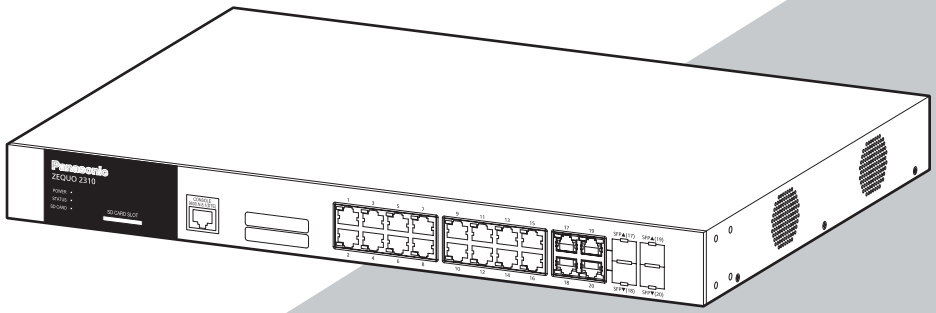
Panasonic

Installation Guide

ZEQUO 2310

Model No. PN26161K-TH
PN26161K-MY
PN26161K-ID
PN26161K-SG
PN26161K-NZ

- Thank you for purchasing our product.
- This manual provides important information about safe and proper operations of this Ethernet Switch.
- Please read the **"Important Safety Instructions" on pages 3 to 5**.
- Any problems or damages resulting from disassembly of this Ethernet Switch by customers are not covered by the warranty.
- The instruction manuals (CLI Version and 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



Panasonic Electric Works Networks Co.,Ltd.
2-12-7, Higashi-Shimbashi, Minato-ku, Tokyo Japan, 105-0021

C0219-20622 Printed in Japan

Contents

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.

⚠WARNING	This symbol indicates a potential hazard that could result in serious injury or death.
⚠CAUTION	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 any foreign objects such as metal or readily combustible things into Ethernet Switch through the openings.**
  Deviation could lead to fire, electrical 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 high humidity, 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 use the Ethernet Switch in very dusty areas such as on floors, underneath floors, the backside of ceilings, or boards.**
  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.
- **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.
- **Do not put the Ethernet Switch into fire.**
  Deviation could lead to explosion and/or fire.

⚠CAUTION

	● 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 except for our optional SFP module (PN54022/PN54024) to the SFP extension slots. Check out our website for the latest information on supported SFP modules.
	● Be sure to check the precautions which are printed on the product labels before using. Deviation could lead to electric shock. ● 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 the ground, connect the ground cable to the ground terminal screw. ● Connect the power cord firmly to the power port. Deviation could lead to electric shock, fire, and/or malfunction. ● If the STATUS LED is blinking in orange (systemt fault), check for the cause via the system log, since it might be a malfunction if it is not the temperature, loop detection and shutoff, unplug the power plug. Deviation, such as keep connecting for a long time, could lead to fire. ● Handle the Ethernet Switch carefully to prevent fingers and hands from being damaged by twisted pair port, SFP extension slot, console port, SD card slot, or power cord hook block.

⚠CAUTION

- **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 or 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.
- **It is recommended that this Ethernet Switch be replaced about five years after it has been installed.**
  This may vary depending upon conditions such as utilisation rates and usage environments, but performance might decrease due to the age-related degradation, etc. of components.
- **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.

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 metal terminal of the RJ45 connector, the modular plug of connected twisted pair cable, or the metal terminal of the SFP extension slot. Do not place charged objects in the proximity of them. 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).
- 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.
- Please use this Ethernet Switch in place where ambient temperature is from 0 to 50°C. Failure to meet the above conditions may result in fire, electric shock, breakdown, and/or malfunction. Please beware because such cases are out of guarantee. Additionally, do not cover the bent hole of this Ethernet Switch. Deviation could lead to high internal temperature, equipment failure and/or 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.
- 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.
- Select the appropriate cables and lay them. Communications might be affected by how the cables are laid, and environmental noise.

