
XG2000 Hardware Guide

Preface

You have purchased the XG2000, a compact, 20 port 10 Gigabit Ethernet layer 2 switch that achieves unsurpassed standards of high throughput and low-latency performance. This manual explains the procedures required to install your XG2000 and should be read and understood before you start using your XG2000.

First edition (February 2007)

Second edition (March 2007)

All Rights Reserved, Copyright © PFU LIMITED 2007

For Safe Use of the XG2000

This manual contains important information to ensure the safe use of your XG2000. Be sure to thoroughly read and understand its contents before attempting to use the XG2000. After reading, store this manual in a safe place for future reference. PFU has made every effort to ensure the safety of the user and others, and to prevent property damage. When using the XG2000, follow the instructions given in this manual.

Warning notations

Warnings are included throughout this manual in order to prevent injury to the user and/or material damage. These are two levels of warnings, both of which are composed of a symbol and a message describing the issue.



This symbol indicates the possibility of serious or fatal injury if the XG2000 is not used properly.



This symbol indicates the possibility of minor or moderate personal injury, as well as damage to the XG2000 and/or to other users and their property, if the XG2000 is not used properly.



WARNING

This symbol indicates the possibility of serious or fatal injury if the XG2000 is not used properly.

For your safety and that of others, please follow these guidelines.

Category	Warning
Danger of electric shock or fire	Never attempt to disassemble, dismantle, upgrade, or recycle the XG2000 by yourself. Do not place objects on the XG2000, as there is a risk of electric shock, fire, and/or damage.
	Do not install the XG2000 where it will be exposed to direct sunlight, close to a heating device, or in an environment with much dust and high humidity, as there is a risk of electric shock and fire.
	For XG2000 models with cooling vents, do not block off the vents as these prevent the internal parts of the XG2000 from reaching high temperature, and there is a risk of fire.
	Do not wrap the running XG2000 with a cloth. Doing so keeps the heat in, and may cause a fire.
	Avoid getting any liquids (such as coffee) or pieces of metal (such as paper clips) into the XG2000, as there is a risk of electric shock and fire. To avoid foreign objects getting into the XG2000, never place objects on it.
	Do not put your fingers into the LAN jack, as there is a risk of electric shock.
	Do not use the XG2000 with any voltage other than that specified on the device, as there is a risk of electric shock and fire.
	Should the XG2000 start giving off heat, smoke, and/or a strange smell, immediately disconnect the power plug from the power outlet. To make this easy, the XG2000 should be located close to the power outlet (wall socket or power strip), and the power outlet must be readily accessible. After the power is disconnected, contact the vendor's service department immediately. Continued use of the XG2000 may cause an electric shock and fire. Note that in this case, the state of data in transmission is not guaranteed.(P.35)
	If the power plug or power socket is dirty, clean it with a dry cloth. Continued use may cause a fire.(P.34)
	Do not touch the power plug with wet hands, as there is a risk of electric shock.(P.34)
	Insert the power plug completely into the power socket. A partially inserted power plug may cause an electric shock, give off smoke, and/or catch fire.(P.35)
	When you remove a power plug from its outlet, be sure to pull the only power plug itself. Pulling on the power cord itself may expose the cores or break the cord, and cause electric shock or fire.(P.35)
	If the XG2000 is to be left unused for any significant period, remove the power plug from the outlet for safety reasons. Failure to do so may cause a fire or damage.(P.35)
	Do not damage or remodel the power cords, as this may cause electric shock or fire. Do not place any object on, wrap any object with, pull and/or kick the power cords, as there is a risk of electric shock and fire.(P.34)
	Never overload a power outlet with multiple devices. If too many devices are connected, the power socket may overheat and cause a fire.
	When you remove a power plug from an outlet, be sure to pull the power plug itself. A power plug damaged by incorrect removal may cause an electric shock and fire.
	Do not use the XG2000 with a damaged power cord, a damaged power plug, and/or a loose socket. Continued use under these conditions may cause an electric shock and fire.(P.34)
	Do not bundle the power cords. Doing so increases the heat density, and may cause a fire.
	Unplug the XG2000 during thunder-storms. Continued use under these conditions risks lightning damage to the XG2000, and may cause a fire.(P.35)
Danger of breakage and injury	Do not place the XG2000 on its side or stack up multiple XG2000s. Ignoring this may damage the XG2000 or injure the operator.
	Do not install the XG2000 in an unstable place (such as on a slanted surface or a place subjected to vibrations). Doing so may cause injury or device damage.
	Do not place any objects or perform any work on the XG2000. Ignoring this may damage the XG2000 or injure the operator.
	Never leave the plastic bags the XG2000 was packed in around where children can find them, as they may suck them into their mouths or place them over their heads in fun, with a severe risk of choking and asphyxia.
	Do not dispose the XG2000 with other wastes. If burnt, the XG2000 can explode.



CAUTION

This symbol indicates the possibility of minor or moderate personal injury, as well as damage to the XG2000 and/or to other users and their property, if the XG2000 is not used properly.

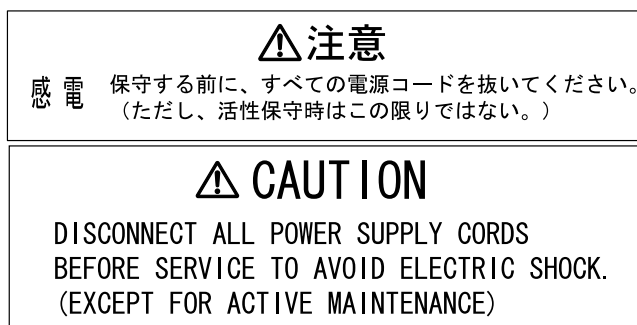
Category	Caution
Danger of device damage	Do not place the XG2000 on its side or stack up multiple XG2000s. Doing so may damage the XG2000.
	Do not install the XG2000 in an unstable place (such as on a slanted surface or a place subjected to vibrations). Doing so may damage the XG2000.
	Do not place any objects or perform any work on the XG2000. Doing so may damage the XG2000.
	Install the XG2000 inside a building. Using the XG2000 outside may damage it.
	Do not use the XG2000 in areas of extremely high temperature, low temperature, or a area where the temperature goes up and down suddenly. Installing the XG2000 in such areas may damage it.
	Do not expose the XG2000 to seawater. Installing the XG2000 in such areas may damage it.
	Do not use the XG2000 in a place subjected to shock or vibrations. Using the XG2000 in such a place may damage it.
	Do not use the XG2000 in a place where chemicals are being sprayed or may otherwise come in contact with it. Using the XG2000 in such a place may damage it.
	Do not use the XG2000 near objects which generate strong magnetic fields, such as microwave ovens. Using the XG2000 in such place may damage it.
	Do not use the XG2000 with foreign objects (liquids and/or pieces of metal) inside it. Using the XG2000 in such a condition may damage it.
	When moving the XG2000, be sure to remove the power plug from the outlet first. No doing so may damage it.
Danger of electromagnetic interference	Do not use the XG2000 near a radio or a TV. Doing so can interfere with the radio and TV reception.
Danger of electric shock	To avoid an electric shock, do not open the cover unless you are a maintenance engineer. When performing maintenance on the XG2000, be sure to remove the power plug from the outlet first.
Danger when rackmounting	Only use the XG2000 if the temperature inside the rack is 40°C or less. Ignoring this may damage the XG2000.(P.26)
	Ensure that the rack is sufficiently ventilated and that excess heat is properly exhausted.(P.26)
	Check that the configuration of devices in the rack does not overload the power supply.(P.26)
	To ensure the stability of the rack, fix it to the wall or floor as appropriate.(P.26)
	Do not install the XG2000 in a rack if it would make it unstable.(P.26)
	Check that all units installed in the rack are correctly connected to a grounded power source.(P.26)
	When installing and removing the XG2000 from a rack, be sure to hold it by both sides. At least two people should work together.(P.26)(P.30)
Danger when cleaning	When cleaning the XG2000, only use a soft cloth, and wipe it gently.

No self maintenance

Never attempt to dismantle or modify the XG2000 yourself. This is extremely dangerous since the XG2000 includes both high voltage and high temperature components. If maintenance is required, contact the vendor's service department.

Warning label

The following warning label may be found on the top of XG2000. Do not attempt to remove this warning label. If you cannot read the details written in the warning label because of dirt or wear, contact the vendor's service department for a replacement label.



Safety precautions

- The expected life of the XG2000 is approximately five years, assuming use at an ambient temperature of 25°C.
- Use of this hardware guide, the XG2000, its firmware, and the management software are the responsibility of the user.
- Fujitsu and its partners accept no responsibility for any errors or data loss arising from use of the XG2000. Before using the XG2000, it should be understood that the XG2000 is not guaranteed against failure for any more than the original purchase price.
- Fujitsu and its partners do not approve of any use of the firmware provided with the XG2000, or of any authorized firmware upgrades, for any purpose other than installation on the XG2000. Modification and disassemble are not permitted at all.
- When connecting up the fiber optic cables, check that there is no dust, foreign objects or fingerprints on the connector surfaces.

