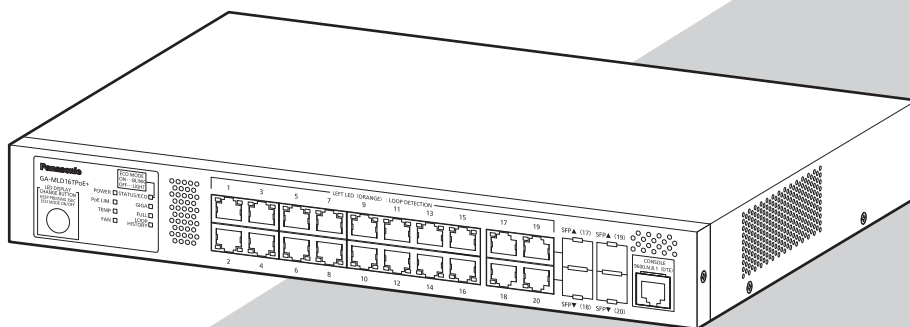


- Thank you for purchasing our product.
- This document provides important information about safe and proper operations of this Ethernet Switch.
- Please read the **"Important Safety Instructions"** on pages from 3 to 6.
- Any problems or damages resulting from disassembly of this Ethernet Switch by customers are not covered by the warranty.
- The instruction manuals (Menu, Version, 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 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) or FAN LED (Fan sensor) 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.**
- **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.

CAUTION



- **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 any other devices except for 10BASE-T/100BASE-TX/1000BASE-T devices to the twisted pair ports.**
Deviation could lead to equipment failure.
- **Do not insert any other modules into the SFP expansion slots except for our optional SFP modules (PN54022/PN54024).**
Deviation could lead to equipment failure.
Check our website for the latest information on supported SFP modules.
- **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 IEEE802.3at to this Ethernet Switch, use a cable rated Cat5e or higher.**
Using other cables may result in heat generation, ignition, and/or equipment failure.
- **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.
- Use the power cord hanging block to prevent the power cord from accidentally falling off.
- 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 places where the ambient temperatures range 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, nor use this Ethernet Switch in environments which possess 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.
- Operation is not guaranteed if a module other than the optional SFP extension modules (PN54022/PN54024) is inserted into the SFP extension slot.
For the latest information about compatible SFP extension modules, check our website.
- 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.

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

GA-MLD16TPoE+ is an Ethernet Switch with management function having 20 ports of 10/100/1000BASE-T and SFP extension slot, one of which is selectable.

Ports 1 to 16 support IEEE802.3at/af PoE power supply function.