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

The ZEQUO 2310 is a Layer 2 all giga Ethernet Switch equipped with management functions that has 20 10/100/1000BASE-T ports and 4 SFP expansion ports.

1.1 Features

- Ports 1 to 20 are 10BASE-T/100BASE-TX/1000BASE-T ports corresponding to autonegotiation.
  Also their speed and communication mode can be switched by configuration.
  However, ports 17 to 20 do not support half-duplex mode.
- Ports 17 to 20 are SFP extension slots.
  These ports and the 1000BASE-T twisted pair cable ports cannot be used simultaneously.
- Settings and firmware can be changed and saved by using an SD card.
- 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. (To prevent loop failures, ports 1 to 16 are fixed to MDI-X at factory default settings.)
- The connection status for each port is detected by the power saving mode, and it can reduce the power consumption to required levels when not linked up.
  (Factory default: deactivated)
- 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 IEEE802.1p compatible QoS function is supported.
- Equipped with energy efficient Ethernet (EEE) conforming to IEEE802.3az(LPI). When there is no data transmission at link up, the energy-saving state automatically starts so that power consumption can be reduced on each port.
- 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.
- The Ring Redundant Protocol (RRP) is supported, allowing to make a redundant net-work via ring topology.

1.2 Specifications

Interface	Twisted pair ports 1–20: RJ45 connector Transmission system: IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T SFP extension slots 17-20 Transmission system: IEEE802.3z 1000BASE-SX/1000BASE-LX SFF-8472 (DMI: Diagnostic Monitoring Interface) * Select ether of RJ45 or SFP for use. SD card slot: SD/SDHC, 128MB-32GB Console port: RJ45 connector RS-232C (ITU-TS V.24)
Switching mode	Store and Forward method: Forwarding rate 10BASE-T: Max. 14,880 pps/port 100BASE-TX: Max. 148,800 pps/port 1000BASE-T/SX/LX: Max. 1,488,000 pps/port MAC Address table: Max. 16K entry/unit Buffer: 2M byte/unit Switching capability: 40Gbps
Layer 2 Features	STP/RSTP/MSTP Tag VLAN, MAC base VLAN, Subnet base VLAN, Protocol base VLAN, Dynamic VLAN, Guest VLAN, Link aggregation (STATIC/LACP), SPAN, RSPAN, Port monitoring, Multicast (IGMP Snooping, MLD Snooping) QoS (PQ, WRR), Authentication (IEEE802.1X, Web-based Access control, MAC-based Access control), Storm control, RRP
Management	DHCP relay agent, Console, TELNET, SSH, WEB SNMPv1/v2c/v3, ZEQUO assist Plus
Power supply	AC 100-240 V, 50/60 Hz, 0.6 A
Power consumption	Normally, Max. 18.1 W, Min. 10.4 W
Operating environment	Temperature: 0–50°C, Humidity: 20–80% RH (no condensation)
Storage environment	Temperature: -20–70°C, Humidity: 10–90% RH (no condensation)
Fan	Not installed
External dimensions	44 mm (Height) × 440 mm (Width) × 312 mm (Depth) (Excluding protruding sections)
Mass (Weight)	3,800 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
- Mounting bracket (for 19-inch rack) 2
- Screw (for 19-inch rack) 4
- Screw (for fixing the main unit and the mounting bracket) 8
- Dummy SD card ..... 1 (unit mounted)
- Power cord 1

* Just the PN26161K-TH has 1 Installation Guide in Thai (a total of 2 guides).

