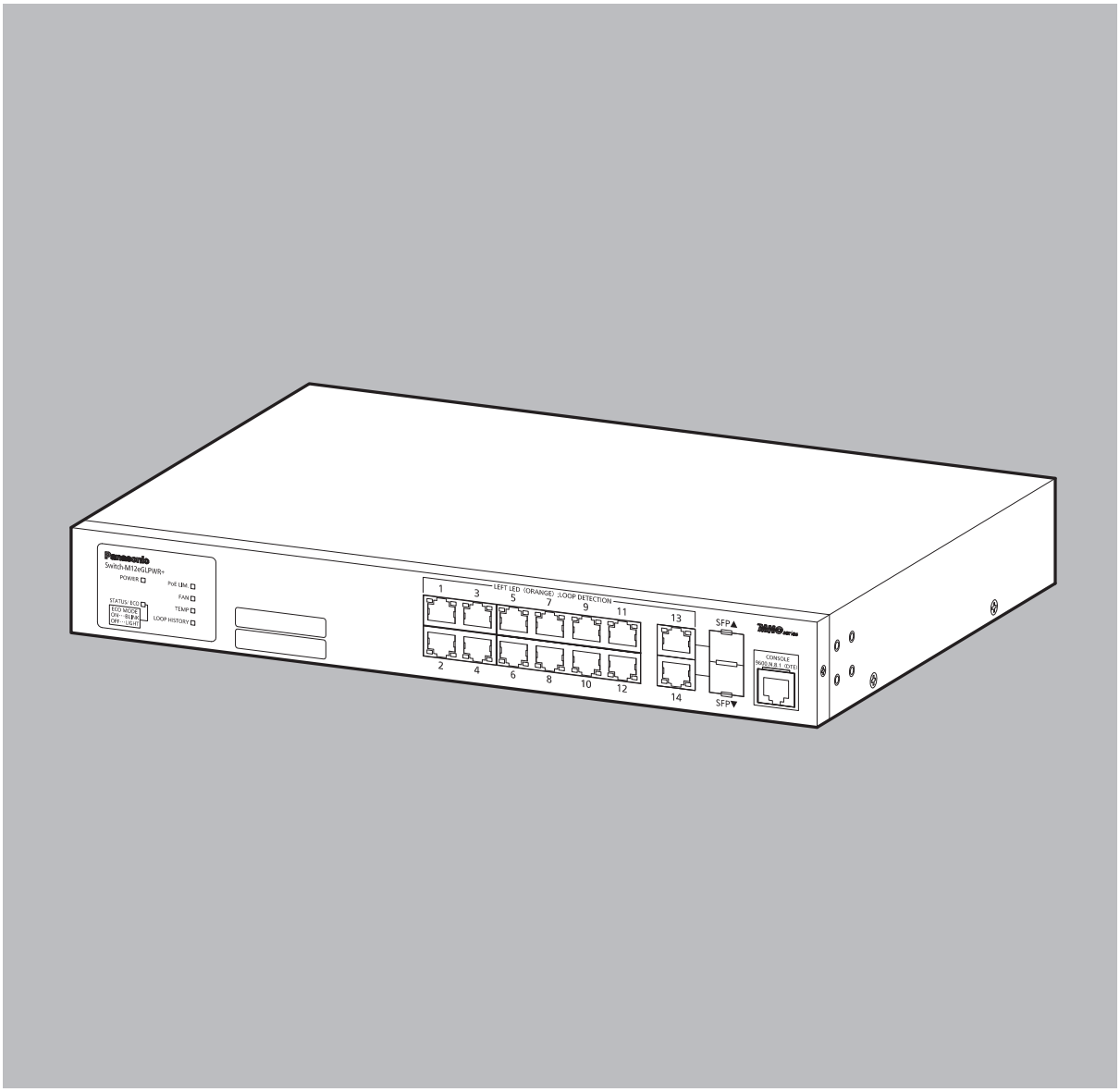
Panasonic®

Operation Manual
for Menu Interface

Switch-M12eGLPWR+

Model Number: PN28128

- 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 3 to 6.
- If you disassemble this Switching Hub for any reason, damage is not covered by warranty.