For security

A default login password is set before the XG2000 is shipped. For security reasons, a new password should be chosen before the XG2000 is used.

Electromagnetic compatibility (USA)

FCC PART 15B (2005) Class A

FCC WARNING:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses, and can radiate radio frequency energy and. If not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Electromagnetic compatibility (CANADA)

Industry Canada Interference-Causing Equipment Standard ICES-003 Class A.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Electromagnetic compatibility (EU)

EN55022(2006) Class A

EN61000-3-2(2000)

EN61000-3-3(1995)+A1(2001)

EN55024(1998) + A1(2001) + A2(2003)

Warning

This is a product which meets Class A of EN55022. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Safety

CAN/CSA C22.2 No. 60950-1, UL60950-1 and EN60950-1

Static electricity

Under certain conditions, twisted pair cables can become charged with static electricity. Connecting a statically charged twisted pair cable to a device can cause the device or its LAN port to operate falsely or to become damaged.

Use a static removal tool to discharge twisted pair cables to ground immediately before connecting them to devices.

Note that a discharged twisted pair cable that has been left unconnected for a long time may become statically charged again.

High safety

[Use for the high safety required case]

The XG2000 is designed, developed and manufactured as contemplated for general use, including without limitation, general office use, personal use, household use, and ordinary industrial use, but is not designed, developed and manufactured for use in situations with accompanying fatal risks or dangers that, unless extremely high safety is secured, could lead directly to death, personal injury, severe physical damage or other loss (hereinafter "High Safety Required Use"), including without limitation, nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, and missile launch control in weapon systems.

Do not use the XG2000 for High Safety Required Use without otherwise ensuring the safety level required. Fujitsu and its related companies assume no liability whatsoever for damages arising from use of the XG2000 by the user in high-safety applications, and for any claims or compensation for damages by the user or a third party.

Laser safety

The XG2000 can install a class 1 laser module (XFP module), and can emit invisible laser light. Do not look into the 10 Gigabit Ethernet port openings. The following warning applies to the XG2000's laser:

- The XG2000 can install XFP modules, which are laser devices.
In the USA, these XFP modules are certified as Class 1 laser products that conform to the requirements of the Department of Health and Human Services (DHHS) regulation 21 CFR Subchapter J, and this certification is indicated by a label attached to each XFP module.
Outside the USA, these XFP modules are certified as Class 1 laser products that conform to the requirements given in IEC825-1 (1993) and Amendment11 (1996) of EN60825-1 (1994).
- Even when cables are not connected, invisible laser light may be still emitted from the port openings. To avoid this laser light, never peer into the port openings.

* XFP module which install in XG2000 must be selected from our specified. (refer to the specified module list)

About This Manual

This section explains who this manual is aimed at, describes the layout of the manual, and gives a description of the symbols used in this manual.

Targeted reader and expected knowledge

This manual is written for an administrator who has responsibility for network system configuration, maintenance, and management.

Understanding the following knowledge is expected.

- Basic knowledge of networks, intranets and the internet.
- Basic knowledge of system management.
- Basic knowledge of system security.

This manual does not give any explanation of network protocol terms.

Organization

This manual is organized as follows.

Chapter 1 Installation

This chapter lists the items that should be in the XG2000 package, describes the names and functions of the various components of the XG2000.

Chapter 2 Installation and Operation

This chapter explains how to install, connect, and start the XG2000.

Chapter 3 Troubleshooting

This chapter describes what you should do when your XG2000 has problems.

Appendix

This appendix explains the specifications of the XG2000, and should be referred to as necessary.

Related manuals

The following manuals are related to this manual. Consult them as required.

- XG2000 Hardware Guide (this manual)
This manual describes the hardware of the XG2000.
- XG2000 User's Guide
This manual describes a variety of operations and procedures, including the installation and maintenance of the XG2000.

When referring to the "XG2000 User's Guide", the manual name is usually abbreviated as "User's Guide".

The user's guide is an online manual, contained in the "XG2000 User's Guide CD-ROM".

Symbols used in this manual

This manual uses the following symbols.



This symbol indicates a point that operator should pay attention to.



This symbol indicates a section which describes related information.



This symbol means "Danger! You are in a situation that could result in bodily injury". Before continuing, make yourself aware of the hazards involved and become familiar with common ways of preventing accidents.



This symbol means "Be careful, or you might do something that could damage your equipment or result in loss of data".

Trademarks and abbreviations used in this manual

Company names and products names referred in this manual are registered trademarks or trademarks of respective companies.

The trademark TM and ® have been omitted from this manual.

Product Information

The latest product information including technical information, update information, are available from the following web site:

<http://www.pfu.fujitsu.com/products/xg>

Contents

Preface	1
For Safe Use of the XG2000	2
Warning notations	2
No self maintenance	5
Warning label	5
Safety precautions	5
For security	5
Electromagnetic compatibility (USA)	6
Electromagnetic compatibility (CANADA)	6
Electromagnetic compatibility (EU)	6
Safety	6
Static electricity	6
High safety	7
Laser safety	7
About This Manual	8
Targeted reader and expected knowledge	8
Organization	8
Related manuals	8
Symbols used in this manual	9
Trademarks and abbreviations used in this manual	9
Product Information	9

Chapter 1 Installation 13

1-1 Parts List	14
1-2 XG2000 Components	16
1-3 Labels	19

Chapter 2 Installation and Operation 23

2-1 Installation Overview	24
2-2 Installation Procedure	25
2-2-1 Installation requirements	25
2-2-2 Installing the XG2000 in a rack	26
2-2-3 Uninstalling the XG2000 from a rack	30
2-3 Installation of XFP modules	31
2-3-1 Installing the XFP modules	31
2-3-2 Uninstalling the XFP modules	32
2-4 Cable Connection	33
2-4-1 Connecting the fiber optic cables	33
2-4-2 Connecting the power cords	34
2-5 Basic Operation	35
2-5-1 Turning the XG2000 on	35
2-5-2 Turning the XG2000 off	35

1

2

3

Chapter 3 Troubleshooting 37

3-1	Start-up Problems	38
3-2	Hardware Problems	39

Appendix 41

Appendix-A	Specifications	42
A.1	Product Specifications	42
A.2	Installation Specifications	42

Installation

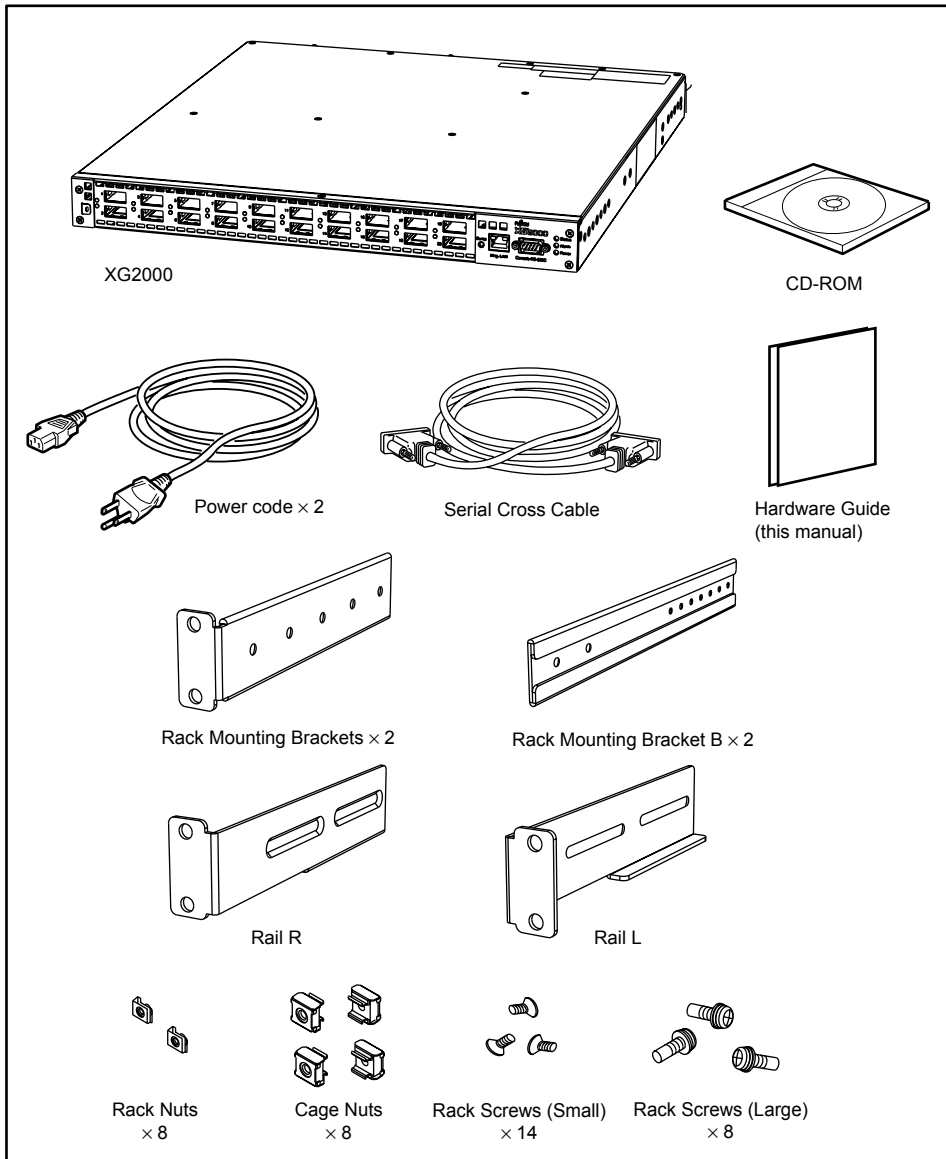
This chapter lists the items that should be in the XG2000 package, describes the names and functions of the various components of the XG2000.



