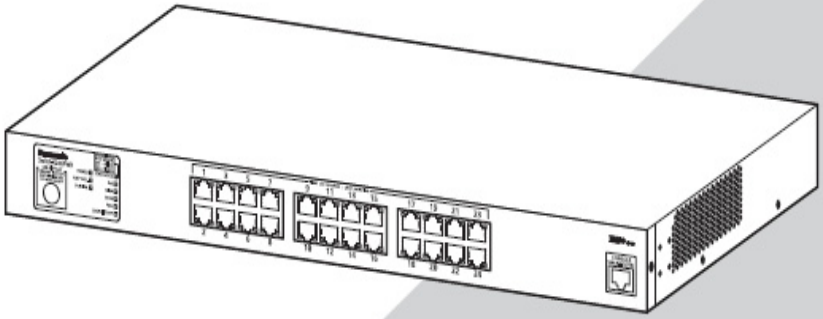
Panasonic®

Operation Manual
for Menu Interface

Switch-S24GPWR

Model Number: PN25249

- Thank you for purchasing our product.
- This manual provides important information about safe and proper operations of this Switching Hub.
- Please read the "Important Safety Instructions" on pages 2 to 4.
- Any problems or damage resulting from disassembly of this Switching Hub by customers are not covered by the warranty.



The target model for this Operation Manual is as follows.

Model name	Model number	Firmware version
Switch-S24GPWR	PN25249-ID PN25249-TH PN25249-MY PN25249-SG	2.0.0.00 or higher

Important Safety Instructions

Please Follow the Instructions

This chapter contains important safety instructions for preventing bodily injury and/or property damage. You are required to follow them.

■Severity of bodily injury and/or property damage, which could result from incorrect use of the Switching Hub, 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 to what they must not do.	❗ This symbol is used to alert users to what they must do.

⚠ CAUTION	
⃠	●Do not use power other than AC 100-240 V. Deviation could lead to fire, electric shock, and/or equipment failure. ●Do not handle the power cord with wet hand. Deviation could lead to electric shock and/or equipment failure. ●Do not handle this Switching Hub and connection cables during a thunderstorm. Deviation could lead to electric shock. ●Do not disassemble and/or modify this Switching Hub. 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 the cord could lead to fire, short, and/or electric shock. ●Do not put foreign objects (such as metal or combustibles) into the opening (such as twisted pair port, console port), and do not drop them inside the Switching Hub. Deviation could lead to fire, electric shock, and/or equipment failure. ●Do not connect equipment other than 10BASE-T/100BASE-TX/ 1000BASE-T to a twisted pair port. Deviation could lead to fire, electric shock, and/or equipment failure.

⚠ WARNING	
	●Do not please this Switching Hub in harsh environment(such as near water, high humid, and/or high dust). Deviation could lead to fire, electric shock, and/or equipment failure. ●Do not place this Switching Hub under direct sunlight and/or high temperature. Deviation could lead to high internal temperature and fire. ●Do not install this Switching Hub at a location with continuous vibration or strong shock, or at an unstable location. The Switching Hub may fall off, leading to injury and/or equipment failure. ●Do not put this Switching Hub into fire. Deviation could lead to explosion and/or fire. ●Do not use the supplied power cord for anything other than this product. Deviation could lead to fire, electric shock, and/or equipment failure. ●Use the bundled power cord (AC 100 - 240V specifications). Deviation could lead to electric shock, malfunction, and/or equipment failure.The warranty does not cover any problems resulting from the use of any power cord other than the one supplied. ●Unplug the power cord in case of equipment failure. Deviation such as keeping connected for a long time could lead to fire. ●Connect this Switching Hub to ground. Deviation could lead to electric shock, malfunction, and/or equipment failure.

⚠ WARNING	
	●Connect the power cord firmly to the power port. Deviation could lead to electric fire, shock, and/or malfunction. ●Unplug the power cord if the Status/ECO LED (Status/ECO mode), blinks in orange (system fault). Deviation, such as keeping connected for a long time, could lead to fire. ●Handle the Switching Hub carefully so that fingers or hands may not be damaged by twisted pair port, console port, or power cord hook block. ●To connect a power receiving equipment supporting IEEE802.3af to this Switching Hub, use a cable rated Cat5e or higher. Using other cables may result in heat generation, ignition, and/or equipment failure.

Important Notice for Measures against Failures Caused by Lightning Strikes

- When connecting devices (especially outdoor devices) prone to lightning strikes, such as network cameras or wireless access points, to a twisted pair port of this Switching Hub, overcurrent and/or overvoltage caused by lightning may affect this Switching Hub through a twisted pair cable, causing equipment failure. When connecting such devices, we strongly recommend installing a lightning arrester (SPD; Surge Protective Device) at the twisted pair port side of the Switching Hub.
- Overcurrent and/or overvoltage caused by lightning may affect this Switching Hub through a power source connected to the power port and/or a grounding line, causing equipment failure. When there is a possibility of overcurrent/overvoltage from lightning affecting this Switching Hub from a power source and/or a grounding line, we strongly recommend installing a lightning arrester (SPD; Surge Protective Device) at the power port side of the Switching Hub.
- In case this Switching Hub fails due to lightning strikes, repair charges will apply even during the warranty period.

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 Switching Hub.
- Unplug the power cord when installing or moving this Switching Hub.
- Unplug the power cord when cleaning this Switching Hub.
- Use this Switching Hub within the specifications. Deviation could lead to malfunction.
- Be sure to confirm that this Switching Hub does not move or fall under the weight of the cables when mounting with magnets. Connect cables while holding the Switching Hub down.
- Securely attach this Switching Hub to the wall with screws when mounting it in a high location.When mounting this Switching Hub with magnets in a high location, a fall of the Switching Hub could lead to injury and/or equipment failure.
- Do not place a floppy disk or magnetic card near the magnet. Deviation could lead to corruption of the data.
- Do not move this Switching Hub when attached to the desk. Deviation could lead to scratches on the painted surface.
- Do not touch the metal terminal of the RJ45 connector, the modular plug of connected twisted pair cable. 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 Switching Hub. 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 Switching Hub).

●Do not store and/or use this Switching Hub in the environment with the characteristics listed below.(Store and/or use this Switching Hub 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 Switching Hub in place where ambient temperature is from 0 to 45 ℃ .Fail- ure to meet the above conditions may result in fire, electric shock, breakdown, and/or malfunction. In addition, do not cover the bent hole of this Switching Hub.Devia- tion could lead to high internal temperature, equipment failure and/or malfunc- tion. If used at a temperature out of the operating temperature range, the protection equipment becomes activated and PoE power supply stops.

●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. Do not block the ventilator of the Switching Hub. Blocked ventilator induces the heat accumulation inside, causing equipment failure and/or malfunction. If used at a temperature out of the operating temperature range, the protection equipment becomes activated and PoE power supply stops.

●Do not stack Switching Hubs. When placing Switching Hubs side by side, leave a minimum of 20 mm space them.

●When mounting Switching Hubs in a rack, leave a minimum of 20 mm space between them.

1. Panasonic will not be liable for any damage resulting from the operation not in accordance with this operation manual, or loss of communications, which may or may not be caused by failure and/or malfunction of this device.
2. The contents described in this document may be changed without prior notice.
3. For any questions, please contact your dealer.

* Brands and product names in this document are trademarks or registered trademarks of their respective holders.

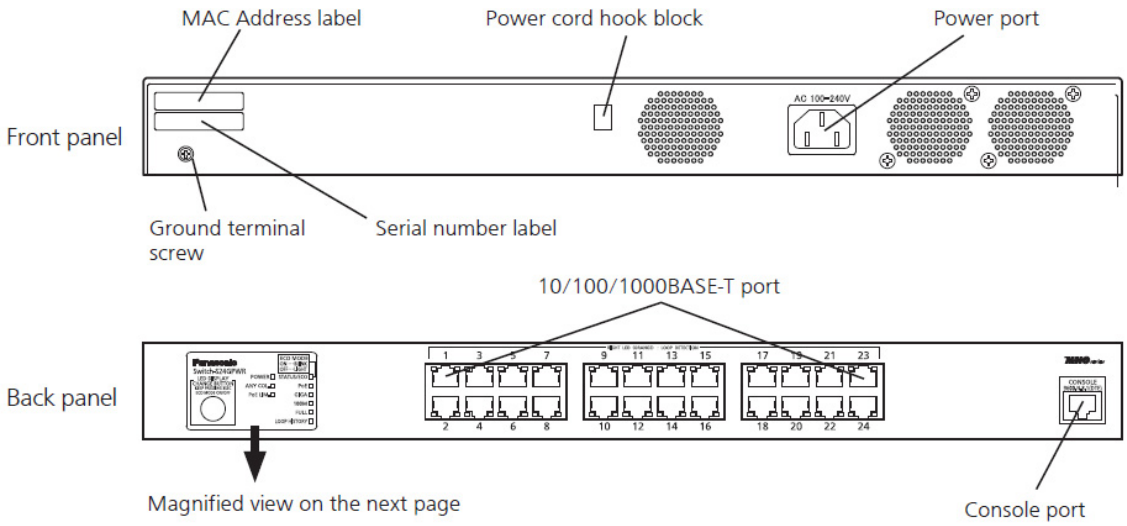
Table of Contents

1.2. Accessories

Please be sure to confirm the contents. Please contact your dealer if any item is missing.

* Switch-S24GPWR main unit 1
* Operation Manual (this manual) 1
* CD-ROM (PDF version of Operation Manual) 1
* Mounting bracket (for 19-inch rack) 2
* Rubber feet 4
* Screws (for 19-inch rack) 4
* Screws (for fixing the main unit and the mounting bracket) 8
* Power cord 1

1.3. Part Names and Functions



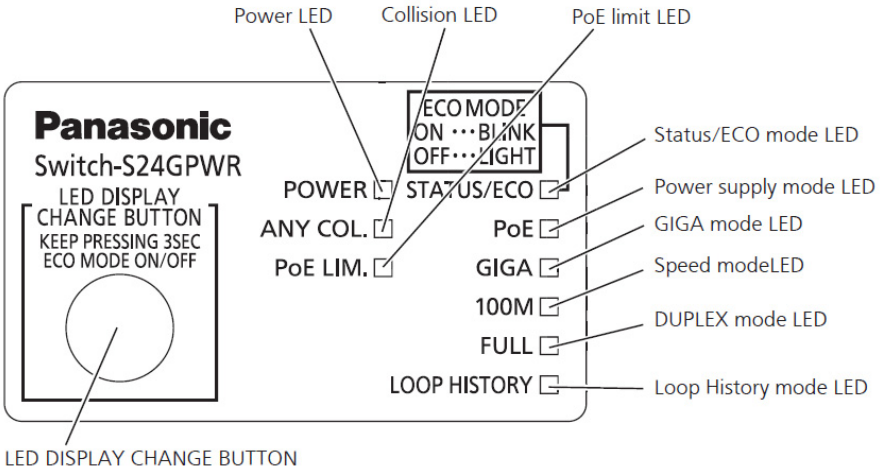


Figure 1-1 Part names

● Power port
Connect the supplied power cord into the port and connect the other end into an electric outlet.

● Power cord hook block
10/100/1000BASE-T port (ports 1 to 24) supporting PoE power supply supports IEEE802.3af PoE power supply. Connect a Powered Device supporting IEEE802.3af. Devices such as 10/100/1000BASE-T terminal, hub, repeater, bridge, and Switching Hub can be connected to this port. The length of the twisted pair cable (CAT5 or above) connecting this Switching Hub and a device must be 100 m or shorter.

● MAC address label
Displays the MAC address of this Switching Hub.

● Serial number label
Displays the serial number of this Switching Hub.

● PoE power supply supported 10/100/1000BASE-T port (Ports 1 to 24)
Supports IEEE802.3af compatible PoE power supply. Connection with 10/100BASE-TX terminal, hub, repeater, bridge, and switching Hub is possible.
The length of the twisted pair cable connecting this Switching Hub and a device must be 100 m or shorter.

● Console port
Used to connect a VT100 compatible terminal to configure and manage this Switching Hub.

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	Communication connector	:	RJ45

Use the separately sold RJ45 D-sub 9 pin console cable (PN72001) for connection.

● LED display Switching Hub button
Used to Switching Hub the LED display mode settings. For detailed display information and behavior on each LED display mode, refer to Section 1.4.

The button operation allows to configure the LED base mode and Loop detection and blocking function (OFF/ON.)

Operation	Description
Press-and-hold for 3 seconds or more	Switching Hub the LED base mode settings. When the LED display button is pressed and held for 3 seconds or more, all of the STATUS/ECO, PoE, GIGA, 100M, and FULL LEDs are lit. Release the button to enter the new mode. For detailed behavior on each LED base mode, refer to Section 1.6.1. By factory default, the LED base mode is set to the Status mode.
Press-and-hold for 10 seconds or more	Configures the loop detection and blocking settings (OFF/ON.) If the LED display Switching Hub button is pressed and held for 10 seconds or more, the LOOP HISTORY LED is lit. Release the button to complete the settings. For detailed behavior on the Loop detection and blocking function settings, refer to Section 4.5.6. By factory default, the Loop detection and blocking function is set to enabled.

1.4. LED Behavior

1.4.1. LED Behavior at Starting-up

When you turn on this Switching Hub, all LEDs are lit momentarily. Then, the hardware self diagnosis is executed. When self-diagnosis is complete and the Power and STATUS/ECO mode LEDs are lit green, Switching Hub operation starts.

1.4.2. LED Behavior while Operating

This Switching Hub has a set of LEDs for each port. These LEDs indicate the operation status of each port.

● System LED

LED	Behavior	Description
Power LED (POWER)	Green Light	Power On
	Off	Power Off
Collision LED (ANY COL.)	Orange Light	Packet collisions in either of ports operating in half-duplex.
	Off	No packet collisions
PoE limit LED (PoE LIM.)	Off	Supplying power at a range from 0 to less than 117 W.
	Green Light	Supplying power at a range from 117to 124 W.
	Orange blink	When power request exceeds 124 W The whole unit is overloaded. Or, when power request exceeds the maximum power request for each port.
Status/ECO mode LED (STATUS/ECO)	Green Light	Operating in the Status mode.
	Green blink	Operating in the ECO mode. (All port LEDs (Left) are turned off.)
	Orange Light	Booting.
	Orange blink	Fault. (Please contact your dealer.)
	Off	Power Off
Power supply mode LED (PoE)	Green Light	Operating in the Power supply mode.
GIGA mode LED (GIGA)	Green Light	Operating in the GIGA mode.
Speed mode LED (100M)	Green Light	Operating in the Speed mode.
DUPLEX mode LED (FULL)	Green Light	Operating in the DUPLEX mode.
Loop History mode LED (LOOP HISTORY)	Green Light	Operating in the Loop History mode.
	Green blink	Having a loop, or had a loop in the past 3 days.

● Port LED display mode

In the Status mode described later, the port LED indicates link-up and communication status. Pressing "LED display Switching Hub button" on the front panel allows to change the port LED display mode as follows:

Port LED display mode	Description
STATUS/ECO	Displays link-up and communication status.
PoE	Displays power supply status to the connected devices.
GIGA	Displays link-up status in 1000 Mbps.
100M	Displays link-up status in 100 Mbps.
FULL	Displays link-up status in full-duplex and half-duplex.
LOOP HISTORY	Displays the Loop detection history and port blocking status.

● Port LEDs

According to the Switching Hub of the "Port LED display mode" described in the previous section, the port LED display on each port changes as follows:

Port LED	Display mode	Behavior	Description
Left	STATUS/ECO	Green Light	Link established.
		Green blink	Transmitting data.
		Off	No device connected.
	PoE	Green Light	Supplying power normally.
		Orange blink	The whole unit or the single port is overloaded.
		Off	Not supplying power, or no PoE power receiving device connected.
	GIGA	Green Light	1000 Mbps link established.
		Off	100 or 10 Mbps link established, or no device connected.
	100M	Green Light	100 Mbps link established.
		Off	1000 or 10 Mbps link established or no device connected.
	FULL	Green Light	Link established in full-duplex.
		Off	Link established in half-duplex or no device connected.
	LOOP HISTORY	Green Light	Recovered from a loop, less than 3 days ago.
		Off	No loop detection history.
Right	-	Orange Light	Blocking by the Loop detection and blocking function.
		Off	Not blocking by the Loop detection and blocking function.

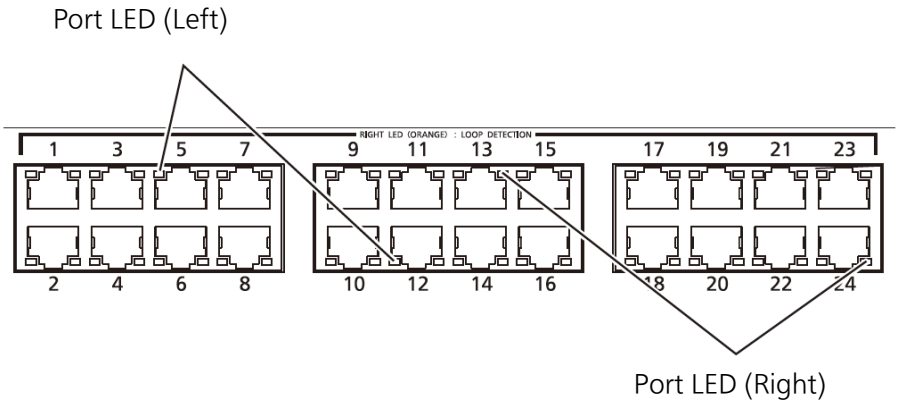


Figure 1-2 Port LEDs

1.4.3. Loop Detection and Blocking Function

When a port causes a loop, the corresponding LED lights up in orange. In this case, the port is automatically blocked (default setting: 60 seconds) to prevent a loop. If the loop is not resolved, the port will be blocked again. Resolve the loop while the port is blocked.

You can Switching Hub the loop detection and blocking function settings (OFF/ ON) by pressing and holding the LED display Switching Hub button for 10 seconds or more, or by configuring on the configuration screen. For details about settings on the configuration screen, refer to Section 4.5.6 of Operation Manual for Menu Screens. When successfully switched, the Loop History mode LED is lit.

If you wish to turn off the Loop History LED display, turn the Switching Hub off and on. Up to 64 saved loop history entries can be retained in the Switching Hub.

1.5. Operation Overview of PoE Power Supply Function

Ports 1 to 24 can support IEEE802.3af compatible PoE power supply. The Switching Hub can supply power up to 15.4 W per port, and up to 124 W in total.

● Power supply operation when the PoE limit LED is blinking orange (the whole unit is overloaded)

When the whole unit is overloaded due to a power request exceeding the limit, you can check which port has stopped supplying power, by switching the LED display to the Power supply mode (PoE). To keep power request less than maximum power supply on the whole unit, unplug the cable connected to the port blinking orange.

● Power supply operation when a single port is overloaded

When power request exceeds the maximum on a single port, the port is overloaded and stops supplying power. You can check which port has stopped supplying power by switching the LED display to the Power supply mode (PoE). Unplug the cable on the port blinking orange.

Note: Power consumption may be greatly different between during normal operation and during maximum power consumption depending on the PoE power receiving device. Configure the Switching Hub not to exceed the limit.

Note: If power request exceeds the limit of the whole unit, a port with a larger port number is blocked and stops supplying power.

1.6. LED Display Switch Button Operation

1.6.1. LED Base Mode Configuration

You can select either of the two LED display modes for this Switching Hub: "Status mode" and "ECO mode."
The mode selected immediately after system boot is called "Base mode." By pressing and holding the LED display switch button for 3 seconds or more, you can switch the Base mode. When the LED display button is pressed and held for 3 seconds or more, all of the STATUS/ECO, PoE, GIGA, 100M and FULL LEDs are lit, and the Base mode changes to the mode after switching.

● Status mode (factory default)
This mode displays each port status on the port LEDs according to the Port LED display mode. In the Status mode, the STATUS/ECO LED is lit green.

● ECO mode
All the port LEDs (Left) are turned off for power saving regardless of whether it is connected or not to the terminal. In the ECO mode, the STATUS/ECO LED is blinking green.

You can also configure the Base mode settings on the configuration screen of this Switching Hub. For details, refer to Section 4.6.7.d of Operation Manual for Menu Screens.

1.6.2. LED Display Switch

Pressing the "LED display switch button" on the front panel allows to change the port LED display in an order as follows:

Port LED display mode	Description
STATUS/ECO	Displays link establishment and communication status.
PoE	Displays power supply status to the connected devices.
GIGA	Displays link-up status in 1000 Mbps.
100M	Displays link-up status in 100 Mbps.
FULL	Displays link-up status in full-duplex and half-duplex.
LOOP HISTORY	Displays the Loop detection history and port blocking status.

If no operation is performed for more than one minute after switching the Port LED display mode to other than the STATUS/ECO mode, the mode is automatically switched back to the Base mode.

2. Installation

Switch-S24GPWR can be installed on a steel product, in a 19-inch rack.

2.1. Installing in a 19-inch Rack

Take out two mount brackets and eight screws (for securing the mount brackets to the Switching Hub) from accessories, and secure a bracket to each of the right and left sides of the Switching Hub via four screw holes.
Then, by using four supplied screws (for 19-inch rack mount) or screws included with the rack, firmly mount the Switching Hub in the rack.

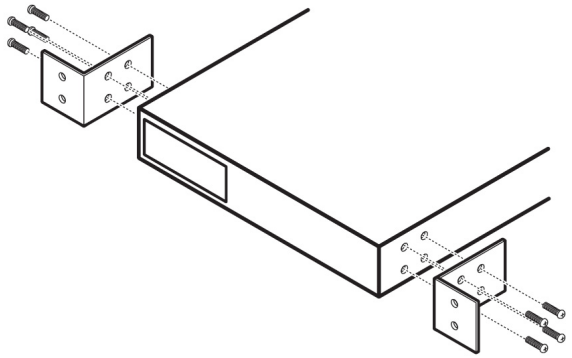


Figure 2-3 Installing in a 19-inch Rack

3. Connection

3.1. Connecting a Twisted Pair Port

● Connection Cable
Use a CAT5E or higher straight cable (twisted pair cable) with 8P8C RJ45 modular plugs.

● Network Configuration

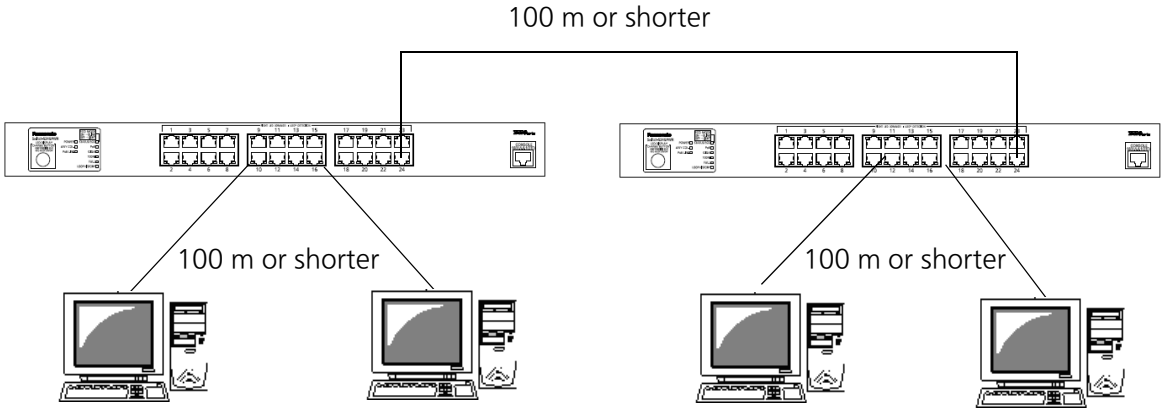


Figure 3-4 Connection configuration example

The length of the cable connecting this Switching Hub and a device must be 100 m or shorter. When a terminal or a LAN device with auto negotiation function is connected to a port, the port is automatically configured to the most appropriate performance mode. When a terminal or a device without auto negotiation function is connected to a port, this Switching Hub automatically determines and sets the communication speed; however, the full-duplex/half-duplex configuration is set at half-duplex because the full-duplex/half-duplex capability cannot be determined. When connecting a terminal or a device without auto negotiation function, set the connection mode of the port to Fixed. For detailed configuration procedure, refer to Section 4.2.2 of Operation Manual for Menu Screens.

Note: If connection mode is set to a fixed value, Auto-MDI/MDI-X function does not work. Therefore, you need to use a cross cable for connections between Switching Hub.

3.2. Connecting to Power

Connect the supplied power cord to the power port of this Switching Hub, and connect the power plug into an electric outlet. The Switching Hub operates at AC 100 to 240 V (50/60 Hz).
It does not have a power Switching Hub. When you connect the power plug, the Switching Hub turns on and starts operating. To power off, unplug the power plug from the electric outlet.

4. Configuration

Upon power on, this Switching Hub starts working as a normal switching Hub. To use the SNMP functions and other functions, you need to configure the Switching Hub by using the console, Telnet, SSH, or WEB control screen.
In this chapter, the configuration of this Switching Hub is explained.

Note: To access this switching Hub via Telnet, SSH or WEB control screen, this Switching Hub must have an IP address. Therefore, before accessing this Switching Hub via Telnet, SSH or WEB control screen, configure an IP address by accessing this Switching Hub via console. For details on configuring an IP address, refer to **4.5.2** of Operation Manual for Menu Screens.

4.1. Login

If you access the Switching Hub via console, the screen displays as shown in Figure. 4-1.
If no similar window is displayed, make sure the transmission mode of console is correct or hit the enter key.

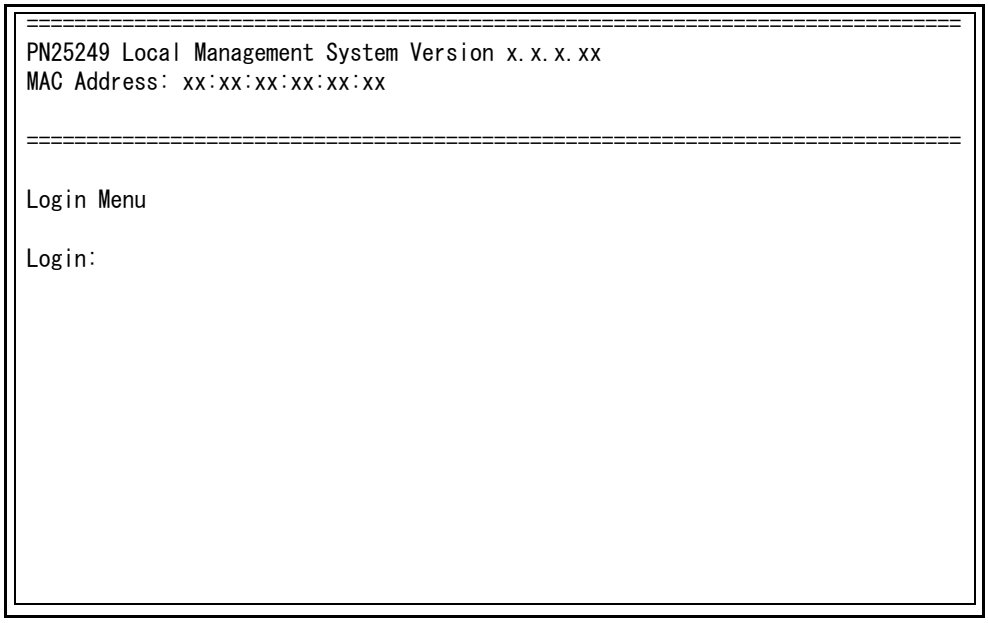


Figure 4-5 Login screen (Console)

If you access the Switching Hub via Telnet or SSH, the screen displays "Remote Management System", similar to Figure 4-6.

