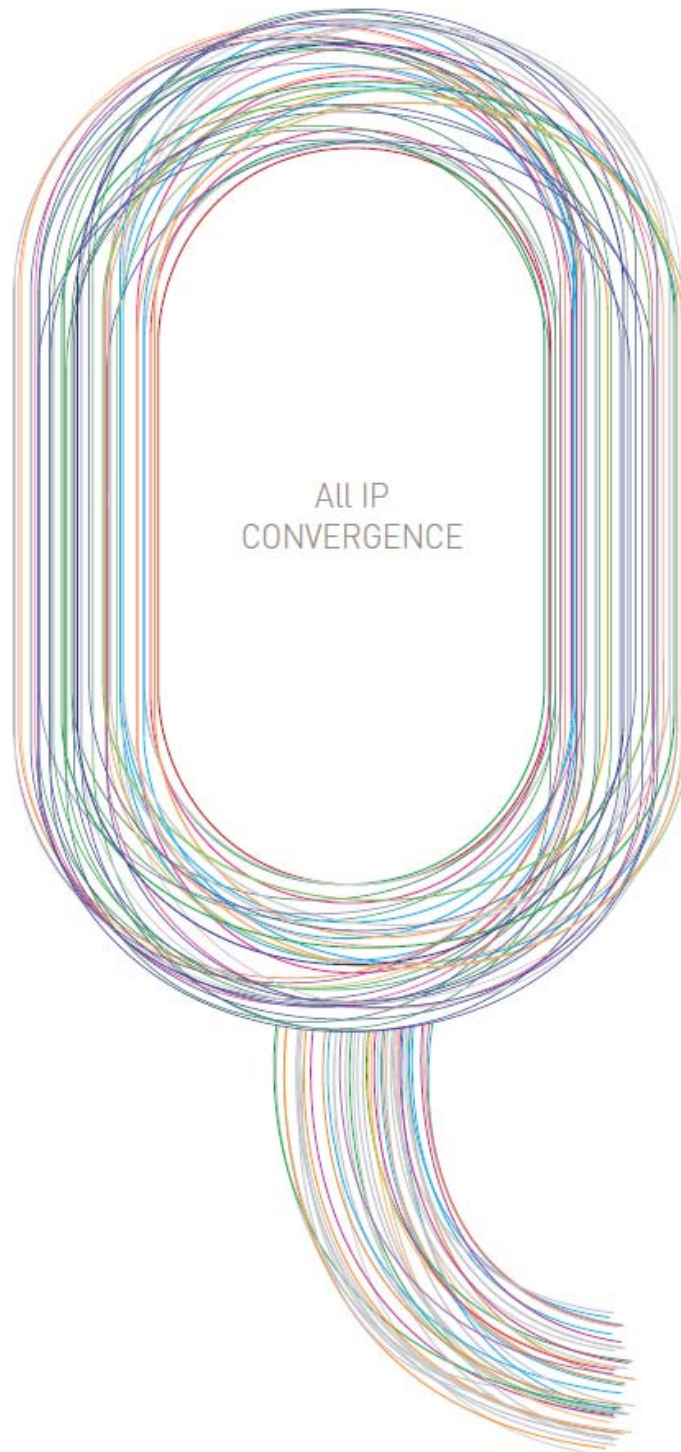


# P8824XG

■ Installation Guide



ubiQuoss

# P8824XG

■ Installation Guide



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## Preface

This preface provides the overview of P8824XG installation guide, which describes guide conventions, and lists other publications that may be useful.

### Introduction

This installation guide describes how to install P8824XG, the PON OLT of ubiQuoss.

- It describes how to install P8824XG and connection it to other devices.
- Chapter 1 describes the name and function of each part of P8824XG and Chapter 2 describes the necessary items and notes for the installation. The user is recommended to understand P8824XG and remember notes through Chapter 1 before the installation because it will be very useful for the user to install and use P8824XG safely.
- This installation 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

P8824XG switch manual switch manual set includes the followings. For additional information on this equipment, refer to the following manuals.