1-1 Parts List.....	14
1-2 XG2000 Components	16
1-3 Labels	19

1-1 Parts List

Before proceeding, check that all of the following parts were included in your XG2000 package. Contact the vendor's service department if any parts are missing and/or the manual has any missing or wrongly collated pages.
Keep the hardware guide (this manual) and the CD-ROM in a safe place.



- | | |
|----------------------|--|
| • XG2000 | The XG2000 itself. |
| • CD-ROM | Contains documents necessary to operate the XG2000. |
| • Power Cord | A 3-pin cable to connect the XG2000 to a power supply. |
| • Serial Cross Cable | A cable to connect the XG2000 to a PC when the settings need to be adjusted. |
| • Hardware Guide | A manual describing the XG2000 hardware and related matters (this manual). |

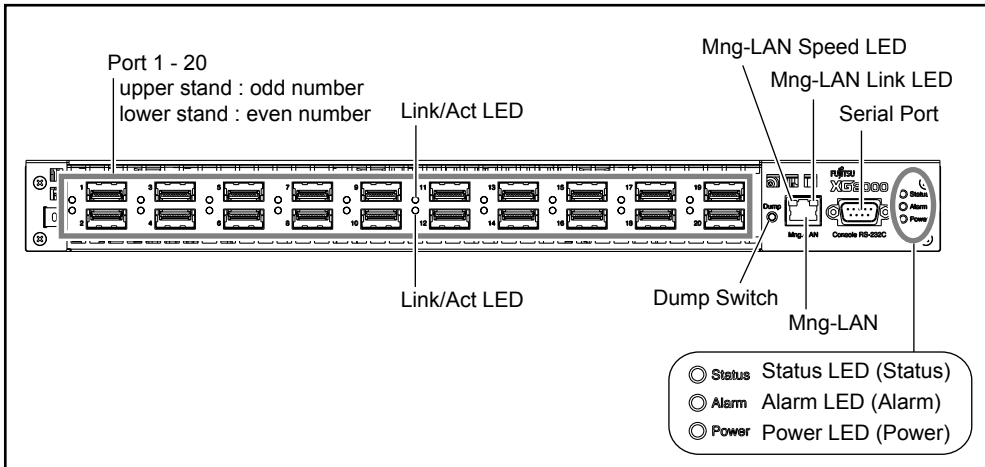
- **Rack Mounting Brackets** Brackets for mounting the XG2000 in a rack. Attach each rack mounting bracket to the right and left sides of the XG2000, and fasten to the rack posts with the rack screws (large).
- **Rack Mounting Bracket B** A bracket for mounting the XG2000 in a rack. Attach the rack mounting bracket B to the back-right and back-left sides of the XG2000, and fasten to the rail (attached to the back-right rack post) with the rack screws (small).
- **Rail R** A rail that are attached to the back-right rack post and into which the back rack mounting bracketed are slid and fastened when mounting the XG2000 in a rack.
- **Rail L** A rail that are attached to the back-left rack post and into which the back rack mounting bracketed are slid and fastened when mounting the XG2000 in a rack.
- **Rack Nuts** When the rack post holes are round, use the rack nuts to fasten the XG2000 and the rails to the rack posts with the rack screws (large).
- **Cage Nuts** When the rack post holes are square, use the rack nuts to fasten the XG2000 and the rails to the rack posts with the rack screws (large).
- **Rack Screws (Small)** Flat-head screws for fixing the rack mounting brackets and rack mounting bracket B to the XG2000, and fixing the rack mounting bracket B to the rails.
- **Rack Screws (Large)** Pan-head screws for fixing the XG2000 and the rails to the rack posts.

1-2 XG2000 Components

This section explains the names and functions of the various XG2000 components, including the various indicator LEDs.

XG2000 front

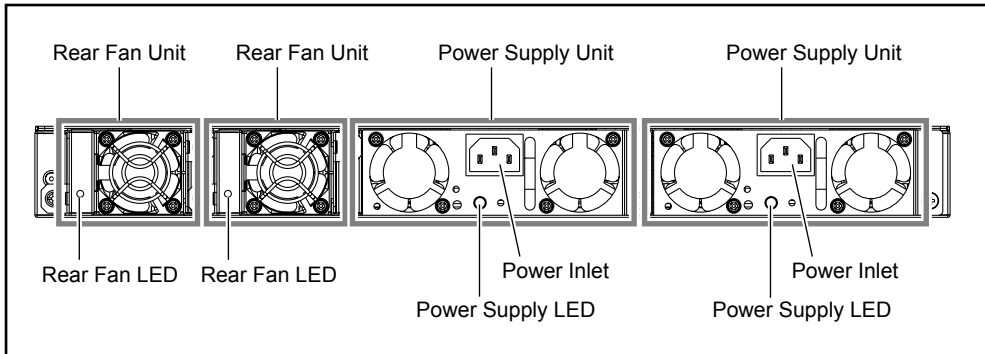
The following explains the names and functions of the components at the front of the XG2000.



- Ports 1-20 XFP modules which connect to the IEEE802.3 ae/ak compliant 10 Gigabit network served by the XG2000. Connection method varies depending on which XFP modules are installed.
- Link/Act LEDs (Green) Displays the condition of respective port. Each LED lights when a link is established on its port. The link is established about few seconds after the received signal is detected.
- Dump Switch Used to collect maintenance information.
- Mng-LAN
 - Mng - LAN Speed LED (Orange) Lights if the link is 100BASE-TX.
 - Mng - LAN Link LED (Green) Lights when the link is established.
- Serial Port Used when performing maintenance or adjusting the settings (Console connection).
- Status LED (Green) Lights when the XG2000 is in an operable state.
- Alarm LED (Orange) Lights when there is a problem with the XG2000.
- Power LED (Green) Lights when the XG2000 is receiving power.

XG2000 rear

The following explains the names and functions of the components at the rear of the XG2000.



- **Rear Fan Unit** Exhaust fan.
 - **Rear Fan LED (Green/Orange)** Green LED lights when the Rear Fan Units is in normal operation.
Orange LED when there is a problem with the Rear Fan Unit.
- **Power Supply Unit** Supplies power to the XG2000 (includes an exhaust fan).
 - **Power Supply LED (Green/Orange)** Green LED lights when the XG2000 is on.
Orange LED lights when there is a problem with the Power Supply Unit.



In order to avoid a negative effect on the cooling of the XG2000, the Rear Fan Unit screws should be kept tight at all times.

Display LEDs

There are three main indicator LEDs on the front of the XG2000: Power LED, Alarm LED, and Status LED. The following explains the LED display under various conditions.

XG2000 Condition		LED		
		Power	Alarm	Status
Off		Off	Off	Off
Starting up	Power just turned on	On	Off	Off
	System starting up	On	Off *1	Blinking
	System start-up completed	On	Off *1	On
Operable		On	Off *1	On
After shutdown		Off	On	Off

*1: If the XG2000 is operating normally.

If a problem occurs, the front panel LEDs and the LEDs on the individual parts can be used to identify the trouble:

XG2000 Condition		LED			
		Power	Alarm	Status	LED on failed part
Problem detected	Startup error	On	---*3	Blinking	---
	Rear fan error	On	On	---*4	Rear Fan LED: Orange
	Power fan error	On	On	---*4	Power Supply LED: Orange
	No AC supply *2	On	On	---*4	Power Supply LED: Orange
	Power supply error	On	On	---*4	Power Supply LED: Orange
	Voltage error	On	On	---*4	---
	Temperature error	On	On	---*4	---
	System dump in progress	On	On	---*4	---

*2: Only detectable and indicated when two power supply units are installed and connected to separate, independent power supplies.

*3: Condition of the Alarm LED will depend on the state of the system.