1.1 Features

- Ports 1 to 16 are 10/100/1000BASE-T ports corresponding to auto negotiation. Also their speed and communication mode can be switched by configuration. Ports 17 to 20 can be used as a 10/100/1000BASE-T port corresponding to auto negotiation or an SFP extension slot exclusively.
- Ports 1 to 16 can supply power conforming with IEEE802.3at and 802.3af. Supplying power up to 30 W per port, and up to 250 W in total is possible.
- The recommended settings for stable operation of the Dante network are set by default. (QoS enable, EEE disable, etc.)
- 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.
- Is equipped with silent fan control functions, and can be set to match the 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 16 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 16).
- 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 1-16: RJ45 connector (*1) Transmitting and receiving networks system IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX IEEE802.3ab 1000BASE-T</p> <p>Twisted pair port 17-20: RJ45 connector Transmitting and receiving networks system IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX IEEE802.3ab 1000BASE-T</p> <p>(*1) Energy Efficient Ethernet function IEEE802.3az(LPI)</p> <p>SFP extension slot 17-20 port Transmitting and receiving networks system IEEE802.3z 1000BASE-SX/1000BASE-LX</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> <p>10BASE-T: Max. 14,880 pps/port 100BASE-TX: Max. 148,800 pps/port 1000BASE-T: Max. 1,488,000 pps/port</p> <p>MAC Address table: Max. 16K entry/unit Buffer: 2.0Mbyte/unit</p> <p>* EAP frame, BPDU frame transmission</p>																			
Link Aggregation	IEEE802.3ad Configurable up to 10 groups (Max. 8 ports per group)																			
VLAN	IEEE802.1Q tagging VLAN protocol compatible (Max. 256 groups including the default VLAN) Port based VLAN, Internet Mansion function																			
QoS	IEEE802.1p compatible, Supports 8 priority queues																			
Management method	ZEQUO assist Plus, SNMP v1/v2c/v3, Telnet, SSH v2, Console, WEB control screen																			
Power supply function	Ports 1 to 16 support the IEEE802.3 at/af compatible power supply function. Maximum power supply: 30W per port, 250W in total																			
Power supply method	Alternative A (Using 1,2,3,6 pin)																			
Silent fan control	<p>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, and it can be used with the fan noise reduced.</p> <table border="1"> <thead> <tr> <th>Fan Speed</th> <th>Operating environment temperature</th> <th>Maximum power supply</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>High</td> <td rowspan="2">0-50°C</td> <td>250W</td> <td>Factory default</td> </tr> <tr> <td rowspan="2">Low</td> <td>(Low1)</td> <td>185W</td> <td></td> </tr> <tr> <td>(Low2)</td> <td>250W</td> <td></td> </tr> <tr> <td>Min.</td> <td>0-40°C</td> <td>185W</td> <td></td> </tr> </tbody> </table>	Fan Speed	Operating environment temperature	Maximum power supply	Comments	High	0-50°C	250W	Factory default	Low	(Low1)	185W		(Low2)	250W		Min.	0-40°C	185W	
Fan Speed	Operating environment temperature	Maximum power supply	Comments																	
High	0-50°C	250W	Factory default																	
Low		(Low1)	185W																	
	(Low2)	250W																		
Min.	0-40°C	185W																		

1 Product Outline

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, 5.0 A
Power consumption	Normally, Max. 315 W (23.1 W when not supplying power), Min. 14.7 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)	3,000 g

1.3 Accessories

Please be sure to confirm the content.

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

	Quantity
● Installation Guide (this document)	1 (*)
● Rubber foot	4
● Rack mount bracket (for 19-inch rack)	2
Screw (for 19-inch rack).....	4
Screw (for fixing the mount brackets to the Ethernet Switch)	8
● Power cord	1

[Power Cord]

The following power cord is supplied as per the intended nation of delivery.

Product Number	Locale	Power Cord Rating	FUSE Rated Current	Plug Type
PN261693D-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)

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.

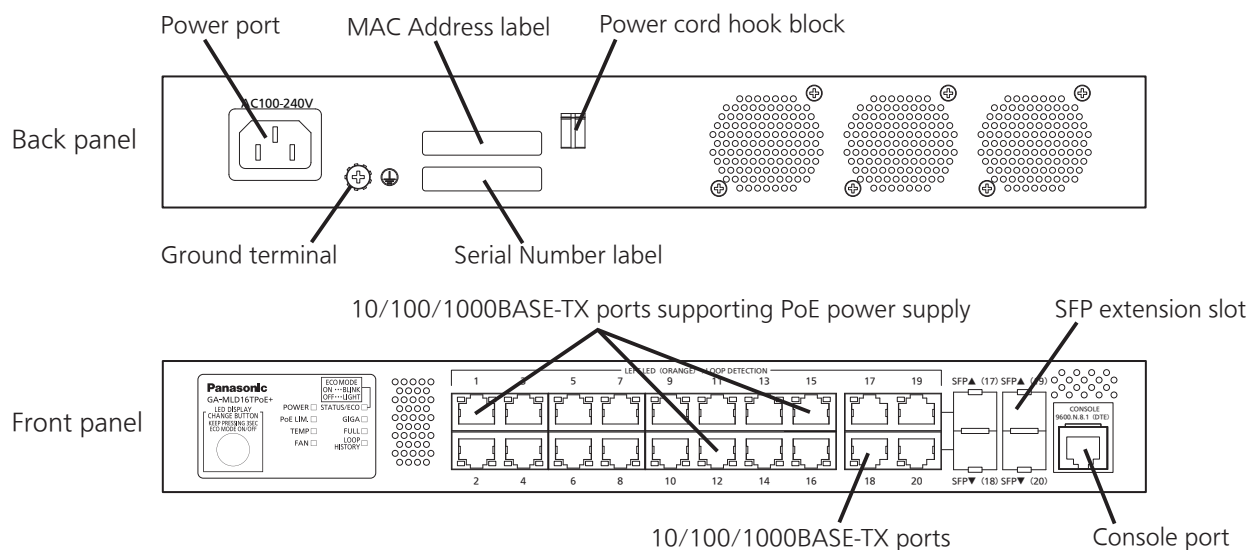
On completion of self-diagnosis, POWER LED (Power), STATUS/ECO LED (Status/ECO mode), TEMP LED (Temperature sensor) and FAN LED (Fan sensor) light in green, and the Ethernet Switch starts operation as a Ethernet Switch.