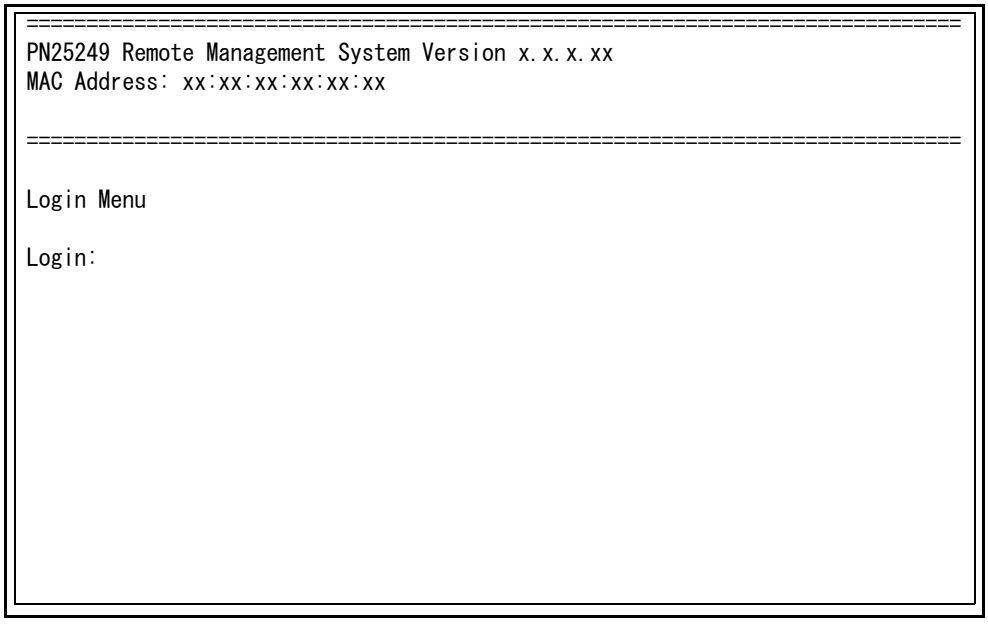


Figure 4-6 Login screen (Telnet/SSH)

On the login screen, similar to Figure 4-5 or Figure 4-6, enter the login name. The Switching Hub's default login name is set to "manager". Enter "manager" and press the Return key. Then, you need to enter a password, as Figure 4-7 displays. The Switching Hub's default password is the same as the login name ("manager"). Enter the password correctly and press the Return key.

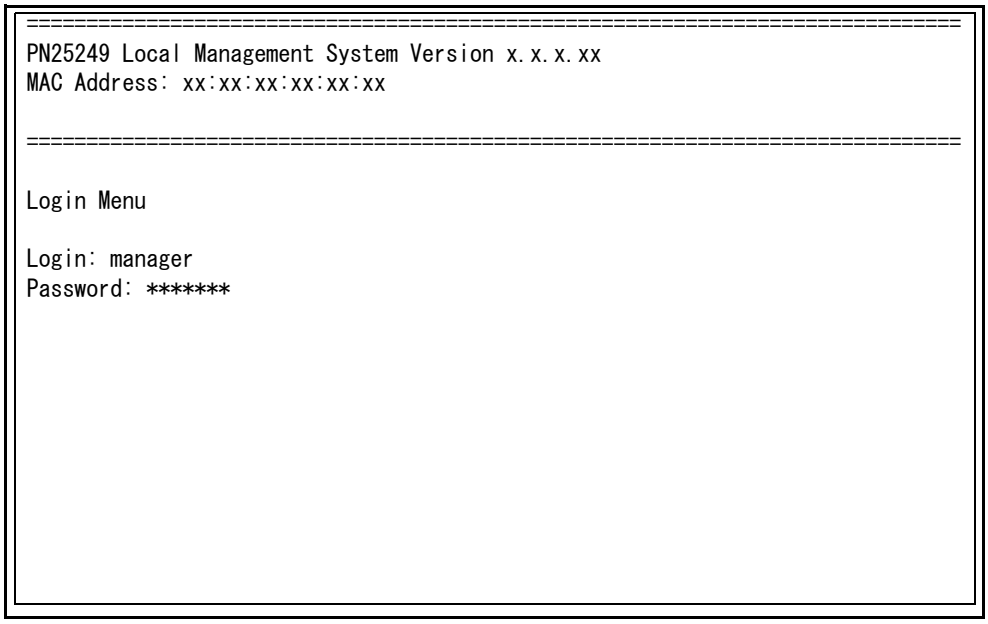


Figure 4-7 Entering password

Both the login name and password can be changed. For the detailed change procedure, refer to 4.6.7.

Note: When entered, the password is displayed in asterisks(*).

Note: Up to four users for Telnet or up to two users for SSH can access the Switching Hub concurrently.

Note: For the SSH login method, follow the operating procedures for each SSH client.

4.2. General Information Menu

On the Main Menu, pressing "G" opens the General Information Menu screen, as shown in Fig. 4-8. This screen displays this Switching Hubs basic information. You cannot edit shown information on this screen.

```
PN25249 Local Management System
Main Menu -> General Information

System up for:               000day(s), 00hr(s), 00min(s), 00sec(s)
Boot / Runtime Code Version: x.x.x.xx / x.x.x.xx
Hardware Information
  Version:                   Version1
  CPU Utilization:           xx.xx %
  DRAM / Flash Size:         128MB / 32MB
  DRAM User Area Size:       Free: xxxxxxxx bytes / Total: xxxxxxxx bytes

Administration Information
  Switch Name:

System Address Information
  MAC Address:               xx:xx:xx:xx:xx:xx
  IP Address:                0.0.0.0
  Subnet Mask:               0.0.0.0
  Default Gateway:           0.0.0.0




Press any key to continue...
```

Fig. 4-8 General Information Menu of Switch

Screen Description

System up for	Displays the cumulative time since the power on of this Switching Hub.	
Boot / Runtime Code Version	Displays this Switching Hub's firmware version. The left side displays the Boot Code, and the right side displays the Runtime Code. (" Firmware Upgrade" described in Section 4.7.1 is about Runtime Code upgrade.)	
Hardware Information	Displays the hardware information.	
	Version	Displays the hardware version information.
	CPU Utilization	Displays the CPU utilization.
	DRAM / Flash Size	Displays the sizes of the installed DRAM and FLASH memories.
	DRAM User Area Size	Displays the sizes of the user area memory and unused memory.
Administration Information	Items shown here are configured in accordance with Section 4.2.1 "System Administration Configuration".	
	Switch Name	Displays the Switching Hub name. The factory default setting is blank. For configuration details, refer to Section 4.2.1.
System Address Information	Items shown here are configured in accordance with Section 4.2.2 "System IP Configuration".	
	MAC address	Displays the MAC address of this Switching Hub. This value is uniquely assigned to each device and cannot be changed.
	IP Address	Displays the Switching Hub's current IP address. "0.0.0.0" is the factory default setting. For configuration details, refer to Section 4.2.2.
	Subnet Mask	Displays the Switching Hub's current subnet mask. "0.0.0.0" is the factory default setting. For configuration details, refer to Section 4.2.2.
	Default Gateway	Displays the IP address of the router for the default gateway. "0.0.0.0" is the factory default setting. For configuration details, refer to Section 4.2.2.

4.2.1. System Administration Configuration

On the Basic Switch Configuration Menu, pressing "A" opens the System Administration Configuration Menu screen, as shown in Fig. 4-9. On this screen, you can set administrative information, such as device name.

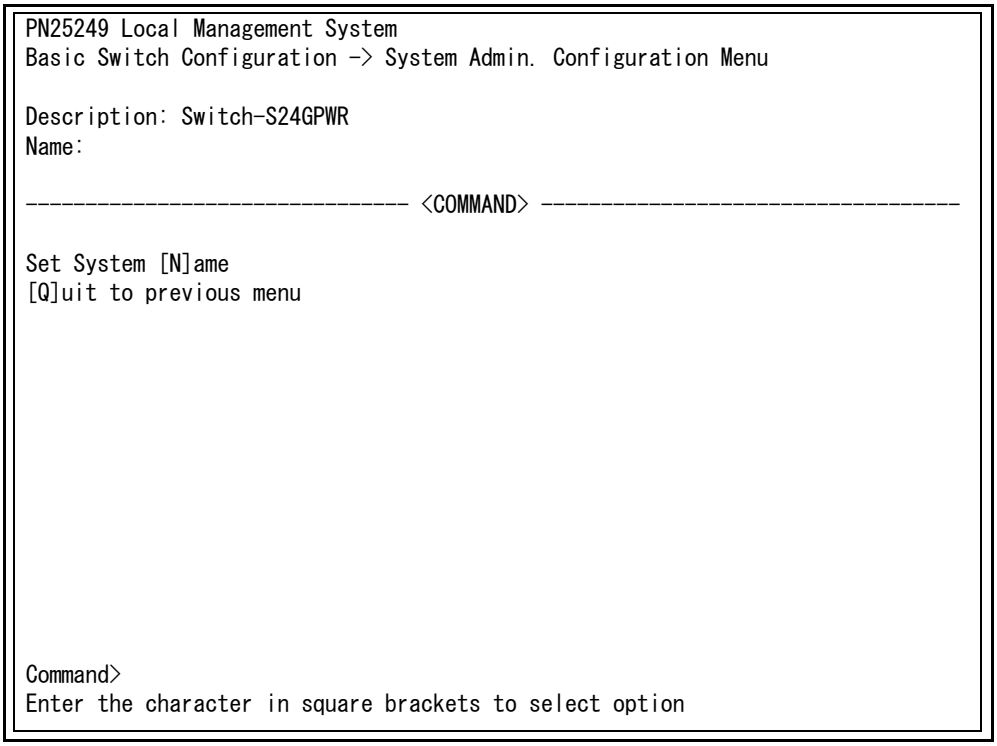


Fig. 4-9 System Administration Configuration

Screen Description

Description	Displays the system information. This item is not editable.
Name	Displays the system name. The factory default setting is blank.

Available commands are listed below.

N	Set/edit the system name.
	Press "N." The command prompt changes to "Enter system name>." Enter a switch name in 50 characters or less.
Q	Return to the parent menu.

4.2.2. System IP Address Configuration

On the Basic Switch Configuration Menu, pressing "I" opens the System IP Configuration Menu screen, as shown in Fig. 4-10. On this screen, you can set IP address related settings for this Switching Hub.

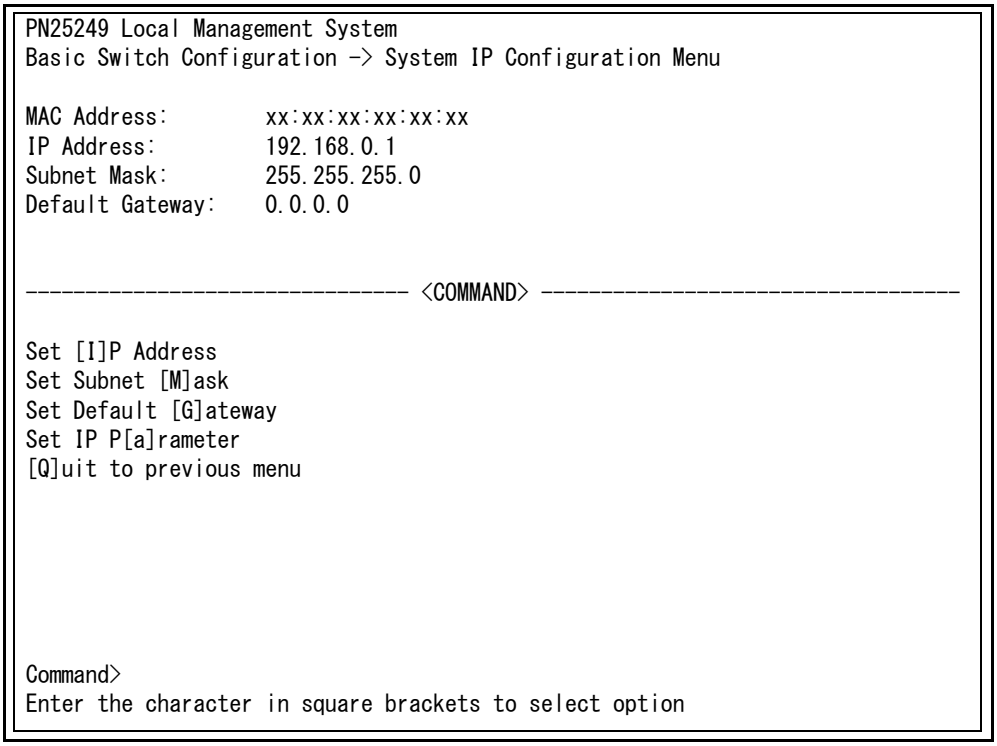


Fig. 4-10 System IP Address Configuration

Screen Description

MAC Address	Displays the MAC address of this Switching Hub. This value is uniquely assigned to each device and cannot be changed.
IP Address	Displays the current IP address. "0.0.0.0" is the factory default setting.
Subnet Mask	Displays the current subnet mask. "0.0.0.0" is the factory default setting.
Default Gateway	Displays the IP address of the router, set as a current default gateway. "0.0.0.0" is the factory default setting.

Available commands are listed below.

I	Set/edit the IP address.	
		Press "I." The command prompt changes to "Enter IP address>." Enter the IP address for the Switching Hub.
M	Set/edit the subnet mask.	
		Press "M." The command prompt changes to "Enter subnet mask>." Enter the subnet mask for the Switching Hub.
G	Set/edit the IP address of the router for the default gateway.	
		Press "G." The command prompt changes to "Enter new gateway IP address>." Enter the IP address of the router, set as the default gateway.
A	Set the IP address, subnet mask and default gateway in succession.	
		1. Press "A." The command prompt changes to "Enter IP address>." Enter the IP address of the Switching Hub. 2. Then, the command prompt changes to "Enter subnet mask>." Enter the subnet mask. 3. Then, the command prompt changes to "Enter new gateway IP address>." Enter the IP address of a router, used as a default gateway.
Q	Return to the parent menu.	

Note: Unless you configure these settings, you cannot use remotely connect to the Switching Hub via Telnet or WEB. Be sure to configure. All IP addresses on the local network must be unique, and no duplications are allowed. If you are unsure, consult the network administrator.

1. Product Outline

Switch-S24GPWR is a Layer-2 Ethernet Switching Hub with management functions, equipped with 24 10BASE-T/100BASE-TX/1000BASE-T (auto-negotiation) twisted pair ports supporting IEEE802.3af-compatible PoE power supply function.

1.1. Features

* This Switching Hub can supply power conforming with IEEE802.3af. Supplying power up to 15.4 W per port, and up to 124 W in total is possible.
* By factory default, ports 1 to 22 are fixed to MDI-X to prevent loop failures.
* The Loop detection and blocking function can prevent a loop failure by automatically blocking a port when a loop occurs.
* The Loop History function allows to identify the looping port by referring to the loop event notification on the LED and the occurrence history on the configuration screen.
* The ECO mode LED function can save more power consumption by turning off the LEDs on the Switching Hub.
* All twisted pair ports support the MDI/MDI-X cable auto sensing function. You can simply connect devices with a straight cable, whether the target is a terminal or a network device. (This function does not work if the port communication configuration is set to Fixed or Trunking. By factory default, ports 1 to 22 are fixed to MDI-X.)
* The Switching Hub supports auto-negotiation to easily accommodate an environment where 10BASE-T, 100BASE-TX, and 1000BASE-T coexist. In addition, speed and communication modes can be set to Fixed.
* The MNO series power saving mode detects the connection status automatically, and reduces power consumption to a minimum.
* PoE settings can be remotely enabled or disabled for each port (Ports 1 to 24).
* The Ping command can be used to verify communications.
* The IEEE802.1Q compatible tag VLAN is supported, allowing registration of up to 256 VLANs.
* The IEEE802.1p compatible QoS function is supported.
* The Reboot timer function is supported, allowing to automatically reboot the Switching Hub after the specified time (within 24 hours.)
* The PoE scheduler function enables scheduling of PoE power supply control.

4.3. Basic Switch Configuration

On the Main Menu, pressing "B" opens the Basic Switch Configuration Menu screen, as shown in Fig. 4-11. On this screen, you can configure the basic configuration settings, such as IP address, ports, MNO series power saving mode.

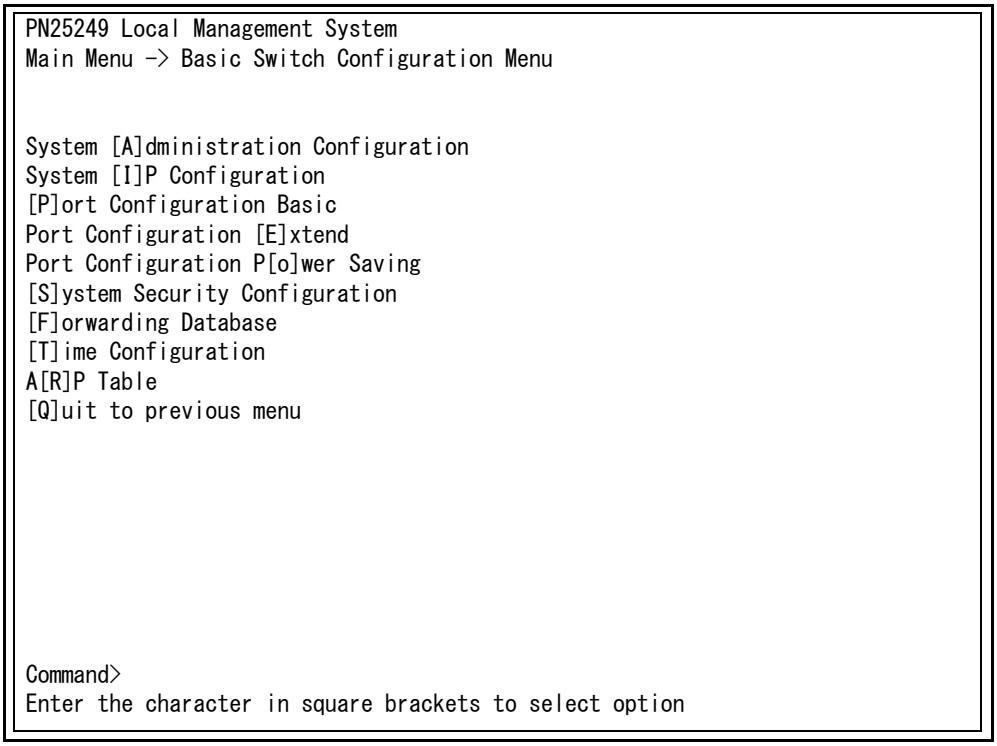


Fig. 4-11 Basic Switch Configuration Menu

Screen Description

System Administration Configuration	Configures the management information settings, such as Switching Hub name used for SNMP, place, and contact.
System IP Configuration	Configures the IP address related network information.
Port Configuration Basic	Configure PoE for each port.
Port Configuration Extend	Configures the extended port settings, such as port name.
Port Configuration Power Saving	Configures the MNO series power saving mode.
System Security Configuration	Configures the security settings, such as access limitation for this Switching Hub.
Forwarding Database	Displays the MAC address table.
Time Configuration	Configures the time settings, such as the SNTP-based time synchronization function and manual mode settings.
ARP Table	Displays the ARP table.
Quit to previous menu	Returns to the main menu.

4.3.2. Port Configuration Basic

On the Basic Switch Configuration Menu, pressing "p" opens the Port Configuration Basic Menu screen, as shown in Fig. 4-12. On this screen, you can configure port status display settings and port settings.

```
PN25249 Local Management System
Basic Switch Configuration -> Port Configuration Basic Menu

Port  Trunk      Type      Admin     Link       Mode       Flow Ctrl  Auto-MDI
----  -----  ----------  --------   ----   ------------  ---------  --------
  1    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
  2    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
  3    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
  4    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
  5    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
  6    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
  7    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
  8    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
  9    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
 10    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
 11    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
 12    ---      1000T     Enabled    Down   Auto          Disabled   Disabled
-------------------------------- <COMMAND> ------------------------------------

[N]ext Page               Set [M]ode                [Q]uit to previous menu
[P]revious Page           Set [F]low Control
Set [A]dmin Status        [S]et Auto-MDI
Command>
Enter the character in square brackets to select option
```

Fig. 4-12 Port Configuration Basic Menu

Screen Description

Port	Displays the port number.	
Trunk	Displays the group number for a trunked port.	
Type	Displays the port type.	
	100TX	The port type is 10/100BASE-TX.
	1000T	The port type is 10/100/1000BASE-T.
Admin	Displays the current port status. For all ports, "Enabled" is the factory default setting.	
	Enabled	The port is available.
	Disabled	The port is not available.
Link	Displays the current link status.	
	Up	A link has been established successfully.
	Down	A link has not been established.
Mode	Displays the communication speed and full-duplex/half-duplex settings. For all ports, "Auto" is the factory default setting.	
	Auto	Auto negotiation mode
	100-FDx(100F)	100 Mbps full-duplex
	100-HDx(100H)	100 Mbps half-duplex
	10-FDx(10F)	10 Mbps full-duplex
	10-HDx(10H)	10 Mbps half-duplex
Flow Ctrl	Displays the flow control settings. For all ports, "Disabled" is the factory default setting.	
	Enabled	The flow control is enabled.
	Disabled	The flow control is disabled.
Auto-MDI	Displays the Auto MDI/MDI-X function settings. Ports 1 to 22 are set to "Disabled," and Ports 23 to 24 are set to "Enabled" at factory default setting.	
	Enabled	The Auto-MDI/MDI-X function is enabled.
	Disabled	The Auto-MDI/MDI-X function is disabled.

Available commands are listed below.

<table>
<tr><td>N</td><td colspan="4">Display the next page.</td></tr>
<tr><td></td><td colspan="4">Press "N" to display the next page.</td></tr>
<tr><td>P</td><td colspan="4">Display the previous page.</td></tr>
<tr><td></td><td colspan="4">Press "P" to display the previous page.</td></tr>
<tr><td>A</td><td colspan="4">Enable/disable a port.</td></tr>
<tr><td></td><td colspan="4">1. Press "A." The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. (To configure all ports at once, enter "0" as the port number.)
2. Then, the command prompt changes to "Enable or Disable port # (E/D)>." Press "E" to enable the port. Press "D" to disable it.
As the change is applied, the display on the upper screen is updated automatically.</td></tr>
<tr><td>M</td><td colspan="4">Configure the speed and full-duplex/half-duplex settings for each port.</td></tr>
<tr><td></td><td colspan="4">1. Press "M." The command prompt changes to "Enter port number>." Enter a port number you wish to configure. (To configure all ports at once, enter "0" as the port number.)
2. Then, the command prompt changes to "Enter mode for port # (A/N)>." Press "A" to enable the auto negotiation mode. Press "N" to disable it.
3. If "N" is selected, the command prompt changes to "Enter speed for port #(10/100)>." Select a desired communication speed.
4. Upon setting, the command prompt changes to "Enter duplex for port #(F/H)>." Select "F" for full-duplex or "H" for half-duplex.
As the change is applied, the display on the upper screen is updated automatically.</td></tr>
<tr><td></td><td>Mode:</td><td>A:</td><td colspan="2">Enable the auto negotiation mode.</td></tr>
<tr><td></td><td></td><td>N:</td><td colspan="2">Disable the auto negotiation mode.
(Fixing the speed at 1000BASE-T is not supported)</td></tr>
<tr><td></td><td>Speed:</td><td>10:</td><td colspan="2">Set at 10 Mbps.</td></tr>
<tr><td></td><td></td><td>100:</td><td colspan="2">Set at 100 Mbps.</td></tr>
<tr><td></td><td>Duplex:</td><td>F:</td><td colspan="2">Set at full-duplex.</td></tr>
<tr><td></td><td></td><td>H:</td><td colspan="2">Set at half-duplex.</td></tr>
<tr><td>F</td><td colspan="4">Enable/disable the flow control.</td></tr>
<tr><td></td><td colspan="4">1. Press "F." The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. (To configure all ports at once, enter "0" as the port number.)
2. Then, the command prompt changes to "Enable or Disable flow control for port # (E/D)>." Press "E" to enable the function. Press "D" to disable it.
As the change is applied, the display on the upper screen is updated automatically.</td></tr>
<tr><td>S</td><td colspan="4">Enable/disable the Auto MDI/MDI-X function.</td></tr>
<tr><td></td><td colspan="4">1. Press "S." The command prompt changes to "Enter port number >." Enter a port number you wish to configure in the range of 1 to 24. (To configure all ports at once, enter "0" as the port number.)
2. Then, the command prompt changes to "Enable or Disable Auto-MDI for port # (E/D)>." Press "E" to enable the function. Press "D" to disable it.
As the change is applied, the display on the upper screen is updated automatically.</td></tr>
<tr><td>Q</td><td colspan="4">Return to the parent menu.</td></tr>
</table>

Note: The screen displays the port status; however, the status is not automatically updated. To display the latest status, press any key.

4.3.3. Port Configuration Extend

On the Basic Switch Configuration Menu, pressing "e" opens the Port Configuration Extend Menu screen, as shown in Fig. 4-13. On this screen, you can configure port status display settings and extended port settings.

```
PN25249 Local Management System
Basic Switch Configuration -> Port Configuration Extend Menu

Port  Trunk      Type     Link     Port Name
----  -----  -----------  ----  ---------------
  1    ---      1000T     Down  Port_1
  2    ---      1000T     Down  Port_2
  3    ---      1000T     Down  Port_3
  4    ---      1000T     Down  Port_4
  5    ---      1000T     Down  Port_5
  6    ---      1000T     Down  Port_6
  7    ---      1000T     Down  Port_7
  8    ---      1000T     Down  Port_8
  9    ---      1000T     Down  Port_9
 10    ---      1000T     Down  Port_10
 11    ---      1000T     Down  Port_11
 12    ---      1000T     Down  Port_12
-------------------------------- <COMMAND> ----------------------------------

[N]ext Page                              Set Port N[a]me
[P]revious Page
[Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-13 Port Configuration Extend Menu

Screen Description

Port	Displays the port number.	
Trunk	Displays the group number for a trunked port.	
Type	Displays the port type.	
	100TX	The port type is 10/100BASE-TX.
	1000T	The port type is 10/100/1000BASE-T.
Link	Displays the current link status.	
	Up	A link has been established successfully.
	Down	A link has not been established.
Port Name	Displays the port name.	

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.

A	Assign a name to each port.	
		1. Press "A." The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. (To configure all ports at once, enter "0" as the port number.) 2. Then, the command prompt changes to "Enter port name string>." Enter a name in 15 characters or less. As the change is applied, the display on the upper screen is updated automatically.
Q	Return to the parent menu.	

Note: The screen displays the port status; however, the status is not automatically updated. To display the latest status, press any key.

4.3.4. Port Configuration Power Saving

In this Switching Hub, it is possible to reduce power consumption by utilizing our original function "MNO series power saving mode" that detects the connection status of ports automatically and saves power consumption to minimum, and the Energy Efficient Ethernet (hereinafter referred to as EEE) of IEEE802.3az respectively.
In addition, the MNO series power saving mode supports two modes: "Half mode" to prioritize connection with other devices and "Full mode" to save more power consumption.

On the Basic Switch Configuration Menu, pressing "o" opens the Port Configuration Power Saving screen, as shown in Fig. 4-14. On this screen, you can configure port status display settings and various power saving mode settings.

```
PN25249 Local Management System
Basic Switch Configuration -> Port Configuration Power Saving Menu

Port   Link    Trunk   Type      Mode        Power-Saving   EEE(802.3az)
----  ------   -----  ------  ----------   ------------   -------------
  1    Down     ---   1000T   Auto         Half           Enabled
  2    Down     ---   1000T   Auto         Half           Enabled
  3    Down     ---   1000T   Auto         Half           Enabled
  4    Down     ---   1000T   Auto         Half           Enabled
  5    Down     ---   1000T   Auto         Half           Enabled
  6    Down     ---   1000T   Auto         Half           Enabled
  7    Down     ---   1000T   Auto         Half           Enabled
  8    Down     ---   1000T   Auto         Half           Enabled
  9    Down     ---   1000T   Auto         Half           Enabled
 10    Down     ---   1000T   Auto         Half           Enabled
 11    Down     ---   1000T   Auto         Half           Enabled
 12    Down     ---   1000T   Auto         Half           Enabled

--------------------------------- <COMMAND> -------------------------------------
[N]ext Page              Set Power [S]aving Mode    Set [E]EE Status
[P]revious Page          [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-14 Port Configuration Power Saving Menu

Screen Description

Port	Displays the port number.	
Link	Displays the current link status.	
	Up	A link has been established successfully.
	Down	A link has not been established.
Trunk	Displays the group number for a trunked port.	
Type	Displays the port type.	
	100TX	The port type is 10/100BASE-TX.
	1000T	The port type is 10/100/1000BASE-T.