The target model for this Operation Manual is as follows.

Model name	Model number	Firmware version
Switch-M12eGLPWR+	PN28128-ID	2.0.0.00 and higher
	PN28128-TH	
	PN28128-MY	
	PN28128-SG	

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.

⚠WARNING	
⃠	●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, SFP extension slot), 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 insert any modules other than the optional SFP modules (PN54021K/PN54023K) into the SFP extension slot. Deviation could lead to fire, electric shock, and/or equipment failure. For the latest information about compatible SFP extension modules, check our website. ●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 any module other than the separately sold SFP module (PN54021K/PN54023K) to SFP extension slot. Deviation could lead to fire, electric shock, and/or equipment failure. ●Do not install this Switching Hub at the location with continuous vibration or strong shock, or at the unstable location. Deviation could lead 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 bundled power cord for anything other than this product. Deviation could lead to fire, electric shock, and/or equipment failure.

⚠ WARNING	
	●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. ●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), FAN LED (fan sensor), or TEMP LED (temperature sensor), 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 IEEE802.3at 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.
- Connect cables while holding the Switching Hub down.
- 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, or the metal terminal of the SFP extension slot. Do not place charged objects in the proximity of them. Static electricity could lead to equipment failure.
- Do not put the modular plug of the connected twisted pair cable on objects that can carry static charge, such as carpet. Do not place it in the proximity. Static electricity could lead to equipment failure.
- Do not put a strong shock, including dropping, to this 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 50 degrees C. Failure 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.Deviation could lead to high internal temperature, 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 mini- mum of 20 mm space them.
- ●When mounting Switching Hubs in a rack, leave a minimum of 20 mm space between them.
- ●Please note that operation will not be guaranteed if any module other than the separately sold SFP extension modules (PN54021K/PN54023K) is installed into SFP extension slot. For the latest information about compatible SFP extension modules, check our website.

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.

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1. Product Outline

Switch-M12eGLPWR+ is an Ethernet Switching Hub with management function having 12 ports of 10/100/1000BASE-T and two pairs of 10/100/1000BASE-T ports and SFP extension slot, one of which is selectable.
Ports 1 to 12 support IEEE802.3at PoE power supply function.

1.1. Features

* Ports 1 to 14 are 10/100/1000BASE-T ports corresponding to auto negotiation. Also their speed and communication mode can be switched by configuration. Ports 13 and 14 can be used as a 10/100/1000BASE-T port corresponding to auto negotiation or an SFP extension slot exclusively.
* Ports 1 to 12 can supply power conforming with IEEE802.3at. Supplying power up to 30 W per port, and up to 185 W in total is possible.
* All twisted pair ports support straight/cross cable auto sensing function. Simply connect devices with straight cables, whether it is a terminal or a network device. (This function does not work if the port communication configuration is set at Fixed or Link Aggregation. Ports 1 to 12 are set at MDI-X. (default))
* Equipped with energy efficient Ethernet (EEE) conforming to IEEE802.3az (LPI). When there is no data transmission at link up, the energy-saving state automatically starts so that power consumption can be reduced on each port.
* Telnet/SSH allows remote configuration changes and verifications of the Switching Hub. Remotely configure the PoE settings for each port (Ports 1 to 12).
* Embedded power saving mode detects the connection status automatically and saves power consumption to minimum.
* The IEEE802.1w Rapid Spanning Tree Protocol is supported, allowing to build a system with redundancy.
* The IEEE802.1p compatible QoS function is supported.
* The IEEE802.1X compatible user authentication function (EAP-MD5/TLS/PEAP) is supported.
* Has an Internet Mansion function, which ensures security between each door.
* Due to the loop detection/blocking function, a port where loop has occurred can be automatically shut off to prevent loop failures. When a port is shut off and recovered automatically, SNMP trap can be sent to notify the incident to the administrator. Moreover, the port with a loop can be identified by loop notification on the LEDs on the main unit and referring the history of loop on the setting screen.
* The PoE scheduler function enables scheduling of PoE power supply control.