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 method, please see the PDF version 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.

- **10/100/1000BASE-T ports (ports 1-20)**

Ports 1 to 16 can supply PoE power confirming with IEEE802.3at/af.

Devices such as 10/100/1000BASE-T terminal, hub, repeater, bridge, and Ethernet Switch can be connected to this port. Install the device so that the length of twisted pair cable (CAT5e or above) becomes 100m or less.

- **SFP extension slot (ports 17-20)**

Install SFP module. (It becomes exclusive usage with twisted pair port.)

When SFP extension slot is linked, the ports is automatically switched to SFP extension mode.

SFP port supports only the full duplex communication.

- **Console port**

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

Transmission mode : RS-232C

Emulation mode : VT100

Transmission speed : 9,600 bps

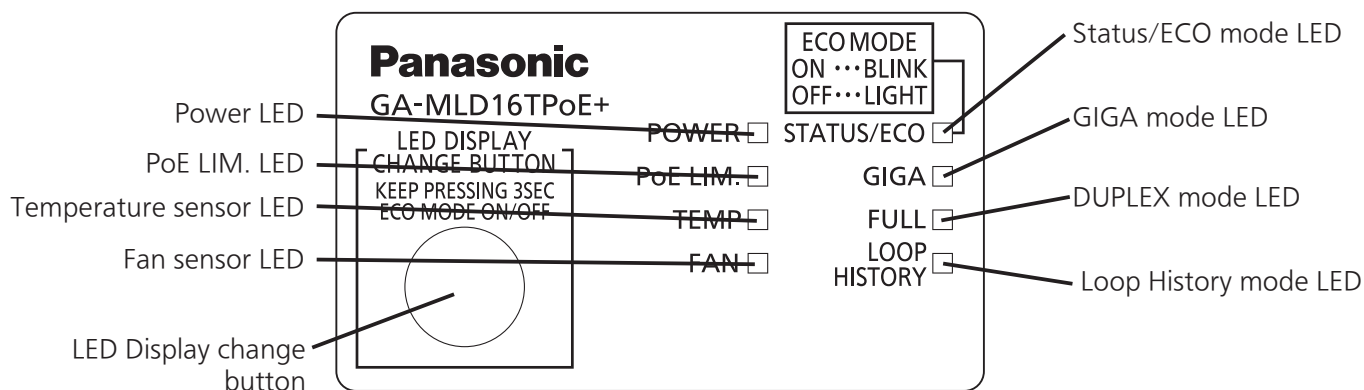
Data length : 8 bits

Stop bit : 1 bit

Parity control : None

Flow 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 235 W.
 Green Light : Supplying power in the range from 235 to 250 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 250 W.

For silent fan control low-speed (Low1), or min-speed (Min)
 Off : Supplying power in the range from 0 to 170 W.
 Green Light : Supplying power in the range from 170 to 185 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 185 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: 62°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 : Operating in ECO mode.
 All Port LEDs (left) are turned off.
 Orange Light : Starting up
 Orange Blink : Malfunction (Contact the seller.)

- **GIGA (GIGA mode) LED**

Green Light : Operating in GIGA mode.

- **FULL (DUPLEX mode) LED**

Green Light : Operating in DUPLEX mode.