[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
PN26161K-TH	Thailand	250 VAC 6 A	-	TIS166-2549
PN26161K-MY	Malaysia	250 VAC 10 A	13 A	BS1363
PN26161K-ID	Indonesia	250 VAC 10 A	-	CEE7/7
PN26161K-SG	Singapore	250 VAC 5 A	5 A	BS1363
PN26161K-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)

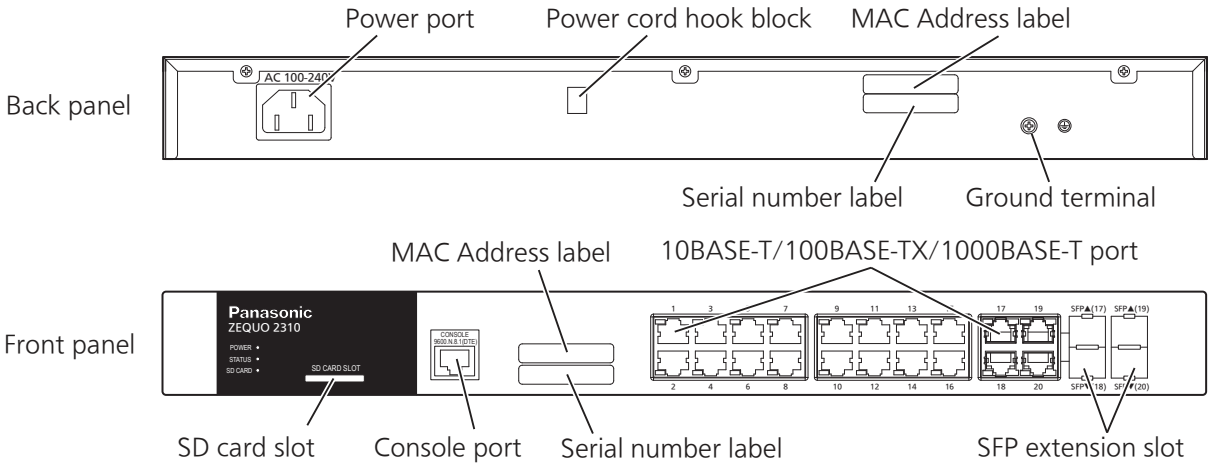
The XXs are identical to the intended nation of delivery codes.

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 LED lights up orange, and the hardware's self-diagnostic is implemented.
On completion of self-diagnosis, STATUS LED light in green, and the Ethernet Switch starts operation as a Ethernet Switch.
When this Ethernet Switch successfully communicates with a terminal connected to a port, the Port LED lights up.
When the terminal is not operating normally, for example when power is not supplied to the terminal, the Port LED does not light up.

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

2 Part Names and Functions

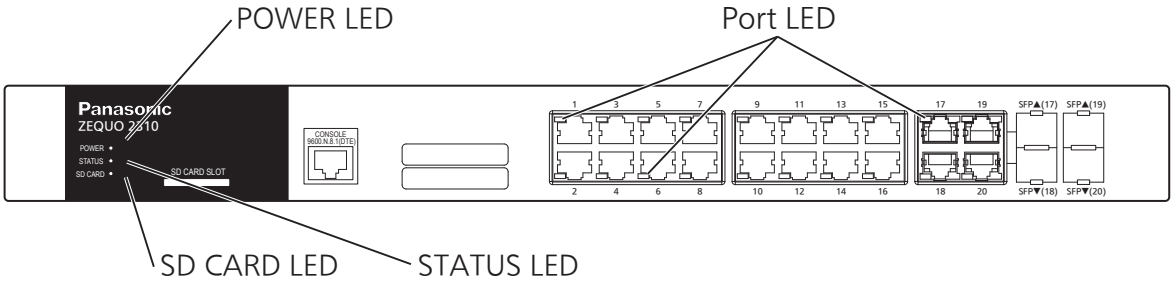


- **Power port**
  Connect the supplied power cord to this port and connect the other end into an electric outlet.
- **Power cord hook block**
  If the supplied power cord is hanged to this block, the cord becomes hard to pull out from the power port.
- **Ground terminal**
  Only qualified personnel should install minimum 18AWG green-and-yellow stranded copper wire to Ground terminal screw.
- **SD card slot**
  Insert an SD card into this slot to change/save settings and firmware.
- **10/100/1000BASE-T port (ports 1–20)**
  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 100 m or less.