1.2. Accessories

Please be sure to confirm the contents. Please contact our distributor if any of the contents are insufficient.

	Quantity
* Switch-M12eGLPWR+	1
* Installation Guide	1
* CD-ROM (PDF version of Operating Instructions)	1
* Rubber foot	4
* Mounting bracket (for 19-inch rack)	4
* Screw (for 19 inch rack)	4
* Screw (for fixing the main unit and the 19-inch rack mount bracket)	8
* Power cord (The bundled power cord is dedicated for AC 100 - 240 V use.)	1

1.3. Optional Accessories

* PN54021K
  SFP-1000SX 1000BASE-SX SFP Module
* PN54023K
  SFP-1000LX 1000BASE-LX SFP Module

1.4. Part Names and Functions

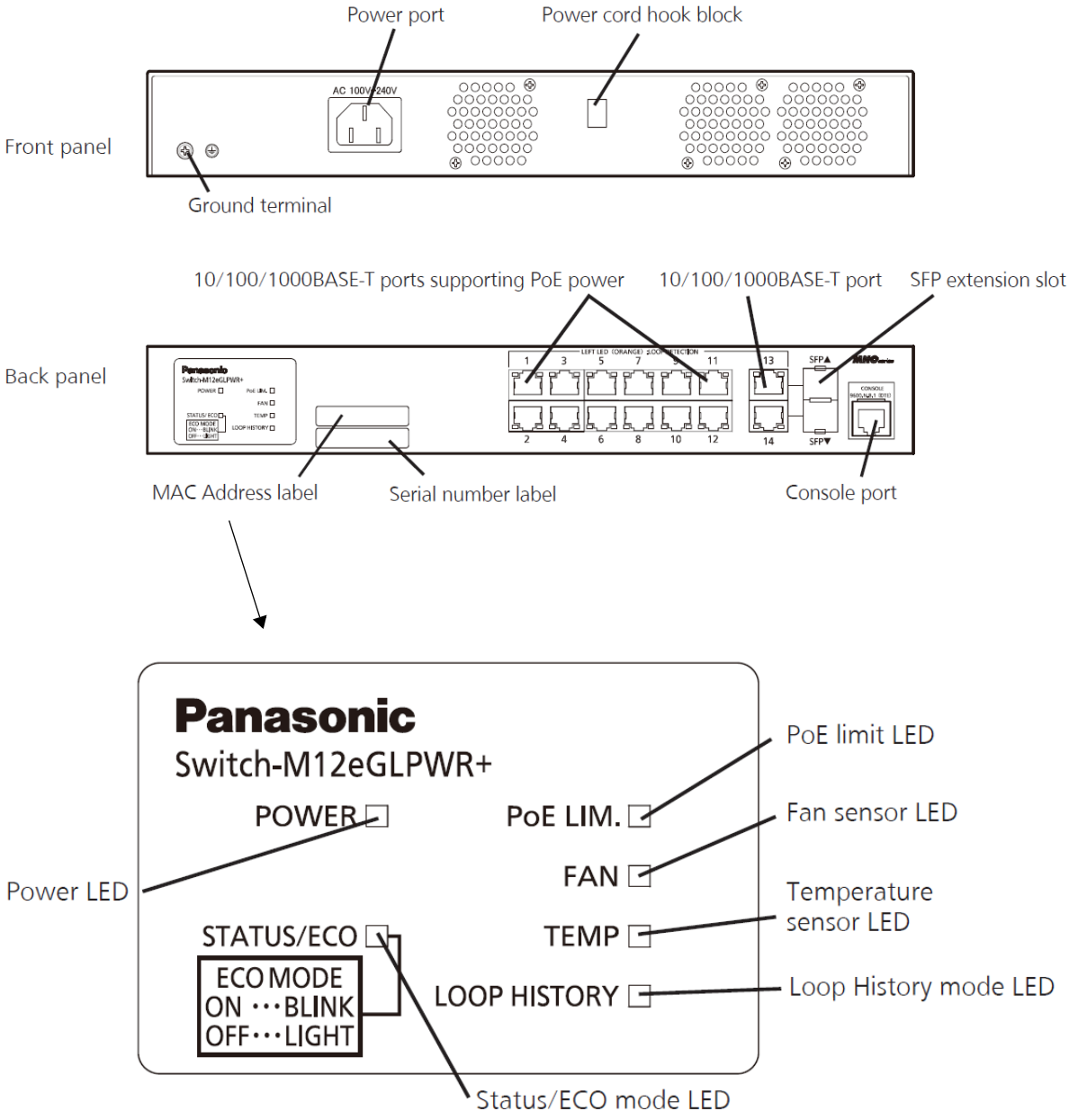


Figure 1-1 Part names

- Power port
  Connect the supplied power cord to this point and connect the other end into an electric outlet.
- Power cord hook block
  Hooking the supplied power cord on the block makes the cord less likely to be unplugged from the power port.
- Ground terminal
  Connect the ground terminal screw and grounding surface using the ground wire.
- MAC address label
  Displays the MAC address of this Switching Hub.
- Serial number label
  Displays the serial number of this Switching Hub.
- 10/100/1000BASE-T port (ports 1 to 12) supporting PoE power supply
  Supports IEEE802.3at PoE power supply. Connect a Powered Device supporting IEEE802.3at. 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 (CAT5e or above) connecting this Switching Hub and a device must be 100 m or shorter.
- 10/100/1000BASE-T port (ports 13 and 14)
  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 (CAT5e or above) connecting this Switching Hub and a device must be 100 m or shorter.
- SFP extension slot (ports 13 and 14, exclusive usage with twisted pair port)
  The supported SFP modules (sold separately) can be attached to the slots.
- Console port
  Connect a VT100 compatible terminal, etc. with this port to configure or 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	Transmission connector	:	RJ45

1.5. LED Behavior