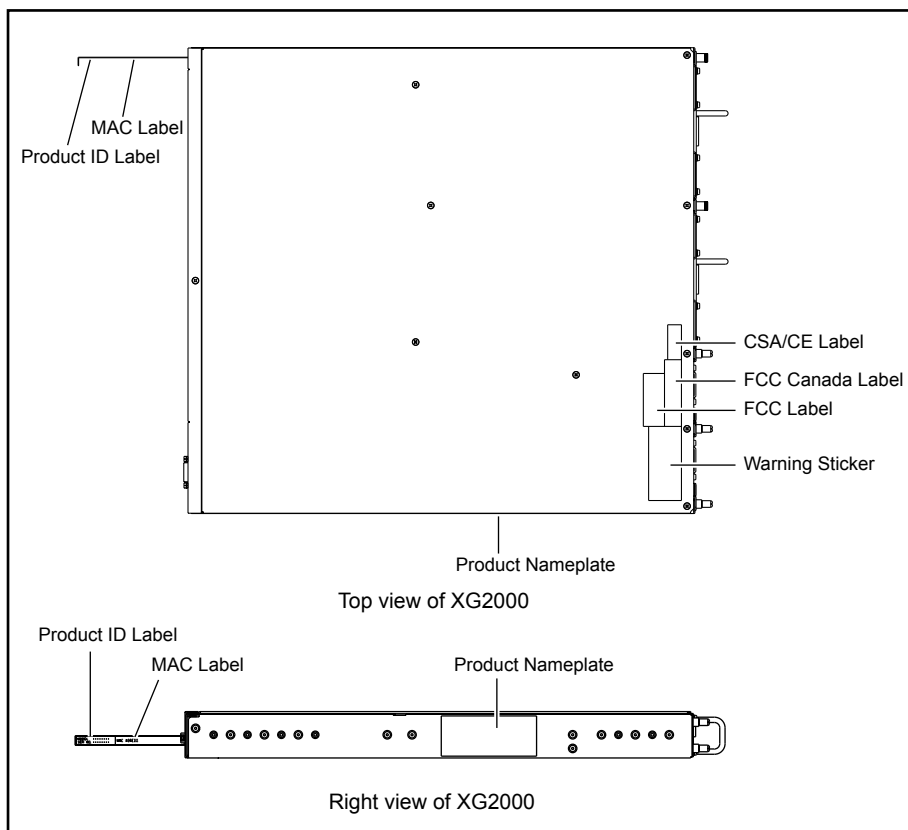
*4: Condition of the Status LED will depend on the state of the system.

Note that the XG2000 will shut itself off when the Temperature error is detected.

Any problems other than those that occur during start up are recorded in the event log. For details of the event log, refer to the "XG2000 User's Guide".

1-3 Labels

A warning sticker, FCC Label, FCC Canada Label, CSA/CE Label, product nameplate, product ID label, and MAC label are to be found in various places on the XG2000.



Warning sticker

Obey the following warning:

⚠ 注意

感電 保守する前に、すべての電源コードを抜いてください。
(ただし、活性保守時はこの限りではない。)

⚠ CAUTION

DISCONNECT ALL POWER SUPPLY CORDS
BEFORE SERVICE TO AVOID ELECTRIC SHOCK.
(EXCEPT FOR ACTIVE MAINTENANCE)

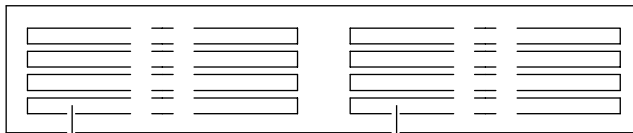
FCC Label

This indicates statement of Part 15 fo FCC rules.

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference
received, including interference that may cause
undesired operation:

FCC Canada Label

This indicates notification of CSA.



Cet appareil numérique de la
classe A respecte toutes les
exigences du Règlement sur le
matériel brouilleur du Canada.

This Class A digital apparatus
meets all requirements of the
Canadian Interference-Causing
Equipment Regulations.

CSA/CE Label

This indicates CE Marking.



Product nameplate

This indicates the model, part number, serial number, etc.

Model	MODEL. *****	Rev. Label	0	1	2	3	4	5	6	7	8	9
Part Number	PART NO. PA*****		0	1	2	3	4	5	6	7	8	9
Serial Number	SER NO. P*****		0	1	2	3	4	5	6	7	8	9

ϕ1 50/60Hz ***** Kg
 100-240V
 -* A/INPUT

PFU Limited
 a Fujitsu company

MADE IN JAPAN

Product ID Label

This indicates the model and serial number.

MODEL ***** Model
SER. NO ***** Serial Number

MAC Label

This indicates the MAC address:

MAC Address:xx:xx:xx:xx:xx:xx~yy:yy:yy:yy:yy:yy

MAC addresses are allotted relative to the address on the MAC label:

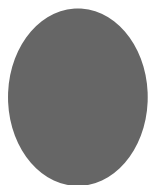
Address on the MAC label	Location
xx:xx:xx:xx:xx:xx	Mng-LAN
xx:xx:xx:xx:xx:xx+1	XG2000
xx:xx:xx:xx:xx:xx+2	Port 1
xx:xx:xx:xx:xx:xx+3	Port 2
xx:xx:xx:xx:xx:xx+4	Port3
xx:xx:xx:xx:xx:xx+5	Port 4
xx:xx:xx:xx:xx:xx+6	Port 5
xx:xx:xx:xx:xx:xx+7	Port 6
xx:xx:xx:xx:xx:xx+8	Port 7
xx:xx:xx:xx:xx:xx+9	Port 8
xx:xx:xx:xx:xx:xx+10	Port 9
xx:xx:xx:xx:xx:xx+11	Port 10
xx:xx:xx:xx:xx:xx+12	Port 11
xx:xx:xx:xx:xx:xx+13	Port 12

Address on the MAC label	Location
xx:xx:xx:xx:xx:xx+14	Port 13
xx:xx:xx:xx:xx:xx+15	Port 14
xx:xx:xx:xx:xx:xx+16	Port 15
xx:xx:xx:xx:xx:xx+17	Port 16
xx:xx:xx:xx:xx:xx+18	Port 17
xx:xx:xx:xx:xx:xx+19	Port 18
xx:xx:xx:xx:xx:xx+20	Port 19
xx:xx:xx:xx:xx:xx+21 (=yy:yy:yy:yy:yy:yy)	Port 20

Installation and Operation

This chapter explains how the user should proceed from installation to operation of the XG2000.

2



2-1	Installation Overview	24
2-2	Installation Procedure	25
2-2-1	Installation requirements	25
2-2-2	Installing the XG2000 in a rack	26
2-2-3	Uninstalling the XG2000 from a rack	30
2-3	Installation of XFP modules	31
2-3-1	Installing the XFP modules	31
2-3-2	Uninstalling the XFP modules	32
2-4	Cable Connection	33
2-4-1	Connecting the fiber optic cables	33
2-4-2	Connecting the power cords	34
2-5	Basic Operation	35
2-5-1	Turning the XG2000 on	35
2-5-2	Turning the XG2000 off	35

2-1 Installation Overview

This section reviews the flow of work as the user proceeds from installation to operation of the XG2000.

Install the XG2000 and then proceed with normal operation as follows:

1 Check the components

•▶ "1-1 Parts List"

2 Check the set up area and install the XG2000

•▶ "For Safe Use of the XG2000", "2-2 Installation Procedure"

3 Installation of the XFP modules

Install the XFP modules in the XG2000.

•▶ "2-3-1 Installing the XFP modules"

4 Connect the cables to the XG2000

Connect the required fiber optic cables and power cords to the XG2000.

•▶ "2-4 Cable Connection"

5 Check that everything is secure

Check that the XG2000 doesn't wobble and that no cables are loose.

6 Turn the power on

Check that the system starts up normally.

•▶ "2-5-1 Turning the XG2000 on"

2-2 Installation Procedure

This chapter describes the installation requirements and installation procedure.

2-2-1 Installation requirements

Before installing the XG2000, read " For Safe Use of the XG2000 (P.2)" and comply with the installation requirements described below.

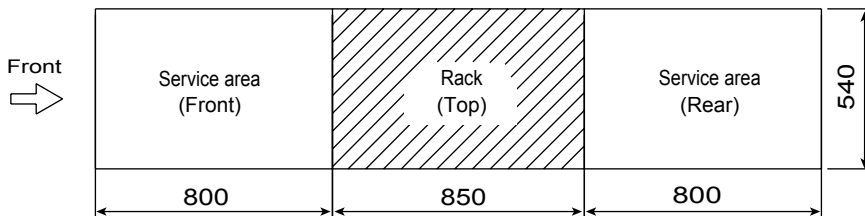
Space requirements

When installing the XG2000, a certain amount of installation space is necessary.
When installing the rack, the indicated space (800mm of both the front and rear of the rack) should be reserved as a service area.
The following figures indicate examples of a 540mm (W) × 850mm (D) 19-inch rack and a 700mm (W) × 950mm (D) 19 inch rack.

