ALAXALA AX2500S

Hardware Instruction Manual

AX25S-H001X-70

Relevant products

This manual covers the following products: 8 models in the AX2500S series including AX2530S-24T, AX2530S-24T4X, AX2530S-48T, AX2530S-48T2X, AX2530S-24S4X, AX2530S-24TD, AX2530S-48TD, and AX2530S-24S4XD.

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Reading and storing this manual

Before you use the equipment, carefully read the manual and make sure that you understand all safety precautions. After reading the manual, keep it in a convenient place for easy reference.

Notes

Information in this document is subject to change without notice.

Radio interference

This switch is a class A information technology device. In a domestic environment this product may cause radio interference in which case the user may be required to take corrective actions.

Limits for harmonic current emissions

Conforming products to the standard harmonic current emissions JIS C 61000-3-2.
Conforming devices:

AX-2530-24T-B	(AX2530S-24T)
AX-2530-24T4X-B	(AX2530S-24T4X)
AX-2530-48T-B	(AX2530S-48T)
AX-2530-48T2X-B	(AX2530S-48T2X)
AX-2530-24S4X-B	(AX2530S-24S4X)
AX-F2430-EPUA	(EPU-A)

Editions history

January 2013 (Edition 8) AX25S-H001X-70

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Preface

About this Manual

This manual describes the hardware instructions for ALAXALA AX2500S series gigabit Ethernet Layer 2 switches. Before you operate the equipment, read this manual carefully and make sure that you understand all instructions and cautionary notes. After reading the manual, keep it in a convenient place for easy reference.

Intended readers

This manual is intended for engineers who install and handle AX2500S series switches. It is therefore assumed that they are familiar with electrical circuits, wiring and networks.

Structure of manual

Safety Information

This section contains cautionary notes for safe use of AX2500S series switches. Make sure to read them prior to using the Switch.

Chapter 1 Components Overview

This chapter contains an overview of the components of the Switch.

Chapter 2 Preparation for Installation

This chapter describes the environmental conditions and required preparation for installation of the Switch.

Chapter 3 Preparation of Interface Cables and Terminals

This chapter describes the interface cables and the terminals used for the Switch.

Chapter 4 Installing, Adding, Replacing, or Removing Switches and Devices

This chapter contains the procedures for installing the Switch, as well as the procedures for adding, replacing, or removing the Switch, an external redundant power unit (EPUs), or a power supply module.

Chapter 5 Required Operations When Installing the Switch

This chapter contains the procedures for setting the time (required during the initial installation), setting an administrator password, changing user IDs, and setting login passwords.

Appendix A Cleaning Optical Connecters

This appendix contains the procedures for cleaning the optical connectors of the transceivers and the optical fiber cable connecters.

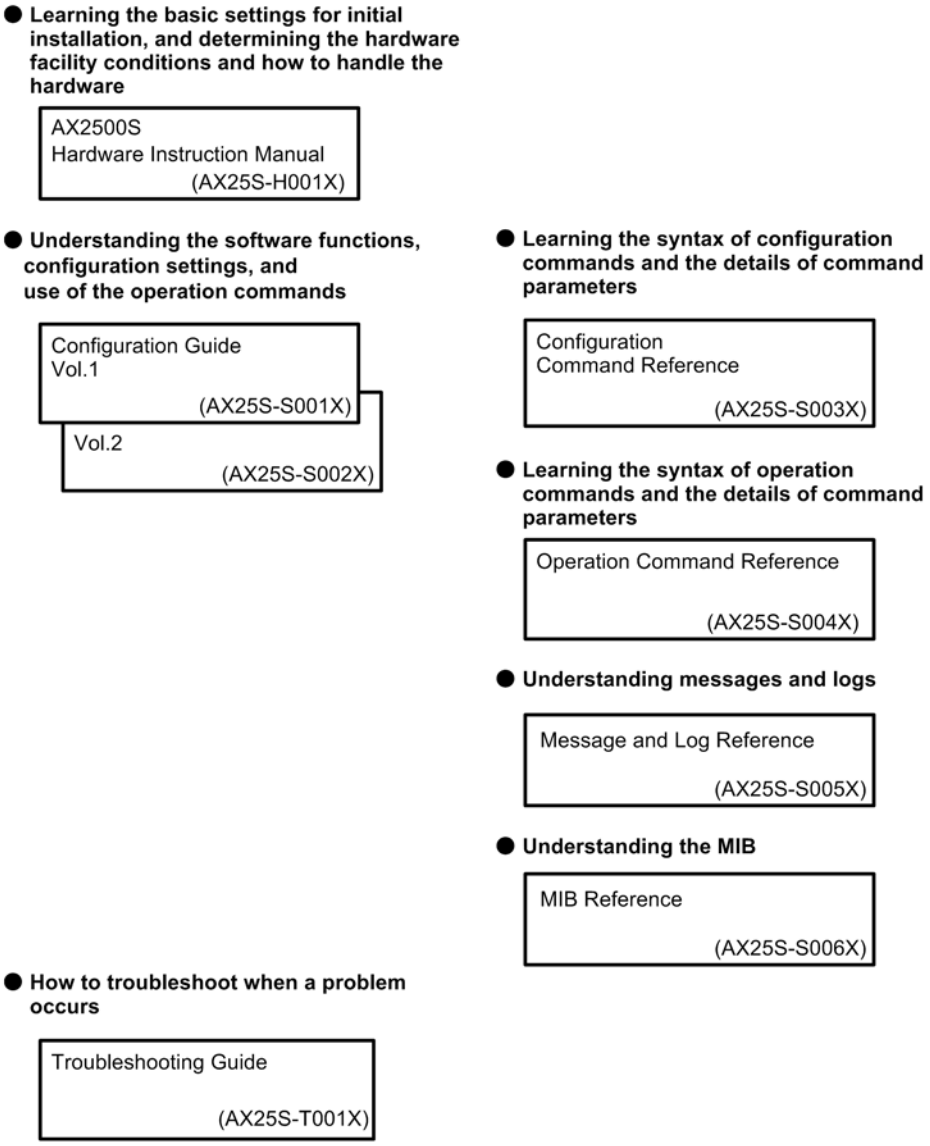
Appendix B Physical Specifications of Network Interfaces

This appendix contains the specifications of the interfaces on the Switch.

Appendix C Specifications of Setup Terminal

This appendix describes the setup terminal and connection cable to use for the Switch.

Reading sequence of the AX2500S series manuals



Manual URL

You can view the manuals for AX2500S series switches on our website at:

http://www.alaxala.com/en/

Abbreviations

EIA	Electronic Industries Alliance
EPU	External Redundant Power Unit
IEEE	Institute of Electrical and Electronics Engineers, Inc.
JIS	Japanese Industrial Standards
LAN	Local Area Network
LED	Light Emitting Diode
MDI	Medium Dependent Interface
MDI-X	Medium Dependent Interface Crossover
PoE	Power over Ethernet
PS	Power Supply
RS232C	Recommended Standard 232C
SD	Secure Digital
SFP	Small Form factor Pluggable
SFP+	Enhanced Small Form factor Pluggable
SML	Split Multi Link
TCP/IP	Transmission Control Protocol/Internet Protocol
T/R	Transmitter/Receiver
URL	Uniform Resource Locator
UTP	Unshielded Twisted Pair

Conventions: The terms "Switch" and "switch"

The term Switch (upper-case "S") is an abbreviation for any or all of the following models:

- AX2500S series switch

The term switch (lower-case "s") might refer to a Switch, another type of switch from the current vendor, or a switch from another vendor. The context decides the meaning.

Safety Information

Using AX2500S series switches correctly and safely

- This guide provides important information for ensuring safe use of AX2500S series switches. Please read this manual completely before using the Switch.
- Keep this manual handy after reading it, so that it is available for later reference.
- Operate the Switch according to the instructions and procedures provided in this manual.
- Heed all warnings and cautions for the Switch in this guide. Failure to do so could result in injury or damage to the Switch.

Before using the Switch

- Caution indications

  These indications are intended to ensure safe and correct use of the Switch and to prevent serious injury, and equipment and property damage. Caution information in this manual and on the Switch is preceded by the indications shown below. Make sure you fully understand the meaning of the indications before continuing with the main body of this manual.

⚠WARNING	Ignoring instructions preceded by this indication and using the Switch incorrectly could result in death or serious injury to yourself and others.
⚠CAUTION	Ignoring instructions preceded by this indication and using the Switch incorrectly could result in injury to yourself and others.
CAUTION	Ignoring instructions preceded by this indication and using the Switch incorrectly could result in serious damage to the Switch or nearby property.
NOTE	Information preceded by this indication is supplementary information that, if ignored, will not result in physical injury or serious damage to the Switch.

Unauthorized operations

- Do not attempt to perform any operations that are not described in this guide.

  In the event of a Switch problem, turn off the power, unplug the power cable, and contact maintenance personnel.

Using common sense

The warnings and cautions provided on the Switch and in this guide have been selected after careful consideration.

Nevertheless, there is always the possibility of the unexpected occurring. Therefore, while using a Switch, stay alert and use common sense in addition to all following instructions.

⚠WARNING

If anything seems wrong, immediately turn off the power.

- If smoke or an unusual smell is emanating from the Switch, or if liquid is spilled into the Switch or a foreign object falls into the Switch, immediately turn off Switch power as described below. Continuing operation could result in fire or electric shock.

Actions to take for abnormal conditions

Device in which an error occurred		Action to take
AC model	When an external redundant power unit (EPU-A) is not used	Turn off the Switch and unplug the power cable.
	When an external redundant power unit (EPU-A) is used	Turn off the Switch and the power supply module supplying power to the Switch, and then unplug the power cable.
DC model		Turn off the Switch, and then set the power supply circuit breaker to OFF.
External redundant power unit (EPU-D)		
External redundant power unit (EPU-A)		Turn off the external redundant power unit (EPU-A), and then unplug the power cable.

Do not allow any foreign objects to get into the Switch.

- Do not insert or drop any foreign objects, such as anything metallic or flammable, through the Switch's ventilation slots. Doing so could result in fire or electric shock.

When pressing the RESET button, do not use anything with a fragile tip, or anything that might become caught in the Switch, such as a pin or paper clip.

- When pressing the **RESET** button, do not use anything with a fragile tip, or anything that might become caught in the Switch, such as a pin or paper clip. Doing so could result in fire or electric shock.

Do not modify the Switch.

- Do not alter the physical makeup of the Switch. Doing so could result in a fire or electric shock.

Do not subject the Switch to shocks.

- In the event that the Switch is dropped or any of its components damaged, turn off the power, unplug the power cable, and contact maintenance personnel. Discontinue using the cable to avoid the risk of fire or electric shock.

Do not place any objects on the Switch.

- Do not place any metallic object such as a small pin or a paper clip or any container with a liquid, such as a vase or a flowerpot, on the Switch. Liquid or metallic objects falling into the Switch could result in fire or electric shock.

Use the Switch only with the indicated power supply.

- Do not use the Switch at any voltage other than the indicated voltage. Doing so could result in fire or electric shock.

⚠WARNING

Ensure that the capacity for incoming current to the distribution board is greater than the operating current of the circuit breaker.

- Ensure that the capacity for incoming current to the distribution board is greater than the operating current of the circuit breaker. If it is not, the circuit breaker might not operate properly in the event of a failure, which could result in a fire.

Ground the Switch.

- When using an AC model and external redundant power unit (EPU-A), always use a grounded power outlet. Using the Switch and an EPU without grounding could result in electric shock or failures due to electrical noise.
- When using a DC model and an external redundant power unit (EPU-D), make sure to connect a ground cable to ground the switch. Using the switch without grounding could result in electric shock or failures.

Use a DC power supply for which the primary side and the secondary side are insulated.

- When using DC power, use a power supply for which the primary side and the secondary side are insulated. Using a power supply that is not insulated could result in electric shock.

Connecting and disconnecting a DC power cable must be performed by a trained technician or maintenance personnel.

- Connecting or disconnecting the DC power cable to the power supply unit must be performed by a trained technician or maintenance personnel. Terminal connections are required for connection of the DC power cable to the power facility. For this reason, incorrect handling of the DC power cable could result in fire or electric shock.

Before connecting or disconnecting a DC power cable, set the power supply circuit breaker to OFF.

- Before connecting or disconnecting a DC power cable, set the power supply circuit breaker to OFF. Connecting or disconnecting the cable with the circuit breaker set to ON could result in a fire or electric shock.

Place an insulation cover over the G and -48 V terminals of DC power cables.

- Place an insulation cover on the G and -48 V terminals of a DC power cable (on the side grounded to the power supply). Using the terminals without an insulation cover could result in electric shock.

When using a DC power supply unit of an external redundant power unit (EPU-D), do not use the terminal block with its cover removed.

- When using a DC power supply unit of an external redundant power unit (EPU-D), after connecting the DC power cable, make sure to attach the terminal

block cover. Using the terminal block without a cover could result in electric shock.

Do not use the Switch with the protection cap removed.

- Do not remove the protection cap except when attaching a cable. Using an AX2500S series switch without a protection cap could result in a fire or electric shock.

Handle power cables carefully.

- Do not place anything heavy on a power cable. Do not pull, bend, or process a cable. Doing so could damage the cable, resulting in fire or electric shock. If the power cable is covered with a carpet or the like, it is easy to forget that the cable is there and to place something heavy on it.
- Use the supplied or a designated power cable. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with other devices. Doing so could result in a fire or electric shock.
- If the power cable is damaged so that the wires underneath the covering are visible or cut, stop using it, and ask maintenance personnel to replace it. Discontinue using the cable to avoid the risk of fire or electric shock.
- Make sure the power plug is free of dust, and insert the plug completely up to the base of the prongs to prevent any looseness. Using a power plug with dust on it or one that is imperfectly connected could result in fire or electric shock.
- Do not touch the power plug with a wet hand. Doing so could result in electric shock.

Do not overload the power outlet.

- Do not overload the power outlet by connecting multiple power plugs to the same outlet. Overloading the outlet could result in fire or the circuit breaker tripping due to excessive power used. This might affect other equipment.

Adding or replacing a module must be performed by a trained technician or maintenance personnel.

- Adding or replacing a power supply module must be performed by a trained technician or maintenance personnel. If anyone other than those mentioned above performs these tasks incorrectly, a fire, electric shock, or failure could result.

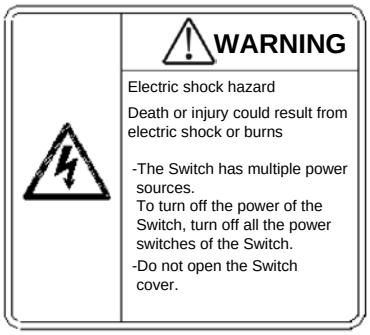
Do not use an air duster near a flame.

- When cleaning the optical connectors, do not use an air duster that contains flammable gas near a flame. Doing so could result in a fire.

⚠WARNING

Do not open the Switch cover.

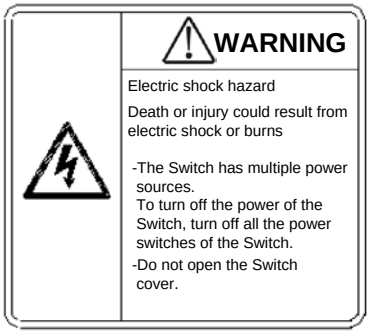
- Do not open the Switch cover. Doing so could result in electric shock. The label below is attached to a Switch.



When turning off the power, stop the supply of all power to the Switch.

- If power is supplied from an external redundant power unit, the Switch cannot be turned off by just setting the power switch of the Switch to OFF. To turn off the power, turn off the power switches of both the Switch and power supply modules. The label below is attached to the Switch.

For the Switch



For an external redundant power unit (EPU-D)

⚠CAUTION

Do not place the Switch in an unstable location.

- When installing the Switch on a table, position the Switch horizontally on a worktable strong enough to bear the weight of the Switch. Placing the Switch in an unstable location, such as on an unsteady or tilting surface, might cause the Switch to fall, resulting in injury.
- When mounting the Switch in a rack, make sure that the Switch is stable. If the Switch is unstable, it might fall, resulting in injury.

Do not position the Switch and external redundant power unit (EPU-D) vertically or lean them against a wall.

- When installing the Switch and external redundant power unit (EPU-D) on a table, position the devices horizontally. If they are positioned vertically or leaned against a wall, they might fall, which could result in injury or damage.

Do not allow hair or objects near the ventilation slots.

- Cooling fan units are mounted in AX2530S-24T4X, AX2530S-48T, AX2530S-48T2X, AX2530S-24S4X, AX2530S-48TD, AX2530S-24S4XD switches and external redundant power units. Do not allow hair or other objects near the ventilation slots. They might be sucked into the Switch, resulting in injury.

Do not hold the handle of the power supply module when moving an EPU.

- Do not hold the handle of the power supply module when moving an external redundant power unit. The handle might come off, resulting in the device falling and possibly causing injury. Also, the EPU or the power supply module might become damaged, resulting in a fire or electric shock.

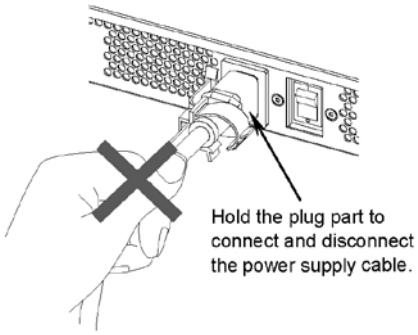
When moving a Switch

- Before moving a Switch, you must turn it off and unplug all cables. Failure to do so might cause the Switch or cable to become deformed, or might damage the Switch, resulting in fire or electric shock.
- If you must stack multiple Switches during transport, use appropriate packaging. Failure to do so might cause the Switch to become deformed or might damage the Switch, resulting in fire or electric shock.

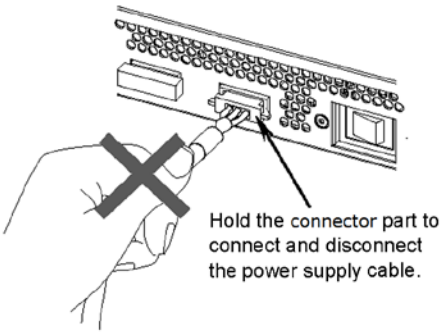
⚠CAUTION

Handle the power cable carefully.

- Do not place the power cable near a heat-generating apparatus. The heat could melt the cable coating, resulting in fire or electric shock.
- When connecting or disconnecting the AC power cable from the outlet, always hold the plug, not the cable itself. Pulling the cable itself might cause the wires to break.



- When connecting or disconnecting a DC power cable, always hold the connector of the cable. Pulling the cable itself might cause the wires to break.



Do not touch the Switch directly if you have a metal allergy.

- The Switch is coated with zinc, nickel, gold, and other elements. Do not touch the Switch directly if you have an allergic reaction to these metallic elements. Doing so might cause eczema or skin irritation.

Avoid looking directly at laser beams.

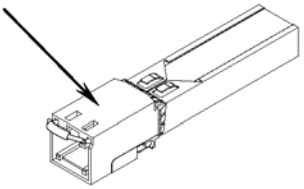
- The Switch uses laser beams that are colorless and transparent, and invisible to the eye. Never look directly into the optical transceiver.

⚠CAUTION

Do not touch the SFP-T during operation and just after operation stops.

- During operation (when a link is established), the temperature of the SFP-T can rise to 65ºC. Do not touch the device while it is operating or just after it stops. Doing so could result in burns.

CAUTION: Hot surface
(All surfaces including top, bottom and sides become hot during operation.)



To remove the SFP-T, use the procedure below. Failure to do so could result in burns.

- To remove the device when the Switch is turned on, block the SFP slot or the SFP+ slot, and then wait five minutes before removing the SFP-T.

- To remove the device after turning off the Switch, turn off the Switch, wait five minutes, and then remove the device.

The following label is attached to the SFP-T.

Do not install the Switch in a dusty or humid location.

- Do not install the Switch in a dusty or humid location. Doing so could result in fire or electric shock.
- Condensation might form on the surfaces and the inside of the Switch if it is moved from a cold location to a warm location. Using the Switch in this condition could result in fire or electric shock. After moving the Switch between two locations with a large temperature variation, let the Switch stand a few hours before using it.

Do not step on the Switch, lean against it, or place anything on it.

- Do not step on the Switch or lean against it. Doing so might damage the Switch. Furthermore, the Switch might fall, or become unbalanced, resulting in injury.
- Do not place any objects on the Switch. Doing so might damage the Switch. Furthermore, the Switch might fall, or become unbalanced, resulting in injury.

Do not touch the inside of the Switch with your hands.

- Do not carelessly put your hands inside the Switch. The frame and components might cause injury.

⚠CAUTION

Attach a blank panel to a slot in which a power supply module for an EPU is not installed.

- Be sure to attach a blank panel to any slots for which a power supply module for an external redundant power unit is not installed. If you use the Switch without attaching the blank panel, you might be injured by a moving part. In addition, if foreign objects fall into the Switch, the Switch might no longer work properly.

Cleaning

- Remove dust on and around the Switch regularly. In addition to causing the Switch to stop, accumulated dust could result in a fire or electric shock.

CAUTION

Ensure adequate heat dissipation from the Switch by not stacking devices.

- Heat dissipates from the top panels of the AX2530S-24T (fanless), AX2530S-24TD (fanless), AX2530S-48T (semi-fanless), and AX2530S-48TD (semi-fanless) models. To ensure adequate heat dissipation, do not stack another device on top of or below the Switch. Doing so could result in Switch malfunction.

  When the Switch is installed in a rack, ensure 1U or more of space between the switch and other devices.

Do not place a Switch in a high-temperature location.

- Do not place a Switch in direct sunlight or near a heater or other heat-generating apparatus. Doing so could adversely affect parts of the Switch.

Do not use a TV or a radio near a Switch.

- Placing a Switch near a TV or a radio could affect both devices. If you hear noise on the TV or radio, do the following:

  - Place the Switch as far away as possible from the TV or radio.

  - Adjust the orientation of the TV or radio antenna.

  - Use separate outlets.

Do not place the Switch in an undesirable environment.

- Using the switch in the following locations might shorten the life of the switch or result in a switch malfunction.

  - An area with salty air, such as the coast

  - An area where corrosive gases are present, such as a hot-springs area

  - An area where oily smoke is present

  - An area where continuous vibrations are present

Do not obstruct the ventilation slots.

- Do not obstruct the ventilation slots of the Switch. Doing so causes heat to accumulate inside the switch, and could result in a switch malfunction. Maintain a space of at least 50 mm around the ventilation slots.

Ensure that voltage drop does not occur in the power facility due to inrush current.

- Turning on the Switch causes inrush current. Ensure that voltage drop does not occur in the power facility due to the inrush current. Voltage drops affect not only the Switch, but also the devices connected to the same power facility.

Turn off the power before connecting or disconnecting the power cable.

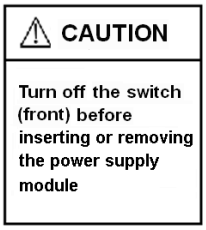
- Turn off the power of the Switch before connecting or disconnecting the power cable of an AC model and an external redundant power unit (EPU-A).

- For a standby power cable, turn off the power of the power supply module first.

CAUTION

Turn off the power before installing or removing a power supply module.

- Before installing or removing a power supply module, turn off its power. Installing or removing the module with the power supply module turned on causes a (Switch) failure. The following label is attached to the external redundant power unit.



Turn off the power of the power supply modules before turning on the main power switch of an EPU.

- Before setting the main power switch of the external redundant power unit to ON, you must set the power switches of the installed power supply modules to OFF.

Do not turn off the main power switch of an EPU if the standby power supply unit is used for the Switch.

- Turning off the main power switch of an external redundant power unit stops the supply of all standby power to the Switch. Do not turn off the main power switch if a standby power supply unit is being used for the Switch.

Handle memory cards and dummy memory cards carefully.

- When installing a memory card and a dummy memory card, do not force the card. When removing a memory card, do not forcibly pull out the card if it is locked. Doing so might damage the connector of the memory card slot.
- When moving the Switch, remove memory cards and dummy memory cards. If a card is subjected to excessive force when the switch is moved, the connector of the memory card slot might be damaged.

When the ACC LED is lit, do not remove the memory card or turn off the power.

- When the ACC LED on the front panel of the Switch is lit, the memory card is being accessed. When a memory card is being accessed, do not remove the memory card or turn off the power. Doing so might damage the memory card.

  In addition, some commands require a certain amount of time after being entered to finish accessing the card. Make sure that the memory card is no longer being accessed before removing the card or turning off the power.

CAUTION

Do not attach any labels to a transceiver or a direct attach cable connector.

- A label attached to the transceiver or direct attach cable connector indicates that the transceiver or direct attach cable connector is a standard product from ALAXALA or another manufacturer. However, such labels are attached where they do not interfere with heat dissipation from the transceiver or from the direct attach cable connector or interfere with the mechanism that prevents the transceiver or the direct attach cable connector from coming loose from the cage.

  Attaching a label to a location that interferes with these functions could cause a malfunction in the transceiver or a direct attach cable connector, or cause damage to the Switch.

Make sure that you use a valid combination for the direct attach cable and the Switch.

- The switches below support SFPP-CU30C/CU1M/CU3M/CU5M. Use direct attach cables only for connections between the indicated Switches. Not doing so could result in a Switch malfunction.

  - AX2530S-24T4X (Supported ports: 25 to 28)

  - AX2530S-24S4X (Supported ports: 25 to 28)

  - AX2530S-48T2X (Supported ports: 51 to 52)

  - AX2530S-24S4XD (Supported ports: 25 to 28)

Make sure that you use a valid combination for the transceiver and the Switch.

- The switches below support SFP-FX. Use the transceivers only with the indicated Switches. Not doing so could result in a Switch malfunction.

  - AX2530S-24S4X (Supported ports: 1 to 24)

  - AX2530S-24S4XD (Supported ports: 1 to 24)

- The switches below support SFP-SX2. Use the transceivers only with the indicated Switches. Not doing so could result in a Switch malfunction.

  - AX2530S-24T (Supported ports: 25 to 28)

  - AX2530S-48T (Supported ports: 49 to 52)

  - AX2530S-48T2X (Supported ports: 49 to 50)

  - AX2530S-24S4X (Supported ports: 1 to 24)

  - AX2530S-24TD (Supported ports: 25 to 28)

  - AX2530S-48TD (Supported ports: 49 to 52)

  - AX2530S-24S4XD (Supported ports: 1 to 24)

When carrying or packing a Switch and its optional modules, wear a wrist strap to protect against static electricity.

- Be sure to wear an antistatic wrist strap. If you handle the Switch without wearing an antistatic wrist strap, the Switch might be damaged by static electricity.

When carrying and packing optional modules, handle them carefully.

- Do not touch a connector when carrying or packaging a transceiver, direct attach cable, memory card, or power supply module. Also, when storing an optional module, use an antistatic bag.

CAUTION

Use care when handling an air duster.

- Use an air duster specially designed for cleaning optical connectors. Using another type of air duster could cause the ferrule tip to become dirty.
- Keep the nozzle or container of the air duster from coming into contact with the ferrule tip. Contact could result in a malfunction.

Use care when handling an optical connector cleaner.

- Always use a dedicated optical connector cleaner. If you use another type of cleaner, the ferrule tip might become dirty.
- Before cleaning, make sure that the tip of the optical connector cleaner is clean and free of defects, such as lint, dirt, or other foreign substances. Using a cleaner with a defective tip might damage the ferrule tip.
- Do not apply excessive pressure when cleaning. Doing so might damage the ferrule tip.
- Rotate the optical connector cleaner (stick) clockwise only. Rotating the cleaner alternately clockwise and counterclockwise might damage the ferrule tip.

Maintenance

- Clean any dirty areas on the exterior of the switch with a clean, dry cloth, or a cloth damp with (but not soaked with) water or a neutral detergent. Do not use volatile organic solutions (such as benzene or paint thinner), chemicals, chemically treated cloths, or pesticides because these substances might deform, discolor, or damage the switch.

If the Switch will not be used for a long time

- For safety reasons, unplug the power cable from the outlet if the Switch will not be used for a long time. If you are using a DC power supply unit, turn off the circuit breaker at the supply of power.

Disposing of a Switch

- When disposing of a switch, you should either follow local ordinances or regulations or contact your local waste disposal and treatment facility.

Contents

1. Device Overview

This chapter provides an overview of the various devices that make up the Switch.

1.1 Switch

AX2500S series switches are Layer 2 gigabit Ethernet switches that can be used as floor switches or distribution switches.

The following table lists the AX2500S series models.

Table 1-1 List of AX2500S series models

No.	LAN interface			Model name
	10/100/1000BASE-T ports	SFP slot	SFP+ slot	
1	24	4	--	AX2530S-24T (AC model) AX2530S-24TD (DC model)
2	24	--	4	AX2530S-24T4X (AC model)
3	48	4	--	AX2530S-48T (AC model) AX2530S-48TD (DC model)
4	48	2	2	AX2530S-48T2X (AC model)
5	--	24	4	AX2530S-24S4X (AC model) AX2530S-24S4XD (DC model)

1.1.1 AX2530S-24T, AX2530S-24TD

The AX2530S-24T and AX2530S-24TD models have the following hardware specifications:

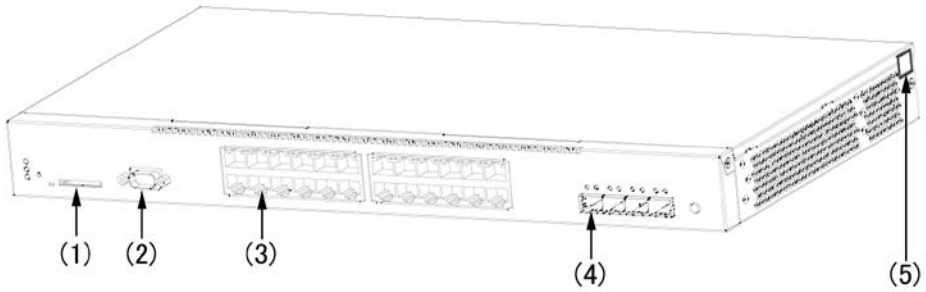
- Ethernet 10/100/1000BASE-T ports: 24
- SFP slots: 4
- Memory card slot: 1
- CONSOLE port: 1

NOTE

For information about the SFP transceivers supported by the Switch, see *1.5.1 SFP*.

(1) External appearance

Figure 1-1 Front view



(1) Memory card slot

(2) CONSOLE port

(3) 10/100/1000BASE-T Ethernet port

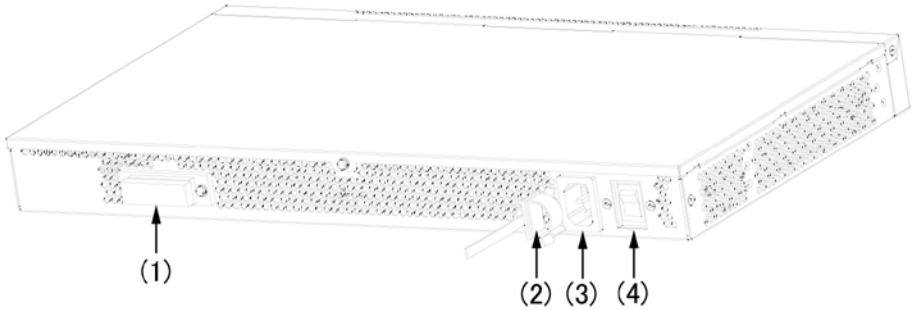
(4) SFP slot

(5) Security tape

NOTE

Do not peel away the security tape.
If you do so, 開封済 will be displayed. The device is no longer under warranty if 開封済 is displayed. The device is no longer under warranty if 開封済 is displayed.

Figure 1-2 Rear view of the AC model



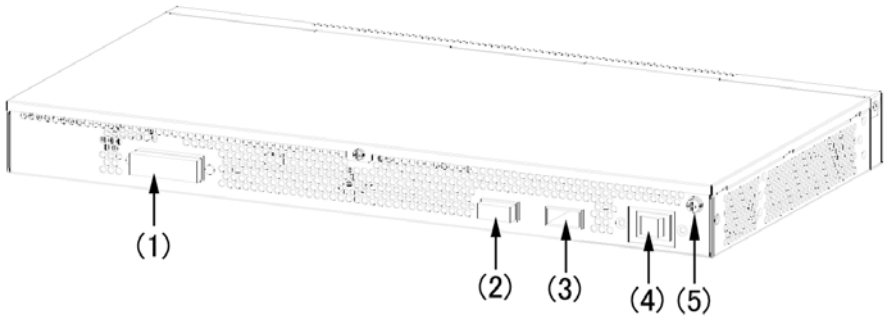
(1) Standby power connector (with a protection cap)

(2) Cable clamp

(3) AC power connector

(4) Power switch

Figure 1-3 Rear view of the DC model



(1) Standby power connector (with a protection cap)

(2) DC power connector 2

(3) DC power connector 1

(4) Power switch

(5) Ground terminal

(2) Front panel

Figure 1-4 Front panel layout shows the front panel layout. The numbers in the figure correspond to the numbers in *Table 1-2 LED indication, switches, and connectors*.

Figure 1-4 Front panel layout

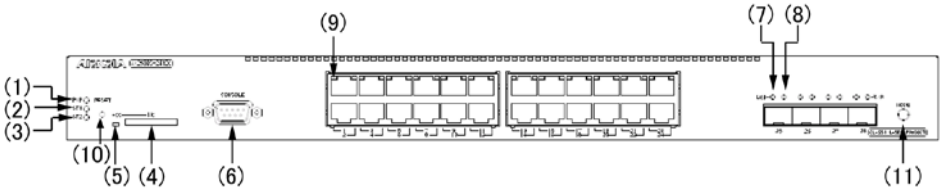


Table 1-2 LED indication, switches, and connectors

No.	Name	Type	Description	Details
(1)	PWR	LED: Green	Indicates that the Switch is on or in the sleep state.	Green: The power is on. Slowly blinking green: The Switch is in the sleep state. Off: The Switch is off or a power failure has occurred.
(2)	ST1	LED: Green, orange, or red	Indicates the Switch status.	Green: The Switch is ready to operate. Blinking green: The Switch is preparing to operate (startup). Slowly blinking green: The LED is set to be turned off. Orange: The initial state after the Switch is turned on.

No.	Name	Type	Description	Details
				Blinking red: A failure has occurred in a part of the Switch. Red: A fatal error has occurred on the Switch (the Switch is no longer usable). Off: The Switch is off or a power failure has occurred.
(3)	ST2	LED: Green or orange	Indicates the SML operating status.	Green: The SML is full. Blinking green: An SML conflict has occurred or the SML is in the standalone state. Orange: The initial state after the Switch is turned on. Off: Normal operation (The SML is disabled).
(4)	MC	Connector	Memory card slot	Memory card slot
(5)	ACC	LED: Green	Indicates the memory card status.	Green: The memory card is being accessed. (Do not remove the memory card.) Off: The memory card is in idle mode (a memory card can be inserted or removed).
(6)	CONSOLE	Connector	CONSOLE port	RS232C port to connect a console terminal
(7)	LINK	LED: Green or orange	Indicates the operating status of the SFP slot Ethernet port	Green: The initial state after the Switch is turned on or after a link has been established. Orange: A line failure has been detected. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(8)	T/R	LED: Green		Blinking green: A frame is being transmitted.
(9)	1-24	LED: Green or orange	Indicates the operating status of the 10/100/1000BASE-T Ethernet port	Green: A link has been established. Blinking green: A link has been established and a frame is being transmitted. Orange: The initial state after the Switch is turned on. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(10)	RESET	Button (non-locking)	The manual RESET button of the Switch[#1]	Restarts the Switch. When pressed continuously until all LEDs on the front panel are lit (3 seconds or more), the Switch is released from sleep mode.
(11)	MODE	Switch	Not supported	--

No.	Name	Type	Description	Details
		(non-locking)		

#1: The RESET button is behind the front panel. Use a screwdriver with a small head to press it.