1.5.1. LED Behavior at Starting-up

When power is supplied, all the LEDs are turned ON.
Then, self-diagnosis of hardware is executed.
On completion of self-diagnosis, POWER LED (Power), STATUS/ECO LED (Status/ ECO mode), FAN LED (Fan sensor), TEMP LED (Temperature sensor) light in green, and the Switching Hub starts operation as a Switching Hub.

1.5.2. 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 is On
	Off	Power is Off
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	Malfunction. (Contact the seller.)
	Off	Power is Off
PoE limit LED (PoE LIM.)	Off	Supplying power in the range from 0 to 170 W.
	Green Light	Supplying power in the range from 170 to 185W.
	Orange Blink	A single port's power supply is exceeding the upper limit, or the total power supply of the Switching Hub is exceeding 185W
Fan sensor LED (FAN)	Green Light	The fan is operating normally.
	Orange Blink	Fan error.
Temperature sensor LED (TEMP)	Green Light	Within the threshold setting of the internal temperature sensor.
	Orange Blink	Exceeding the threshold setting of the internal temperature sensor. (For details, refer to Section 4.5.3.c.)
Loop History mode LED (LOOP HISTORY)	Green Blink	Loop is occurring, or occurred within the last 3 days.
	Off	No loop detection history.

● Port LED

Port LED	Display mode	Behavior	Description
Left	STATUS/ECO (when the LOOP HISTORY LED is off)	Green Light	Link is established at 10/100/1000 Mbps.
		Green Blink	Transmitting and receiving data.
		Orange Light	Shut off by the loop detection/shutoff function.
		Off	No device connected, or set to ECO mode.
	STATUS/ECO (when the LOOP HISTORY LED is blinking)	Green Light	Within three days after a loop has been elimi-nated.
		Off	No loop detection history.
Right	PoE	Green Light	Power is supplied normally. (ports 1-12 only)
		Orange Blink	Overload power supply or overload in a single port. (ports 1-12 only)
		Off	Power is not supplied or PoE receiving equipment is not connected. * port 13 and 14 are always off.

