

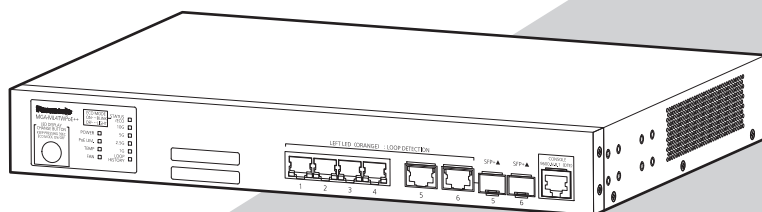
Installation Guide

MGA-ML4TWPoE++

Model No. PN290496-SG
PN290496-NZ

- Thank you for purchasing our product.
- This document provides important information about safe and proper operations of this Ethernet Switch.
- Please read the **"Important Safety Instructions"** on pages from 3 to 6.
- Any problems or damages resulting from disassembly of this Ethernet Switch by customers are not covered by the warranty.
- The instruction manuals (CLI, Version, Web Version), latest firmware and SDN application (ZEQUO assist Plus) can be downloaded from the following URL.

<https://panasonic.co.jp/ew/pewnw/english/datadownload/index.html>



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Important Safety Instructions

This chapter contains important safety instructions for preventing bodily injury and/or property damage. Please read carefully, and follow them at all times.

- Severity of bodily injury and/or property damage, which could result from incorrect use of the Ethernet Switch, are explained below.



This symbol indicates a potential hazard that could result in serious injury or death.



This symbol indicates safety instructions. Deviation from these instructions could lead to bodily injury and/or property damage.

- The following symbols are used to classify and describe the type of instructions to be observed.



This symbol is used to alert users what they must not do.



This symbol is used to alert users what they must do.

WARNING



- Do not use power supply other than AC 100 - 240 V.
Deviation could lead to fire, electric shock, and/or equipment failure.
- Do not handle this Ethernet Switch and connection cables during a thunderstorm.
Deviation could lead to electric shock.
- Do not disassemble and/or modify this Ethernet Switch.
Deviation could lead to fire, electric shock, and/or equipment failure.
- Do not damage the power cord. Do not bend too tightly, stretch, twist, bundle with other cord, pinch, put under a heavy object and/or heat it.
Damaged power cord could lead to fire, short, and/or electric shock.
- Do not unplug nor plug in the power plug with wet hands.
Deviation could lead to electrical shock, and/or equipment failure.
- Do not insert, or drop foreign objects such as metal or combustible things into Ethernet Switch through the openings, twisted pair ports, console port and SFP+ extension slot.
Deviation could lead to fire, electric shock, and/or equipment failure.
- Do not store or use the Ethernet Switch in places where it might get splashed with liquids such as water, in places with a lot of humidity, in places with conductive dust, or in places where there are corrosive and combustible gases.
Deviation could lead to fire, electrical shock, and/or equipment failure.
- Do not store or use the Ethernet Switch in places where it will be exposed to direct sunlight or high temperatures.
The temperature inside will rise, which may cause fire.
- Do not store or use the Ethernet Switch in places where there are lots of vibrations and impacts, or in unstable areas.
It might fall, which may cause injuries and/or equipment failure.

WARNING



- **Do not put the Ethernet Switch into fire.**
Deviation could lead to explosion and/or fire.
- **Do not look at the laser beam.**
Doing so might cause eyesight impairment. (Class 1 laser product)
- **Do not connect any other devices except for 100BASE-TX/1000BASE-T/2.5GBASE-T/5GBASE-T/10GBASE-T devices to the twisted pair ports.**
Deviation could lead to equipment failure.
- **Do not insert any other modules into the SFP+ expansion slots (ports 5 and 6) except for the separately sold SFP modules (PN54022/PN54024), and the SFP+ modules (PN59021/PN59023).**
Deviation could lead to equipment failure.
Check our website for the latest information on supported SFP modules.
- **Do not use the Ethernet Switch in dusty environments such as on floors, underneath floors, the backside of ceilings, or wiring panels.**
Do not use the Ethernet Switch in very dusty areas such as on floors, underneath floors, the backside of ceilings, or wiring panels. Deviation could lead to fire, electrical shock, and/or equipment failure. It is recommended that the Ethernet Switch be operated in environments such as the inside of racks where it is difficult for dust to be generated.

CAUTION



- **Use the bundled power cord (AC 100 – 240 V specifications).**
Deviation could lead to electric shock, malfunction, and/or equipment failure.
- **Unplug the power cord in case of equipment failure.**
Deviation, such as keep connecting for a long time, could lead to fire.
- **Be sure to connect the ground cable.**
Otherwise this might cause electrical shocks, misoperations and malfunctions.
Connect the Ethernet Switch via the supplied power cord to the outlet which is connected to the ground.
If the outlet is not connected to a ground, connect the ground cable to the ground terminal screw.
- **Connect the power cord firmly to the power port.**
Otherwise this might cause electrical shocks and malfunctions.
- **Unplug the power cord if the STATUS/ECO LED (Status/ECO mode) blinks in orange (system fault).**
Deviation, such as keep connecting for a long time, could lead to fire.
- **Handle the Ethernet Switch carefully so that fingers or hands may not be damaged by twisted pair port, SFP+ extension slot, console port, or power cord hook block.**
- **When mounting the Ethernet Switch on a wall, mount it securely using wall mount brackets to prevent the Ethernet Switch from falling due its weight and that of the connection cables.**
Deviation could lead to falling, injury and/or equipment failure.

CAUTION



- If the device is going to be mounted onto a rack, use the 2 installation brackets (for 19-inch rack mounting) which include the 19-inch rack mounting brackets (for 1 rack) and the 8 screws (for the rack installation brackets and for the main unit connections), and install the installation brackets into each of the 4 horizontal holes in the device, then securely secure it and set it up.
If it is not firmly secured, then deviation could lead to falling, injury and/or equipment failure.
- Check whether the optical fiber cable connectors are contaminated with dust, etc. This might cause the optical signal to not be transmitted normally, and cause misoperations and malfunctions. If they are contaminated, make sure to clean them off, then connect them to the optical fiber ports.
- This Ethernet Switch is to be periodically serviced in order to maintain its performance.
Please assign a product administrator, and be sure to implement periodic maintenance. When doing maintenance, check the inspection chart that is posted on our website which has the requisite items listed on it.
- When using this Ethernet Switch to design systems, use it after applying appropriate measures such as setting up redundant configurations.
Communication failures might be generated due to causes such as malfunctions or misoperations while the Ethernet Switch is being used.
- When using this Ethernet Switch for applications which require extremely high reliability, be careful to expend all possible means to ensure safety and reliability.
This Ethernet Switch is not designed nor manufactured with the intention that it be used for applications (in use with railways, aviation, and medical care, etc. where the influence rate due to communication failures is extremely high in regard to systems that directly affect systems and human lives) which require extremely high reliability.
- Be aware of glitches which are caused in the usage environments such as age-related degradation, etc.
This may vary depending upon conditions such as utilization rates and usage environments, but performance might decrease due to the age-related degradation, etc. of components. It is recommended that this Ethernet Switch be replaced about five years after it has been installed.
- Be careful in regards to environmental restrictions whereby the Ethernet Switch can be used.
Please isolate the business power lines and communication lines. Isolate distribution lines and other distribution lines, and low current power lines, optical fiber cables, metallic water conduits, and gas conduits, etc. Noise may be generated in the communication lines which might cause communication glitches.
- Do not connect the console ports with any other device except for Serial communication terminal.
Deviation could lead to equipment failure.
- To connect a power receiving equipment supporting IEEE802.3bt or IEEE802.3at to this Ethernet Switch, use a cable rated Cat5e or higher.
Using other cables may result in heat generation, ignition, and/or equipment failure.