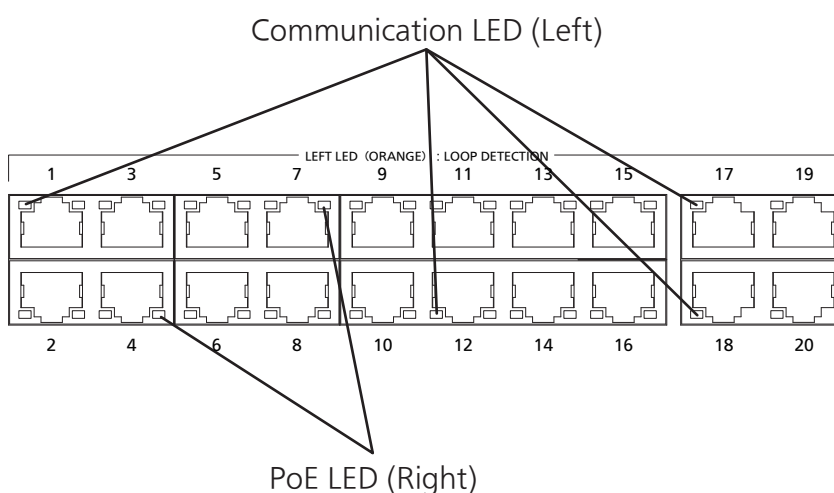
- **LOOP HISTORY LED (Loop History mode)**

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 20 correspond as shown below.

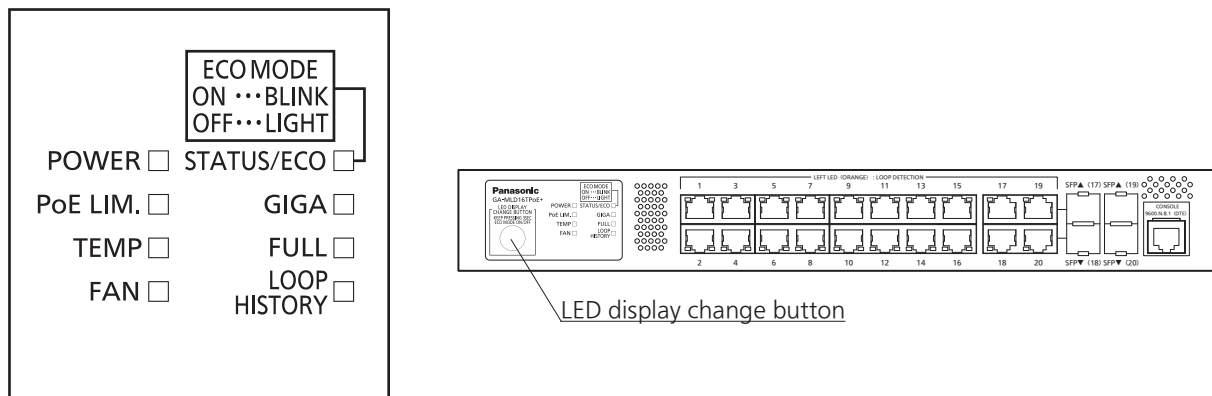
Port LED	Display mode	Behavior	Description
Communication LED (Left)	STATUS/ECO	Green Light	Link is established.
		Green Blink	Transmitting and receiving data.
		Orange Light	It is shut off via the loop detection and shutoff function/storm control or the BPDU guard.
		Orange Blink	It is sending and receiving just the control packet.
		Off	No device connected or the ECO mode is set.
	GIGA	Green Light	Link is established at 1000 Mbps.
		Off	Link is established at 100 Mbps or 10 Mbps, or no device is connected.
	FULL	Green Light	Link is established at full-duplex.
		Off	Link is established at half-duplex 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 1000 Mbps transmission rate (GIGA mode),
Display for the full-duplex or half-duplex transmission system (DUPLEX 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, GIGA, and FULL LED lamps light up at the same time. When you release the button, the Base mode is changed to the selected mode.