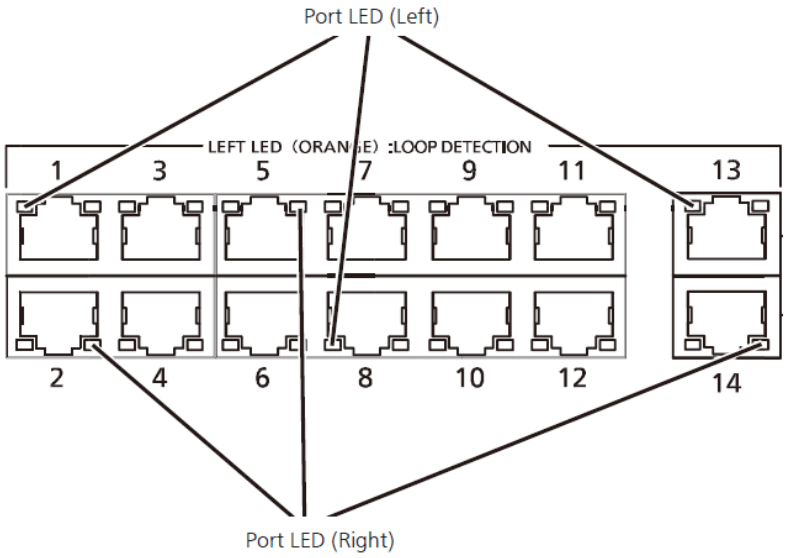


Figure 1-1 Port LEDs

1.5.3. Loop Detection and Blocking Function

When a port causes a loop, the corresponding port LED (Left) 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 recovered, the port will be blocked again. Recover the loop while the port is blocked.
During loop is occurring, or if loop has occurred within the latest 3 days, LOOP HISTORY LED blinks to notify this. You can change the loop detection function settings (Enable/Disable) on the configuration screen. For details about settings on the configuration screen, refer to Section 4.6.11. If you want 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.

1.5.4. Operation Overview of PoE Power Supply Function

Ports 1-12 can support IEEE802.3at PoE power supply. The Switching Hub can supply power up to 30 W per port, and up to 185 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 because power request exceeds the limit, you can verify a port that stopped supplying power by the corresponding port LED (Right). 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 verify a port that stopped supplying power by the corresponding port LED (Right). 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 higher priority is blocked and stops supplying power.(If other ports have same priority, a port with a larger port number is blocked and stops supplying power.)

2. Installation

Switch-M12eGLPWR+ can be installed in a 19-inch rack.

2.1. Installing in Rack

Use the supplied two 19-inch rack mount brackets and eight screws (for fixing the mount brackets to the Switching Hub) to fix the mount brackets to the four holes on each side of the Switching Hub. Then securely install the Switching Hub on the rack using the supplied four screws (for a 19-inch rack mount) or screws supplied with the rack.

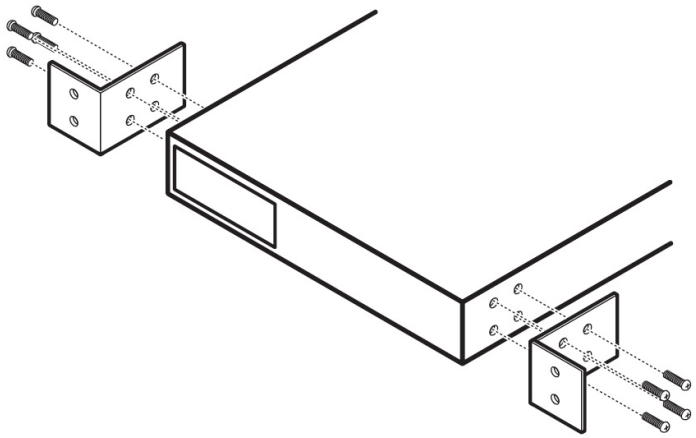


Figure 2-1 Bottom face

3. Connection

3.1. Connecting a Twisted Pair Port

● Connection Cable

Use a CAT5e-compliant straight cable (twisted pair) with 8P8C RJ45 modular plugs when connecting.