CAUTION



- When connecting 10GBASE-T (IEEE 802.3an) supported devices to this device, use Cat6 or above cables.
If any other cables except for the aforementioned are used, malfunctions might be caused.
- When connecting IEEE802.3bt compatible devices to this device, AWG24 and 65 °C or higher rated temperature cables are recommended.
If cables other than the above are used, that may cause overheating, ignition, or malfunctions.
- It is strongly recommended that a lightning arrester (SPD) be installed on the twisted pair port side and the power supply side of this Ethernet Switch.
Malfunctions might be caused due to overcurrent and overvoltage due to the effects of lightning strikes.

Important Requests on Protection from Lightning Strike

- If you connect a network camera, a wireless access point, or other devices that can be affected by a lightning strike (in particular, devices installed outdoors) to the twisted pair port of this Ethernet Switch, a lightning surge current/voltage may be conducted to this Ethernet Switch through the twisted pair cable, leading to malfunction. If you connect such a device, it is strongly recommended that you install a surge protective device (SPD) on the twisted pair port side of this Ethernet Switch.
- A lightning surge current/voltage may be conducted to this Ethernet Switch through the power supply or ground wire connected to the power port, leading to malfunction. If a lightning surge current/voltage may flow in through the power supply or ground wire, it is recommended that you install a surge protective device (SPD) on the power port side of this Ethernet Switch.

Basic Instructions for the Use of This Product

- For inspection and/or repair, consult the retailer.
- Use commercial power supply from a wall socket, which is close and easily accessible to this Ethernet Switch.
- Unplug the power cord when installing or moving this Ethernet Switch.
- Unplug the power cord when cleaning this Ethernet Switch.
- Use this Ethernet Switch within the specifications. Deviation could lead to malfunction.
- Do not touch the twisted pair cable modular metal terminals which are connected to RJ45 connectors (twisted pair ports) or the connectors, nor place them near electrically-charged objects. Static electricity could lead to equipment failure.
- Do not put the modular plug of the connected twisted pair cable on objects that can carry static charge, such as carpet. Do not place it in the proximity. Static electricity could lead to equipment failure.
- Do not put a strong shock, including dropping, to this Ethernet Switch. Deviation could lead to equipment failure.
- Before connecting a console cable to the console port, discharge static electricity, for example by touching metal appliance (do not discharge by touching this Ethernet Switch).
- Please use this Ethernet Switch in place where ambient temperature is from 0 to 50°C and, when the fan setting is set to Low2, or Min and it is used, use it in areas where the ambient temperatures range from 0 to 40°C.

Do not store and/or use this Ethernet Switch in the environment with the characteristics listed below. (Store and/or use this Ethernet Switch in the environment in accordance with the specification.)

- High humidity. Possible spilled liquid (water).
- Dusty. Possible static charge (such as carpet).
- Under direct sunlight.
- Possible condensation. High/low temperature exceeding the specifications environment.
- Strong vibration and/or strong shock.

Failure to satisfy the conditions above may result in a fire, electric shock, equipment failure, and/or malfunction. Such events are not covered by the warranty.

*If it is used beyond the operating environmental temperatures, then the protective devices will start working and the Ethernet Switch power will be shut off.

- Do not block the ventilator of the Ethernet Switch.
Blocked ventilator induces the heat accumulation inside, causing equipment failure and/or malfunction.

If used at a temperature out of the operating temperature range, deviation could lead to malfunction.

- When using two Ethernet Switches, do not stack them. When you place them side by side, allow for a space of 20 mm or more between them. This space is not necessary if you use supplied connection brackets.
- When Ethernet Switches mounting to rack, leave a minimum of 20 mm space between them.
- When bundling and installing the cables which connect the IEEE802.3bt compatible devices, it is recommended that the number of cables be 24 or less.

If multiple cables are bundled and wired according to the cable specifications, that could lead to ignition, malfunctions, or misoperations.

*Please contact the cable manufacturers for detailed installation conditions.

1. Please note that Panasonic shall not bear any liability whatsoever for any damages (this shall include, but is not limited to, lost earnings, lost opportunities, etc.) which were generated in relation to damages caused by operations and usage, or the inability to use this Ethernet Switch, whereby the customer does not follow this Installation Guide.
2. The contents described in this document may be changed without prior notice.
3. For any question, please contact the retailer where you purchased the product.

1 Product Outline

MGA-ML4TWPoE++ is an Ethernet Ethernet Switch with management functions which has 4 100/1000/2.5G/5GBASE-T compatible ports, and 2 100/1000/2.5G/5G/10GBASE-T compatible ports, and 2 SFP+ expansion slots (they are exclusively used with the twisted pair ports).

Ports 1 to 4 support IEEE802.3bt/at/af PoE power supply function.

1.1 Features

- Ports 1 to 4 are 100BASE-TX/1000BASE-T/2.5GBASE-T/5GBASE-T ports corresponding to auto negotiation.
Also their speed and communication mode can be switched by configuration.
Ports 5 and 6 can be used as a 100BASE-TX/1000BASE-T/2.5GBASE-T/5GBASE-T/10GBASE-T port corresponding to auto negotiation or an SFP extension slot exclusively.
- Ports 1 to 4 can supply power conforming with IEEE802.3bt/at/af. Supplying power up to 95 W per port, and up to 240 W in total is possible.
- Is equipped with PoE auto reboot functions, and monitoring, and the switching of the power supply OFF/ON to ports is possible via Ping, LLDP, and the 3 traffic volume methods.
- Equipped with silent fan control functions, can be set to match the operating environment temperature and power supply, and be used with any of the fan rpm, "High" , "Low" and "Min" .
- All twisted pair ports support straight/cross cable auto sensing function. Simply connect devices with straight cables, whether it is a terminal or a network device.
(This function does not work if the port communication configuration is set at Fixed or Link Aggregation. Ports 1 to 4 are set at MDI-X. (default))
- Telnet/SSH allows remote configuration changes and verifications of the Ethernet Switch. Remotely configure the PoE settings for each port (Ports 1 to 4).
- The connection status for each port is detected by the power saving mode, and it can suppress the power consumption to required volumes when not linked up. (Factory default: deactivated)
- Rapid Spanning Tree Protocol is supported, allowing to build a system with redundancy.
- The IEEE802.1p compatible QoS function is supported.
- Supports triple authentication that can simultaneously wait on IEEE802.1X authentication, MAC authentication, and WEB authentication via one port, and an authentication network which is matched to the kinds of connection terminals can be constructed.
- Equipped with step authentication functions, and can prevent illegal access of the terminals.
- Since it is equipped with authentication supplicant functions, a more robust security configuration can be configured in combination with the upper switch's IEEE802.1X authentication functions.
- Due to the loop detection/shutoff function, a port where loop has occurred can be automatically shut off to prevent loop failures. When a port is shut off and recovered automatically, SNMP trap can be sent to notify the incident to the administrator.
Moreover, the port with a loop can be identified by loop notification on the LEDs on the main unit and referring the history of loop on the setting screen.
- The PoE scheduler function enables scheduling of PoE power supply control.
- Supports ZEQUO assist Plus. Processes from introduction to maintenance can be performed easily.