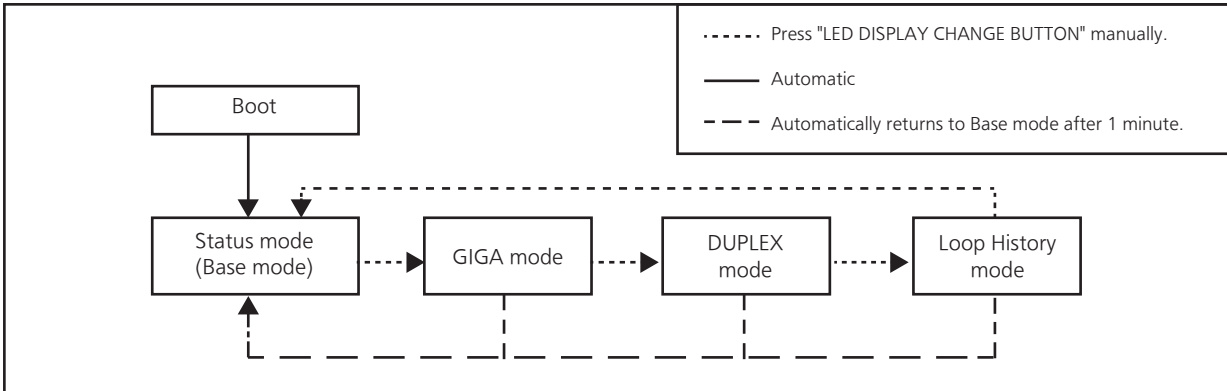
If the mode is changed to the GIGA mode, DUPLEX mode, or loop history mode and the LED display switch button is not used for one minute or longer, the mode automatically returns to a Base mode (Status mode or ECO mode).

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:

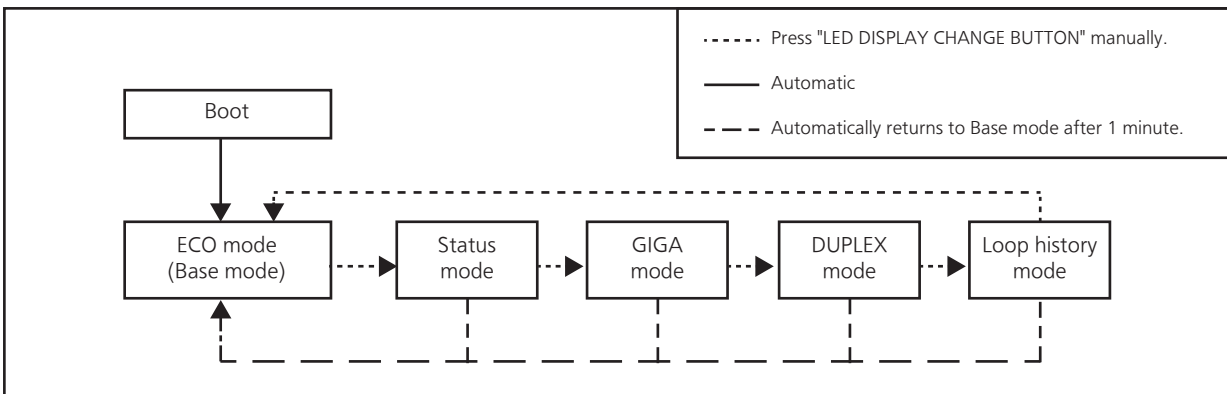
When Base mode is Status mode (factory default setting)



When Base mode is ECO mode



Switch Base mode (keep pressing "LED DISPLAY CHANGE BUTTON" over 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 20 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.