⚠WARNING When pressing the RESET button, do not use anything with a fragile tip, or anything that might become caught in the Switch, such as a pin or a paper clip. Doing so could result in fire or electric shock.

1.1.2 AX2530S-24T4X

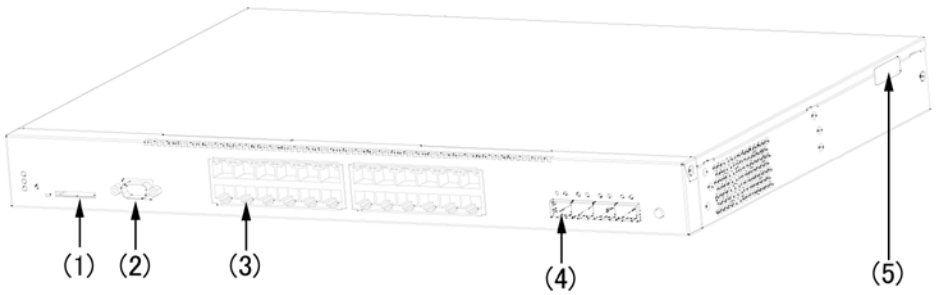
The AX2530S-24T4X model has the following hardware specifications:

- Ethernet 10/100/1000BASE-T ports: 24
- SFP+ slots: 4
- Memory card slot: 1
- CONSOLE port: 1

NOTE For information about the SFP and SFP+ transceivers supported by the Switch, see *1.5.1 SFP* and *1.5.2 SFP+*.

(1) External appearance

Figure 1-5 Front view



(1) Memory card slot

(2) CONSOLE port

(3) 10/100/1000BASE-T Ethernet port

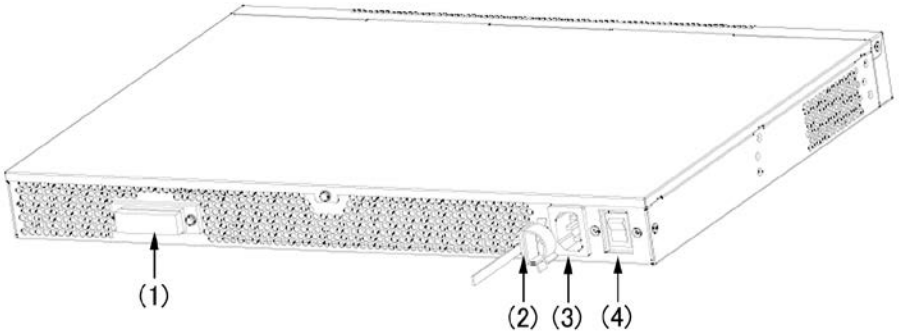
(4) SFP+ slot

(5) Security tape

NOTE

Do not peel away the security tape.
If you do so, 開封済 will be displayed. The device is no longer under warranty if 開封済 is displayed. The device is no longer under warranty if 開封済 is displayed.

Figure 1-6 Rear view



(1) Standby power connector (with a protection cap)

(2) Cable clamp

(3) AC power connector

(4) Power switch

(2) Front panel

Figure 1-7 Front panel layout shows the front panel layout. The numbers in the figure correspond to the numbers in *Table 1-3 LED indication, switches, and connectors*.

Figure 1-7 Front panel layout

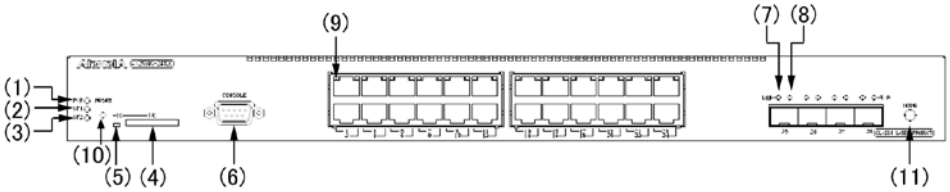


Table 1-3 LED indication, switches, and connectors

No.	Name	Type	Description	Details
(1)	PWR	LED: Green	Indicates that the Switch is on or in the sleep state.	Green: The power is on. Slowly blinking green: The Switch is in the sleep state. Off: The Switch is off or a power failure has occurred.

No.	Name	Type	Description	Details
(2)	ST1	LED: Green, orange, or red	Indicates the Switch status.	Green: The Switch is ready to operate. Blinking green: The Switch is preparing to operate (startup). Slowly blinking green: The LED is set to be turned off. Orange: The initial state after the Switch is turned on. Blinking red: A failure has occurred in a part of the Switch. Red: A fatal error has occurred on the Switch (the Switch is no longer usable). Off: The Switch is off or a power failure has occurred.
(3)	ST2	LED: Green or orange	Indicates the SML operating status.	Green: The SML is full. Blinking green: An SML conflict has occurred or the SML is in the standalone state. Orange: The initial state after the Switch is turned on. Off: Normal operation (The SML is disabled).
(4)	MC	Connector	Memory card slot	Memory card slot
(5)	ACC	LED: Green	Indicates the memory card status.	Green: The memory card is being accessed. (Do not remove the memory card.) Off: The memory card is in idle mode (a memory card can be inserted or removed).
(6)	CONSOLE	Connector	CONSOLE port	RS232C port to connect a console terminal
(7)	LINK	LED: Green or orange	Indicates the operating status of the SFP+ slot Ethernet port	Green: The initial state after the Switch is turned on or after a link has been established. Orange: A line failure has been detected. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(8)	T/R	LED: Green		Blinking green: A frame is being transmitted.
(9)	1-24	LED: Green or orange	Indicates the operating status of the 10/100/1000BASE-T Ethernet port	Green: A link has been established. Blinking green: A link has been established and a frame is being transmitted. Orange: The initial state after the Switch is turned on. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.

No.	Name	Type	Description	Details
(10)	RESET	Button (non-locking)	The manual RESET button of the Switch#1	Restarts the Switch. When pressed continuously until all LEDs on the front panel are lit (3 seconds or more), the Switch is released from sleep mode.
(11)	MODE	Switch (non-locking)	Not supported	--

#1: The RESET button is behind the front panel. Use a screwdriver with a small head to press it.

⚠WARNING When pressing the RESET button, do not use anything with a fragile tip, or anything that might become caught in the Switch, such as a pin or a paper clip. Doing so could result in fire or electric shock.

1.1.3 AX2530S-48T, AX2530S-48TD

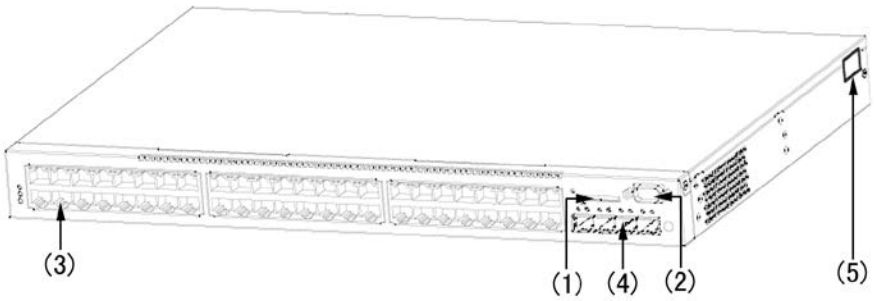
The AX2530S-48T and AX2530S-48TD models have the following hardware specifications:

- Ethernet 10/100/1000BASE-T ports: 48
- SFP slots: 4
- Memory card slot: 1
- CONSOLE port: 1

NOTE For information about the SFP transceivers supported by the Switch, see *1.5.1 SFP*.

(1) External appearance

Figure 1-8 Front view



(1) Memory card slot

(2) CONSOLE port

(3) 10/100/1000BASE-T Ethernet port

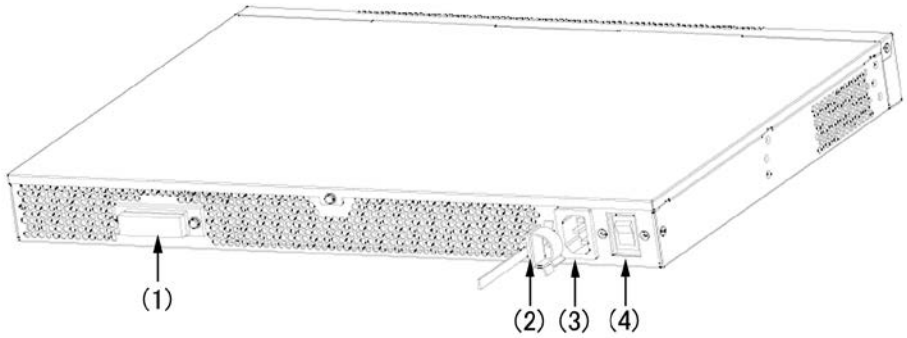
(4) SFP slot

(5) Security tape

NOTE

Do not peel away the security tape.
If you do so, **開封済** will be displayed. The device is no longer under warranty if **開封済** is displayed. The device is no longer under warranty if **開封済** is displayed.

Figure 1-9 Rear view of the AC model



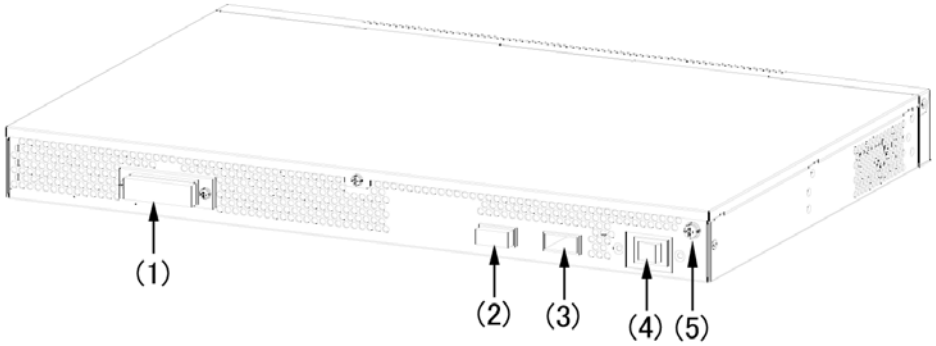
(1) Standby power connector (with a protection cap)

(2) Cable clamp

(3) AC power connector

(4) Power switch

Figure 1-10 Rear view of the DC model



(1) Standby power connector (with a protection cap)

(2) DC power connector 2

(3) DC power connector 1

(4) Power switch

(5) Ground terminal

(2) Front panel

Figure 1-11 Front panel layout shows the front panel layout. The numbers in the figure correspond to the numbers in *Table 1-4 LED indication, switches, and connectors*.

Figure 1-11 Front panel layout

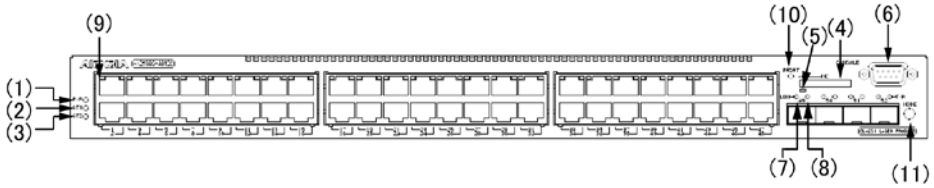


Table 1-4 LED indication, buttons, and connectors

No.	Name	Type	Description	Details
(1)	PWR	LED: Green	Indicates that the Switch is on or in the sleep state.	Green: The power is on. Slowly blinking green: The Switch is in the sleep state. Off: The Switch is off or a power failure has occurred.
(2)	ST1	LED: Green, orange, or red	Indicates the Switch status.	Green: The Switch is ready to operate. Blinking green: The Switch is preparing to operate (startup). Slowly blinking green: The LED is set to be turned off. Orange: The initial state after the Switch is turned on. Blinking red: A failure has occurred in a part of the Switch. Red: A fatal error has occurred on the Switch (the Switch is no longer usable). Off: The Switch is off or a power failure has occurred.
(3)	ST2	LED: Green or orange	Indicates the SML operating status.	Green: The SML is full. Blinking green: An SML conflict has occurred or the SML is in the standalone state. Orange: The initial state after the Switch is turned on. Off: Normal operation (The SML is disabled).
(4)	MC	Connector	Memory card slot	Memory card slot
(5)	ACC	LED: Green	Indicates the memory card status.	Green: The memory card is being accessed. (Do not remove the memory card.) Off: The memory card is in idle mode (a memory card can be inserted or removed).
(6)	CONSOLE	Connector	CONSOLE port	RS232C port to connect a console terminal

No.	Name	Type	Description	Details
(7)	LINK	LED: Green or orange	Indicates the operating status of the SFP slot Ethernet port	Green: The initial state after the Switch is turned on or after a link has been established. Orange: A line failure has been detected. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(8)	T/R	LED: Green		Blinking green: A frame is being transmitted.
(9)	1-48	LED: Green or orange	Indicates the operating status of the 10/100/1000BASE-T Ethernet port	Green: A link has been established. Blinking green: A link has been established and a frame is being transmitted. Orange: The initial state after the Switch is turned on. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(10)	RESET	Button (non-locking)	The manual RESET button of the Switch#1	Restarts the Switch. When pressed continuously until all LEDs on the front panel are lit (3 seconds or more), the Switch is released from sleep mode.
(11)	MODE	Button (non-locking)	Not supported	--

#1: The RESET button is behind the front panel. Use a screwdriver with a small head to press the button.

⚠WARNING When pressing the RESET button, do not use anything with a fragile tip, or anything that might become caught in the Switch, such as a pin or a paper clip. Doing so could result in fire or electric shock.

1.1.4 AX2530S-48T2X

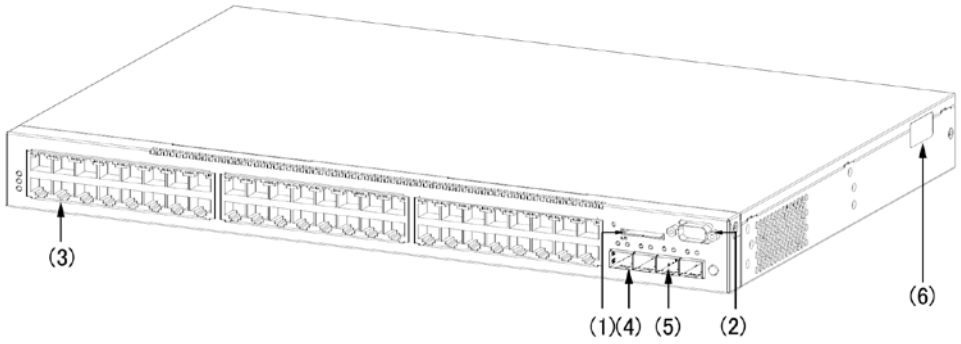
The AX2530S-48T2X has the following hardware specifications:

- Ethernet 10/100/1000BASE-T ports: 48
- SFP slots: 2
- SFP+ slots: 2
- Memory card slot: 1
- CONSOLE port: 1

NOTE For information about the SFP and SFP+ transceivers supported by the Switch, see *1.5.1 SFP* or *1.5.2 SFP+*.

(1) External appearance

Figure 1-12 Front view



(1) Memory card slot

(2) CONSOLE port

(3) 10/100/1000BASE-T Ethernet port

(4) SFP slot

(5) SFP+ slot

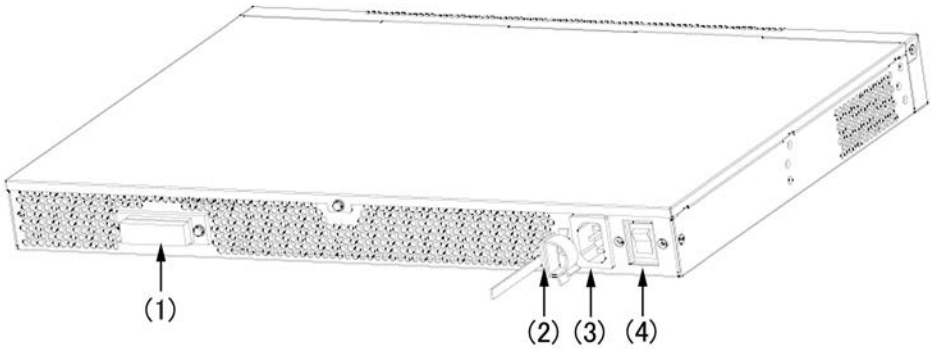
(6) Security tape

NOTE

Do not peel away the security tape.

If you do so, **開封済** will be displayed. The device is no longer under warranty if **開封済** is displayed. The device is no longer under warranty if **開封済** is displayed.

Figure 1-13 Rear view



(1) Standby power connector (with a protection cap)

(2) Cable clamp

(3) AC power connector

(4) Power switch

(2) Front panel

Figure 1-14 Front panel layout shows the front panel layout. The numbers in the

figure correspond to the numbers in *Table 1-5 LED indication, switches, and connectors*.

Figure 1-14 Front panel layout

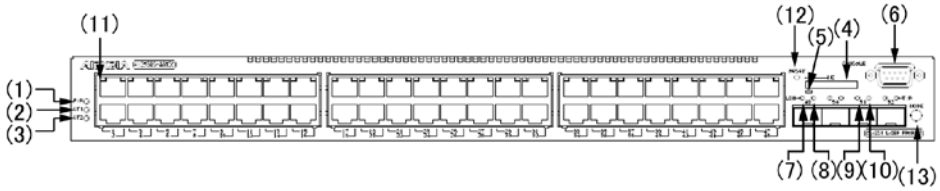


Table 1-5 LED indication, switches, and connectors

No.	Name	Type	Description	Details
(1)	PWR	LED: Green	Indicates that the Switch is on or in the sleep state.	Green: The power is on. Slowly blinking green: The Switch is in the sleep state. Off: The Switch is off or a power failure has occurred.
(2)	ST1	LED: Green, orange, or red	Indicates the Switch status.	Green: The Switch is ready to operate. Blinking green: The Switch is preparing to operate (startup). Slowly blinking green: The LED is set to be turned off. Orange: The initial state after the Switch is turned on. Blinking red: A failure has occurred in a part of the Switch. Red: A fatal error has occurred on the Switch (the Switch is no longer usable). Off: The Switch is off or a power failure has occurred.
(3)	ST2	LED: Green or orange	Indicates the SML operating status.	Green: The SML is full. Blinking green: An SML conflict has occurred or the SML is in the standalone state. Orange: The initial state after the Switch is turned on. Off: Normal operation (The SML is disabled).
(4)	MC	Connector	Memory card slot	Memory card slot
(5)	ACC	LED: Green	Indicates the memory card status.	Green: The memory card is being accessed. (Do not remove the memory card.) Off: The memory card is in idle mode (a memory card can be inserted or removed).
(6)	CONSOLE	Connector	CONSOLE port	RS232C port to connect a console terminal

No.	Name	Type	Description	Details
(7)	LINK	LED: Green	Indicates the operating status of the SFP slot Ethernet port	Green: The initial state after the Switch is turned on or after a link has been established. Orange: A line failure has been detected. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(8)	T/R	LED: Green		Blinking green: A frame is being transmitted.
(9)	LINK	LED: Green	Indicates the operating status of the SFP+ slot Ethernet port	Green: The initial state after the Switch is turned on or after a link has been established. Orange: A line failure has been detected. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(10)	T/R	LED: Green		Blinking green: A frame is being transmitted.
(11)	1-48	LED: Green or orange	Indicates the operating status of the 10/100/1000BASE-T Ethernet port	Green: A link has been established. Blinking green: A link has been established and a frame is being transmitted. Orange: The initial state after the Switch is turned on. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(12)	RESET	Button (non-locking)	The manual RESET button of the Switch[#1]	Restarts the Switch. When pressed continuously until all LEDs on the front panel are lit (3 seconds or more), the Switch is released from sleep mode.
(13)	MODE	Button (non-locking)	Not supported	--

#1: The RESET button is behind the front panel. Use a screwdriver with a small head to press the button.

⚠WARNING When pressing the RESET button, do not use anything with a fragile tip, or anything that might become caught in the Switch, such as a pin or a paper clip. Doing so could result in fire or electric shock.

1.1.5 AX2530S-24S4X, AX2530S-24S4XD

The AX2530S-24S4X and AX2530S-24S4XD models have the following hardware specifications:

- SFP slots: 24
- SFP+ slots: 4
- Memory card slot: 1

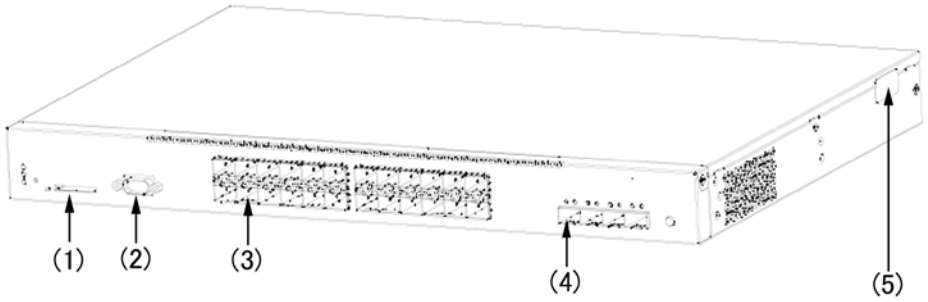
- CONSOLE port: 1

NOTE

For information about the SFP and SFP+ transceivers supported by the Switch, see *1.5.1 SFP* or *1.5.2 SFP+*.

(1) External appearance

Figure 1-15 Front view



(1) Memory card slot

(2) CONSOLE port

(3) SFP slot

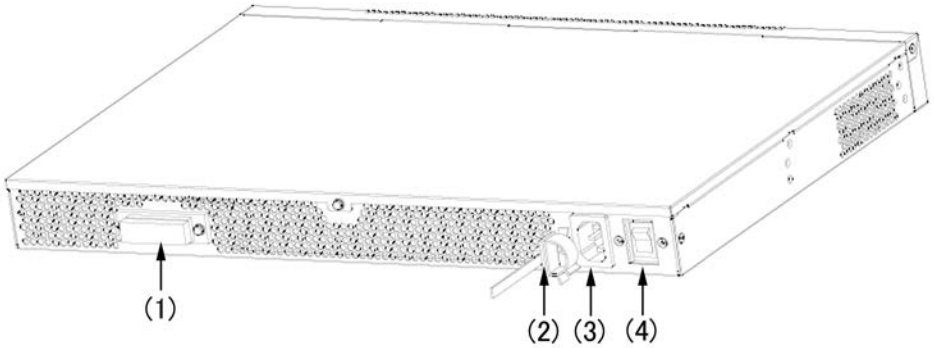
(4) SFP+ slot

(5) Security tape

NOTE

Do not peel away the security tape.
If you do so, **開封済** will be displayed. The device is no longer under warranty if **開封済** is displayed. The device is no longer under warranty if **開封済** is displayed.

Figure 1-16 Rear view of the AC model



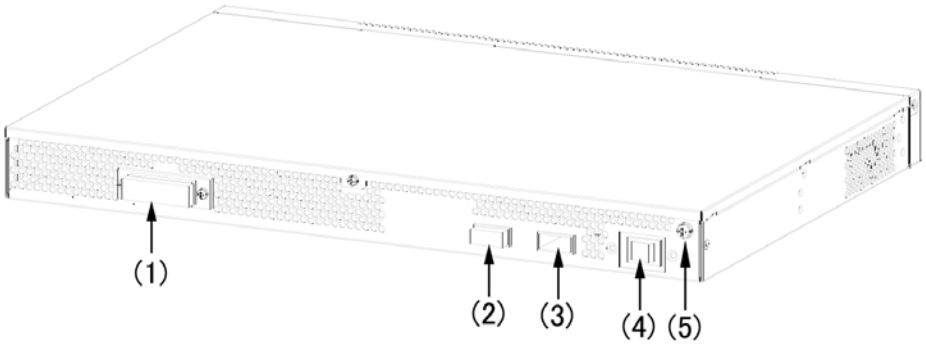
(1) Standby power connector (with a protection cap)

(2) Cable clamp

(3) AC power connector

(4) Power switch

Figure 1-17 Rear view of the DC model



(1) Standby power connector (with a protection cap)

(2) DC power connector 2

(3) DC power connector 1

(4) Power switch

(5) Ground terminal

(2) Front panel

Figure 1-18 Front panel layout shows the front panel layout. The numbers in the figure correspond to the numbers in *Table 1-6 LED indication, switches, and connectors*.

Figure 1-18 Front panel layout

Table 1-6 LED indication, switches, and connectors

No.	Name	Type	Description	Details
(1)	PWR	LED: Green	Indicates that the Switch is on or in the sleep state.	Green: The power is on. Slowly blinking green: The Switch is in the sleep state. Off: The Switch is off or a power failure has occurred.

No.	Name	Type	Description	Details
(2)	ST1	LED: Green, orange, or red	Indicates the Switch status.	Green: The Switch is ready to operate. Blinking green: The Switch is preparing to operate (startup). Slowly blinking green: The LED is set to be turned off. Orange: The initial state after the Switch is turned on. Blinking red: A failure has occurred in a part of the Switch. Red: A fatal error has occurred on the Switch (the Switch is no longer usable). Off: The Switch is off or a power failure has occurred.
(3)	ST2	LED: Green or orange	Indicates the SML operating status.	Green: The SML is full. Blinking green: An SML conflict has occurred or the SML is in the standalone state. Orange: The initial state after the Switch is turned on. Off: Normal operation (The SML is disabled).
(4)	MC	Connector	Memory card slot	Memory card slot
(5)	ACC	LED: Green	Indicates the memory card status.	Green: The memory card is being accessed. (Do not remove the memory card.) Off: The memory card is in idle mode (a memory card can be inserted or removed).
(6)	CONSOLE	Connector	CONSOLE port	RS232C port to connect a console terminal
(7)	LINK	LED: Green or orange	Indicates the operating status of the SFP+ slot Ethernet port	Green: The initial state after the Switch is turned on or after a link has been established. Orange: A line failure has been detected. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(8)	T/R	LED: Green		Blinking green: A frame is being transmitted.
(9)	LINK	LED: Green or orange	Indicates the operating status of the SFP slot Ethernet port	Green: The initial state after the Switch is turned on or after a link has been established. Orange: A line failure has been detected. Off: If the ST1 LED is green, a link failure has occurred or the port is blocked.
(10)	T/R	LED: Green		Blinking green: A frame is being transmitted.

No.	Name	Type	Description	Details
(11)	RESET	Button (non-locking)	The manual RESET button of the Switch[#1]	Restarts the Switch. When pressed continuously until all LEDs on the front panel are lit (3 seconds or more), the Switch is released from sleep mode.
(12)	MODE	Button (non-locking)	Not supported	--

#1: The RESET button is behind the front panel. Use a screwdriver with a small head to press the button.

⚠WARNING When pressing the RESET button, do not use anything with a fragile tip, or anything that might become caught in the Switch, such as a pin or a paper clip. Doing so could result in fire or electric shock.

1.1.6 Accessories

The item listed in *Table 1-7 Switch accessories* are shipped with the Switch when it is shipped from the factory.

Table 1-7 Switch accessories

No.	Name	Models		Quantity	Remarks
		AC model	DC model		
1	Prior to Use of the "Switch"	Y	Y	1	Contains a checklist of the items included in the packaging. "The Switch" is replaced with the series name of the actual switch.
2	Safety information	Y	Y	1	
3	Software license agreement	Y	Y	1	
4	AC power cable	Y	--	1	Length: 3 meters
5	DC power cable	--	Y	1	Length: 3 meters
6	Ground cable	--	Y	1	Length: 3 meters
7	Rubber pad	Y	Y	4	
8	Rack mounting bracket	Y	Y	2	L and R (one of each)
9	Screws	Y	Y	12	M3 x 6
10	Dummy memory card	Y	Y	1	

No.	Name	Models		Quantity	Remarks
		AC model	DC model		
11	Note on Use of the Dummy Memory Card	Y	Y	1	

Legend: Y: Included as accessories, --: Not included

(1) Prior to Use of an AX3800S/AX3600S/AX2500S/AX2400S Series Switch

This document lists the items supplied with the Switch when it is shipped from the factory.

(2) Safety information

This document includes important notes regarding safe use of the power supply module.

Be sure to read this document before use.

(3) Software license agreement

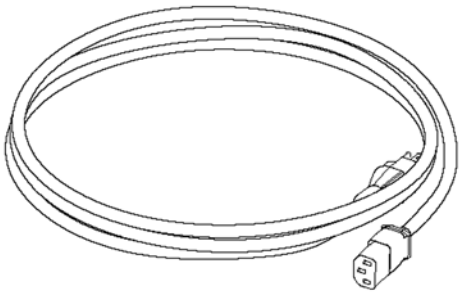
This document stipulates the terms and conditions regarding the use of the software installed on the Switch.

Be sure to read this document before use.

(4) AC power cable

A 100 V AC, 3.0 m power cable (*Figure 1-19 AC power cable*) is bundled with the AC models.

Figure 1-19 AC power cable



⚠WARNING When using the AC model at 100 V AC, use the supplied power cable or the optional ALAXALA power cable. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

⚠WARNING When using the AC model at 200 V AC, use the optional ALAXALA power cable or a cable that satisfies Alaxala Networks Corporation's specifications. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

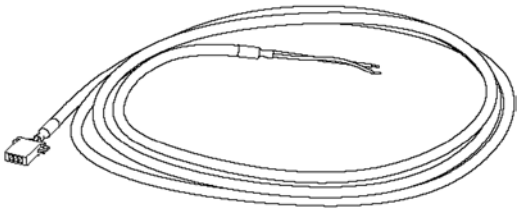
NOTE

For details about power cables that satisfy Alaxala Networks Corporation's specifications, see *2.3.2 Facilities for 200 V AC power supply*.

(5) DC power cable

A -48 V DC, 3.0 m power cable (*Figure 1-20 DC power cable*) is bundled with the DC models.

Figure 1-20 DC power cable



⚠WARNING

Make sure to use the accessory power cable for any DC model. Other cable except the bundled one may cause a fire and/or an electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in a fire or electric shock.

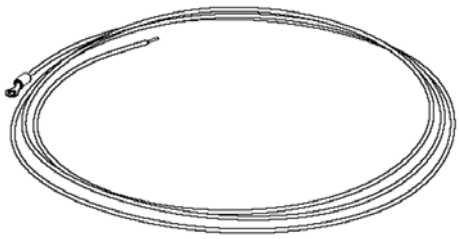
NOTE

Optional DC power cables are available. Use an optional one when a DC model is connected to two power supply systems.

(6) Ground cable

A 3.0 m ground cable (*Figure 1-21 Ground cable*) is bundled with the DC models.

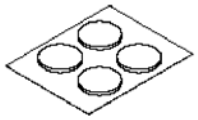
Figure 1-21 Ground cable



(7) Rubber pad

Use these pads when placing the EPU on a table.

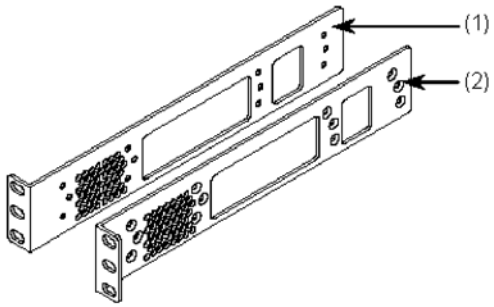
Figure 1-22 Rubber pad



(8) Rack mounting bracket

Use these brackets to mount the Switch on a 19-inch cabinet rack.

Figure 1-23 Rack mounting bracket



(1) Rack mounting bracket (L)

(2) Rack mounting bracket (R)

(9) Screws

Use the screws to attach the rack mounting brackets to the Switch.

Figure 1-24 Screws

(10) Dummy memory card

When a memory card is not being used, a dummy memory card replaces the memory card in the memory card slot of the Switch. After the Switch is installed, insert a dummy memory card.

There are two types of dummy memory cards, A and B, which are distinguished by shape.

Figure 1-25 Type A dummy memory card

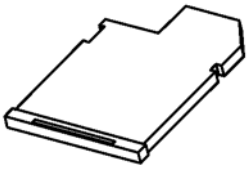
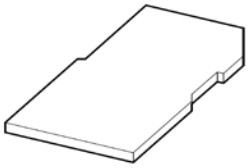


Figure 1-26 Type B dummy memory card



NOTE

There are two types of dummy memory cards, A and B, which function the same.

(11) Note on Use of the Dummy Memory Card

This document describes how to use a dummy memory card and provides notes for handling the dummy memory card.

1.2 External redundant power unit (EPU)

An external redundant power unit supplies standby power for an AX2500 series switch. Use the supplied cable to connect to the Switch. Using an external redundant power unit provides a redundant power supply configuration for a Switch. If internal Switch power fails, operation can be continued without stopping the Switch.

There are two types of external redundant power units: EPU-A for AC models and EPU-D for DC models. The correspondence between Switches, external redundant power units, and power supply modules is shown in *Table 1-8 Correspondence between Switches, external redundant power units (EPUs), and power supply modules*.

Power supply modules are installed in an external redundant power unit. A power supply module supplies standby power for the Switch. Adding power supply modules to an external redundant power unit allows standby power to be supplied for a maximum of four Switches.

Table 1-8 Correspondence between Switches, external redundant power units (EPUs), and power supply modules

Switch (model name)	Supported EPU	Supported power supply module
AX2530S-24T AX2530S-24T4X AX2530S-48T AX2530S-48T2X AX2530S-24S4X	EPU-A	EPU-AM
AX2530S-24TD AX2530S-48TD AX2530S-24S4XD	EPU-D	EPU-DM

1.2.1 EPU-A

EPU-A is an external redundant power unit used for the AC models.

EPU-A has the following hardware specifications:

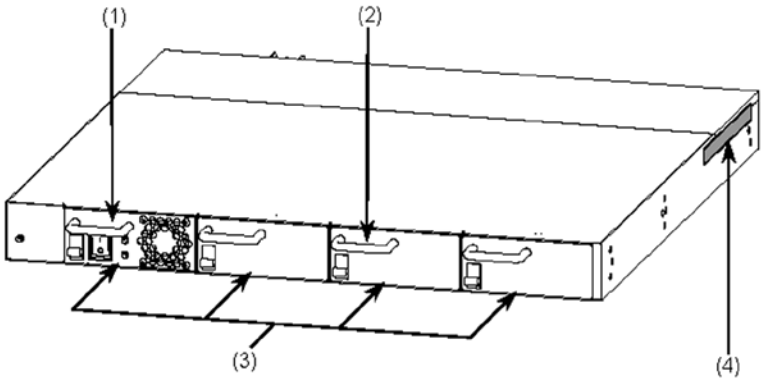
- Slots for the power supply module: 4
- Power supply module (EPU-AM): 1

NOTE

When an external redundant power unit (EPU-A) is shipped from the factory, a power supply module (EPU-AM) is inserted in slot 1. A blank panel is inserted in other slots.

(1) External appearance

Figure 1-27 Front view



(1) Power supply module EPU-AM (inserted in slot 1 when shipped from the factory)

(2) Blank panel

(3) Power supply module slot (4 slots)

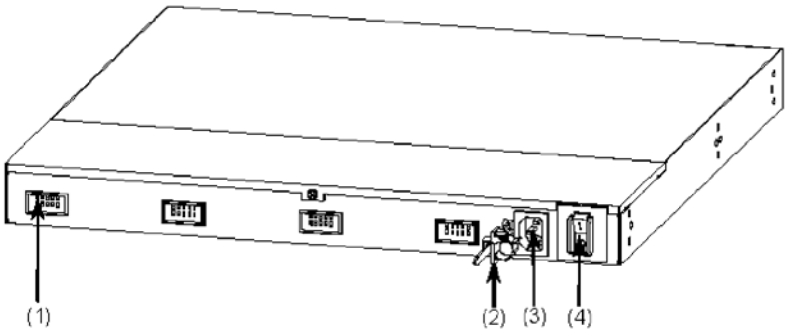
(4) Security tape

NOTE

Do not peel away the security tape.