1.2 Specifications

Interface	<p>Twisted pair port 1-4: RJ45 connector (*1) Transmitting and receiving networks system IEEE802.3u 100BASE-TX IEEE802.3ab 1000BASE-T IEEE802.3bz 2.5GBASE-T IEEE802.3bz 5GBASE-T</p> <p>Twisted pair port 5,6: RJ45 connector Transmitting and receiving networks system IEEE802.3u 100BASE-TX IEEE802.3ab 1000BASE-T IEEE802.3bz 2.5GBASE-T IEEE802.3bz 5GBASE-T IEEE802.3an 10GBASE-T</p> <p>(*1) Energy Efficient Ethernet function IEEE802.3az(LPI)</p> <p>SFP+ extension slot 5,6port Transmitting and receiving networks system IEEE802.3z 1000BASE-X IEEE802.3ae 10GBASE-SR/LR</p> <p>*Select either RJ45 or SFP for use SFF-8472 (DMI:Diagnostic Monitoring Interface)</p> <p>Console port: RJ45 connector RS-232C(ITU-TS V.24)</p>										
Switching mode	<p>Store and Forward method: Forwarding rate</p> <table> <tr> <td>100BASE-TX:</td> <td>Max. 148,800 pps/port</td> </tr> <tr> <td>1000BASE-T:</td> <td>Max. 1,488,000 pps/port</td> </tr> <tr> <td>2.5GBASE-T:</td> <td>Max. 3,720,000 pps/port</td> </tr> <tr> <td>5GBASE-T:</td> <td>Max. 7,440,000 pps/port</td> </tr> <tr> <td>10GBASE-T:</td> <td>Max. 14,880,000 pps/port</td> </tr> </table> <p>MAC Address table: Max. 16K entry/unit Buffer: 2.0Mbyte/unit * EAP frame, BPDU frame transmission</p>	100BASE-TX:	Max. 148,800 pps/port	1000BASE-T:	Max. 1,488,000 pps/port	2.5GBASE-T:	Max. 3,720,000 pps/port	5GBASE-T:	Max. 7,440,000 pps/port	10GBASE-T:	Max. 14,880,000 pps/port
100BASE-TX:	Max. 148,800 pps/port										
1000BASE-T:	Max. 1,488,000 pps/port										
2.5GBASE-T:	Max. 3,720,000 pps/port										
5GBASE-T:	Max. 7,440,000 pps/port										
10GBASE-T:	Max. 14,880,000 pps/port										
Link Aggregation	<p>IEEE802.3ad Configurable up to 3 groups (Max. 6 ports per group)</p>										
VLAN	<p>IEEE802.1Q tagging VLAN protocol compatible (Max. 256 groups including the default VLAN) Port based VLAN, Internet Mansion function</p>										
QoS	<p>IEEE802.1p compatible, Supports 8 priority queues</p>										
Management method	<p>ZEQUO assist Plus, SNMP v1/v2c/v3, Telnet, SSH v2, Console, WEB control screen (Scheduled to be supported)</p>										
Power supply function	<p>Ports 1 to 4 support the IEEE802.3bt/at/af compatible power supply function. Maximum power supply: 95 W per port, 240 W in total</p>										
Power supply method	<p>IEEE802.3at/af: Alternative A (Using pins 1, 2, 3, 6) IEEE802.3bt: Alternative A, B (Using pins 1 - 8)</p>										

1 Product Outline

Silent fan control	The fan rpm can be set in accordance with the usage environments. If the fan rpm are set, the maximum power supply will be automatically restricted. If the fan rpm (Fan Speed) are set to Low1, or Min, the device’s overall maximum power supply (Power Budget) will be automatically restricted to 120 W, and it can be used with the fan noise reduced.				
	Fan Speed		Operating environment temperature	Maximum power supply (Power Budget)	Comments
	High		0-50°C	240 W	Factory default
	Low	(Low1)		180 W	
		(Low2)	240 W		
	Min		0-40°C	180 W	
Others	STP/RSTP/MSTP Supports the IEEE802.1X authentication (MAC-based, port-based) MAC authentication, WEB authentication, Triple authentication, STEP authentication, IEEE802.1X supplicant, Port monitoring, Ring protocol, IGMP snooping, Loop detection/shutoff function, Storm control, DSCP mapping function, Login RADIUS function, DHCP client function, PoE scheduler function, PoE auto reboot function, Port grouping function, Multi-cast address group registration function				
Power supply	AC 100-240 V, 50/60 Hz, 3.8 A				
Power consumption	Normally, Max. 303 W (32.5 W when not supplying power), Min. 20.8 W				
Operating environment	Temperature: 0–50°C, Humidity: 20–80% RH (no condensation) *If it is used beyond the operating environmental temperatures, then the protective devices will start working and the Ethernet Switch power will be shut off.				
Storage environment	Temperature: -20–70°C, Humidity: 10–90% RH (no condensation)				
External dimensions	44 mm (Height) × 330 mm (Width) × 230 mm (Depth) (Excluding protruding sections)				
Mass (Weight)	3,100 g				

1.3 Accessories

Please be sure to confirm the content.

Please contact our distributor if any of the contents are insufficient.

Quantity

- Rubber feet4
- Rack mount brackets (for 19-inch rack)2
- Screws (for 19-inch rack)4
- Screws (for fixing the mount brackets to the Ethernet Switch)8
- Power cord1

[Power Cord]

The following power cords are supplied as per the intended nation of delivery.

Product Number	Locale	Power Cord Rating	FUSE Rated Current	Plug Type
PN290496-SG	Singapore	250 VAC 5 A	5 A	BS1363
PN290496-NZ	Australia /New Zealand	250 VAC 10 A	-	AS/NZS 3112

[Optional accessories]

- PN54022-XX 1000BASE-SX SFP Module(i)
- PN54024-XX 1000BASE-LX SFP Module(i)
- PN59021-XX 10GBASE-SR SFP+ Module
- PN59023-XX 10GBASE-LR SFP+ Module

The XXs are identical to the intended nation of delivery codes.

1.4 Basic operation

This Product does not have a power ON/OFF switch. Connect the supplied power cord to this Ethernet Switch and connect the other end into an electric outlet.

This Ethernet Switch operates at AC 100 - 240 V (50/60 Hz).

When power is supplied, all the LEDs are turned ON.

Then, POWER LED (Power) lights in green, STATUS/ECO LED (Status/ECO mode) lights in orange, and self-diagnosis of hardware is executed.