Mode	Displays the communication speed and full-duplex/half-duplex settings. For all ports, "Auto" is the factory default setting.	
	Auto	Auto negotiation mode
	100-FDx(100F)	100 Mbps full-duplex
	100-HDx(100H)	100 Mbps half-duplex
	10-FDx(10F)	10 Mbps full-duplex
	10-HDx(10H)	10 Mbps half-duplex
Power-Saving	Displays the status of the MNO series power saving mode. For all ports, "Half" is the factory default setting.	
	Half	The MNO series power saving mode status is enabled (Half).
	Full	The MNO series power saving mode status is enabled (Full).
	Disabled	The MNO series power saving mode status is disabled.
EEE(802.3az)	Displays the EEE (Energy Efficient Ethernet) status. For all ports, "Disabled" is the factory default setting.	
	Enabled	The EEE is enabled.
	Disabled	The EEE is disabled.

Available commands are listed below.

N	Display the next page.
	Press "N" to display the next page.
P	Display the previous page.
	Press "P" to display the previous page.
S	Configure the MNO series power saving mode for each port.
	1. Press "S." The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. (To configure all ports at once, enter "0" as the port number.) 2. Then, the command prompt changes to "Enter Power Saving mode for port (F/H/D)>." Press "F" to enable the mode. Press "D" to disable it. Press "H" to select the MNO series power saving mode that prioritizes connection with other devices. As the change is applied, the display on the upper screen is updated automatically.
E	Configure the EEE settings for each port.
	1. Press "E." The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. (To configure all ports at once, enter "0" as the port number.) 2. Then, the command prompt changes to "Enable, Disable for Energy Efficient Ethernet(EEE 802.3az) (E/D)>." Press "E" to enable the EEE. Press "D" to disable it.
Q	Return to the parent menu.

4.3.5. System Security Configuration

On the Basic Switch Configuration Menu, pressing "S" opens the System Security Configuration screen, as shown in Fig. 4-15. On this screen, you can configure the various settings for accessing this Switching Hub for configuration and management.

```
PN25249 Local Management System
Basic Switch Configuration -> System Security Configuration

Console UI Idle Timeout:     5 Min.
Telnet UI Idle Timeout:      5 Min.

Telnet Server:               Enabled
Web Server Status:           Disabled
IP Setup Interface:          Enabled
Local User Name:             manager


-------------------------------- <COMMAND> ----------------------------------

Set [C]onsole UI Time Out            Change Local User [N]ame
Set [T]elnet UI Time Out             Change Local [P]assword
Enable/Disable Te[l]net Server       [I]P Setup Interface
[W]eb Server Ststus                  Telnet [A]ccess Limitation
LED [B]ase Mode Configuration        [Q]uit to previous menu



Command>
Enter the character in square brackets to select option
```

Fig. 4-15 System Security Configuration

Screen Description

Console UI Idle Time Out:	Displays the idle timeout settings (in minutes) for terminating a console-connected session if no input is made. The factory default setting is 5 minutes.	
Telnet UI Idle Time Out:	Displays the idle timeout settings (in minutes) for terminating a Telnet-connected session if no input is made. The factory default setting is 5 minutes.	
Telnet Server:	Displays the Telnet access settings. "Enabled" is the factory default setting.	
	Enabled:	Access is enabled.
	Disabled:	Access is disabled.
Web Server Status:	Displays whether access by the Web browser is enabled or disabled. "Disabled" is the factory default setting.	
	Enabled:	Access is enabled.
	Disabled:	Access is disabled.
IP Setup Interface:	Displays the access settings for the IP address configuration software, bundled with the Panasonic network cameras. "Enabled" is the factory default setting.* For instructions, refer to Appendix C.	
	Enabled:	Access is enabled.
	Disabled:	Access is disabled.
Local User Name:	Displays the current login username. "manager" is the factory default setting.	

Available commands are listed below.

C	Configure the idle timeout settings for automatically terminating a console-connected session if no input is made.	
		Press "C." The command prompt changes to "Enter console idle timeout>." Enter a value from 0 to 60 (minutes). Entering "0" disables the automatic termination.
T	Configure the idle timeout settings for automatically terminating a Telnet-connected session if no input is made.	
		Press "T." The command prompt changes to "Enter telnet idle timeout>." Enter a value from 1 to 60 (minutes).
N	Edit the login username.	
		1. Press "N." The command prompt changes to "Enter current password>." Enter the current password. 2. After entering the correct password, the command prompt changes to "Enter new name>." Enter a new username in 12 characters.
P	Edit the login password.	
		1. Press "P." The command prompt changes to "Enter old password>." Enter the current password. 2. If the password is correct, the command prompt changes to "Enter new password>." Enter a new password in 12 characters. 3. After entering the password, the command prompt changes to "Retype new password>" for confirmation. Enter the new password again.
L	Configure the Telnet access settings.	
		Press "L." The command prompt changes to "Enable or Disable telnet server(E/D)>." Enter "E" to enable the access. Enter "D" to disable it.
W	Configure the Web browser access settings.	
		Press "W." The command prompt changes to "Enable or Disable web server (E/D)>." Enter "E" to enable the access. Enter "D" to disable it.
A	Configure a terminal accessible via Telnet.	
		Press "A" to move to the Telnet Access Limitation Menu. For configuration details, refer to the next section (**4.3.5.a**).
I	Configure the access settings for the IP address configuration software, bundled with the Panasonic network cameras.	
		Press "I." The command prompt changes to "Enable or Disable IP setup interface (E/D)>." Enter "E" to enable the access. Enter "D" to disable it.

B	Configure the LED base mode settings.	
		Press "B" to move to the LED Basic Mode Configuration page. For configuration details, refer to the next section (4.3.5.b).
Q	Return to the parent menu.	

4.3.5.a. Telnet Access Limitation Configuration

On the System Security Configuration Menu, pressing "A" opens the Telnet Access Limitation screen, as shown in **Fig. 4-1**. On this screen, you can configure limitation of equipment accessing to this Switching Hub via Telnet.

```
PN25249 Local Management System
System Security Configuration -> Telnet Access Limitation Menu

Telnet Access Limitation :   Disabled

No.      IP Address          Subnet Mask
---   ---------------     ---------------
 1     <empty>              <empty>
 2     <empty>              <empty>
 3     <empty>              <empty>
 4     <empty>              <empty>
 5     <empty>              <empty>
-------------------------------- <COMMAND> ----------------------------------

[E]nable/Disable Telnet Access Limitation
[A]dd IP Address and Subnet Mask
[D]elete IP Address and Subnet Mask
[M]odify IP Address and Subnet Mask
[Q]uit to previous menu



Command>
Enter the character in square brackets to select option
```

Fig. 4-1 Telnet Access Limitation Configuration

Available commands are listed below.

E	Enable/disable the access limitation via Telnet.	
	E	Enable the access limitation.
	D	Disable the access limitation.
A	Set accessible IP addresses. Five ranges can be set up.	
		1. Press "A." The command prompt changes to "Enter IP address entry number>." Enter an IP address entry number between 1 and 5. 2. The command prompt changes to "Enter IP address>." Enter an IP address to be accessible. 3. If the IP address is correct, the command prompt changes to "Enter subnetwork mask>." Enter a range of IP address to which you wish to permit access with mask. (Setting example) No. IP Address Subnet Mask Accessible IP Address --- --- --- --- 1 192.168.1.10 255.255.255.255 192.168.1.10 (Only one unit can be accessed) 2 192.168.1.20 255.255.255.254 192.168.1.20、192.168.1.21 (Two units can be accessed) 3 192.168.2.1 255.255.255.128 192.168.2.1 ～ 192.168.2.127 (127 units can be accessed) 4 192.168.3.1 255.255.255.0 192.168.3.1 ～ 192.168.3.254 (254 units can be accessed)

D	Delete a range of IP address that has been set up.	
		Press "D." The command prompt changes to "Enter IP address entry number>." Enter an IP address entry number you wish to delete.
M	Change a range of IP address that has been set up.	
		1. Press "M." The command prompt changes to "Enter IP address entry number>." Enter an IP address entry number between 1 and 5. 2. The command prompt changes to "Enter IP address>." Enter an IP address that has been set up. 3. The command prompt changes to "Enter subnet mask>." Enter a range of IP address to which you wish to permit access with mask.
Q	Return to the parent menu.	

4.3.5.b. LED Base Mode Configuration

On the System Security Configuration Menu, pressing "B" opens the LED Base Mode Configuration screen, as shown in Fig. 4-2. On this screen, you can configure the LED base mode settings.

```
PN25249 Local Management System
System Security Configuration -> LED Base Mode Configuration

LED Base Mode:              Status









Note: Save Configuration to Flash will be executed when LED Base Mode changed.

-------------------------------- <COMMAND> ----------------------------------
Set LED [B]ase Mode
[Q]uit to previous menu

Command>
Enter the character in square brackets to select option
```

Fig. 4-2 LED Base Mode Configuration

Screen Description

System LED base-mode	Displays the current LED base mode. For all ports, the factory default setting is set to the Status mode (Status).	
	Status	Operating in the Status mode.
	Eco	Operating in the ECO mode.

Available commands are listed below.

B	Change the current LED base mode.
	Press "B." The command prompt changes to "Select LED Base Mode (S/E)>." Press "S" to change the LED base mode to the Status mode. Press "E" to change to the ECO mode.
Q	Return to the parent menu.

Note: When you change the LED base mode, all configuration information will be saved into the internal memory.

4.3.6. Forwarding Database

On the Basic Switch Configuration Menu, pressing "F" opens the Forwarding Database Information Menu screen, as shown in **Fig. 4-3**. On this screen, a list of MAC address tables required for transferring packets that have been learned and recorded is displayed.

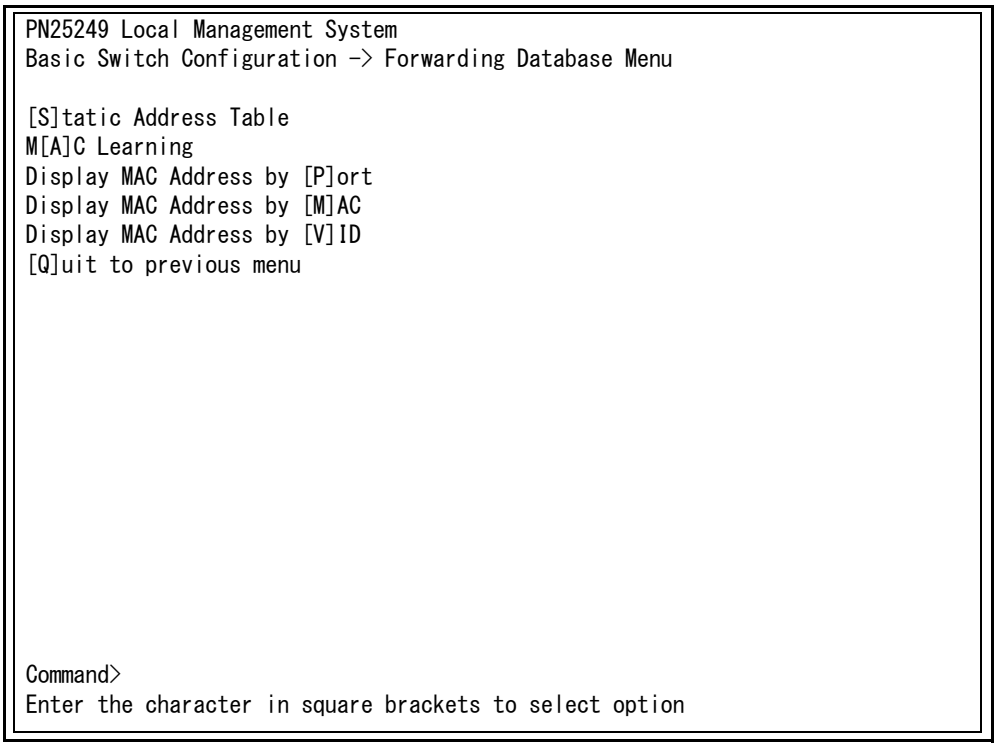


Fig. 4-3 Reference to MAC Address Table

Screen Description

Static Address Table	Adds or deletes MAC addresses. For details, refer to the next section (**4.3.8.e**).
MAC Learning	Configures the Auto/OFF settings of the MAC Learning function by port. When it is OFF, only the MAC addresses registered in "Static Address Table" can be communicated. For details, refer to the next section (**4.3.8.a**).
Display MAC Address by Port	Displays the MAC address table by port. For details, refer to the next section (**4.3.8.b**).
Display MAC Address by MAC	Displays all registered MAC addresses. For details, refer to the next section (**4.3.8.c**).
Display MAC Address by VID	Displays the MAC address table by VLAN. For details, refer to the next section (**4.3.8.d**).
Quit to previous menu	Return to the parent menu.

4.3.7. SNTP Configuration

In this Switching Hub, it is possible to set the time accurately by synchronizing the internal clock to an external SNTP server's clock via SNTP (Simple Network Time Protocol).
On the Basic Switch Configuration Menu, pressing "T" opens the SNTP Configuration Menu screen, as shown in Fig. 4-4. On this screen, you can configure the SNTP settings.

```
PN25249 Local Management System
Basic Switch Configuration -> Time Configuration Menu

Time ( HH:MM:SS )   : xx:xx:xx
Date ( YYYY/MM/DD ) : xxxx/xx/xx     xxxxxx

SNTP Server IP        : x.x.x.x
SNTP Polling Interval : 1440 Min
Time Zone : (GMT+09:00) Osaka,Sapporo,Tokyo
Daylight Saving       : N/A

-------------------------------- <COMMAND> ----------------------------------

Set SNTP Server I[P]
Set SNTP [I]nterval
Set Time [Z]one
S[e]t Daylight Saving
[Q]uit to previous menu




Command>
Enter the character in square brackets to select option
```

Fig. 4-4 SNTP Configuration Menu

Screen Description

Time(HH:MM:SS):	Displays the time of the internal clock.
Date(YYYY/MM/DD):	Displays the date of the internal clock.
SNTP Server IP:	Displays the IP address of the SNTP server that executes time synchronization.
SNTP Polling Interval:	Displays the interval of time synchronization with the SNTP server.
Time Zone:	Displays the time zone.
Daylight Saving:	Displays the application status of Daylight Saving (Summer time).

Available commands are listed below.

P	Set the IP address of the SNTP server.	
		Press "P." The command prompt changes to "Enter new IP address>." Enter the IP address of the SNTP server.
I	Set the interval time for SNTP synchronization.	
		Press "I." The command prompt changes to "Enter Interval Time>." Enter the interval of time synchronization with the SNTP server with a value of 1 to 1440 (minutes). The factory default setting is 1440 minutes (1 day).
E	Set the application of Daylight Saving (Summer time).	
		Press "E." The command prompt changes to "Enable or Disable Daylight Saving (E/D)>." Enter "E" to apply Daylight Saving. Enter "D" not to apply it. However, in case the set time zone is a zone where Daylight Saving is not applied, this configuration is not available. When this Switching Hub is used domestically, this configuration is not required.
Z	Set the time zone.	
		Press "Z" to open a list of time zones. Specify a time zone you wish to set. The factory default setting is "(GMT+09:00) Osaka, Sapporo, Tokyo."
Q	Return to the parent menu.	

Note: In case the SNTP server is located outside of the firewall, connection with the SNTP server may not be possible depending on settings by the system administrator.
For details, ask your system administrator.
If you wish to disable the time synchronization function, set the SNTP server IP to "0.0.0.0."

4.3.8. ARP Table Configuration

On the Basic Switch Configuration Menu, pressing "R" opens the ARP Table screen, as shown in **Fig. 4-5**. On this screen, you can refer to and configure the ARP table.

```
PN25249 Local Management System
Basic Switch Configuration -> ARP Table

Sorting Method :   By IP
ARP Age Timeout :  7200 seconds
  IP Address      Hardware Address     Type
---------------   -----------------   -------









-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                           [A]dd/Modify Static Entry
[P]revious Page                       [D]elete Entry
Set ARP Age [T]imeout                 [Q]uit to previous menu
[S]orting Entry Method
Command>
Enter the character in square brackets to select option
```

Fig. 4-5 ARP Table

Screen Description

Sorting Method	Displays the order of displaying.	
	By IP	Displays in the order of IP address.
	By MAC	Displays in the order of MAC address.
	By Static Type	Displays addresses set manually.
	By Dynamic Type	Displays addresses learned automatically.
ARP Age Timeout	Displays the age-out time of the ARP table.	
IP Address	Displays the IP address entries on the ARP table.	
Hardware Address	Displays the hardware address on the ARP table.	
Type	Displays the type of the registered ARP entry.	
	Static	Indicates that the ARP entry has been set manually.
	Dynamic	Indicates that the ARP entry has been learned automatically.

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
T	Set the age-out time of the ARP table.	
		Press "T." The command prompt changes to "Enter ARP age timeout value >." Enter the age-out time of the ARP table with a value of 30 to 86400 (seconds).
S	Select the order of displaying ARP table.	
		Press "S." The command prompt changes to "Select method for sorting entry to display (I/M/T)>." Enter "I" to display the order of IP Address, "M" to display the order of Hardware Address, or "T" to display the order of Type.
S	Select the order of displaying ARP table.	
		Press "S." The command prompt changes to "Select method for sorting entry to display (I/T)>." Enter "I" to display the order of IP Address or "T" to display the order of Type. When you enter "T," the command prompt changes to "Select type for sorting entry to display (S/D)>." Enter "S" to display addresses set manually or "D" to display addresses learned automatically.
A	Add or correct an entry of the ARP table.	
		1. Press "A." The command prompt changes to "Enter IP address>." Enter an IP address. 2. Then, the command prompt changes to "Enter Hardware address>." Enter MAC Address in such way as "**:**:**:**:**:**."
D	Delete an entry of the ARP table.	
		Press "D." The command prompt changes to "Enter IP address>." Enter an IP address.
Q	Return to the parent menu.	

4.3.8.a. MAC Address Learning Mode Configuration

On the Forwarding Database Information Menu, pressing "A" opens the MAC Learning Menu screen, as shown in**Fig. 4-6**. On this screen, you can configure the learning mode settings of the MAC address by port.

```
PN25249 Local Management System
Forwarding Database Menu -> MAC Learning Menu

 Port   MAC Learning
------  ------------
   1      Auto
   2      Auto
   3      Auto
   4      Auto
   5      Auto
   6      Auto
   7      Auto
   8      Auto
   9      Auto
  10      Auto
  11      Auto
  12      Auto
-------------------------------- <COMMAND> ---------------------------------

[N]ext Page              [S]et MAC Learning Mode
[P]revious Page          [Q]uit to previous menu

Command>
Enter the character in square brackets to select option
```

Fig. 4-6 MAC Address Learning Mode Configuration

Screen Description

Port	Displays the port number.	
MAC Learning	Displays the learning method of the MAC address. "Auto" is the factory default setting.	
	Auto	The MAC address is automatically learned, and the packet transmission is executed.
	Disabled	Auto-learning of MAC address is disabled, and packet transmission is not executed unless the MAC address is registered statically.

Note: When the MAC address auto-learning is disabled, communication cannot be executed unless the MAC address is registered statically.

Available commands are listed below.

N	Display the next page.
	Press "N" to display the next page.
P	Display the previous page.
	Press "P" to display the previous page.

S	Switching Hub the learning mode of the MAC address. 1. Press "S." The command prompt changes to "Select Port Number to be changed>." Enter a port number for which you wish to change the setting. 2. Then, the command prompt changes to "Change MAC Learning Mode for port #(specified port number)>." Enter "A" for MAC address auto-leaning. Otherwise, enter "D."
Q	Return to the parent menu.

4.3.8.b. Display of MAC Address Table by Port

On the Forwarding Database Information Menu, press "P." The command prompt changes to "Enter Port Number>." Specifying a port number opens the Display MAC Address by Port screen as shown in Fig. 4-7. On this screen, you can display the MAC address table by port.

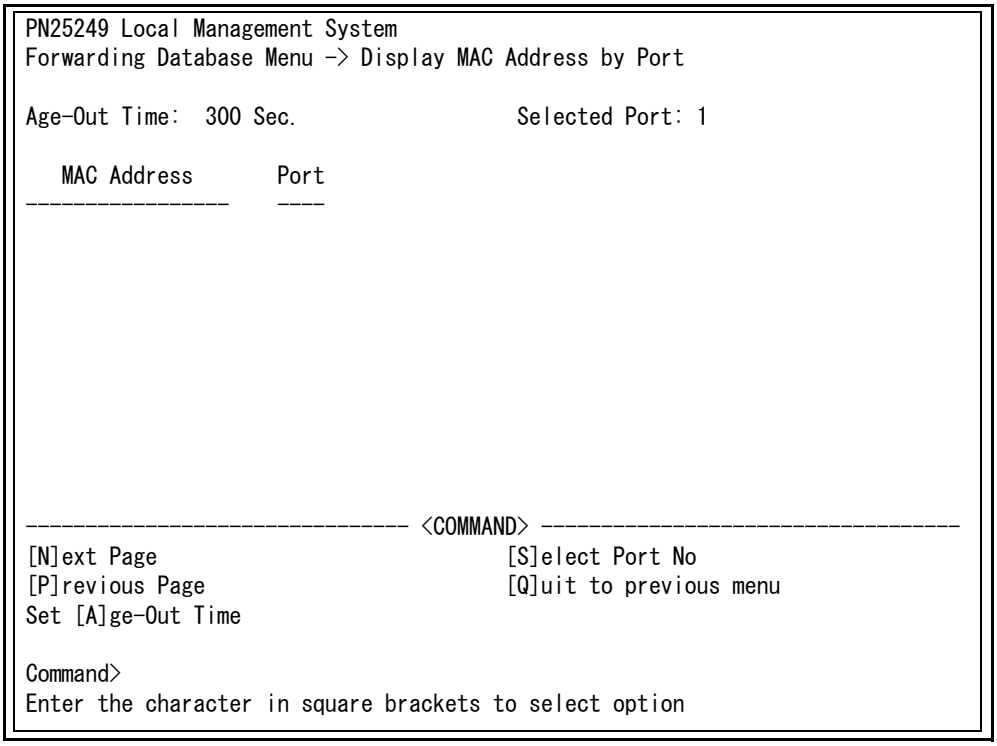


Fig. 4-7 Display of MAC Address Table by Port

Screen Description

Age-Out Time:	Displays the time to store the MAC address table. It is equal to the time after receiving the last packet. The factory default setting is 300 seconds (5 minutes).
Select Port:	Displays the selected port number.
MAC Address	Displays all the entries in the MAC address table.
Port	Displays the port to which the MAC address has been assigned.

Available commands are listed below.

N	Display the next page.
	Press "N" to display the next page.
P	Display the previous page.
	Press "P" to display the previous page.
A	Set the time to store the MAC address.
	Press "A." The command prompt changes to "Enter Age-Out time>." Enter the age-out time with a value of 10 to 1000000 (seconds).
S	Switching Hub the port to be displayed.
	Press "S." The command prompt changes to "Enter Port Number>." Enter a port number you wish to display.
Q	Return to the parent menu.

4.3.8.c. Display oF All MAC Addresses

On the Forwarding Database Information Menu, pressing "M" opens the Display MAC Address by MAC screen, as shown in Fig. 4-8. On this screen, you can display all the MAC address tables in this Switching Hub.

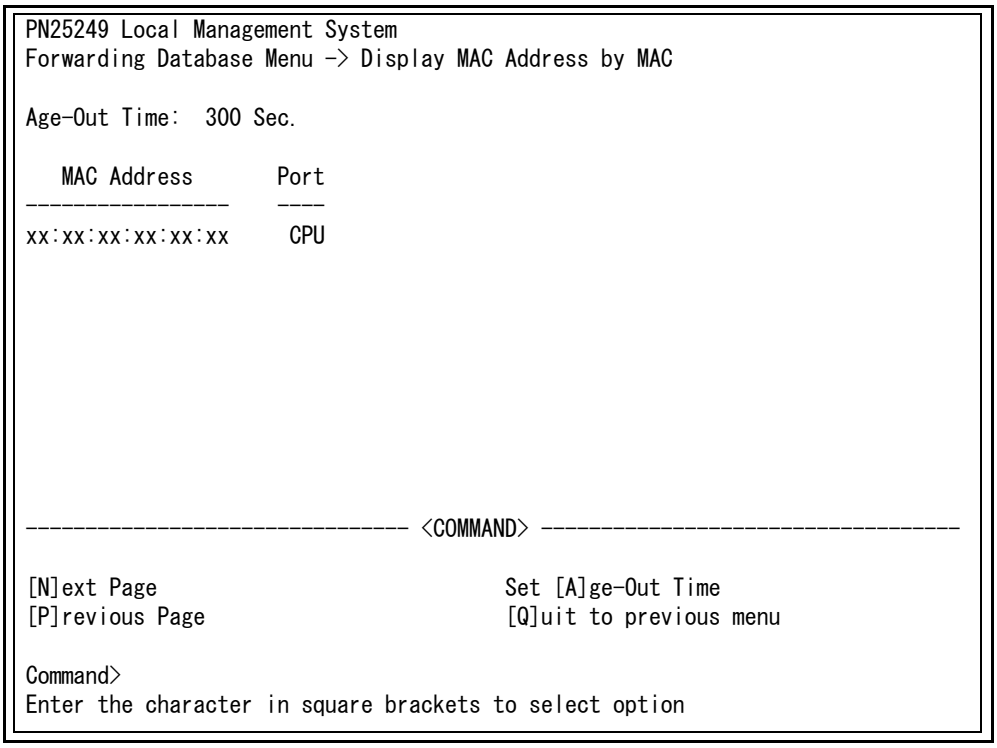


Fig. 4-8 Display oF All MAC Addresses

Screen Description

Age-Out Time:	Displays the time to store the MAC address table. It is equal to the time after receiving the last packet. The factory default setting is 300 seconds (5 minutes).
MAC Address	Displays all the entries in the MAC address table.
Port	Displays the port to which the MAC address has been assigned.

Available commands are listed below.

N	Display the next page.
	Press "N" to display the next page.
P	Display the previous page.
	Press "P" to display the previous page.
A	Set the time to store the MAC address.
	Press "A." The command prompt changes to "Enter Age-Out time>." Enter the age-out time with a value of 10 to 1000000 (seconds).
Q	Return to the parent menu.

4.3.8.d. Display of MAC Address Table by VLAN

On the Forwarding Database Information Menu, press "V." The command prompt changes to "Enter VLAN ID>." Specifying a port number opens the Display MAC Address by VLAN ID screen as shown in Fig. 4-9. On this screen, you can display the MAC address table by VLAN.