If you do so, 開封済 will be displayed. The device is no longer under warranty if 開封済 is displayed.

Figure 1-28 Rear view



(1) Standby power connector (4 locations)

(2) Cable clamp

(3) AC power connector

(4) Main power switch

(2) Panel layout

Figure 1-29 Front panel layout shows the front panel layout and *Figure 1-30 Rear panel layout* shows the rear panel layout. The numbers in the figure correspond to the numbers in *Table 1-9 LED indication, switches, and connectors*.

Figure 1-29 Front panel layout

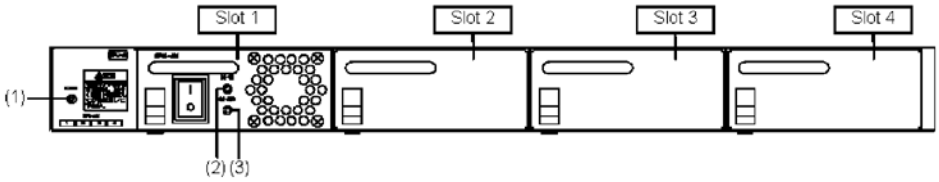


Figure 1-30 Rear panel layout

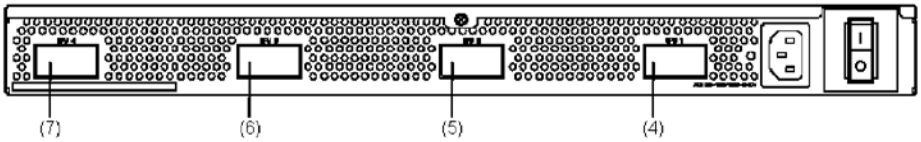


Table 1-9 LED indication, switches, and connectors

No.	Name	Type	Description	Details
(1)	POWER	LED: Green	Indicates that the Switch is on.	Green: The power is on. Power is being supplied to the installed power supply modules. Off: Supply of input power to the external redundant power unit has failed or the power is off.
(2)	DC-OK	LED: Green	Indicates the output power supply status	Green: The output power supply of a power supply module is operating normally. Off: The output power supply of a power supply module has failed or the power is off.
(3)	DC-ALM	LED: Red	Indicates the output power supply status	Red: The output power supply of a power supply module has failed. Off: The output power supply of a power supply module is operating normally or the power is off.
(4)	EPU 1	Connector	Standby power connector 1	Power supply output of a power supply module inserted in slot 1. Connect the standby power cable supplied with an external redundant power unit to the standby power connector on the rear of a Switch before using the external redundant power unit.
(5)	EPU 2	Connector	Standby power connector 2	Power supply output of power supply modules inserted in slots 2 to 4. Connect the standby power cable supplied with a power supply module to a standby power connector on the rear of the Switch before using the power supply module.
(6)	EPU 3	Connector	Standby power connector 3	
(7)	EPU 4	Connector	Standby power connector 4	

1.2.2 EPU-D

EPU-D is an external redundant power unit used for the DC models.

EPU-D has the following hardware specifications:

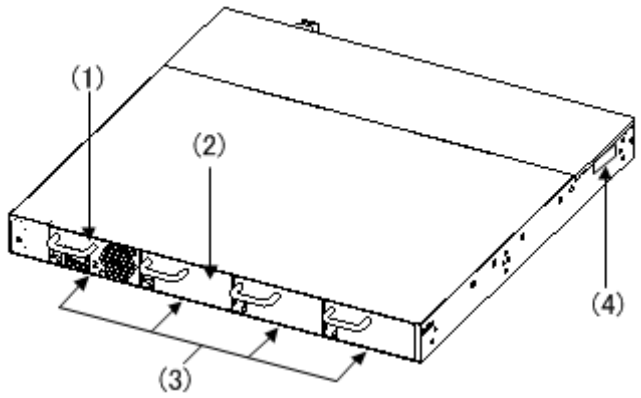
- Power supply module slots: 4
- Power supply module (EPU-DM): 1

NOTE

The external redundant power unit (EPU-D) has one power supply module (EPU-DM) in slot 1 when shipped. Other slots are covered with blank panels.

(1) External appearance

Figure 1-31 Front view



(1) Power supply module EPU-DM (mounted in slot 1 when shipped)

(2) Blank panel

(3) Power supply module slots (4)

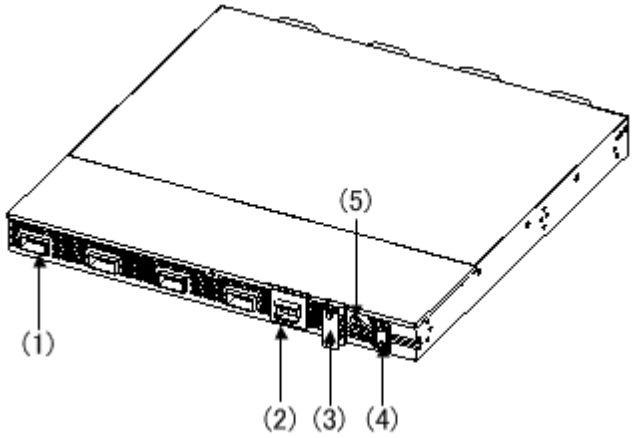
(4) Security tape

NOTE

Do not peel away the security tape.

If you do so, **開封済** will be displayed. The device is no longer under warranty if **開封済** is displayed.

Figure 1-32 Rear view



(1) Standby power connectors (4)

(2) Main power switch

(3) Terminal block cover

(4) Cable clamp

(5) Ground terminal

(2) Panel layout

The front layout and back layout are shown in *Figure 1-33 Front panel layout* and *Figure 1-34 Rear panel layout*, respectively. The numbers in the figure correspond to those in *Table 1-10 LED indications, buttons, and connectors*.

Figure 1-33 Front panel layout

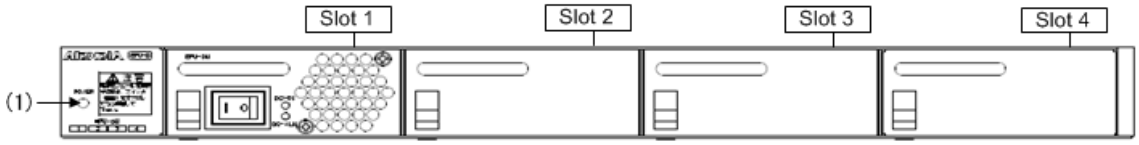


Figure 1-34 Rear panel layout

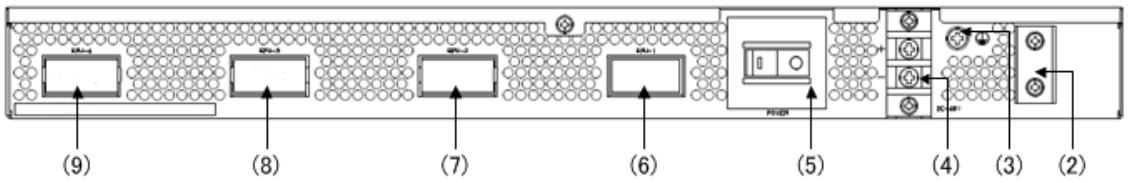


Table 1-10 LED indications, buttons, and connectors

No.	Name	Type	Description	Details
(1)	POWER	LED: Green	Indicates the power supply status.	Lit in green: Powered-on. Electrical power is output to the mounted power supply modules. Off: Input power failure to the external redundant power unit or powered-off.

(2)	(No display)	Cable clamp	--	Cable clamps for a power cable and ground cable
(3)	Grounding mark	Ground terminal	--	Terminals for connecting a ground cable
(4)	DC-48	Input terminal block	--	Terminal blocks for connecting a DC power cable
(5)	POWER	Main power switch	--	Turning on or off this switch starts or stops the supply of output power.
(6)	EPU-1	Connector	Standby power connector 1	To output electrical power from the power supply module mounted in slot 1. Connect the standby power cable bundled with the external redundant power unit to the standby power connector on the back face of the switch.
(7)	EPU-2	Connector	Standby power connector 2	To output electrical power from the power supply module mounted in slots 2 to 4. Connect the standby power cable bundled with the power supply module to the standby power connector on the back face of the switch.
(8)	EPU-3	Connector	Standby power connector 3	
(9)	EPU-4	Connector	Standby power connector 4	

1.2.3 External redundant power unit (EPU) accessories

The items listed in *Table 1-11 External redundant power unit (EPU) accessories* are included as accessories with shipment of the external redundant power unit.

Table 1-11 External redundant power unit (EPU) accessories

No.	Name	External redundant power unit		Quantity	Remarks
		EPU-A	EPU-D		
1	Bundled item checklist	Y	Y	1	
2	Safety information	Y	Y	1	
3	AC power cable	Y	--	1	3m
4	DC power cable	--	Y	1	3m
5	Standby power cable	Y	Y	1	1.5m
6	Ground cable	--	Y	1	3m

7	Rubber pad	Y	Y	4	
8	Rack mounting brackets	Y	Y	2	1 each for left and right
9	Screws	Y	Y	12	M3x6

Legend: Y: Included as accessories, --: Not included

(1) Bundled item checklist

This document lists the items supplied with an external redundant power unit when it is shipped from the factory.

(2) Safety information

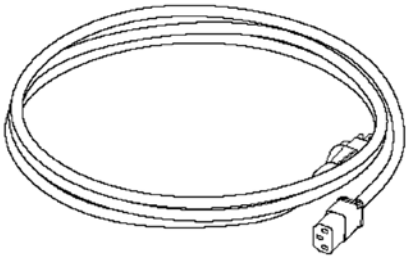
This document includes important notes regarding safe use of the power supply module.

Be sure to read this document before use.

(3) AC power cable

A 100 V AC, 3.0 m power cable (*Figure 1-35 AC power cable*) is available as an accessory. Use this cable for connecting an external redundant power unit (EPU-A) and power facility.

Figure 1-35 AC power cable

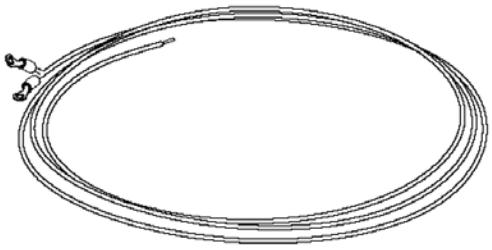


⚠WARNING Use the supplied power cable for an external redundant power unit. Using another cable could result in fire or electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in fire or electric shock.

(4) DC power cable

A -48 V DC, 3.0 m power cable (*Figure 1-36 DC power cable*) is available as an accessory. Use this cable for connecting an external redundant power unit (EPU-D) and power facility.

Figure 1-36 DC power cable

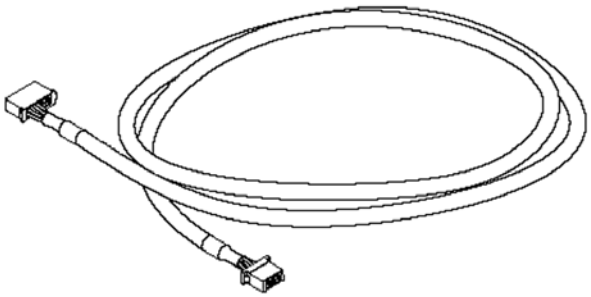


⚠WARNING Use the supplied power cable for an external redundant power unit. Using another cable could result in fire or electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in fire or electric shock.

(5) Standby power cable

A 1.5 m standby power cable (*Figure 1-37 Standby power cable*) is available as an accessory. Use this cable to connect an external redundant power unit to the Switch.

Figure 1-37 Standby power cable



⚠WARNING Use the supplied power cable. Other cable except the bundled one may cause a fire and/or an electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in a fire or electric shock.

NOTE There are two types of standby power cables: one each for external redundant power units EPU-A and EPU-D. The cable for the external redundant power unit EPU-A has a tag labeled "EPU-A/C CABLE", and the cable for the external redundant power unit EPU-D has a tag labeled "EPU-D CABLE."

(6) Ground cable

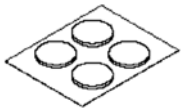
A 3.0 m ground cable (*Figure 1-38 Ground cable*) is bundled with the external redundant power unit (EPU-D).

Figure 1-38 Ground cable

(7) Rubber pad

Use these pads when placing the EPU on a table.

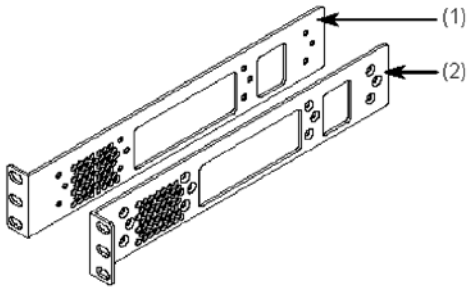
Figure 1-39 Rubber pad



(8) Rack mounting bracket

Use these brackets to mount the EPU on a 19-inch cabinet rack.

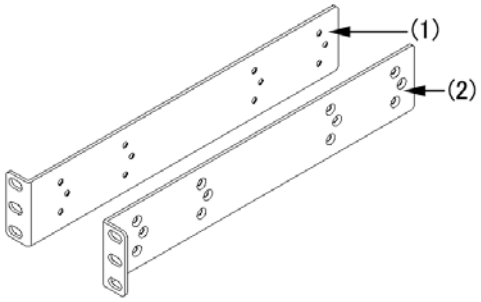
Figure 1-40 Rack mounting bracket (For the external redundant power unit: EPU-A)



(1) Rack mounting bracket (L)

(2) Rack mounting bracket (R)

Figure 1-41 Rack mounting bracket (For the external redundant power unit: EPU-D)



(1) Rack mounting bracket (L)

(2) Rack mounting bracket (R)

(9) Screws

Use the screws to attach the rack mounting brackets to the external redundant power unit.

Figure 1-42 Screws

1.3 Power supply module

A power supply module for an external redundant power unit of AX2500S series switches. When using two or more external redundant power units connected to a Switch, add a power supply module to an external redundant power unit.

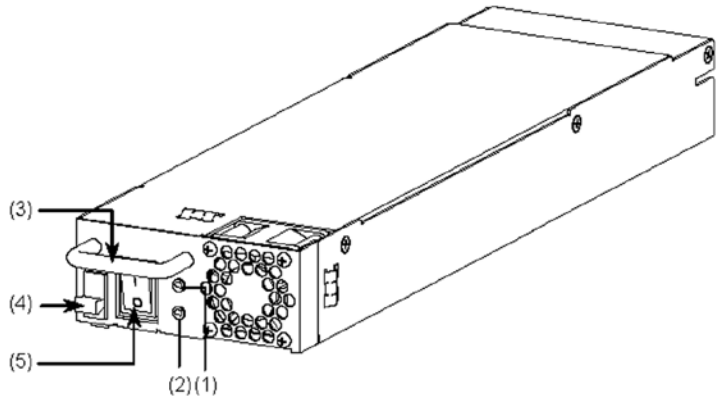
There are two types of power supply modules: EPU-AM for the external redundant power unit (EPU-A), and EPU-DM for the external redundant power unit (EPU-D). For the correspondence between Switches and EPUs, see *1.2 External redundant power unit (EPU)*.

1.3.1 EPU-AM

EPU-AM is a power supply module for an external redundant power unit (EPU-A). Insert an EPU-AM in the slot for a power supply module of an external redundant power unit (EPU-A) before use.

Figure 1-43 External appearance shows the external appearance. For details about (1) and (2) in the figure, see *Table 1-12 LED indications*.

Figure 1-43 External appearance



(1) DC-OK LED

(2) DC-ALM LED

(3) Handle

(4) Latch

(5) Power switch

Table 1-12 LED indications

No.	Name	Type	Description	Details
(1)	DC-OK	LED: Green	Indicates the output power supply status	Green: The output power supply of a power supply module is operating normally. Off: The output power supply of a power supply module has failed or the power is off.

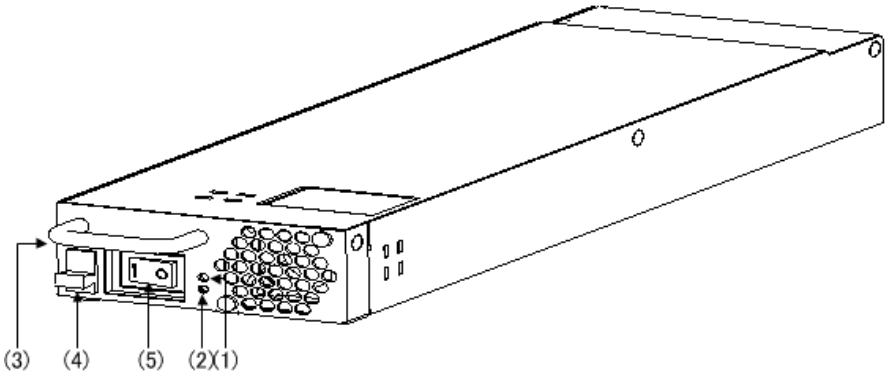
No.	Name	Type	Description	Details
(2)	DC-ALM	LED: Red	Indicates the output power supply status	Red: The output power supply of a power supply module has failed. Off: The output power supply of a power supply module is operating normally or the power is off.

1.3.2 EPU-DM

EPU-DM is a power supply module for an external redundant power unit (EPU-D). Insert an EPU-DM in the slot for a power supply module of an external redundant power unit (EPU-D) before use.

Figure 1-44 External appearance shows the external appearance. For details about (1) and (2) in the figure, see *Table 1-13 LED indications*.

Figure 1-44 External appearance



(1) DC-OK LED

(2) DC-ALM LED

(3) Handle

(4) Latch

(5) Power switch

Table 1-13 LED indications

No.	Name	Type	Description	Details
(1)	DC-OK	Green LED	Indicates the power output status from the power supply modules.	Lit in green: Normal output from the power supply modules. Off: Output power failure from the power supply modules or powered-off.
(2)	DC-ALM	Red LED	Indicates the power output status from the power supply modules.	Lit in red: Output power failure from the power supply modules, or fan failure. Off: Output power failure from the power supply modules or powered-off.

1.3.3 Power supply module accessories

The item listed in *Table 1-14 Power supply module accessories* are shipped with the power supply module when it is shipped from the factory.

Table 1-14 Power supply module accessories

No.	Name	Quantity	Remarks
1	Bundled item checklist	1	
2	Safety information	1	
3	Standby power cable	1	1.5 m

(1) Bundled item checklist

This document lists the items supplied with the power supply module when it is shipped from the factory.

(2) Safety information

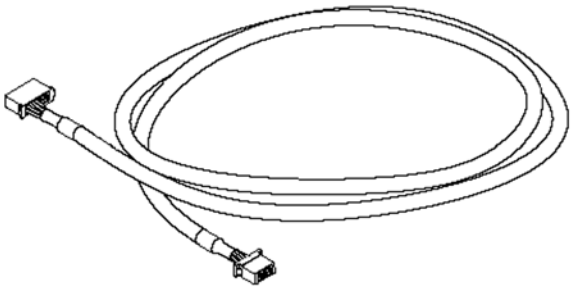
This document includes important notes regarding safe use of the power supply module.

Be sure to read this document before use.

(3) Standby power cable

A 1.5 m standby power cable is available as an accessory. Use this cable for connecting an external redundant power unit and the Switch.

Figure 1-45 Standby power cable



⚠WARNING Use the supplied power cable. Using another cable could result in fire or electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in fire or electric shock.

NOTE There are two types of standby power cables: one each for external redundant power units EPU-A and EPU-D. The cable for the external redundant power unit EPU-A has a tag labeled "EPU-A/C CABLE", and the cable for the external

redundant power unit EPU-D has a tag labeled "EPU-D CABLE."

1.4 Memory card

A memory card is inserted in the memory card slot of the Switch.

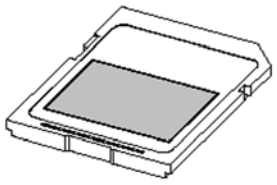
The memory card is used for the following:

- Saving failure information in the event of a failure
- Updating the Switch software

(1) SD128

An SD memory card with 128 MB of capacity.

Figure 1-46 External appearance

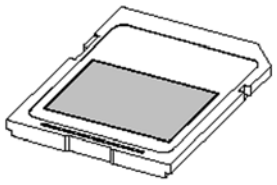


Label: AlaxalA SD128

(2) SD1G

An SD memory card with 1 GB of capacity.

Figure 1-47 External appearance



Label: AlaxalA SD1G

NOTE

Make sure to use ALAXALA Networks Corporation standard products, which have labels as shown in the figures. If non-standard products are used, correct operation is not guaranteed.

NOTE

The memory card can be written to approximately 10000 times.

1.5 Transceiver

1.5.1 SFP

To use an SFP transceiver, mount it to the SFP or SFP+ slot of the Switch. The SFP type can be identified by either of the following:

- Shape and lever color of the SFP transceiver (excluding SFP-FX and SFP-SX)
- Label

Note that the supported SFP transceivers depend on the Switch model used. For the correspondence between Switches and SFP transceivers, see *Table 1-15 List of SFP transceivers*.

NOTE

To distinguish between the SFP-FX and SFP-SX, please check the label.

NOTE

When an SFP transceiver is mounted on a Switch, use the `show port` command to determine the SFP type from the displayed interface information.

For details about the `show port` command, see *13. Ethernet* in the manual *Software Manual Operation Command Reference Vol. 1*.

Table 1-15 List of SFP transceivers

No.	Module name	Interface	Supported models
1	SFP-T	Ethernet 10/100/1000BASE-T	AX2500S series[#1]
2	SFP-FX	Ethernet 100BASE-FX	AX2530S-24S4X[#2] AX2530S-24S4XD[#2]
3	SFP-SX	Gigabit Ethernet 1000BASE-SX	AX2500S series
4	SFP-SX2	Gigabit Ethernet 1000BASE-SX2	AX2530S-24T AX2530S-48T AX2530S-48T2X[#3] AX2530S-24S4X[#4] AX2530S-24TD AX2530S-48TD AX2530S-24S4XD[#4]
5	SFP-LX	Gigabit Ethernet 1000BASE-LX	AX2500S series
6	SFP-LH	Gigabit Ethernet 1000BASE-LH	
7	SFP-LHB	Gigabit Ethernet 1000BASE-LHB	

No.	Module name	Interface	Supported models
8	SFP-BX1U	Gigabit Ethernet 1000BASE--BX10-D[#5]	
9	SFP-BX1D	Gigabit Ethernet 1000BASE--BX10-D[#5]	
10	SFP-BX4U	Gigabit Ethernet 1000BASE--BX40-U[#6]	
11	SFP-BX4D	Gigabit Ethernet 1000BASE--BX40-D[#6]	

#1: Supported ranges are as follows:

Table 1-16 SFP-T transceiver supported range

Model	Slot	Port	Remarks
AX2530S-24T AX2530S-24TD	SFP	0/25 to 0/28	Fixed to 1000BASE-T
AX2530S-24T4X	SFP+	0/25 to 0/28	Fixed to 1000BASE-T
AX2530S-48T AX2530S-48TD	SFP	0/49 to 0/52	Fixed to 1000BASE-T
AX2530S-48T2X	SFP	0/49 to 0/50	Fixed to 1000BASE-T
	SFP+	0/51 to 0/52	Fixed to 1000BASE-T
AX2530S-24S4X AX2530S-24S4XD	SFP	0/1 to 0/24	--
	SFP+	0/25 to 0/28	Fixed to 1000BASE-T

#2: Supported on ports 0/1 to 0/24 of an SFP slot.

#3: Supported on ports 0/49 to 0/50 of an SFP slot.

#4: Supported on ports 0/1 to 0/24 of an SFP slot.

#5: 1000BASE-BX10-U and 1000BASE-BX10-D are paired when in use.

#6: 1000BASE-BX40-U and 1000BASE-BX40-D are paired when in use.

⚠CAUTION

SFP transceivers (except SFP-T transceivers) use laser beams that are colorless and transparent, and are therefore invisible to the eye. Never look directly into the optical transceiver.

CAUTION

Do not attach any labels to a transceiver.

A label attached to the transceiver indicates that the transceiver is a standard product from ALAXALA or another manufacturer. However, such labels are attached where they do not interfere with heat dissipation from the transceiver or the mechanism that prevents the transceiver from coming loose from the cage.

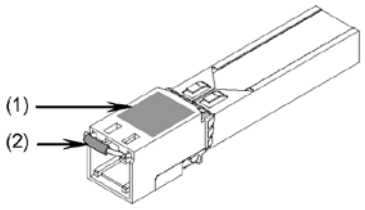
Attaching a label to a location that interferes with these functions could cause a malfunction in the transceiver or damage to the Switch.

NOTE

Make sure to use ALAXALA Networks Corporation standard products, which have labels as shown in the figures. If non-standard products are used, correct operation is not guaranteed.

(1) SFP-T

Figure 1-48 External appearance



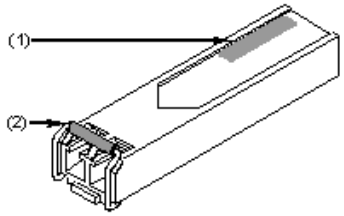
(1) Label: AlaxalA SFP-T

Label color: White

(2) Lever color: Yellow

(2) SFP-FX

Figure 1-49 External appearance



(1) Label: AlaxalA SFP-FX

Label color: White

(2) Lever color: Black

NOTE

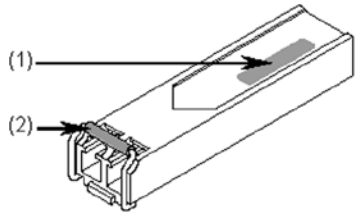
The switch below supports SFP-FX transceivers. Use the transceivers only with the indicated Switches. Not doing so could result in a switch malfunction.

AX2530S-24S4X (Supported ports: 1 to 24)

AX2530S-24S4XD (Supported ports: 1 to 24)

(3) SFP-SX

Figure 1-50 External appearance



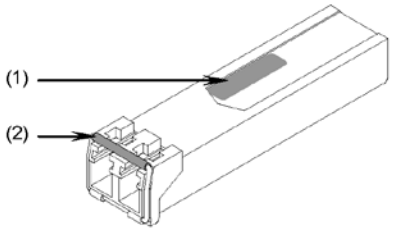
(1) Label: AlaxalA SFP-SX

Label color: Black

(2) Lever color: Black

(4) SFP-SX2

Figure 1-51 External appearance



(1) Label: AlaxalA SFP-SX2

Label color: White

(2) Lever color: Silver

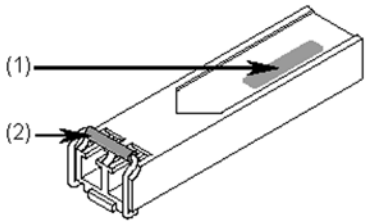
NOTE

The switches below support SFP-SX2. Use the transceivers only with the indicated Switches. Not doing so could result in a Switch malfunction.

AX2530S-24T (Supported ports: 25 to 28)
AX2530S-48T (Supported ports: 49 to 52)
AX2530S-48T2X (Supported ports: 49 to 50)
AX2530S-24S4X (Supported ports: 1 to 24)
AX2530S-24TD (Supported ports: 25 to 28)
AX2530S-48TD (Supported ports: 49 to 52)
AX2530S-24S4XD (Supported ports: 1 to 24)

(5) SFP-LX

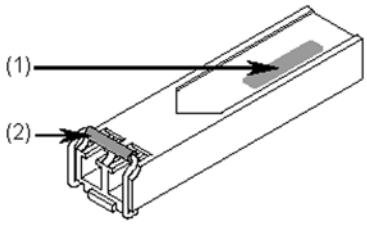
Figure 1-52 External appearance



(1) Label: AlaxalA SFP-LX
Label color: Blue
(2) Lever color: Blue

(6) SFP-LH

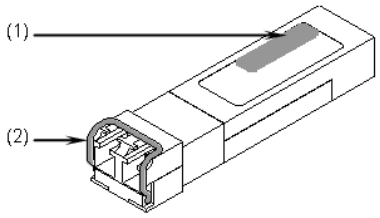
Figure 1-53 External appearance



(1) Label: AlaxalA SFP-LH
Label color: Green
(2) Lever color: Green

(7) SFP-LHB

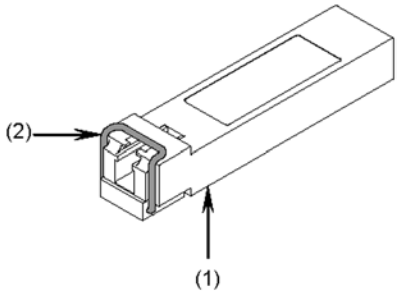
Figure 1-54 External appearance



(1) Label: AlaxalA SFP-LHB
Label color: White
(2) Lever color: Yellow-green

(8) SFP-BX1U

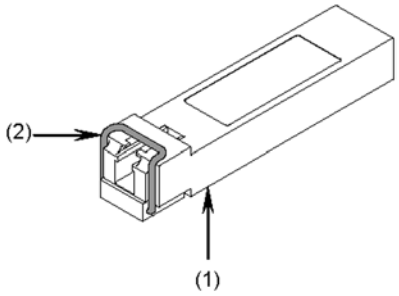
Figure 1-55 External appearance



(1) Label: AlaxalA SFP-BX1U
Label color: White
(2) Lever color: Blue

(9) SFP-BX1D

Figure 1-56 External appearance

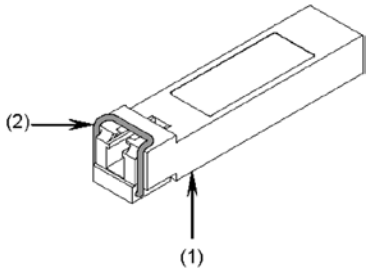


(1) Label: AlaxalA SFP-BX1D
Label color: White

(2) Lever color: Magenta

(10) SFP-BX4U

Figure 1-57 External appearance

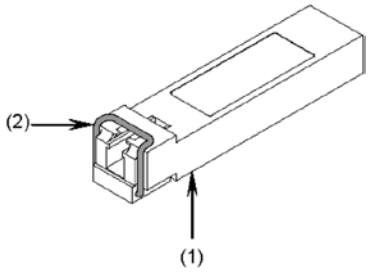


(1) Label: AlaxalA SFP-BX4U
Label color: White

(2) Lever color: Yellow

(11) SFP-BX4D

Figure 1-58 External appearance



(1) Label: AlaxalA SFP-BX4D
Label color: White

(2) Lever color: Green

1.5.2 SFP+

To use an SFP+ transceiver, insert it to the SFP slot of the Switch. The types of an SFP+ transceiver can be determined from the label or the color of the lever.

The SFP+ transceivers supported by the Switch are listed in *Table 1-17 List of SFP+ transceivers*.

Table 1-17 List of SFP+ transceivers

No.	Module name	Interface	Supported models
1	SFPP-SR	10 gigabit Ethernet 10GBASE-SR	AX2530S-24T4X#1 AX2530S-48T2X#2 AX2530S-24S4X#1 AX2530S-24S4XD#1
2	SFPP-LR	10 gigabit Ethernet 10GBASE-LR	
3	SFPP-ER	10 gigabit Ethernet 10GBASE-ER	

#1: Supported on ports 0/25 to 0/28 of an SFP+ slot.

#2: Supported on ports 0/51 to 0/52 of an SFP+ slot.

⚠CAUTION The Switch uses laser beams that are colorless and transparent, and invisible to the eye. Never look directly into the optical transceiver.

CAUTION

Do not attach any labels to a transceiver.

A label attached to the transceiver indicates that the transceiver is a standard product from ALAXALA or another manufacturer. However, such labels are attached where they do not interfere with heat dissipation from the transceiver or the mechanism that prevents the transceiver from coming loose from the cage.

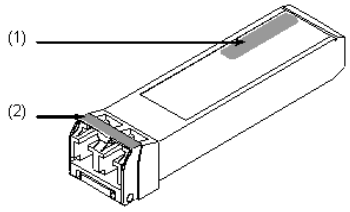
Attaching a label to a location that interferes with these functions could cause a malfunction in the transceiver or damage to the Switch.

NOTE

Make sure to use ALAXALA Networks Corporation standard products, which have labels as shown in the figures. If non-standard products are used, correct operation is not guaranteed.

(1) SFPP-SR

Figure 1-59 External appearance



(1) Label: AlaxalA SFPP-SR

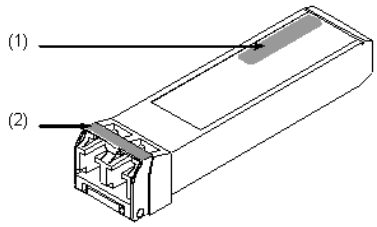
(2) Lever color: Ivory

NOTE

SFPP-SR is supported by four models: AX2530S-24T4X, AX2530S-48T2X, AX2530S-24S4X, and AX2530S-24S4XD.

(2) SFPP-LR

Figure 1-60 External appearance



(1) Label: AlaxalA SFPP-LR

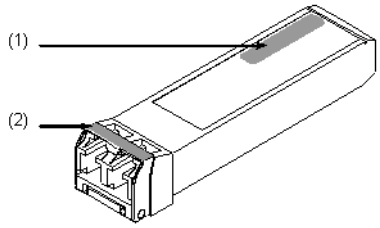
(2) Lever color: Blue

NOTE

SFPP-LR is supported by four models: AX2530S-24T4X, AX2530S-48T2X, AX2530S-24S4X, and AX2530S-24S4XD.

(3) SFPP-ER

Figure 1-61 External appearance



(1) Label: AlaxalA SFPP-ER

(2) Lever color: Red

NOTE

SFPP-ER is supported by four models: AX2530S-24T4X, AX2530S-48T2X, AX2530S-24S4X, and AX2530S-24S4XD.

1.5.3 Transceiver accessories

The item listed in *Table 1-18 Transceiver accessories* are shipped with the transceiver when it is shipped from the factory.

Table 1-18 Transceiver accessories

No.	Name	Quantity	Remarks
1	Bundled item checklist	1	
2	Safety information	1	

(1) Bundled item checklist

This document lists the items supplied with the transceiver when it is shipped from the factory.

(2) Safety information

This document includes important notes regarding safe use of the transceiver.

Be sure to read this document before use.

1.6 Direct attach cable

A direct attach cable is an interface cable with a transceiver connector on both ends. Descriptions on the label tell you which type of cable you have.

Direct attach cables are connected to the SFP+ slot of switches to connect them when they are a short distance from each other.

The direct attach cables supported by the Switch are listed in *Table 1-19 List of direct attach cables*.

Table 1-19 List of direct attach cables

No.	Name	Length #1	AWG No.	Minimum bend radius Single bend#2	Label	Supported models
1	SFPP-CU30C	30cm	30	20.5mm	AlaxalA SFPP-CU30C	AX2530S-24T4X#3 AX2530S-48T2X#4 AX2530S-24S4X#3 AX2530S-24S4XD #3
2	SFPP-CU1M	1 m	30	20.5 mm	AlaxalA SFPP-CU1M	
3	SFPP-CU3M	3 m	30	20.5 mm	AlaxalA SFPP-CU3M	
4	SFPP-CU5M	5 m	24	30.0 mm	AlaxalA SFPP-CU5M	

#1: Including the length of connectors (approx. 60mm each, approx. 120mm for both).

The cable length can be calculated by subtracting the length of connectors.

Ex) SFPP-CU30C cable length = 300mm – (approx. 60mm x 2) = approx. 180mm

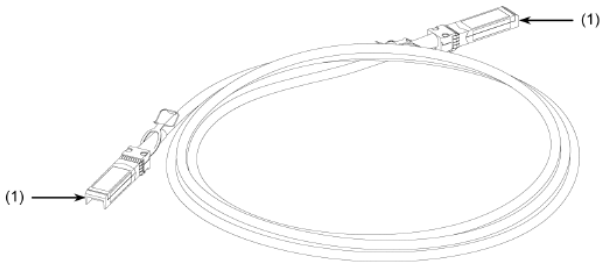
#2: Single bend indicates the bend radius when the cable is bent at a point.