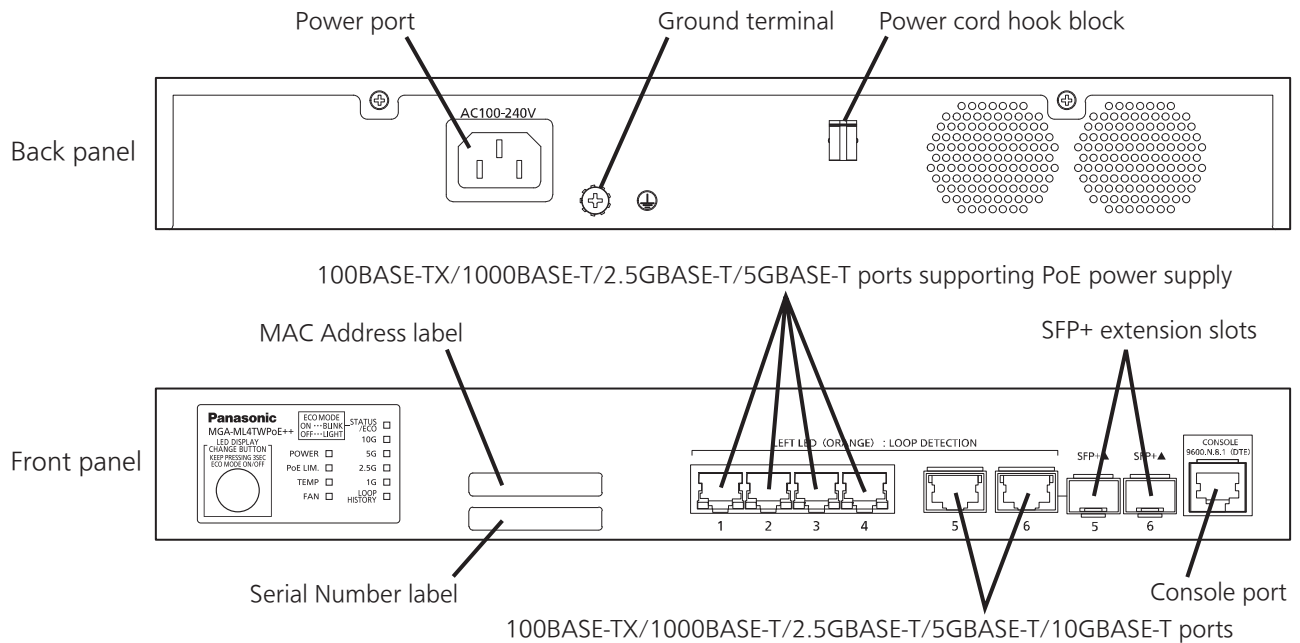
On completion of self-diagnosis, POWER LED (Power), STATUS/ECO LED (Status/ECO mode) and TEMP LED (Temperature sensor) light in green, and the Ethernet Switch starts operation as a Ethernet Switch.

As this Ethernet Switch succeeds in communicating with a terminal connected to each port, LED of the port lights up.

When the terminal is not operating normally, for example when power is not supplied to the terminal, LED is not lighted.

*** For the configuration and management methods, please see the PDF version of the Operating Instructions on Panasonic's website.**

2 Part Names and Functions



- **Power port**

Connect the supplied power cord to this port and connect the other end into an electric outlet.

- **Power cord hook block**

If the supplied power cord is hanged to this block, the cord becomes hard to pull out from the power port.

- **Ground terminal**

Only qualified personnel should install minimum 18AWG green-and-yellow stranded copper wire to Ground terminal screw.

- **100BASE-TX/1000BASE-T/2.5GBASE-T/5GBASE-T ports supporting PoE power supply (ports 1 - 4)**

A PoE power supply which is IEEE802.3bt/at/af compatible is usable.

100BASE-TX/1000BASE-T/2.5GBASE-T/5GBASE-T terminals, hubs, repeaters, bridges, Ethernet Switches, etc. are connectable. Lay out the twisted pair cables (CAT5e or higher) so that the cable lengths fit within 100 m.

- **100BASE-TX/1000BASE-T/2.5GBASE-T/5GBASE-T/10GBASE-T ports + SFP+ expansion slots (ports 5, 6)**

SFP expansion modules can be mounted. (They are exclusively used with the twisted pair ports.)

They automatically switch when the SFP+ expansion slots are linked.

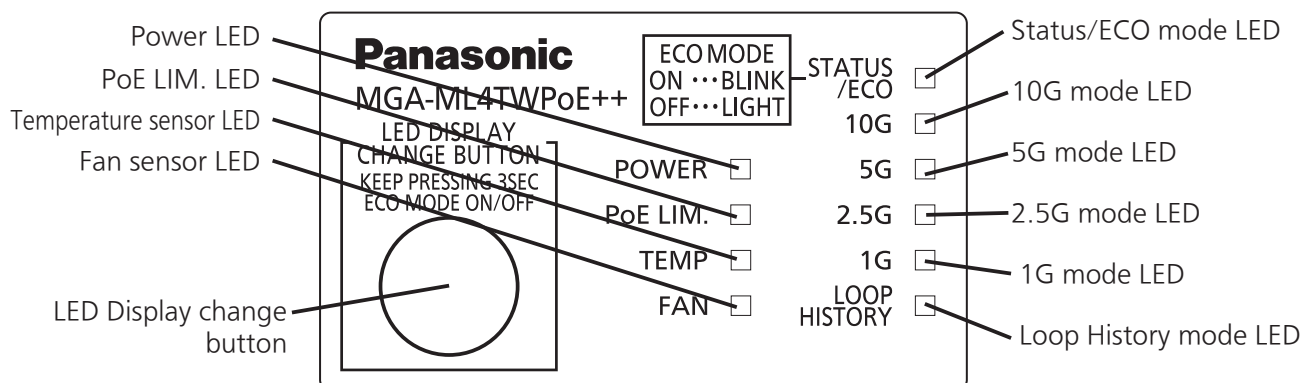
Lay out the twisted pair cables (CAT6 or higher) so that the cable lengths fit within 100 m. The SFP ports only support full duplex.

- **Console port**

Connect a VT100 compatible terminal, etc. with this port to configure or manage this Ethernet Switch.

Transmission mode : RS-232C
 Transmission speed : 9,600 bps
 Stop bit : 1 bit
 Flow control : None

Emulation mode : VT100
 Data length : 8 bits
 Parity control : None
 Transmission connector : RJ45



- **POWER LED (Power)**

Green Light : Power is ON.
Off : Power is OFF.

- **PoE LIM. LED (PoE limit)**

For silent fan control high-speed (High)* For factory default, or low-speed (Low2)

Off : Supplying power in the range from 0 to 225 W.
Green Light : Supplying power in the range from 225 to 240 W.
Orange Blink : A single port's power supply is exceeding the upper limit, or the total power supply of the Ethernet Switch is exceeding 240 W.

For silent fan control low-speed (Low1), or min-speed (Min)

Off : Supplying power in the range from 0 to 105 W.
Green Light : Supplying power in the range from 105 to 120 W.
Orange Blink : A single port's power supply is exceeding the upper limit, or the total power supply of the Ethernet Switch is exceeding 120 W.

