.

Features

Front View
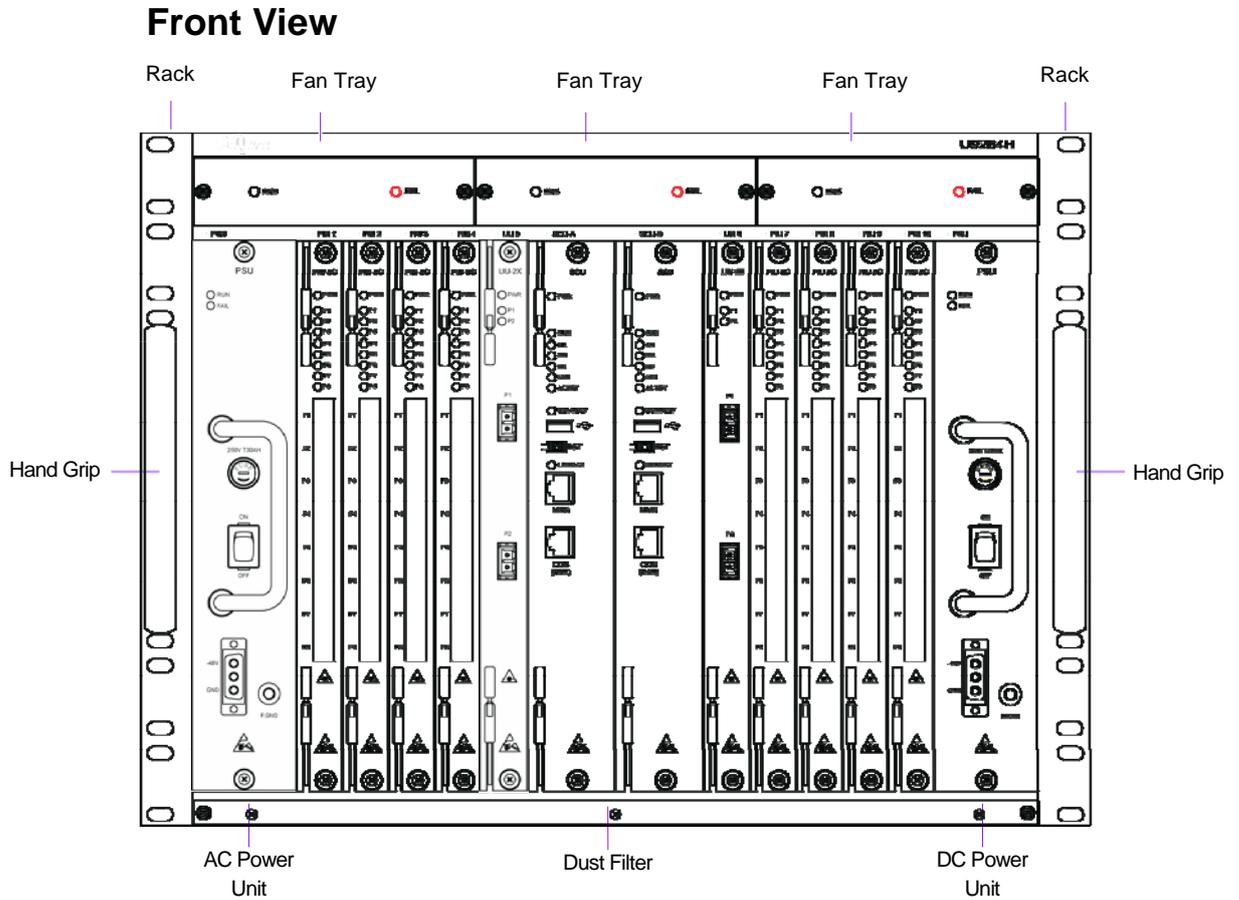
Figure 1. Front Panel
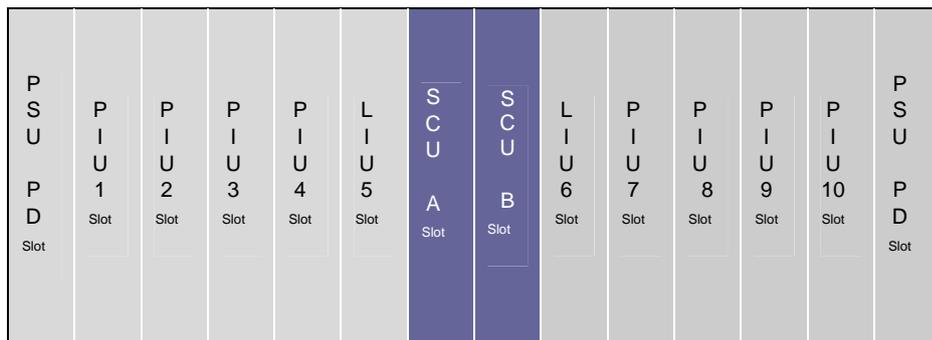
Figure 2. Slot layout

| | Caution | You must install Interface cards on the relevant slots. A LIU card (LIU-2X or LIU 4X) must install 5 or 6 slot and a PIU card (PIU-8G) must install PIU slots. If you do not obey this rule, the Interface card does not work. |

Description on each U9264H unit

Table 1 Description on each U9264H unit

Unit	Description	Remarks
SCU	System Management Block and Switch Configuration Unit	Common part
PSU-PD	DC -48V Power Module: Supporting redundancy.	Common
FMU	Fan Module Unit: Modular unit	Common part
PIU-8G	GPON 2.5G 8-port Line Card The applicable GPON optical module is SFP type. - Note (1)	Line Card
LIU-2X	10GBase-xR 2-port Line Card	Line Card
LIU-4X	10GBase-xR 4-port Line Card	Line Card

Note (1) – As for the applicable GPON optical modules, only the approved products are supported.
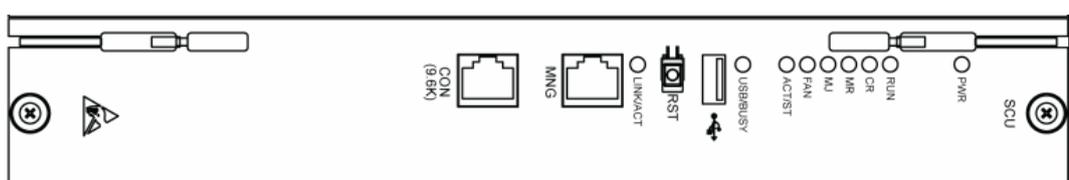
Figure 3. SCU
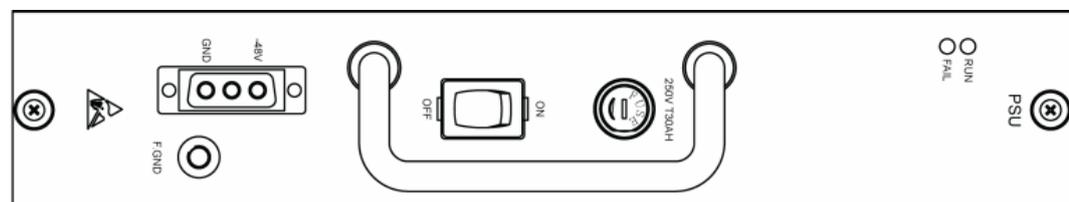
Figure 4. PSU-PD

Figure 5. FMU

	Warning	Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.
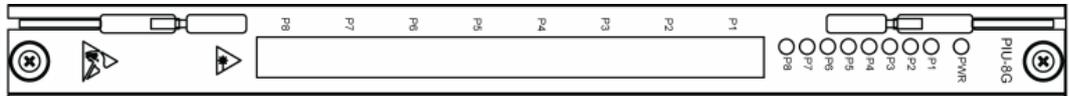
Figure 6. PIU-8G

Figure 7. LIU-2X
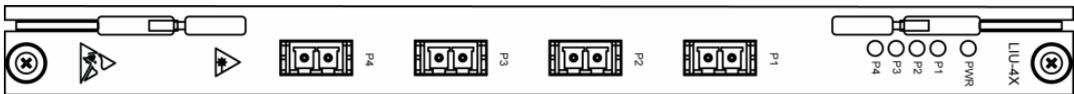
Figure 8. LIU-4X

LED for each U9264H unit

Table 2 LED for each U9264H unit

Unit	LED	Status		Description
SCU	PWR	GREEN	ON	Power ON
		ORANGE	ON	Reset or Power Fail
	CR	RED	ON	System Critical Alarm ON
			OFF	System Critical Alarm OFF
	MJ	ORANGE	ON	System Major Alarm ON
			OFF	System Major Alarm OFF
	MN	ORANGE	ON	System Minor Alarm ON
			OFF	System Minor Alarm OFF
	FAN	GREEN	ON	FAN normal status
		ORANGE	ON	FAN Alarm status
	ACT/ST	GREEN	BLINK	SCU Active operation mode.
		ORANGE	ON	SCU Standby operation mode
	USB/BUSY	GREEN	ON	USB Memory Busy status
			OFF	USB Memory Run status
	LNK/ACT	GREEN	ON	Management Ethernet Link Up
			BLINK	Management Ethernet TX/RX status
PSU	PWR	GREEN	OFF	Power: Normal
			ON	Power: ON
	FAIL	RED	OFF	Power: OFF
			ON	In case of PSU-PA: Fail In case of PSU-PD: The DC Power is ON the PSU.
FMU	RUN	GREEN	OFF	Power: OFF
			ON	FAN: ACT
	FAIL	RED	OFF	FAN: ACT/NORMAL
			ON	FAN: FAIL, STOP
PIU-8G	PWR	GREEN	ON	Power ON
		ORANGE	ON	Reset or Power Fail
	P1~8	GREEN	OFF	No Link
			ON	PON Interface link
			BLINK	PON Interface TX/RX Status
		ORANGE	OFF	Normal Status
			ON	Alarm on PON Interface
LIU-2X	PWR	GREEN	ON	Power ON
		ORANGE	ON	Reset or Power Fail
	P1~2	GREEN	OFF	No Link
			ON	Interface link
			BLINK	Interface TX/RX Status