Manual	Contents
<i>Hardware Installation Guide</i>	Hardware installation Initial operating environment configuration
<i>User Guide</i>	Operating configuration for services System operation, administration and maintenance Trouble Shooting



#### Notice

You can download or request the latest documents and information on the products of ubiQuoss Inc. including P8824XG from the website (<http://www.ubiQuoss.com>).  
This document is the manual for the P8824XG.

## Symbols in this Guide

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

### Description of Symbols

The installation 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

Warning: Optical Terminal  
Do not look at the optical terminal directly. It could cause serious damage to your eyes.



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

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The installation guide consists of four chapters and two appendices. The summary of each part is described below.

### ***Chapter 1. Introduction***

This chapter introduces the product types and characteristics of P8824XG and the name and function of each part as well.

### ***Chapter 2. Installation Preparation***

This chapter describes the items to check before installing P8824XG and how to install it.

### ***Chapter 3. Installation***

This chapter describes how to install P8824XG.

### ***Appendix A. Product Spec***

Appendix A describes the product specifications of P8824XG.

### ***Appendix B. Cable Spec***

Appendix B describes the specifications of the cable used to connect the ports of P8824XG.

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# ***Chapter 1. Introduction***

This chapter introduces the product types and characteristics of P8824XG and the name and function of each part as well.

The chapter consists of the followings:

- Overview
- Characteristics

# Overview

## Gigabit Aggregation QoS L3 Switch



- 20-Ports 1000Base-X(SFP) or 100Base-FX(SFP)
- 4-Ports 1000Base-X(SFP) or 10/100/1000Base-Tx (Combo Type)
- 2-Ports 10G Base-R(XFP)

### Overview

P8824XG is a Gigabit L3 switch that delivers remarkable efficiency and reliability for robust switching at the CO aggregation or enterprise network edge. It is furnished with routing, multicasting, QoS (Quality of Service) functions suitable for IP-TV, mission critical data, and voice services.

Considering the connection possibility with existing device which have RJ-45 type connectors, P8824XG supports 4-Ports of 10/100/1000 Base-T interface as Combo Type. It basically has 24-Ports 1000 Base-X and optionally 2-Ports of 10Gbase-R (XFP type). Especially, in case of FX Module, the capacity expansion can be achieved by unit of port so that it can be helpful for scalable augmentation. All 24 ports of the switch are managed en bloc for efficiency, including power module insertion/extraction and Cisco-like CLI.

P8824XG is a 1U-sized switch applied for spatial efficiency and easy installation. System stability is optimized by supporting hardware based distributed switching and hot-swapping for each module, and system extension while operating is carried out without service interruption.

P8824XG makes use of high-speed non-blocking switch fabric. It also supports bandwidth management and QoS; therefore, service providers can offer differentiated IP services corresponding to applied service or SLA (Service Level Agreement). P8824XG's hardware-based multi-routing protocols provide never-before-seen functions among existing software-based routers.

### Scalable interface

- Up to 24 Ports of SFP type Gigabit Ethernet Switch along with 4 100/1000Base-T Combo ports
- 2 slots for 10G Base-R interface module for Expansion

### Redundant Power for HA

- Module Type of Power Supply Unit
- Dual configuration with either AC or DC
- Hot swapping enabled for continuous operation

### QoS feature

- IEEE 802.1p QoS, ToS, Diff-serv support
- Congestion Management
- Subscriber Traffic control by ACLs (Access Control Lists)
- Hardware-based Rate Limiting
- Rate Limiting: 1Mbps per Gigabit port
- Egress Traffic Shaping per Port
- Ingress Traffic Policing per Flow/Packet
- Hardware Based Symmetric & Asymmetric Rate Limiting