● Network Configuration

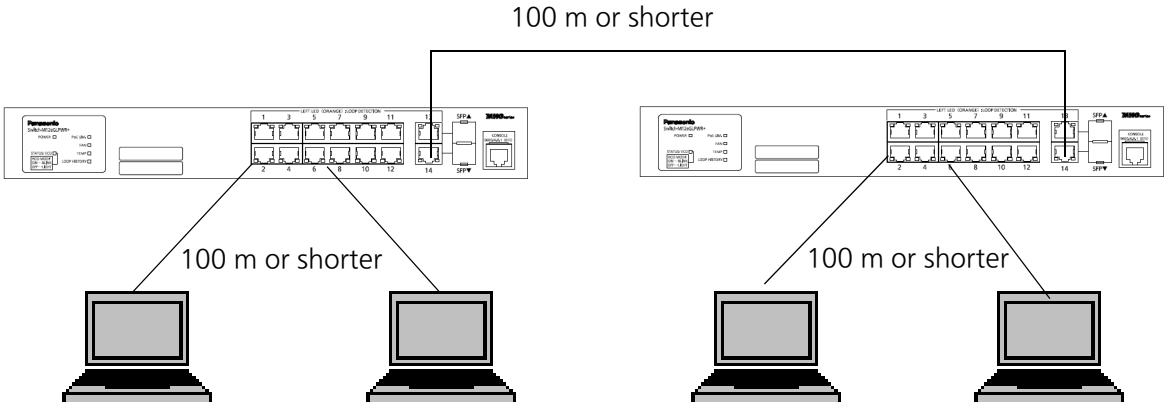


Figure 3-1 Connection configuration example

The length of the cable connecting this Switching Hub and a device must be 100m or shorter. When a terminal or a LAN device with auto negotiation function is connected to this Switching Hub, the port is automatically configured at the highest performance mode. When a terminal or a LAN device without auto negotiation function is connected to this Switching Hub, 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 LAN device without auto negotiation function, a fixed-mode port configuration needs to be set. For detailed configuration procedure, refer to Section 4.5.4.

Note: If a fixed-mode port configuration mode is set, Auto-MDI/MDI-X function does not work. Therefore, use a cross cable to connect them.

3.2. Connecting an SFP Extension Slot

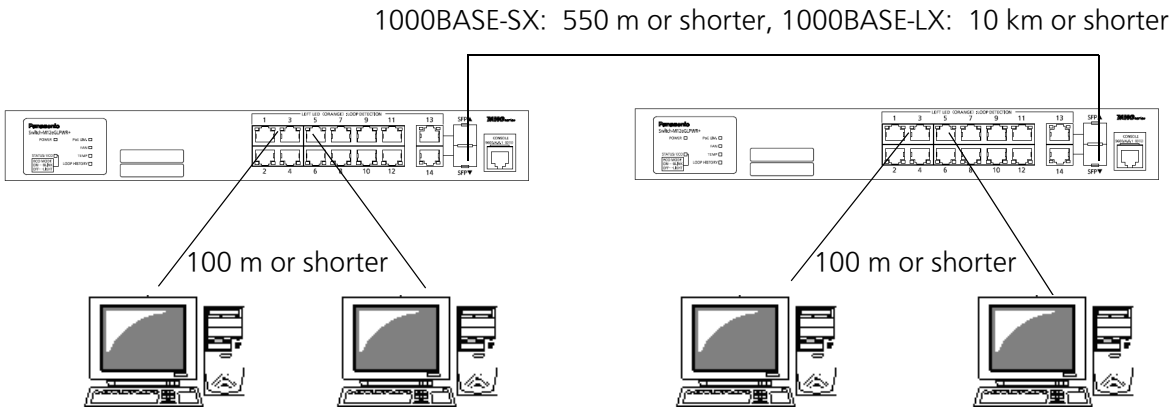


Figure 3-2 Optical fiber cable connection example

Plugging an SFP module (optional) into an SFP extension slot enables an optical fiber connection. By factory default, the twisted pair port is enabled, but the SFP extension port is automatically enabled when a link is established.
Connect this Switching Hub's TX port to the RX port of the connected device and this Switching Hub's RX port to the TX port of the connected device.