			NK	
		ORANGE	OFF	Normal Status
			ON	Alarm on Interface
LIU-4X	PWR	GREEN	ON	Power ON
		ORANGE	ON	Reset or Power Fail
	P1~4	GREEN	OFF	No Link
			ON	Interface link
			BLINK	Interface TX/RX Status
		ORANGE	OFF	Normal Status
			ON	Alarm on Interface

Rear View

Vent Hole

Ground Terminal

Top and Side View

Top View
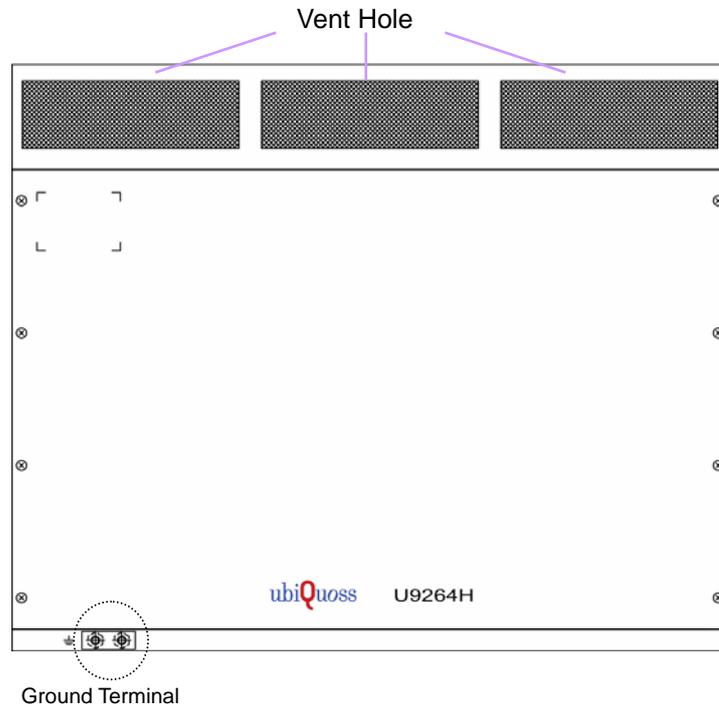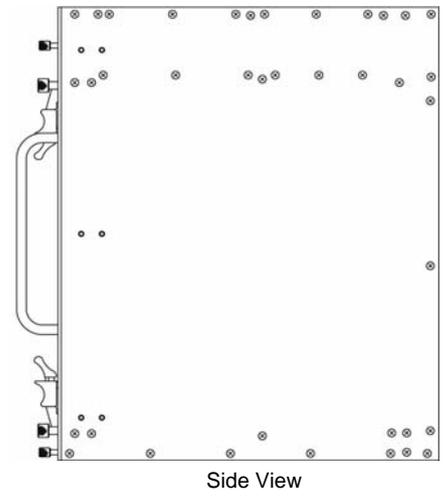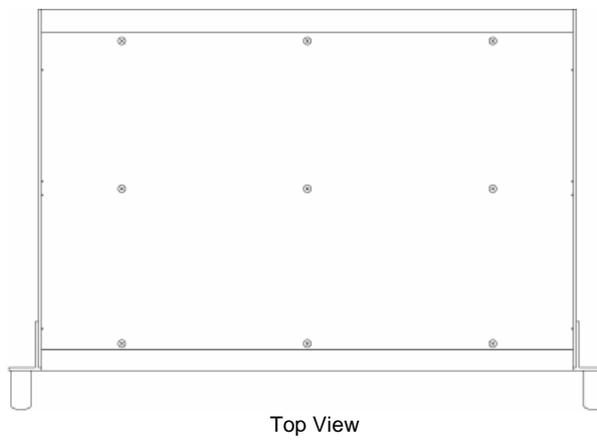
Side View

Figure 9. Top and Side View

Fan Ventilation

The Fan Vent is the place that the external cold air is supplied through to prevent the product from being overheated. The following figures show that air flows into the system.

Side View

Rear View

Air Intake
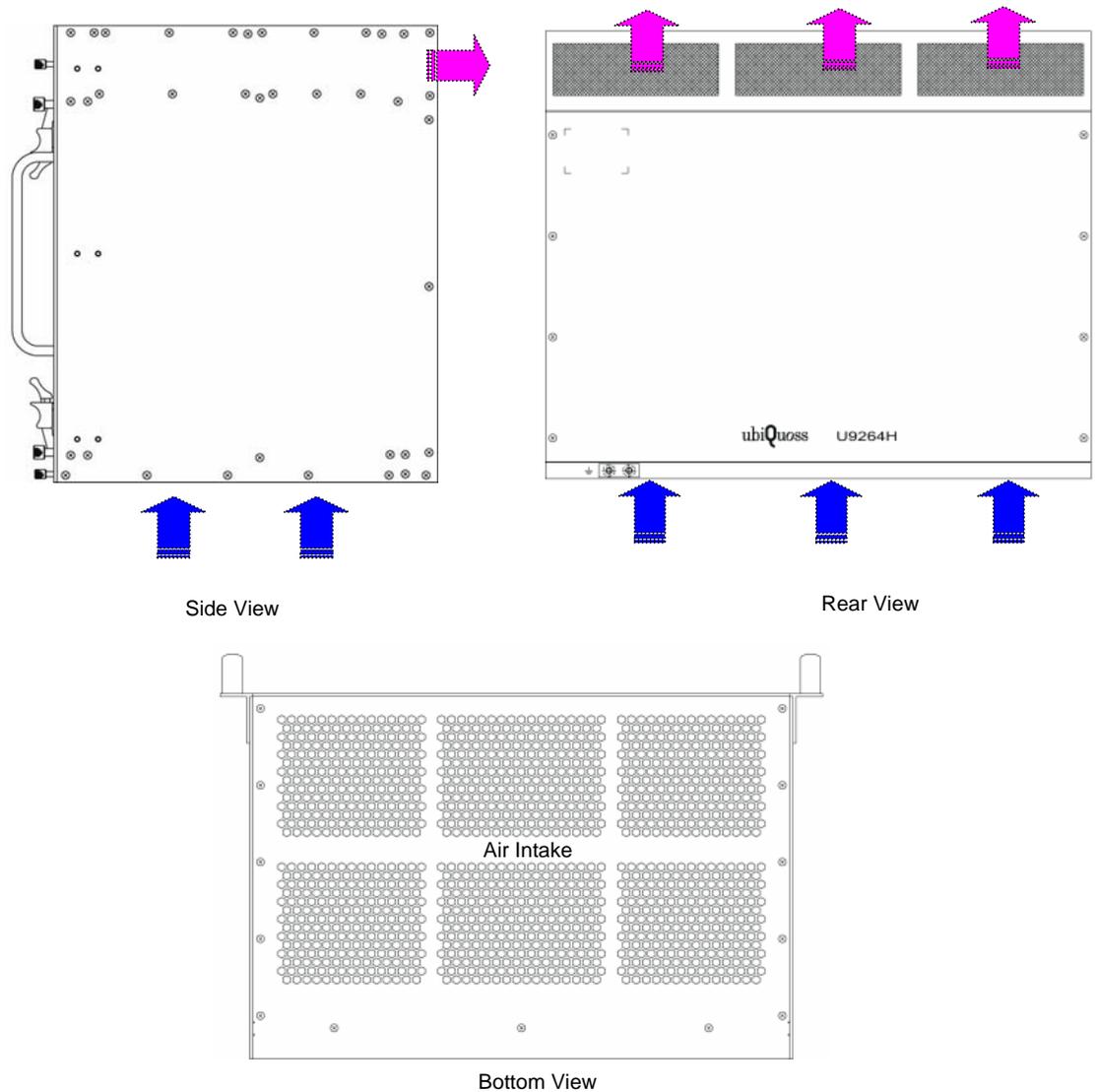
Bottom View

Figure 10. Rear, Side, and Bottom View

> **Caution** U9264H has the structure that the Fan Module (FMU) is located on the top of the device so that the cooling is done through the hot air rising from the bottom (convection cooling). Consequently, if the top and the bottom of the device are blocked, the internal warm air and the external cold air cannot be circulated properly and the product can be overheated.

Power Supply

U9264H uses DC to supply power to the system, and it provides two terminals that provide power to the system for power redundancy as shown below.