#3: Supported in ports 0/25 to 0/28 of an SFP+ slot

#4: Supported in ports 0/51 to 0/52 of an SFP+ slot

(1) SFPP-CU30C, SFPP-CU1M, SFPP-CU3M, and SFPP-CU5M

Figure 1-62 Direct attach cable



(1) Connector

CAUTION

Do not attach any labels to a connector.

A label attached to the connector indicates that the connector is a standard product from ALAXALA Networks Corporation or some other manufacturer. However, such labels are attached where they do not interfere with heat dissipation from the connector or the mechanism that prevents the connector from coming loose from the cage.

Attaching a label to a location that interferes with these functions could cause a malfunction in the connector or damage to the Switch.

CAUTION

The switches below support SFPP-CU30C/CU1M/CU3M/CU5M. Use the cable only with the indicated switches. Not doing so could result in a Switch malfunction.

AX2530S-24T4X (Supported ports: 25 to 28)

AX2530S-24S4X (Supported ports: 25 to 28)

AX2530S-48T2X (Supported ports: 51 to 52)

AX2530S-24S4XD (Supported ports: 25 to 28)

NOTE

To prevent the cable from bending over time, fix the direct attach cable to the cable holder supplied with the rack so that the base of the cable is free from excessive stress.

NOTE

If you are connecting the Switch to a non-ALAXALA device by using a direct attach cable, verify the operation in advance.

NOTE

Make sure to use ALAXALA Networks Corporation standard products, which have labels as shown in the table. If non-standard products are used, correct operation is not guaranteed.

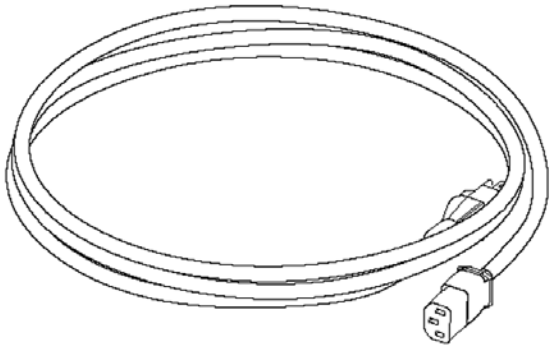
1.7 Power cable

(1) CBLACA

A 3.0 m, 100 V AC power cable that is sold separately.

Use this cable when you use an AC model at 100 V AC.

Figure 1-63 External appearance



⚠WARNING When using AC models at 100 V AC, use the supplied power cable or the optional ALAXALA power cable. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

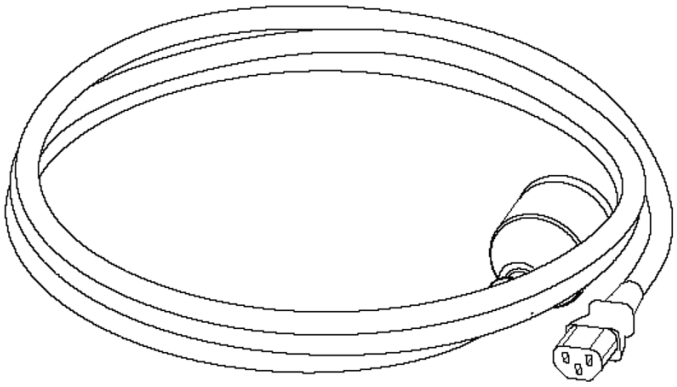
(2) CBL-A12

A 2.5 m, 200 V AC power cable that is sold separately.

Use this cable when you use an AC model at 200 V AC.

Note that the disconnection-preventing bracket that comes with the CBL-A12 cable can be used only for AX6300S, AX6600S, and AX6700S series switches. Included with the Switch is a cable clamp for fixing cables, which dispenses with a bracket for preventing disconnections.

Figure 1-64 External appearance



⚠WARNING When using AC models at 200 V AC, use the optional ALAXALA power cable or a cable that satisfies Alaxala Networks Corporation's specifications. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

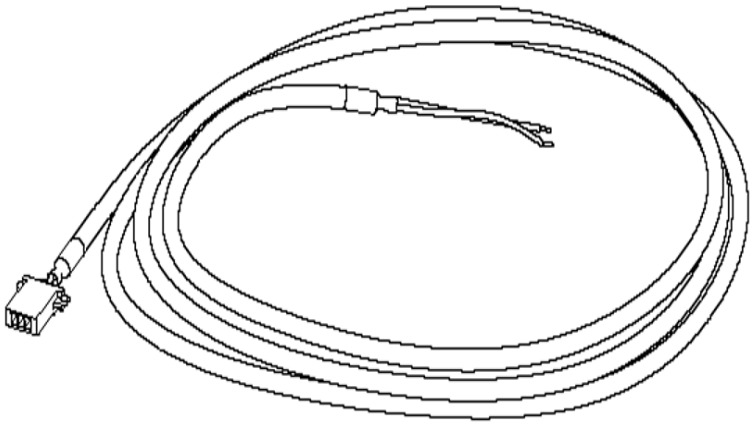
NOTE If the optional ALAXALA power cable cannot be used with your electrical power equipment, use a power cable that meets Alaxala Networks Corporation's specifications. For details about power cables that satisfy Alaxala Networks Corporation's specifications, see 2.3.2 Facilities for 200 V AC power supply units.

(3) CBLDCC

A -48 V DC, 3.0 m power cable that is sold separately.

Use this cable when you use the DC models.

Figure 1-65 External view



⚠WARNING When using the DC models, use the supplied power cable or the optional ALAXALA power cable.
Using another cable could result in fire or electric shock.
In addition, do not use the supplied cable with devices other than the DC models.
Doing so could result in fire or electric shock.

2. Preparation for Installation

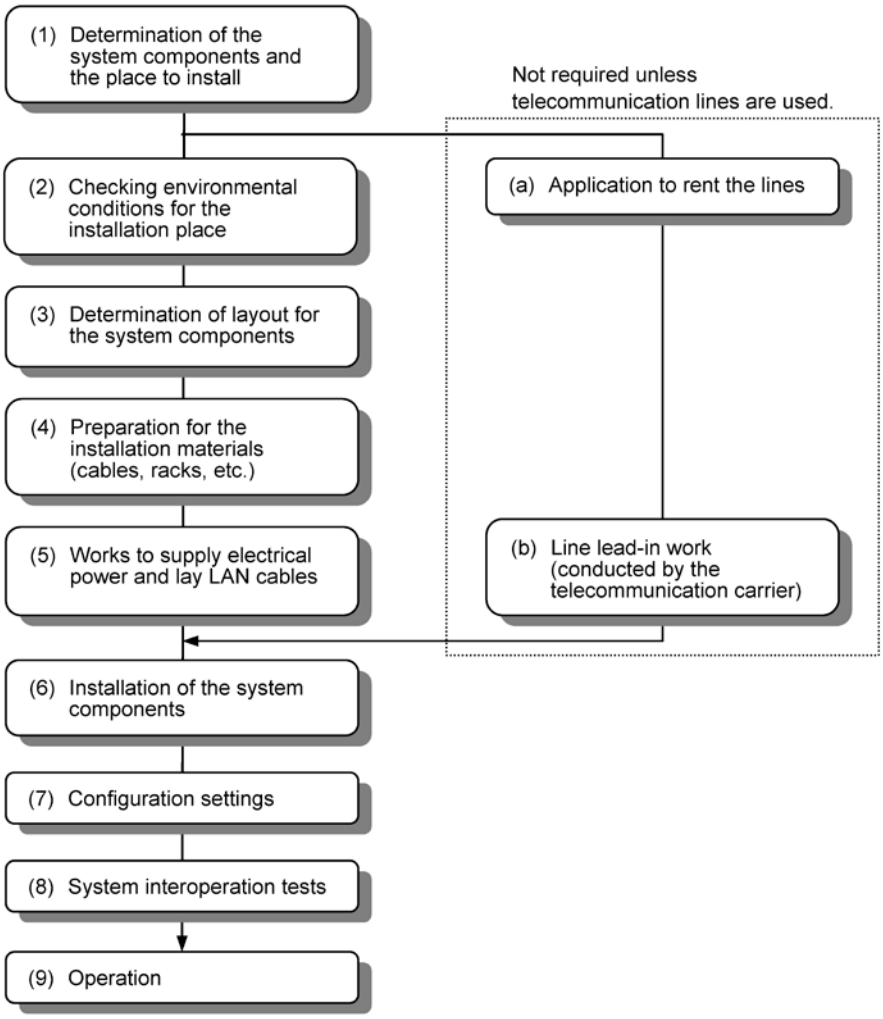
This chapter describes the environment conditions and preparations required for installation of the Switch. Before preparing for the installation, read this chapter carefully and be sure that you understand all instructions and notes within.

2.1 Preparation workflow

The workflow to prepare for installation is shown in *Figure 2-1 Flowchart of preparation for installation*.

Be sure to schedule enough time to complete the following work before installing the Switch: power supply work, communications equipment work, and laying down LAN cables.

Figure 2-1 Flowchart of preparation for installation



2.2 Installation conditions

This section describes the requirements for installing the Switch and an external redundant power unit. The installation environment must meet these requirements.

2.2.1 General installation requirements

The general installation requirements for the Switch are described below.

Table 2-1 General installation requirements for AX2500S series switches (AC model)

Entry		Model name				
		AX2530S-24T	**AX2530S -24T4X**	**AX2530S -48T**	**AX2530S -48T2X**	**AX2530S -24S4X**
Dimensions (W x D x H)[#1]		445 x 230 x 43 mm	445 x 300 x 43 mm			
Weight[#2]		3.0 kg	3.9 kg	4.2 kg	4.2 kg	3.9 kg
Input voltage	Rated breaker capacity	Single phase 100 to 120 V AC, 200 to 240 V AC ±10%[#3]				
	Variation range	90 to 127.2 V AC, 180 to 254.4 V AC				
Frequency		50/60 ± 3 Hz				
Maximum input current		0.7 A @ 100 V AC		1.0 A @ 100 V AC		
		0.4 A @ 200 V AC		0.5 A @ 200 V AC		
Maximum power consumption		40 W	57 W	80 W	85 W	75 W
Heat emission		144 kJ/h	205 kJ/h	288 kJ/h	306 kJ/h	270 kJ/h

#1: Excluding the dimensions of connectors.

#2: Weight of a Switch only. The weights of cables, rack fixtures, memory cards, and transceivers are excluded.

#3: The power cable supplied with the Switch supports only 100 V AC.

Table 2-2 General installation requirements for AX2500S series switches (DC model)

Entry	Model name		
	AX2530S -24TD	**AX2530S -48TD**	**AX2530S -24S4XD**
Dimensions (W x D x H)[#1]	445 x 230 x 43mm	445 x 300 x 43mm	

Weight[#2]		3.0 kg	4.2 kg	3.9 kg
Input voltage	Rated breaker capacity	-48 V DC		
	Variation range	-40 to -57 V DC		
Maximum input current		1.1 A @ -48 V DC	1.8 A @ -48 V DC	1.7 A @ -48 V DC
Maximum power consumption		41 W	71 W	66 W
Heat emission		148 kJ/h	256 kJ/h	238 kJ/h

#1: Excluding the dimensions of connectors.

#2: Weight of a Switch only. The weights of cables, rack fixtures, memory cards, and transceivers are excluded.

Table 2-3 General installation requirements for external redundant power units (EPU)

Entry		**External redundant power unit**	
		EPU-A	**EPU-D**
Dimensions (W x D x H)[#1]		445 x 440 x 43mm	
Weight[#2]		12 kg or less	9.6 kg
Input voltage	Rated breaker capacity	Single phase 100 to 120 V AC	-48 V DC
	Variation range	90 to 127.2 V AC	-40 to -57 V DC
Frequency		50/60 ±3 Hz	--
Maximum input current		10.5 A @ 100 V AC	19.2 A @ -48 V DC
Maximum power consumption		1050 W	768 W
Heat emission[#3]		1534 kJ/h	605 kJ/h

#1: Excluding the dimensions of connectors and handles.

#2: Weight of the unit with maximum number of power supply modules. The weights of cables and rack fixtures are excluded.

#3: Heat emission of the Switch only.

2.2.2 Environmental requirements

The environment requirements for the Switch are described below.

Table 2-4 Environmental requirements (AC model)

Entry		Specifications				
		Device				
		AX2530S -24T	**AX2530S -24T4X**	**AX2530S -48T**	**AX2530S -48T2X**	**AX2530S -24S4X**
Noise[#1]		45 dB or less				
Vibration		2.45 m/s^2 or less				
Dust[#2]		0.15 mg/m^3 or less				
Temperature	Operating	0 to 45°C	0 to 50°C			
	Not operating	−10 to 60°C				
	During storage and transportation	− 25 to 65°C				
Humidity[#3]	Operating	10 to 90% RH				
	Not operating	8 to 90% RH				
	During storage and transportation	5 to 90% RH				

#1: Actual measurement according to ISO 7779.

#2: According to JIS Z 8813 Measuring Methods for Suspended Particulate Matter Concentration in Air.

#3: No condensation

Table 2-5 Environmental requirements (DC model, external redundant power unit (EPU))

Entry	Specifications				
	Device			External redundant power unit	
	AX2530S -24TD	**AX2530S -48TD**	**AX2530S -24S4XD**	**EPU-A**	**EPU-D**
Noise[#1]	45 dB or less				
Vibration	2.45 m/s^2 or less				
Dust[#2]	0.15 mg/m^3 or less				

Temperature	Operating	0 to 45°C	0 to 50°C	0 to 40°C (Recommended value: 23 to 28°C)	0 to 50°C
	Not operating	−10 to 60°C		-10 to 43°C	-10 to 60°C
	During storage and transportation	− 25 to 65°C		-25 to 65°C	-25 to 65°C
Humidity[#3]	Operating	10 to 90% RH		10 to 85% (Recommended value: 45 to 55%)	10 to 90% RH
	Not operating	8 to 90% RH		8 to 85%	8 to 90% RH
	During storage and transportation	5 to 90% RH		5 to 85%	5 to 90% RH

#1: Actual measurement according to ISO 7779.

#2: According to JIS Z 8813 Measuring Methods for Suspended Particulate Matter Concentration in Air.

#3: No condensation

2.3 Power facilities

2.3.1 Facilities for 100 V AC

(1) Electrical outlet standards

Use an outlet shown below, that conforms to the JIS and NEMA standards. This type of electrical outlet is available from general contractors for electrical installation.

Table 2-6 Electrical outlet standards

Standards		Specifications
JIS	C-8303	15 A 125 V, two-pin grounded outlet
NEMA	5-15R	

Figure 2-2 Two-pin grounded outlet (15 A 125 V)

⚠WARNING Always use a grounded power outlet for an AC model. Using the Switch without grounding could result in electric shock or failures due to electrical noise.

(2) Distribution board

Use circuit breakers on the branch circuit supplying power to the Switch. Select a circuit breaker that is equal to or less than the rated breaking capacity shown below by taking into consideration input current, and inrush current and time.

- Rated breaking capacity: 15 AT with single phase 100 V AC (for a 15 A circuit)

For details about the input current of a Switch, see *2.2.1 General installation requirements*.
For details about the inrush current and time of a Switch, see *Table 2-7 Inrush current*.

Table 2-7 Inrush current

Series	Model	Current (peak value)	Time
AX2500S	AX2530S-24T AX2530S-24T4X AX2530S-48T AX2530S-48T2X AX2530S-24S4X	20 A	10 ms or less
External redundant power unit	EPU-A	30 A	10 ms or less

NOTE For easy operation, the distribution board should be installed in the same room as the Switch or in an adjacent room.

(3) Requirements for incoming current to the distribution board

Ensure that the capacity for incoming current to the distribution board is greater than the operating current of the circuit breaker.

⚠WARNING Ensure that the capacity for incoming current to the distribution board is greater than the operating current of the circuit breaker. If it is not, the circuit breaker might not operate properly in the event of a failure, which could result in fire.

NOTE Generally, the breaker operating current is greater than the rated current. Check the specifications of the circuit breaker.

In addition, when a Switch is turned on, inrush current shown in *Table 2-7 Inrush current* flows. Consider measures for avoiding a voltage drop in the power facility caused by the inrush current.

CAUTION Turning on the Switch causes inrush current. Ensure that voltage drop does not occur in the power facility due to the inrush current. Voltage drops affect not only the Switch, but also the devices connected to the same power facility.

2.3.2 Facilities for 200 V AC

(1) AC power cable

An optional 200 V AC power cable is available that allows the Switch to be used in a 200 V AC environment. For information about the 200 V AC power cable, see *1.7 Power cable*.

NOTE If the optional ALAXALA power cable cannot be used with your electrical power equipment, use a power cable that meets Alaxala Networks Corporation's specifications.

Use the power cable described below.

Table 2-8 Specifications for the AC power cable

Item	Connector on the Switch side	Cable	Plug on the outlet side
Rated breaker capacity	250 V 10 A or higher PSE approved product	250 V 10 A or higher PSE approved product	250 V 10 A or higher PSE approved product
Type		Three cores	Prepare a plug suitable for the outlet.

⚠WARNING When using AC models at 200 V AC, use the optional ALAXALA power cable or a cable that satisfies Alaxala Networks Corporation's specifications. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

(2) Electrical outlet standards

When using the optional ALAXALA 200 V AC power cable, use the type of electrical outlet described below. This type of electrical outlet is available from general contractors for electrical installation.

Table 2-9 Electrical outlet standards

Standards		Specifications
JIS	C-8303	250 V 20 A grounding double-pole twist-locking socket
NEMA	L6-20R	

Figure 2-3 Grounding double-pole twist-locking socket (250 V 20 A)

If you do not want to use the ALAXALA optional 200 V AC power cable, use the outlet below. This type of electrical outlet is available from general contractors for electrical installation.

Grounding double-pole twist-locking socket: 250 V 10 A or higher

⚠WARNING Always use a grounded power outlet for an AC model. Using the Switch without grounding could result in electric shock or failures due to electrical noise.

(3) Distribution board

Use circuit breakers on the branch circuit supplying power to the Switch. Select a circuit breaker that is equal to or less than the rated breaking capacity shown below by taking into consideration input current, and inrush current and time.

- Rated breaking capacity: 10 AT with single phase 200 V AC (for a 10 A circuit)

For details about the input current of a Switch, see *2.2.1 General installation requirements*.
For details about the inrush current and time of a Switch, see *Table 2-10 Inrush current*.

Table 2-10 Inrush current

Series	Model	Current (peak value)	Time
AX2500S	AX2530S-24T AX2530S-24T4X AX2530S-48T AX2530S-48T2X AX2530S-24S4X	45 A	10 ms or less

NOTE

For easy operation, the distribution board should be installed in the same room as the Switch or in an adjacent room.

(4) Requirements for incoming current to the distribution board

Ensure that the capacity for incoming current to the distribution board is greater than the operating current of the circuit breaker.

⚠WARNING

Ensure that the capacity for incoming current to the distribution board is greater than the operating current of the circuit breaker. If it is not, the circuit breaker might not operate properly in the event of a failure, which could result in fire.

NOTE

Generally, the breaker operating current is greater than the rated current. Check the specifications of the circuit breaker.

In addition, when a Switch is turned on, inrush current shown in *Table 2-10 Inrush current* flows. Consider measures for avoiding a voltage drop in the power facility caused by the inrush current.

CAUTION

Turning on the Switch causes inrush current. Ensure that voltage drop does not occur in the power facility due to the inrush current. Voltage drops affect not only the Switch, but also the devices connected to the same power facility.

2.3.3 Facilities for -48 V DC (DC model)

⚠WARNING

When using DC power, use a power supply for which the primary side and the secondary side are insulated. Using a power supply that is not insulated could result in electric shock.

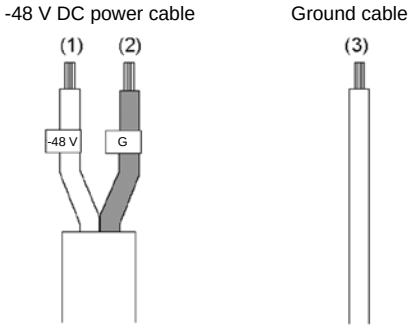
(1) DC power cable

Use the supplied power cable.

The DC power cable is supplied with no cable end treatment on the power supply unit side. The specifications of the DC power cable for the electrical power equipment are shown in *Figure 2-4 Specifications of the DC power cable (for electrical power equipment)*. Fit the cable end properly with terminals or by some other means to connect to your electrical

power equipment.

Figure 2-4 Specifications of the DC power cable (for electrical power equipment)



(1) -48 V (white)

(2) 0V (red)

(3) Ground (green/yellow)

Table 2-11 Specifications of -48 V DC power cable

Cable Type	Cable specifications	
	Number of core wires	AWG No.
DC power cable	2	16
Ground cable	1	14

⚠WARNING

Connecting or disconnecting the DC power cable to the power supply unit must be performed by a trained technician or maintenance personnel. Terminal connections are required for connection of the DC power cable to the power facility. For this reason, incorrect handling of the DC power cable could result in fire or electric shock.

⚠WARNING

Before connecting or disconnecting a DC power cable, set the power supply circuit breaker to OFF. Connecting or disconnecting the cable with the circuit breaker set to ON could result in an electric shock.

⚠WARNING

Cover the G and -48 V terminals of the DC power cable (on the electrical power equipment side) with an insulation jacket. Using the terminals without an insulation cover could result in electric shock.

⚠WARNING

For the DC models, make sure to connect the ground cable. Failure to do so might not only result in electric shock, but it might also introduce unwanted electrical noise that could cause a Switch failure.

(2) Distribution board

Use circuit breakers on the branch circuit supplying power to the Switch. Select a circuit breaker that is equal to or less than the rated breaking capacity shown below by taking into consideration input current, and inrush current and time.

- For the Switch Rated breaking capacity: 15 AT (for a 15 A circuit) or less
- For external redundant power units (EPU-D) Rated breaking capacity: 25 AT (for a 25 A circuit) or less

For details about the input current of a Switch, see *2.2.1 General installation requirements*.
For details about the inrush current and time of a Switch, see *Table 2-12 Inrush current*.

Table 2-12 Inrush current

Series	Model	Current (peak value)	Time
AX2500S	AX2530S-24TD AX2530S-48TD AX2530S-24S4XD	10A	10 ms or less
External redundant power unit	EPU-D	20A	10 ms or less

NOTE

For easy operation, it is recommended that the distribution board should be installed in the same room as the Switch or the adjacent room.

(3) Requirements for incoming current to the distribution board

Ensure that the capacity for incoming current to the distribution board is greater than the operating current of the circuit breaker.

⚠WARNING

Ensure that the capacity for incoming current to the distribution board is greater than the operating current of the circuit breaker. If it is not, the circuit breaker might not operate properly in the event of a failure, which could result in a fire.

NOTE

Generally, the breaker operating current is larger than the rated current. Check the specifications of the circuit breaker.

In addition, if a Switch is turned on, the inrush current described in *Table 2-12 Inrush current* flows. Consider measures to prevent voltage reduction of the power supply due to inrush current.

CAUTION

Turning on the Switch causes an inrush current. Ensure that voltage drop does not occur in the power facility due to the inrush current. Voltage drops affect not only the Switch, but also the devices connected to the same electrical power equipment.

(4) Providing two power supply systems to the electrical power equipment

Using the optional DC power cable, two power supply systems can be connected and used.

2.4 Notes on electric noise

Electric noise emitted by other devices can cause failures.

Note the following points when designing a plan for power facilities:

- The branch circuit of the power supply to the Switch should not be connected to devices that use a relay, micro-switches, or other means to power them on and off repeatedly, such as air conditioners.
- The service ground terminal of the Switch (Type D grounding) should be directly connected to the ground plate or, if possible, to a dedicated ground system for the Switch.
- Embed a circuit to prevent noise generation into devices that emit electrical noise.
- The cables connected to the Switch can be broadly categorized into power cables and signal cables, which have different electrical characteristics. Avoid bundling or twisting the two types of cables together when laying the cables.
- Do not route communication lines along the power cables.

2.5 Leakage current

The Switch is equipped with a noise filter to prevent failure due to electric noise. As a result, a leakage current flows through the protective ground line (Type D grounding).

Each Switch has at most 1 m A of leakage current. Be sure to consider whether the installation of a residual current circuit breaker is required for compliance with the Fire Service Act or other legislation.

2.6 Environmental requirements

(1) Dust

Do not install the Switch in a humid or dusty place. Dust requirements for the Switch are as follows:

- Airborne dust concentration: 0.15 mg/m^3 or less (according to JIS Z 8813 Measuring Methods for Suspended Particulate Matter Concentration in Air: General Requirements)

NOTE

Generally, areas around printers or with large numbers of people passing by contain high levels of toner or dust. Do not install the Switch in such places.

(2) Corrosive and flammable gases

Install the Switch in a place free of corrosive or flammable gases. If the Switch is installed where it is exposed to corrosive gases, the Switch will deteriorate and become unreliable.

(3) Floor surface material

The Switch can be installed in an ordinary office room. However, the floor surface should have the following properties:

- Fireproof
- Dust-resistant

(4) Direct sunlight

Do not expose the Switch to direct sunlight.

(5) Water

When cleaning the floor, do not allow the Switch to be exposed to water.

(6) Electromagnetic interference

Please note that when using high-frequency devices near the Switch, waves emitted by such devices might interfere with normal operation of the Switch.

The Switch generates weak high-frequency radio waves that might affect indoor antennas for television, radio, and transceivers within 30 m of the Switch.

(7) Cable protection

Route the cables through ducts or cover them for protection.

If cables are unprotected, mice or other animals might bite or chew them, leading to cable disconnection.

Fiber-optic cables require special handling; lay the cables with a bend radius of 100 mm or more along the major axis and 50 mm or more along the minor axis, and protect them with metal covers.

For fiber-optic cables with the required number of cores, ensure that they are protected against repeated mechanical stress due to bending, stretching, compression, and straightening when laying the cables, and ensure that they are protected against environmental stress after installation.

(8) Spraying

When spraying pesticide or disinfectant in the room where the Switch is installed, cover the Switch beforehand to prevent direct exposure to chemicals.

(9) Earthquake countermeasures

Earthquakes can cause Switches to shift, fall over, or fall out of windows, possibly resulting in bodily injury or death. Take sufficient precautions to prevent the Switch from shifting or falling over.

NOTE

The actual vibration affecting a Switch is different from the vibrations at ground level and varies depending on the amplification factor determined by the structure of the building and the floor level of the room containing the Switch. Generally, the fifth floor and above of a nine-story, medium-rise building experiences two to three times the amount of shaking than that at ground level.

Examples of effects observed in past earthquakes:

- The position of Switches shifting from 10 to 30 cm
- Racks fell over.
- Objects on higher furnishings in the room falling on Switches

2.7 Installation location

The Switch can be installed on either a desktop or a 19-inch cabinet rack.

(1) On a desktop

When installing the Switch on a desktop, use a level, stable, and flat surface. When installing the Switch on a desktop, consider the requirements described in *Table 2-13 Requirements for installing on a desktop*.

Table 2-13 Requirements for installing on a desktop

Item	Requirement
Air intake and exhaust space	Ensure at least 50 mm of space around all air vents of the Switch (For details, see *2.9 Cooling requirements*).
Cable space	Ensure 100 mm of space in front of and behind the Switch to accommodate cables.
Device noise	For details about device noise, see *2.10 Device noise*.

⚠CAUTION

When installing the Switch on a table, position the Switch horizontally on a worktable strong enough to bear the weight of the Switch. Placing the Switch in an unstable location, such as on an unsteady or tilting surface, might cause the Switch to fall, resulting in injury.

CAUTION

Heat dissipates from the top panels of the AX2530S-24T (fanless model), AX2530S-24TD (fanless model), AX2530S-48T (when using the semi-fanless model), and AX2530S-48TD (when using the semi-fanless model). To ensure adequate heat dissipation, do not stack another device on top of or below the Switch.

When a Switch is installed in a rack, ensure 1U or more of space between the switch and other devices.

(2) 19-inch cabinet rack

When mounting the Switch on a rack, be sure to satisfy the rack requirements described in *Table 2-14 Rack requirements*. In addition, provide the items listed in *Table 2-15 Items required when mounting the Switch on a rack*.

Table 2-14 Rack requirements

Item	Requirement
Rack standard	19-inch cabinet rack conforming to the EIA standard
Air intake and exhaust space	Ensure 50 mm or more of space between all air vents of the Switch and the rack pillars and side walls (For details, see *2.9 Cooling requirements*.)

Item	Requirement
Cable space	Ensure 100 mm of space in front of and behind the Switch to accommodate cables.

Table 2-15 Items required when mounting the Switch on a rack

Item	Requirement
Screws supplied with the rack	M5 screws x 4

NOTE

The rack mounting brackets included in the accessories are compatible with M5 screws. Use a rack compatible with M5 screws.

2.8 Maintenance area

Ensure a proper amount of space for Switch maintenance as described below.

(1) Maintenance area for a desktop installation

For a desktop installation, the required area for maintenance varies depending on the model. For the required maintenance area in front of and in the rear the Switch, see *Table 2-16 Front and rear maintenance area*.

Figure 2-5 Maintenance area for a desktop installation

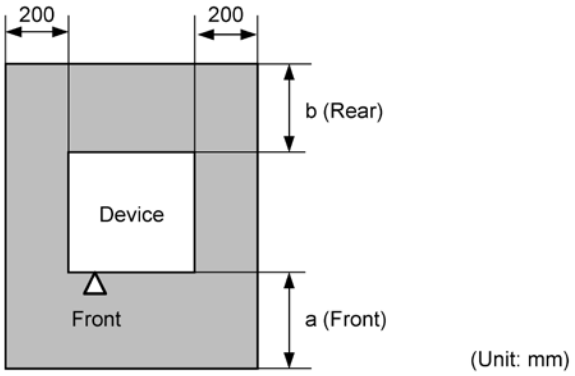


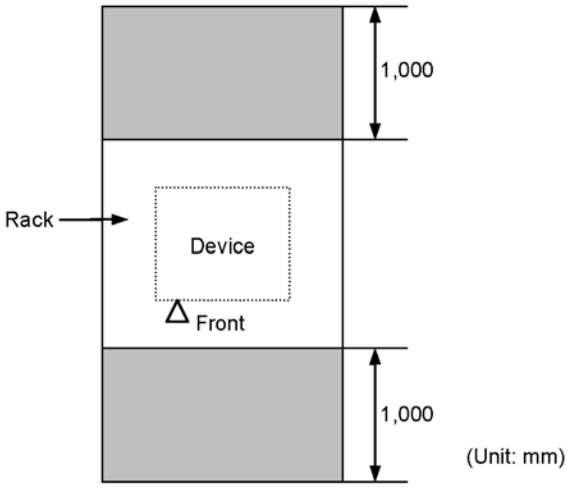
Table 2-16 Front and rear maintenance area

Device	a (Front)	b (Rear)
AX2500S series	200	200
External redundant power unit	400[#1]	200

#1: Required when installing and removing a power supply module.

(2) Maintenance area for a rack installation

Figure 2-6 Maintenance area for a rack installation



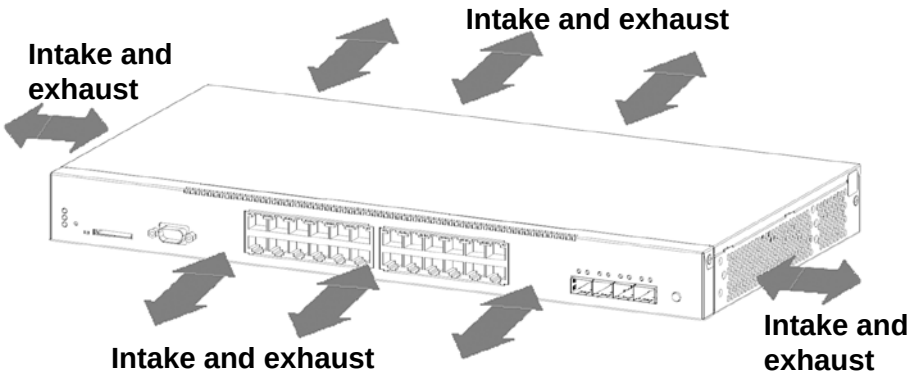
2.9 Cooling requirements

2.9.1 Airflow

(1) Switch (AX2530S-24T and AX2530S-24TD)

The airflow into and out of the Switch is shown in *Figure 2-7 Airflow for AX2530S-24T and AX2530S-24TD*.

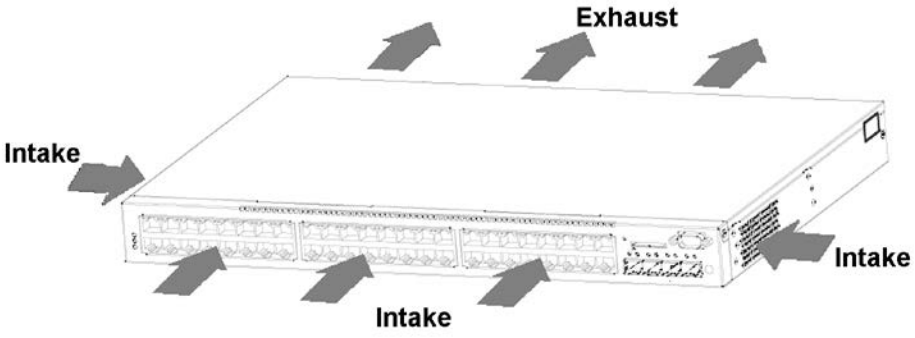
Figure 2-7 Airflow for AX2530S-24T and AX2530S-24TD



(2) Switch (AX2530S-24T4X, AX2530S-48T, AX2530S-48T2X, AX2530S-24S4X, AX2530S-48TD, and AX2530S-24S4XD)

The airflow into and out of the Switch is shown in *Figure 2-8 Airflow for AX2530S-24T4X, AX2530S-48T, AX2530S-48T2X, AX2530S-24S4X, AX2530S-48TD, and AX2530S-24S4XD*.

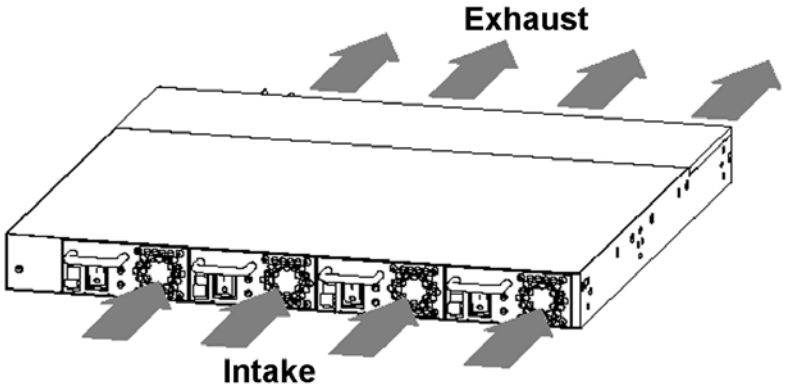
Figure 2-8 Airflow for AX2530S-24T4X, AX2530S-48T, AX2530S-48T2X, AX2530S-24S4X, AX2530S-48TD, and AX2530S-24S4XD



(3) External redundant power unit (EPU)

The airflow into and out of an external redundant power unit is shown in *Figure 2-9 Airflow for an external redundant power unit (EPU)*.

Figure 2-9 Airflow for an external redundant power unit (EPU)



2.9.2 Cooling requirements for a desktop installation

Ensure at least 50 mm of space for airflow on all sides of the Switch.

CAUTION

Do not obstruct the ventilation slots of the Switch. Doing so could cause heat to accumulate inside the Switch, and could result in a fire. Maintain a space of at least 50 mm around the ventilation slots.

NOTE

When equipment with forced air cooling systems is installed near the Switch, interference due to the airflow from multiple devices can adversely affect the cooling of the Switch, which might result in a malfunction. Maintain enough space or place a partition between equipment to prevent airflow interference.