### L2 switching capability

- Max. 4K VLAN
- Private VLAN, 802.1Q Tag VLAN (Max 4K Tag VLAN)
- Link Aggregation (802.3ad): 13 group, Max 8port/group
- 802.1v protocol base VLAN, VMAN(Ether9100, Q-in-Q)
- Max. 32K MAC Management
- STP(802.1D), RSTP(802.1w), PVSTP
- NAT
- DHCP server & relay
- NTP (Network Time protocol) server & Client
- Jumbo Frame packet support: 10290byte (Giga)

#### L3 routing ability

- RIP v1/v2, OSPF v2, BGP v4, Static
- Default gateway, Multiple Default gateway
- Loop-back interface, VRRP
- IGMP v1, v2, v3, IGMP snooping, IGMP snooping fast leave,
- IGMP snooping suppression, IGMP proxy
- PIM-SM, PIM-SSM

#### Security

- IEEE 802.1x support
- Filtering: Mac address, Mac address Count limit, Netbios, NBT,
- DHCP, Broadcast Storm, specific IP confirmation control, IP Packet
- Filtering, IP collision detection, IP Sub-network bandwidth blocking
- Virus Filtering: DoS prevention, Warm virus Filtering
- RADIUS, TACACS+, SSH

#### Management facility

- SNMP v1/v2, RMON, MIB-I/II
- sFlow, tcpDump
- Remote S/W Upgrade, Telnet, TFTP, FTP
- Port Mirroring
- CLI, Syslog, manager authority control function

#### Applications

- High-speed & high-capacity service for communication enterprises
- High-speed Internet service and intra-network environment for business and house subscribers
- Client-Server Network
- IPv6, routing, multicasting & QoS for IP-TV & TPS service
- Differentiated IP services corresponding to applied service or SLA (Service Level Agreement).

## Characteristics

### Front view of System



Figure 1: Front view of P8824XG

### Ethernet (LAN) Port Block

- This equipment provides Ethernet (LAN) interfaces to be connected to Ethernet ports of previously installed L2 switches for transmission of data.
- This equipment supports total 24 ports of Ethernet (LAN).
- Each port supports LINK LED, ACT, TH LED.

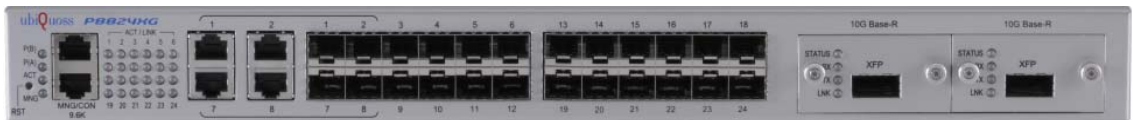


Figure 2: Ethernet (LAN) Port part

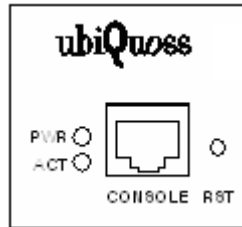
### LEDs

Table 1: Ethernet (LAN) LED Indicators

LED	Activity	Function
LINK / ACT / TH	ON (Green)	Normal link status
	ON (RED)	Data Threshold status
	Blink (Green)	Data transmission status
	OFF	Link down status

## Management and Control Block

- A serial (RS-232) Console port
- RESET BUTTON
- PWR / ACT LED



**Figure 3: Management and Control Block**

### 1. Console Port

The console port is used to connect a console terminal to P8824XG directly for management purpose. The console cable (Serial cable) for connecting between the console port and the console terminal comes with the product. PC or workstation with terminal emulator program installed can be used as a Console Terminal. The following table shows the specification of the console port.

**Table 2: Specification of Console port**

Item		Settings
Specification		UART
Baud rate		9600 bps
Connector type		RJ-45
Terminal Configuration	Data bit	8 bit
	Stop Bit	1 bits
	Parity Bit	None
	Flow Control	None

### 2. RESET BUTTON

The reset button is for cold rebooting of the system. When a cold reboot is required for the system, please press this button using a thin material like a pen or a pin set.

### 3. PWR / ACT

The table below summarizes the LEDs for indicating the operation status of the System.