  Communication mode on ports 17 to 20 support full-duplex mode only. Half-duplex mode is not supported.
- **SFP extension slot (ports 17-20)**
  Install SFP module. (It becomes exclusive usage with twisted pair port.)
  When SFP extension slot is linked, the port 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

2 Part Names and Functions



- **POWER LED (Power)**
  - Green Light : Power is ON.
  - Off : Power is OFF. Or, an internal power fault.
- **STATUS LED**
  - Green Light : The system is normally operating.
  - Green Blink : One or more ports are within 3 days after loop resolution.
  - Orange Light : Starting up
  - Orange Blink : System failure
  - Off : Power is OFF.
- **SD CARD LED**
  - Green Light : SD card inserted
  - Green Blink : Reading/writing data
  - Orange Light : SD card error
  - Off : No SD card
- **Port LED (Port 1-20)**
  - Green Light : Link is established at 10/100/1000 Mbps.
  - Green Blink : Transmitting and receiving data at 10/100/1000 Mbps.
  - Orange Light : Shutting off due to loop detection and shutoff functions/storm controls/ BPDU guard
  - Orange Blink : Transmitting and receiving specific packets including loop detection packets.
  - Off : No devices are connected.
- **Port LED (SFP Port 17-20)**
  - Green Light : Link is established at 1000 Mbps.
  - Green Blink : Transmitting and receiving data at 1000 Mbps.
  - Orange Light : Shutting off due to loop detection and shutoff functions/storm controls/ BPDU guard
  - Orange Blink : Transmitting and receiving specific packets including loop detection packets.
  - Off : No devices are connected.

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.

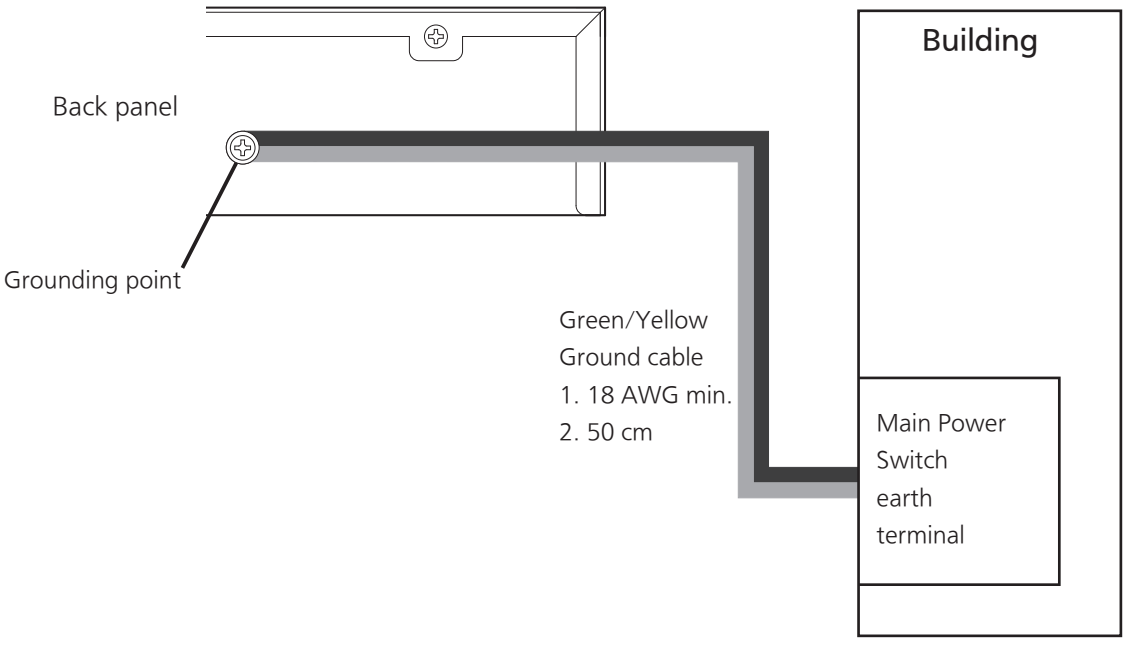
1. Ensure that the grounding cable is connected correctly so that the equipment is protected against lightning and interference. The correct connection of the grounding cable is an important measure to ensure the human safety.