Note that if a partition is installed, it must be at least 50 mm away from the side panel of the Switch.

- The exhaust airflow from nearby equipment might be drawn into the Switch, and the Switch intake air temperature might exceed the environment requirements.
- When nearby equipment has too strong an intake or exhaust air system, reverse air pressure might affect Switch airflow, decreasing the performance of internal cooling.

2.9.3 Cooling requirements for a rack installation

Ensure at least 50 mm of space between the Switch and all structural components of the rack, including the side walls, pillars, guide rails, and front and rear doors.

CAUTION

Do not obstruct the ventilation slots of the Switch. Doing so could cause heat to accumulate inside the Switch, and could result in a fire. Maintain a space of at least 50 mm around the ventilation slots.

CAUTION

Heat dissipates from the top panels of the AX2530S-24T (fanless model), AX2530S-24TD (fanless model), AX2530S-48T (when using the semi-fanless model), and AX2530S-48TD (when using the semi-fanless model). To ensure adequate heat dissipation, do not stack another device on top of or below the Switch.

When a Switch is installed in a rack, ensure 1U or more of space between the switch and other devices.

NOTE

Be sure that the temperature inside the rack is within the operating temperature specified for the Switch. Otherwise, the Switch might malfunction or fail. To bring the temperature inside the rack within the temperature requirements of the Switch, consider the following methods:

- Install fans inside the rack for sufficient ventilation.
- To allow good ventilation, replace the front and rear door panels with panels that have punched holes for cooling, or remove the doors.
- If necessary, reduce the number of devices in the rack or mount the Switch under other equipment that emits heat.

NOTE

When equipment with forced air cooling systems is installed above or below the Switch, interference due to the airflow from nearby equipment can adversely affect the cooling of the Switch, which might result in a malfunction. Maintain enough space between equipment installed in the rack to prevent airflow interference.

- The exhaust airflow from nearby equipment might be drawn into the Switch, and the Switch air intake temperature might exceed the environmental requirements.
- When nearby equipment has too strong an intake or exhaust air system, reverse air pressure might affect the Switch airflow, decreasing the performance of internal cooling.

2.10 Device noise

Switches except the AX2530S-24T and AX2530S-24TD contain cooling fans that generate noise. Consider this noise when planning the layout for the installation of Switches.

For details about the noise emitted by the Switch, see *2.2 Installation conditions*.

NOTE

Some examples of a layout that takes noise into account are given below.

- Separate the area by using partitions or shelves to block the direct propagation of noise.
- Do not install the Switch in frequently used areas (such as in offices, in meeting rooms, or on desks).
- Install the Switch in a corner of the office area.
- Install the Switch in a rack.
- Avoid installation near windows or other objects that easily reflect sound.

3. Preparation of Interface Cables and Terminals

This chapter describes the interface cables and the terminals used for the Switch.

3.1 Connecting interface cables and terminals

The applicable interfaces and connecting cables for the Switch are listed in *Table 3-1 Interface cables and terminal connection cables*.

The customer is responsible for obtaining these cables.

Table 3-1 Interface cables and terminal connection cables

Port/slot	Transceiver	Interface	Cable	Connector
10/100/1000BASE-T port	--	10BASE-T	UTP cable (Category 3 or higher)	RJ45 connector
		100BASE-TX	UTP cable (Category 5 or higher)	
		1000BASE-T	UTP cable (Enhanced Category 5 or higher)	
SFP slot	SFP-T	10BASE-T	UTP cable (Category 5 or higher)	
		100BASE-TX		
		1000BASE-T	UTP cable (Enhanced Category 5 or higher)	
SFP+ slot	SFP-T	1000BASE-T	UTP cable (Enhanced Category 5 or higher)	
SFP slot	SFP-FX	100BASE-FX	Multi-mode optical fiber cable (core/cladding diameter = 50/125 μm)	LC2 core connector
			Multi-mode optical fiber cable (core/cladding diameter = 62.5/125 μm)	
	SFP-SX 2	1000BASE-SX2	Multi-mode optical fiber cable (core/cladding diameter = 50/125 μm)	
			Multi-mode optical fiber cable (core/cladding diameter = 62.5/125 μm)	
SFP slot SFP+ slot	SFP-SX	1000BASE-SX	Multi-mode optical fiber cable (core/cladding diameter = 50/125 μm)	

Port/slot	Transceiver	Interface	Cable	Connector
			Multi-mode optical fiber cable (core/cladding diameter = 62.5/125 μm)	
	SFP-LX	1000BASE-LX	Multi-mode optical fiber cable[#1] (core/cladding diameter = 50/125 μm)	
			Multi-mode optical fiber cable[#1] (core/cladding diameter = 62.5/125 μm)	
			Single mode optical fiber cable (core/cladding diameter = 10/125 μm)	
	SFP-LH	1000BASE-LH	Single mode optical fiber cable (core/cladding diameter = 10/125 μm)	
			Single mode (DSF) optical fiber cable (core/cladding diameter = 8/125 μm)	
	SFP-LHB	1000BASE-LHB	Single mode optical fiber cable (core/cladding diameter = 10/125 μm)	
			Single mode (DSF) optical fiber cable (core/cladding diameter = 8/125 μm)	
	SFP-BX1U	1000BASE-BX10-U	Single mode optical fiber cable (core/cladding diameter = 10/125 μm)	LC1 core connector
	SFP-BX1D	1000BASE-BX10-D		
	SFP-BX4U	1000BASE-BX40-U		
	SFP-BX4D	1000BASE-BX40-D		
SFP+ slot	SFPP-SR	10GBASE-SR	Multi-mode optical fiber cable (core/cladding diameter = 50/125 μm)	LC duplex connector

Port/slot	Transceiver	Interface	Cable	Connector
			Multi-mode optical fiber cable (core/cladding diameter = 62.5/125 μm)	
	SFPP-LR	10GBASE-LR	Single mode optical fiber cable (core/cladding diameter = 10/125 μm)	
	SFPP-ER	10GBASE-ER		
	SFPP-CU30C	--	--	--
	SFPP-CU1M	--	--	--
	SFPP-CU3M	--	--	
	SFPP-CU5M	--	--	
CONSOLE port	--	RS232C	RS232C crossover cable	D-sub (9-pin)

#1: Some kinds of multi-mode optical fiber might increase the BER (bit error rate) when used with 1000BASE-LX. In this case, proper communication can be established by using the mode-conditioning patch code.

NOTE

To allow for Switch maintenance, fiber optic cables should be the necessary length (3 m), and the excess cabling should be bundled near the Switch. When fiber optic cables and other interface cables are used together, be sure to avoid applying excessive stress on the fiber optic cables.

NOTE

Always have extra fiber optic cables ready in addition to the ones in use.

NOTE

For details about interfaces, see *Appendix B Physical Specifications of Network Interfaces*.

3.2 Network interface specifications

3.2.1 Ethernet 10/100/1000BASE-T

(1) Port mode setting

Any of the modes below can be specified for Ethernet 10/100/1000BASE-T ports. The factory default setting is auto-negotiation.

- Auto-negotiation (default)
- 100BASE-TX full duplex (fixed)
- 100BASE-TX half duplex (fixed)
- 10BASE-T full duplex (fixed)
- 10BASE-T half duplex (fixed)

NOTE

The following modes are applicable under auto-negotiation on the 10/100/1000BASE-T port:

- 1000BASE-T full duplex
- 100BASE-TX full duplex
- 100BASE-TX half duplex
- 10BASE-T full duplex
- 10BASE-T half duplex

NOTE

As for 1000BASE-T, the fixed settings and half-duplex communication are not supported.

(2) Flow control functionality

This function is enabled when the connection is full duplex.

(3) Auto MDI/MDI-X functionality

This functionality is enabled when auto-negotiation is specified.

When settings are fixed, MDI-X is always selected.

3.2.2 Ethernet 100BASE-FX

(1) Port mode setting

The available mode setting for Ethernet 100BASE-FX ports is fixed to full duplex.

NOTE

Auto-negotiation and half-duplex communication are not supported.

NOTE

100BASE-FX is supported by the AX2530S-24S4X and AX2530S-24S4XD models.

(2) Flow control functionality

This function is enabled when the connection is full duplex.

3.2.3 Ethernet 1000BASE-X

(1) Port mode setting

Either of the following modes can be specified for the Ethernet 1000BASE-X port. The factory default setting is auto-negotiation.

- Auto-negotiation (default)
- 1000BASE-X full duplex (fixed)

NOTE

Half-duplex communication is not supported.

(2) Flow control functionality

This function is enabled when the connection is full duplex.

3.2.4 Ethernet 10GBASE-R

(1) Port mode setting

The available mode setting for Ethernet 10GBASE-R ports is fixed to full duplex.

NOTE

Auto-negotiation and half-duplex communication are not supported.

NOTE

10GBASE-R is supported by four models: AX2530S-24T4X, AX2530S-48T2X, AX2530S-24S4X, and AX2530S-24S4XD.

(2) Flow control functionality

This function is enabled when the connection is full duplex.

4. Installing, Adding, Replacing, or Removing Switches and Devices

This chapter provides the procedures for installing, adding, replacing, or removing devices, Switches, EPUs, and power supply modules.

4.1 Required tools

The following tools are necessary to install, add, replace, or remove a Switch and devices:

No. 1 Phillips screwdriver:

Used to attach the rack mounting brackets to the Switch.

No. 2 Phillips screwdriver:

Use this screwdriver to install or remove the device to or from the rack.

Also, use this screwdriver to connect or disconnect the ground cable to or from the DC model and the external redundant power unit (EPU-D).

Antistatic wrist strap:

Used to protect the equipment from electrostatic discharge.

4.2 Read prior to operation

⚠CAUTION	When installing the Switch on a table, position the Switch horizontally. If the Switch is positioned vertically or leaned against a wall, the Switch might fall, which could result in injury or damage.
⚠CAUTION	When installing the Switch on a table, position the Switch horizontally in a stable location. Placing the Switch in an unstable location, such as on an unsteady or tilting surface, might cause the Switch to fall, resulting in injury.
⚠CAUTION	Do not place any objects on the Switch. Doing so could result in a Switch failure. Furthermore, the Switch might fall, or become unbalanced, resulting in injury.
CAUTION	Do not obstruct the ventilation slots of the Switch. Doing so could cause heat to accumulate inside the Switch, and could result in a fire. Maintain a space of at least 50 mm around the ventilation slots.
CAUTION	Be sure to wear an antistatic wrist strap. If you handle the Switch without wearing an antistatic wrist strap, the Switch might be damaged by static electricity.
NOTE	Place the Switch where the LEDs can be easily seen.
NOTE	Route the cables through ducts or cover them for protection. Fiber optic cables require special handling; lay the cables with a bend radius of 100 mm or more along the major axis and 50 mm or more along the minor axis, and protect them with metal covers.
NOTE	To allow for Switch maintenance, fiber optic cables should be the necessary length (3 m), and the excess cabling should be bundled near the Switch. When fiber optic cables and other interface cables are used together, be sure to avoid applying excessive stress on the fiber optic cables.

4.3 Installing the Switch

This section describes placing the Switch on a table or mounting it on a rack. Follow the procedures below.

4.3.1 Installing a Switch on a desktop

The Switch can be placed on a level, stable, flat surface. To do so:

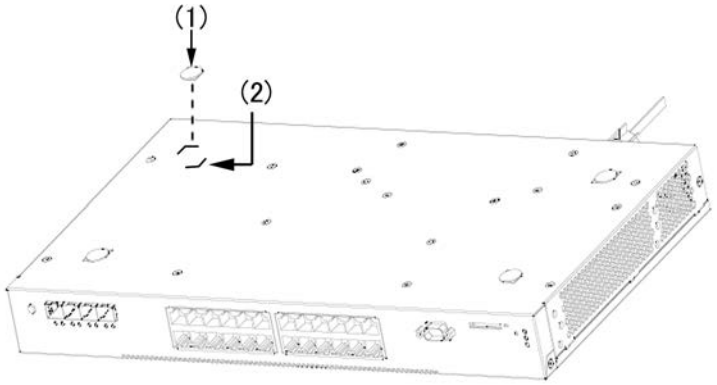
Step 1

Place the Switch upside down on a flat surface.

Step 2

Attach the four rubber pads into the marks on the bottom of the Switch

Figure 4-1 Attaching the rubber pads



(1) Rubber pad

(2) Mark

NOTE Make sure that the places to attach the rubber pads are clean. If not, wipe them clean with a dry cloth before attaching the rubber pads.

Step 3

Flip the Switch back around, and then place it on the table.

4.3.2 Mounting on a rack

The Switch can be mounted onto a 19-inch cabinet rack that conforms to the EIA Standards. The procedure for mounting on a rack is described below.

NOTE The rack mounting brackets included in the accessories are compatible with M5 screws. Use a rack compatible with M5 screws.

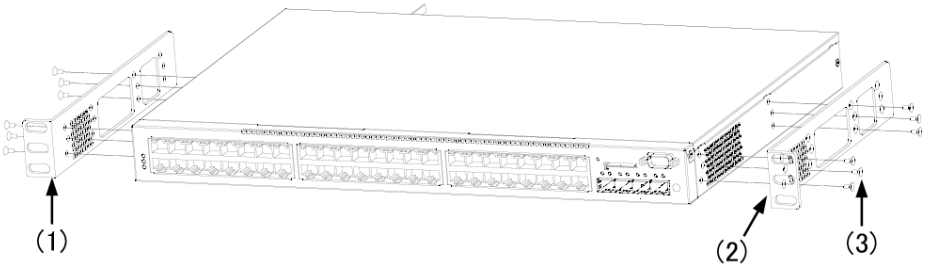
NOTE

For rack-mounting requirements, see *2.7 Installation location (2) 19-inch cabinet rack*.

Step 1

Attach the rack mounting brackets to the Switch.

Figure 4-2 Attaching the rack mounting brackets



(1) Rack mounting bracket (L)

(2) Rack mounting bracket (R)

(3) Screws (M3 x 6, 12 screws)

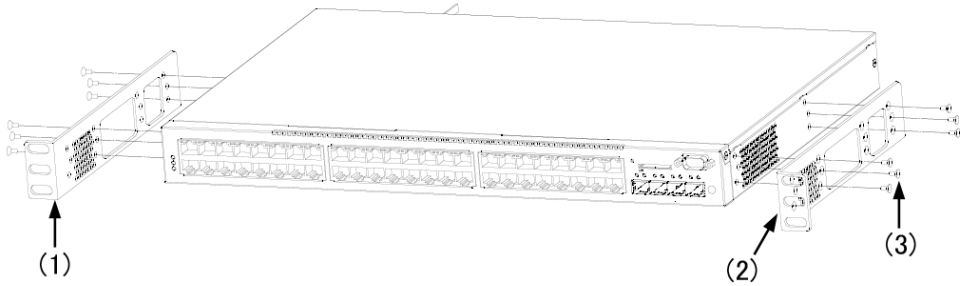
NOTE

Two types of rack mounting brackets (L and R) are available. The left mounting bracket is marked L, and the right mounting bracket is marked R.

NOTE

When installing the switch in a rack, if you cannot maintain a 100-mm space (for cables), slide the brackets 50 mm toward you and attach them as shown in the following figure. For space necessary for cables in front of the Switch, see *Table 2-14 Rack requirements*.

Figure 4-3 Attaching the rack mounting brackets by sliding them 50 mm forward



(1) Rack mounting bracket (L)

(2) Rack mounting bracket (R)

(3) Screws (M3 x 6, 12 screws)

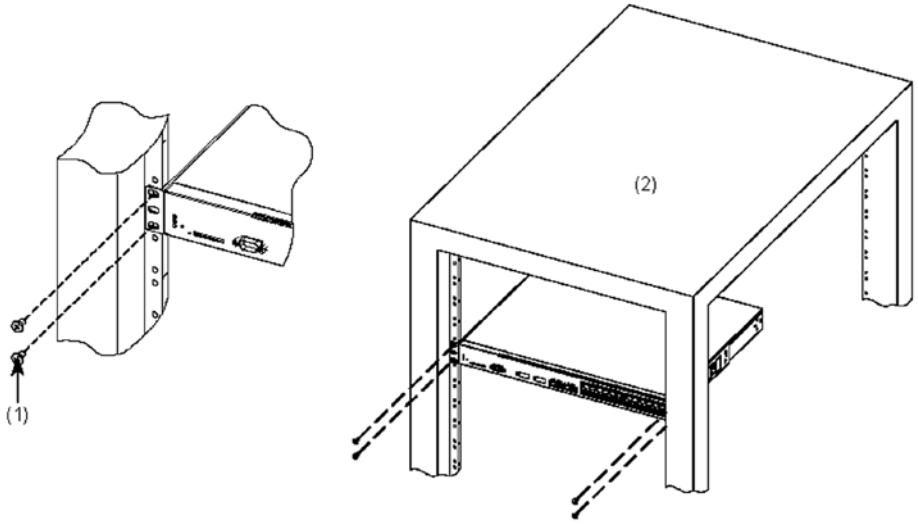
NOTE

Use the supplied screws to attach the rack mounting brackets to the Switch.

Step 2

Mount the Switch onto the rack.

Figure 4-4 Mounting a Switch on the rack



(1) Screws (M5 x 4)

(2) 19-inch cabinet rack

⚠CAUTION

When mounting the Switch on a rack, make sure that the Switch is stable. If the Switch is unstable, it might fall, resulting in injury.

NOTE

When mounting the Switch onto the rack, use the M5 screws supplied with the rack.

4.4 Installing an EPU and attaching a power supply module

This section describes how to install an external redundant power unit on a desktop and how to mount it on a rack. When using an external redundant power unit, follow the procedure below.

Note that if you connect two or more external redundant power units to a Switch, power supply modules must be added. Follow the procedures below to add power supply modules.

⚠CAUTION

Do not hold the handle of the power supply module when moving an external redundant power unit. The handle might come off, resulting in the device falling and possibly causing injury. Also, the EPU or the power supply unit might become damaged, resulting in fire or electric shock.

4.4.1 Installing an EPU on a desktop

The external redundant power switch can be placed on a level, stable, flat surface. To do so:

⚠CAUTION

When placing the external redundant power unit (EPU-D) on a desk, lay it on its side on a workbench capable of withstanding the weight of the Switch. If, for example, you place the Switch on a shaky table or a tilted surface, the Switch might fall and possibly injure someone.

⚠CAUTION

When installing the external redundant power unit (EPU-D) on a table, position the device horizontally. If the Switch is positioned vertically or leaned against a wall, the Switch might fall, which could result in injury or damage.

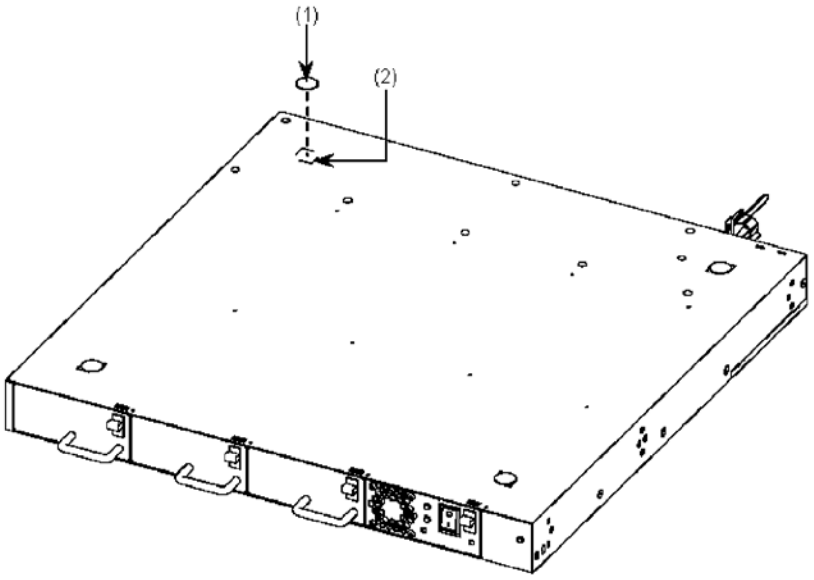
Step 1

Place the Switch upside down on a flat surface.

Step 2

Attach the four rubber pads into the marks on the bottom of the Switch

Figure 4-5 Attaching the rubber pads



(1) Rubber pad

(2) Mark

NOTE Make sure that the places to attach the rubber pads are clean. If not, wipe them clean with a dry cloth before attaching the rubber pads.

Step 3

Flip the Switch back around, and then place it on the table.

4.4.2 Mounting on a rack

An external redundant power unit can be mounted onto a 19-inch cabinet rack that conforms to the EIA standard.

The procedure for mounting on a rack is described below.

⚠CAUTION Before installing an external redundant power unit (EPU-D) in a rack, make sure the device is stable. If the device is not positioned correctly, injury could result from falling equipment or stumbling over the equipment.

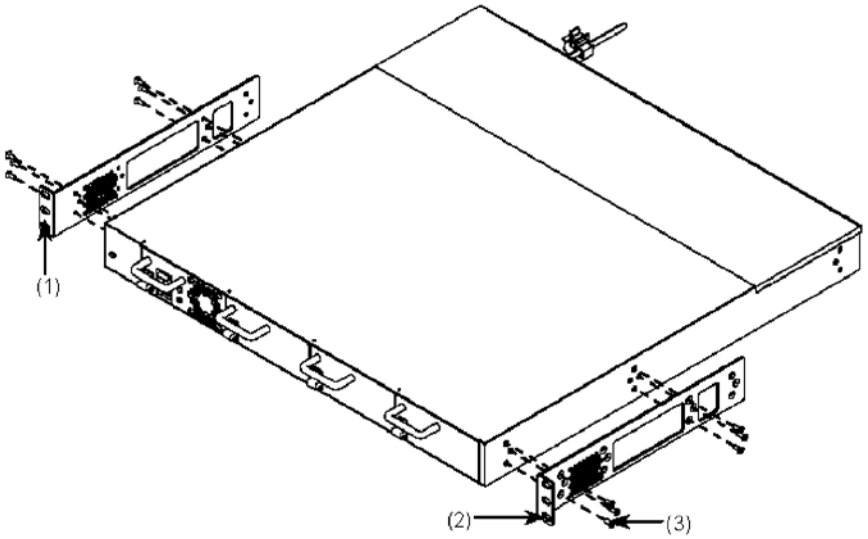
NOTE The rack mounting brackets included in the accessories are compatible with M5 screws. Use a rack compatible with M5 screws.

NOTE For rack-mounting requirements, see *2.7 Installation location (2) 19-inch cabinet rack*.

Step 1

Attach the rack mounting brackets to the Switch.

Figure 4-6 Attaching the rack mounting brackets



(1) Rack mounting bracket (L)

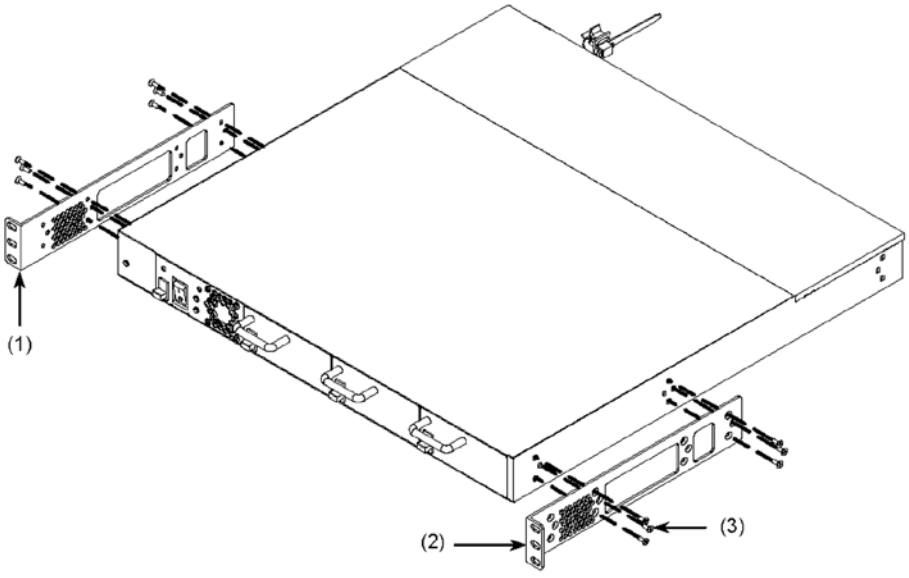
(2) Rack mounting bracket (R)

(3) Screws (M3 x 6, 12 screws)

NOTE

When installing the switch in a rack, if you cannot maintain a 100-mm space (for cables), slide the brackets 50 mm toward you and attach them as shown in the following figure. For space necessary for cables in front of the Switch, see *Table 2-14 Rack requirements*.

Figure 4-7 Attaching the rack mounting brackets by sliding them 50 mm forward



(1) Rack mounting bracket (L)

(2) Rack mounting bracket (R)

(3) Screws (M3 x 6, 12 screws)

NOTE

Use the supplied screws to attach the rack mounting brackets to the Switch.

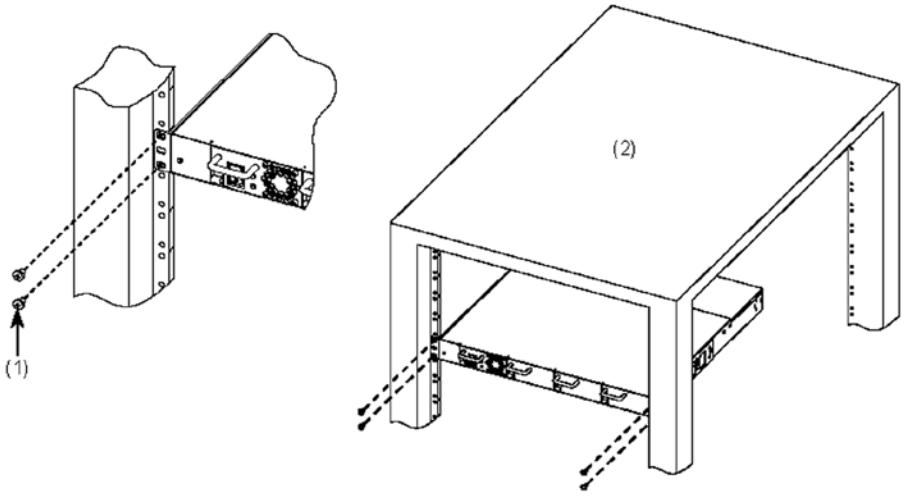
NOTE

Two types of rack mounting brackets (L and R) are available. The left mounting bracket is marked L, and the right mounting bracket is marked R.

Step 2

Mount the Switch onto the rack.

Figure 4-8 Mounting a Switch on the rack



(1) Screws (M5 x 4)

(2) 19-inch cabinet rack

⚠CAUTION When mounting the Switch on a rack, make sure that the Switch is stable. If the Switch is unstable, it might fall, resulting in injury.

NOTE

When mounting the Switch onto the rack, use the M5 screws supplied with the rack.

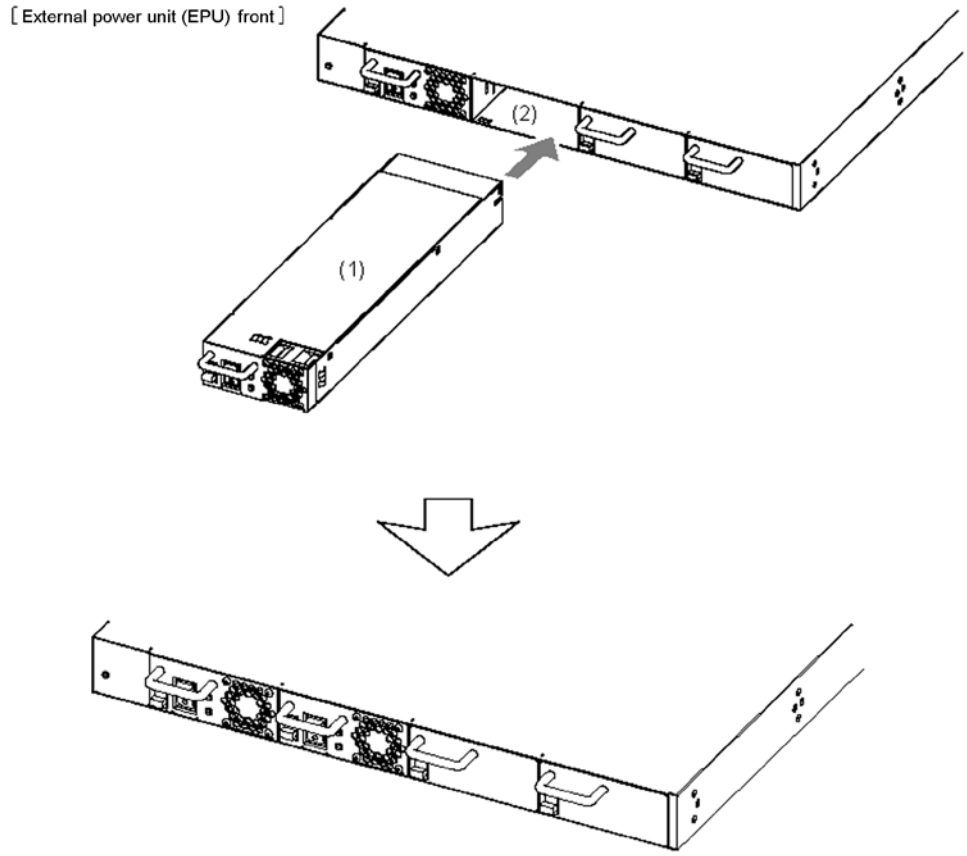
4.4.3 Installing and removing power supply modules

CAUTION Before installing or removing the power supply module, set the power switch of the module to OFF.

(1) Attaching

Push the power supply module until you hear a click.

Figure 4-9 Installing a power supply module



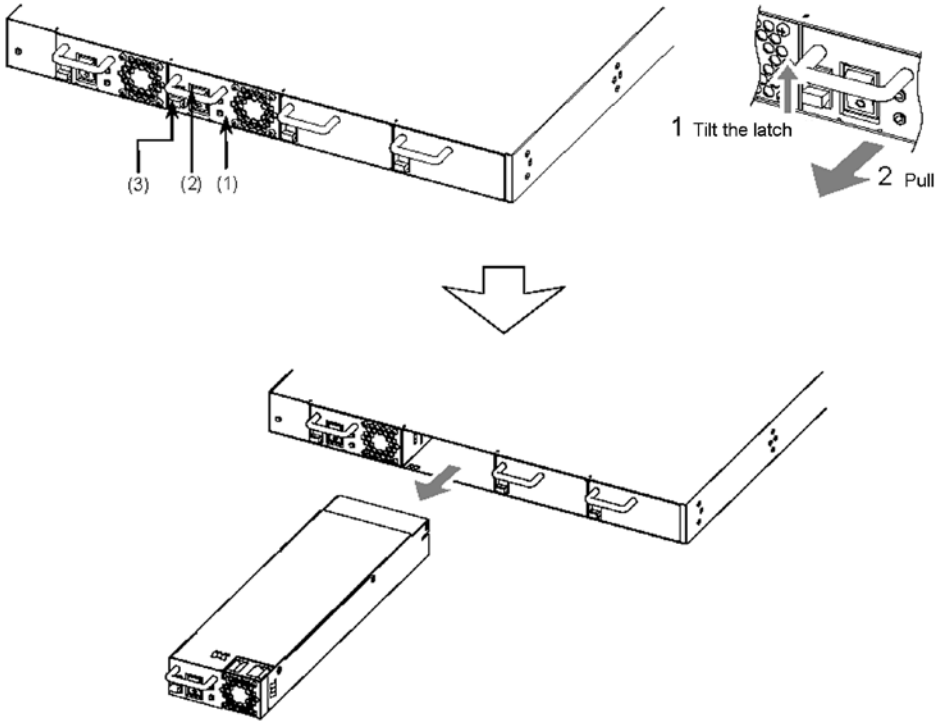
(1) Power supply module

(2) Slot for the power supply module

(2) Removing

Tilt the latch in the direction of the arrow, and pull the power supply module toward you to remove it (when removing the module, hold the handle and pull it toward you a little, and then hold the bottom of the module while pulling it the rest of the way).

Figure 4-10 Removing the power supply module



(1) Power supply module

(2) Handle

(3) Latch

4.5 Connecting and disconnecting the power cable to and from the Switch

This section describes how to connect and disconnect a power cable to and from the Switch.

An AC power cable is used for the AC models.

A DC power cable is used for the DC models.

Follow the procedure below to connect or disconnect the power cable.

4.5.1 AC power cable (AC model)

⚠WARNING Always use a grounded power outlet for the Switch. Using the Switch without grounding could result in electric shock or failures due to electrical noise.

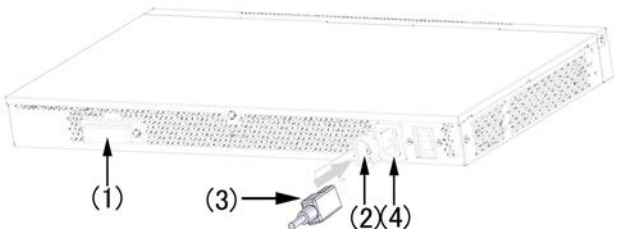
NOTE When the Switch is mounted on a rack, fasten the power cable with the cable holder supplied with the rack to avoid stressing the cable connection.

(1) Attaching

Step 1

Connect the included power cable to the AC power connector on the rear of the Switch.

Figure 4-11 Connecting the power cable



(1) Standby power connector (with a protection cap)

(2) Cable clamp

(3) AC power cable

(4) AC power connector

⚠WARNING When using AC models at 100 V AC, use the supplied power cable or the optional ALAXALA power cable. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

⚠WARNING When using AC models at 200 V AC, use the optional ALAXALA power cable or a cable that satisfies Alaxala Networks Corporation's specifications. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

⚠WARNING Do not remove the protection cap except to connect a cable. Using a Switch without a protection cap could result in fire or electric shock.

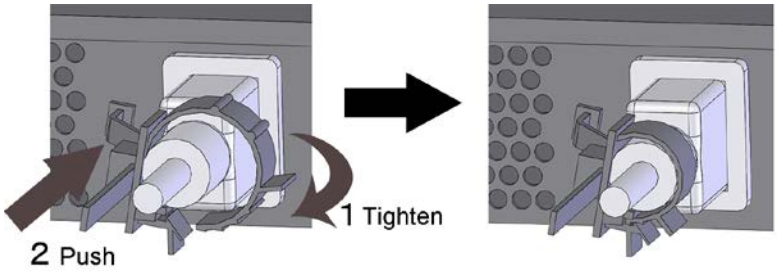
CAUTION Turn off the power of the Switch before connecting or disconnecting the power cable.

NOTE For the specifications defined by ALAXALA for power cables, see *2.3.2 Facilities for 200 V AC power supply*.

Step 2

Clamp the power connector to the power cable with the cable clamp.

Figure 4-12 Clamping the power cable



(2) Removing

Unfasten the cable clamp, and then disconnect the power cable.

CAUTION Turn off the power of the Switch before connecting or disconnecting the power cable.

4.5.2 DC power cable (DC model)

⚠WARNING When using DC power, use a power supply for which the primary side and the secondary side are insulated. Using a power supply that is not insulated could result in electric shock.

⚠WARNING Connecting or disconnecting the DC power cable to the power supply unit must be performed by a trained technician or maintenance personnel. Terminal connections are required for connection of the DC power cable to the power facility. For this reason, incorrect handling of the DC power cable could result in fire or electric shock.

⚠WARNING Use the supplied power cable. Other cable except the bundled one may cause a fire and/or an electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in a fire or electric shock.

⚠WARNING Before connecting or disconnecting a power cable, set the power supply circuit breaker to OFF. Connecting or disconnecting the cable with the circuit breaker set to ON could result in a fire or electric shock.