**Table 3. System operation status LED indicators**

LED	Activity	Function
PWR	ON (Green)	System Power ON
	OFF	System Power OFF

ACT	ON (Green) OFF	System NORMAL System ABNORMAL
-----	-------------------	----------------------------------

## Uplink Slot



Figure 4: Uplink slot and status LED's

Table 4: GPON Uplink LED

LED	Activity	Function
LINK / ACT / TH	ON (Green)	Normal link status
	ON (RED)	Data Threshold status
	Blink (Green)	Data transmission status
	OFF	Link down status

## Rear View of the Module

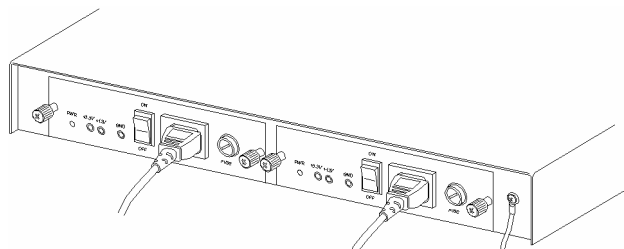
The rear panel of P8824XG consists of power supply AC INLET (110/220 FREE VOLTAGE), screws for chassis grounding, Module ON/OFF switch. The following figure shows the rear view of P8824XG.



Figure 5: Rear view of P8824XG

## FAN Ventilation Hole

FAN ventilation hole is the part that blows out hot air inside of the equipment. Please pay attention not to block this hole when installing the equipment.



## ***Chapter 2.    Installation Preparation***

This chapter describes the items to check before installing P8824XG and how to install it.

## Checking Items

### Checking safety

The user should check the items below before installing or using the P8824XG ONU.

### Checking electric safety

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.

Check any possibility that a danger occurs in the installation place. The product should not be installed in the place with the environment such as a wet floor, ungrounded power extension cable, the power cord that is worn out so much that the inside is visible, the floor without any grounding facility, high temperature, high humidity, and ill-ventilated place.

### Checking the installation place

P8824XG is the product designed for indoor use. The equipment can be mounted on 19" standard Rack and the brackets for rack mounting are supplied together with the product in the package.

Please keep the equipment away from water or moisture.

Please place the equipment in the location where power supply and cable wiring is convenient.

Check if the power supplied to the installation place is "clean." If the supplied power has many sparks and noises, install a power adjustment device.

An electronic product generates heat during operation. If the air circulation is not proper in the product installation place, the product might not operate well due to the generated heat. Check if the air circulation in the installation place is proper.

Check if the installation place is clean. If an optical connector has dust, it can cause an error or an improper operation.

Please install the equipment in a clean environment where temperature and humidity control is available.

### Checking the Package

The user should check the following components of the Module before starting installing of P8824XG ONU:

Open the box and check if the items below are all included in the box.

1. P8824XG Module and Main Body
2. AC INLET CABLE
3. Installation Guide and Operator's manual of P8824XG
4. Serial cable: To connect to the management terminal
5. Brackets and screws for Rack mounting



## Checking the installation environment

This section describes the necessary installation environment to install and use P8824XG ONU safely.

It is recommended to keep the P8824XG ONU temperature and humidity stable. The product can be used in the following environment:

- Operating temperature: 0°C ~ +50°C
- Relative humidity: 20~80%
- Power consumption: Max 16.64 W
- Adaptor input voltage: 110~220 V  $\pm 15\%$ , 60  $\pm 3$  Hz

## ***Chapter 3. Installation***

This chapter describes how to install P8824XG.

## Installation Procedure

---

For P8824XG, the Module main body, power adapter, and all other accessories are packed separately for shipment. Please follow the following steps for installation.

1. Check the components.
2. Decide the installation place, and place the P8824XG main body. P8824XG can be mounted on a 19" Rack. When mounting the equipment on a 19" Rack, please fix it to the rack using brackets for P8824XG.
3. If the equipment is not mounted on the Rack, please install the equipment on the place corresponding to the requirements of "2. Installation Place" section.
4. Connect power adapter and check power status LED on the front panel to see if the power is being supplied normally.
5. If Module setup or check through console port is needed, please connect the console port to the management terminal.
6. Once the power is supplied normally, please check if each interface LEDs of P8824XG is working normally.