When installing in any other 19-inch rack, refer to the user guide provided with the rack.

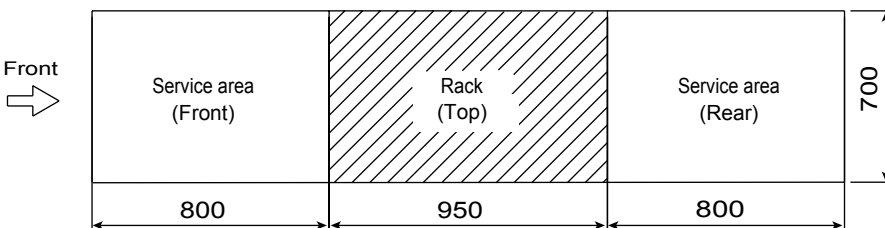
[540mm (W) X 850mm (D) 19-inch rack]

(Unit: mm)



[700mm (W) X 950mm (D) 19-inch rack]

(Unit: mm)



⚠ CAUTION

The XG2000 may be installed in any rack with an internal depth of between 640mm and 750mm.

Set up requirements

Only use the XG2000 under the temperature, humidity and other environmental conditions specified in "A.2 Installation Specifications (P.42)". Using the XG2000 outside the following ranges can shorten the lifetime or cause the failure of the XG2000.

- Temperature (5 - 40°C)
- Humidity (20 - 80%RH)

When installing the XG2000 in a rack, note the following.

- Certain types of racks cannot be used. To check whether the XG2000 can be installed in a given rack, contact the vendor's service department.

CAUTION

- Remember that when an installed unit is operating, the temperature inside the rack will be higher than the external ambient temperature, particularly if the rack contains multiple units. The rack's internal ambient temperature should not be allowed to exceed the maximum ambient temperature specified for each installed unit. The maximum ambient temperature allowed for the XG2000 is 40°C.
- A certain amount of air is required for the XG2000 to operate safely. Make sure that adequate ventilation is provided and that the front and rear air vents are not obstructed.
- Be careful that the rack is able to supply sufficient power for all the installed units. To avoid overloading the rack, check the power requirements specified for the each installed unit. The power requirement of the XG2000 is 0.22KVA.
- Installing the XG2000 in a rack may cause the entire rack to become unstable. To avoid this, fix the rack to the wall or floor as appropriate.
- Check that all the installed units are correctly grounded. Special care should be taken if the unit's power supply is not drawn directly from the distribution board (such as when a power strip is used, for example). When multiple devices are connected to a single power strip, the combined leakage currents can overwhelm the grounding capacity of the power strip.
- Set the XG2000 nearby the AC outlet, and keep it within the reach of the power cord for pulling it easily. The XG2000 is shut off by pulling the power cord off the AC outlet.

2-2-2 Installing the XG2000 in a rack

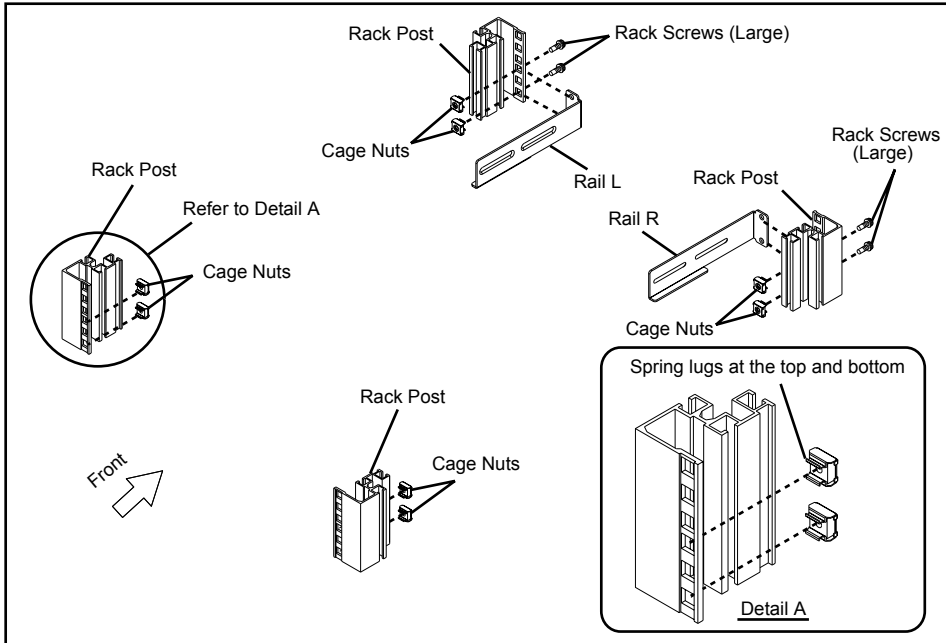
The following explains how to install the XG2000 in a 19-inch rack.

1. Take the XG2000 out of its box.

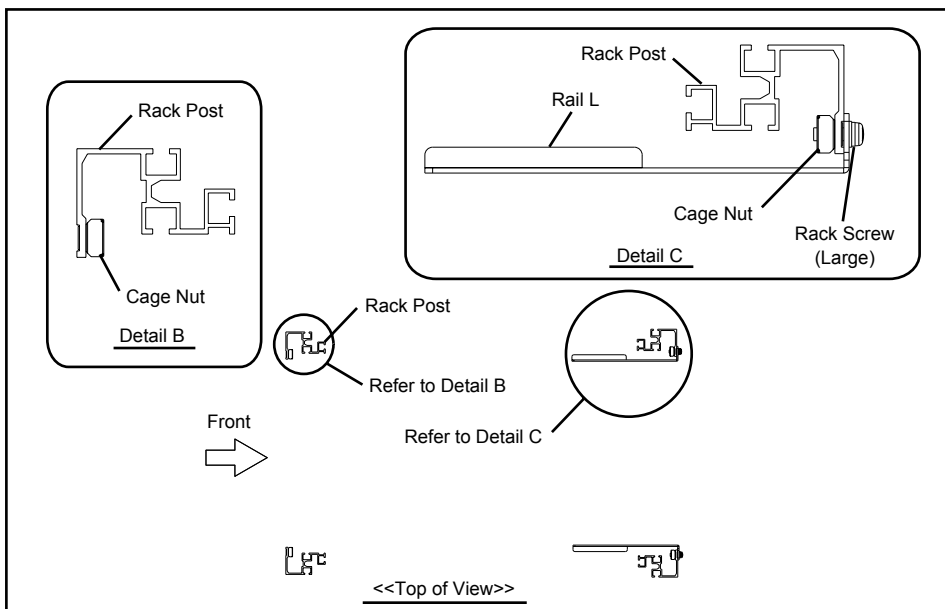
2. Fix the nuts and rails to the rack posts.

First, choose nuts, cage nuts or rack nuts, by the type of hole dug in the rack post. When the rack has square post holes, cage nuts are used. When round holes, rack nuts are used.

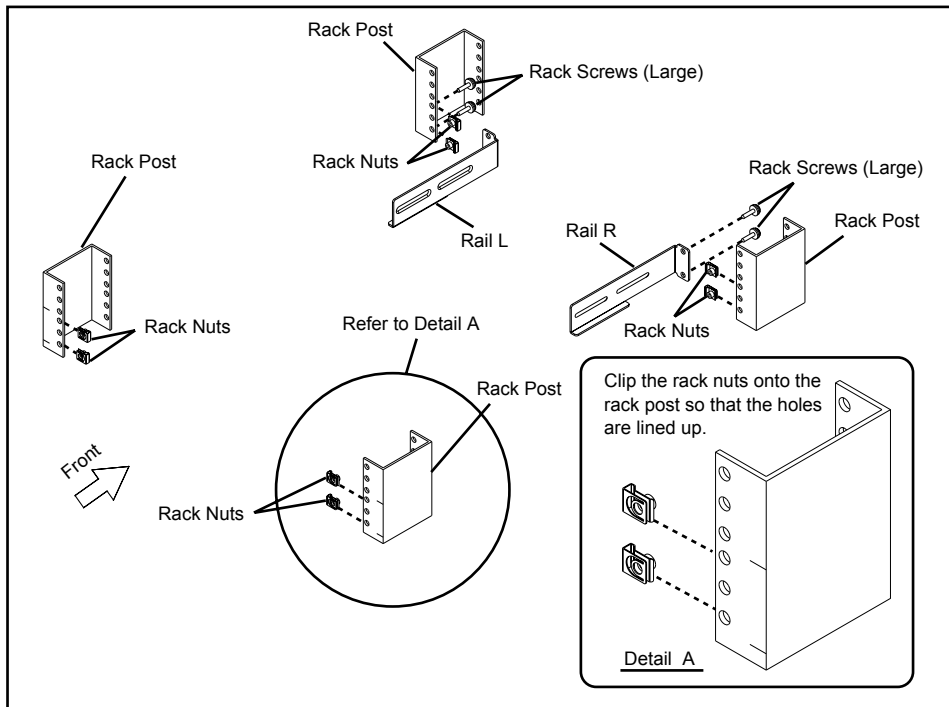
[When the rack has square post holes]