PSU

RUN
FAIL

Status LED

250V T30AH

Fuse Terminal

ON

OFF

Power Switch

-48V

GND

F.GND

Power Terminal
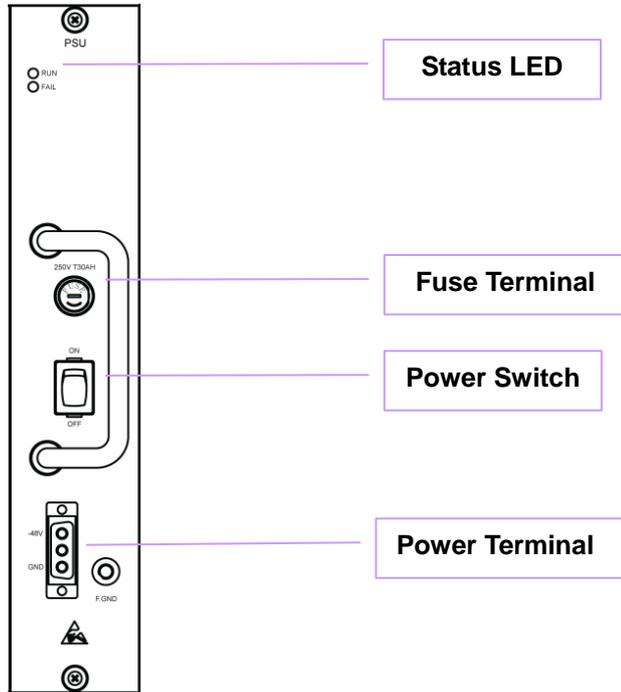
Figure 11. U9264H DC PSU

The power switch is used to turn on or off the power supply. If the power supply is out of order, set the power switch of the applicable power supply to OFF (O direction) before replacing the power supply. The status of the power supply is displayed through the power display LED on the front of the device.

	Note	U9264H provides two power supplies for power redundancy in order to provide stable power. For power redundancy, each power input terminal should be connected to different power sources. In case a power supply has a problem and fails to provide power properly, the power redundancy function allows the other power supply to provide power to the system so that the system can seamlessly operate without any disturbance. This power redundancy does not require any additional action as long as the power is supplied from two different power supplies.

Ground Terminal

A ground terminal is used to connect the system and the ground.
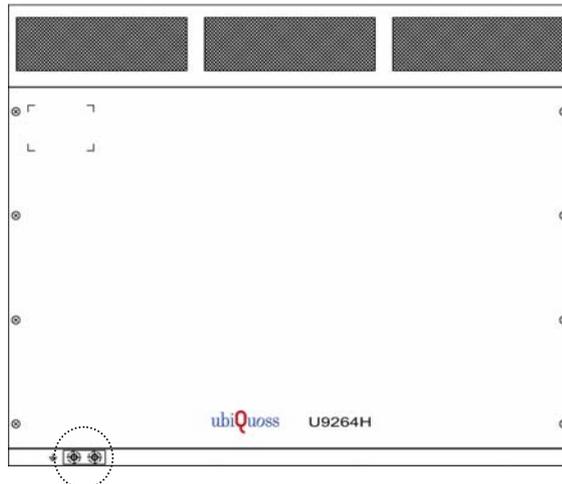
Figure 12. Ground Terminal

	Warning	For the electric safety, the product administrator and user should ground the product before supplying power to the product. If the product is not grounded, static electricity or sparks can be generated and the product can be damaged by a surge or a thunderstorm

Chapter 2.   Installation Preparation

This chapter explains about the items necessary to install U9264H and notes for installing and using the product. The user should fully understand the notes in this chapter before installing the product to prevent any problem that may occur during the installation of product.

This chapter consists of;

* Notes for installation
* Items necessary for installation
* Checking the contents of package

Notes to Take before Installation

Before installing and using U9264H, the user should fully understand the warnings and notes explained in this section and follow the instructions.

Do not disassemble the product

The user should not disassemble the product. If the user thinks that a repair is necessary, contact the Ubiquoss Technical Support Team.

Installation site condition

The product should be installed in the site satisfying the following conditions to use the product safely and stably:

• Avoid the location whose temperature is too high or too low.
• Avoid the top of a shaky shelf, a tilted location, or the place with big vibrations.
• Avoid the location that is not ventilated or airtight.
• Avoid the location with water or moisture and direct sunrays. Choose the cool and dry location. If water gets into the product, it can cause an electric shock or the product failure.
• Keep the surroundings of the product clean and dust-free during or after the product installation.
• An electro-magnetic wave can cause a problem to the product operation, so avoid the location where an electro-magnetic wave is generated.
• Install the product in the location that the user can easily access and connect a cable to the product easily.

Satisfying operational environment conditions

U9264H normally operates in the environment with the following conditions:

• Operating temperature: 0 ~ 50℃
• Relative humidity: 10 ~ 85% (non-condensation)

Even in the environment that satisfies the above conditions, if the product operates in the excessively low or high temperature for long time, the product life becomes shorter or the product is vulnerable to damage. So always maintain a proper environment.

Prevent static electricity

Because static electricity can cause serious damage to the device or a circuit, the user and the supervisor should take the following actions when using the product:

• Always discharge the static electricity on the body before touching the product. (Use the static electricity-preventing strap.)
• Do not touch the internal components or connector pins with hands.
• It is recommended to put the product into a static electricity-preventing envelop when storing or moving the product.

Notes to take when using power
• Ground all the cables connected to the product and connect them to the grounded outlets to prevent and minimize the problem related to electro-magnetic wave or surge.

- The power supplied to the product should comply with the power requirements specified in the Hardware Installation Guide.
- The administrator or user is encouraged to check the grounding status and take appropriate actions for the electric safety before supplying power to the product.
- Do not touch the power plug with wet hands because it can cause an electric shock.
- Do not pull out the power cable because it can cause a fire.
- Do not use the power cable that is peeled or the one whose plug connection is not tight because it can cause an electric shock and a fire.
- Always check the working place for the possibility of any danger, the wet floor, non-grounded power extension cable, the floor with no grounding facility, etc.
- The provided power cable includes a grounding line, so ground the outlet that the power cable is connected to.
- Connect the power cable in the safe place so that unknown people cannot be exposed to it.
- If the user uses other power cables than those provided with the product together, use the ones that satisfy the specifications.
- In case of product installation, installation site change, product transportation, and product disassembling (only relevant engineers are allowed to do this), turn off the power, remove the communication cables from all ports, and remove the power cables.

Grounding

For the electric safety, the product supervisor and user should check the grounding status before supplying power to the product, and ground the product using the ground hole on the rear of the product if the product is not grounded. The product grounding is the first thing to do before using the product and the last thing to remove in case of product transportation.

Lightening

Because lightening can cause a serious fault to the product, pay extra attention to prevent the product, the cables connected to the product, and the installation site from being exposed to lightening.

Checking a rack before installation

In case of installing U9264H on rack, check the stability of the rack first to prevent from occurrence of the case that the rack falls down or fails to hold the product weight after the product is installed.

Preventing overheating

Because the product overheating can cause a failure or an incorrect operation, pay attention to the followings to ensure the smooth air circulation in the product:

- During the production installation, secure a sufficient space (1U on the top/bottom) to prevent the product from being affected the temperature of other products or unsmooth air circulation.
- Do not block the cooling fan and vents on the top/bottom of the product because they play an important role of cooling down the system temperature.
- In case of installing the device on a rack, it is recommended to use an open-type rack. In case of using a closed-type rack, install an additional ventilation device.

Notes to take when cleaning the product
- Do not wipe the inside of the device with wet cloth.
- Do not use tough tools or chemical components, such as benzene, to wipe the product because it can deform the product appearance.

Other notes
• Do not put a heavy thing on the product.
• Do not take any action that can cause an injury to a person or damage to the device.

Checking the installation environment

This section describes the necessary installation environment to install and use U9264H safely.

It is recommended to keep the U9264H temperature and humidity stable. The product can be used in the following environment:

• Operating temperature: 0~50°C
• Relative humidity: 10~85%
• Power consumption: Max. 600W (typical: 450W) – based on full installation
• Input voltage: 220 VAC, 50/60Hz or DC -48 VDC

Working with Lasers

If your system includes a fiber-optic port, note the following guidelines.

• To avoid exposure to radiation, do not stare into the aperture of a fiber-optic port. Invisible radiation might be emitted from the aperture of the port when no fiber cable is connected.
• Always keep unused fiber-optic ports capped with a clean dust cap.
• When you see the following symbol label in the system module, you must take care to ensure that any laser light escaping is not directed towards the eyes.

Figure 13. Warning Label According to IEC 60825/EN 60825

Necessary Items for Installation

An U9264H installation requires the items described below. The items marked by * are not supplied with the product. The user should prepare these before the product installation.