- **TEMP LED (Temperature sensor)**

Green Light : The system is normally operating.
Orange Blink : The temperature exceeded the set threshold of the internal temperature sensor.
Set threshold of the internal temperature sensor: 73°C (factory default)

- **FAN (Fan sensor) LED**

Green Light : The system is normally operating.
Orange Blink : Fan failure

- **STATUS/ECO LED (Status/ECO mode)**

Green Light : Operating in status mode.
Green Blink : The system is normally operating in ECO mode.
(In ECO mode, all of the port LEDs are off.)
Orange Light : Starting up
Orange Blink : Malfunction

- **10G (10G mode) LED**

Green Light : Operating in 10G mode.

- **5G (5G mode) LED**

Green Light : Operating in 5G mode.

- **2.5G (2.5G mode) LED**

Green Light : Operating in 2.5G mode.

- **1G (1G mode) LED**

Green Light : Operating in 1G mode.

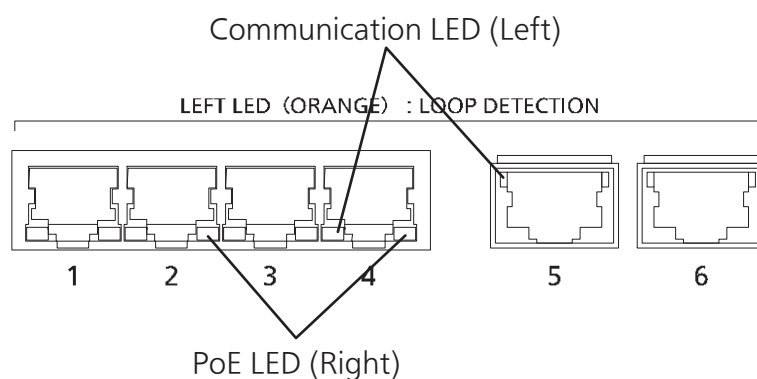
- **LOOP HISTORY LED (Loop History mode)**

Green Light : Operating in Loop History mode.
Green Blink : Loop is occurring, or occurred within the last 3 days.
Off : No loop detection.

2 Part Names and Functions

Table1. Ports and Port LED lamps 1 to 6 correspond as shown below.

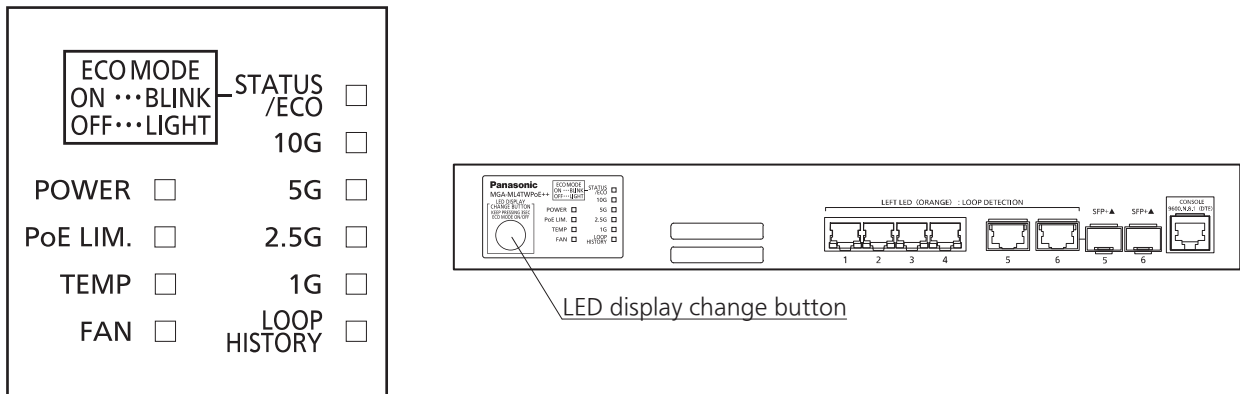
Port LED	Display mode	Behavior	Description
Communication LED (Left)	STATUS/ECO	Green Light	Link is established.
		Green Blink	Transmitting and receiving data.
		Orange Light	It is shut off via the loop detection and shutoff function/storm control or the BPDU guard.
		Orange Blink	It is sending and receiving just the control packet.
		Off	No device connected or the ECO mode is set.
	10G	Green Light	Link is established at 10 Gbps.
		Off	Link is established at 5 Gbps, 2.5 Gbps, 1000 Mbps or 100 Mbps, or no device is connected.
	5G	Green Light	Link is established at 5 Gbps.
		Off	Link is established at 10 Gbps, 2.5 Gbps, 1000 Mbps or 100 Mbps, or no device is connected.
	2.5G	Green Light	Link is established at 2.5 Gbps.
		Off	Link is established at 10 Gbps, 5 Gbps, 1000 Mbps or 100 Mbps, or no device is connected.
	1G	Green Light	Link is established at 1000 Mbps.
		Off	Link is established at 10 Gbps, 5 Gbps, 2.5 Gbps or 100 Mbps, or no device is connected.
	LOOP HISTORY	Green Light	Loop has been detected within the last 3 days.
		Off	No loop detection history.
PoE LED (Right)		Green Light	PoE are being supplied power.
		Orange Blink	Single port overload. Also, an overload of the Ethernet Switch occurs, and the ports are displayed which cannot be supplied power.
		Off	Power is not being supplied, or the PoE receiving equipment are not connected. Also, it is set in the ECO mode.



2.1 LED display change

●Display style set by the LED display change button

Indication on the front panel and
LED lamps



You can display the following items using the LED display switch button.

Display for the connection with a connected terminal (Status mode),

Display for the 10 Gbps transmission rate (10G mode),

Display for the 5 Gbps transmission rate (5G mode),

Display for the 2.5 Gbps transmission rate (2.5G mode),

Display for the 1000 Mbps transmission rate (1G mode),

Display for ports with a loop history (Loop history mode),

All port LED lamps can be turned OFF (ECO mode).

●Two types of Base modes and each mode

The mode at the start is called "Base mode."

There are two types of Base modes: Status mode (factory default setting) and ECO mode. You can change the Base mode by holding down the LED display switch button (for at least 3 sec).

When the Base mode is changed normally, all STATUS/ECO, 10G, 5G, 2.5G, and 1G LED lamps light up at the same time. When you release the button, the Base mode is changed to the selected mode.

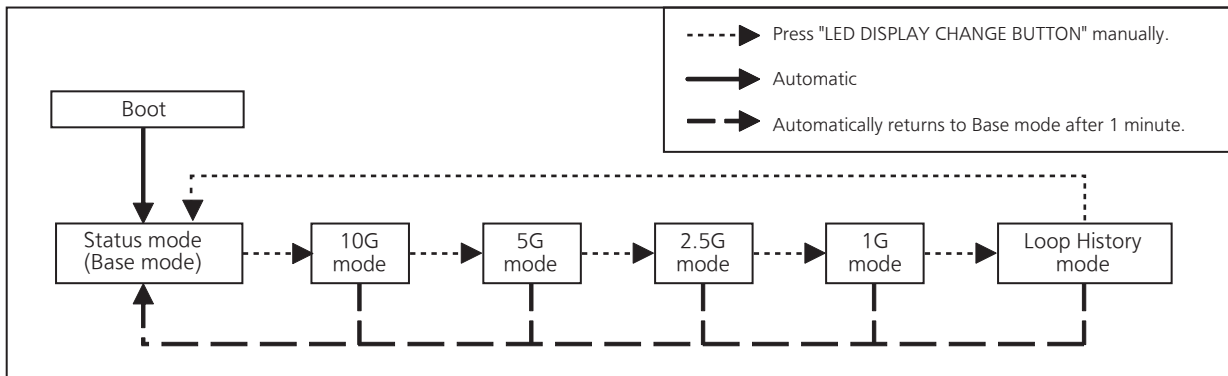
If the mode is changed to the 10G mode, 5G mode, 2.5G mode, 1G mode, or loop history mode and the LED display switch button is not used for one minute or longer, the mode automatically returns to a Base mode (Status mode or ECO mode).