# Appendix A. Product Spec

Appendix A describes the product specifications of P8824XG.

**Table 5: Specification**

P8824XG Specification	
System Architecture & Console	Gigabit Ethernet Switch : max 24 Port 20-Ports 1000Base-X (SFP) or 100Base-FX(SFP) 4-Ports 1000Base-X(SFP) or 10/100/1000Base-Tx (Combo Type) Expansion Module : 2-Ports 10G Base-R Dual AC/DC Power (Module Type)
Memory	256MB Main Memory 32MB Flash Memory
Physical Dimension	19" Rack Mount Type 44mm(H)x482.6mm(W)x335mm(D)
Environment Conditions	
Power	110~220 VAC / 50~60 Hz, -44 ~ -52 VDC (optional : Hot-swapping Redundant)
Power consumption	max 58.5 W
Operating temperature	0℃ ~ +60℃
Storage temperature	-20℃ ~ +70℃
Performance	
Switching Fabric	88 Gbps non-blocking
Throughput	65.4 Mpps wire-speed L2/L3 Switching/Routing
Capacity	
MAC Address	Up to 32K MAC Management
VLAN	Up to 4K VLAN Private VLAN, 802.1Q Tag VLAN (Max 4K Tag VLAN) Link Aggregation (802.3ad) : 13 group, Max 8port/group 802.1v protocol base VLAN, VMAN(Ether9100, Q-in-Q)
Services and Features	
Routing Protocol	RIP v1/v2, OSPF v2, BGP v4, Static Default gateway, Multiple Default gateway Loop-back interface, VRRP
Filtering, Security & QoS	IEEE 802.1x support IEEE 802.1p QoS, ToS, Diff-serv support Congestion Management Filtering : Mac address, Mac address Count limit, Netbios, NBT, DHCP, Broadcast Storm, Selective handling of specified IP address, IP Packet filtering, Detection of IP address collision, IP Sub-network range blocking Virus Filtering : DoS prevention, Warm virus Filtering Subscriber Traffic control by ACLs (Access Control Lists)
Bandwidth Management	Hardware-based Rate Limiting Rate Limiting : 1Mbps per Gigabit port Egress Traffic Shaping per Port

	Ingress Traffic Policing per Flow/Packet Hardware Based Symmetric & Asymmetric Rate Limiting
Management	SNMP v1/v2, RMON, MIB-I/II sFlow, tcpDump Remote S/W Upgrade, Telnet, TFTP, FTP Port Mirroring CLI, Syslog, Access level control for administrator, RADIUS, TACACS+, SSH
Functions	STP(802.1D), RSTP(802.1w), PVSTP NAT DHCP server & relay NTP (Network Time protocol) server & Client Jumbo Frame packet support : 10290byte (Giga)
Multicasting Protocol	IGMP v1, v2, v3, IGMP snooping, IGMP snooping fast leave, IGMP snooping suppression, IGMP proxy PIM-SM, PIM-SSM
<b>Standards</b>	
IEEE Standards	802.1D Spanning Tree Protocol 802.1w RSTP 802.1p Priority Control 802.1Q VLAN 802.3 10Base-T Ethernet 802.3u 100Base-X Fast Ethernet 802.3x Flow Control 802.3ad Link Aggregation 802.3z 1000Base-X
IETF Standards	RFC 1058 RIP v1 RFC 1112 IGMP RFC 1723 RIP v2 RFC 1771 BGP4 RFC 768 UDP RFC 791 IP RFC 903 TCP RFC 2131 DHCP Server/Relay RFC 2328 OSPF v2 RFC 2236 IGMP v2 RFC 3376 IGMP v3 RFC 2362 PIM-SM RFC 3569 PIM-SSM
Management Standards & MIB	RFC 783 TFTP RFC 854 Telnet RFC 1157 SNMP v1 RFC 1213 MIB-I I RFC 1253 OSPF-MIB RFC 1493 Bridge-MIB RFC 1724 RIPv2-MIB RFC 1757 RMON-MIB RFC 1850 OSPF2-MIB RFC 1902 SNMP v2 RFC 1907 SNMP-MIB







# Appendix B. Cable Spec

Appendix B describes the specifications of the cable used to connect the ports of P8824XG.