- U9264H Main Body
- U9264H Installation, User Guide: a book or a manual CD
- Power Cord
- Console Cable
- Console Terminal *
- Management Ethernet Port Connection Cable
- Gigabit Ethernet Port Connection Cable *
- Rack*
- Binder head screw: 4 EA (used to mount the device onto the rack)*
- Cross screw driver *

PON
OLT

Package Items

Package Items

The U9264H package includes the followings:

Table 3 List of Package Items

Items	Quantity	Usage
Body	1 EA	U9264H Body
Hardware Installation Guide or a manual CD	1 EA	The manual that describes how to install the device and connect cables
		A manual CD that includes a release note, a user guide, a command guide, and a configuration user guide.
Power cable	2 EA	The cables to supply power (the -48V power cable is sold separately.)
Console cable	1 EA	The cable used to connect a console port and a console terminal (straight-through cable)

The user should thoroughly check the items in the product package for any missing item that is in the list and any damaged item. For any missing or damaged item, contact the product purchase place for new items.
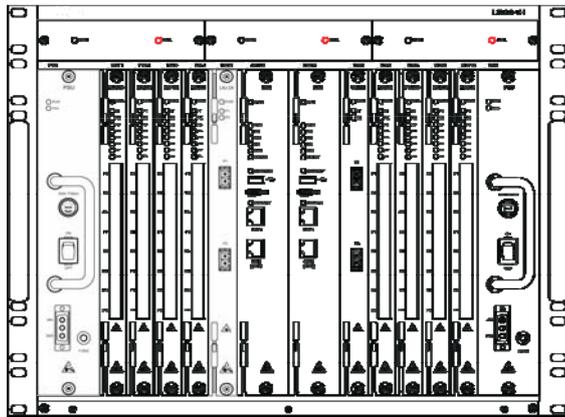
U9264H
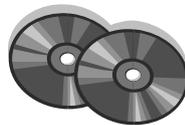
User's Guide   Console cable (RJ45-DB9)   Binder-head screws
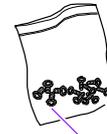
Figure 14. Package Items

Chapter 3.   Installation

This chapter describes how to install U9264H to a rack and connect each port of the device.

The chapter consists of the following sections:

- Selecting an Installation Site
- Installation onto a Rack
- Connecting Power
- Connecting a Console Terminal
- Connecting a Management Ethernet Port
- Connecting a Gigabit Ethernet Port
- Checking the Operation

Installation Place

To install and use U9264H safely, it should be installed in the environment that satisfies the following conditions:

- Avoid the location whose temperature is too high or low. (Especially, avoid the location that is exposed to direct sunrays or the location around a heater.)
- Avoid the location that is not properly ventilated, airtight, or wet. Install the product in the location that is cool, dry, or ventilated properly.
- Secure the space of at least 10cm on the top/bottom of the product for ventilation.
- Avoid the top of a shaky shelf, a tilted location, or a place with big vibrations.
- Avoid the location where an electro-magnetic wave is generated.
- Keep the surroundings of the product clean and dust-free during or after the product installation.
- To prevent people from being exposed to any injury, put the device and tools away from the location that people often visit.
- Install the device in the location that the user can access easily and connect the cable easily.
- U9264H operates normally in the temperature and humidity below. If the temperature and the humidity are out of these ranges, the product can operate abnormally. Consequently, install the product in the location that can satisfy the following conditions:

    - Operating temperature: 0~50℃

    - Relative humidity: 10 ~ 85% (non-condensation)

Mounting on the Rack

U9264H can be mounted onto a standard 19" rack. The following describes how to install U9264H onto a rack:

1. Remove all the cables connected to the product and turn off the power.
2. Put the product on the floor or a firm table that is near the installation rack.
3. If another device is already installed on the rack, choose the location on the rack to install the product onto by considering the product size below. Ensure to secure the space of 1U on the top/bottom of the product.
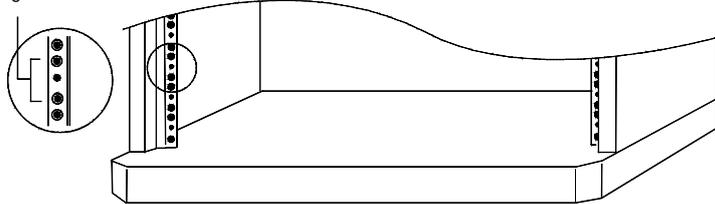
U9264H size: 482.6mm (W) x 295.0mm (D) x 354.5mm (H)
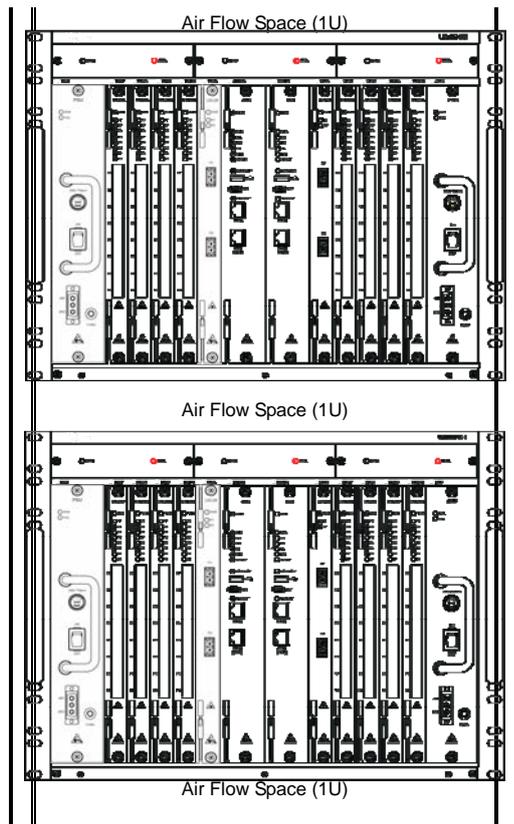
Figure 15. Mounting on the Rack

4. Two workers should work together to put the product with the rack brackets attached on the installation site of the 19" rack.

5. Align the rack brackets attached to the product and the holes of the 19" rack, and then fix the product to the rack by using 4 binder head screws.

	Note	The binder head screws are not supplied with U9264H. For these, contact the company that provided the 19" rack.

	Caution	Before installing the product onto the rack, check the stability of the rack in order to prevent the incident such as the rack falls down after the product installation or the rack fails to hold the product weight. In case of installing the product onto an empty rack, use the bottom of the rack first.

Grounding the OLT on the Rack

⚠	Warning	For the safety of operators and equipment, securely ground the OLT. Make sure that the resistance reading between the chassis and the ground is less than 1 ohm.

Most racks are equipped with a grounding strip. You can connect the yellow-green grounding cable of the equipment to the grounding strip.

✎	Note	Use the supplied grounding cable (CAT 6 cable with dual-hole OT terminals).

1. Remove the grounding screw from OLT chassis.
2. Put the supplied OT terminal of the grounding cable on the grounding screw.
3. Insert the grounding screw into the grounding hole and screw it down.
4. Connect the other end of the grounding cable to the grounding strip of the rack in the same way.

Grounding
Terminal Box
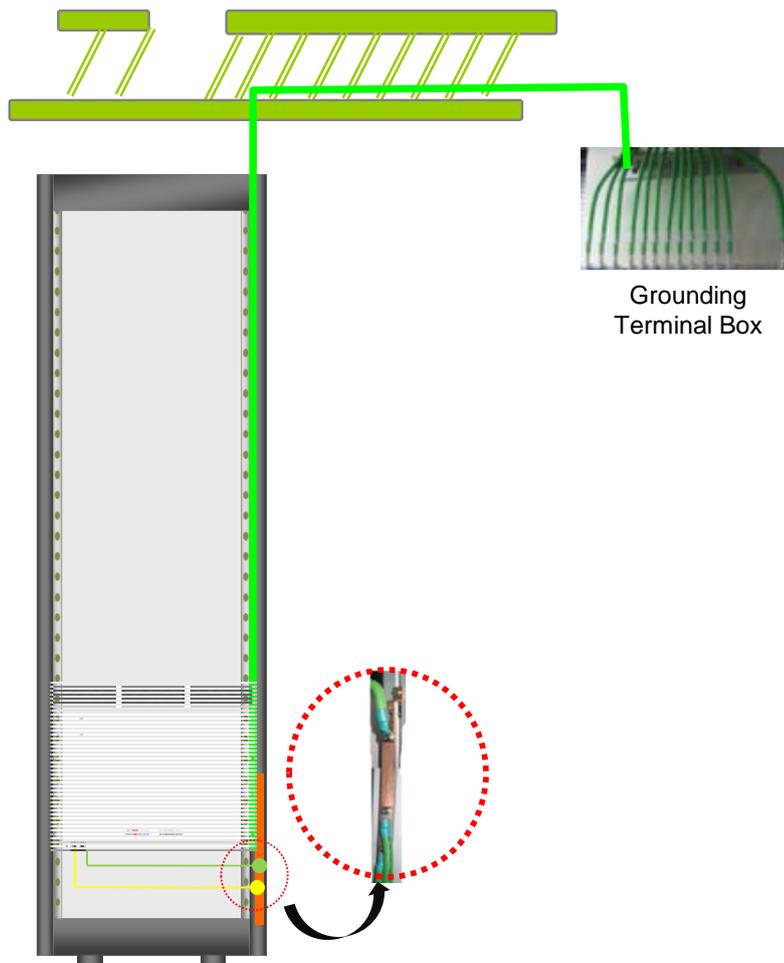
Figure 16. Grouding on the Rack

If there is no grounding point on the rack, you can attach the grounding cable to a grounding strip. The installation procedures are similar.

	Caution	Connect the grounding cable to the earthing system in the equipment room. Do not connect it to a fire main or lightning rod.