The Base mode is maintained even after the power is turned OFF.

2 Part Names and Functions

Switch two types of Base modes and their LEDs in the following way:

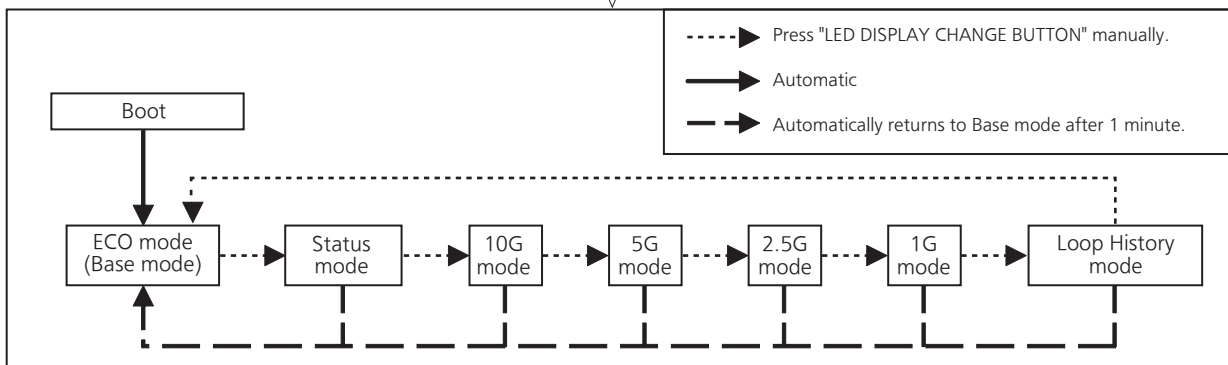
When Base mode is Status mode (factory default setting)



When Base mode is ECO mode



Switch Base mode (keep pressing for 3 seconds)



※The Base mode is maintained even after the power is turned OFF.

LED lamps for each mode and LED lamps for ports 1 to 6 correspond as shown in Table 1 (see page 14).

●Loop detection/shutoff function and loop history function

Turns on the port LED with a orange light when a loop occurs in the corresponding port. The Loop shutoff mode has the following 2 types of modes.

- Block mode (factory default)

When loops are detected, the port statuses are automatically blocked, and just the specified packets which include the loop detection packets will be transmitted and received.

- Shut-down mode

When loops are being detected, the ports will be automatically linked down, and none of the packets will be transmitted and received.

*Just the loop detection packets from 30 seconds before the set restoration times will automatically be transmitted and received.

During loop is occurring, or if loop has occurred within the latest 3 days, LOOP HISTORY LED blinks to notify this. It is possible to switch loop detection setting (OFF/ON) by using a console cable (for details, see the PDF version of the Operating Instructions). The default setting is ON.

If you wish to clear loop detection history, turn OFF once the power supply of the Ethernet Switch and turn it ON again.

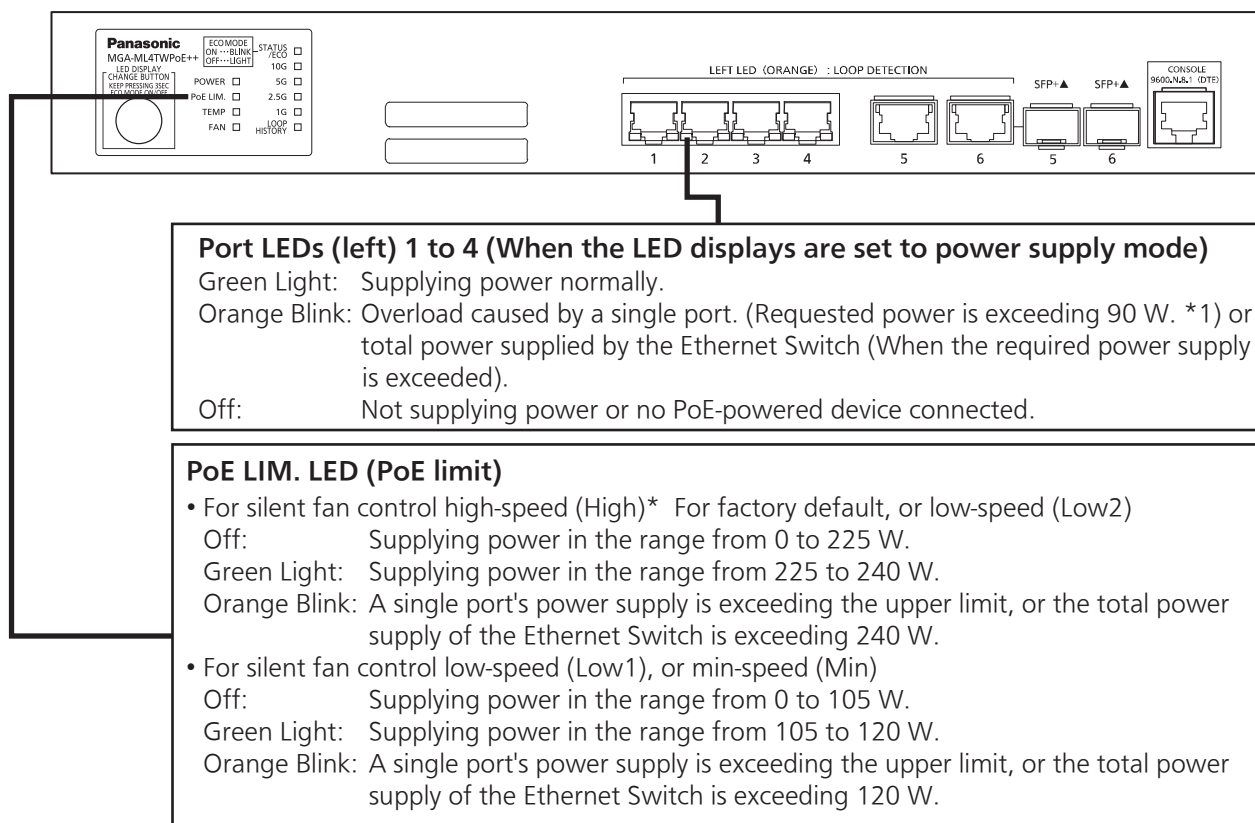
Then, loop detection history is deleted.

The Ethernet Switch can hold up to 64 loop history logs.

2.2 PoE power supply function

● PoE power supply function operation overview

Ports 1 to 4 support IEEE802.3bt/at/af PoE. This function allows for power supply of up to 95 W through each port and 240 W in total through the Ethernet Switch.