The following SFP modules are optionally available:
* 1000BASE-SX SFP module (Part number: PN54021K)
* 1000BASE-LX SFP module (Part number: PN54023K)

3.3. Connecting to Power

Connect the bundled power cord to the power port of this Switching Hub and connect the power plug into an electric outlet. The Switching Hub operates on AC 100-240 V (50/60 Hz).
This Switching Hub does not have a power switch. Plugging the power cord turns on this Switching Hub's power and it 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 Section 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.

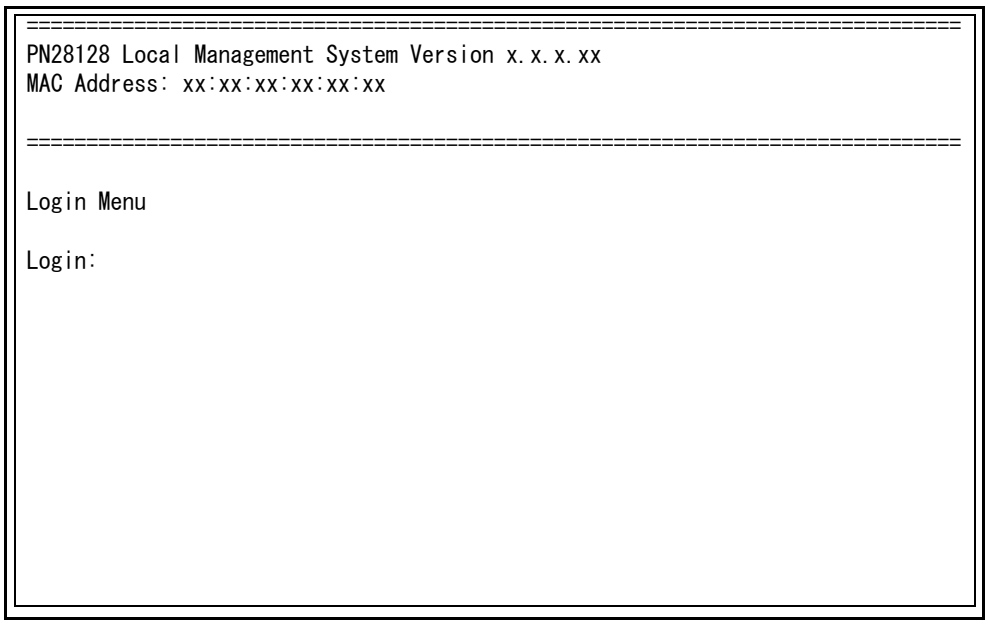


Figure 4-1 Login screen (Console)

If you access the Switching Hub via Telnet or SSH, the screen displays "Remote Management System", similar to **Figure 4-2**.