Installing a LINE Card

1. Insert a LINE Card in the chassis rail.
2. Hang the each side hinge of ejector at the hanging pin.
3. Press the lever with fingers and push it forward powerfully.
4. When the hinges of ejectors are inserted in the holes, the LINE card is installed on backplane socket well.
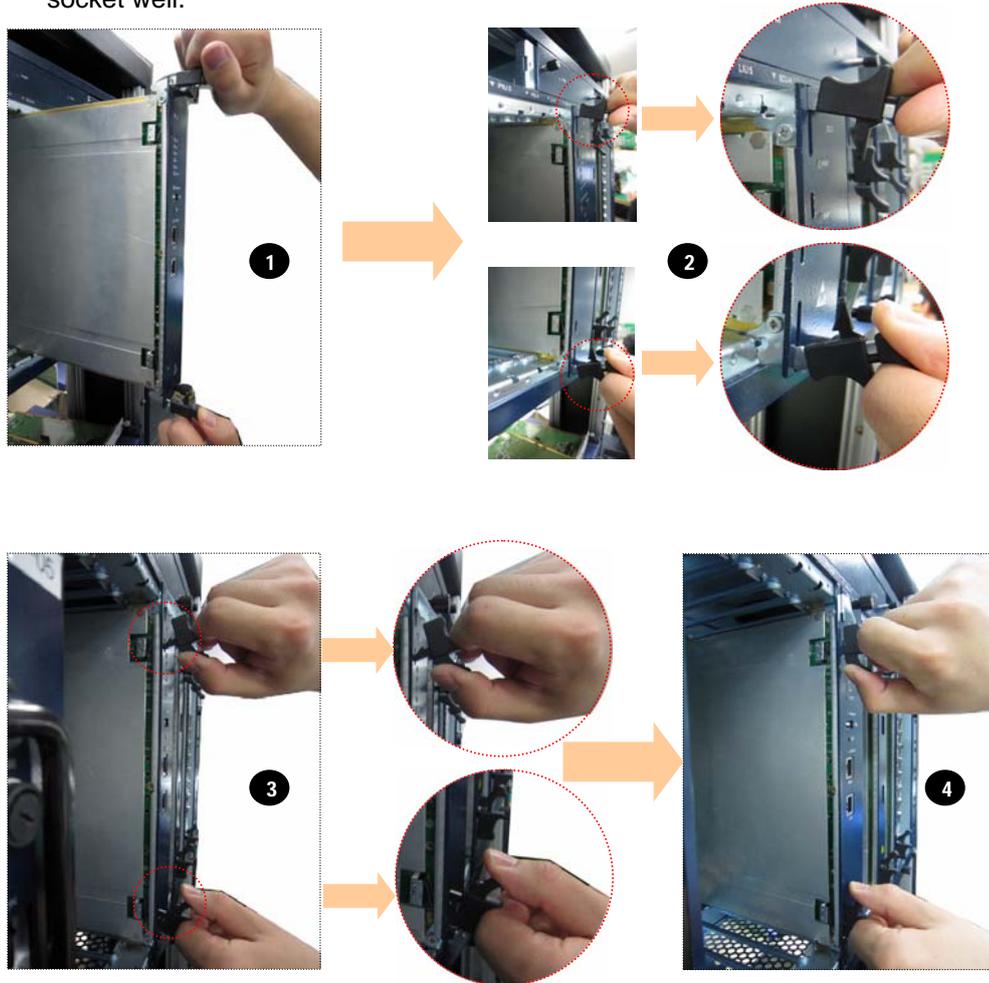
Figure 17. Installing a LINE Card

Removing the LINE Card

1. Press the each lever of ejectors and pull out the each hinge from each hole.
2. Pull out the each side hinge of ejector from the hanging pin of a chassis.
3. Take the end of ejector lever and pull it backward powerfully.
4. While the ejectors unfold more, the LINE Card is separated from the backplane socket.
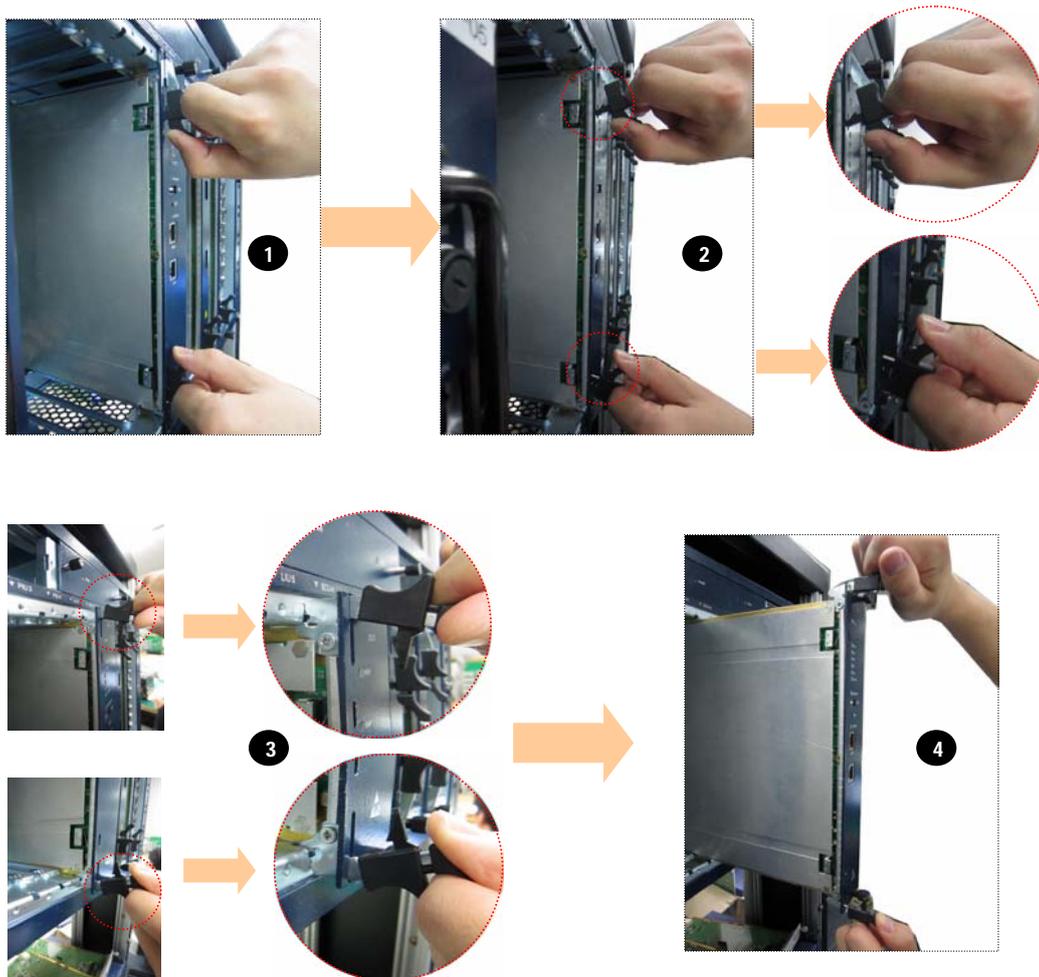
Figure 18. Removing the LINE Card

Connector and Cable Connection

You can select Optic module and configure port connection according to the port type as follows:

| ⚠ | Warning | Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. |

Single Mode Fiber Optic Cable
• Connector : Simplex SC/APC
• Wavelength : 1310nm (Rx), 1490nm (Tx)
• Max. cable length : 10/20Km

SFP/SC Optic module
Rx: 1310 nm
Tx: 1490 nm

SC/APC connector (GPON)

LIU-8G
PX Port
(PON Optic)

Figure 19. PON Optic Port

Single Mode Fiber Optic Cable
• Connector : Duplex LC
• Wavelength : 1310nm (Rx, Tx)
• Max. cable length : 10Km

Multi-Mode Fiber Optic Cable
• Connector : Duplex LC
• Wavelength : 850nm (Rx, Tx)
• Max. cable length : 550m

SFP/LC Optic module
SX Type (850nm)
LX Type (1310nm)