*1 If it is changed in the supply limit setting, then it operates with the set value.

● Power supply while the PoE LIM. LED is blinking orange (overload caused by the total power supplied by the Ethernet Switch)

When the requested power supply for the Ethernet Switch is exceeded and it gets overloaded, the power supply to the low priority ports is stopped, and the port LEDs (right) of the ports whose power supply have been stopped blink orange.

The priority settings for the power supply can be set and changed from the console, etc.

*** For the configuration and management methods, please see the PDF version of the Operating Instructions on Panasonic's website.**

● Power supply while the overload is caused by a single port

When the power supply which is requested exceeds 95 W via a single port and the port LED (right) blinks orange, and the power supply is stopped.

Unplug the port cable which is blinking orange, and check the PoE receiving equipment's specifications.

Caution: 1) Some PoE-powered devices may have a large difference in power consumption between their maximum power use condition and normal condition. Carefully configure them so that the upper limit of power supply will not be exceeded.

2) If you do not set a priority for power supply or if the same priority is given, note that the power supply priority is assigned to the ports in ascending order of the port numbers. (If the requested power supply for the device overall is exceeded, then the power supply to a port with a higher port number will be stopped first.)

3 Installation and Configuration

3.1 Using 10GBASE-T

10GBASE-T was established as per the IEEE 802.3an-2006 standard, and depending upon the twisted pair cables, it is an Ethernet standard whereas communication are transmissible at 10 Gbps, up to maximum of a 100 m.

(1) Supported cable types

Cable type	Transmission distance
Cat. 5e or below	Cannot be used
Cat. 6	Maximum 37 m (* From 37 m to 55 m there is alien crosstalk)
Cat. 6A	Maximum 100 m

In order to attenuate the noise effects in regard to alien crosstalk noise, and exogenous noise, it is recommended that STP cables be used.

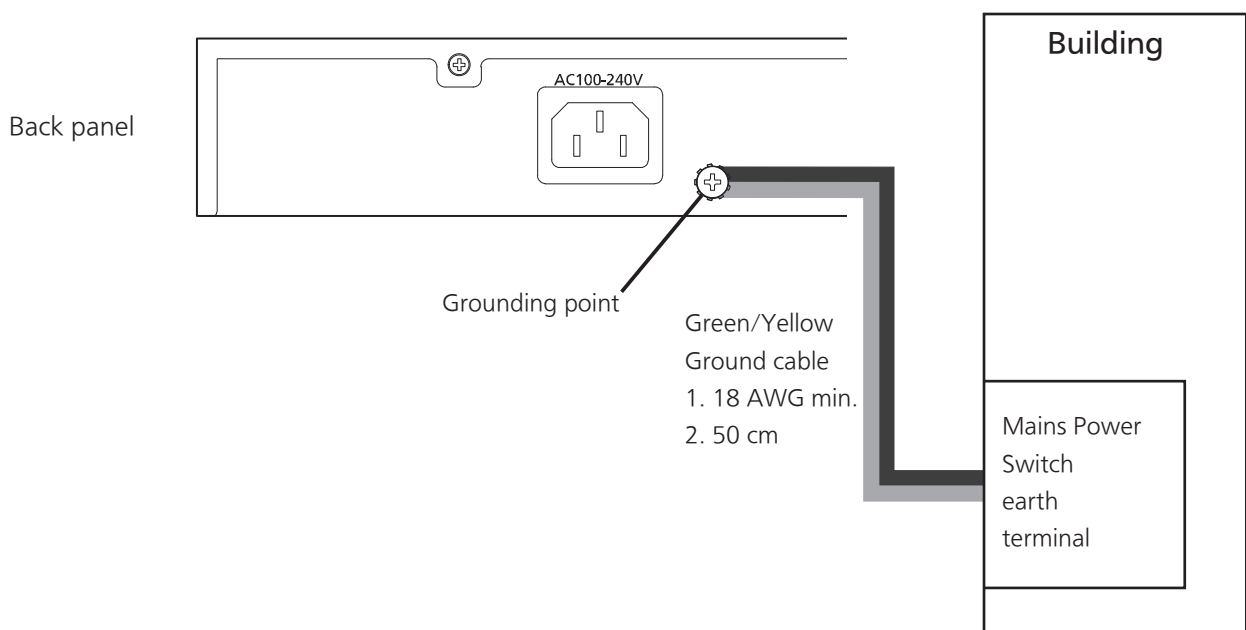
(2) Cable laying environment

Communication might be affected due to exogenous noise to the cables. The person responsible for laying the cables might request to select appropriate cables, and to make improvements regarding environmental noise.

3.2 Grounding Cable Connection

The chassis of the equipment must be grounded properly so that the lightning can flow to the ground, which improves the capability of the chassis for resisting the electromagnetic interference.

1. Ensure that the grounding cable is connected correctly so that the equipment is protected against lightning and interference. The correct connection of the grounding cable is an important measure to ensure the human safety.
2. Connect the chassis to the ground by using a grounding cable. The grounding resistance must be smaller than 0.10 ohms and the gauge of the grounding cable must be no less than 18 AWG and the length is 50 cm.
3. The ground installed screw shall comply with 3.5mm minimum in nominal thread diameter, and engage at least two complete threads into metal chassis with appropriate fixing hardware like washer.
4. The grounding cable shall not be removed during normal operation, servicing or maintenance.
5. Installation steps:
Step 1: Ensure the detachable power supply cord is removed.
Step 2: Use the screwdriver to turn the screws on the earth ground screw point.
Step 3: Strip one end of the ground wire to the ground hole of system.
Step 4: Connect the other end of the ground wire to a suitable grounding point of building at your side.
Figure shows the grounding points.

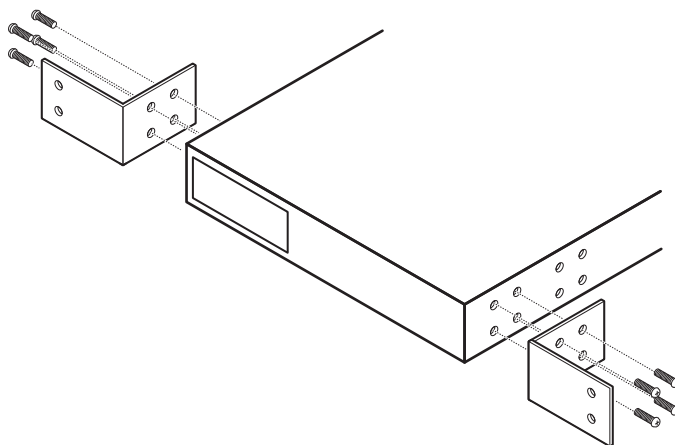
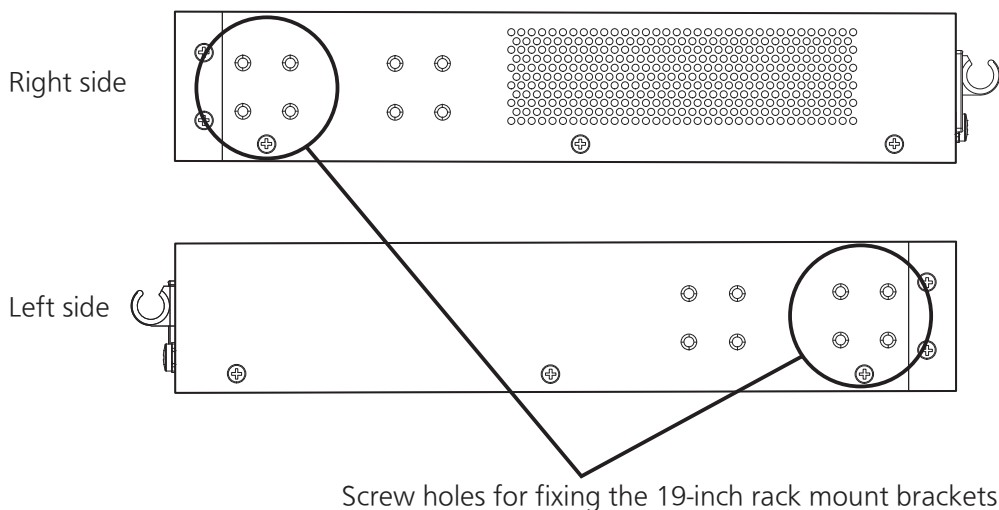