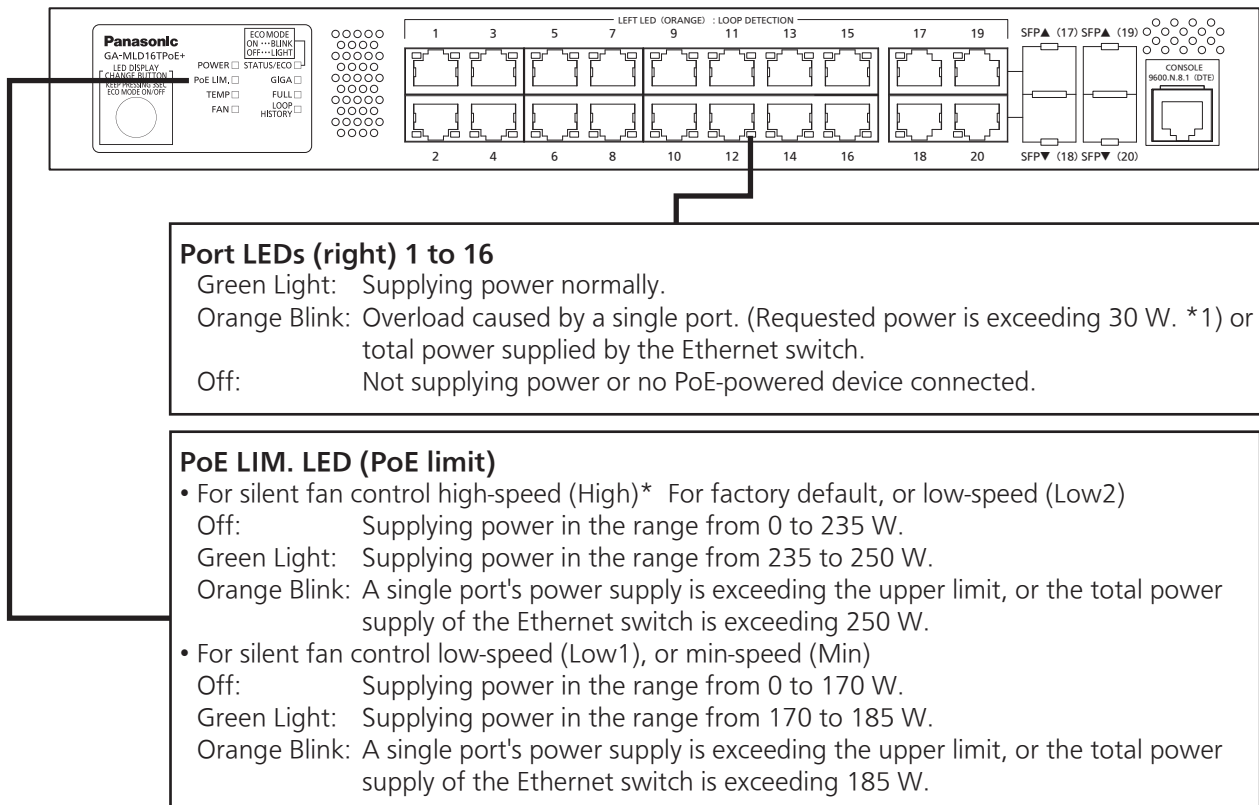
Then, loop detection history is deleted.

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 16 support IEEE802.3at/af PoE. This function allows for power supply of up to 30 W through each port and 250W in total through the Ethernet switch.



*1 When configured IEEE802.3at (factory default). Exceeds 15.4 W when configured IEEE802.3af.

● 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 method, please see the PDF version 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 30 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.)