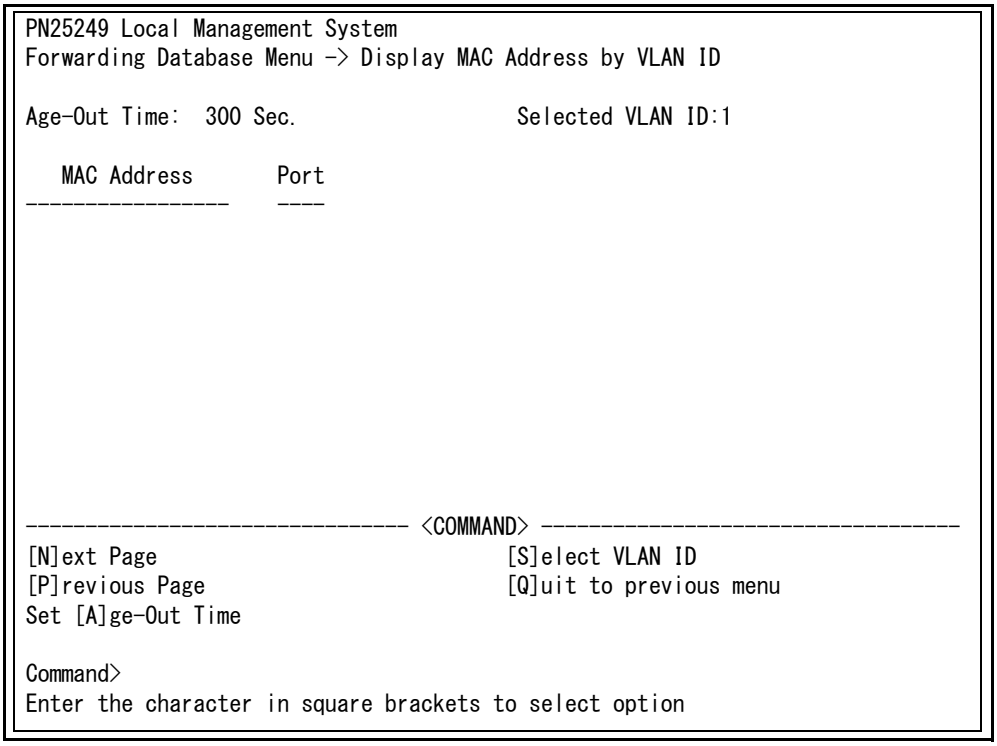


Fig. 4-9 Display of MAC Address Table by VLAN

Screen Description

Age-Out Time:	Displays the time to store the MAC address table. It is equal to the time after receiving the last packet. The factory default setting is 300 seconds (5 minutes).
Select VLAN ID:	Displays the selected VLAN ID.
MAC Address	Displays all the entries in the MAC address table.
Port	Displays the port to which the MAC address has been assigned.

Available commands are listed below.

N	Display the next page.
	Press "N" to display the next page.
P	Display the previous page.
	Press "P" to display the previous page.
A	Set the time to store the MAC address.
	Press "A." The command prompt changes to "Enter Age-Out time>." Enter the age-out time with a value of 10 to 1000000 (seconds).
S	Switching Hub the VLAN to be displayed.
	Press "S." The command prompt changes to "Enter VLAN ID>." Enter a VLAN ID you wish to display.
Q	Return to the parent menu.

4.3.8.e. Addition Or Deletion Of MAC Address

On the Forwarding Database Information Menu, pressing "S" opens the Static Address Table Menu screen, as shown in Fig. 4-10. On this screen, you can add or delete MAC addresses statically.

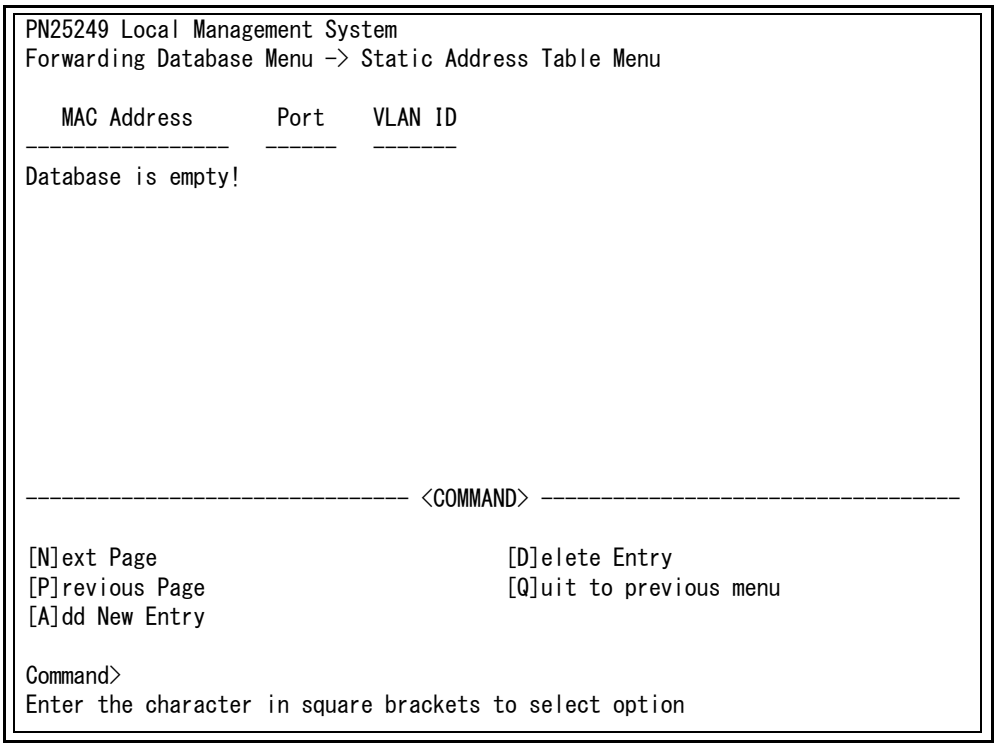


Fig. 4-10 Addition Or Deletion Of MAC Address

Screen Description

MAC Address	Displays all the entries in the MAC address table.
Port	Displays the port to which the MAC address belongs.
VLAN ID	Displays the VLAN ID to which the MAC address belongs.

Available commands are listed below.

N	Display the next page.
	Press "N" to display the next page.
P	Display the previous page.
	Press "P" to display the previous page.
A	Execute additional registration of MAC address.
	Press "A." The command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx)." Enter a MAC address to be added.
D	Delete a MAC address that has been registered.
	Press "D." The command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx)." Enter a MAC address to be deleted.
Q	Return to the parent menu.

4.4. Advanced Switch Configuration

On the Main Menu, pressing "A" opens the Advanced Switch Configuration Menu screen, as shown in Fig. 4-11.
On this screen, you can configure the settings of VLAN, Link Aggregation, Port Monitoring, QoS, Power Over Ethernet and Loop detection and blocking function for this Switching Hub.

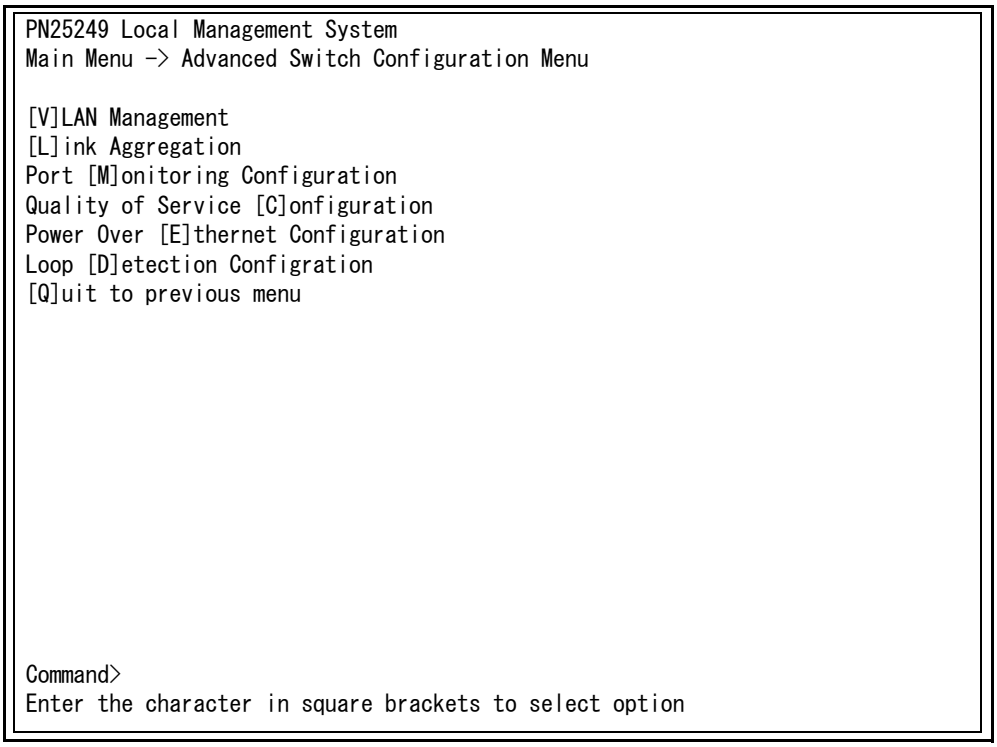


Fig. 4-11 Advanced Switch Configuration

Screen Description

VLAN Management	Configures the VLAN-related settings.
Link Aggregation	Configures the link aggregation settings.
Port Monitoring Configuration	Configures the port monitoring settings.
Quality of Service Configuration	Configure the QoS settings.
Power Over Ethernet Configuration	Configures the PoE power supply settings.
Loop Detection Configuration	Configures the loop detection and blocking function settings.
Quit to previous menu	Quits the Advanced Switch Configuration Menu and returns to the Main Menu.

4.5.1. VLAN Management

4.5.1.a. Special Features

- Corresponding to IEEE802.1Q Tag VLAN, the VLAN can send frames with a VLAN tag (hereinafter, called as just "tag") attached.

- It has two different parameters: VLAN ID and PVID. The destination of untagged frames is determined by a combination of these parameters.

- VLAN ID

The VLAN ID is a VLAN identifier attached to each frame when tagged frames are handled. Also in case of untagged frames, ports are divided into group by this ID, and a destination of frame forwarding is determined by referring to this ID. Multiple VLAN IDs can be set to each port.

- PVID (Port VLAN ID)

Only one PVID can be set to each port. When a untagged frame was received, this ID determines to which VLAN ID the frame should be transferred. In case of a tagged frame, this ID is not referred to, and the VLAN ID within the tag is used instead.

4.5.1.b. VLAN Management Menu

On the Advanced Switch Configuration Menu, pressing "V" opens the VLAN Management Menu screen, as shown in Fig. 4-12. On this screen, you can configure the VLAN-related settings.

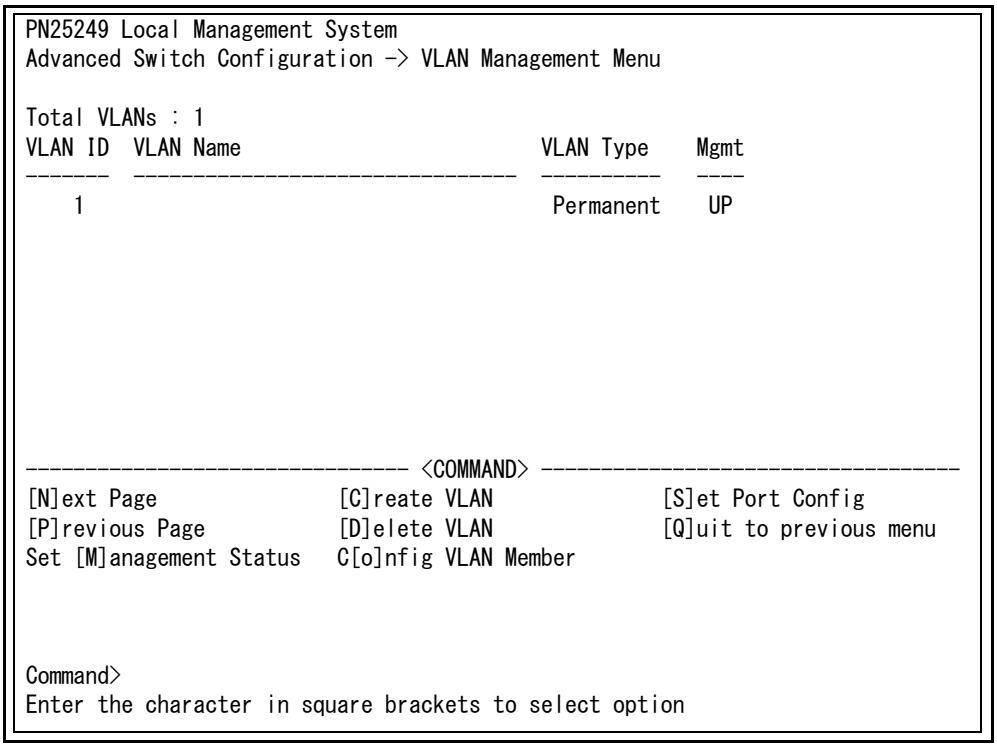


Fig. 4-12 VLAN Management Menu

Screen Description

VLAN ID	Displays the VLAN ID.	
VLAN Name	Displays the name of the VLAN that has been configured.	
VLAN Type	Displays the VLAN type.	
	Permanent	Indicates that the VLAN is the one of the initial settings. At least one VLAN must exist, and this VLAN cannot be deleted.
	Static	Indicates that the VLAN is the newly configured one.
Mgmt	Indicates whether the VLAN is a management VLAN or not.	
	UP	Indicates that the VLAN is a management VLAN (VLAN that can communicate with the CPU).
	DOWN	Indicates that the VLAN is not a management VLAN.

Note: All ports belong to VLAN ID=1 (default VLAN) in factory default setting, and the management VLAN status of VLAN ID=1 is UP.

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.

C	Move to the VLAN creation screen.	
		Press "C." The screen changes to "VLAN Create Menu." For details, refer to the next section (**4.5.1.c**).
D	Delete a VLAN that has been configured.	
		Press "D." The command prompt changes to "Enter VLAN ID >." Enter the VLAN ID you wish to delete with a value of 2 to 4094.
M	Set the management VLAN.	
		Press "M." The command prompt changes to "Enter index number>." Enter VLAN ID you wish to configure as a management VLAN with a value of 1 to 4094.
O	Move to the screen to modify the VLAN settings.	
		Press "O." The command prompt changes to "Enter VLAN ID>." Enter the VLAN ID you wish to configure with a value of 1 to 4094. Then, the screen changes to ” VLAN modification Menu.” For details, refer to the next section**(4.5.1.d)**.
S	Configure and confirm the PVID by port.	
		Press "S." The screen changes to ” VLAN Port Configuration Menu.” For details, refer to the next section**(4.5.1.e)**.
Q	Return to the parent menu.	

Note: When creating a new VLAN, the PVID is not changed with this new creation. After registering the VLAN on this screen, make sure to confirm the configuration operation and configuration content on the configuration screen of **Fig. 4-15**.
When you wish to delete a VLAN, you cannot delete it if the VLAN ID of the VLAN to be deleted still remains as a PVID. Delete the VLAN after changing the PVID to other VLAN ID.

Note: All ports belong to VLAN 1 (default VLAN) in factory default setting, and the management VLAN is enabled.

4.5.1.c. VLAN Creation Menu

On the VLAN Management Menu, pressing "C" opens the VLAN Creation Menu screen, as shown in Fig. 4-13. On this screen, you can create a VLAN.

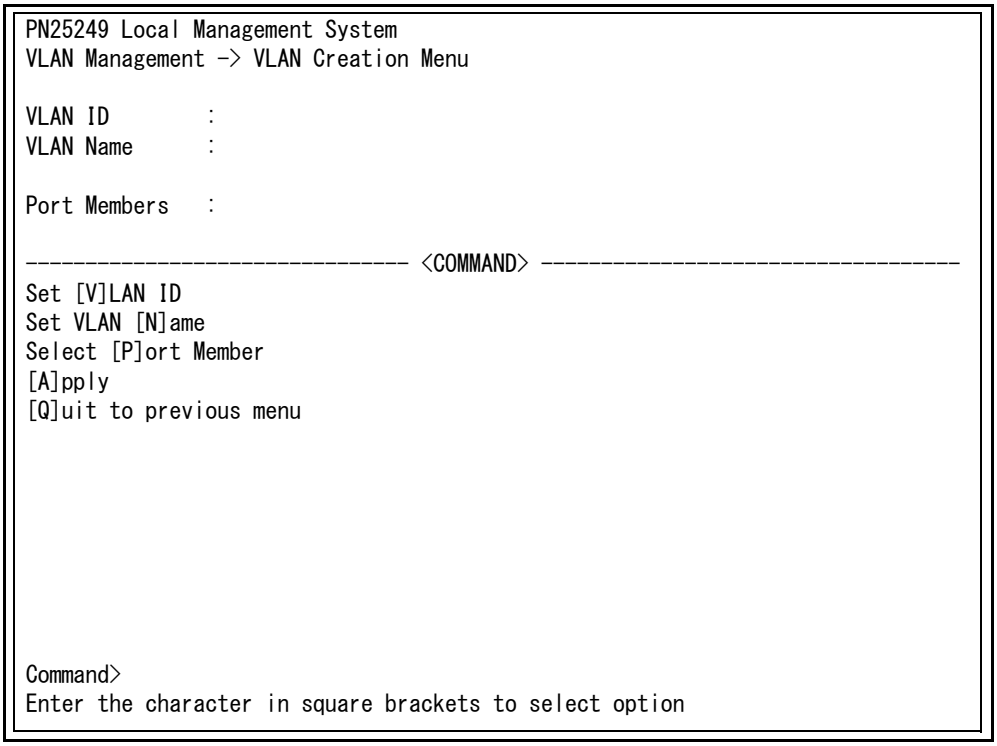


Fig. 4-13 VLAN Creation Menu

Screen Description

VLAN ID	Displays the VLAN ID of the VLAN you wish to create.
VLAN Name	Displays the VLAN name of the VLAN you wish to create.
Port Member	Displays the port number of the member of the VLAN you wish to create.

Available commands are listed below.

V	Set the VLAN ID (VLAN Identifier).	
		Press "V." The command prompt changes to "Set VLAN ID->Enter VLAN ID >." Enter a new VLAN ID.
N	Set the name of the VLAN.	
		Press "N." The command prompt changes to "Set VLAN name->Enter VLAN name >." Enter a new VLAN name in 30 characters or less.
P	Set the VLAN members.	
		Press "P." The command prompt changes to "Enter egress port number >." Enter a port number. When entering two or more port numbers, separate them with a comma without a space, or use a hyphen for consecutive numbers.
A	Set the VLAN.	
		Press "A" to apply the created VLAN.
Q	Return to the parent menu.	

Note: After configuring VLAN settings, be sure to apply them by pressing "A." If you press "Q" without applying them, the settings are canceled and a VLAN is not created.

4.5.1.d. VLAN Modification Menu

On the VLAN Management Menu, pressing "o" and specifying the target VLAN ID open the VLAN Modification Menu screen, as shown in Fig. 4-14. On this screen, you can modify VLAN-related setting information.

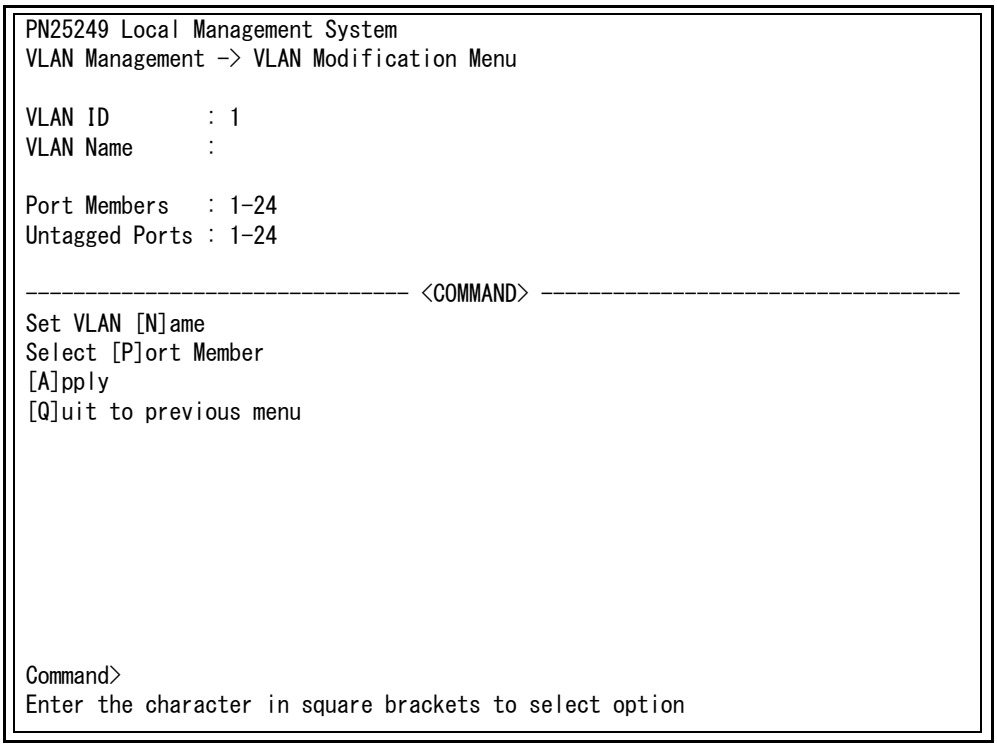


Fig. 4-14 VLAN Modification Menu

Screen Description

VLAN ID	Displays the VLAN ID of the VLAN you wish to create.
VLAN Name	Displays the VLAN name of the VLAN you wish to create.
Port Member	Displays the port number of the member of the VLAN you wish to create.
Untagged Port	Displays ports that do not use tags.

Available commands are listed below.

N	Set the name of the VLAN.	
		Press "N." The command prompt changes to "Set VLAN name->Enter VLAN name >." Enter a new VLAN name in 30 characters or less.
P	Set the VLAN members.	
		Press "P." The command prompt changes to "Enter egress port number >." Enter a port number. When entering two or more port numbers, separate them with a comma without a space, or use a hyphen for consecutive numbers.
A	Set the VLAN.	
		Press "A" to apply the created VLAN.
Q	Return to the parent menu.	

4.5.1.e. VLAN Port Configuration Menu

On the VLAN Management Menu, pressing "S" opens the VLAN Port Configuration Menu screen, as shown in Fig. 4-15. On this screen, you can configure the VLAN-related settings by port.

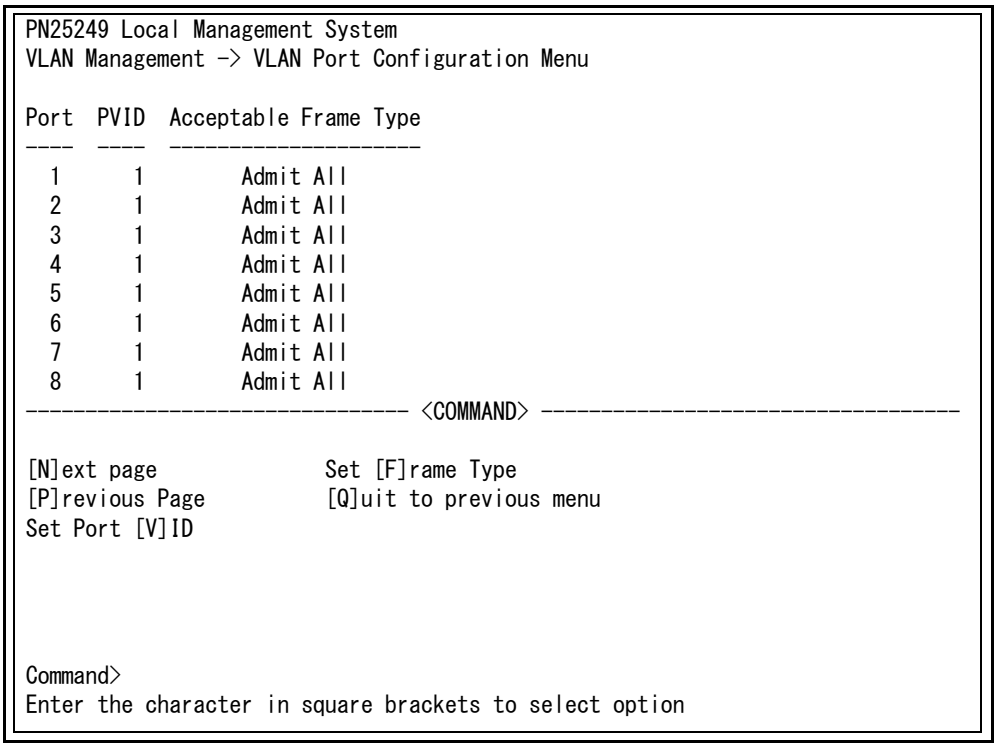


Fig. 4-15 VLAN Port Configuration Menu

Screen Description

Port	Displays the port number.	
PVID	Displays the PVID (Port VLAN ID) that has been set to the port. The PVID displays the VLAN ID to which an untagged packet should be transferred when it was received. The factory default setting is "1." When a tagged packet was received, the destination port is determined by referring to the tag regardless of the PVID.	
Acceptable Frame Type	Displays the type of frames to be received.	
	Admit All	Receives all frames.
	Tagged Only	Receives only the tagged frames.

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
V	Configure the PVID settings.	
		1. Press "V." The command prompt changes to "Enter port number>." Enter the port number you wish to configure. 2. Then, the command prompt changes to "Enter PVID for port #>." Enter the VLAN ID you wish to modify among the VLAN IDs already configured.
F	Set the type of packets to be received.	
		1. Press "F." The command prompt changes to "Enter port number>." Enter the port number you wish to configure. 2. Then, the command prompt changes to "Select port acceptable frame type (A/T)>." Enter "A" to receive all the frames or "T" to receive only the tagged frames.
Q	Return to the parent menu.	

Note: This Switching Hub can assign multiple VLANs to one port. When a new VLAN was configured, it belongs to both VLAN to which it has belonged and the new VLAN. So, when you divide the domain, make sure to delete it from the VLAN to which it has belonged.

4.5.2. Link Aggregation

4.5.2.a. About Link Aggregation

Link Aggregation is a function that can duplicate the cable and increase the bandwidth between switches by grouping multiple Switching Hub ports (called trunking) for connection.
In this Switching Hub, it is possible to create up to 8 groups, each of which includes up to 8 ports.

Note: Link Aggregation cannot be set with a structure in which multiple port communication modes exist. Combined usage with the Internet Mansion mode is not possible.

Note: Depending on the number of ports in the group or the traffic condition, traffic may not be assigned uniformly to all the ports in the link-aggregation group.

4.5.2.b. Trunk Configuration Menu

On the Advanced Switch Configuration Menu, pressing "L" opens the Trunk Configuration Menu screen, as shown in **Fig. 4-16**. On this screen, you can configure the trunking settings.

```
PN25249 Local Management System
Advanced Switch Configuration -> Trunk Configuration Menu
 Key    Mode      Member Port List
----- -------- ------------------------------------------------------------

    1  Manual  5-6

--------------------------------- <COMMAND> ----------------------------------

[N]ext Page             [A]dd Group Member       [Q]uit to previous menu
[P]revious Page         [R]emove Group Member

Command>
Enter the character in square brackets to select option
```

Fig. 4-16 Trunk Configuration

Screen Description

Key	Displays the group number of trunking.	
Mode	Displays the operation mode of trunking.	
	Manual	Constructs trunking forcibly without using a LACP packet. The other side should have the same configuration as this side.
Members Port List	Displays the port belonging to the trunking group.	

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
A	Configure new trunking settings.	
		1. Press "A." The command prompt changes to "Enter trunk group admin key>." Enter the group number you wish to configure. 2. The command prompt changes to "Enter port member for group key #>." Enter a port number for which you wish to execute trunking. When entering two or more port numbers, separate them with a comma without a space, or use a hyphen for consecutive numbers.

R	Remove trunking settings.	
		1. Press "R." The command prompt changes to "Enter trunk group admin key>." Enter the group number you wish to delete. 2. The command prompt changes to "Enter port member port for group key #>." Enter a port number you wish to do delete. When entering two or more port numbers, separate them with a comma without a space, or use a hyphen for consecutive numbers.
Q	Return to the previous menu.	