LC connector

1000Base-X Port
(Ethernet Optic)
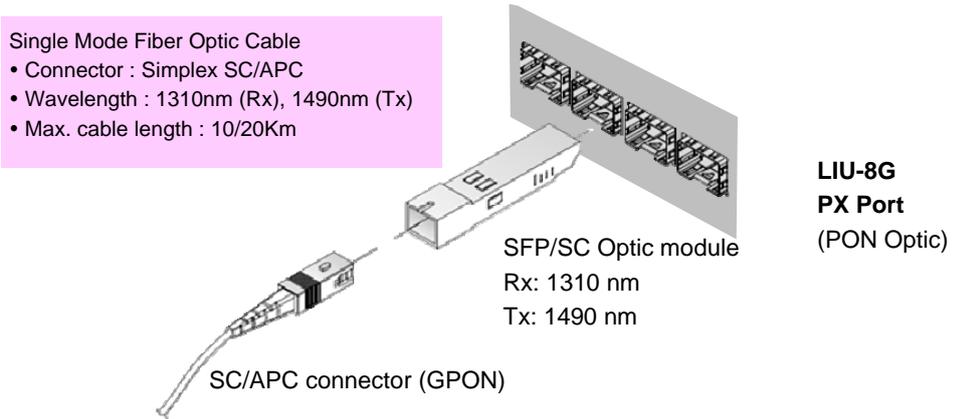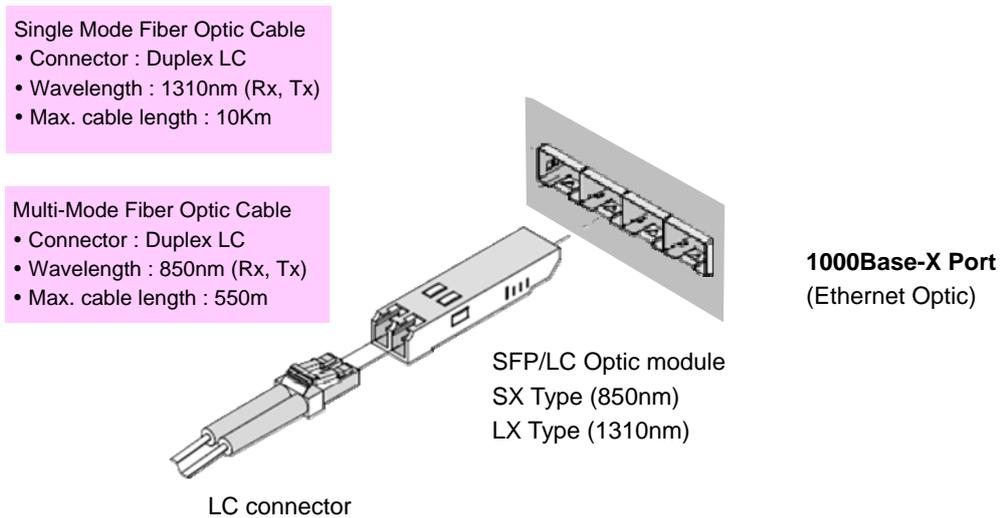
Figure 20. Ethernet Optic Port

GPON Network Configuration

The following figure shows how to configure GPON network with U9264H OLT.

- Single Mode Fiber Optic Cable
- Connector : Duplex LC
- Wavelength : 1310nm (Rx, Tx)

Edge or Core Network System

LIM 2X or 4X

U9264H

Single Mode Fiber Optic Cable
- Connector : Simplex SC/APC
- Wavelength : 1310nm (Rx), 1490nm (Tx)
- Max. cable length : 10/20Km

Optical Splitter

GPON ONT

PIU 8G

Single Mode Fiber Optic Cable
- Connector : Simplex SC/APC
- Wavelength :1490nm (Rx),1310nm (Tx)
- Max. cable length : 20Km

Figure 21. GPON Network Configuration

Connecting Power

Before connecting power to U9264H, make sure the power switches on the rear side of the product are set to OFF.

- DC power: Connect the–48V DC power supplied from the rack to two–48V power input terminals, and then connect the ground terminal to that of the rack. In case of duplicating the U9264H power, connect the power supplied from the rack to two –48 VDC power input terminals.

250V T30AH

Voltage: -48VDC
GND

DC Power Rectifier
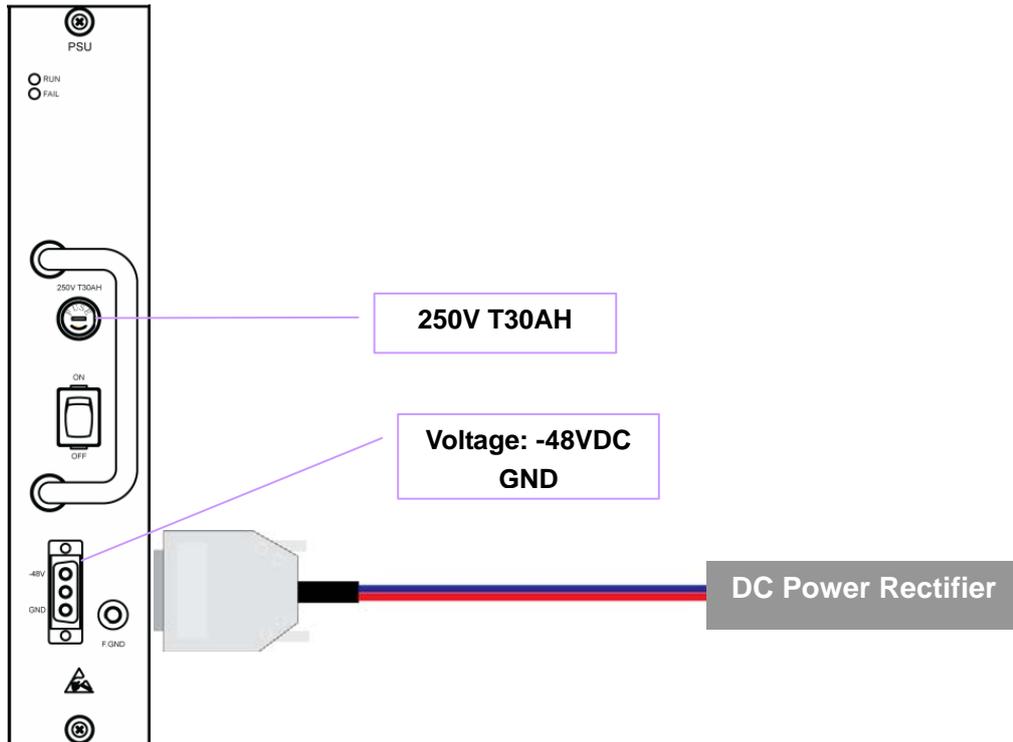
Figure 22. U9264H DC Connecting Power

i	Caution	To prevent electric shock and protect the device from lightening and a surge, the device must be grounded. To ground the device, connect the ground hole on the rear of the device and the ground terminal in the installation site.

i	Caution	The power for the U9264H using DC should satisfy the following specifications:

- Voltage: DC –48VDC
- Power consumption: Max 600 Watt (Typical: 450Watt) – based on full installation

The supply of the power that fails to satisfy the above specifications can cause product damage or a fire.

Connecting Console Terminal

U9264H can be set or monitored through a local console port. The use of console cable that came with the product is recommended to connect between the product and the console terminal. Connect the RJ-45 connector of console cable to the console port of the product and the DB-9 connector (the other side of the cable) to the console terminal.

The terminal device used as the console terminal of U9264H should be set according to the following communication environment conditions so that it can communicate with U9264H normally.

- Bit Rate: 9600 bps
- Data Bit: 8 bit
- Stop bit: 1 bit
- Parity bit: None.
- Flow control: None.
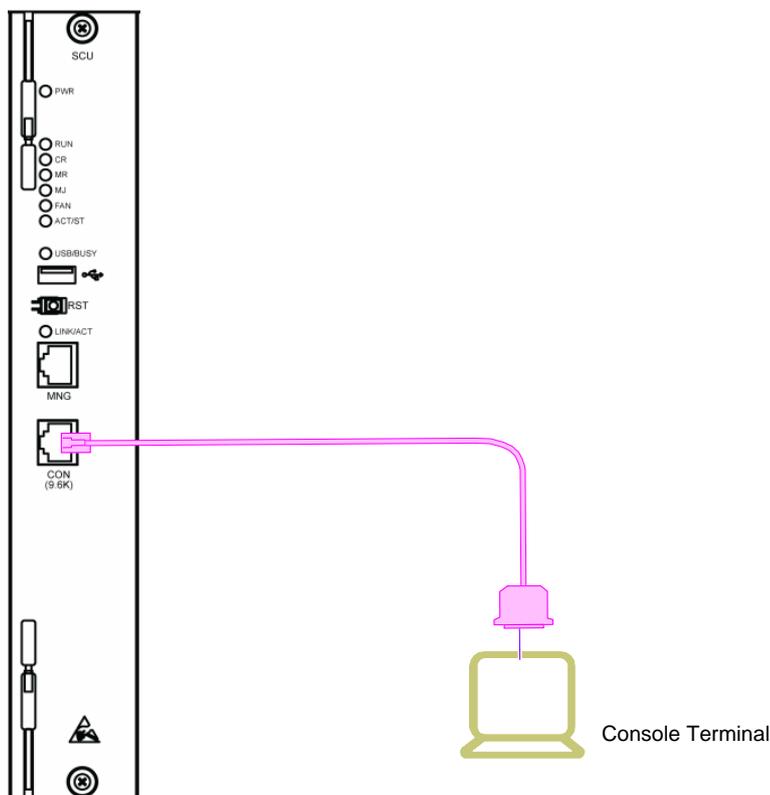
Console Terminal

Figure 23. Connecting Console Terminal

ℹ	Caution	Most of the cases that the screen output of the console terminal fails, it is due to the wrong setting of the number of bits per sec in the console terminal. In case that the characters on the console terminal screen are broken or that no character is displayed, check the number of bits per sec set in the terminal.

✎	Note	See the console cable specifications and "Appendix B "Cable Spec." (The connectors of a cable are pin-connected.)

Connecting Management Port

U9264H provides an Ethernet port so that the user can manage the product through the host connected to a local network. Use the Ethernet cable (UTP Category 5) accompanying the product for the connection of the management Ethernet port to the network. Connect one RJ-45 connector of the Ethernet cable to the management Ethernet port and the other connector to the device such as the switch connected to the network.

If a cable is connected to the management Ethernet port when power is supplied to U9264H, it is possible to check the network connection status through the LED operation. If the LED is turned on or blinks in green, it indicates that the management Ethernet port is connected to the network normally.