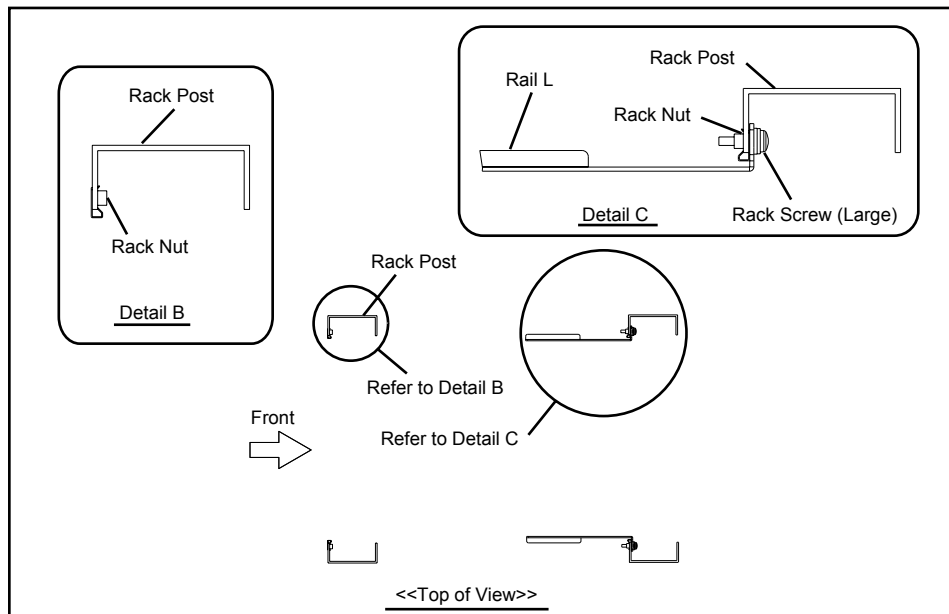
[When the rack has round post holes (top of view)]



[When the rack has round post holes]

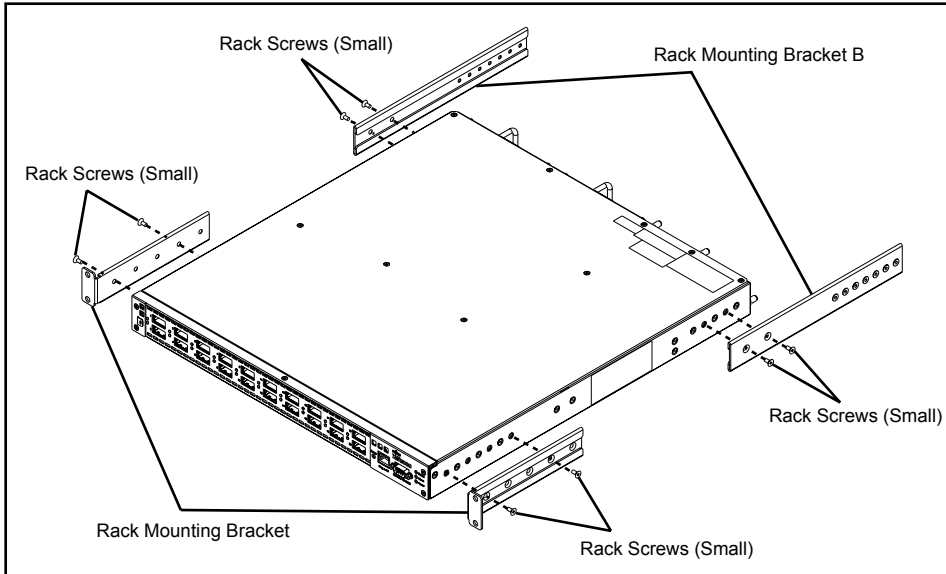


[When the rack has round post holes (top of view)]



3. Fix the four rack mounting brackets to the XG2000.

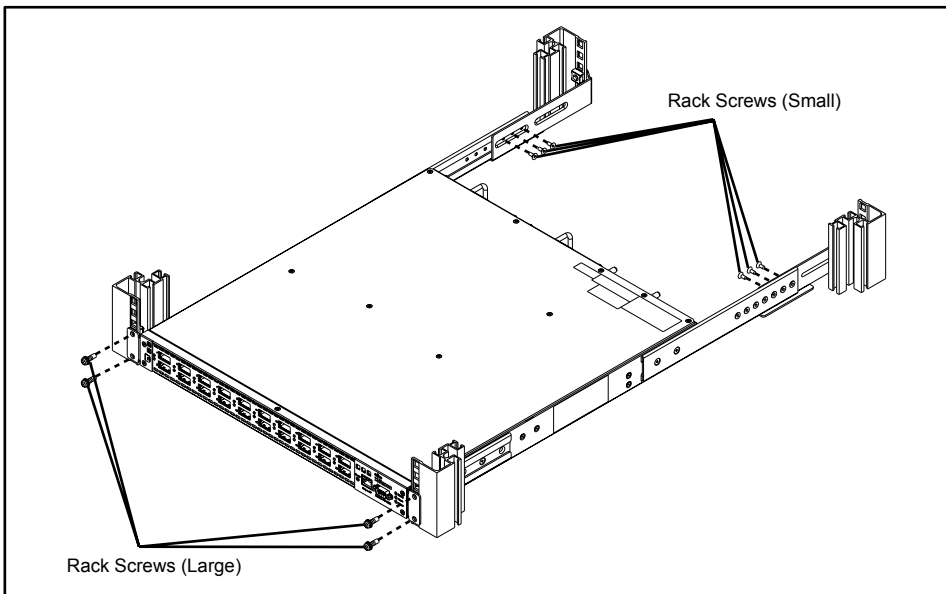
Each of the four rack mounting brackets (two of front side, two of back side) has two holes that should line up with matching holes on the sides of the XG2000, as shown in the diagram. Attach each rack mounting bracket using the countersunk bracket screws provided.



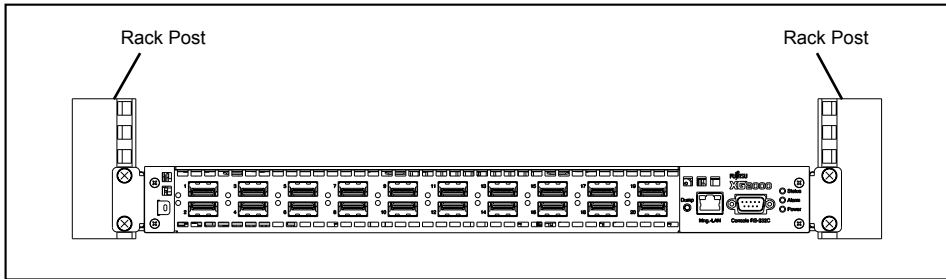
4. Slide the XG2000 into the rack and fasten it in place.

Two rack mounting bracket of front side is fixed to the rack post with each of two rack screw (small). and two rack mounting bracket B of rear side is fixed to the rails (rail R and rail L) with each of three rack screws (small).

Securely tighten all the screws with a screwdriver.



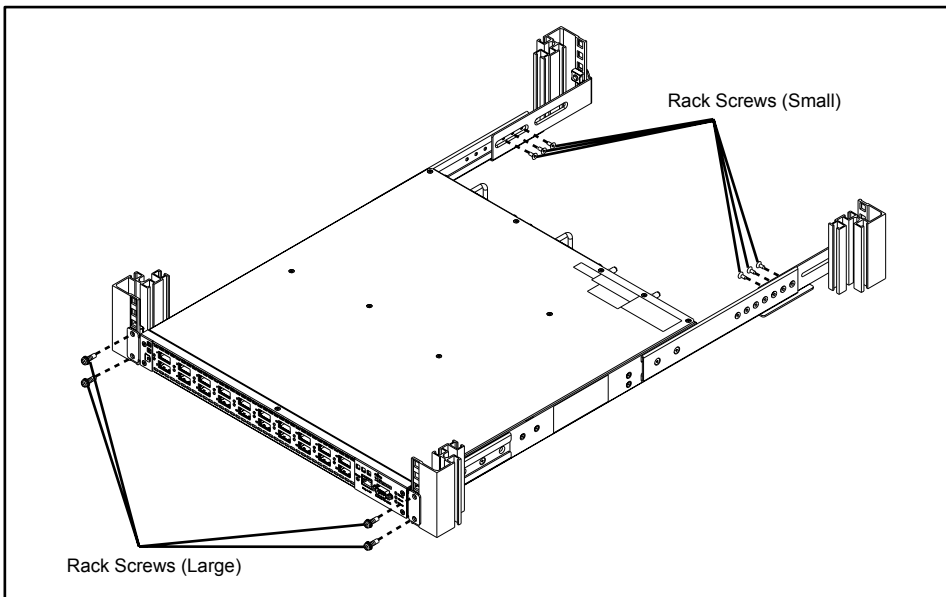
5. This completes the rack installation procedure.