4.5.3. Port Monitoring Configuration

On the Advanced Switch Configuration Menu, pressing "M" opens the Port Monitoring Configuration Menu screen, as shown in Fig. 4-17. In this Switching Hub, when analyzing communication using a protocol analyzer, etc., it is possible to monitor other port's packet that cannot be obtained under normal conditions because of being filtered. On this screen, you can configure the port monitoring settings.

```
PN25249 Local Management System
Advanced Switch Configuration -> Port Monitoring Configuration Menu

Monitoring Port                    Be Monitored Port(s)
---------------    ------------------------------------------------------------
      24            1-22

Direction             Status
---------           -------------
  Both                Enabled


--------------------------------- <COMMAND> -----------------------------------

[S]et Monitoring Port
Set Ports to be [M]onitored
Set Traffic [D]irection
[C]hange Mirror Status
[Q]uit to previous menu



Command>
Enter the character in square brackets to select option
```

Fig. 4-17 Port Monitoring Configuration

Screen Description

Monitoring Port	Displays the destination port number of data for which port monitoring has been executed.	
Be Monitored Port(s)	Displays the port number(s) that are targets of port monitoring.	
Direction	Displays the communication direction of the target packet for port monitoring.	
	Tx	Monitors the transmit packet.
	Rx	Monitors the receive packet.
	Both	Monitors both of the transmit and receive packets. (Factory default setting)
Status	Displays the monitoring status.	
	Enabled	Port monitoring is enabled.
	Disabled	Port monitoring is disabled. (Factory default setting)

Available commands are listed below.

S	Set a destination port (port to which the analyzer, etc. is connected) of the monitored data.	
		Press "S." The command prompt changes to "Enter port number>." Enter the target port number.
M	Configure a port to be monitored.	
		Press "M." The command prompt changes to "Enter port number>." Enter the target port number. (Possible to configure multiple ports) When entering multiple port numbers, delimit with comma, or hyphenate the continuous numbers.
D	Set the communication direction of the packet to be monitored.	
		Press "D." The command prompt changes to "Select port monitoring direction(R/T/B)>." Enter "R" to monitor the receive packet, "T" to monitor the transmit packet, or "B" to monitor both of the receive and transmit packets.
C	Set the port monitoring status.	
		Press "C." The command prompt changes to "Enter the select(E/D)>." Enter "E" to start port monitoring. Enter "D" to stop it.
Q	Return to the parent menu.	

Note: The VLAN tag of the received VLAN ID is attached to a mirror packet in Tx-direction.

Note: Management packets such as Ping or ARP transmitted from this Switching Hub cannot be captured.

4.5.4. Quality of Service Configuration

On the Advanced Switch Configuration Menu, pressing "C" opens the Quality of Service Configuration Menu screen, as shown in **Fig. 4-18**. On this screen, you can configure the settings of QoS (Quality of Service) of the Switching Hub.

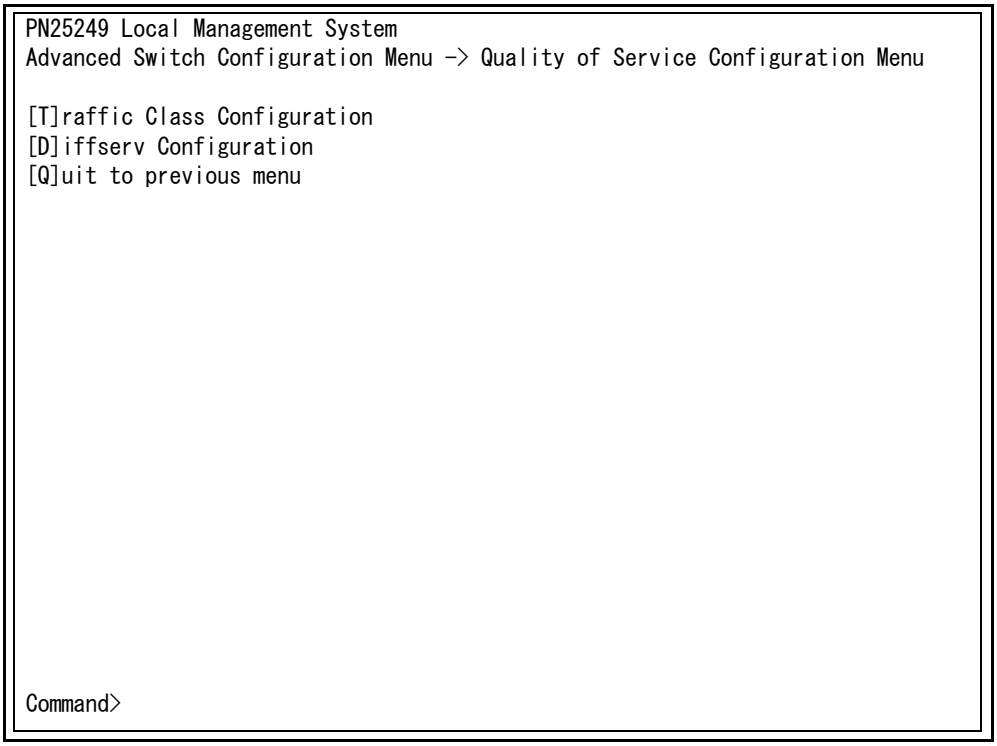


Fig. 4-18 QoS Configuration

Available commands are listed below.

T	Move to the Traffic Class configuration screen.	
		Press "T." The screen changes to "Traffic Class Configuration Menu." For the configuration contents, refer to the next section (**4.5.4.a**).
D	Move to the DiffServ configuration screen.	
		Press "D." The screen changes to "Diffserv Configuration Menu." For the configuration contents, refer to the next section (**4.5.4.b**).
Q	Return to the parent menu.	

4.5.4.a. Traffic Class Configuration Menu

On the Quality of Service Configuration Menu, pressing "T" opens the Traffic Class Configuration screen, as shown in Fig. 4-19. On this screen, you can configure the QoS and Traffic Class settings.

```
PN25249 Local Management System
Quality of Service Configuration -> Traffic Class Configuration Menu

QoS Status: Disabled

Priority    Traffic Class
--------    -------------
   0              0
   1              0
   2              1
   3              1
   4              2
   5              2
   6              3                        0: Lowest
   7              3                        3: Highest

-------------------------------- <COMMAND> -----------------------------------

[S]et QoS Status                        [Q]uit to previous menu
Set Priority-Traffic Class [M]apping


Command>
Enter the character in square brackets to select option
```

Fig. 4-19 QoS Configuration

Screen Description

QoS Status	Displays the status of the QoS function using IEEE802.1p.	
	Enabled	QoS is enabled.
	Disabled	QoS is disabled. (Factory default setting)
Priority	Displays the priority value in the VLAN tag.	
Traffic Class	Displays the priority of the Traffic Class.	

Available commands are listed below.

S	Enable/disable the QoS function.	
		Press "S." The command prompt changes to "Enable or Disable QoS (E/D)>." Press "E" to enable the function. Press "D" to disable it.
M	Assign priority (Traffic Class) to a priority value of IEEE802.1p.	
		1. Press "M." The command prompt changes to "Enter Priority (E/D)>." Enter a priority value (0 to 3) to be assigned. 2. Then, the command prompt changes to "Enter traffic class for priority #>." Enter a Traffic Class from 1 to 3 for control in this Switching Hub.
Q	Return to the parent menu.	

4.5.4.b. DiffServ Configuration Menu

On the Quality of Service Configuration Menu, pressing "D" opens the DiffServ Configuration screen, as shown in Fig. 4-20. On this screen, you can configure the DiffServ settings using DSCP values.

```
PN25249 Local Management System
Quality of Service Configuration -> Diffserv Configuration Menu

Diffserv Status : Disabled                                  0 : Lowest  3 : Highest
DSCP  Priority  DSCP  Priority  DSCP  Priority  DSCP  Priority  DSCP  Priority
----- --------  ----- --------  ----- --------  ----- --------  ----- --------
  0       0       13      0       26      0       39      0       52      0
  1       0       14      0       27      0       40      0       53      0
  2       0       15      0       28      0       41      0       54      0
  3       0       16      0       29      0       42      0       55      0
  4       0       17      0       30      0       43      0       56      0
  5       0       18      0       31      0       44      0       57      0
  6       0       19      0       32      0       45      0       58      0
  7       0       20      0       33      0       46      0       59      0
  8       0       21      0       34      0       47      0       60      0
  9       0       22      0       35      0       48      0       61      0
 10       0       23      0       36      0       49      0       62      0
 11       0       24      0       37      0       50      0       63      0
 12       0       25      0       38      0       51      0
-------------------------------- <COMMAND> ----------------------------------
[S]et Diffserv Status                              [Q]uit to previous menu
Set DSCP [M]apping
Command>
Enter the character in square brackets to select option
```

Fig. 4-20 DiffServ Configuration Menu

Screen Description

Diffserv Status:	Displays the status of the DiffServ function using DSCP values.	
	Enabled	DiffServ is enabled.
	Disabled	DiffServ is disabled. (Factory default setting)
DSCP	Displays the DSCP value.	
Priority	Displays the priority.	

Available commands are listed below.

S	Enable/disable the DiffServ function.	
		Press "S." The command prompt changes to "Enable or Disable Diffserv (E/D)." Press "E" to enable the function. Press "D" to disable it.
M	Assign priority (Priority) to DSCP values.	
		1. Press "M." The command prompt changes to "Enter DSCP>." Enter a DSCP value (0 to 63) to be assigned. 2. Then, the command prompt changes to "Enter priority for DSCP # (0-3)>." Enter Priority (0 to 3).
Q	Return to the previous menu.	

4.5.5. Power Over Ethernet Configuration

On the Advanced Switch Configuration Menu, pressing "P" opens the Power Over Ethernet Configuration Menu screen as shown in Fig. 4-21. On this screen, you can configure IEEE802.3af power supply settings.

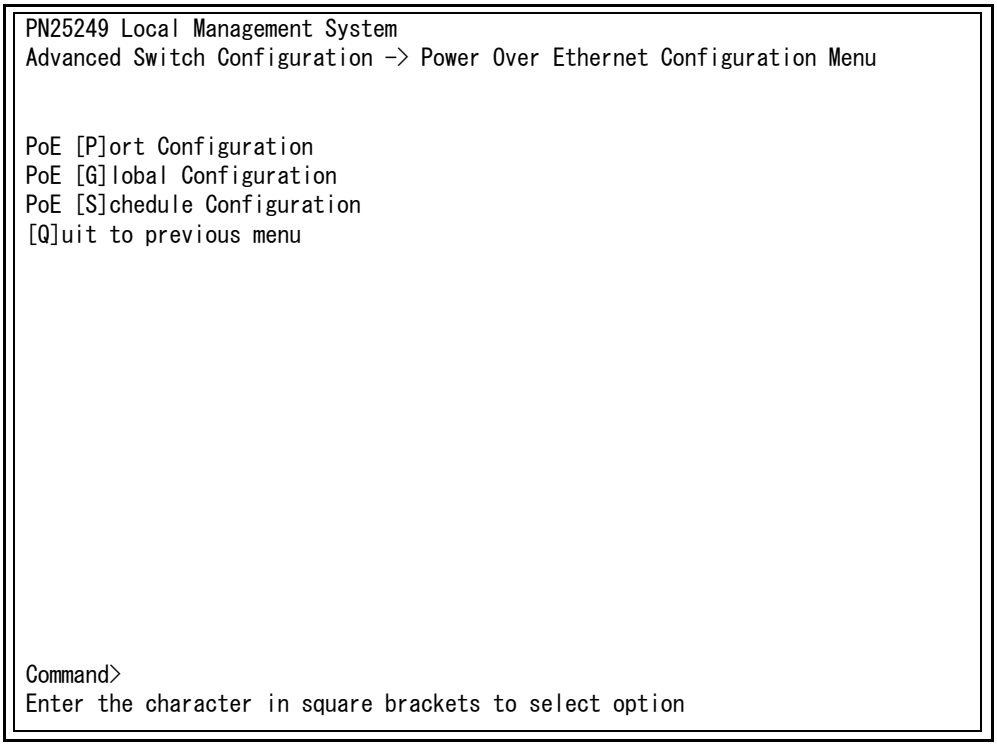


Fig. 4-21 PoE Configuration

Available commands are listed below.

P	Configure PoE for each port.	
		Press "P" to move to the "PoE Port Configuration Menu" screen. Refer to 4.5.5.a.
G	Configure the PoE settings.	
		Press "G" to move to the "PoE Global Configuration Menu" screen. Refer to 4.5.5.b.
S	Configure the PoE scheduler settings.	
		Press "S" to move to the "PoE Schedule Configuration Menu" screen. Refer to 4.5.5.c.
Q	Return to the parent menu.	

Note: This Switching Hub can supply power up to 124 W in total to terminal devices conforming to IEEE802.3af. For each port, it can supply up to 15.4 W for a IEEE802.3af compatible device however, the total of power required for terminal devices to be connected should not exceed 124 W. Otherwise, "Over" is displayed in Status in 4.5.5.a, and the power cannot be supplied normally.

4.5.5.a. PoE Port Configuration Menu

On the Power Over Ethernet Configuration Menu, pressing "P" opens the PoE Port Configuration Menu screen, as shown in Fig. 4-22. On this screen, you can configure the PoE settings for each port.

```
PN25249 Remote Management System
Power Over Ethernet Configuration -> PoE Port Configuration Menu

No. Admin Sche. Status   Class Limit(mW)   Pow.(mW)   Vol.(V)   Cur.(mA)
--- ----- ----- -------  ----- ---------   --------   -------   ---------
 1   Up    ON    Pwr          3      15400      14900        52        284
 2   Up    ON    NotPwr       0      15400          0         0          0
 3   Up    ON    Over         0      15400          0         0          0
 4   Up    -     NotPwr       1      15400      14700        52        279
 5  Down   -     NotPwr       0      15400          0         0          0
 6   Up    -     NotPwr       0      15400          0         0          0
 7   Up    -     NotPwr       0      15400          0         0          0
 8   Up    -     NotPwr       0      15400          0         0          0
 9   Up    -     NotPwr       0      15400          0         0          0
10   Up    -     NotPwr       0      15400          0         0          0
11   Up    -     NotPwr       0      15400          0         0          0
12   Up    -     NotPwr       0      15400          0         0          0

-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                          Set PoE Port Power [L]imit
[P]revious Page                      [Q]uit to previous menu
Set PoE Port Admin [S]tatus
Command>
Enter the character in square brackets to select option
```

Fig. 4-22 PoE Port Configuration Menu

Screen Description

Admin	Displays whether or not power supply is possible. The factory default setting is "Up."	
	Up	Power supply is possible.
	Down	Power supply is not possible.
Sche.	Displays the PoE scheduler function status.	
	ON	Indicates that the power supply to the PoE is turned on by the PoE scheduler.
	OFF	Indicates that the power supply to the PoE is turned off by the PoE scheduler.
	-	Indicates that the PoE scheduler is not operating.
Status	Displays the power supply status.	
	Pwr	Power is supplied.
	NotPwr	Power is not supplied.
	Overload	Power supply is stopped because the power request exceeds the limit.
Class	Displays the class selected by the Classification function.	
Limit	Displays the upper limit of power supply amount. (in units of 200 mW) "Auto" is the factory default setting.	
Pow.	Displays the amount of power supply. (in units of 100 mW)	
Vol.	Displays the voltage. (in units of 1 V)	
Cur.	Displays the current. (in units of 1 mA)	

Available commands are listed below.

S	Set whether the power supply is enabled or disabled.	
		1. Press "S." The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. (To configure all ports at once, enter "0" as the port number.) 2. Then, the command prompt changes to "Up or Down PoE port admin status (U/D)>." Press "U" to enable power supply (Up). Press "D" to disable it (Down).
L	Set the upper limit of power supply.	
		1. Press "L." The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. (To configure all ports at once, enter "0" as the port number.) 2. Then, the command prompt changes to "Enter the power limit>." Enter the limit between 3000 and 15400 mW (in units of 200 mW).
Q	Return to the parent menu.	

Note: If power request exceeds the limit of the whole unit, a port with a larger port number is blocked to stop supplying power.

4.5.5.b. PoE Global Configuration Menu

On the Power Over Ethernet Configuration Menu, pressing "G" opens the PoE Global Configuration Menu as shown in **Fig. 4-23**. On this screen, you can view the PoE settings.

```
PN25249 Local Management System
Power Over Ethernet Configuration -> PoE Global Configuration Menu


Power Budget :                          124W
Power Consumption :                      0W




-------------------------------- <COMMAND> ----------------------------------


[Q]uit to previous menu









Command>
Enter the character in square brackets to select option
```

Fig. 4-23 PoE Configuration

Screen Description

Power Budget	Displays the maximum amount of power this Switching Hub can supply.
Power Consumption	Displays the value of power supplied by this Switching Hub.

Available commands are listed below.

Q	Return to the parent menu.

4.5.5.c. PoE Schedule Configuration Menu

On the Power Over Ethernet Configuration Menu, pressing "S" opens the PoE Schedule Configuration Menu screen as shown in **Fig. 4-24**. On this screen, you can configure the PoE scheduler settings.

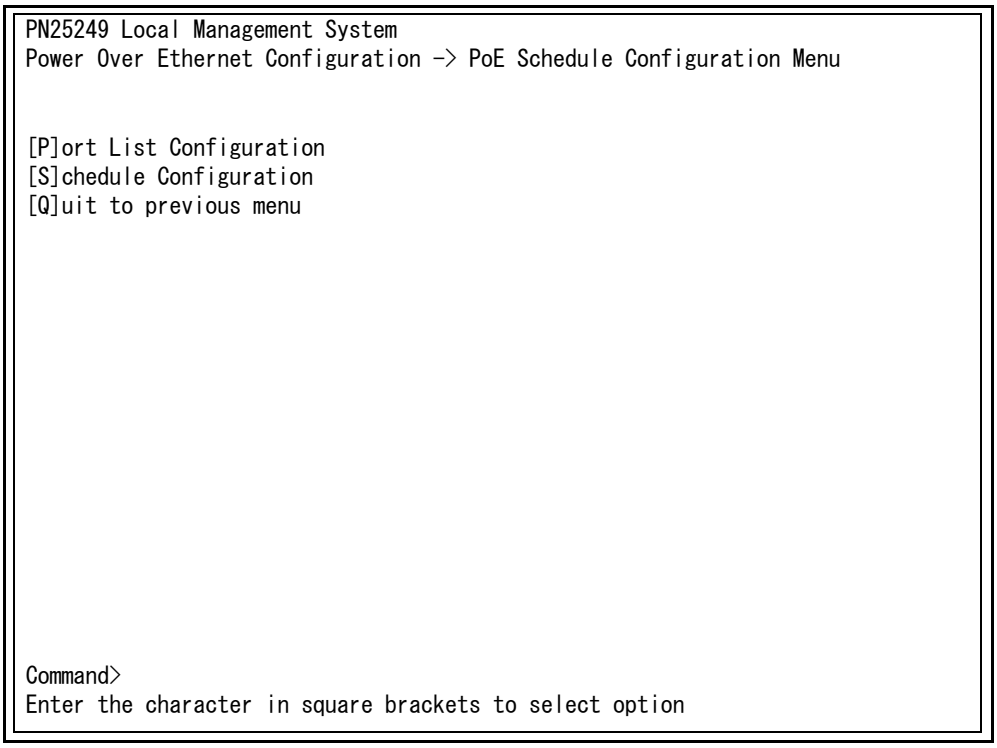


Fig. 4-24 PoE Configuration

Available commands are listed below.

P	Set a port list.	
		Press "P" to move to the "Port List Configuration Menu" screen. Refer to 4.5.5.d.
S	Set a schedule.	
		Press "P" to move to the "Schedule Configuration Menu" screen. Refer to 4.5.5.e.
Q	Return to the parent menu.	

4.5.5.d. Port List Configuration Menu

On the PoE Schedule Configuration Menu, pressing "P" opens the Port List Configuration Menu screen, as shown in **Fig. 4-25**. On this screen, you can set/delete a port number to be operated on the PoE scheduler.

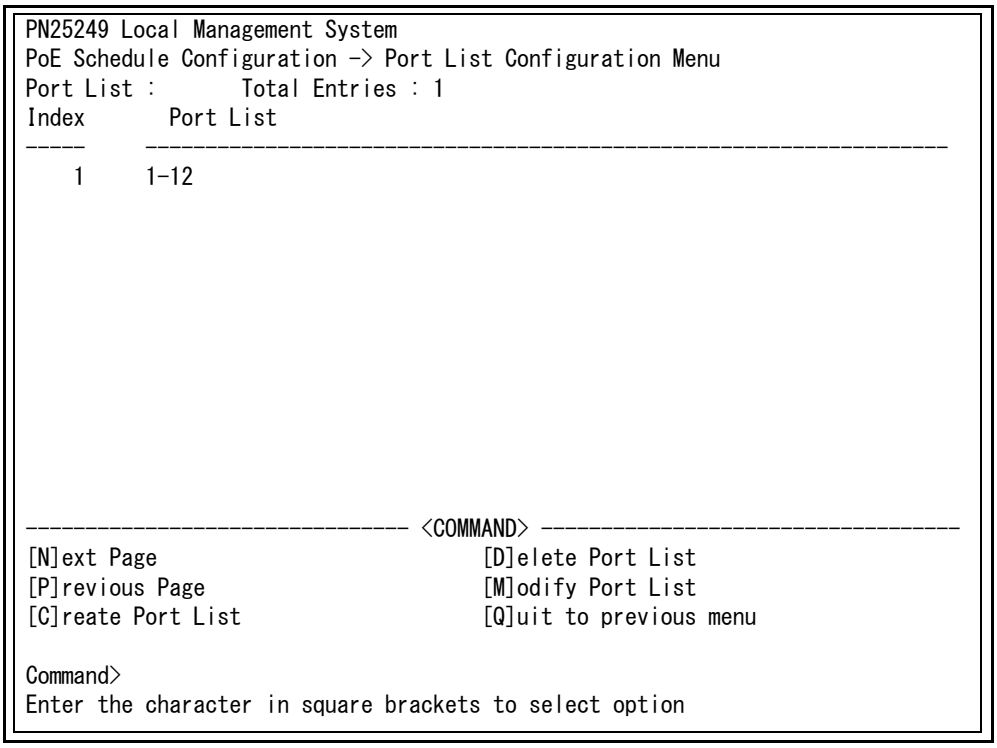


Fig. 4-25 Port List Configuration Menu

Screen Description

Total Entries	Displays the number of created port lists (number of indexes).
Index	Displays the ID number of the port list.
Port List	Displays the port numbers created on the port list.

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
C	Create a port list.	
		Press "C" to move to the "Port List Creation Menu" screen. Refer to 4.5.5.d.1.
D	Delete a port list.	
		Press "D." The command prompt changes to "Enter port list index >." Enter the index number of the port list to be deleted.
M	Modify a port list.	
		Press "M." The command prompt changes to "Enter port list index>." Enter the index number of the port list to be modified and modify the target place in the same procedure as creation.
Q	Return to the parent menu.	

4.5.5.d.1. Port List Creation Menu

On the Port List Configuration Menu, pressing "C" opens the Port List Creation Menu screen, as shown in Fig. 4-26. On this screen, you can set/delete a port number for which the PoE scheduler is operated.

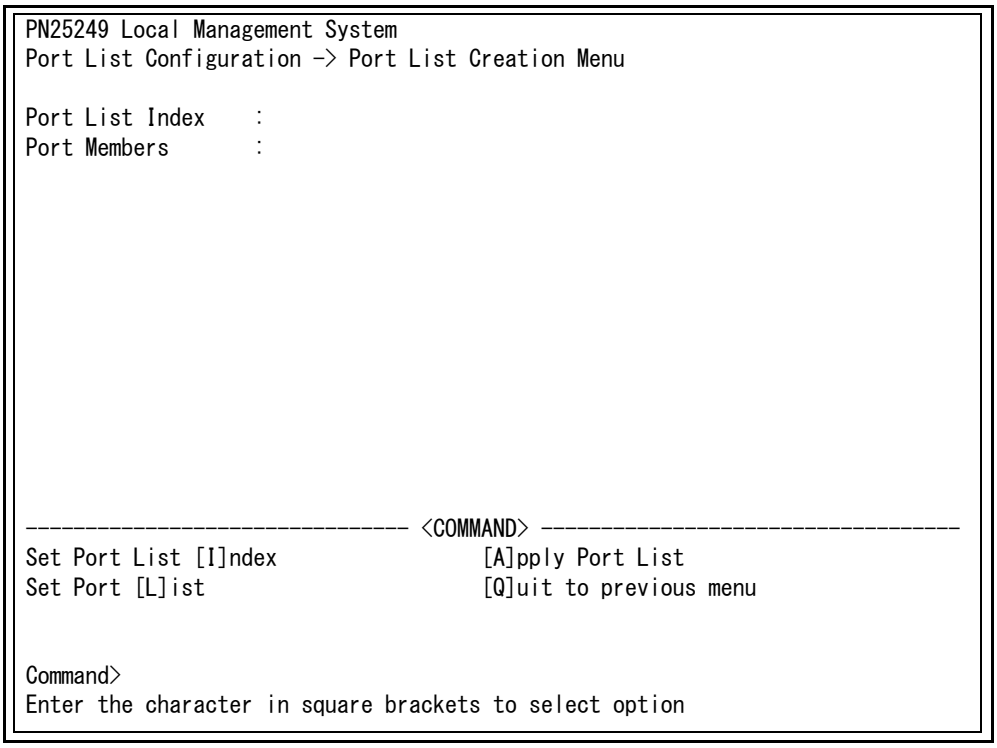


Fig. 4-26 Port List Creation Menu

Screen Description

Port List Index	Displays the index number of the port list.
Port Members	Displays the port numbers that belong to the port list.

Available commands are listed below.

I	Set the index number of the port list.	
		Press "I." The command prompt changes to "Enter Port List index >." Enter the index number of the port number.
L	Set a port number that will belong to the port list.	
		Press "L." The command prompt changes to "Enter port number >." Enter the port number that will belong the port list.
A	Apply the settings. The settings are canceled when you press "Q" without applying them.	
Q	Return to the parent menu.	

4.5.5.e. Schedule Configuration Menu

On the PoE Schedule Configuration Menu, pressing "S" opens the Schedule Configuration Menu screen, as shown in Fig. 4-27. On this screen, you can configure the settings of time (month, week, day, specified date) to operate on the PoE scheduler and power supply control.

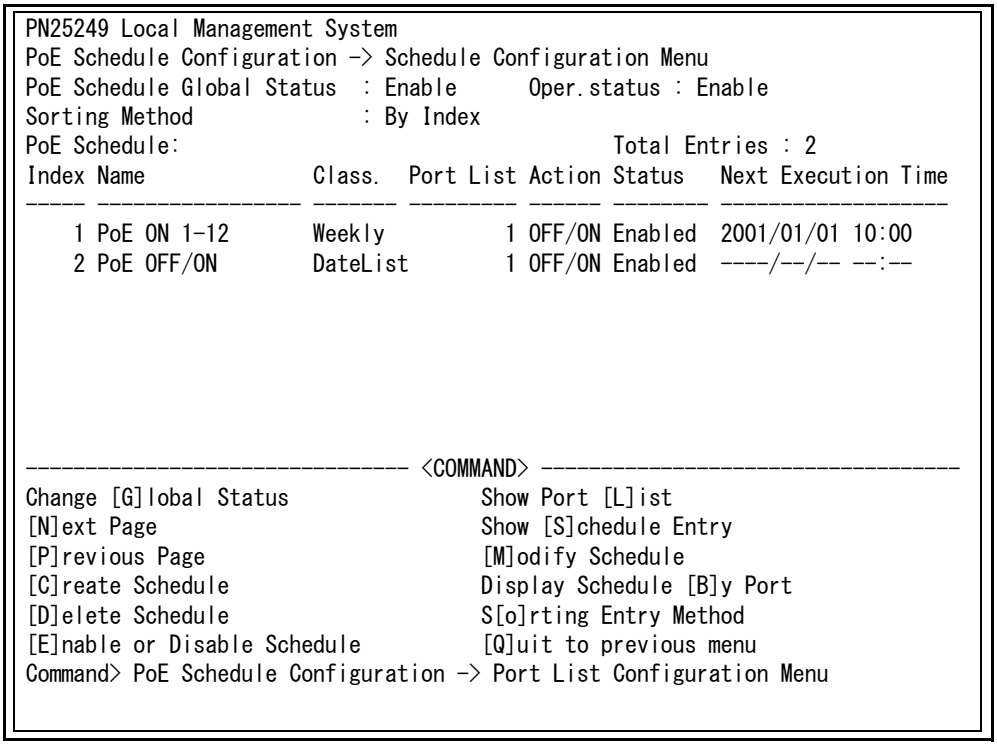


Fig. 4-27 Schedule Configuration Menu

Screen Description

PoE Schedule Global Status	Displays the PoE scheduler settings.	
Oper.status	Displays the operation status of the PoE scheduler.	
Sorting Method	Displays the setting of display order.	
	By Index	Displays in the order of index number.
	By Next Execution Time	Displays in the order of next execution time.
Total Entries	Displays the number of created schedules.	
Index	Displays the index number of the schedule.	
Name	Displays the name of the schedule.	
Class.	Displays the class of the PoE schedule.	
	Daily	The schedule operates at the set time every day.
	Weekly	The schedule operates on the set day and time every week.
	Montly	The schedule operates on the set date and time every month.
	DateList	The schedule operates on the date and time set by the user.
Port List	Displays the port numbers created on the port list.	