3 Installation and Configuration

3.3 Mounting to rack

Use the two 19-inch rack mount brackets and eight screws (for fixing the rack mount brackets to the Ethernet Switch) supplied with the mount brackets to fix the mount brackets to the four holes on each side of the Ethernet Switch.

Then securely install the Ethernet Switch onto the rack using the four screws (for a 19-inch rack mount) supplied with the mount brackets or the screws supplied with the rack.



3.4 Configuration of IP address (Basic)

- (1) Connect this Ethernet Switch and PC with a RJ45–DSub 9-pin console cable and start up the terminal emulator (ZEUQUO assist Plus, etc.).
- (2) Pressing Enter key once opens Login screen. Enter UserName and Password (the default is "manager" for both). **(Screen 1)**
- (3) The command input screen is displayed. **(Screen 2)**
- (4) Enter the IP address and subnet mask using the following command. **(Screen 3)**

```
>enable  
#configure  
(config)#interface vlan 1  
(config-if)#ip address 192.168.1.254 255.255.255.0
```
- (5) Enter the following command to save the setting.

```
(config-if)#exit  
(config)#exit  
#copy running-config startup-config
```
- (6) Since the following screen is displayed, enter "Y" and the settings will be saved. **(Screen 4)**
Confirm that the settings have been normally saved.
- (7) After configuring, start with the terminals, etc. which are connected to the network, and conduct PING testing on the IP addresses that have been input, and confirm whether or not that the settings are proper being reflected.

3 Installation and Configuration

```
UserName:
```

Screen 1

```
UserName:manager
Password:*****

MGA-ML4TWPoE++>
```

Screen 2

```
UserName:manager
Password:*****

MGA-ML4TWPoE++>enable
MGA-ML4TWPoE++#configure
MGA-ML4TWPoE++(config)#interface vlan 1
MGA-ML4TWPoE++(config-if)#ip address 192.168.1.254 255.255.255.0
MGA-ML4TWPoE++(config-if)#
```

Screen 3

```
UserName:manager
Password:*****

MGA-ML4TWPoE++>enable
MGA-ML4TWPoE++#configure
MGA-ML4TWPoE++(config)#interface vlan 1
MGA-ML4TWPoE++(config-if)#ip address 192.168.1.254 255.255.255.0
MGA-ML4TWPoE++(config-if)#exit
MGA-ML4TWPoE++(config)#exit
MGA-ML4TWPoE++#copy running-config startup-config

Destination filename startup-config? [y/n]:
```

Screen 4

* For detailed configuration and management methods, and the settings from the ZEQUO assist Plus and the Web screens, please see the PDF version of the Operating Instructions on Panasonic's website.

Troubleshooting

If you find any problem, please take the following steps to check.

◆ LED

The POWER LED (Power) is not lit.

- Check if the power cord is disconnected. Please confirm that the power cord is securely connected to the power port.
- Is the Ethernet Switch being used at a temperature between 0 and 50°C?
Use the Ethernet Switch in its operating temperature range.

Note: If used at a temperature out of the operating temperature range, the protection equipment becomes activated and Ethernet Switch power stops.

The Port LED is not lit in Status mode.

- Is the cable correctly connected to the target port?
- Is the cable appropriate to use?
- Is the terminal connected to the relevant port conforming with 100BASE-TX, 1000BASE-T, 2.5GBASE-T, 5GBASE-T or 10GBASE-T standard?
- Is the correct Port LED display mode selected using the LED display switch button?

The Port LED (left) lights in orange.

- Loop is occurring. By removing the loop, orange LED will be turned off.

LOOP HISTORY LED Blinks in orange.

- This is to notify that there is a port in which a loop is occurring, or has been removed within 3 days.

◆ Communication is slow.

- Are the communication speed and mode settings correct?
If the communications speed is slow, check the communications speed which is currently being negotiated with the LED display switching button.
Do not set forced full-duplex for the equipment that the Ethernet Switch is connected to.
- Is not the utilization ratio of the network to which this Ethernet Switch is connected too high?
Try separating this Ethernet Switch from the network.

Troubleshooting

◆ Communication fail.

- Are the equipment linked up?

When the power saving mode or EEE (IEEE802.3az, Energy Efficient Ethernet function) is enabled, it may not link, depending on the connected devices.

Change the settings as per the following.

1. Change the Power Saving Mode setting to "Half" or "Disabled"
2. Change the EEE (IEEE802.3az) setting to "Disabled"

- Is any Port LED lamp (left) lit in orange?

If a Port LED lamp (left) is lit in orange, the respective port is shut off by the loop detection/shutoff function. After canceling the loop connection under the control of the ports, stand by for more than the recovery time until the loop detection/shutoff automatically recovers, or cancel the port shutoffs from the setting screen.

◆ PoE power supply is impossible.

Power is not supplied to a Powered Device.

- If you use an STP cable, PoE power supply may not be possible depending on the installation environment. In such cases, use a UTP cable.
- Is a CAT5e or better straight cable (RJ45-8/8) used?
- Is the cable connected to the port 1–4 that supports PoE power supply?
- Ensure that either the port alone or the entire equipment is not overloaded.
- Is the PoE power receiving device which is connected to the corresponding port compliant with any one of the IEEE802.3bt standard, IEEE802.3at standard, or IEEE802.3af standard?
- Is the upper threshold of the power supply manually (Manual) set in the range of 15600 – 30000 mW?
(When power is being supplied to the PoE+ receiving devices which do not support IEEE802.3at)

Port LED (Right) is blinking orange:

- Ensure that the total power supply demand from PoE-powered devices does not exceed 240 W.

When the power supply is suddenly shut off:

- It is likely that a PoE-powered device in use has a different power consumption in normal operation and standby states. Please confirm the PoE LIM. LED.
- Confirm that a single port is not overloaded [the Port LED (left) is not blinking orange] and that the maximum limit of the total power supply is not exceeded (the PoE LIM. LED is not blinking orange).

*** For the configuration and management methods, please see the PDF version of the Operating Instructions on Panasonic's website.**