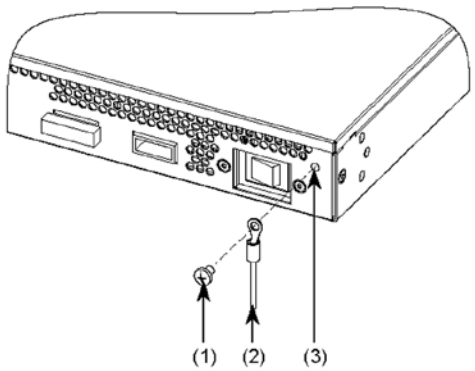
NOTE When a switch is installed in a rack, use the cable holder supplied with the rack to fix the power cable in order to prevent stress on the cable base.

(1) Attaching

Step 1

Connect the ground cable to the Switch.

Figure 4-13 Connecting the ground cable



(1) Screws (M4 x 10)

(2) Ground cable

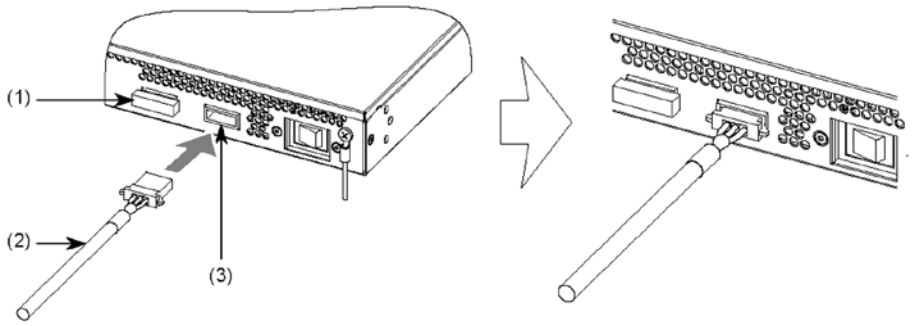
(3) Ground terminal

⚠WARNING Make sure to connect the ground cable. Failure to do so might not only result in electric shock, but it might also introduce unwanted electrical noise that could cause a Switch failure.

Step 2

Connect the supplied power cable to DC power connector 1 on the rear of the Switch (push the connector until you hear a click).

Figure 4-14 Connecting the power cable



(1) DC power connector 2 (with the protection cap)

(2) DC power cable

(3) DC power connector 1

⚠WARNING Do not remove the protection cap except to connect a cable. Using the Switch with no protection cap could result in a fire or electric shock.

CAUTION When connecting a DC power cable, make sure that the cable is connected to the correct pole. Using a DC power cable connected to the wrong pole could cause a failure.

NOTE An optional DC power cable is required to have redundant power supply units.
For this operation, remove the protection cap on DC power connector 2, and connect a DC power cable. Make sure you keep the removed protection cap in a safe place.

NOTE By adding a second power supply unit, a redundant supply of DC power can be provided to the Switch.
However, in such cases, shut off the electrical power equipment before attaching the redundant power cable.

(3) Removing

Step 1

Disconnect the DC power cable from the DC power connector on the back face of the device. Push the tabs on the both sides and pull it out.

Step 2

Detach the ground cable from the device.

⚠WARNING Before connecting or disconnecting a power cable, set the power supply circuit breaker to OFF. Connecting or disconnecting the cable with the circuit breaker set to ON could result in a fire or electric shock.

NOTE

By adding a second power supply unit, a redundant supply of DC power can be provided to the Switch.

However, in such cases, shut off the electrical power equipment before detaching the redundant power cable.

4.6 Connecting and disconnecting the power cable to and from EPUs

This section describes how to connect and disconnect a power cable to and from an external redundant power unit.

4.6.1 AC power cable

Connect the AC power cable and the standby power cable that supplies standby power to the Switch to an external redundant power unit (EPU-A).

When using an external redundant power unit (EPU-A), follow the procedures below to connect and disconnect the AC power cable and standby power cable.

⚠WARNING Always use a grounded power outlet for the Switch. Using the Switch without grounding could result in electric shock or failures due to electrical noise.

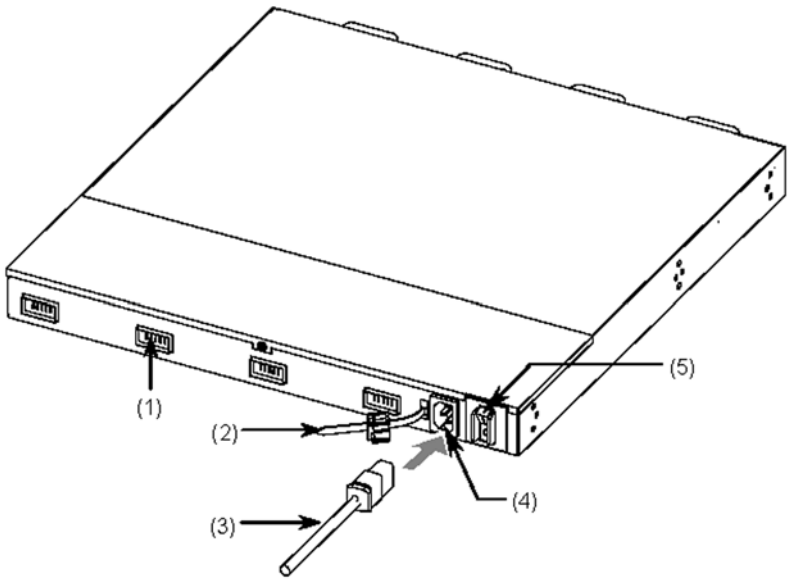
NOTE When the Switch is mounted on a rack, fasten the power cable with the cable holder supplied with the rack to avoid stressing the cable connection.

(1) Attaching

Step 1

Connect the included power cable to the AC power connector on the rear of the Switch.

Figure 4-15 Connecting the power cable



(1) Standby power connector (with a protection cap)

(2) Cable clamp

(3) AC power cable

(4) AC power connector

(5) Main power switch

⚠WARNING Use the supplied power cable. Using another cable could result in fire or electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in fire or electric shock.

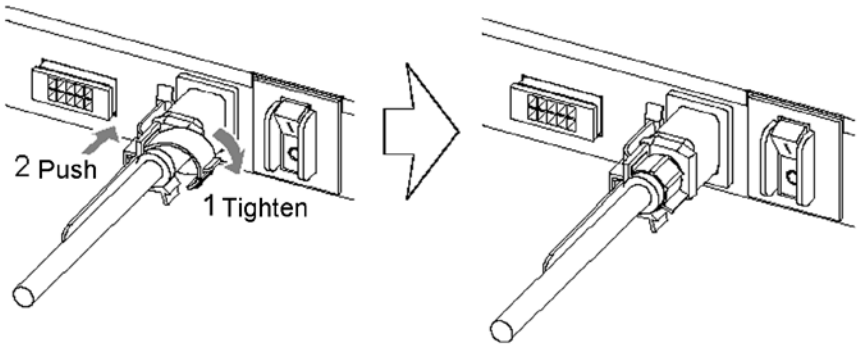
⚠WARNING Do not remove the protection cap except to connect a cable. Using a Switch without a protection cap could result in fire or electric shock.

CAUTION Before connecting or disconnecting a power cable, set the main power switch of the external redundant power unit to OFF.

Step 2

Clamp the power connector to the power cable with the cable clamp.

Figure 4-16 Clamping the power cable



(2) Removing

Unfasten the cable clamp, and then disconnect the power cable.

CAUTION Before connecting or disconnecting a power cable, set the main power switch of the external redundant power unit to OFF.

4.6.2 DC power cable

Connect the DC power cable and the standby power cable, which supplies standby power to the Switch, to the external redundant power unit (EPU-D).

To use the external redundant power unit (EPU-D), follow the procedures below to attach or detach the DC power cable and the standby power cable.

⚠WARNING When using DC power, use a power supply for which the primary side and the secondary side are insulated. Using a power supply that is not insulated could result in electric shock.

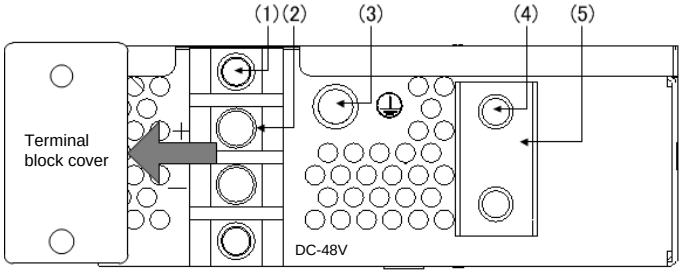
⚠WARNING Connecting or disconnecting the DC power cable to the power supply unit must be performed by a trained technician or maintenance personnel. Terminal connections are required for connection of the DC power cable to the power facility. For this reason, incorrect handling of the DC power cable could result in fire or electric shock.

⚠WARNING Use the supplied power cable. Using another cable could result in fire or electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in fire or electric shock.

⚠WARNING Before connecting or disconnecting a power cable, set the power supply circuit breaker to OFF. Connecting or disconnecting the cable with the circuit breaker set to ON could result in a fire or electric shock.

NOTE When the Switch is mounted on a rack, fasten the power cable with the cable holder supplied with the rack to avoid stressing the cable connection.

Figure 4-17 Connecting cables to the external redundant power unit (back of the EPU-D)



(1) Terminal block cover mounting screw

(2) DC power input terminal block (with the terminal block cover removed)

(3) Ground cable connecting screw

(4) Cable clamp mounting screw

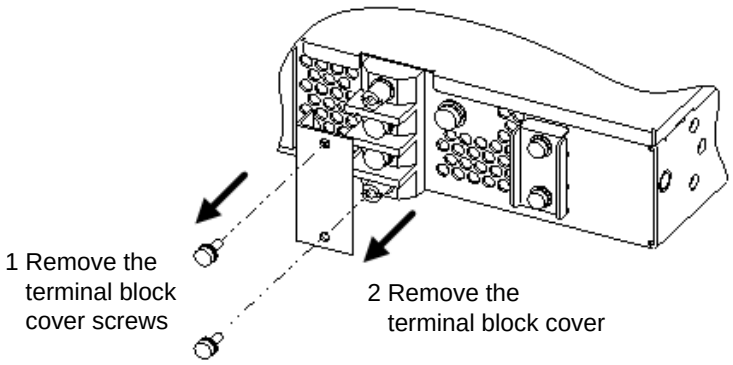
(5) Cable clamp

(1) Attaching

Step 1

Remove the cover for the DC power input terminal block

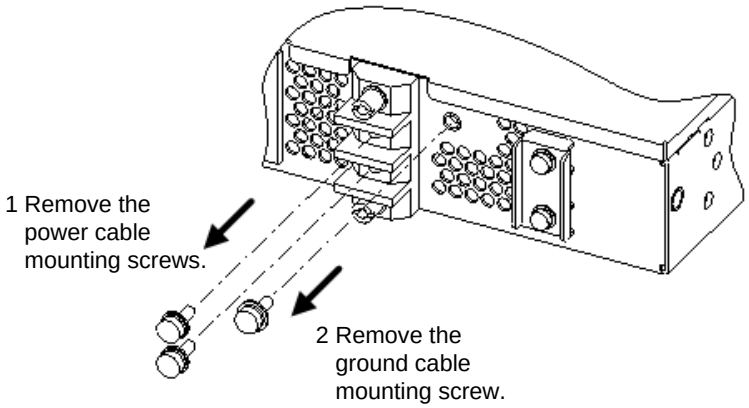
Figure 4-18 Removing the terminal block cover



Step 2

Remove the cable mounting screws.

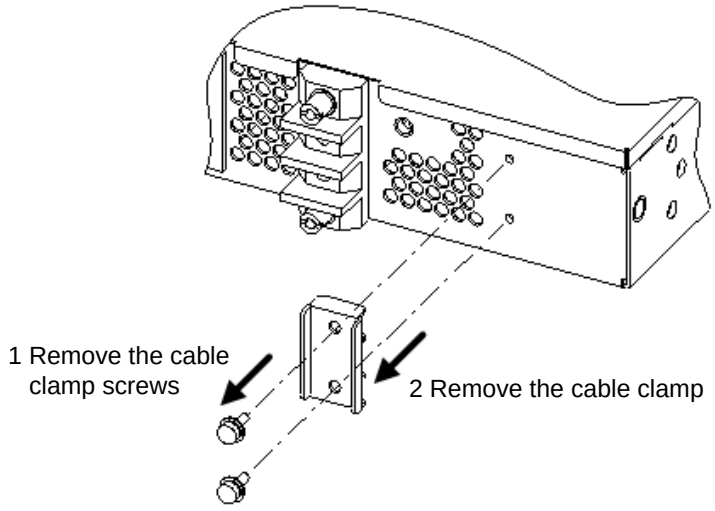
Figure 4-19 Removing the cable mounting screws



Step 3

Remove the cable clamp.

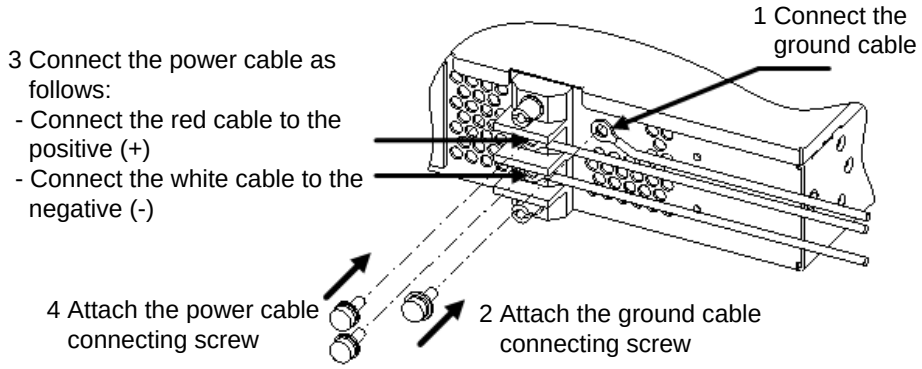
Figure 4-20 Removing the cable clamp



Step 4

Connect the power cable and ground cable.

Figure 4-21 Connecting the power cable and ground cable



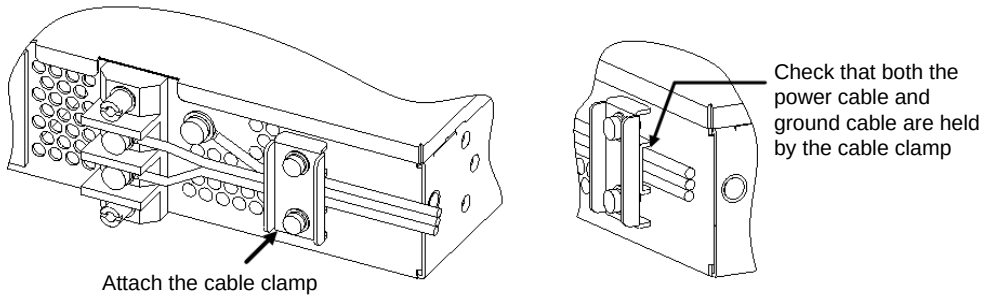
⚠WARNING	Use the supplied power cable. Other cable except the bundled one may cause a fire and/or an electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in a fire or electric shock.

⚠WARNING	Make sure to connect the ground cable. Failure to do so might not only result in electric shock, but it might also introduce unwanted electrical noise that could cause a Switch failure.

Step 5

Secure the power cable and ground cable with the cable clamp.

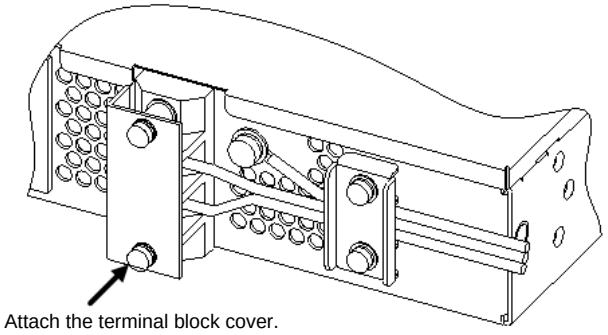
Figure 4-22 Securing the power cable and ground cable



Step 6

Attach the terminal block cover.

Figure 4-23 Attaching the terminal block cover



⚠WARNING After connecting the DC power cable, make sure that you attach the terminal block cover. Using the terminal block without a cover could result in electric shock.

(2) Removing

Reverse the steps described in *(1) Connecting the DC power cable* to remove the power cable.

⚠WARNING Before connecting or disconnecting a power cable, set the power supply circuit breaker to OFF. Connecting or disconnecting the cable with the circuit breaker set to ON could result in a fire or electric shock.

4.6.3 Standby power cable

Use the standby power cable to connect the external redundant power unit with the Switch.

Figure 4-24 Connection schematic of the standby power cable (Connecting the external redundant power unit EPU-A to the AC model)

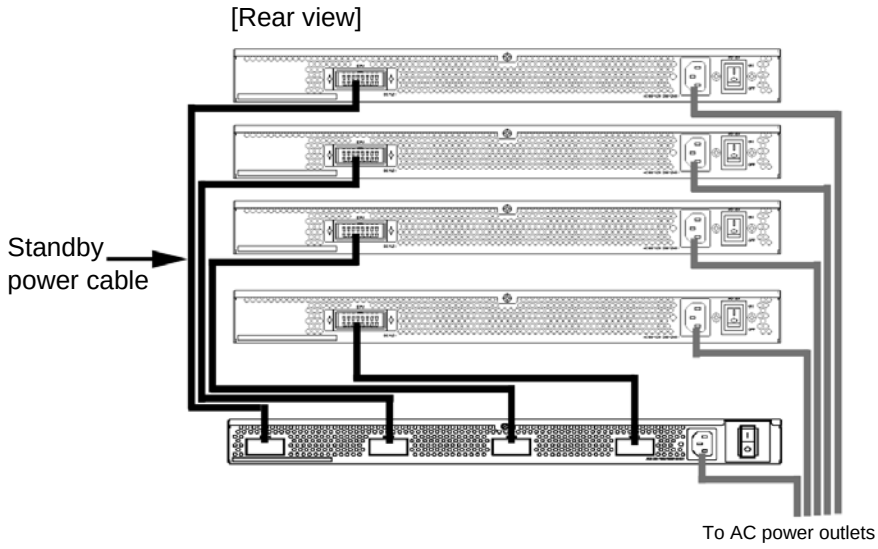
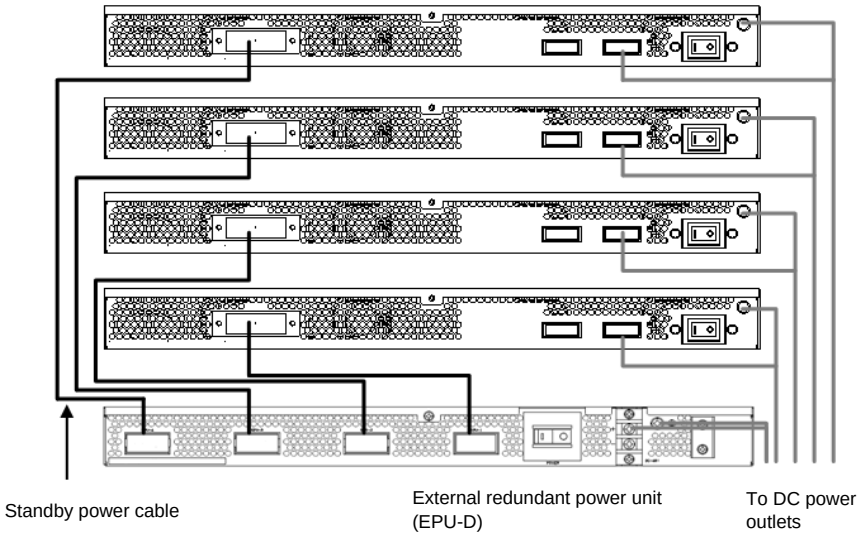


Figure 4-25 Connection schematic of the standby power cable (Connecting the external redundant power unit EPU-D to the DC model)



⚠WARNING

Use the supplied power cable. Other cable except the bundled one may cause a fire and/or an electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in a fire or electric shock.

NOTE

When a switch is installed in a rack, use the cable holder supplied with the rack to fix the power cable in order to prevent stress on the cable base.

NOTE

The following shows an example of connecting an external redundant power unit (EPU-A) to an AC model. Use the same procedure to connect an external redundant power unit (EPU-D) to a DC model.

(1) Attaching

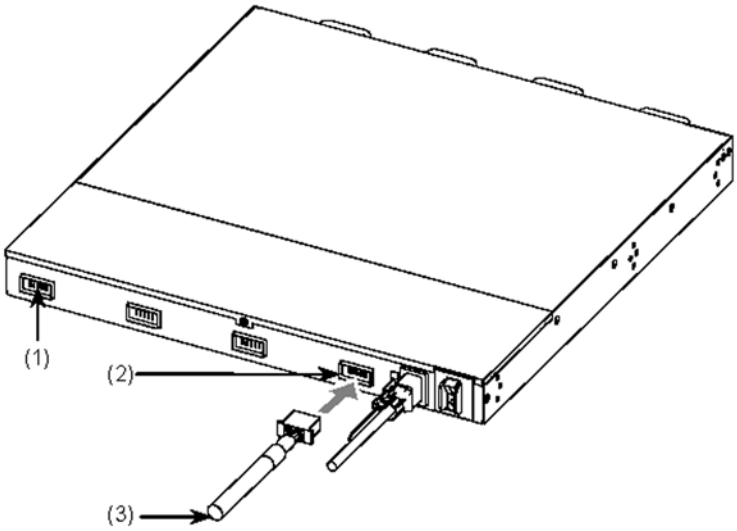
CAUTION

Before connecting or disconnecting a standby power cable, set the power switch of the power supply module in the applicable slot to OFF.

Step 1

Connect the standby power cable to the standby power connector on the rear of an external redundant power unit (press the cable until you hear a click).

Figure 4-26 Connecting the standby power cable (on the standby power unit side)



(1) Standby power connector (with a protection cap)

(2) Standby power connector

(3) Standby power cable

⚠WARNING

Do not remove the protection cap except to connect a cable. Using a Switch without a protection cap could result in fire or electric shock.

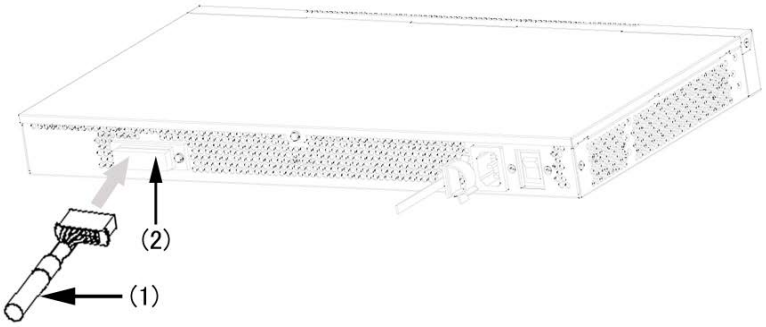
NOTE

When supplying standby power to multiple switches from a single external redundant power unit, connect the standby power cable to standby power connector 2 and subsequent connectors. When doing so, remove the protection cap before connecting the standby power cable. Make sure you keep the removed protection cap in a safe place.

Step 2

Connect the standby power cable to the standby power connector on the rear of an EPU (press the cable until you hear a click).

Figure 4-27 Connecting the standby power cable (on the EPU sides)



(1) Standby power cable

(2) Standby power connector (with a protection cap)

⚠WARNING Do not remove the protection cap except to connect a cable. Using a Switch without a protection cap could result in fire or electric shock.

NOTE A protection cap is installed on the standby power connector. Connect the standby power cable after removing the protection cap. Make sure you keep the removed protection cap in a safe place.

(2) Removing

To disconnect the cable, while pressing the right and left levers down, pull out the cable.

4.7 Inserting and removing memory cards and dummy cards

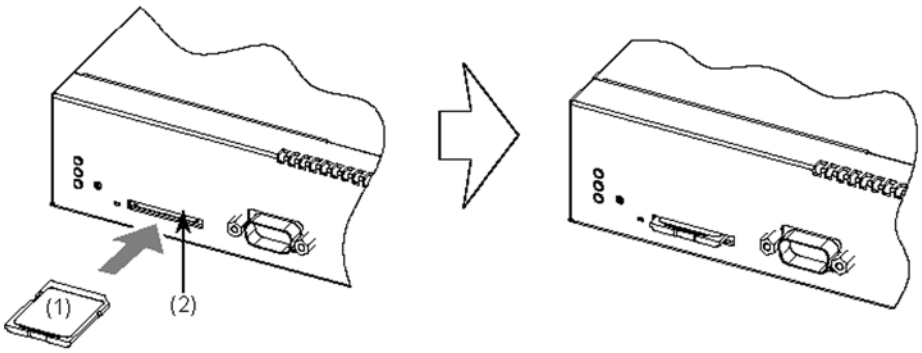
4.7.1 Inserting and removing memory cards

CAUTION When moving the Switch, remove memory cards. If a card is subjected to excessive force when the Switch is moved, the connector of the memory card slot might be damaged.

(1) Attaching

Insert a memory card into the slot until you hear a click, and then remove your fingers slowly. (Hold the memory card with the cut-off corner to the right.)

Figure 4-28 Inserting a memory card



(1) Memory card

(2) Memory card slot

CAUTION When inserting a memory card, do not push the card too strongly or flick it with your finger. Doing so might damage the connector of the memory card slot.

NOTE If a dummy card is inserted, remove it before inserting the memory card.

NOTE To prevent deleting or writing of data, slide the protection switch to the Lock position before inserting it.

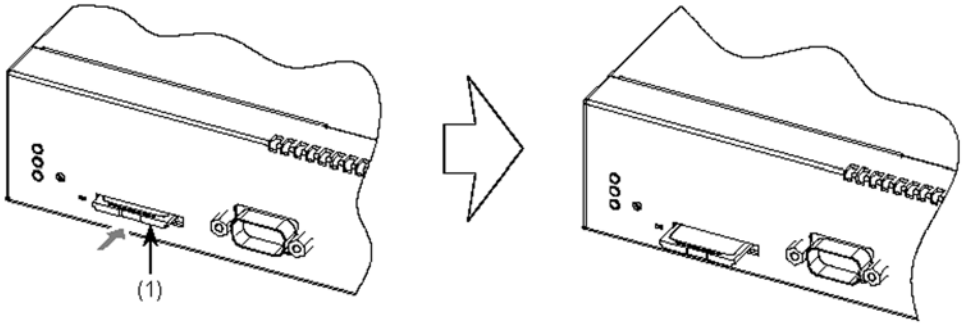
NOTE If the memory card slot is dusty, clean the slot with a dry cloth before inserting a memory card.

(2) Removing

Step 1

Push the memory card in until you hear a click. (The lock is released, and the memory card is ejected slightly.)

Figure 4-29 Removing the memory card

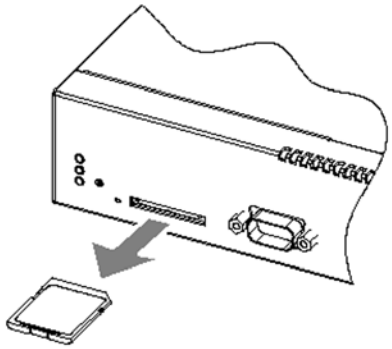


(1) Memory card

Step 2

Remove the memory card.

Figure 4-30 Removing a memory card



CAUTION

If the ACC LED is lit, the memory card is being accessed. While a memory card is being accessed, do not remove the memory card or turn off the power. Doing so might damage the memory card.

In addition, some commands require a certain amount of time after being entered to finish accessing the card. Make sure that the memory card is no longer being accessed before removing the card or turning off the power.

CAUTION

When removing a memory card, do not forcibly pull out the card if it is locked. Doing so might damage the connector of the memory card slot.

NOTE

After removing a memory card, insert a dummy memory card.

4.7.2 Inserting and removing dummy memory cards

If a memory card will not be used, insert a dummy memory card (hereafter, a dummy card) in the memory card slot of a Switch in place of the memory card.

A dummy card is shipped with a Switch when it is shipped from the factory. After a Switch is installed, follow the procedure below to use the dummy card.

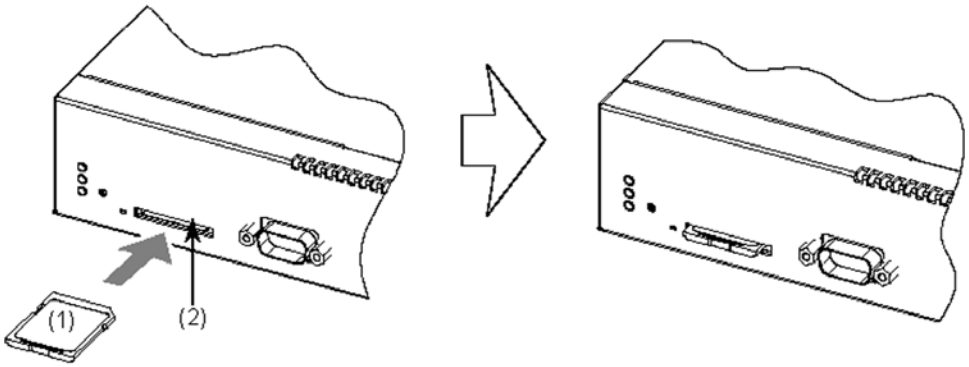
CAUTION When moving a Switch, remove any dummy cards. If a card is subjected to excessive force when the Switch is moved, the connector of the memory card slot might be damaged.

NOTE The following instructions show how to install and remove a type B dummy memory card. The same procedure applies to type A cards.

(1) Attaching

Insert a dummy card into the slot until you hear a click, and then remove your fingers slowly (install the dummy card with the cut-off corner to the right.).

Figure 4-31 Inserting a dummy card



(1) Dummy card

(2) Memory card slot

CAUTION When installing a dummy card, do not force the card or pinch it with your fingers. Doing so might damage the connector of the memory card slot.

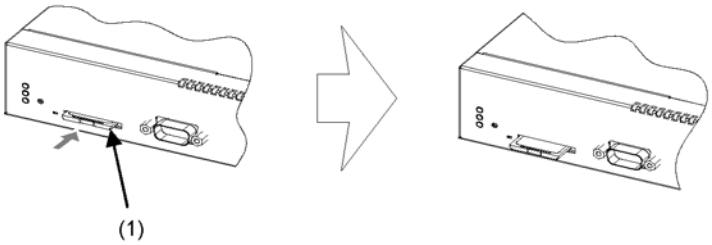
NOTE If the memory card slot is dusty, clean the slot with a dry cloth before inserting a memory card.

(2) Removing

Step 1

Push the memory card in until you hear a click. The lock is released, and the memory card is ejected slightly.

Figure 4-32 Ejecting a dummy card

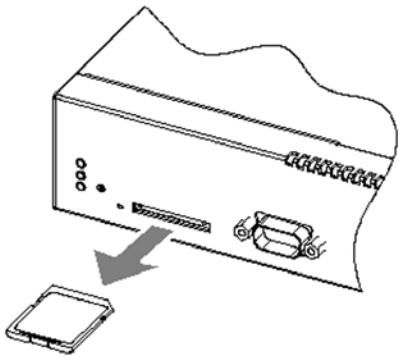


(1) Dummy card

Step 2

Remove the dummy card.

Figure 4-33 Removing a dummy card



CAUTION

When removing a dummy card, do not forcibly pull out the card if it is locked. Doing so might damage the connector of the memory card slot.

NOTE

Make sure you keep the dummy card you remove.

4.8 Inserting and removing SFP and SFP+ transceivers

SFP and SFP+ transceivers can be inserted and removed while the Switch is turned on.

4.8.1 Inserting and removing SFP-T transceivers

⚠CAUTION

During operation (when a link is established), the temperature of the SFP-T can rise to 65°C. Do not touch the transceiver while it is operating or just after it stops. Doing so could result in burns.

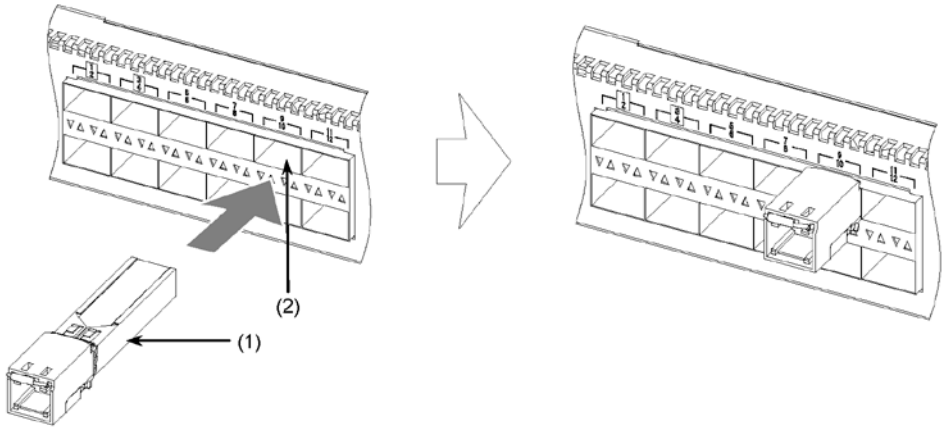
To remove the SFP-T transceiver, use the procedure below. Failure to do so could result in burns.

- To remove an SFP-T transceiver while the Switch is turned on, block the SFP or SFP+ slot, and then wait five minutes before removing the SFP-T.
- To remove the device after turning off the Switch, turn off the Switch, wait five minutes, and then remove the transceiver.

(1) Attaching

Keep the lever upright as shown in the figure, and insert the SFP transceiver until you hear a click.

Figure 4-34 Inserting an SFP transceiver (upper port)



(1) SFP transceiver

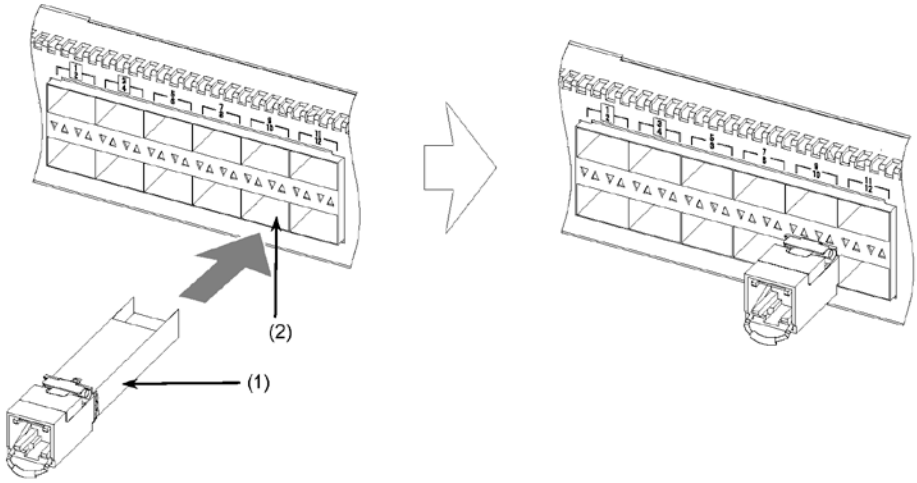
(2) SFP slot

NOTE

The above figure shows an example of inserting an SFP transceiver in the upper SFP slot of a Switch that has two-tiered slots. For a model that has only one tier, insert an SFP transceiver oriented as shown in the figure.

When inserting an SFP transceiver in the lower SFP slot of a Switch that has two-tiered SFP slots, turn the SFP transceiver upside down and install it as shown in the figure below.