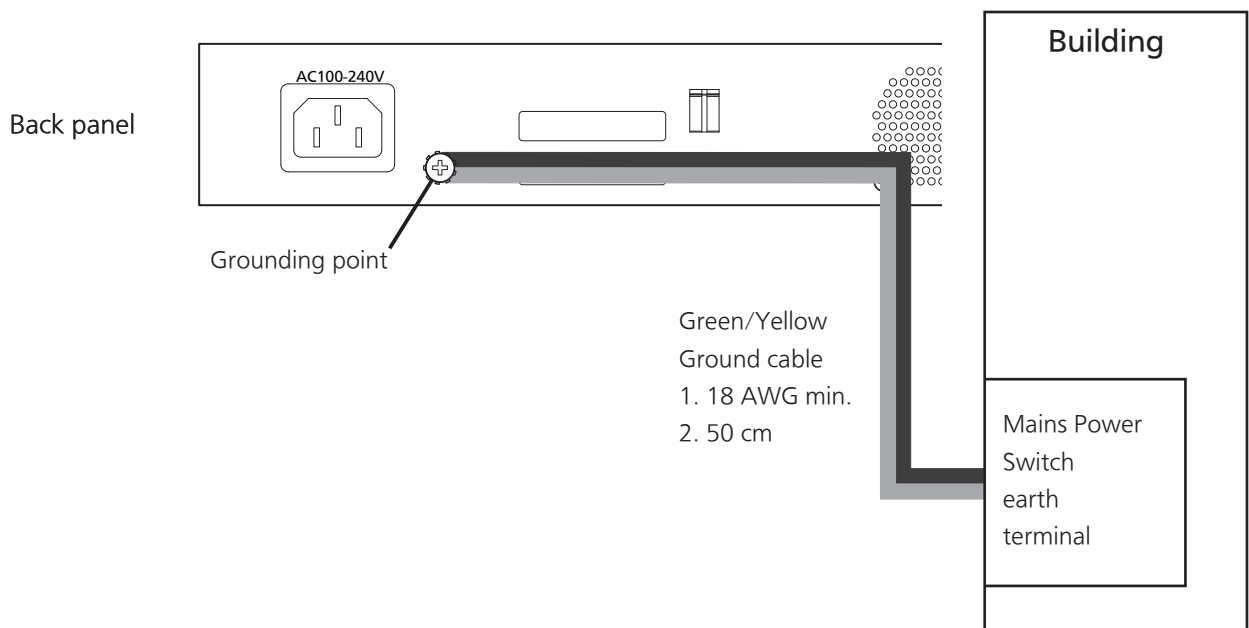
3 Installation and Configuration

3.1 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.

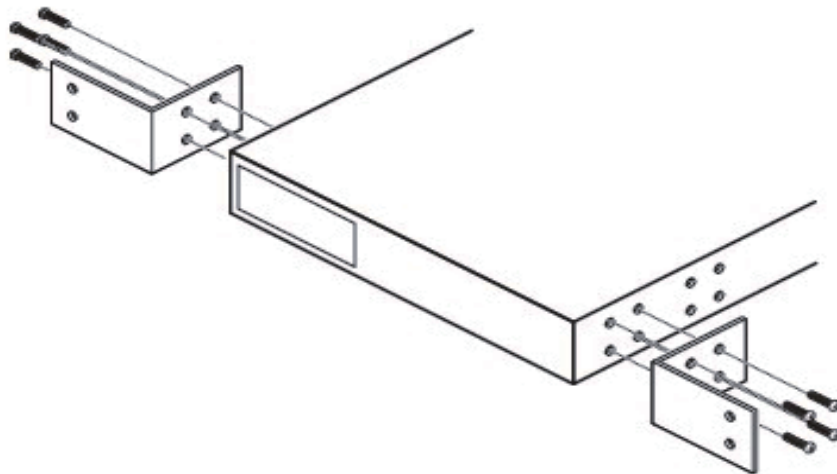
Figure shows the grounding points.



3.2 Mounting to rack

Take out the provided mount brackets (2pcs.) and eight screws (for fixing the mount brackets and the Ethernet Switch). Fix the mount brackets to the four holes on each side of the Ethernet Switch using the screws.

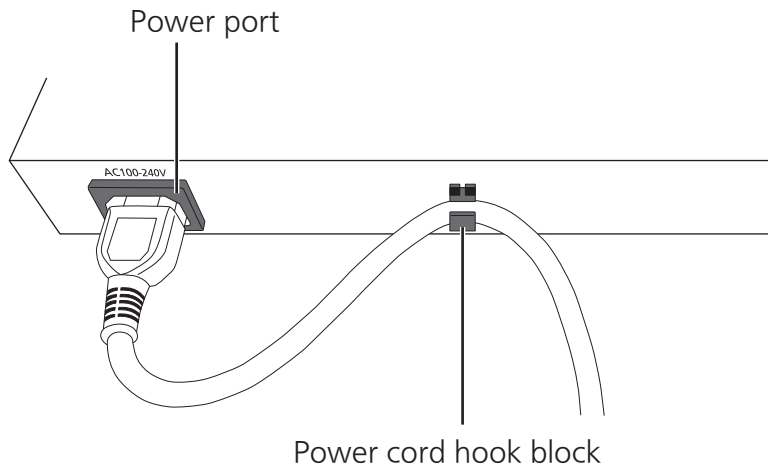
Then, securely install the Ethernet Switch on the rack using the four provided screws (for mounting on a 19-inch rack) or screws provided with the rack.