Action	Displays the number of created port lists.	
	ON	Turns on the PoE.
	OFF	Turns off the PoE.
	OFF/ON	Turns off the PoE and then turns it on (RESTART).
Status	Displays the PoE schedule function status by port.	
	Enable	Enables the PoE schedule function by port.
	Disable	Disables the PoE schedule function by port.
Next Execution Time	Displays the date and time on which the schedule is executed next.	

Note: If the schedule settings of each class become the same date and time, only the schedule of the class with highest priority will be executed.
[Priority: High] Date list > Monthly > Weekly > Daily [Priority: Low]

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
G	Enable/disable the PoE scheduler.	
		Press "G." The command prompt changes to "Enable or Disable Global Status (E/D) >." Press "E" to enable the PoE scheduler. Press "D" to disable it.
C	Create a schedule.	
		Press "C" to move to the "Create Schedule Configuration Menu" screen.
D	Delete a schedule.	
		Press "D." The command prompt changes to "Enter PoE Schedule index >." Enter the index number of the schedule to be deleted.
E	Enable/disable each schedule.	
		Press "E." The command prompt changes to "Enter PoE Schedule index >." Enter an index number. The command prompt changes to "Enable or Disable PoE Schedule index (E/D) >." Enter "E" to enable the schedule. Enter "D" to disable it.
L	Display the set port list.	
		Press "L." The "Show Port List Information Menu" screen is displayed.
S	Display the set schedule.	
		Press "S." The command prompt changes to "Enter PoE Schedule index >." Enter an index number. Then, the "Show Date List Menu" screen is displayed.
M	Edit a schedule.	
		Press "M." The command prompt changes to "Enter PoE Schedule index >." Enter an index number. The "Modify Schedule Configuration Menu" screen is displayed.
B	Display the schedule by port.	
		Press "B." The command prompt changes to "Enter Port >." Enter a port number. Then, the "Display Schedule By Port Menu" screen is displayed.
O	Set the display order of the set schedules.	
		Press "O." The command prompt changes to "Enter Sort method >." Press "0" to display in the order of index number or "1" in the order of next execution time.
Q	Return to the parent menu.	

4.5.5.e.1. Create Schedule Configuration Menu

On the PoE Schedule Configuration Menu, pressing "C" opens the Create Schedule Configuration Menu screen, as shown in Fig. 4-28. On this screen, you can configure the settings of time (month, week, day, specified date) to operate on the PoE scheduler and power supply control.

```
PN25249 Local Management System
PoE Schedule Configuration -> Create Schedule Configuration Menu
Schedule Index              :
Schedule Name               :
Schedule Classifier         :
Year                        :
Date                        :
Date List Index             :
Time                        :
Port List Index             :
PoE Action                  :



-------------------------------- <COMMAND> ----------------------------------
Set [S]chedule Index                 Set [T]ime
Set Schedule [N]ame                  Show Port [L]ist
Select [C]lassifier                  Set Port List Inde[x]
Set [D]ate                           Select [P]oE action
C[o]nfig Date List                   [A]pply Schedule
Set Date L[i]st                      [Q]uit to previous menu

Command>
Enter the character in square brackets to select option
```

Fig. 4-28 Create Schedule Configuration Menu

Screen Description

Schedule Index	Displays the index number of the PoE schedule information.	
Schedule Name	Displays the name of the PoE schedule.	
Schedule Classifier	Displays the class of the PoE schedule.	
	Daily	The schedule operates at the set time every day.
	Weekly	The schedule operates on the set day and time every week.
	Monthly	The schedule operates on the set date and time every month.
	DateList	The schedule operates on the date and time set by the user.
Date List Index	Displays the index number of the list of dates on which schedules are executed.	
Time	Displays the time on which the PoE schedule is executed.	
Port List Index	Displays the index number of the port list for which the PoE schedule is executed.	
PoE Action	Displays the action of the PoE schedule.	
	ON	Turns on the PoE.
	OFF	Turns off the PoE.
	OFF/ON	Turns off the PoE and then turn it on (RESTART).

Available commands are listed below.

S	Set the index number of the schedule.	
		Press "S." The command prompt changes to "Enter PoE Schedule index >." Enter an index number between 1 and 65535. (Maximum number to be set: 32)
N	Set the name of the schedule.	
		Press "N." The command prompt changes to "Enter Schedule name >." Enter the name of the schedule. (Maximum number of characters: 17)
C	Set the class of the schedule.	
		Press "C." The command prompt changes to "Enter Classifier type >." Press "1" for Monthly, "2" for Weekly, "3" for Daily, or "4" for Datelist.
D	Set the execution date.	
		Press "D." The command prompt changes to "Enter Date >." Enter the date between 1 and 31.
O	Set the date list.	
		Press "O" to move to the "Date list Configuration Menu" screen.
I	Display the port list.	
		Press "L." The "Show Port List Information Menu" screen is displayed.
T	Set the execution time.	
		Press "T." The command prompt changes to "Enter Hour >." Set the hour between 0 and 23. Then, the command prompt changes to "Enter Minute >." Enter the minute between 0 and 59.
L	Display the port list.	
		Press "L." The "Show Port List Information Menu" screen is displayed.
X	Set the index number of the port list to be executed.	
		Press "X". The command prompt changes to "Enter Port List index >." Enter the index number of the port list.
P	Set the PoE schedule power supply control.	
		Press "P." The command prompt changes to "Enter Action >." Press "1" to turn on power supply to the port, "2" to turn it off, or "3" to turn it off/on.
A	Set the schedule.	
		Press "A" to apply the created schedule.
Q	Return to the parent menu.	

4.5.5.e.2. Date list Configuration Menu

On the PoE Schedule Configuration Menu, pressing "I" opens the Date list Configuration Menu screen, as shown in Fig. 4-29. On this screen, you can configure the settings of the date list of the PoE scheduler.

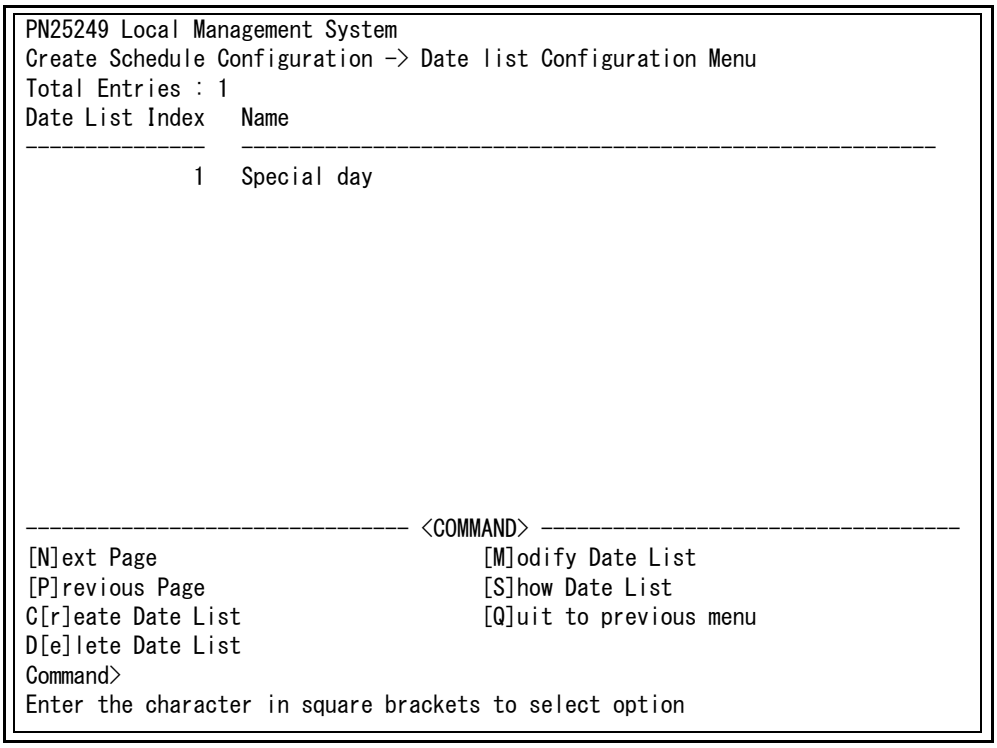


Fig. 4-29 Date list Configuration Menu

Screen Description

Total Entries	Displays the number of created schedules.
Index	Displays the index number of the date list.
Name	Displays the name of the date list.

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
R	Create a date list.	
		Press "R" to move to the "Create Date List Menu" screen.
E	Delete a date list.	
		Press "E." The command prompt changes to "Enter Date List index >." Enter the index number of the date list to be deleted.
M	Modify a date list.	
		Press "M." The command prompt changes to "Enter Date List index >." Enter the index number of the date list to be modified.
S	Refer to a date list.	
		Press "S." The command prompt changes to "Enter Date List index >." Enter the index number of the date list to be referred to. Then, the "Show Date List Menu" screen is displayed.
Q	Return to the parent menu.	

4.5.5.e.3. Create Date List Menu

On the PoE Schedule Configuration Menu, pressing "S" opens the Create Date List Menu screen, as shown in Fig. 4-30. On this screen, you can configure the settings of the date list for execution of schedules.
Set the year, month, and date on the date list.

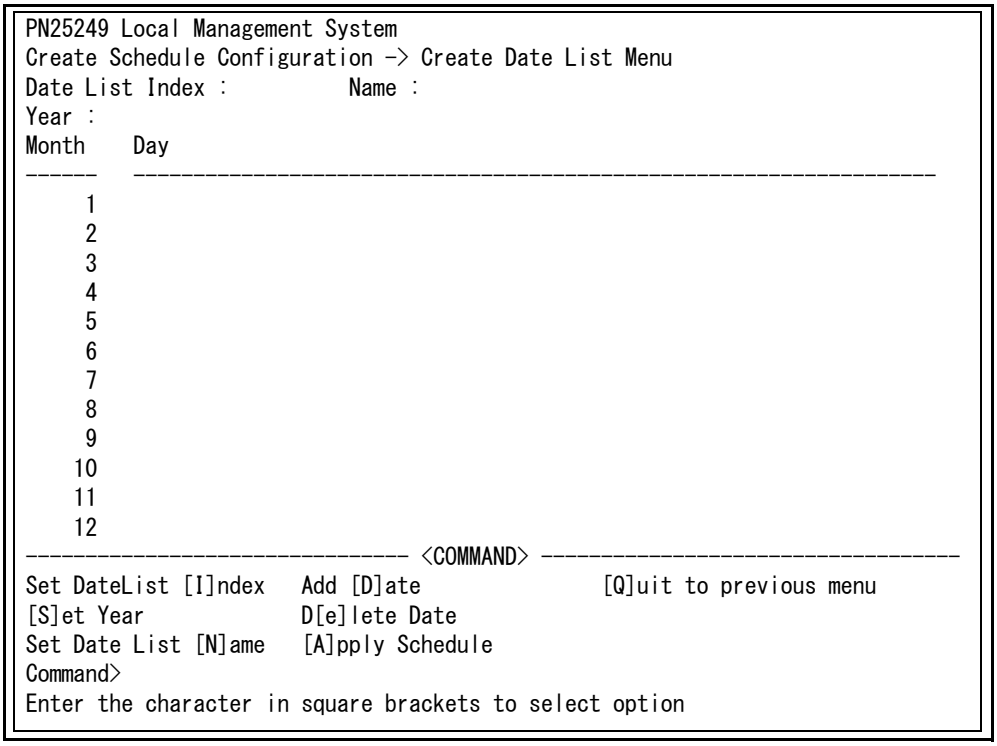


Fig. 4-30 Create Date List Menu

Screen Description

Index	Displays the index number of the date list.
Name	Displays the name of the date list.
Year	Displays the year in which the date list is executed.
Day	Displays the day on which the date list is executed.

Available commands are listed below.

I	Set the index number of the date list.	
		Press "I." The command prompt changes to "Enter Date List index >." Enter an index number between 1 and 65535.
S	Set the year in which the date list is executed.	
		Press "S." The command prompt changes to "Enter Date List year >." Enter the year.
N	Set the name of the date list.	
		Press "N." The command prompt changes to "Enter Date List name >." Enter the name of the date list. (Maximum number of characters: 30)
D	Set the date on which the date list is executed.	
		Press "D." The command prompt changes to "Enter Date List month >." Enter the month between 1 and 12. Then, the command prompt changes to "Enter Date List days >." Set the date between 1 and 31.
E	Delete a date from the date list.	
		Press "E." The command prompt changes to "Enter Date List month >." Enter the month between 1 and 12. Then, the command prompt changes to "Enter Date List days >." Enter the date to be deleted.
A	Set the date list.	
		Press "A" to apply the created date list.
Q	Return to the parent menu.	

4.5.6. Loop Detection Configuration Menu

On the Advanced Switch Configuration Menu, pressing "D" opens the Loop Detection Configuration Menu screen as shown in **Fig. 4-31**. On this screen, you can configure the Loop detection and blocking function settings.
For network configuration, refer to Appendix D "Network Configuration Example and Notes Using Loop Detection and Blocking Function" in Basic Operation Manual.

```
PN25249 Local Management System
Advanced Switch Configuration -> Loop Detection Configuration Menu
Global Loop Detection Status: Enabled
Port Trunk Link    State      Loop Detect    Mode     Recovery   Recovery Time
---- ----- ---- ----------- ------------- -------- ---------- ---------------
  1   ---  Up   Forwarding  Enabled       Block    Enabled          60
  2   ---  Down Forwarding  Enabled       Block    Enabled          60
  3   ---  Down Forwarding  Enabled       Block    Enabled          60
  4   ---  Down Forwarding  Enabled       Block    Enabled          60
  5   ---  Down Forwarding  Enabled       Block    Enabled          60
  6   ---  Down Forwarding  Enabled       Block    Enabled          60
  7   ---  Down Forwarding  Enabled       Block    Enabled          60
  8   ---  Down Forwarding  Enabled       Block    Enabled          60
  9   ---  Down Forwarding  Enabled       Block    Enabled          60
 10   ---  Down Forwarding  Enabled       Block    Enabled          60
 11   ---  Down Forwarding  Enabled       Block    Enabled          60
 12   ---  Down Forwarding  Enabled       Block    Enabled          60
-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                          Set Port [L]oop Detect Status
[P]revious Page                      Set Port Recovery [S]tatus
[E]nable/Disable Loop Detection      Set Port Recovery [T]imer
Loop History [I]nformation           [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-31 Loop Detection Configuration Menu

Screen Description

Global Loop Detection Status	Displays the status of the Loop detection and blocking function.	
	Enabled	The Loop detection and blocking function is enabled. (Factory default setting)
	Disabled	The Loop detection and blocking function is disabled.
Port	Displays the port number.	
Trunk	Displays the link aggregation group ID.	
Link	Displays the link-up status.	
	Up	Linking up.
	Down	Linking down.
State	Displays the operation of the Loop detection and blocking function.	
	Forwarding	Sending packets normally.
	Loop Detect	Detecting a loop and blocking a port.
Loop Detect	Displays the status of the Loop detection and blocking function for each port.	
	Enabled	The Loop detection and blocking function is enabled. (Factory default setting: Ports 1 to 22)
	Disabled	The Loop detection and blocking function is disabled. (Factory default setting: Ports 23 to 24)

Mode	Shows the mode of Loop detection behavior.	
	Block	When the Switching Hub detects loop, the ports are blocked. (Factory default setting)
	Shutdown	When the Switching Hub detects loop, the ports are shut down.
Recovery	Displays the status of the Recovery mode that can automatically recover a blocked port.	
	Enabled	Automatically recovers a blocked port after the Recovery Time period. (Factory default setting)
	Disabled	Does not recover a blocked port until manually configured.
Recovery Time	Displays the Recovery Time (seconds) that is a waiting time until a port starts to be automatically recovered after being blocked. (The factory default setting is 60)	

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
E	Configure the status of the Loop detection and blocking function.	
		Press "E." The command prompt changes to "Enable or Disable Loop Detection (E/D)>." Press "E" to enable the function. Press "D" to disable it.
I	Press "I" to move to the Loop History screen.	
L	Configure the status of the Loop detection and blocking function for each port.	
		1. Press "L."The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. 2. Then, the command prompt changes to "Enable or Disable Loop Detection (E/D)>." Enter "E" to enable the loop detection/shut-off function of each port. Press "D" to disable it. 3. Upon setting, the command prompt changes to " Select Loop Detection mode (B/S)>." Pless "B" to change to the block mode. Pless "S" to change to the shutdown mode. When entering multiple port numbers, delimit with comma, or hyphenate the continuous numbers. To configure all ports, enter "0" as the port number.
S	Configure the status of the Recovery mode that can automatically recover a blocked port.	
		1. Press "S." The command prompt changes to "Select port number to be changed>." Enter a port number you wish to configure. 2. Then, the command prompt changes to "Enable or Disable Recovery for port x (E/D)>." Press "E" to enable the automatic port recovery. Press "D" to disable it. When entering multiple port numbers, delimit with comma, or hyphenate the continuous numbers. To configure all ports, enter "0" as the port number.
T	Display the Recovery Time (seconds) that is a waiting time until a port starts to be automatically recovered after being blocked.	
		1. Press "T." The command prompt changes to "Select port number to be changed>." Enter the port number you wish to configure. 2. Then, the command prompt changes to "Enter Recovery Timer >." Enter a value between 60 and 86400 (seconds) as the recovery time.
Q	Return to the parent menu.	

Note: When you change the Loop detection and blocking function status (Global Loop Detection Status), all configuration information will be saved into the internal memory.

4.5.6.a. Loop History Information

On the Loop Detection Configuration Menu, pressing "I" opens the Loop History Information screen, as shown in Fig. 4-32. On this screen, you can view the loop detection date and time and a list of event information.

```
PN25249 Local Management System
Loop Detection Configuration Menu -> Loop History Information

Entry  Time(YYYY/MM/DD HH:MM:SS)                    Event
-----  ------------------------- ------------------------------------------
   1   2001/01/01 00:00:33       The loop detected between port 1 and 9
   2   2001/01/01 00:01:33       Port 1 auto recovery









-------------------------------- <COMMAND> ----------------------------------
[N]ext Page
[P]revious Page
[C]lear Loop Detection History
[Q]uit to previous menu


Command>
Enter the character in square brackets to select option
```

Fig. 4-32 Loop History Information View

Screen Description

Entry	Displays the event number.	
Time	Displays the time when the event occurred, or the time accumulated after boot if the clock is not set.	
Event	Displays the description of the event caused to the Switching Hub.	
	The loop detected on portX.	A loop was detected and connection was blocked on a Switching Hub in Port X.
	The loop detected between portX and portY.	A loop was detected and connection was blocked on a Switching Hub between Port X and Port Y.
	PortX auto recovery.	The blocked Port X was automatically recovered.

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
C	Delete the history information of the Loop History function.	
Q	Return to the parent menu.	

4.6. Statistics

On the Main Menu, pressing "S" opens the Statistics Menu screen as shown in **Fig. 4-33**. On this screen, you can monitor the number of packets as statistics information of the Switching Hub and thereby keep an eye on the network status. In addition, monitoring of error packets allows you to segregate failures.

```
PN25249 Local Management System
Main Menu -> Statistics Menu
Port:  1   Refresh: 300 Sec.      Elapsed Time Since System Up: 000:00:00:00
<Counter Name>          <Total>                  <Avg./s>
Total RX Bytes          0                        0
Total RX Pkts           0                        0
Good Broadcast          0                        0
Good Multicast          0                        0
CRC/Align Errors        0                        0
Undersize Pkts          0                        0
Oversize Pkts           0                        0
Fragments               0                        0
Jabbers                 0                        0
Collisions              0                        0
64-Byte Pkts            0                        0
65-127 Pkts             0                        0
128-255 Pkts            0                        0
256-511 Pkts            0                        0
512-1023 Pkts           0                        0
Over 1024 Pkts          0                        0
-------------------------------- <COMMAND> ----------------------------------
[N]ext  [P]revious  [S]elect Port  Re[f]resh Mode  Since [R]eset  [Q]uit
Command>
Enter the character in square brackets to select option
```

Fig. 4-33 Statistics: Values Accumulated after Reboot

Screen Description

Port	Displays the port number.
Refresh	Displays the refresh interval. (The factory default setting is 300 seconds)
Elapsed Time Since System Up	Displays this Switching Hub's reboot time.
Counter Name	Displays each counter name.
Total	Displays each counter value.
Avg./s	Displays the average value per second of each counter.

Available commands are listed below.

S	Switching Hub the port to display the values.	
		Press "S." The command prompt changes to "Select Port number>." Enter the port number for which you wish to display values.
N	Display the values of the next port.	
		Press "N." The screen displays the counter values of the next port. The command is invalid for Port 24.
P	Display the values of the previous port.	
		Press "P." The screen displays the counter values of the previous port. The command is invalid for Port 1.

R	Reset counter values.	
		Press "R." The counter values are reset and immediately changed to those accumulated after resetting the counters.
F	Set the display refresh mode.	
		Press "F." The command prompt changes to "1 for start to refresh,2 for set refresh rate." Press "1" to cancel the automatic refresh. Press "2" to change the refresh interval. If you press "2", the command prompt changes to "Input refresh time>." Enter an integer between 5 and 600 (seconds).
Q	Return to the parent menu.	

On this screen, you can display two types of counter values: Values accumulated after booting this Switching Hub (Fig. 4-33), and values accumulated after resetting the counters (Fig. 4-34). The values accumulated after booting the Switching Hub are retained even after you reset the counters.