Figure 4-35 Inserting an SFP transceiver (lower port)



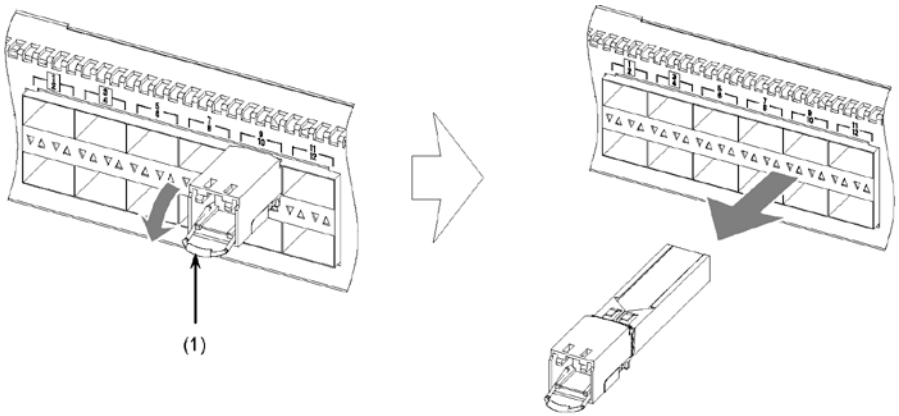
(1) SFP transceiver

(2) SFP slot

(2) Removing

Press the lever down in the direction of the arrow. While holding down the lever, pull out the SFP transceiver.

Figure 4-36 Removing an SFP transceiver



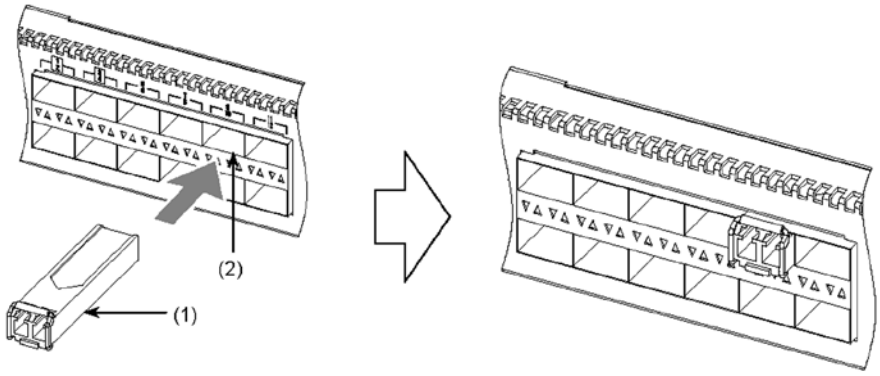
(1) Lever

4.8.2 Inserting and removing SFP transceivers (except SFP-T)

(1) Attaching

Keep the lever upright as shown in the figure, and insert the SFP transceiver until you hear a click.

Figure 4-37 Inserting an SFP transceiver (upper port)



(1) SFP transceiver

(2) SFP slot

NOTE

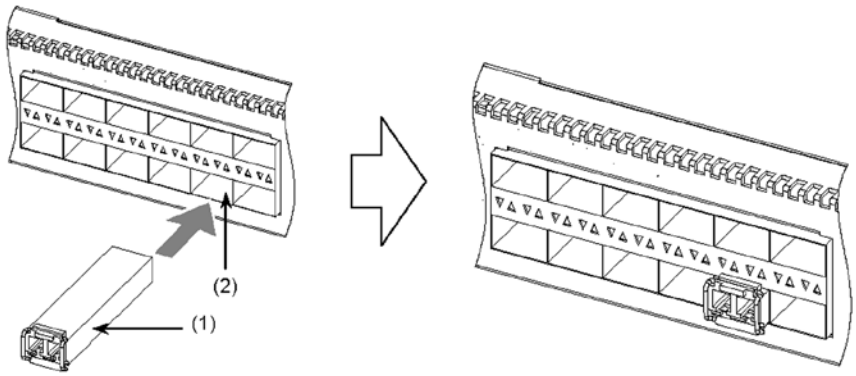
The above figure shows an example of inserting an SFP transceiver in the upper SFP slot of a Switch that has two-tiered slots. For a model that has only one tier, insert an SFP transceiver oriented as shown in the figure.

When inserting an SFP transceiver in the lower SFP slot of a Switch that has two-tiered SFP slots, turn the SFP transceiver upside down and install it as shown in the figure below.

NOTE

The same procedures apply to SFP+ transceivers.

Figure 4-38 Inserting an SFP transceiver (lower port)



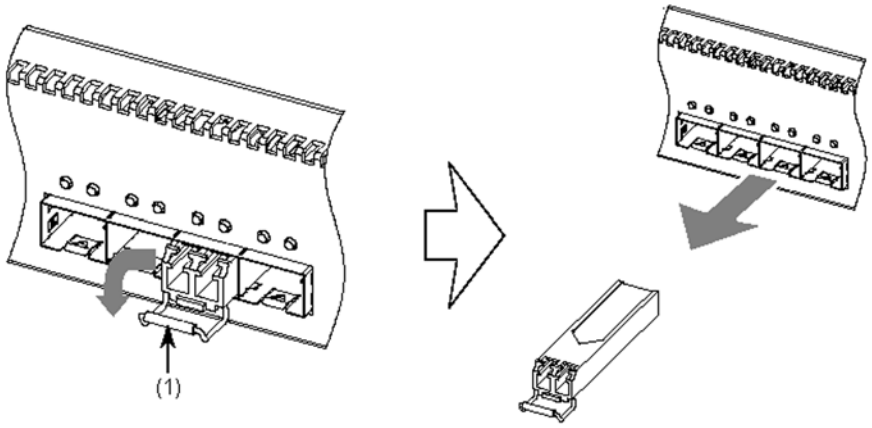
(1) SFP transceiver

(2) SFP slot

(2) Removing

Press the lever down in the direction of the arrow. While holding down the lever, pull out the SFP transceiver.

Figure 4-39 Removing an SFP transceiver



(1) Lever

NOTE

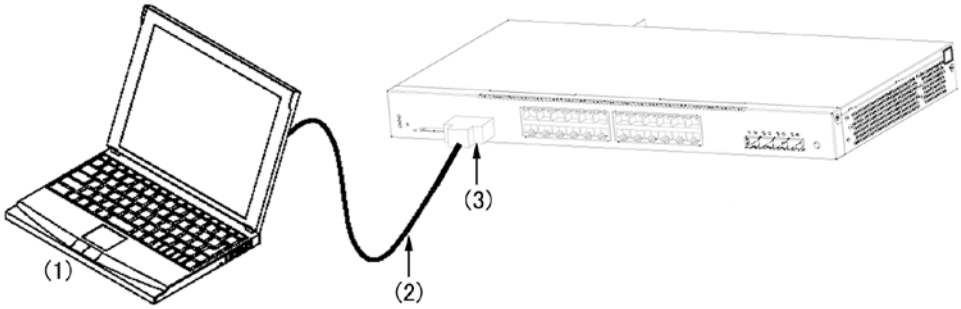
The same procedures apply to SFP+ transceivers.

4.9 Connecting a setup terminal

Connect a setup terminal to the CONSOLE port of a Switch.

For this connection, use an RS232C crossover cable with D-sub 9-pin female connectors on both ends.

Figure 4-40 Connecting the setup terminal



(1) Setup terminal

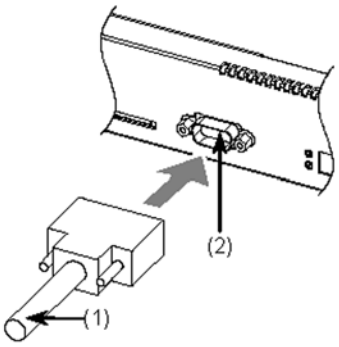
(2) RS232C cable

(3) CONSOLE port

Step 1

Connect the RS232C cable to the CONSOLE port of the Switch.

Figure 4-41 Connecting the RS232C cable



(1) RS232C cable

(2) CONSOLE port

NOTE

After the cable is connected to the port, tighten the screws. Also make sure the cable is firmly connected.

Step 2

In the same way, connect the RS232C cable to the setup terminal.

4.10 Connecting interface cables

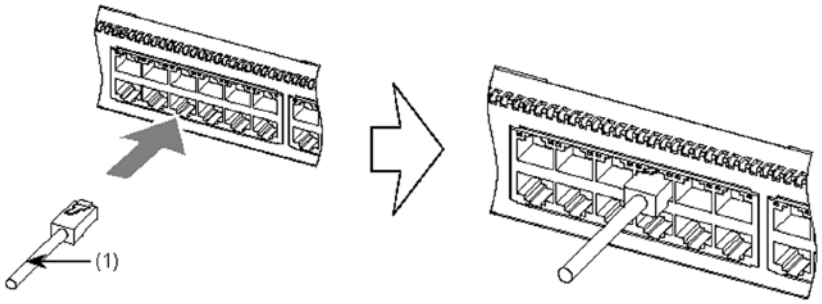
4.10.1 UTP cables and optical fiber cables

UTP cables and optical fiber cables can be attached and detached without turning off the switch.

(1) UTP cable

To connect a UTP cable, push the connector until you hear a click.

Figure 4-42 Connecting a UTP cable



(1) UTP cable

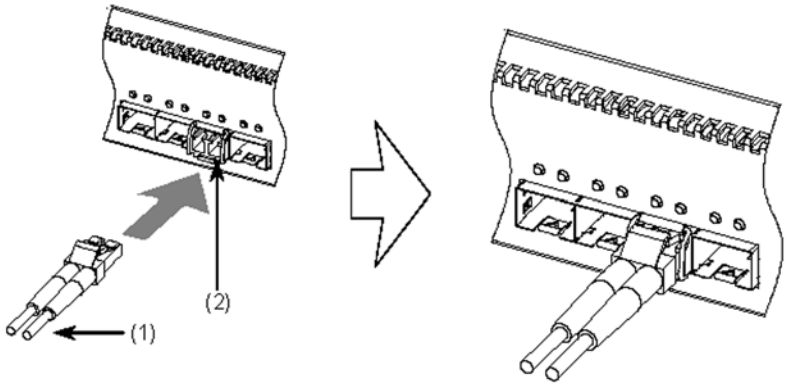
NOTE

The above figure shows an example of connecting a UTP cable into an Ethernet 10/100/1000BASE-T port of a Switch. Use the same procedure to connect an UTP cable to the SFP-T transceiver.

(2) Fiber optic cable (LC duplex connector)

Push the connector until you hear a click.

Figure 4-43 Fiber optic cable (LC duplex connector)



(1) Fiber optic cable (LC duplex connector)

(2) Transceiver

NOTE For details about cleaning optical connectors, see *Appendix A Cleaning Optical Connectors*.

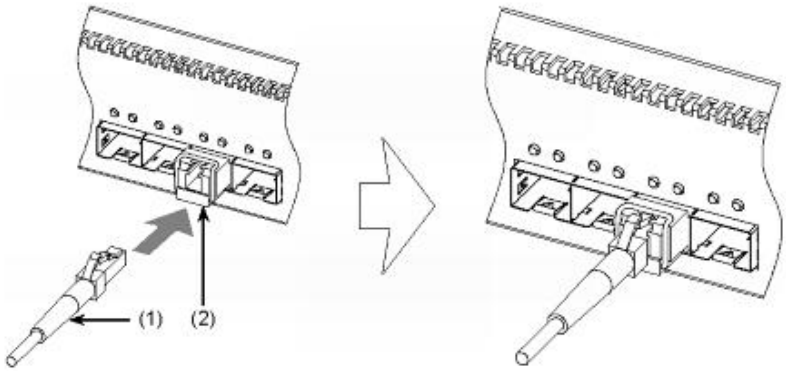
NOTE To detach the cable, hold the tab down and pull out the connector.

NOTE The above figure is an example of attaching the cable to an SFP transceiver. Use the same procedure to attach the cable to an SFP+ transceiver.

(3) Optical fiber cable (LC simplex connector)

Push the connector until you hear a click.

Figure 4-44 Optical fiber cable (LC simplex connector)



(1) Optical fiber cable (LC simplex connector)

(2) Transceiver

NOTE For details about cleaning optical connectors, see *Appendix A Cleaning Optical Connectors*.

NOTE To detach the cable, hold the tab down and pull out the connector.

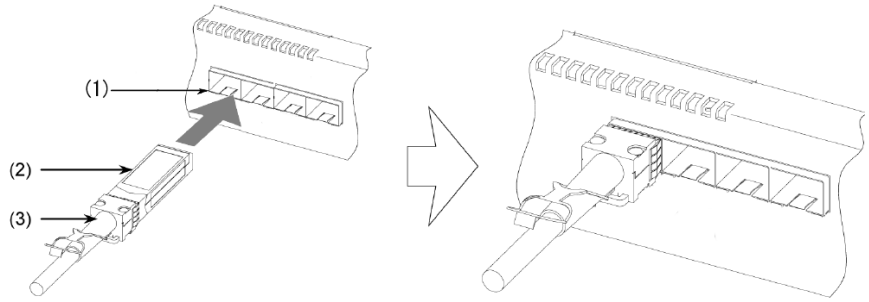
4.10.2 Direct attach cable

Direct attach cables can be connected and disconnected while the Switch is turned on.

(1) Attaching

Hold the base of the cable and push the cable until you hear a click.

Figure 4-45 Connecting a direct attach cable



(1) SFP+ slot

(2) Connector

(3) Base of the cable

NOTE

To prevent the cable from bending over time, fix the direct attach cable to the cable holder supplied with the rack so that the base of the cable is free from excessive stress.

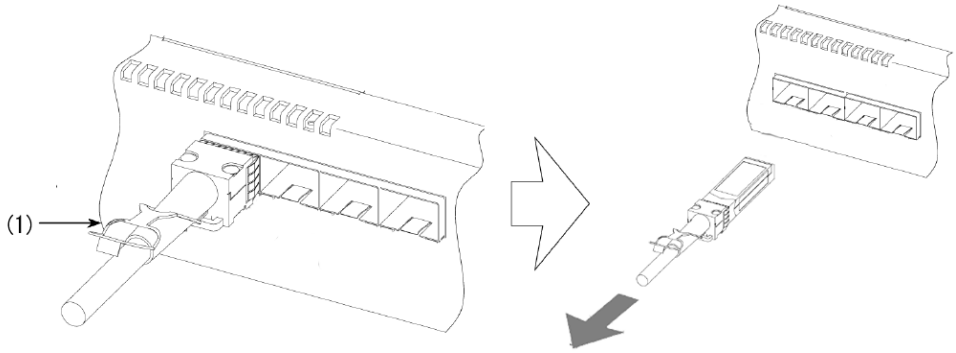
(2) Removing

Hold the tab and pull the transceiver toward you.

CAUTION

To remove a direct attach cable, horizontally pull the tab. Exerting a force on directions other than horizontal could cause failure or damage.

Figure 4-46 Connecting a direct attach cable



(1) Tab

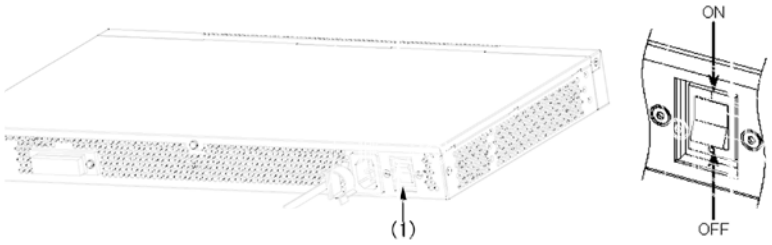
4.11 Turning the Switch on and off

4.11.1 AC model

(1) Turning on the power

Turn on the power switch at the rear of the Switch.

Figure 4-47 Turning on the power (AC model)



(1) Power switch

NOTE

To supply standby power from an external redundant power unit, turn on the power switch of the external redundant power unit and a power supply module. To turn on an external redundant power unit and a power supply module, see *4.12 Turning the power of EPUs on and off*.

(2) Turning off the power

Turn off the power switch at the rear of the Switch.

⚠CAUTION

When standby power is supplied from an external redundant power unit, Switch power cannot be turned off only by setting the power switch of the Switch to OFF. Set the power switch of the Switch and the power supply module that supplies standby power to OFF.

CAUTION

If the ACC LED is lit, the memory card is being accessed. While a memory card is being accessed, do not remove the memory card or turn off the power. Doing so might damage the memory card.

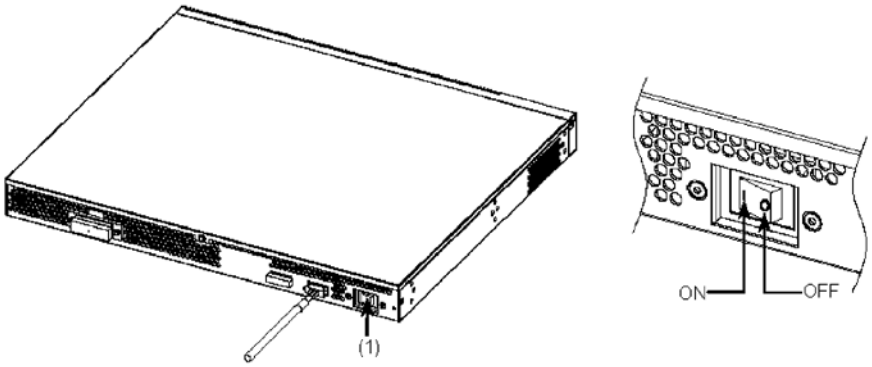
In addition, some commands require a certain amount of time after being entered to finish accessing the card. Make sure that the memory card is no longer being accessed before removing the card or turning off the power.

4.11.2 DC model

(1) Turning on the power

Turn on the power switch on the back face of the device.

Figure 4-48 Turning on the power (DC model)



(1) Power switch

(2) Turning off the power

Turn off the power switch on the back face of the device.

CAUTION

If the ACC LED is lit, the memory card is being accessed. While a memory card is being accessed, do not remove the memory card or turn off the power. Doing so might damage the memory card.

In addition, some commands require a certain amount of time after being entered to finish accessing the card. Make sure that the memory card is no longer being accessed before removing the card or turning off the power.

4.12 Turning the power of EPUs on and off

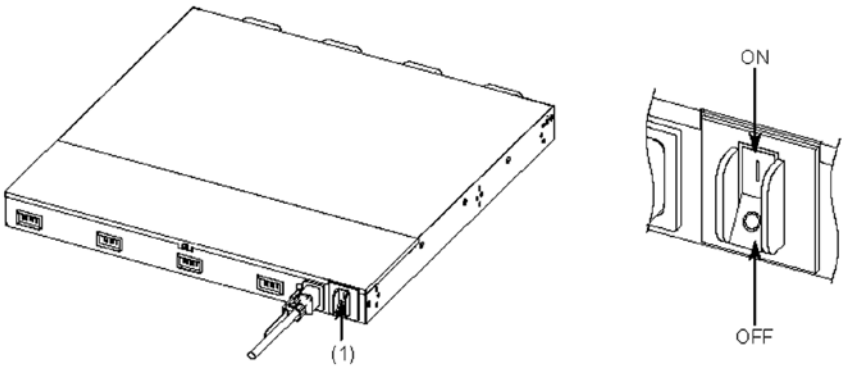
4.12.1 EPU-A

(1) Turning on the power

Step 1

Set the main power switch on the rear of the external redundant power unit to ON.

Figure 4-49 Turning on the power (EPU)



(1) Main power switch

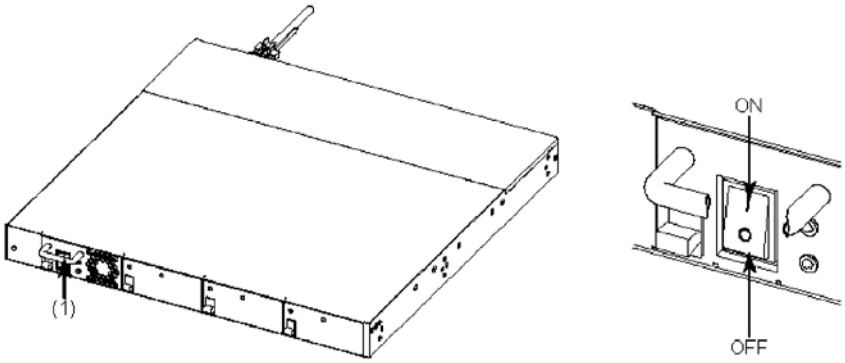
CAUTION

Before setting the main power switch of the external redundant power unit to ON, you must set the power switches of the installed power supply modules to OFF.

Step 2

Set the power switch of the power supply module to ON.

Figure 4-50 Turning on the power (power supply module)



(1) Power switch

(2) Turning off the power

To stop supplying standby power to a Switch, set the main power switch of the external redundant power unit to OFF.

Step 1

Set the power switch of the power supply module to OFF.

NOTE

Check the cable connection on the rear of a Switch, and then set the power switch of the power supply module to which you want to stop supplying power to OFF.

Step 2

When all the power switches of the power supply modules are set to OFF, set the main power switch on the rear of the external redundant power unit to OFF.

⚠CAUTION

Turning off the main power switch of an external redundant power unit stops the supply of all standby power to the switch. Do not turn off the main power switch if a standby power supply unit is being used for the Switch.

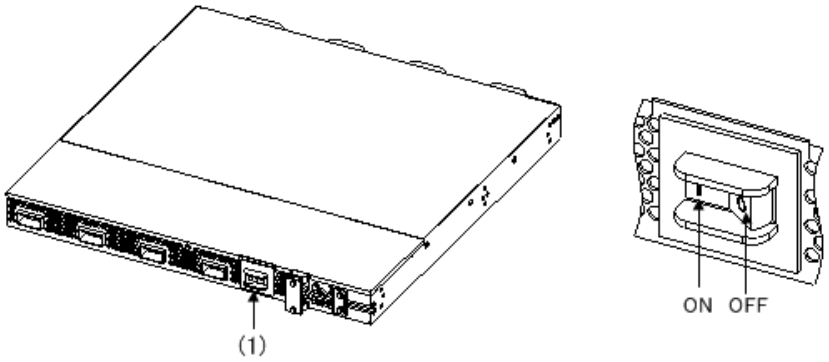
4.12.2 EPU-D

(1) Turning on the power

Step 1

Set the main power switch on the rear of the external redundant power unit to ON.

Figure 4-51 Turning on the power (External redundant power unit)



(1) Main power switch

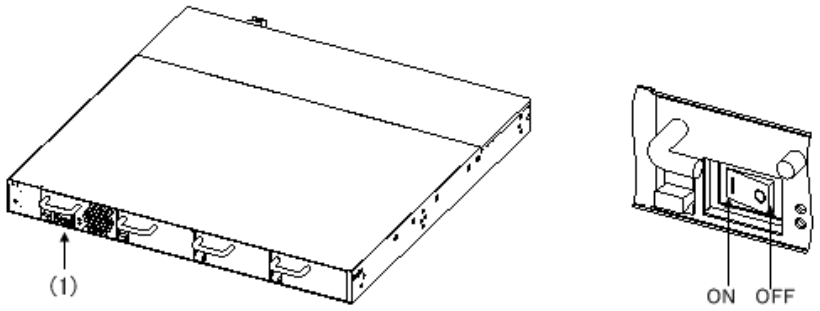
CAUTION

Before setting the main power switch of the EPU to ON, you must set the power switches of the installed power supply modules to OFF.

Step 2

Set the power switch of the power supply module to ON.

Figure 4-52 Turning on the power (power supply module)



(1) Power switch

(2) Turning off the power

To stop supplying standby power to a Switch, set the main power switch of the external redundant power unit to OFF.

Step 1

Set the power switch of the power supply module to OFF.

NOTE

Check the cable connection on the rear of a Switch, and then set the power switch of the power supply module to which you want to stop supplying power to OFF.

Step 2

When all the power switches of the power supply modules are set to OFF, set the main power switch on the rear of the external redundant power unit to OFF.

⚠CAUTION

Turning off the main power switch of an external redundant power unit stops the supply of all standby power to the switch. Do not turn off the main power switch if a standby power supply unit is being used for the Switch.

4.13 Adding, replacing, or removing Switches

This section describes how to remove and install a Switch.

Follow the steps shown in *Figure 4-53 Removing the Switch (AC model)* and *Figure 4-54 Removing the Switch (DC model)* to remove a Switch. For installation, perform the steps in reverse.

⚠WARNING

Adding or replacing a power supply module must be performed by a trained technician or maintenance personnel. If anyone other than those mentioned above performs these tasks incorrectly, a fire, electric shock, or failure could result.

NOTE

The figure below shows an example when an external redundant power unit is used.

NOTE

Skip steps 1, 3 and 6 in the cases below. Perform only steps 2, 4 and 5.

- An external redundant power unit (EPU-A) is not used for the AC models.
- An external redundant power unit (EPU-D) is not used for the DC models.

Figure 4-53 Removing the Switch (AC model)

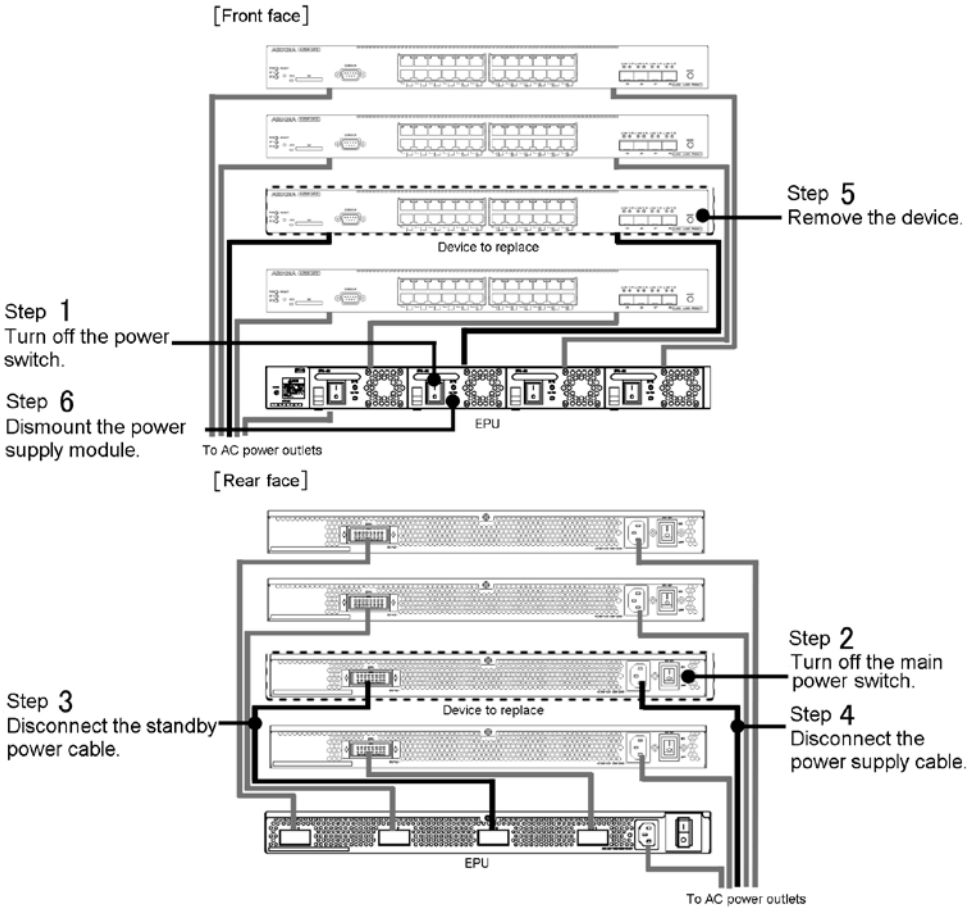
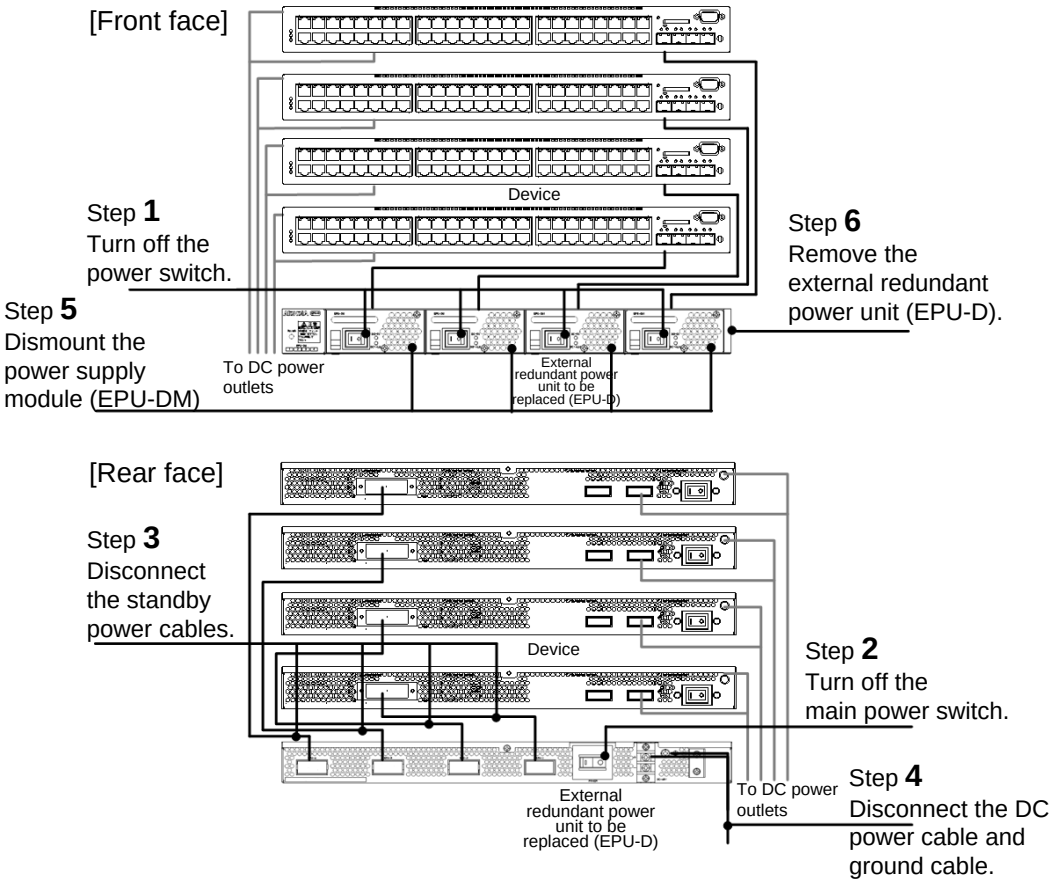


Figure 4-54 Removing the Switch (DC model)



⚠WARNING	Connecting or disconnecting the DC power cable to the power supply unit must be performed by a trained technician or maintenance personnel. Terminal connections are required for connection of the DC power cable to the power facility. For this reason, incorrect handling of the DC power cable could result in fire or electric shock.

⚠WARNING	When using the Switch at 100 V AC, use the supplied power cable or the optional ALAXALA power cable. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

⚠WARNING	When using the Switch at 200 V AC, use the optional ALAXALA power cable or a cable that satisfies Alaxala Networks Corporation's specifications. Using another cable could result in fire or electric shock. In addition, do not use the supplied cable with devices other than the Switch. Doing so could result in fire or electric shock.

⚠WARNING	Use the supplied power cable. Other cable except the bundled one may cause a fire and/or an electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in a fire or electric shock.

⚠WARNING	Before connecting or disconnecting a DC power cable, set the power supply circuit breaker to OFF. Connecting or disconnecting the cable with the circuit breaker set to ON could result in a fire or electric shock.

⚠CAUTION	Do not carelessly put your hands inside the Switch. The frame and components might cause injury.

CAUTION	Before installing or removing the power supply module, set the power switch of the module to OFF.

CAUTION	Do not touch any components or soldered surfaces of a power supply module with your hands. Also, when storing a power supply module, use an antistatic bag.

(1) Removing

Step 1

Confirm the location of the external redundant power unit and the external redundant power unit slot that supply standby power to the Switch. Set the power switch of the power supply module installed at that location to OFF.

Step 2

Set the power switch of the Switch to OFF.

Step 3

Disconnect the standby power cable from the Switch and the external redundant power unit.

Step 4

For the AC models, disconnect the AC power cable from the Switch.

For the DC models, disconnect the DC power cable and the ground cable from the Switch.

Step 5

Remove the Switch.

Step 6

External redundant power units and power supply modules that supply standby power to the Switch can be used to supply standby power to other Switches. To continue using these devices, do not remove them. If you will not use them, remove them.

⚠CAUTION

If continuing to use the Switch after removing a power supply module, attach a blank panel. If you use the switch without attaching the blank panel, you might be injured by a moving part. In addition, if foreign objects fall into the Switch, the Switch might no longer work properly.

(2) Attaching

Step 1

Install a Switch.

Step 2

Install the power supply module in an external redundant power unit.

Step 3

For the AC models, connect the AC power cable to the Switch.

For the DC models, connect the DC power cable and the ground cable to the Switch.

⚠WARNING

Make sure to connect the ground cable. Failure to do so might not only result in electric shock, but it might also introduce unwanted electrical noise that could cause a Switch failure.

Step 4

Connect the standby power cable to the Switch and external redundant power unit.

Step 5

Set the power switch of the Switch to ON.

Step 6

Set the power switch of the power supply module that supplies power to the Switch to ON.

NOTE

When replacing Switches, restore the operation information after the Switch starts. To do so, use the `restore` command. For details about the `restore` command, see *7. Checking the Software Version and Switch Status* in the manual *Software Manual Operation Command Reference*.

4.14 Adding, replacing, or removing EPUs

This section describes how to remove and install external redundant power units.

Follow the steps shown in *Figure 4-55 Replacing an external redundant power unit (EPU-A)* and *Figure 4-56 Replacing an external redundant power unit (EPU-D)* to remove an external redundant power unit. For installation, perform the steps in reverse.

⚠WARNING

Adding or replacing a power supply module must be performed by a trained technician or maintenance personnel. If anyone other than those mentioned above performs these tasks incorrectly, a fire, electric shock, or failure could result.