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.

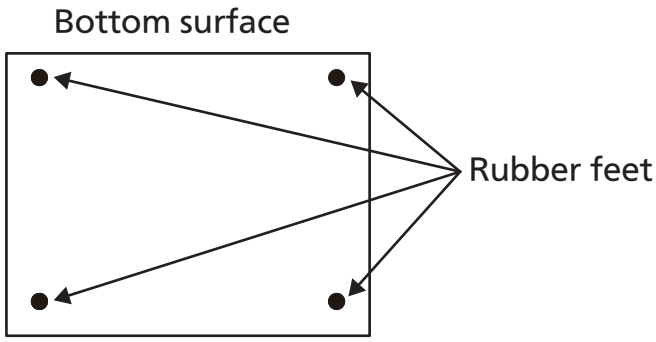
5. Installation steps:
   Step 1: Ensure the detachable power supply cord removed.
   Step 2: Use the screwdriver to turn the screws on the earth ground screw point.
   Step 3: Strip one end of the ground wire to the ground hole of system.
   Step 4: Connect the other end of the ground wire to a suitable grounding point of building at your side.
   Figure shows the grounding points.



3.2 Installing on level shelves

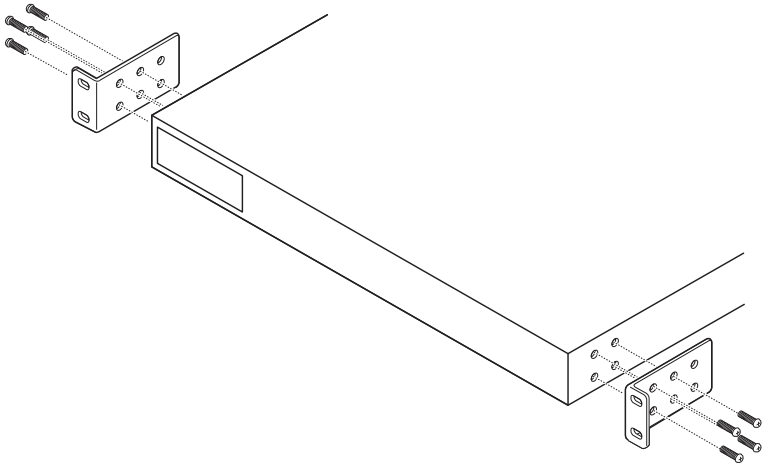
(1) Apply the supplied rubber feet onto the bottom surface of the unit.
(2) Install in a level area.

Caution
- Do not stack and use.
  Set up with a clearance of
  20 mm or more.