Connect to the local network (Ethernet LAN)
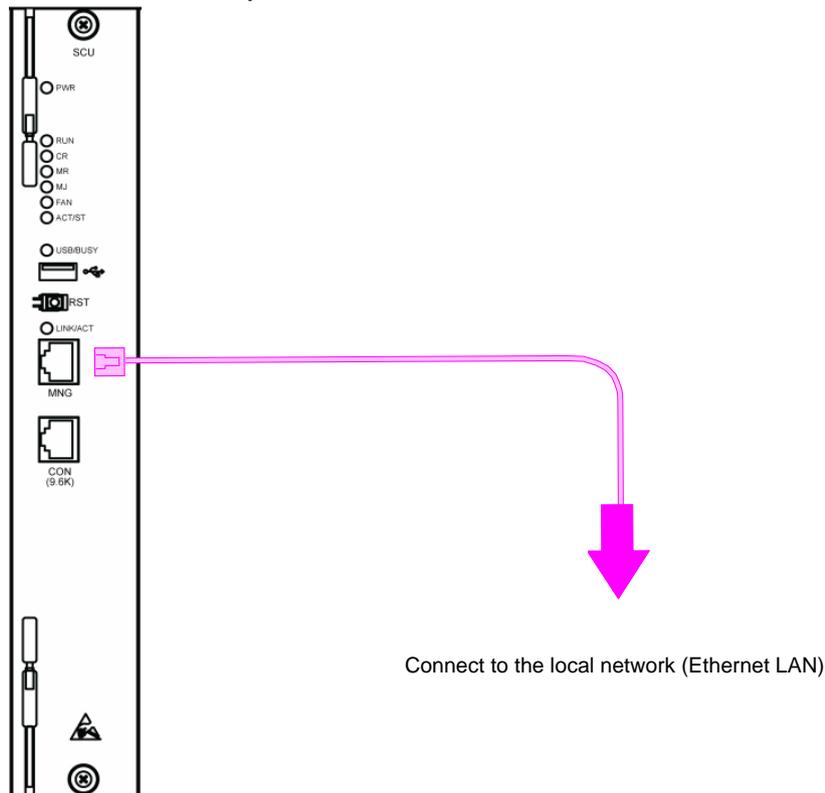
Figure 24. Connecting Management Port

| | Caution | You must use only the crossover cable type to connect MNG port. In case of connecting MNG Fast Ethernet port using other cables than those accompanying the product, refer to the cable specification in Appendix B "Cables and Connector Spec." |

Operation Checking

If the device installation is completed and all cables are connected, use the following procedure to check if the device operates with no problem:

Checking LEDs

Turn on the device by setting the power-connected power switch to ON. Then, check if the LEDs on the front of the device operate as described below.

- Check if the PWR LED on the front panel is turned on in green after the power switch is set to ON.
- If the power is supplied normally, the device is initialized. It is possible to check the initialization procedure even in the console terminal through a console port.
- If the system initialization is completed normally after about 40 seconds, the console terminal displays the prompt for the supervisor's input. If no prompt is displayed after about 40 seconds, it indicates that the system is not operating normally.
- If the initialization is completed, the LED of the port connected to a cable is turned on. The LNK LEDs of the ports properly connected to a PC or network devices are turned on in green.

Checking Console

The use of a console terminal is recommended when it is not easy to check the status of device only with LED indicators. As described before, connect a console terminal using the console port of the device and set the communication environment of the console terminal. If the console terminal is connected in the middle of the device initialization, the user can see in the console terminal the messages displayed in the initialization procedure below.

If the initialization procedure is completed normally, a login message is displayed. The user can log into the CLI of the device and set the device.

In case that a console terminal is connected after the device initialization is completed, the user can see the login message by pressing [Enter].

	Note	For how to set the device after the login through CLI, see the U9264H User Guide accompanying this Hardware Installation Guide.

	Note	The messages displayed on the console terminal screen can be different somehow, depending on the device type and the version of the firmware installed in the device.

Setting IP Address

The operator can change the IP address according to the network configuration.

IP address setup procedure of U9264H is as follows.

1. Connect a PC or workstation used as a management terminal to the Console port and run the terminal emulation program (for example, hyper terminal).
2. If a password input line appears, enter the password and press [Enter] key. The factory default id is "root" and the password is "frontier".

   Password : ********
   U9264H>enable

```
U9264H#
```

3. If the password is entered correctly, the U9264H# prompt appears.
4. IP address can also be set up in config terminal mode. To enter into the config terminal mode, please use the following command.

```
U9264H# config terminal
U9264H(config)#
```

5. Set the desired IP address along with subnet mask. The following shows an example of setting the IP address to 10.1.13.220.

```
U9264H (config)#int eth0
U9264H(config-if-eth0)# ip address 10.1.13.220/24
U9264H (config-if-eth0)#end
```

6. To view the IP address previously set, the mode should be changed to root mode.
7. In a U9264H# prompt, please use the following command to check the current IP address

```
U9264H# show ip interfaces brief
```

8. After checking if the IP address is correct set, please use the following command to save the IP address in the system.

```
U9264H# copy running-config startup-config
```

* For CLI menu items, please refer to a separate manual.

Chapter 4.   Troubleshooting

This chapter describes the problems that can occur during the installation and use of U9264H and how to resolve them.

Many of the problems occurring to the device are what the user can check and resolve easily. If the device fails to operate normally, see the description in this chapter and check if the problem can be resolved.

If the user thinks that the problem is too difficult, contact the Technical Support Team of ubiQuoss Inc. and the team will take proper actions promptly.

Troubleshooting Case

[Problem 1] The Power LED is not turned on.

The power is not supplied normally.

Solution

---

1. Check if the power cable is properly connected to the power input terminal and the outlet.
2. Check the power supplying status of the outlet that the power cable is connected to.
3. If the plug of the power cable is connected to an extension cord, check if the power switch of the
4. extension cord is turned on
5. Remove the fuse socket on the left of the power input terminal and check if the fuse is broken.

[Problem 2] The characters on the console terminal screen are not broken, but the login message is not displayed.

The proper system initialization has failed.

Solution

Turn off the power switch and then turn it on to run the device again.

[Problem 3] No character is displayed on the console terminal screen or the displayed characters are broken.

An improper console cable is connected or the communication setting of the console terminal is not correct.

Solution

---

1. Check if the console cable is properly connected to the console port and the console terminal.
2. Check if the connected console cable is the one provided during the product purchase. If the connected console cable is not this one, check if the cable satisfies the console cable specifications in Appendix B.
3. Check if the console terminal has the following communication setting:
   - Bit Rate: 9600 bps
   - Data bit: 8 bit
   - Stop bit: 1 bit
   - Parity bit: None
   - Flow control: None

[Problem 4] After the cable is connected, the ports are not recognized or the port LEDs are not turned on.

The cable connection is not correct, an improper cable is used, or the connected device is not operating.

Solution

---

1. Check if the connector of the cable is inserted into the port properly.
2. Check if the connected device is operating normally.
3. Check if the cable used for the port satisfies the specifications in Appendix B.

FMU Change

The U9264H has 3 Fan Module Units. If a FAIL LED get RED like the following figure, you must check troble and change a new FMU.

Figure 25. FMU Fail Status

The following table shows the FMU LED status and description.

Table 4 FMU LED Status

Unit	LED	Status		Description
FMU	RUN	GREEN	OFF	Power: OFF
			ON	FAN: ACT
	FAIL	RED	OFF	FAN: ACT/NORMAL
			ON	FAN: FAIL, STOP

Removing a FMU
1. Hold each hand screw with your fingers.
2. Turn each hand screw to counterclockwise with your fingers.
3. Pull the FMU out from the slot.
4. Remove the FMU as you hold its body with your two hands.
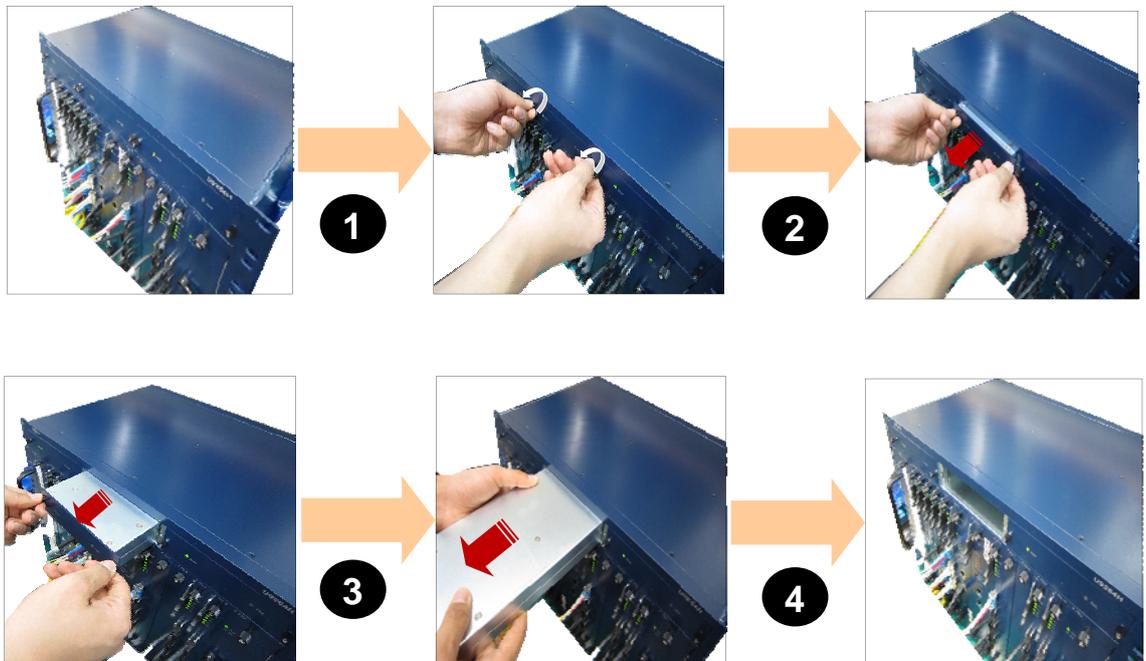
Figure 26. Removing a FMU