Figure 4-55 Replacing an external redundant power unit (EPU-A)

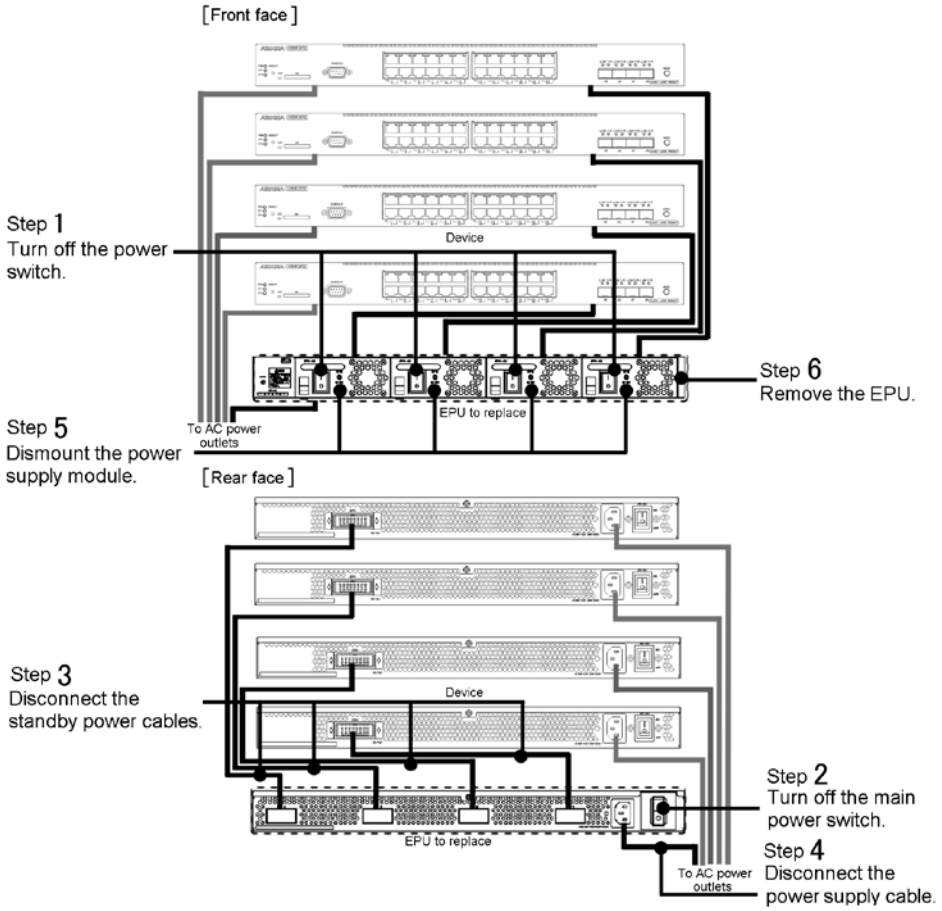
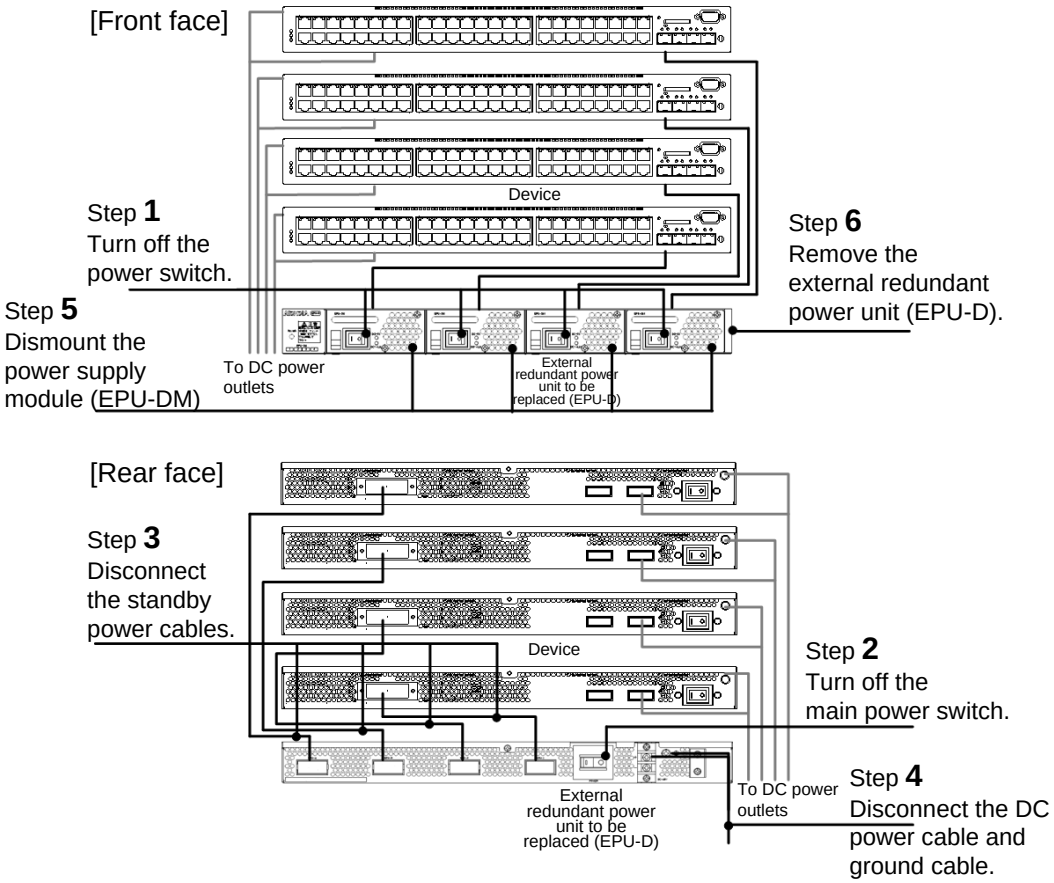


Figure 4-56 Replacing an external redundant power unit (EPU-D)



⚠WARNING	Connecting or disconnecting the DC power cable to the power supply unit must be performed by a trained technician or maintenance personnel. Terminal connections are required for connection of the DC power cable to the power facility. For this reason, incorrect handling of the DC power cable could result in fire or electric shock.

⚠WARNING	Use the supplied power cable. Other cable except the bundled one may cause a fire and/or an electric shock. In addition, do not use the supplied power cable with another switch. Doing so could result in a fire or electric shock.

⚠WARNING	Before connecting or disconnecting a DC power cable, set the power supply circuit breaker to OFF. Connecting or disconnecting the cable with the circuit breaker set to ON could result in a fire or electric shock.

⚠CAUTION	Do not carelessly put your hands inside the Switch. The frame and components might cause injury.

⚠CAUTION

Do not hold the handle of the power supply module when moving an external redundant power unit. The handle might come off, resulting in the switch falling and possibly causing injury. Also, the EPU or the power supply unit might become damaged, resulting in fire or electric shock.

CAUTION

Before installing or removing the power supply module, set the power switch of the module to OFF.

CAUTION

Do not touch any components or soldered surfaces of a power supply module with your hands. Also, when storing a power supply module, use an antistatic bag.

(1) Removing

Step 1

Set all power switches of the power supply modules to OFF.

Step 2

Set the main power switch of the external redundant power unit to OFF.

Step 3

Remove all standby power cables from the Switch and the external redundant power units.

Step 4

For an external redundant power unit (EPU-A), disconnect the AC power cable from the external redundant power unit (EPU-A).

For an external redundant power unit (EPU-D), disconnect the DC power cable and the ground cable from the external redundant power unit (EPU-D).

NOTE

For details about how to disconnect a DC power cable and ground cable from an external redundant power unit (EPU-D), see *4.6 Connecting and disconnecting the power cable to and from EPUs*.

Step 5

Remove all power supply modules inserted in slots 2, 3, and 4 of the external redundant power unit.

Step 6

Remove the external redundant power unit.

(2) Attaching

Step 1

Install an external redundant power unit.

Step 2

Install the power supply module in an external redundant power unit.

Step 3

For an external redundant power unit (EPU-A), connect the AC power cable to the external redundant power unit (EPU-A).

For an external redundant power unit (EPU-D), connect the DC power cable and the ground cable to the external redundant power unit (EPU-D).

⚠WARNING Make sure to connect the ground cable. Failure to do so might not only result in electric shock, but it might also introduce unwanted electrical noise that could cause a Switch failure.

NOTE For details about how to connect a DC power cable and ground cable to an external redundant power unit (EPU-D), see *4.6 Connecting and disconnecting the power cable to and from EPUs*.

Step 4

Connect a standby power cable to the Switch and the external redundant power unit.

Step 5

Set the main power switch of the external redundant power unit to ON.

Step 6

Set the power switch of the power supply module to ON.

4.15 Adding, replacing, or removing power supply modules

This section describes how to remove and install power supply modules while external redundant power units are turned on.

Follow the steps shown in *Figure 4-57 Replacing power supply modules (EPU-AM)* and *Figure 4-58 Replacing power supply modules (EPU-DM)* to remove a power supply module. For installation, perform the steps in reverse.

⚠WARNING Adding or replacing a power supply module must be performed by a trained technician or maintenance personnel. If anyone other than those mentioned above performs these tasks incorrectly, a fire, electric shock, or failure could result.

Figure 4-57 Replacing power supply modules (EPU-AM)

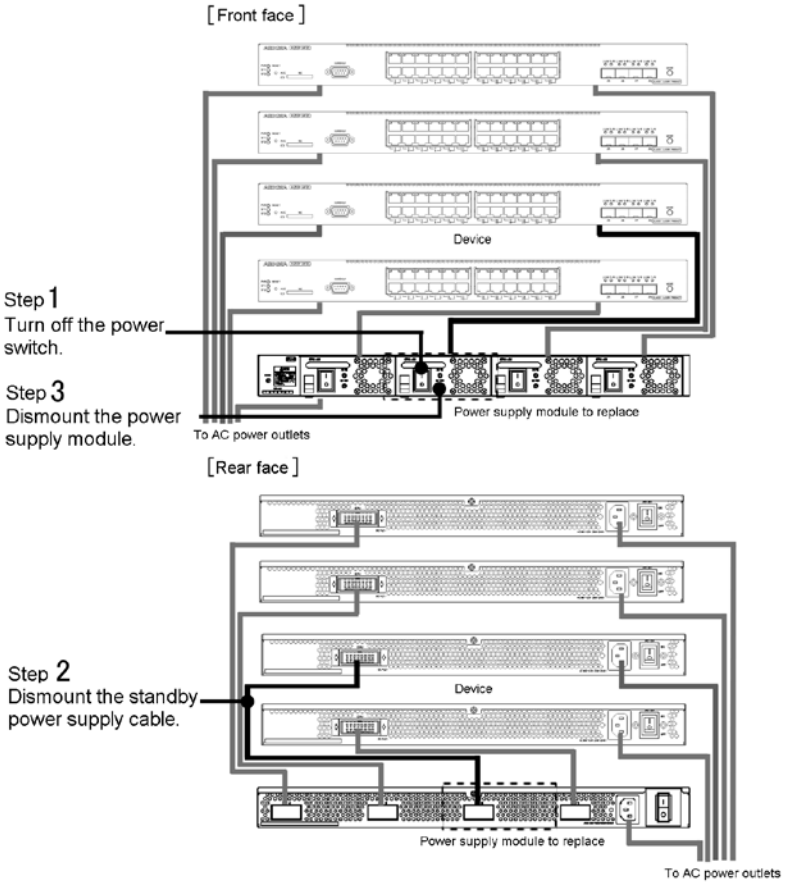
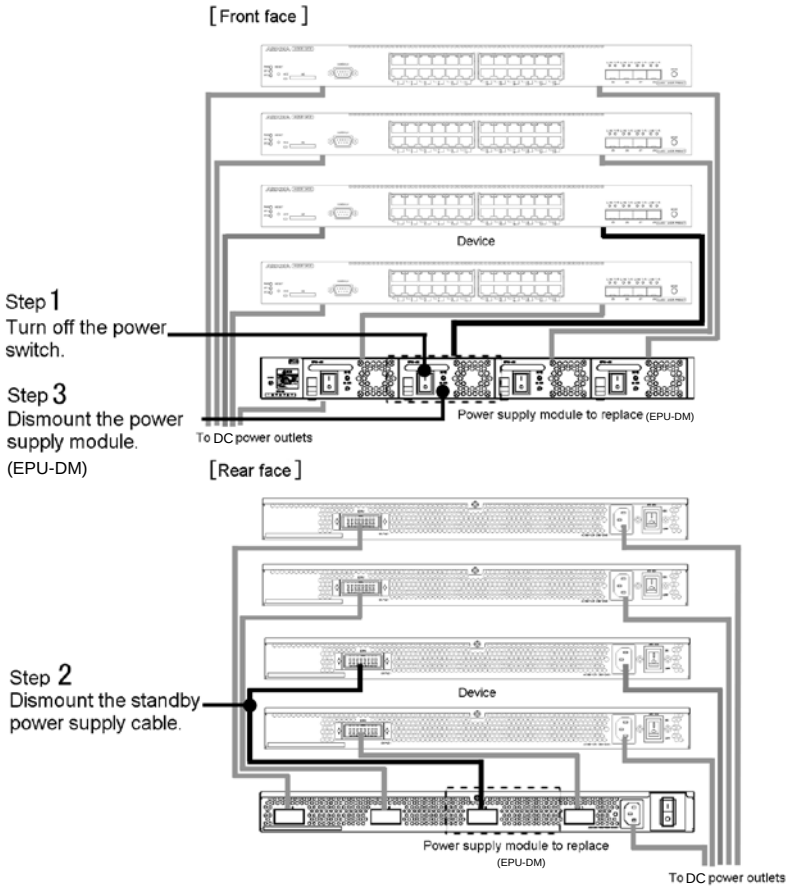


Figure 4-58 Replacing power supply modules (EPU-DM)



⚠CAUTION	Do not carelessly put your hands inside the Switch. The frame and components might cause injury.

CAUTION	Before installing or removing the power supply module, set the power switch of the module to OFF.

CAUTION	Do not touch any components or soldered surfaces of a power supply module with your hands. Also, when storing a power supply module, use an antistatic bag.

(1) Removing

Step 1

Set the power switch of the power supply module to be replaced to OFF.

Step 2

Disconnect the standby power cable from the Switch and the external redundant power unit.

Step 3

Remove the power supply module.

⚠CAUTION

If continuing to use the Switch after removing a power supply module, attach a blank panel. If you use the switch without attaching the blank panel, you might be injured by a moving part. In addition, if foreign objects fall into the Switch, the Switch might no longer work properly.

(2) Attaching

Step 1

Install the power supply module in an external redundant power unit.

NOTE

When adding a network interface unit, remove the blank panel. Make sure you keep the blank panel you remove.

Step 2

Connect the standby power cable to the Switch and the external redundant power unit.

Step 3

Set the power switch of the power supply module to ON.

5. Required Operations When Installing the Switch

This chapter describes how to set the time (required for initial installation), set the administrator password, change user IDs, and set login passwords.

5.1 Notes before installing the Switch

The following must be done when installing a Switch.

(1) The progress of the Switch must be checked until it has started.

The progress of the Switch from the time the power is turned on until the Switch has started is tracked as follows:

- After the power is turned on, the ST1 LED on the front panel begins blinking green, and the boot process starts.
- After the Switch has completely started, the ST1 LED turns green.

(2) Remove the memory card before starting the Switch.

Memory cards are used in the following situations:

- Saving error information in the event of a failure.
- Updating software.

For further information on inserting and removing the memory card, see *4.7 Inserting and removing memory cards and dummy cards*.

5.2 Necessary operations for installing the Switch

This section describes the operations necessary for initial installation.

5.2.1 Overview of the command input modes

The command input modes of the command line interface (CLI) for the Switch has a user mode, an administrator mode, and a configuration command mode. Configuration or operation commands must be entered to set or change the Switch configuration, or to determine the status of the Switch after switching to the appropriate command input mode.
Each command input mode has its own properties as shown below.

For details about entering commands for each mode and exiting each mode, see *Table 5-1 Command input modes*.

Table 5-1 Command input modes

Command input mode	Command to change modes	Prompt	Exit command	Description
User mode	`login:` *<User ID>*	`>`	`>logout`	Allows normal operation commands.
Administrator mode	`>enable`	`#`	`#disable`	Allows all operation commands.
Configuration command mode	`#configure`	`(config)#`	`(config)# exit`	Allows all configuration commands.

(1) User mode

After a user logs in, the Switch is in user mode. In this mode, most operation commands can be executed.

(2) Administrator mode

By typing the `enable` command in user mode, the Switch enters administrator mode. In this mode, all operation commands can be executed.

Initially, no password is set for the `enable` command. To ensure security, setting a password for the `enable` command is highly recommended.

(3) Configuration command mode

If you enter the `configure` command in administrator mode, the Switch enters configuration command mode. In this mode, all configuration commands are available in order to set and change the configuration of the Switch.

NOTE

The configuration command mode is level-structured.
Under the above `(config)#`, which is called global configuration mode, there are sub-configuration modes categorized by command types. For details about configuration command mode, see the *Software Manual Configuration Guide*.

NOTE

For further information on operation commands available in each command input mode, see the manual *Software Manual Operation Command Reference*.

For further information on configuration commands available in each command input mode, see the manual *Software Manual Configuration Command Reference*.

5.2.2 Overview of operations when installing a Switch

An overview of the operations necessary when installing a Switch is described below.

NOTE

Below is the minimum number of operations necessary for installing a Switch.

For details, see the manuals listed in *5.3 Miscellaneous operations*.

(1) Login

Log in to the Switch. Use the default user ID `operator`, which is set when a Switch is installed. (Since no password is set for `operator`, there is no authentication process for logging in.)

(2) Setting the Administrator password

Set the administrator password. Initially, no password is set for the administrator account. In order to enhance the security level, setting the administrator password is highly recommended.

(3) Changing the login user ID and setting a login password

Change the user ID `operator` to a different name, and then set a login password.

(4) Setting the time

Specify the time zone and the current time. The clock is not set initially. Since time is critical information for gathering fault information, set the exact time.

NOTE

The time setting for the Switch is retained for about ten days after being shut down. If the Switch is off for more than ten days, the clock needs to be reset when the Switch is turned on the next time.

(a) Login

When the Switch is turned on, the `login` prompt is displayed. After the `login` prompt, type the user ID and log in to the Switch.

```
login:operator                                  ...Type the user ID operator.



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>
```

(b) Setting the Administrator password

Set the administrator password.

```
> enable                                ...Enter administrator mode.

# password enable-mode                  ...Enable the administrator password setting.

Changing local password for admin.

New password: **********                 ...Set the administrator password.

Retype new password: **********         ...Re-type the password for confirmation.

#
```

NOTE

Passwords can be between 6 and 128 characters. (If a password longer than 128 characters is entered, only the first 128 characters are registered.)

A password cannot contain only lowercase letters. We recommend using a combination of uppercase letters, numbers, and special characters.

(c) Changing the user ID and setting a login password

[Step 1] Creating a user ID and setting the login password

Create a new user ID and set the login password. The following example shows how to create the user ID `newuser` and set a password for it.

```
# adduser newuser                 ...Set the new user ID newuser.

User(empty password) add done. Please setting password.

Changing local password for newuser.

New password: ********            ...Set the login password for user ID newuser.

Retype new password: ********     ...Re-type the password for confirmation.

# disable                         ...Return to the user mode.

> logout                          ...Log out.
```

NOTE

Login user IDs can be between 1 and 16 characters.
Passwords can be between 6 and 128 characters. (If a password longer than 128 characters is entered, only the first 128 characters are registered.)
A password cannot contain only lowercase letters. We recommend using a combination of uppercase letters, numbers, and special characters.

[Step 2] Deleting the operator user ID

Delete the default user ID (`operator`).

```
login: newuser                    ...Log in using the new user ID newuser.

Password: ********                ...Enter a login password (the password set in step 1).

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> enable                          ...Enter administrator mode.

Password: ********                ...Enter the administrator mode password.

# rmuser operator                 ...Delete the default user ID (operator).

Delete user 'operator'? (y/n): y

#
```

(d) Setting the time

Specify the time zone and the current time. The following example shows the

procedure for setting the time zone as Japan and the time to February 22, 2011 at 15:30.

```
# configure                          ...Enter configuration command mode.

(config)# clock timezone JST         ...Set the time zone to JST, which is a +9 hour-offset from UTC.
+9

!(config)# save                      ...Save the time zone setting.

(config)# exit                       ...Return to administrator mode.

# set clock 1102221530               ...Enter the date and time (year, month, date, time, and minute)
                                     as two-digit numeric values.

Tue Feb 22 15:30:00 JST 2011

#
```

NOTE

When the configuration is modified, `!` is displayed at the prompt. After the configuration is saved, `!` is no longer displayed.

NOTE

The time setting for the Switch is retained for about ten days after being shut down. If the Switch is off for more than ten days, the clock needs to be reset when the Switch is turned on the next time.

NOTE

The time zone setting for the Switch is retained in the configuration, even if the Switch is turned off. Even after ten days, the time zone does not have to be reset.

This concludes the initial settings, which include setting the time, the administrator password, adding the login user ID, and setting a login password.

NOTE

For details about operation maintenance and configuration settings after the initial settings, see *5.3 Miscellaneous operations*.

5.3 Miscellaneous operations

(1) Operation management and configuration settings

For details about the operation management and configuration settings, see the manuals listed in *Table 5-2 Manuals for operation management and configuration settings*.

In addition, for details about the operation commands, see the manuals listed in *Table 5-3 Manuals for detailed operation commands*. For details about the configuration commands, see the manuals listed in *Table 5-4 Manuals for detailed configuration commands*.

Table 5-2 Manuals for operation management and configuration settings

Series	Reference manuals
AX2500S series	*AX2500S Software Manual Configuration Guide Vol. 1* *AX2500S Software Manual Configuration Guide Vol. 2*

Table 5-3 Manuals for detailed operation commands

Series	Reference manuals
AX2500S series	*AX2500S Software Manual Operation Command Reference*

Table 5-4 Manuals for detailed configuration commands

Series	Reference manuals
AX2500S series	*AX2500S Software Manual Configuration Command Reference*

NOTE

After setting a configuration, back up the operation information. Doing so simplifies restoration in the event of a fault or components need to be replaced. For details about back up operations, see *11 Switch Management* in the *Software Manual Configuration Guide Vol. 1*.

(2) System interoperation test

Before actual system operation, conduct a test to check the configuration settings.

(3) Troubleshooting

See the following manual for corrective actions to problems.

Table 5-5 Troubleshooting manual

Series	Reference manuals
AX2500S series	*AX2500S Troubleshooting Guide*

Appendixes

A. Cleaning Optical Connectors

A.1 Cleaning the optical connectors of transceivers

Follow the procedure below to clean the optical connector for a transceiver.

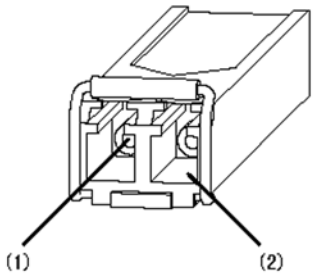
⚠CAUTION The Switch uses laser beams that are colorless and transparent, and invisible to the eye. Never look directly into the optical transceiver.

NOTE The following is an example of cleaning the optical connector of an SFP transceiver. Use the same procedure to clean the optical connector of an SFP+ transceiver.

Step 1

Use an air duster to remove dirt and dust from the optical connector.

Figure A-1 Optical connector and ferrule tip



(1) Ferrule tip (at the back)

(2) Optical connector

⚠WARNING Do not use an air duster that contains flammable gas near a flame. Doing so could result in a fire.

CAUTION Use an air duster specially designed for cleaning optical connectors. Using another type of air duster could cause the ferrule tip to become dirty.

CAUTION Keep the nozzle or container of the air duster from coming into contact with the ferrule tip. Contact could result in a malfunction.

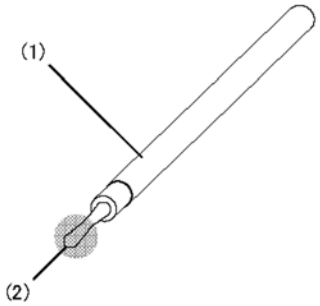
NOTE

For instructions on how to use the air duster, see the documentation for the air duster.

Step 2

Check the tip of the optical connector cleaner (stick-type) for irregularities, such as lint, dirt, or other foreign matter.

Figure A-2 Checking the optical connector cleaner



(1) Optical connector cleaner (stick-type)

(2) Part to check

CAUTION

Before cleaning, make sure that the tip of the optical connector cleaner is clean and free of defects, such as lint, dirt, or other foreign substances.
Using a cleaner with a defective tip might damage the ferrule tip.

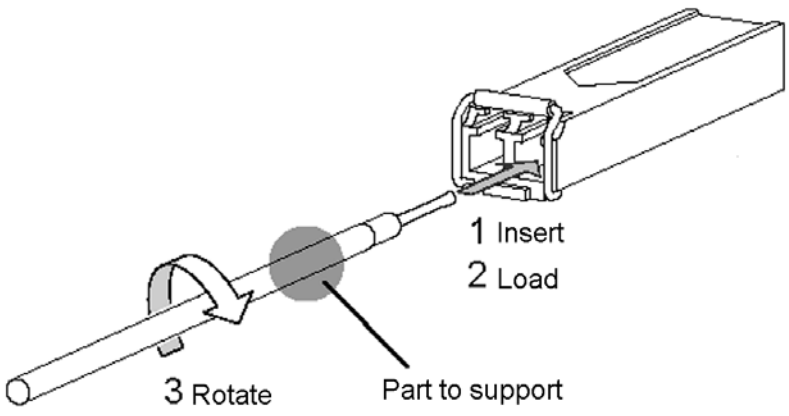
CAUTION

Always use a dedicated optical connector cleaner. If you use another type of cleaner, the ferrule tip might become dirty.

Step 3

Use the optical connector cleaner (stick-type) to clean any dirt from the ferrule tip.

Figure A-3 Cleaning the ferrule tip



CAUTION Do not apply excessive pressure when cleaning. Doing so might damage the ferrule tip.

CAUTION Rotate the optical connector cleaner clockwise only. Rotating the cleaner alternately clockwise and counterclockwise might damage the ferrule tip.

NOTE For instructions on how to use the optical connector cleaner, see the documentation for the optical connector cleaner.

A.2 Cleaning fiber optic cables

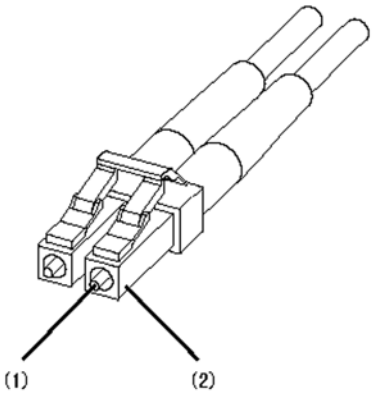
To clean fiber optic cables, follow the procedure below.

⚠CAUTION The Switch uses laser beams that are colorless and transparent, and invisible to the eye. Never look directly into the optical transceiver.

Step 1

Use an air duster to remove dirt and dust from the tip of the connector.

Figure A-4 Optical connector and ferrule tip



(1) Ferrule tip

(2) Connector

⚠WARNING Do not use an air duster that contains flammable gas near a flame. Doing so could result in a fire.

CAUTION Use an air duster specially designed for cleaning optical connectors. Using another type of air duster could cause the ferrule tip to become dirty.

CAUTION Keep the nozzle or container of the air duster from coming into contact with the ferrule tip. Contact could result in a malfunction.

NOTE For instructions on how to use the air duster, see the documentation for the air duster.

Step 2

Use an optical connector cleaner (reel-type) to clean any dirt from the ferrule tip.

Figure A-5 Cleaning the ferrule tip

CAUTION Always use a dedicated optical connector cleaner. If you use another type of cleaner, the ferrule tip might be damaged.

CAUTION Do not apply excessive pressure when cleaning. Doing so might damage the ferrule tip.

NOTE For instructions on how to use the optical connector cleaner, see the documentation for the optical connector cleaner.

B. Physical Specifications of Network Interfaces

B.1 Ethernet 10BASE-T/100BASE-TX/1000BASE-T

Table B-1 Physical specifications for 10/100/1000BASE-T (Ethernet port of a Switch)

Item	**Physical specifications**		
	10BASE-T	**100BASE-TX**	**1000BASE-T**
UTP cable	Category 3 and higher	Category 5 and higher	Enhanced category 5 and higher
Transmission distance (max.)	100 m	100 m	100 m

Table B-2 Physical specifications for 10BASE-T/100BASE-TX/1000BASE-T (SFP-T)

Item	**Physical specifications**		
	10BASE-T	**100BASE-TX**	**1000BASE-T**
UTP cable	Category 5 and higher	Category 5 and higher	Enhanced category 5 and higher
Transmission distance (max.)	100 m	100 m	100 m

Table B-3 Pin arrangement of 10BASE-T/100BASE-TX/1000BASE-T port

RJ45 pin number	**Physical specifications**		
	10BASE-T	**100BASE-TX**	**1000BASE-T**
1	Receive (+) (A)	Receive (+) (A)	Send/receive A (+) (A)
2	Receive (−) (a)	Receive (−) (a)	Send/receive A (−) (a)
3	Send (+) (B)	Send (+) (B)	Send/receive B (+) (B)
4	Not used[#1] (C)	Not used[#1] (C)	Send/receive C (+) (C)
5	Not used[#1] (c)	Not used[#1] (c)	Send/receive C (−) (c)
6	Send (-) (b)	Send (-) (b)	Send/receive B (−) (b)

RJ45 pin number	Physical specifications		
	10BASE-T	100BASE-TX	1000BASE-T
7	Not used[#1] (D)	Not used[#1] (D)	Send/receive D (+) (D)
8	Not used[#1] (d)	Not used[#1] (d)	Send/receive D (−) (d)

#1: Use when connecting to a cable rated enhanced category 5 or higher.

B.2 Ethernet 100BASE-FX

Table B-4 Physical specifications for 100BASE-FX

Item	Physical specifications	
Cable type	Multi-mode	
Core/cladding diameter	50/125 μm	62.5/125 μm
Transmission band	500 MHz.km	500 MHz.km
Laser center wavelength	1.270 to 1.380 μm	
Optical transmission power (mean)	−23.0 to −14.0 dBm	−20.0 to −14.0 dBm
Optical reception power (mean)	−31.0 to −14.0 dBm	
Optical transmission loss (max.)	8.0 dB	11.0 dB
Transmission distance	2 m to 2 km	

B.3 Ethernet 1000BASE-X interface

Table B-5 Physical specifications for 1000BASE-SX

Item	Physical specifications			
Cable type	Multi-mode			
Core/cladding diameter	50/125 μm		62.5/125 μm	
Transmission band	400 MHz.km	500 MHz.km	160 MHz.km	200 MHz.km
Laser center wavelength	0.770 to 0.860 μm			
Optical transmission power (mean)	−9.5 to 0 dBm			

Item	Physical specifications			
Optical reception power (mean)	−17.0 to 0 dBm			
Optical transmission loss (max.)	7.5 dB			
Transmission distance	2 to 500 m	2 to 550 m	2 to 220 m	2 to 275 m

Table B-6 Physical specifications for 1000BASE-SX2

Item	Physical specifications	
Cable type	Multi-mode	
Core/cladding diameter	50/125 μm	62.5/125 μm
Transmission band	500 MHz.km	500 MHz.km
Laser center wavelength	1.270 to 1.355 μm	
Optical transmission power (mean)	−9.0 to −3.0 dBm	
Optical reception power (mean)	−19.0 to −3.0 dBm	
Optical transmission loss (max.)	10.0 dB	
Transmission distance	2 m to 2 km	2 m to 1 km[#1]

#1: The transmission distance can be increased by using the mode conditioning patch code. However, the maximum distance for transmission is 2 km, and that distance depends on transmission loss. For 2 km transmission, the packet loss must be no more than 10 dB.

Table B-7 Physical specifications for 1000BASE-LX

Item	Physical specifications			
Cable type	Multi-mode[#1]			Single mode
Core/cladding diameter	50/125 μm		62.5/125 μm	10/125 μm
Transmission band	400 MHz.km	500 MHz.km	500 MHz.km	−
Laser center wavelength	1.270 to 1.355 μm			
Optical transmission power (mean)	−11.5 to −3.0 dBm			−11.0 to −3.0 dBm
Optical reception power (mean)	−19.0 to −3.0 dBm			

Item	Physical specifications	
Optical transmission loss (max.)	7.5 dB	8.0 dB
Transmission distance	2 to 550 m	2 m to 5 km

#1: Some kinds of multi-mode optical fiber might increase the BER (bit error rate) when used with 1000BASE-LX. In this case, proper communication can be established by using the mode-conditioning patch code.

Table B-8 Physical specifications for 1000BASE-LH

Item	Physical specifications	
Cable type	Single mode	Single mode (DSF)
Core/cladding diameter	10/125 μm	8/125 μm
Laser center wavelength	1.540 to 1.570 μm	
Optical transmission power (mean)	0 to +5.0 dBm	
Optical reception power (mean)	−22.0 to 0 dBm	
Optical transmission loss (max.)	22.0 dB[#1]	
Transmission distance	2 m to 70 km	

#1: When optical transmission loss is 5.0 dB or less, use an optical attenuator to adjust the loss.

Table B-9 Physical specifications for 1000BASE-LHB

Item	Physical specifications	
Cable type	Single mode	Single mode (DSF)
Core/cladding diameter	10/125 μm	8/125 μm
Laser center wavelength	1.480 to 1.580 μm	
Optical transmission power (mean)	+2.0 to +7.0 dBm	
Optical reception power (mean)	−34.0 to −9.0 dBm	
Optical transmission loss (max.)	36.0 dB[#1]	
Transmission distance	2 m to 100 km[#2]	2 m to 100 km

#1: When optical transmission loss is 16.0 dB or less, use an optical attenuator to adjust the loss.

#2: For transmission over a 100 km distance, use an optical fiber with dispersion of

20 ps/nm/km or less.

Table B-10 Physical specifications for 1000BASE-BX

Item	**Physical specifications**			
Interface	1000BASE-BX10-U[#1]	1000BASE-BX10-D[#1]	1000BASE-BX40-U[#2]	1000BASE-BX40-D[#2]
Cable type	Single mode			
Core/cladding diameter	10/125 μm			
Laser center wavelength	1.260 to 1.360 μm	1.480 to 1.500 μm	1.260 to 1.360 μm	1.480 to 1.500 μm
Receiving wavelength	1.480 to 1.500 μm	1.260 to 1.360 μm	1.480 to 1.500 μm	1.260 to 1.360 μm
Optical transmission power (mean)	−9.0 to −3.0 dBm		−3.0 to 3.0 dBm	
Optical reception power (mean)	−19.5 to −3.0 dBm		−23.0 to −3.0 dBm	
Optical transmission loss (max.)	10.5 dBm		20.0 dB[#3]	
Transmission distance	0.5 m to 10 km		−0.5 m to 40 km	

#1: 1000BASE-BX10-U and 1000BASE-BX10-D are paired when in use.

#2: 1000BASE-BX40-U and 1000BASE-BX40-D are paired when in use.

#3: When optical transmission loss is 6.0 dB or less, use an optical attenuator to adjust the loss.

B.4 Ethernet 10GBASE-R interface

Table B-11 Physical specifications for 10GBASE-SR

Item	**Physical specifications**				
Cable type	Multi-mode				
Core/cladding diameter	50/125 μm			62.5/125 μm	
Transmission band	400 MHz.km	500 MHz.km	2000 MHz.km	160 MHz.km	200 MHz.km
Laser center wavelength	0.840 to 0.860 μm				

Item	Physical specifications				
Optical transmission power (mean)	−7.3 to −1.0 dBm				
Optical reception power (mean)	−9.9 to −1.0 dBm				
Optical transmission loss (max.)	2.6 dB				
Transmission distance	2 m to 66 m	2 m to 82 m	2 m to 300 m	2 m to 26 m	2 m to 33 m

Table B-12 Physical specifications for 10GBASE-LR

Item	Physical specifications
Cable type	Single mode
Core/cladding diameter	10/125 μm
Laser center wavelength	1.260 to 1.355 μm
Optical transmission power (mean)	−8.2 to +0.5 dBm
Optical reception power (mean)	−14.4 to +0.5 dBm
Optical transmission loss (max.)	6.2 dB
Transmission distance	2 m to 10 km

Table B-13 Physical specifications for 10GBASE-ER

Item	Physical specifications
Cable type	Single mode
Core/cladding diameter	10/125 μm
Laser center wavelength	1.530 to 1.565 μm
Optical transmission power (mean)	−4.7 to +4.0 dBm
Optical reception power (mean)	−15.8to +1.0 dBm
Optical transmission loss (max.)	11.1 dB[#1]
Transmission distance	2 m to 40 km

#1: When optical transmission loss is 5.0 dB or less, use an optical attenuator to adjust the loss.

C. Specifications of the Setup Terminal

C.1 Specifications of the setup terminal

Use a personal computer or a workstation that meets the specifications listed in *Table C-1 Terminal specifications*.

Table C-1 Terminal specifications

Entry		**Specifications**
Communication port		RS232C port
Communication software		Tera Term Pro (Version 2.3) or communication software that meets the communication settings below.
Operation mode		VT100 emulation mode
Communication settings	Communication parameters	8 bits, 1 stop bit, no parity
	Communication speed[#1]	19200 bit/s, 9600 bit/s, 4800 bit/s, 2400 bit/s, 1200 bit/s

#1: The communication speed of the Switch is set to 9600 bit/s when shipped from the factory.

C.2 Specifications of the setup terminal connection cable

An RS232C crossover cable with D-sub 9-pin female connectors and with #4-40 inch-screws on both ends is required to connect the Switch to the setup terminal. *Figure C-1 Setup terminal connection cable pin configuration* shows the pin arrangement of an RS232C crossover cable.

Figure C-1 Setup terminal connection cable pin configuration