3 Installation and Configuration

3.3 Attaching the power cord

Insert the supplied power cord into the power port.
Then hang the power cord on the cord hook block to secure it.



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 (ZEQUO 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. **(Screen 5)**
- (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

3.4 Configuration of IP address (Basic)

```
GA-MLD16TPoE+

Product Number: PN261693D
Firmware Version: x.x.x.xx
MAC Address: 00:50:40:xx:xx:xx
Serial Number: xxxxxxxxxxxx

UserName:
```

Screen 1

```
GA-MLD16TPoE+

Product Number: PN261693D
Firmware Version: x.x.x.xx
MAC Address: 00:50:40:xx:xx:xx
Serial Number: xxxxxxxxxxxx

UserName:manager
Password:*****

GA-MLD16TPoE+>
```

Screen 2

```
GA-MLD16TPoE+

Product Number: PN261693D
Firmware Version: x.x.x.xx
MAC Address: 00:50:40:xx:xx:xx
Serial Number: xxxxxxxxxxxx

UserName:manager
Password:*****

GA-MLD16TPoE+>enable
GA-MLD16TPoE+#configure
GA-MLD16TPoE+(config)#interface vlan 1
GA-MLD16TPoE+(config-if)#ip address 192.168.1.254 255.255.255.0
GA-MLD16TPoE+(config-if)#
```

Screen 3

```
GA-MLD16TPoE+

Product Number: PN261693D
Firmware Version: x.x.x.xx
MAC Address: 00:50:40:xx:xx:xx
Serial Number: xxxxxxxxxxxx

UserName:manager
Password:*****

GA-MLD16TPoE+>enable
GA-MLD16TPoE+#configure
GA-MLD16TPoE+(config)#interface vlan 1
GA-MLD16TPoE+(config-if)#ip address 192.168.1.254 255.255.255.0
GA-MLD16TPoE+(config-if)#exit
GA-MLD16TPoE+(config)#exit
GA-MLD16TPoE+#copy running-config startup-config

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

Screen 4

```
GA-MLD16TPoE+

Product Number: PN261693D
Firmware Version: x.x.x.xx
MAC Address: 00:50:40:xx:xx:xx
Serial Number: xxxxxxxxxxxx

UserName:manager
Password:*****

GA-MLD16TPoE+>enable
GA-MLD16TPoE+#configure
GA-MLD16TPoE+(config)#interface vlan 1
GA-MLD16TPoE+(config-if)#ip address 192.168.1.254 255.255.255.0
GA-MLD16TPoE+(config-if)#exit
GA-MLD16TPoE+(config)#exit
GA-MLD16TPoE+#copy running-config startup-config

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

Saving all configurations to NV-RAM..... Done.

GA-MLD16TPoE+#
```

Screen 5

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

- Detailed configuration and management methods using the CLI.
- Configuration and management method from ZEQUO assist Plus.

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 10BASE-T, 100BASE-TX, or 1000BASE-T standard?
- Auto-negotiation may have failed.
Check the port settings of this Ethernet Switch or the terminal settings.
- 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 green.

- 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 proper communication mode signal cannot be obtained, apply half-duplex mode.
Please reconfirm auto-negotiation setting.
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 1–16 that supports PoE power supply?
- Ensure that either the port alone or the entire equipment is not overloaded.
- Is the Powered Device connected to the port compliant with the 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 in orange:

- Ensure that the total power supply demand from PoE-powered devices does not exceed 250 W. (185 W when the fan rpm are set to Low1, or Min)

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 in orange] and that the maximum limit of the total power supply is not exceeded (the PoE LIM. LED is not blinking in orange).

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