```
PN25249 Local Management System
Main Menu -> Statistics Menu
Port:  1   Refresh : 300 Sec.   Elapsed Time Since System Reset: 000:00:00:00
<Counter Name>          <Total>                 <Avg./s>
Total RX Bytes          0                       0
Total RX Pkts           0                       0
Good Broadcast          0                       0
Good Multicast          0                       0
CRC/Align Errors        0                       0
Undersize Pkts          0                       0
Oversize Pkts           0                       0
Fragments               0                       0
Jabbers                 0                       0
Collisions              0                       0
64-Byte Pkts            0                       0
65-127 Pkts             0                       0
128-255 Pkts            0                       0
256-511 Pkts            0                       0
512-1023 Pkts           0                       0
Over 1024 Pkts          0                       0
-------------------------------- <COMMAND> ----------------------------------
[N]ext  [P]revious  [S]elect Port  Re[f]resh  [R]eset  Since [U]p  [Q]uit
Command>
Enter the character in square brackets to select option
```

Fig. 4-34 Display of Values Accumulated after Resetting the Counters

Screen Description

Port	Displays the port number.
Refresh	Displays the refresh interval. (The factory default setting is 300 seconds)
Elapsed Time Since System Reset	Displays the time elapsed since resetting of the counters.
Counter Name	Displays each counter name.
Total	Displays each counter value.
Avg./s	Displays the average value per second of each counter.

Available commands are listed below.

S	Switching Hub the port to display the values.	
		Press "S." The command prompt changes to "Select Port number>." Enter the port number for which you wish to display values.
N	Display the values of the next port.	
		Press "N." The screen displays the counter values of the next port. The command is invalid for Port 24.
P	Display the values of the previous port.	
		Press "P." The screen displays the counter values of the previous port. The command is invalid for Port 1.
U	Change the counter display.	
		Press "U." The counter values are changed to those accumulated after the system boot.
R	Reset counter values.	
		Press "R." The counter values are reset and immediately changed to those accumulated after resetting the counters.
F	Set the screen refresh mode.	
		Press "F." The command prompt changes to "1 for start to refresh,2 for set refresh rate." Press "1" to cancel the automatic refreshing. Press "2" to change the refresh interval. If you press "2", the command prompt changes to "Input refresh time>." Enter an integer number between 5 and 600 (seconds).
Q	Return to the parent menu.	

The counters are described below.

Total RX Bytes	Displays the number of bytes of all packets received.
Total RX Pkts	Displays the number of all packets received.
Good Broadcast	Displays the number of broadcast packets received.
Good Multicast	Displays the number of multicast packets received.
CRC/Align Errors	Displays the number of error packets that have a normal packet length (64 to 1518 bytes); however, have an error found by an error detection code (FCS). If the packet length is an integral multiple of one byte, the error is a CRC (FCS) error. If not, it is an alignment error.
Undersize Pkts	Displays the number of error packets that have a packet length less than 64 bytes; however, have no other errors.
Oversize Pkts	<Jumbo status Disabled> Displays the number of packets that has a packet length more than 1518 bytes. <Jumbo status Enabled> Displays the number of packets that has a packet length more than 9216 bytes.
Fragments	Displays the number of error packets that have a packet length less than 64 bytes and have a CRC or alignment error.
Jabbers	Displays the number of error packets that have a packet length more than 1518 bytes and have a CRC or alignment error.
Collisions	Displays the number of packet collisions.
64-Byte Pkts	Displays the total number of packets that have a packet length of 64 bytes.
65-127 Pkts	Displays the total number of packets that have a packet length of 65 to 127 bytes.
128-255 Pkts	Displays the total number of packets that have a packet length of 128 to 255 bytes.
256-511 Pkts	Displays the total number of packets that have a packet length of 256 to 511 bytes.
512-1023 Pkts	Displays the total number of packets that have a packet length of 512 to 1023 bytes.

Over 1024 Pkts	Displays the total number of packets that have a packet length of 1024 bytes or greater. *This items is displayed with Jumbo Status Disabled.

Note: This screen is set to refresh at the refresh intervals. Therefore, if the timeouts of the console, SSH, and Telnet are set to be longer than the refresh interval, timeouts do not occur.

4.7. Switch Tools Configuration

On the Main Menu, pressing "T" opens the Switch Tools Configuration screen as shown in Fig. 4-35. On this screen, you can use and configure the switch tools for firmware upgrade, upload/download of configuration files, system reboot, log viewing, etc.

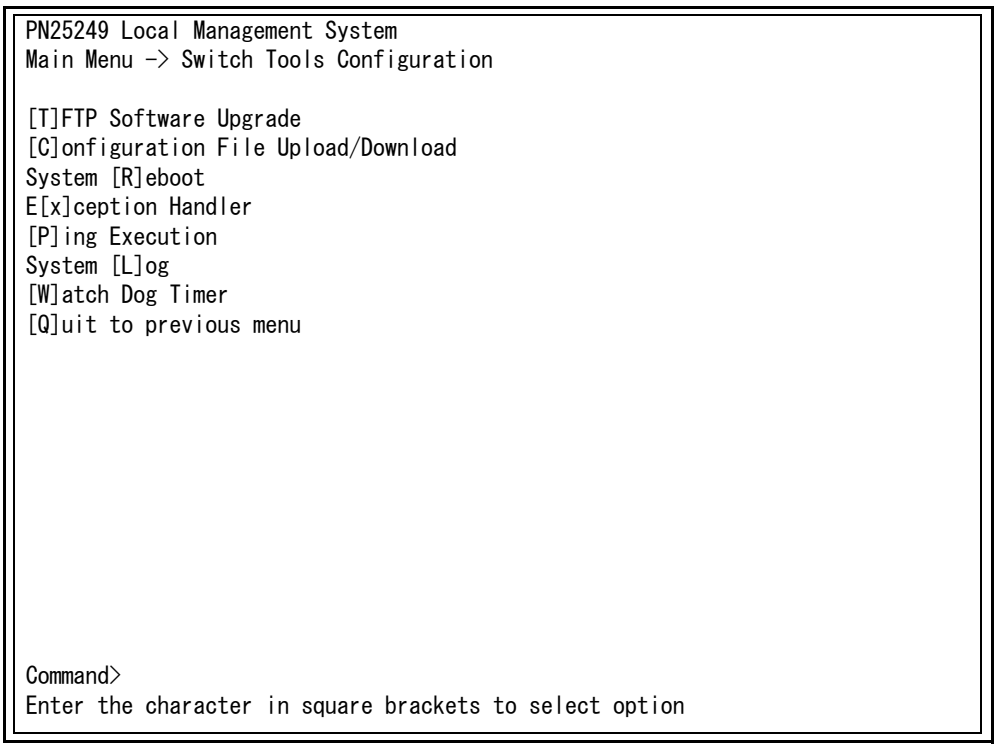


Fig. 4-35 Switch Tools Configuration

Screen Description

TFTP Software Upgrade	Configures and executes firmware upgrade of this Switching Hub.
Configuration File Upload/Download	Configures and executes upload/download of the configuration of this Switching Hub.
System Reboot	Configures and executes reboot of this Switching Hub.
Exception Handler	Configures exception handling operations.
Ping Execution	Executes ping from this Switching Hub.
System Log	Displays the system log of this Switching Hub.
Watch Dog Timer	Configures the Watch Dog Timer function.
Quit to previous menu	Quits the Switch Tools Configuration Menu and returns to the Main Menu.

4.7.1. TFTP Software Upgrade

On the Switch Tools Configuration Menu, pressing "T" opens the TFTP Software Upgrade screen as shown in **Fig. 4-36**. On this screen, you can execute and configure firmware upgrades.

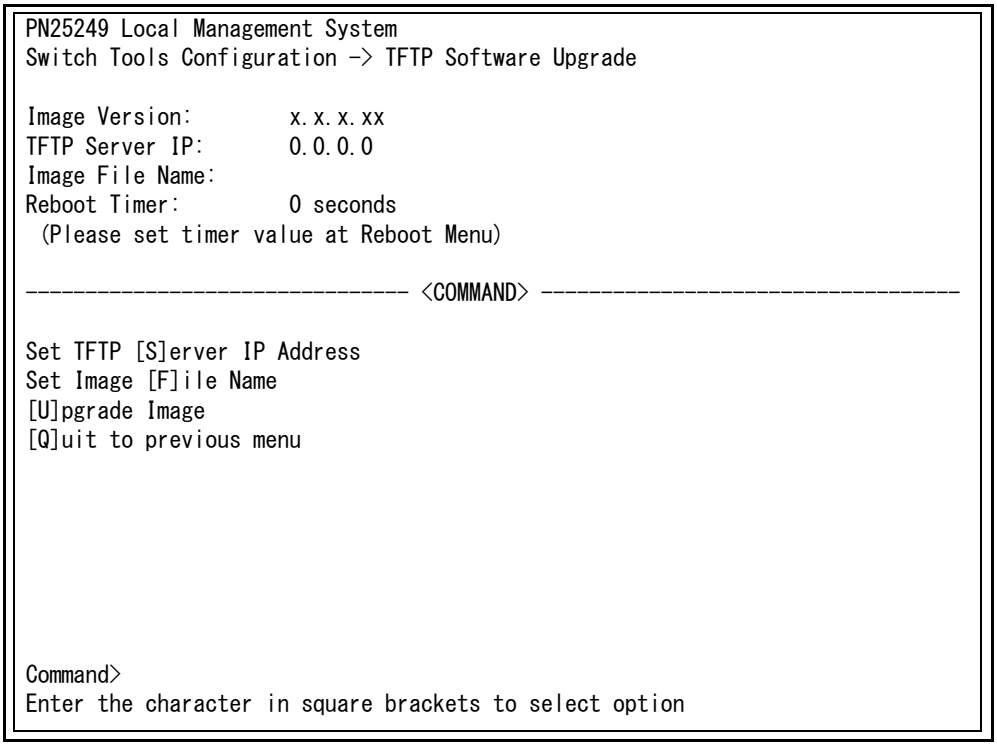


Fig. 4-36 TFTP Software Upgrade

Screen Description

Image Version	Displays the current firmware version.
TFTP Server IP	Displays the IP address of the TFTP server with the firmware to be upgraded installed.
Image File Name	Displays the file name of the firmware to be upgraded.
Reboot Timer	Displays the time before booting after downloading the firmware. You can set the time in "System Reboot Menu."

Available commands are listed below.

S	Set the IP address of the TFTP server with the firmware to be upgraded installed.	
		Press "S." The command prompt changes to "Enter IP address of TFTP server>." Enter the IP address of the TFTP server.
F	Set the file name of the firmware to be upgraded.	
		Press "F." The command prompt changes to "Enter file name>." Specify the file name in 39 characters or less.
U	Start the upgrade.	
		Press "U." The command prompt changes to "Download file(Y/N)>." Confirm whether or not you wish to start the process. Confirm that all settings are correct. Press "Y" to start the upgrade. If you have find an error in settings, press "N" to return to the original status.
Q	Return to the parent menu.	

When the download starts, the screen shown in **Fig. 4-37** opens, and you can check the download status.
(By pressing Ctrl+c keys during transmission, you can interrupt the TFTP transmission process.)
After the download completes, the system is automatically rebooted, and the login screen opens. The firmware is rewritten, and the system is automatically rebooted after waiting for the time set by Reboot Timer.

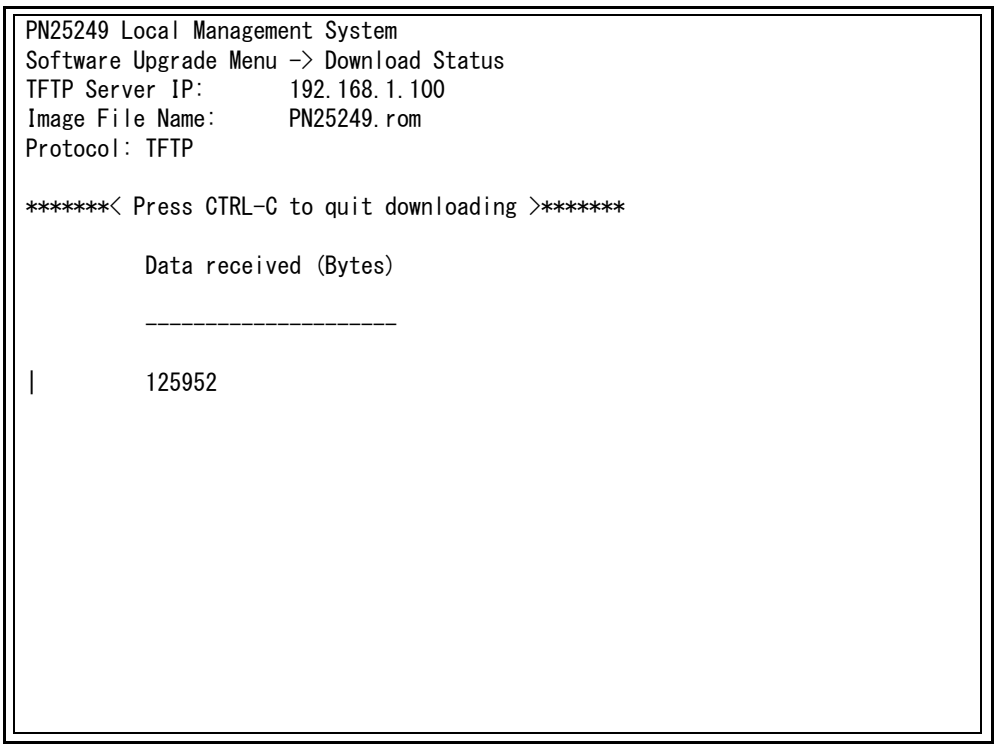


Fig. 4-37 Download in Process

Note: After the download completes, the black band at the bottom of the screen displays "System will reset automatically after image program into flash." When this message is displayed, the firmware is written in flash memory. Be sure not to power off the Switching Hub.Never power off this Switching Hub during upgrade of the firmware.

4.7.2. Configuration File Upload/Download

On the Switch Tools Configuration Menu, pressing "C" opens the Configuration File Upload/Download Menu screen as shown in **Fig. 4-38**. On this screen, you can execute and configure upload/download of the configuration file of this Switching Hub to/from a PC.

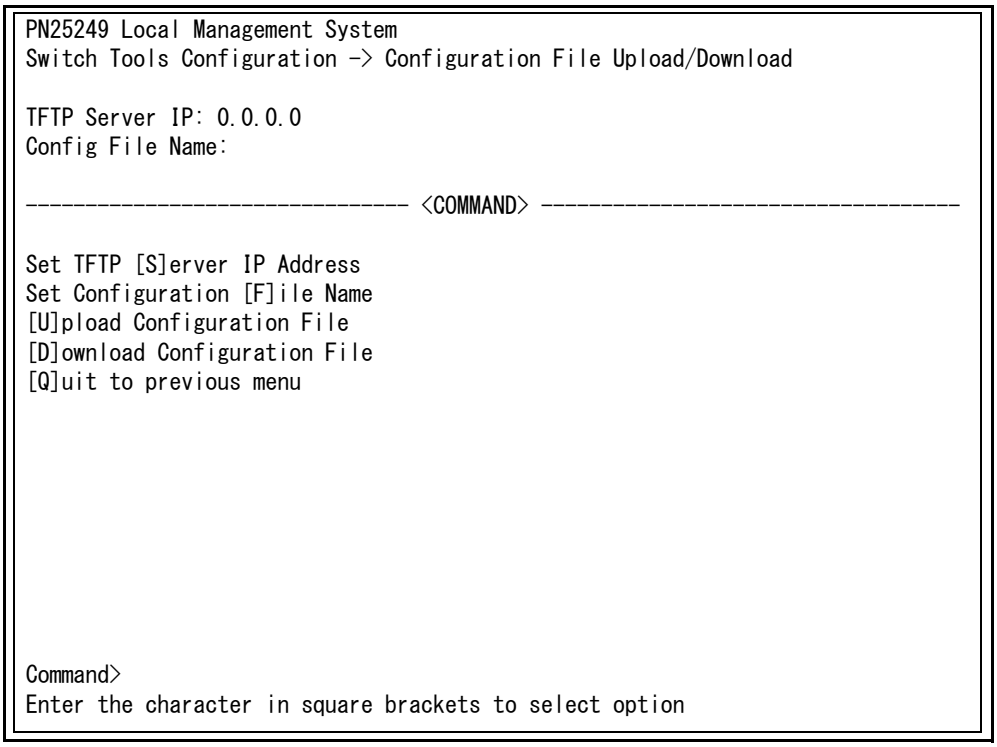


Fig. 4-38 Configuration File Upload/Download

Screen Description

TFTP Server IP	Displays the IP address of the TFTP server that executes upload/download of the configuration file.
Config File Name	Displays the configuration file name.

Available commands are listed below.

S	Set the IP address of the TFTP server that executes upload/download of the configuration file.	
		Press "S." The command prompt changes to "Enter IP address of TFTP server>." Enter the IP address of the TFTP server.
F	Set the name of the configuration file to be uploaded/downloaded.	
		Press "F." The command prompt changes to "Enter file name>." Specify the file name of the downloaded program in 30 half-width characters or less.
U	Start the upload of the configuration file.	
		Press "U." The command prompt changes to "Upload file(Y/N)>." Confirm whether or not you wish to start the process. Confirm that all settings are correct. Press "Y" to start the process. If you have find an error in settings, press "N" to return to the original status.
D	Start the download of the configuration file.	
		Press "D." The command prompt changes to "Download file(Y/N)>." Confirm whether or not you wish to start the process. Confirm that all settings are correct. Press "Y" to start the process. If you have find an error in settings, press "N" to return to the original status.
Q	Return to the parent menu.	

4.7.3. System Reboot

On the Switch Tools Configuration Menu, pressing "R" opens the System Reboot Menu screen as shown in Fig. 4-39. On this screen, you can reboot this Switching Hub.

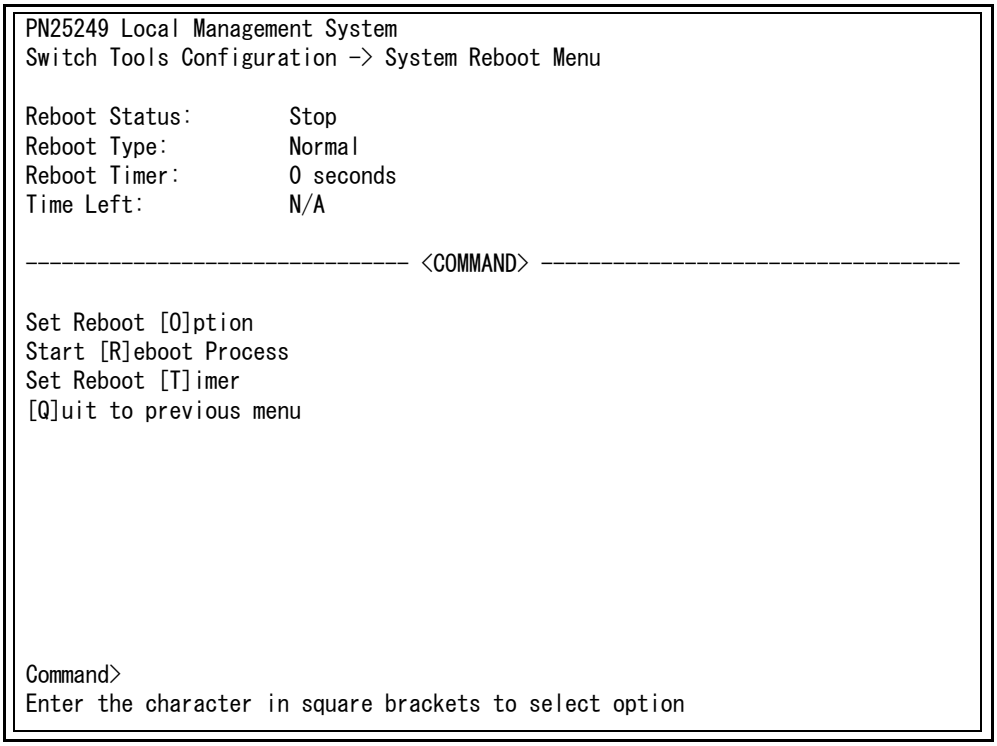


Fig. 4-39 System Reboot

Screen Description

Reboot Status	Displays whether or not the reboot command is executed.	
	Stop	Displays that the reboot command is not executed.
	In Process	Reboot in process or in waiting status set by the reboot timer.
Reboot Type	Displays the reboot type. The factory default setting is "Normal."	
	Normal	Normal reboot is executed.
	Factory Default	All settings are reset to factory default.
	Factory Default Except IP	All settings except the IP address are reset to factory default.
Reboot Timer	Displays the time between execution of the reboot command and actual reboot. The factory default setting is 0 second.	
Time Left	Displays the time left before the system is actually rebooted after execution of the reboot command. A key entry refreshes the screen display, allowing you to check the elapsed time.	

Available commands are listed below.

O	Set the reboot type to normal reboot or factory default.	
		Press "O." The command prompt changes to "Select reboot option (N/F/I)>." Press "N" to set the type to normal reboot, "F" to return it to factory default, or "I" to save only the IP address setting and return the other settings to factory default.
R	Execute the reboot.	
		Press "R." The command prompt changes to "Are you sure to reboot the system (Y/N)>." Press "Y" to execute it. Press "N" to cancel it.
T	Set the time before the system is rebooted.	
		Press "T." The command prompt changes to "Enter Reboot Timer>." Enter a value between 0 and 86400 seconds (24 hours).
Q	Return to the parent menu.	

4.7.4. Exception Handler

On the Switch Tools Configuration Menu, pressing "X" opens the Exception Handler screen as shown in Fig. 4-40. On this screen, you can configure the exception handling operations.

```
PN25249 Local Management System
Switch Tools Configuration -> Exception Handler

Exception Handler:            Disabled
Exception Handler Mode:       Debug Message









-------------------------------- <COMMAND> ----------------------------------

Enable/Disable E[x]ception Handler
Set Exception Handler [M]ode
[Q]uit to previous menu