Appendix B consists of:

- Ethernet cable
- Optical cable
- Console cable

## Ethernet cable

In case of connecting the management Ethernet port on the front of P8824XG, use the UTP cable that has RJ-45 connectors on both sides.

In case of using a twisted-pair cable, choose the one of a proper category, depending on the device speed.

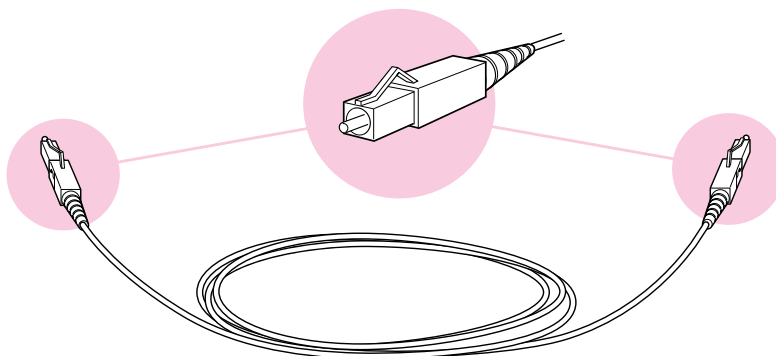
- 10M: Category 3, 4
- 100M: Category 5
- 1000M: Category 5, 5+, 6



## Optical cable

For the GPON link of P8824XG, use the single-mode optical cable that has SC/APC connectors on both sides.

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

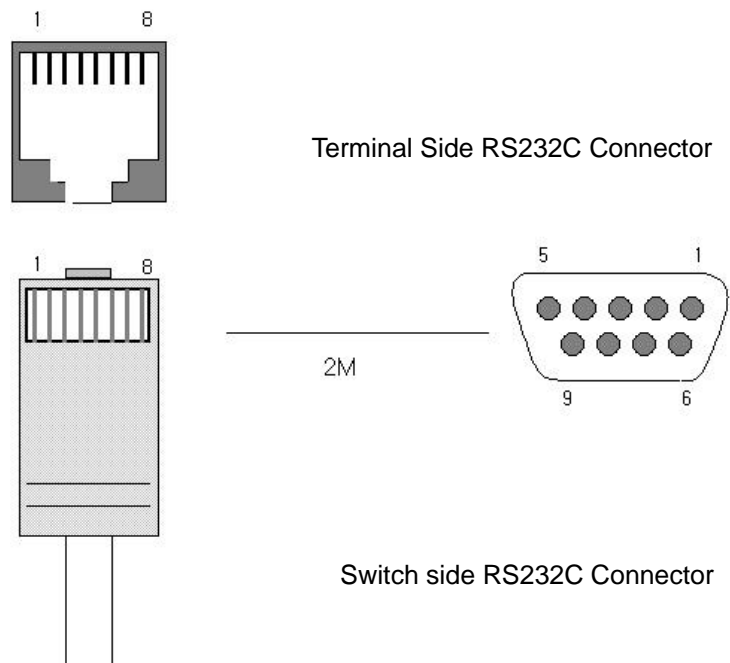


## Console cable

Operator can manage the Module on site by connecting the RJ-45 type console port of P8824XG to the management terminal. The configuration of terminal mode connected to the console port is as follows.

**Table 6: Configuration of terminal mode**

Item		Settings
Specification		UART
Baud Rate		9600 bps
Connector type		RJ-45
Terminal Configuration	Data Bit	8 bit
	Stop Bit	1 bits
	Parity Bit	None
	Flow Control	None



**Figure 6: Diagram of Console cable**