2-2-3 Uninstalling the XG2000 from a rack

The following explains how to uninstall the XG2000 from a rack.

1. Undo the rack screws that were used to fasten the XG2000 to the rack.



2. Slide the XG2000 forward, and remove it from the rack.

2-3 Installation of XFP modules

This section describes the installation of the XFP modules.

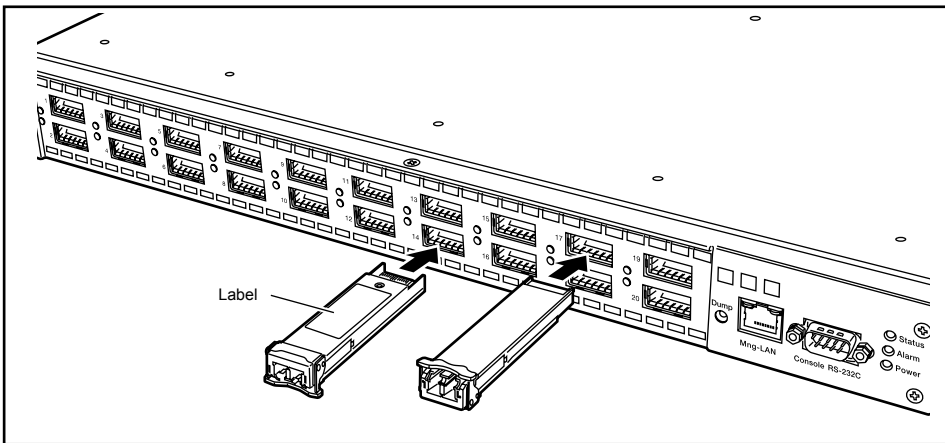
2-3-1 Installing the XFP modules

The following explains how to install the XFP modules in the XG2000.

1. Install the XFP module in the XG2000.

How to install the XFP module is the following,

- (1) Insert the XFP module with the cable connector facing outward. In cases installing the XFP module in an odd port number, the slot connector facing down. Otherwise, in cases installing the XFP module in an even port number, the slot connector facing up.
- (2) Slide the XFP module into the slot until it snaps into place without the lever lifting.



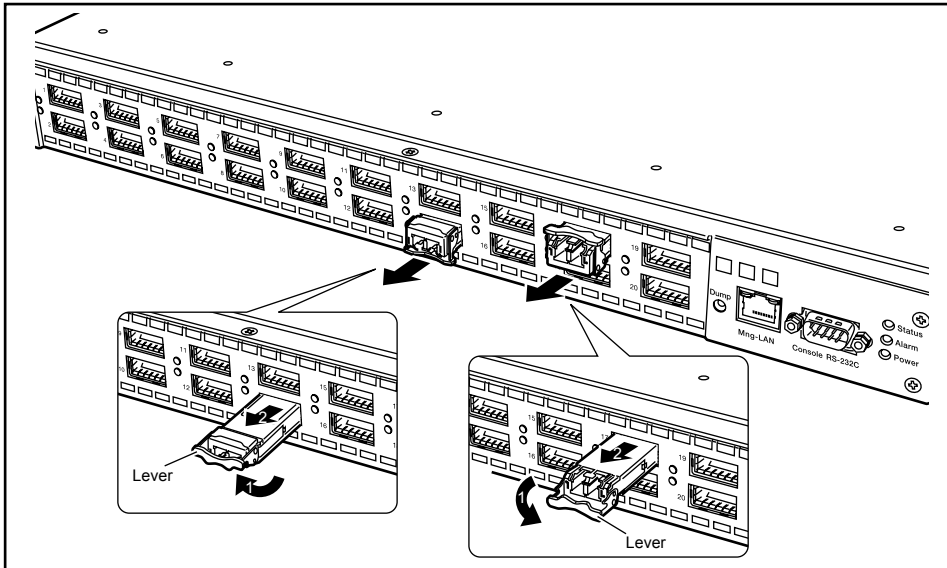
2-3-2 Uninstalling the XFP modules

The following explains how to uninstall the XFP modules from the XG2000.

1. Uninstall the XFP module from the XG2000.

How to uninstall the XFP module is the following.

- (1) Remove the XFP module from the slot. In cases removing the XFP module from an odd port number, lift off the lever horizontally. Otherwise, in cases removing the XFP module from an even port number, lift up the lever horizontally.
- (2) Pull the XFP module out with the lever.



2-4 Cable Connection

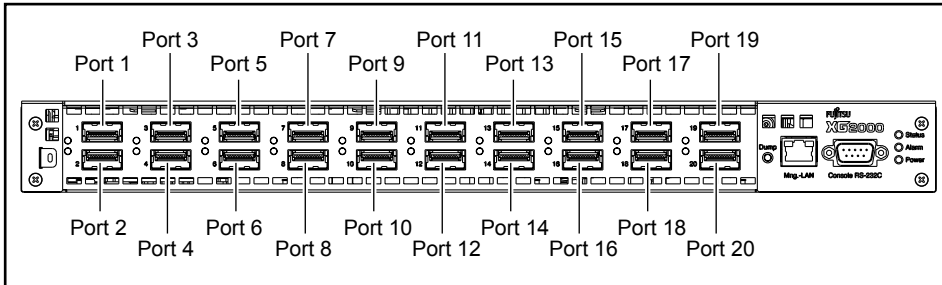
This section explains how to connect the cables and power cords.

2-4-1 Connecting the fiber optic cables

The cables need to be connected to the XG2000 XFP modules.

1. Connect the fiber optic cables to the XG2000.

Connect the fiber optic cables to the XFP modules (Port 1 - Port 20) on the front of XG2000.



⚠ CAUTION

An fiber optic connector is used when connecting two fiber optic cables. When connectors such as these are used, it is important that they be connected correctly. If a connector is misconnected, or cleaned incorrectly, it can be damaged. If the Fiber optic connector is dirty or damaged, data transmission may become errorprone and/or unstable.



- It is necessary that the connectors be fixed in the correct position, in order to protect the connector interface against external influences.
- Connection quality is influenced by two factors: the type of connector and whether it is properly cleaned and connected. Optical losses are often caused by dirty fiber connectors. Always keep your connectors clean and protect them with a dust power plug or cover if they are not being used.
- Before connecting any cables or connectors, use an lint-free alcohol pad (included in the cleaning kit) to clean the ferrule, the protective tube, and the end of the fiber core. If a large light loss is detected, and the cause is not immediately clear, clean the connector as a first attempt to resolve the problem.

2-4-2 Connecting the power cords

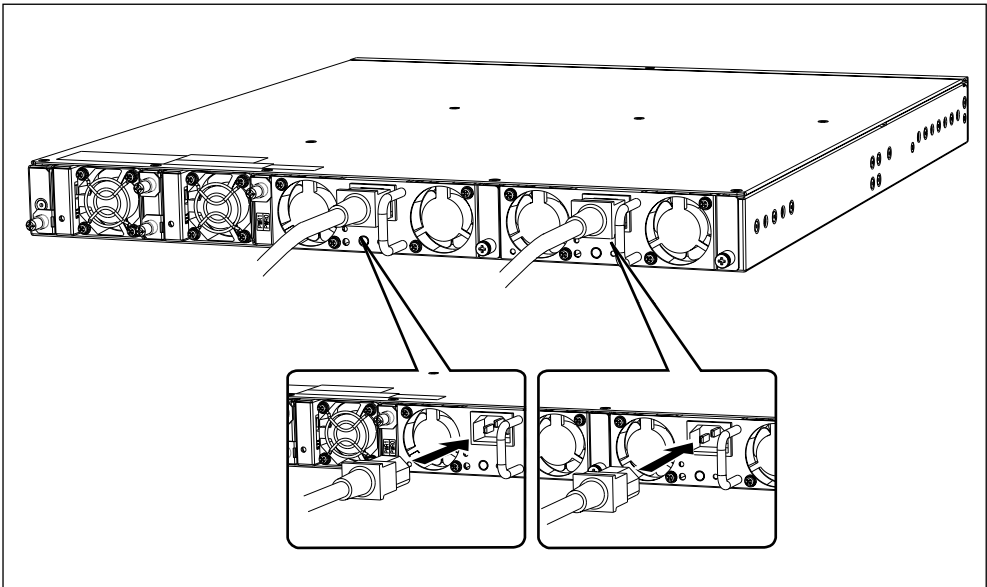
After connecting the peripheral units, connect the XG2000 power cords.