Command>
Enter the character in square brackets to select option
```

Fig. 4-40 Exception Handler Configuration

Screen Description

Exception Handler	Displays the exception handling function status. "Disabled" is the factory default setting.	
	Enabled	The exception handler is enabled.
	Disabled	The exception handler is disabled.
Exception Handler Mode	Displays the exception handling method. "Debug Message" is the factory default setting.	
	Debug Message	Outputs a debug message to the console when exception handling is detected.
	System Reboot	Automatically reboots when exception handling is detected.
	Debug Message and System Reboot	Outputs a debug message to the console and then automatically reboots when exception handling is detected.

Available commands are listed below.

X	Enable/disable the exception handling function.	
		Press "X." The command prompt changes to "Enable or Disable Exception Handler (E/D)>." Press "E" to enable the function. Press "D" to disable it.
M	Set the exception handling method.	
		Press "M." The command prompt changes to "Select Exception Handler Mode (M/R/B)>." Press "M" to display the debug message, "R" to reboot, or "B" to execute both.
Q	Return to the parent menu.	

4.7.5. Ping Execution

On the Switch Tools Configuration Menu, pressing "P" opens the Ping Execution screen as shown in Fig. 4-41. On this screen, you can execute the ping command from the Switching Hub to confirm communications with connected terminals and other devices.

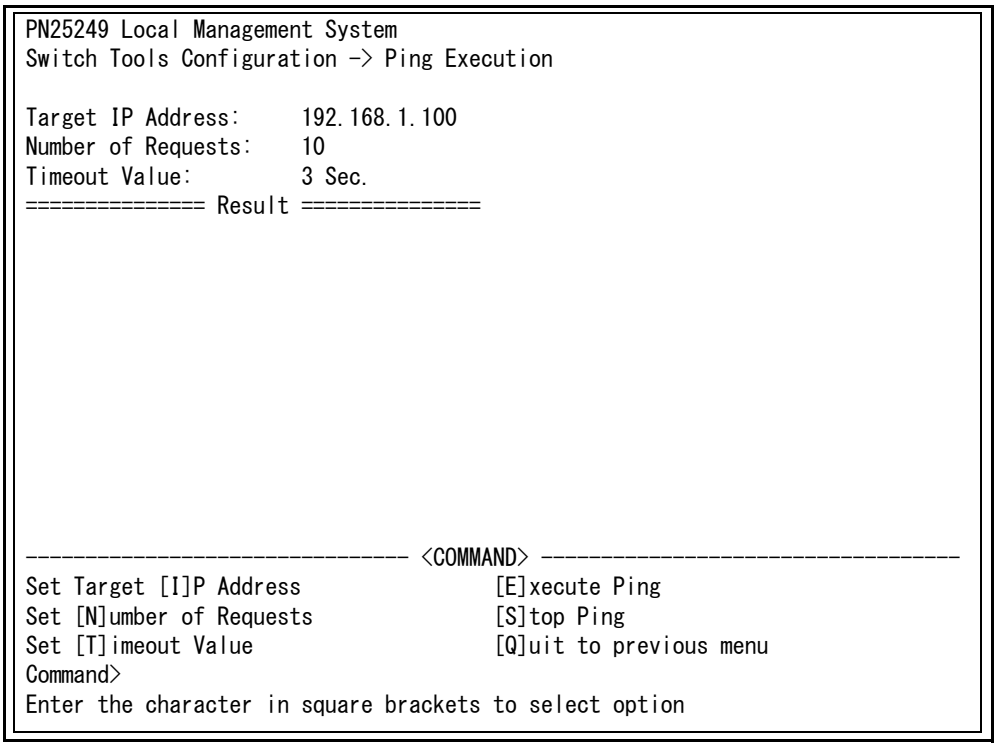


Fig. 4-41 Ping Execution

Screen Description

Target IP Address	Displays the IP address of the target of the ping. The factory default setting is "0.0.0.0."
Number of Request	Displays the number of times of ping. The factory default setting is 10 times.
Timeout Value	Displays the time before timeout occurs. The factory default setting is 3 seconds.
Result	Displays the ping result.

Available commands are listed below.

I	Set the IP address of the target of the ping.	
		Press "I." The command prompt changes to "Enter new Target IP Address >." Enter the IP address.
N	Set the number of times of ping.	
		Press "N." The command prompt changes to "Enter new Request Times >." Enter the number of times between 1 and 10.
T	Set the time before timeout occurs.	
		Press "T." The command prompt changes to "Enter new Timeout Value >." Set the time between 1 to 5 seconds.
E	Execute the ping command or clear the display.	
		Press "E." The command prompt changes to "Execute Ping or Clean before Ping Data (E/C)>." Press "E" to execute ping. Press "C" to only clear the display.
S	Cancel the ping command.	
		Press "S" or "Ctrl+C" during the ping execution to cancel it.
Q	Return to the parent menu.	

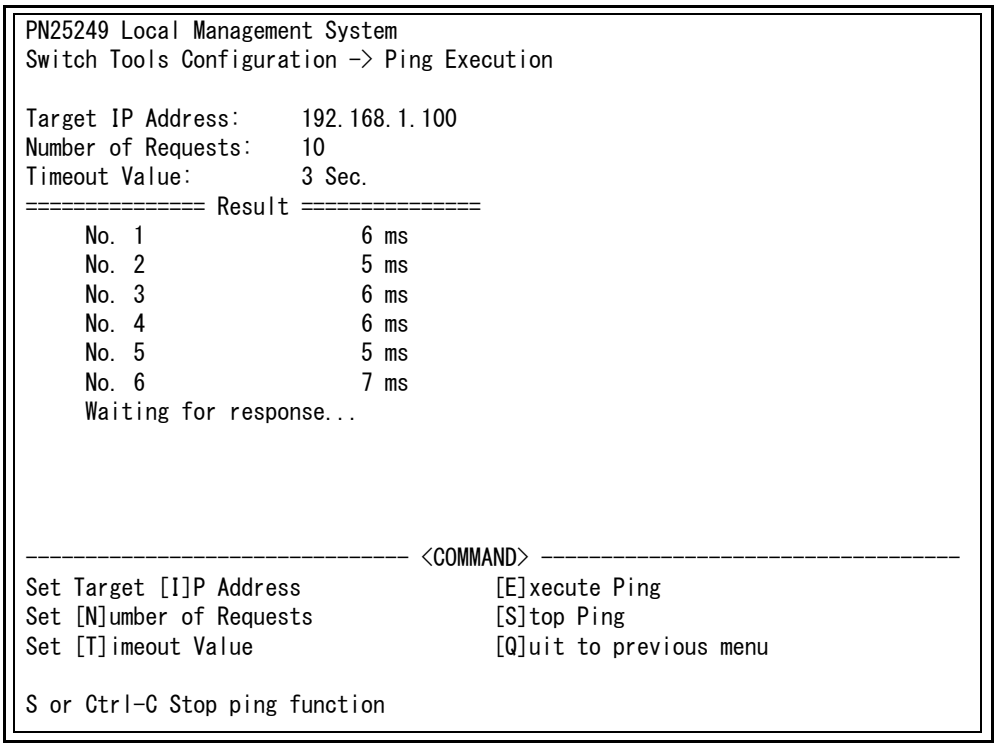


Fig. 4-42 Display during Ping Execution

4.7.1. System Log

On the Switch Tools Configuration Menu, pressing "L" opens the System Log Menu screen as shown in **Fig. 4-43**. This screen displays logs of events caused to the Switching Hub. By viewing events, you can check activities related to the Switching Hub, which is useful information for network management.

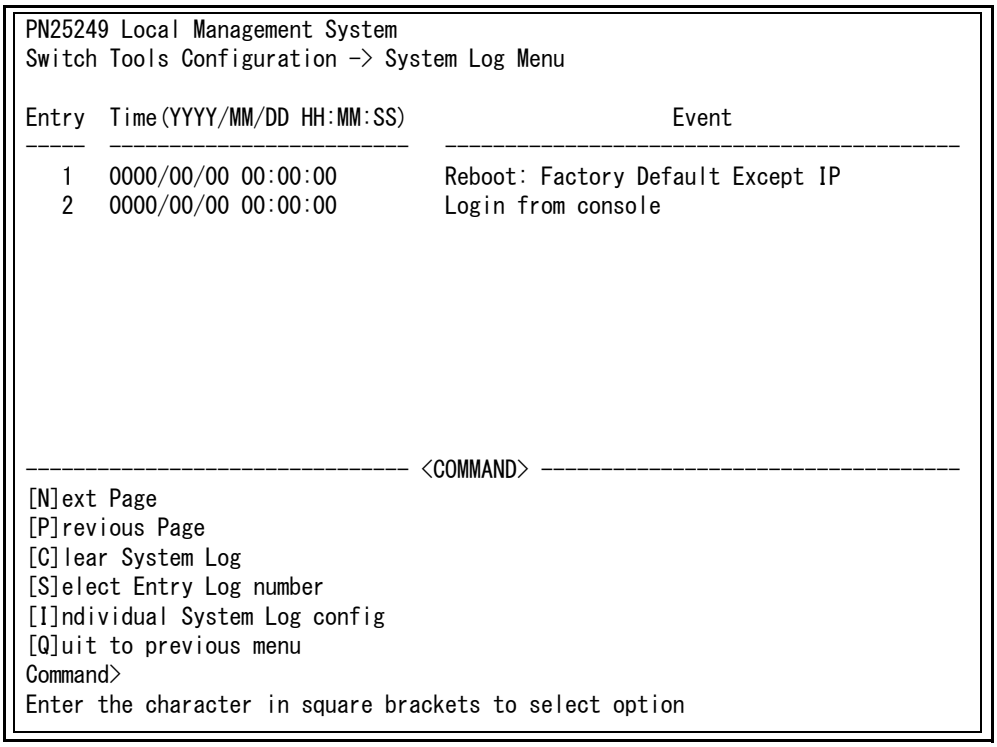


Fig. 4-43 System Log

Each event displayed on this screen links to an SNMP trap. Events for which a trap is set to be sent are displayed. The relationships with traps are shown below.

Screen Description

Entry	Displays the event number.
Time	Displays the time when the event occurred, or the time accumulated after boot if the clock is not set.
Event	Displays the description of the event caused to the Switching Hub.

Available commands are listed below.

N	Display the next page.	
		Press "N" to display the next page.
P	Display the previous page.	
		Press "P" to display the previous page.
C	Clear all system logs.	
		Press "C" to clear all system logs.
S	Displayed the entry log number.	
		Press "S."The command prompt changes to "Select entry log number>."Set the range from 1 to 1024, 0 for last entry.
I	Move to the screen to change the System Log settings.	
		Press "I."The screen changes to "Enable/Disable Individual System Log Menu."For details, refer to the next section(4.7.1.a).
Q	Return to the parent menu.	

System Log Description (PN25249)

Login from console	Indicates a login from the console.
Login from telnet, xxx.xxx.xxx.xxx	Indicates a login from the host with IP address xxx.xxx.xxx.xxx via Telnet.
Configuration changed	Indicates that the configuration was changed.
Runtime code changes	Indicates that the firmware was changed.
Configuration file upload	Indicates that the configuration file was uploaded via TFTP.
Configuration file download	Indicates that the configuration file was downloaded via TFTP.
Reboot: Normal	Indicates that this Switching Hub was rebooted.
Reboot: Factory Default	Indicates that this Switching Hub was rebooted to return settings to factory default.
Reboot: Factory Default Except IP	Indicates that this Switching Hub was rebooted to return settings except the IP address to factory default.
SNTP first update to yyyy/mm/dd hh:mm:ss	Indicates that the time was retrieved via SNTP for the first time.
! Stus: xxxxxxxx IP: x Code: x Add: xxxxxxxx ! Tsk: "xxxx" P:xxxxxxxxx Pri: xx	Indicates system information when an exception occurred.
Port-*xx* Link-up	Indicates that Port xx was linked up. This event occurs when Individual Trap is enabled and a target port is set.
Port-*xx* Link-down	Indicates that Port xx was linked down. This event occurs when Individual Trap is enabled and a target port is set.
Port-*xx* Power ON notification	Indicates that the power supply to the target port is turned on.
Port-*xx* Power OFF notification	Indicates that the power supply to the target port is turned off.
System Cold Start	Indicates that this Switching Hub was booted.

4.7.1.a. Enable/Disable Individual System Log

On the System Log Menu, pressing "I" opens the Enable/Disable Individual System Log Menu screen as shown in Fig. 4-44. On this screen, you can change the System Log settings.

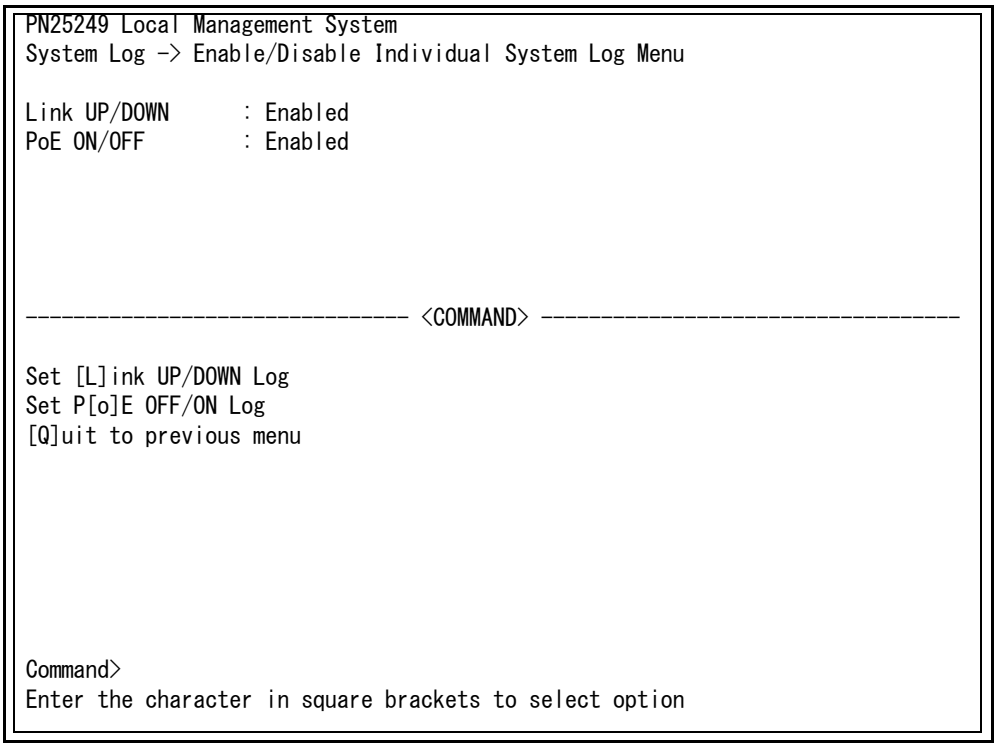


Fig. 4-44 System Log

Screen Description

Link UP/DOWN	Displays the Link UP/DOWN configuration.
PoE ON/OFF	Displays the PoE ON/OFF configuration.

Available commands are listed below.

L	Enable/Disable the Link Up/Down.	
		Press "L."The command prompt changes to "Enable or Disable Link UP/DOWN Log (E/D)>."Enter "E" to enable the log.Enter "D" to disable it.
O	Enable/Disable the PoE On/Off.	
		Press "O."The command prompt changes to "Enable or Disable PoE ON/OFF Log (E/D)>."Enter "E" to enable the log.Enter "D" to disable it.
Q	Return to the parent menu.	

4.7.2. Watch Dog Timer Menu

On the Switch Tools Configuration Menu, pressing "W" opens the Watch Dog Timer Menu screen, as shown in Fig. 4-45. On this screen, you can configure the Watch Dog Timer function settings.

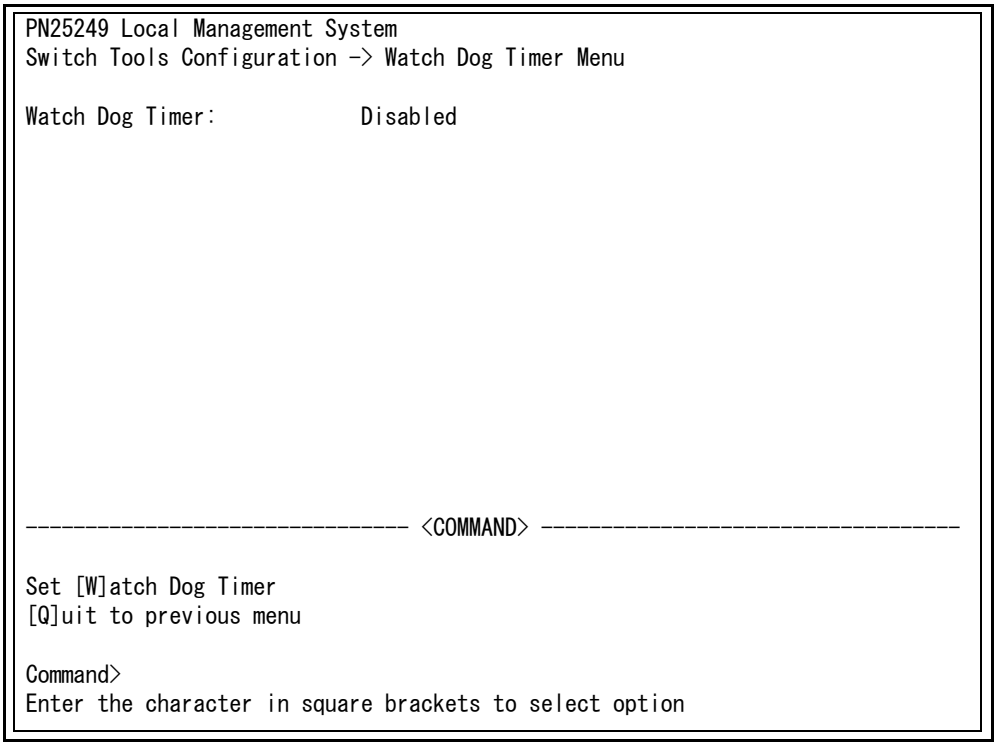


Fig. 4-45 Watch Dog Timer Menu

Screen Description

Watch Dog Timer	Displays the Watch Dog Timer function status. "Disabled" is the factory default setting.	
	Enabled	The function is enabled.
	Disabled	The function is disabled.

Available commands are listed below.

W	Switching Hub the Watch Dog Timer function status.	
		Press "W." The command prompt changes to "Enable or Disable Watch Dog Timer(E/D)>." Press "E" to enable the function. Press "D" to disable it.
Q	Return to the parent menu.	

4.8. Save Configuration to Flash

On the Main Menu, pressing "F" opens the Save Configuration to Flash screen as shown in Fig. 4-46. Execute this command to save the Switching Hub configuration to built-in memory. On this screen, the command prompt changes to "Save current configuration?(Y/N)." Press "Y" to save the configuration. Otherwise, press "N."
If you don't save the configuration, it will be deleted when the system is rebooted or the power is shut down.

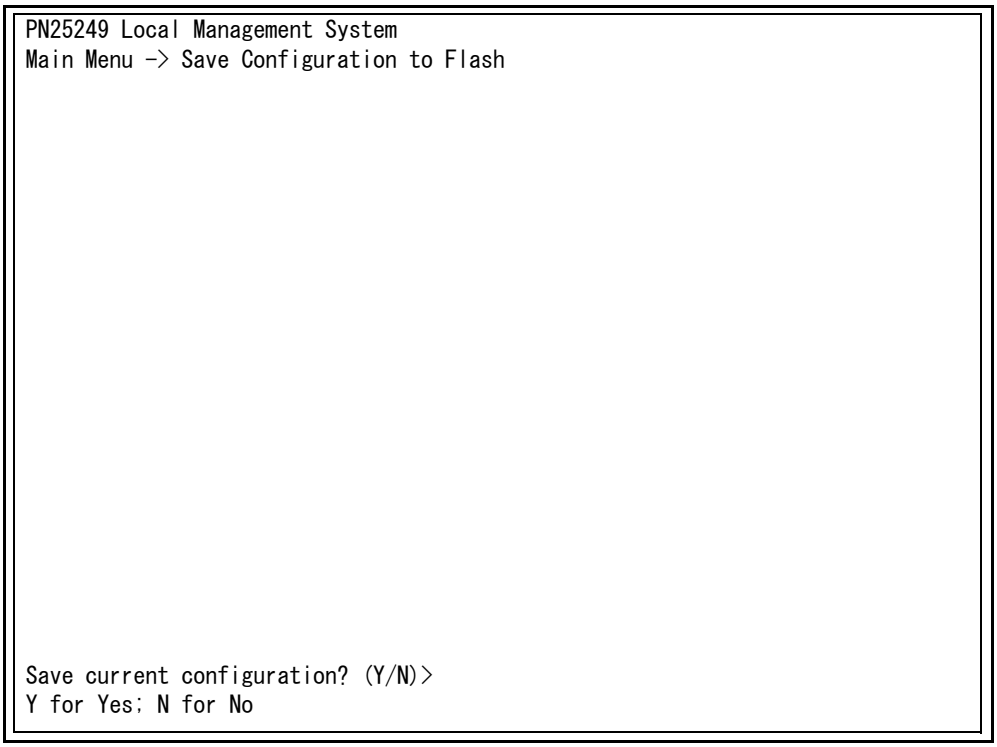


Fig. 4-46 Save Configuration to Flash Screen: Confirm Whether to Save or Not

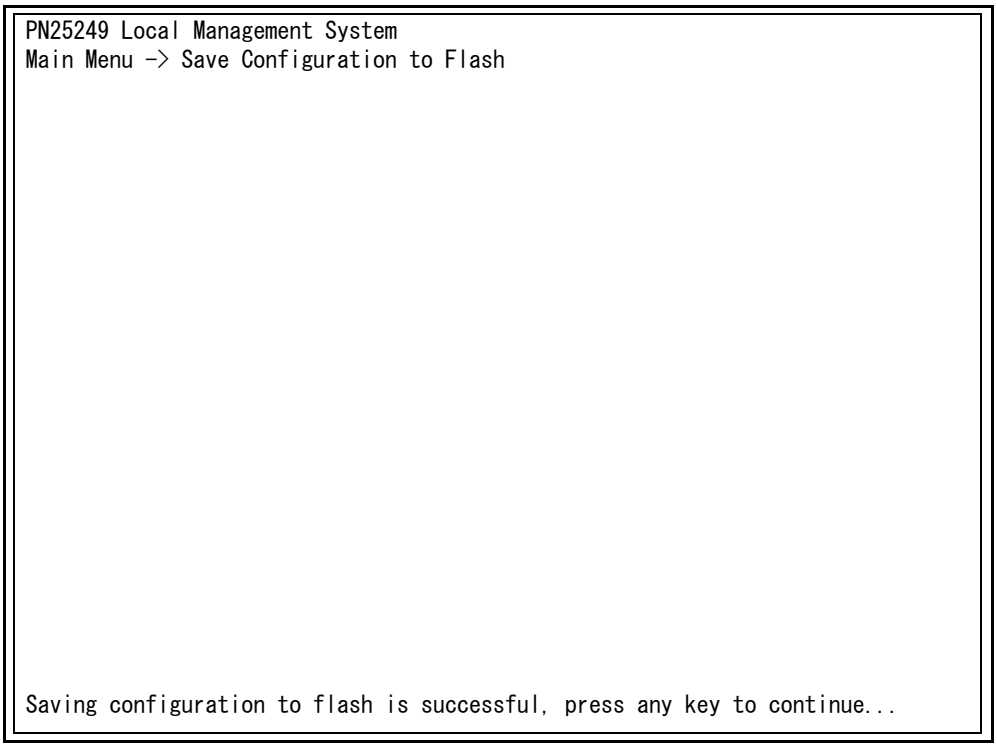


Fig. 4-47 Save Configuration to Flash Screen: Completed

4.9. Command Line Interface (CLI)

On the Main Menu, pressing "C" opens the screen as shown in Fig. 4-48.
On this screen, you can use the command line for configuration instead of the menu. Refer to the separate volume "Operation Manual (For CLI)" for configuration procedures. Enter "logout" at the command prompt to return to the Menu from CLI.

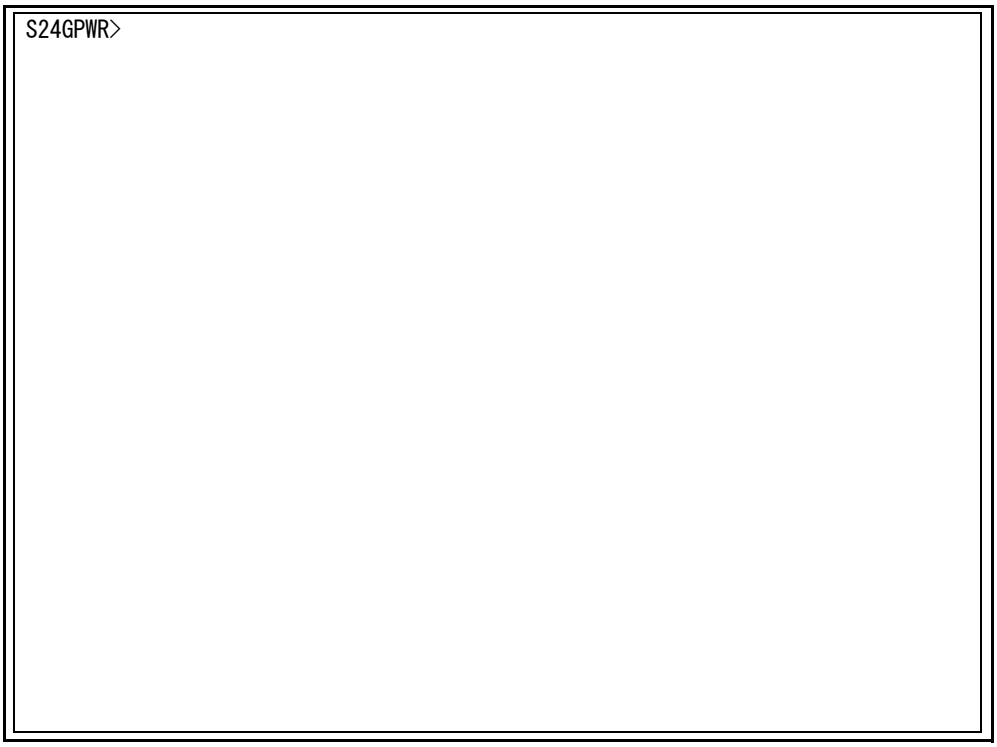


Fig. 4-48 Command Line Interface (CLI)

4.10.Logout

On the Main Menu, if you access from the console port, pressing "Q" opens the login screen. If you access using Telnet or SSH, then pressing "Q" terminates the connection.
Follow the login procedures shown in section 4.2 of Basic Operation Manual to log in again.
You are automatically logged out after the time set in the timeout field shown in section Section 4.3.5 System Security Configuration has elapsed.

5. Appendix

5.1. Specifications

○ Interface
- Twisted-pair ports: Ports 1 to 24 (RJ45 connector)
  - ✧ Transmission system: IEEE802.3 10BASE-T
    IEEE802.3u 100BASE-TX
    IEEE802.3ab 1000BASE-T

- Console port x 1 (RJ45 connector)
  - ✧ RS-232C (ITU-TS V.24)

○ Switching system
- Store-and-forward system
- Forwarding rate: 10BASE-T 14,880 pps; 100BASE-TX 148,800 pps; 1000BASE-T 1,488,000 pps
- MAC address table: 8K entries/unit
- Buffered memory: 512 KB
- Flow control: IEEE802.3x (full-duplex); Back pressure (half-duplex)

○ Major functions
- IEEE802.1Q: Tag VLAN (256 VLANs max.)
- IEEE802.1p: QoS function (Four levels of Priority Queue supported)
- IEEE802.3x: Flow control
- Link aggregation: Capable of establishing up to eight ports in eight groups
- Port monitoring: 1:n supported

○ Agent specifications
- TELNET (RFC854)
- TFTP (RFC783)
- SNTP v3 (RFC1769)

○ Power supply specifications
- Power supply: AC 100-240 V, 50/60 Hz, 2.6 A
- Power consumption: Max. 172 W(29.8 W when not supplying power), Min.18.5 W

○ Environment specifications
- Operating temperature: 0 to 45 ℃
- Operating humidity: 20 to 80 % RH (no condensation)
- Storage temperature: -20 to 70 ℃
- Storage humidity: 10 to 90 % RH (no condensation)

○ External specifications

- Dimensions (Depth)	44mm (Height) x 440mm((Width) x 256 mm (Excluding protruding sections)
- Mass (Weight)	3,600 g

5.2. Easy IP Address Setup Function

The following are points to note when using the easy IP address setup function.

[Known compatible software]
Panasonic Life Solutions Networks Co., Ltd. "ZEQUOassistPLUS" Ver. 1.1.1.0
Panasonic Corporation "Easy IP Setup" V3.01/V4.00/V4.24R00
Panasonic System Networks Co., Ltd. "Easy Config" Ver3.10R00

[User-settable items]
* IP address, subnet mask, and default gateway
* System name
  * This item can be configured only with the software "Easy Config."
    In the software, the item is displayed as "Camera name."

[Restrictions]
* The time for accepting setting changes is limited to 20 minutes after power-on to ensure security.
  However, you can change settings regardless of the time limit if the IP address, subnet mask, default gateway, user name, and password values are set to factory defaults.
  * Even after the time limit is reached, you can check the current settings displayed in a list.
* The following function of the software "Easy Config" cannot be used.
  - "Auto setup function"

*Please contact your manufacturer for information about network cameras.

5.3. Network Configuration Example and Notes Using Loop Detection and Blocking Function

Configuration example using the Loop detection and blocking function

Using the Loop detection and blocking function allows to prevent a loop failure possibly occurring on a downstream Switching Hub that the user directly uses.
If you connect a hub that does not support the Loop detection and blocking function to a downstream Switching Hub, and a loop failure occurs in the Switching Hub, the downstream Switching Hub port that caused a loop is blocked to prevent a loop failure from affecting the entire network.

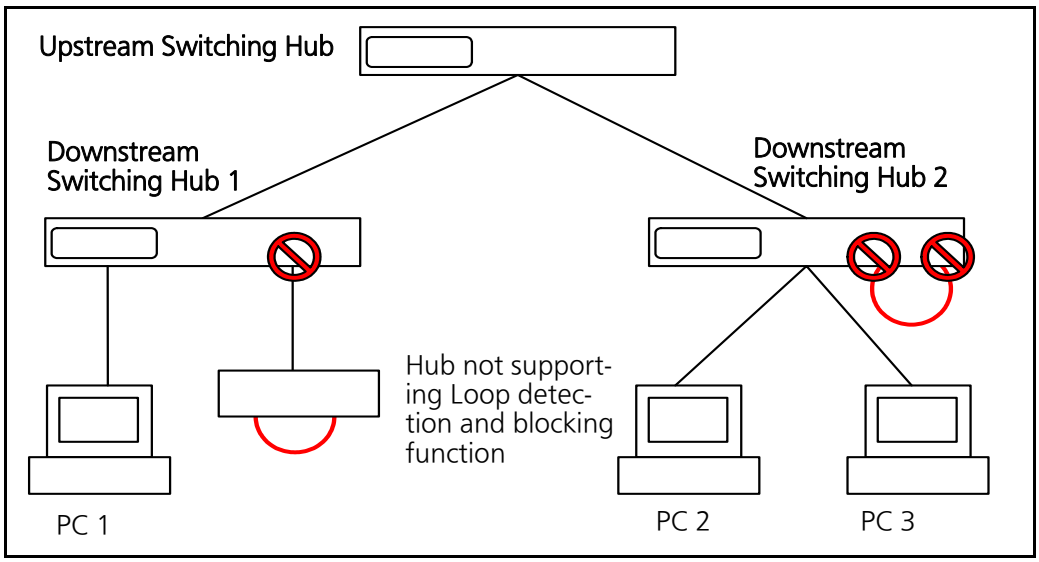
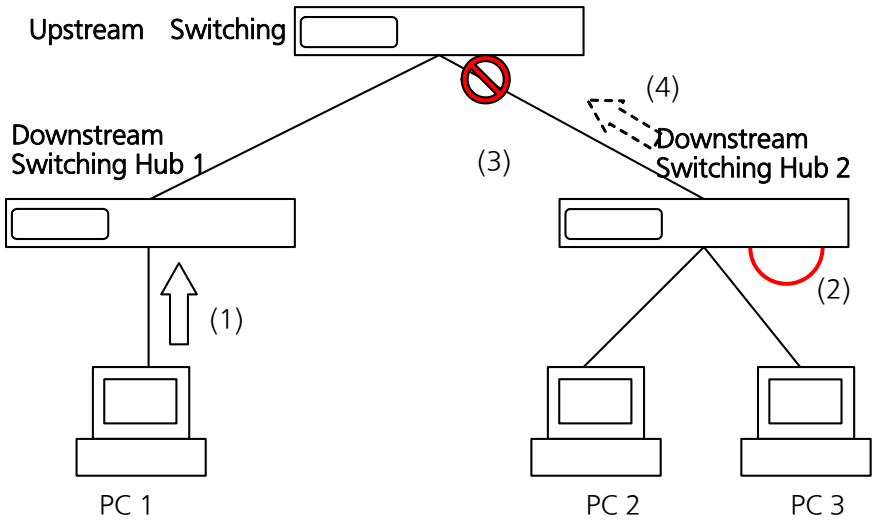


Figure 5-1 Configuration example using the Loop detection and blocking function

Notes when using the Loop detection and blocking function - Disable the function on the upstream Switching Hub

If you configure a network only with switches having the Loop detection and blocking function, the upstream Switching Hub may detect a loop occurring on the downstream Switching Hub first depending on the condition. Then, all communications to the downstream Switching Hub may be blocked.
To minimize the impact of communication blocks caused by loop detection, the Loop detection and blocking function needs to be disabled on the upstream Switching Hub. Then, network configuration and Switching Hub settings need to be changed to block only the port having a loop on the Switching Hub.



[Occurrence conditions]
(1) Communication is taking place between PC 1 and PC 2, and between PC 1 and PC 3.
(2) A loop occurs on downstream Switching Hub 2.
(3) The upstream Switching Hub detects the loop first and blocks the uplink port on downstream Switching Hub 2. (Normally, only the loop-connected port is blocked.)
(4) The uplink port on downstream Switching Hub 2 is linked down, and all communication to other switches is blocked.

Figure 5-2 Notes when using the Loop detection and blocking function

6. Troubleshooting

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

◆ LED indicators
- ■ The power LED (POWER) is not lit.
  - ● Is the power cord connected? Please confirm that the power cord is securely connected to the power port.
  - ● Use the Switching Hub within the range of operating temperature.
- ■ The port LED is not lit on the Status mode.
  - ● Is the cable correctly connected to the target port?
  - ● Is an appropriate cable used?
  - ● Is a 10BASE-T, 100BASE-TX, or 1000BASE-T terminal connected to the target port?
  - ● Auto-negotiation may have failed.
    → Set the port of this Switching Hub or the terminal to half-duplex mode.
- ■ The port LED (Right) is lit solid orange.
  - ● A loop is occurring. When you recover the loop, solid orange LED is turned off.
- ■ LOOP HISTORY LED is flashing green.
  - ● There is a port having a loop or a port on which a loop was recovered less than 3 days ago.

◆ Communications fail.
- ■ Communications with all ports are down or slow.
  - ● Are the communication speed and mode settings correct?
    → If the communication mode signal cannot be properly obtained, apply half-duplex mode.
    Switching Hub the communication mode of the connection target to half-duplex mode.
    Do not fix the communication mode of the connected terminal to full-duplex mode.
  - ● Are the ports linking up?
    → If the MNO series power saving mode is set to "Full", try setting it to "Half" or "Disabled."
  - ● Is the bandwidth usage rate of the backbone network to which this Switching Hub is connected excessively high?
    → Try separating this Switching Hub from the backbone network.
  - ● Is the port LED (Right) lit solid orange?
    → If the port LED (Right) is lit solid orange, the port is being blocked by the Loop detection and blocking function. After the loop was recovered in the port, wait for more than the recovery time until a port starts to be automatically recovered, or release the blocked port on the configuration screen.

◆ PoE power supply is impossible.

■ The PoE power supply LED (PoE) is not lit.

● Is the LED mode set to the Power supply mode (PoE)?
→ Select the Power supply mode LED (PoE) by pressing the LED switch button.

● Is the cable appropriate to use and connected to a port that supports PoE power supply?

● Is the PoE-ready terminal connected to the port compliant with the IEEE802.3af standard?

● Is a single port or the whole unit overloaded?

■ The port LED (Left) is flashing orange when the LED displays the Power supply mode.

● Is the whole unit overloaded because power request exceeds the limit of 124 W?

■ Power supply suddenly stops.

● If you are using a PoE power receiving device that has different power consumption between during normal operation and during standby power consumption, the Switching Hub may be overloaded.
→ After switching the LED mode to the Power supply mode (PoE), verify that a single port is not overloaded [the Port LED (Left) is not flashing orange] or that power supply is not exceeding the limit of the whole unit (The PoE LIM. LED is not flashing orange).

7. After-sales Service

1. Warranty card

A warranty card is included in the operating instructions (paper) provided with this Switching Hub. Be sure to confirm that the date of purchase, shop (company) name, etc., have been entered in the warranty card and then receive it from the shop. Keep it in a safe place. The warranty period is one year from the date of purchase.

2. Repair request

If a problem is not solved even after taking the steps shown in the "Troubleshooting" section in this manual, please use the Memo shown on the next page and make a repair request with the following information to the shop where you purchased this Switching Hub.

- ◆ Product name ◆ Model No.
- ◆ Product serial No.(11 alphanumeric characters labeled on the product)
- ◆ Firmware version(The number after "Ver." labeled on the unit package)
- ◆ Problem status (Please give as concrete information as possible.)
- ● Within the warranty period:
  Repair service will be provided in accordance with the conditions stipulated in the warranty card.
  Please bring your product and warranty card in the shop where you purchased it.
- ● After the warranty period expires:
  If our check determines that your product is repairable, a chargeable repair service is available upon your request.
  Please contact the shop where you purchased the product.

3. Inquiries about after-sales service and the product

Contact the shop where you purchased the product or call/fax the following number.

Memo(Fill in for future reference)

<table>
<tr><td rowspan="2">Date of purchase</td><td colspan="6" rowspan="2"></td><td>Product name</td><td colspan="4">Switch-S24GPWR</td></tr>
<tr><td>Model No.</td><td colspan="4">PN25249</td></tr>
<tr><td rowspan="2">Firmware version (*)</td><td colspan="3">Boot Code</td><td colspan="7"></td></tr>
<tr><td colspan="3">Runtime Code</td><td colspan="7"></td></tr>
<tr><td rowspan="2">Serial No.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="11">(11 alphanumeric characters labeled on the product)</td></tr>
<tr><td>Shop/Sales company</td><td colspan="11">Tel:</td></tr>
<tr><td>Customer service contact</td><td colspan="11">Tel:</td></tr>
</table>

(* You can check the version on the screen described in Section 4.2 of the Operation Manual - for Menu Interface.)

Panasonic Life Solutions Networks Co., Ltd.

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P1014-3100