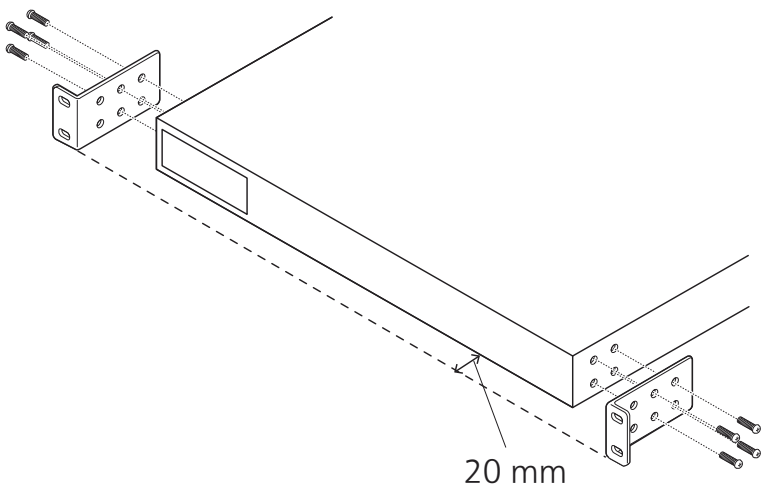


3.3 Mounting to rack

Take out the supplied 2 mounting brackets (for 19-inch rack) and 8 screws (for fixing the main unit and the mounting bracket), and fix the brackets to the main unit by tightening screws into 4 holes located at the sides. Then, mount this Ethernet Switch firmly to the rack using the supplied 4 screws (for 19-inch rack) or screws furnished at the rack.



The main unit can be placed 20 mm back on the rack by changing the bracket fixing position.



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.).

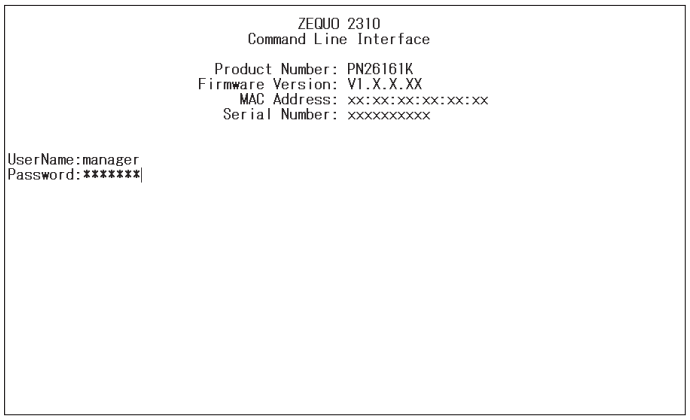
(2) Pressing Enter key 1 time opens Login screen. Enter UserName and Password (the default is "manager" for both). **(Screen 1)**

(3) The command input screen is displayed. **(Screen 2)**

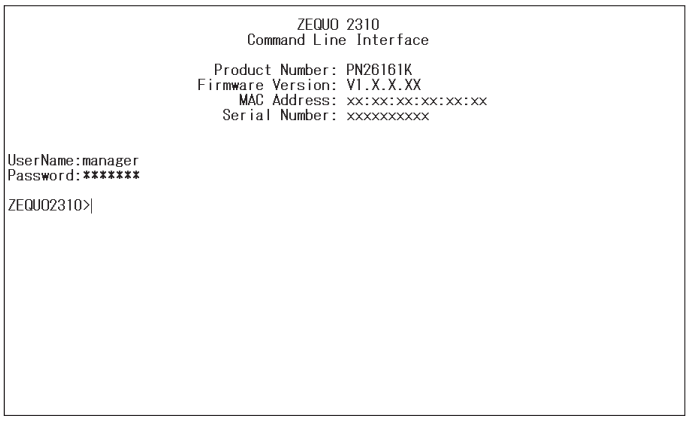
(4) Enter the IP address and subnet mask using the following command. **(Screen 3)**
>enable
#configure
(config)#interface vlan1
(config-if)#ip address 192.168.1.254 255.255.255.0

(5) Enter the following command to save the setting. Since the following screen is displayed, enter “Y” and the settings will be saved. **(Screen 4)**
(config-if)#exit
(config)#exit
#copy running-config startup-config