WARNING

- Do not touch the power plug with wet hands, as there is a risk of electric shock.
- Do not damage or remodel the power cords, as this may cause electric shock or fire. Placing a heavy object on, pulling, excessively bending, twisting, or overheating a power cord can damage it, and may cause electric shock or fire.
- Do not use the XG2000 with a damaged power cord, a damaged power plug, and/or a loose socket. Continued use under these conditions may cause a fire.
- If the power plug pins or socket holes are dusty, clean with a dry cloth. Continued use with a dirty power plug or socket may cause electric shock or fire.

1. Connect the power cords to the XG2000.

Insert the plug at the end of the power cord into the power inlet at the rear of the XG2000.



2-5 Basic Operation

This section explains the basic operation of XG2000.

2-5-1 Turning the XG2000 on

⚠ WARNING

- Unplug the XG2000 during thunder-storms. Continued use under these conditions risks lightning damage to the XG2000, and may cause a fire.
- Insert the power plug completely into the power socket. Using the XG2000 with a half inserted power plug may cause a fire or damage.
- If the XG2000 is to be left unused for any significant period, remove the power plug from the outlet for safety reasons. Failure to do so may cause a fire or damage.

⚠ CAUTION

Do not move, shock, or vibrate the XG2000 while it is on.

1. Connect the power cord to the power outlet.

Insert the plug at the other end of the power cord into the power strip or wall socket. The Power LED (Green) on the front of the XG2000 should turn on. The Alarm LED (Orange) should turn on for a moment, then should turn off. The Status LED (Green) should turn on. If an error occurs while the XG2000 is starting up, the Alarm LED (Orange) will start blinking.

2. When the system has finished starting up, the Status LED (Green) turns on.

2-5-2 Turning the XG2000 off

⚠ WARNING

- When you remove a power plug from its outlet, be sure to pull the only power plug itself. Pulling on the power cord itself may expose the cores or break the cord, and cause electric shock or fire.
- Should the XG2000 start giving off heat, smoke, and/or a strange smell, immediately disconnect the power plug from the power outlet. To make this easy, the XG2000 should be located close to the power outlet (wall socket or power strip), and the power outlet must be readily accessible. After the power is disconnected, contact the vendor's service department immediately. Continued use of the XG2000 may cause an electric shock and fire. Note that in this case, the state of data in transmission is not guaranteed.

1. Execute the "system shutdown" command.

If the firmware has not been updated yet, then execute "system shutdown" from the command line.

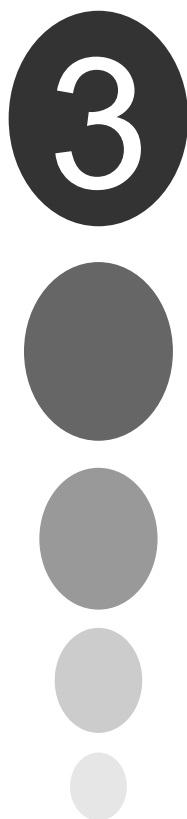


For details of the system shutdown command, refer to the "Command Reference" section in the "XG2000 User's Guide".

2. Disconnect the power cord to the power outlet.

Troubleshooting

This chapter describes what you should do when your XG2000 has problems.



3-1 Start-up Problems	38
3-2 Hardware Problems	39

3-1 Start-up Problems

The following errors may occur when the XG2000 is started up.

If the cause of the error cannot be resolved, contact the vendor's service department.

The following explains some general errors that can occur. Check if any of these match your problem.

The XG2000 does not turn on

[Symptom] The power cord is inserted to the power outlet, but the XG2000 does not power up.

[Cause] Possible causes:

- 1 Loose cable, or
- 2 Hardware failure

[Action] Take action in the following with the corresponding number;

- 1 Check that all cables are connected properly, then (if the XG2000 still doesn't turn on)
or
- 2 Contact the vendor's service department.

Status LED blinks, but the XG2000 does not start up

[Symptom] The XG2000 has not started within a few minutes of the XG2000 turned on.
The Status LED keeps blinking.

[Cause] Probable hardware failure.

[Action] Contact the vendor's service department.

Alarm LED lights, but the XG2000 does not start up

[Symptom] The XG2000 has not started within a few minutes of the XG2000 turned on.
The Alarm LED (Orange) lights.

[Cause] Probable hardware failure.

[Action] Contact the vendor's service department.

3-2 Hardware Problems

This section explains what should be done when a fan, temperature, Voltage, power supply, or memory or XFP error occurs. Contact the vendor's service department when the following errors occurred.

Fan error

When a problem is detected with a fan, the front panel Alarm LED lights up in orange, the LED of the fan unit in which the error has occurred lights up in orange, and an error is recorded in the event log. If a fan error occurs, contact the vendor's service department.

Temperature error

When XG2000 overheats, the Alarm LED lights up in orange, and a temperature error is recorded in the event log. In this case, check that the ambient and internal rack temperatures are within the specified temperature range, adjust them if they are not and try turning the XG2000 back on. When error occurs even though the ambient rack temperatures are acceptable, turn the XG2000 off and contact the vendor's service department.

Voltage error

When a voltage problem is detected, the Alarm LED lights up in orange, and an error is recorded in the event log. In this case, turn the XG2000 off and contact the vendor's service department.

Power supply error

When a power supply problem is detected, the Alarm LED lights up in orange, the power supply LED of the power supply unit in which the error has occurred lights up in orange, and an error is recorded in the event log. Verify that the AC power supply for the failed power supply unit is normal and the cable has not come loose.

If some other reason has caused the power supply LED to light up, contact the vendor's service department.

Memory error

Startup diagnostic tests are run after the power is turned. If a memory error is detected at this stage, the Alarm LED blinks, but an event log entry is not created. If a memory error is detected during operation, an event log entry is created and the system automatically reboots. Note that whether or not a memory error results in an event log entry is a matter of timing.

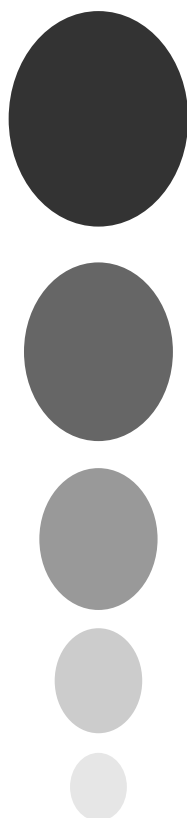
If memory errors occur repeatedly, contact the vendor's service department.

XFP error

When a problem is detected with a XFP module, an error is recorded in the event log. In addition, if the transceiver in the XFP module overheats, the system shutdown the XFP module.

Appendix

This appendix explains XG2000 specifications.



Appendix-A Specifications	42
A.1 Product Specifications	42
A.2 Installation Specifications.....	42

Appendix-A Specifications

This section details the specifications of XG2000.

A.1 Product Specifications

The product specifications of the XG2000 are as follows:

Items		Overview
10 Gigabit ports	Port1 - Port20	IEEE802.3ae/ak compliant 10 Gigabit Ethernet port × 20 (for XFP modules)
Serial Port		RS-232C D-SUB9 × 1 Console connection port
Management LAN	Mng-LAN	10BASE-T/100BASE-TX × 1
Indicators	LED	Power (Green), Alarm (Orange), Status (Green), Rear fan × 2, Power supply units × 2

A.2 Installation Specifications

The installation specifications of the XG2000 are as follows:

Items		Specifications
Dimensions (Excluding protrusions)	Width	440mm
	Depth	480mm
	Height	43.8mm
Maximum weight		14kg
Power Cord		for 3-pin socket (grounded)
Power source	Voltage	AC100 (-10%) - 240V (+10%)
	Phase	Single-phase
	Frequency	50 or 60Hz (+2% / -4%)
Input current		100 - 240 V 2.2 - 1.0 A/Input
Ambient temperature	XG2000 on	+5 - +40°C (Inlet temperature)
	XG2000 off	0 - +50°C (Inlet temperature)
Ambient humidity	XG2000 on	20 - 80%RH (Non-condensing)
	XG2000 off	8 - 80%RH (Non-condensing)
Temperature gradient	XG2000 on	15°C/hr or less (Non-condensing)
	XG2000 off	
Ambient dust		0.15mg/m3 or less
Ambient noise		55dB or less
Electromagnetic compatibility		FCC Class A CE Marking
Service area	Front	800mm
	Rear	800mm
Installation		1U in a 19-inch rack

XG2000 Hardware Guide

P3N1-E112-02EN

Date of issue: March 2007

Issuing authority: PFU LIMITED

Printed in Japan

- Contents of this manual are not to be reproduced without permission from PFU.
 - The contents of this manual may be updated without notice.
 - PFU assumes no liability for damages to third party copyrights or other rights arising from the use of any information in this manual.
 - Manuals with missing or wrongly collated pages will be replaced free of charge.
-