Installing a FMU

1. Insert a new FMU into the slot as you hold its body with your two hands.
2. Push the FMU into the slot.
3. Hold each hand screw with your fingers.
4. Fasten each hand screw to clockwise with your fingers.
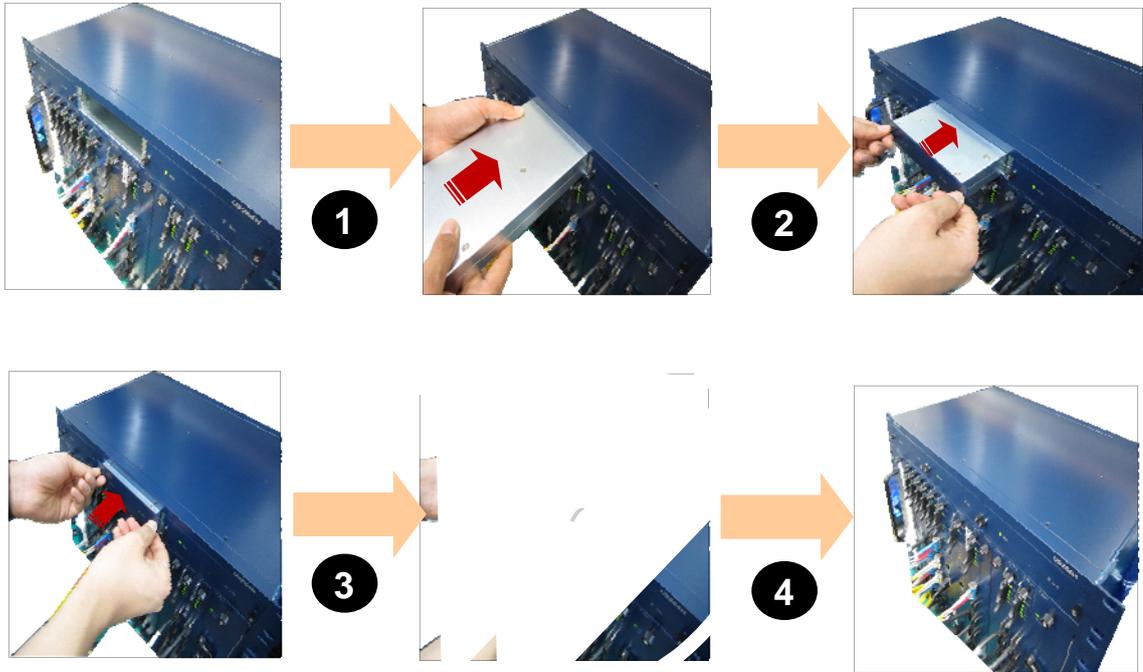
Figure 27. Installing a FMU

Appendix A. Product Specification

Appendix A describes the product specifications of U9264H.

Table 5 U9264H Specification

Item	Content
Physical Dimension	
Size (W x D x H)	482.6mm x 295.0mm x 354.5mm
Rack Mount	Standard 19" rack.
Weight	Max: 45kg
Power	
DC Input	• Input voltage: DC -48VDC
Redundancy	Power redundancy (2 power supplies)
Power Consumption	Max: 800 Watt (typical: 450 Watt) – based on full installation
LED	
System Status LED	• PWR: Power LED (normal - green) • System status LED: RUN, CR/MJ/.MN • MNG: Management Port Status LED (green)
PON Port Status LED	• LNK/ACT/ALARM: Link Status LED (green)
Operating Environment	
Operating Temperature	0 ~ 50°C
Storage Temperature	-20 ~ 70°C
Operating Humidity	0 ~ 80% (relative humidity)
Certification	
Certificate	MIC
Hardware Spec.	
Processor	PowerPC Processor
Boot Flash	2 Mbytes
Application Flash	64 Mbytes
System Memory	1Gbytes
System Monitoring	• Watchdog • Sensing the FAN failure, monitoring temperature, sensing improper power.

Appendix B. Connector and Cable Specification

Appendix B describes the specifications of the connectors and cables used to connect the ports of U9264H.

Appendix B consists of:

- Connectors Specification
- Cables Specification

Connectors Specification

RJ-45 Connector

10/100/1000Base-T Port

10/100/1000Base-T ports on the modules have the 8-pin RJ-45 connector. The cable used for connecting 10/100/1000Base-T port is twisted-pair cable with RJ-45 connectors at both ends.

8   1

Pin configuration of 10/100/1000Base-T port is as follows:

Table 6 Pin Configuration of 10/100/1000Base-T Port

Pin	Signal	Pin	Signal
1	Tx, Rx+ (1 pair)	5	Tx, Rx+ (3 pair)
2	Tx, Rx- (1 pair)	6	Tx, Rx- (2 pair)
3	Tx, Rx+ (2 pair)	7	Tx, Rx+ (4 pair)
4	Tx, Rx- (3 pair)	8	Tx, Rx- (4 pair)

Console Port

The CONSOLE port on the module has an 8-pin RJ-45 connector. The cable used for connecting console port is serial cable with an RJ-45 connector and a DB-9 at each end.
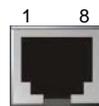
1   8

Pin configuration of Console port is as follows:

Table 7 Pin Configuration of Console Port

Pin	Signal
3	Tx
6	Rx
4 or 5	GND

LC Connector

1000Base-SX Port

1000Base-SX ports on the uplink modules have Duplex LC connectors. The cable used for connecting these LC connectors is multi mode fiber optic cable (transmitting/receiving wavelength: 850nm).

1000Base-LX Port

1000Base-LX ports on the uplink modules have Duplex LC connectors. The cable used for connecting these LC connectors is single mode fiber optic cable (transmitting/receiving wavelength: 1310nm).

SC Connector

PX Port

PX ports have simplex SC connectors. The cable used for connecting these SC connectors is single mode fiber optic cable (transmitting/receiving wavelength: 1310/1490nm).

Cables Specification

Optical Cable

Duplex LC Fiber Optic Cable

The cable used for connecting the *1000Base-SX/LX SFP ports* on the *uplink modules* is fiber-optic cable with *duplex LC connectors* at both ends (transmitting/receiving wavelength: 850nm or 1310nm).
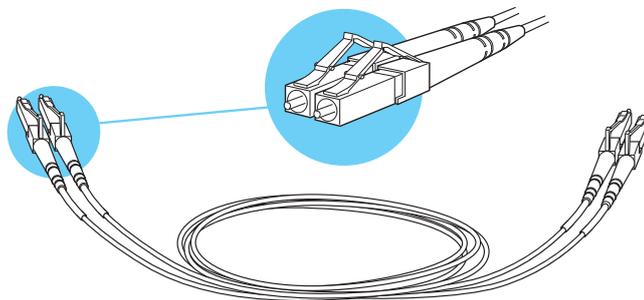
Simplex SC Fiber Optic Cable

For the PON link of U9264H, use the single-mode optical cable that has SC/PC connectors on both sides. In case of connecting GPON interface of ONT, use the SC/APC type connectors.

If the other optical cables than this are used, the communication might fail or the data transmission distance cannot be guaranteed.
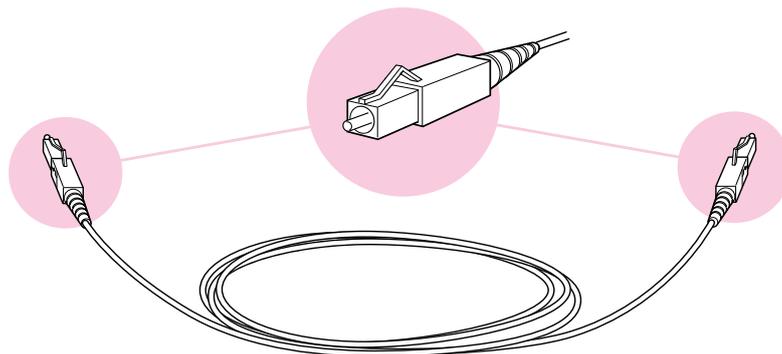
Console Cable

To connect a console port to a console terminal, use the serial cable that has an RS-232 DB-9 connector on one side and an RJ-45 connector on the other side as describe below.

The table below describes the types of the signals transmitted from each pin of the connectors on both sides of a console cable.

Table 8 Console Cable Pin Signal

Pin No. (Console Port)	Pin No. (Console Terminal)	Signal	Pin Definition
3	3	TXD	Transmit Data
6	2	RXD	Receive Data
4,5	5	GND	