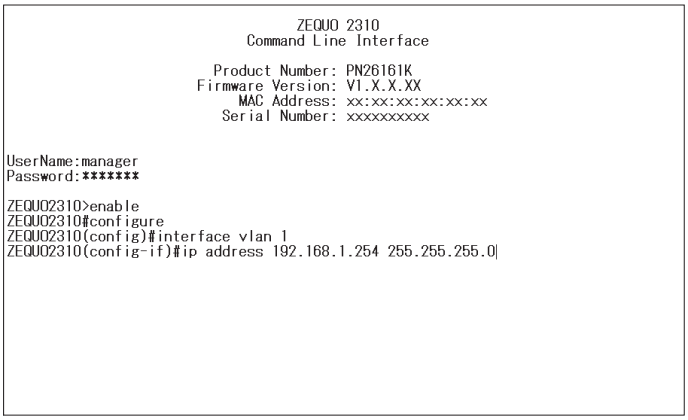
(6) From terminals connected to network, confirm that the settings are reflected correctly by executing PING test for entered address.



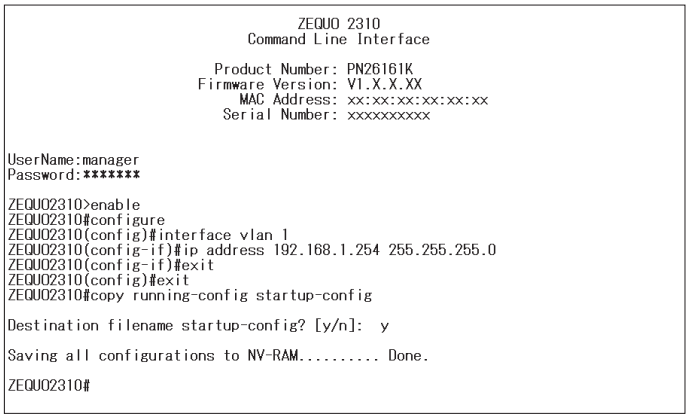
Screen 1



Screen 2



Screen 3



Screen 4

*** For detailed settings and administration methods, please see the PDF version of the 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.

- Is the power plug connected?
  Check that the power plug is firmly connected, so the connection is not loose at the power port.

If the STATUS LEDs are blinking orange

- Is the Ethernet Switch being used at a temperature between 0 and 50℃?
  Use the Ethernet Switch in its operating temperature range.
  If used at a temperature out of the operating temperature range, STATUS LED blinks in orange and indicates abnormality.

If the STATUS LEDs are blinking green

- Check whether the loops have occurred, since this is an indication that one or more ports are within 3 days after loop resolution.

The SD CARD LED is not lit.

- Is the SD card installed?
  Check that the SD card is firmly inserted.

◆ Communication Failure

- Is the UTP/fiber cable connected to the correct port?
- Are the SFP modules complied with the same standard each other?
- Is the fiber cable correct the fiber mode (single or multi)?
- Are the equipment linked up?
  If Embedded power-saving mode is set to "Full", change it to "Half" or "Disabled".
- Attempt to disable “EEE conforming to IEEE802.3az (LPI)” function at target port.
- Are the communication speed and mode settings correct?
  If the communication mode signal cannot be properly obtained, the Ethernet Switch operates in half-duplex mode. Check the auto negotiation setting again.
  Do not fix the speed/duplex mode of the connected terminal to full-duplex mode.
- Is the device whose communication mode fixed to half-duplex mode or full-duplex mode connected to ports 17 to 20?
  Ports 17 to 20 do not link up with devices in fixed mode.
  Connect the device to ports 1 to 16 or enable auto negotiation of the device you want to connect.
- Is the usage rate of the network to which this Ethernet Switch is connected excessively high?
  Try separating this Ethernet Switch from the network.

Troubleshooting

- Are the port LEDs lit up orange, or blinking orange?
  If the port LEDs are lit up orange, or blinking orange, the ports will be blocked via the loop detection and blocking functions. After the port controlled loop connections are resolved, release the port blocking from the settings screen as to whether the standby time will be longer than the recovery time until the auto-recovery of the loop detection and blocking.

*** Please refer to the instruction manual on the ZEQUO assist Plus on Panasonic's website in regard to settings and management methods.**