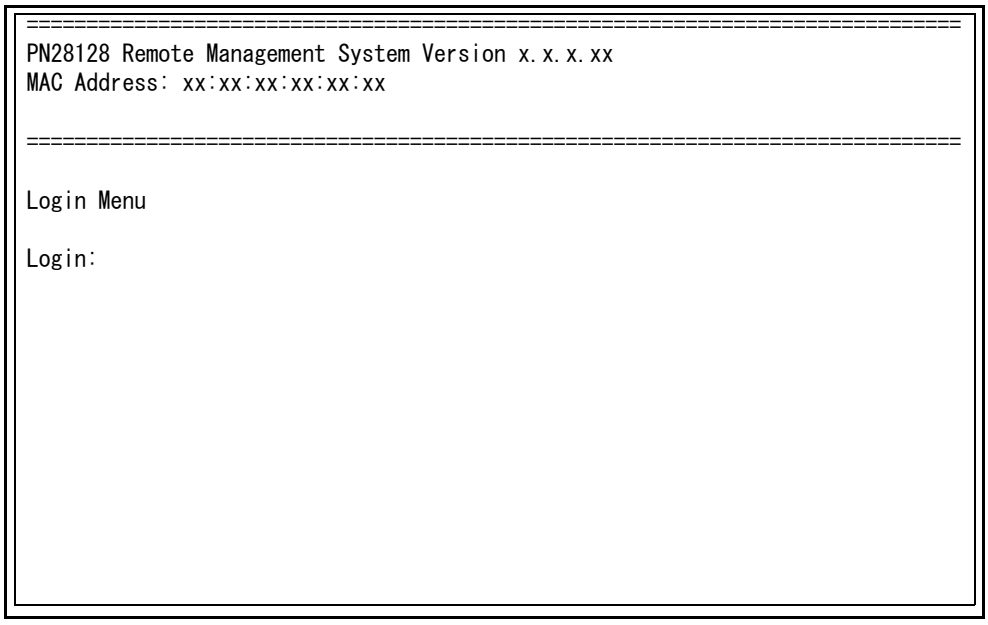


Figure 4-2 Login screen (Telnet/SSH)

On the login screen, similar to Figure 4-1 or Figure 4-2, 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 4-3 displays. The Switching Hub's default password is the same as the login name ("manager"). Enter the password correctly and press the Return key.

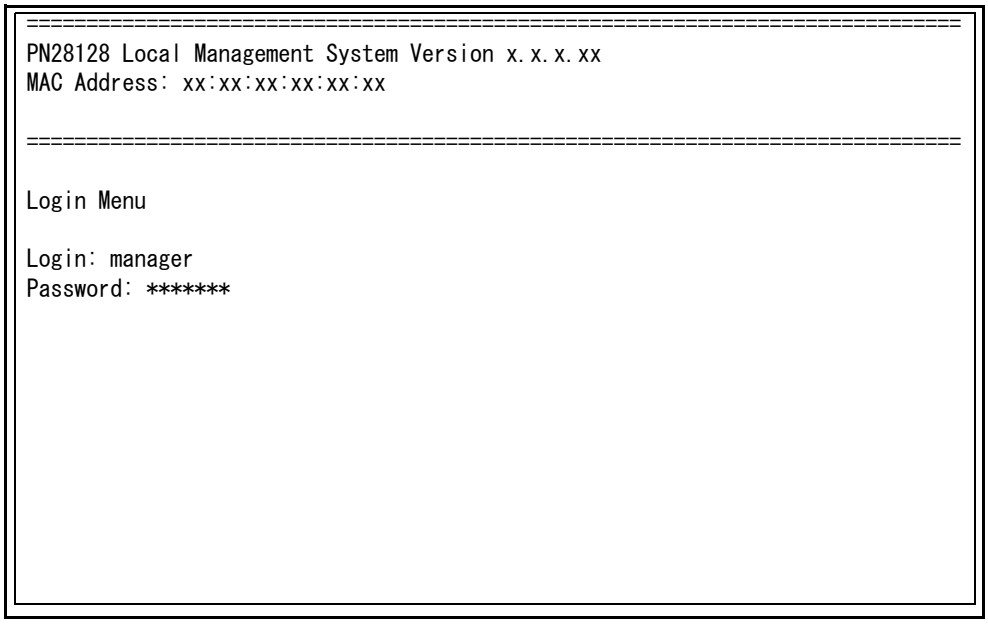


Figure 4-3 Entering password

Both the login name and password can be changed. For the detailed change procedure, refer to Section 4.5.7.

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. Basic Operations on the Screen

The console screen of this Switching Hub is organized as follows:

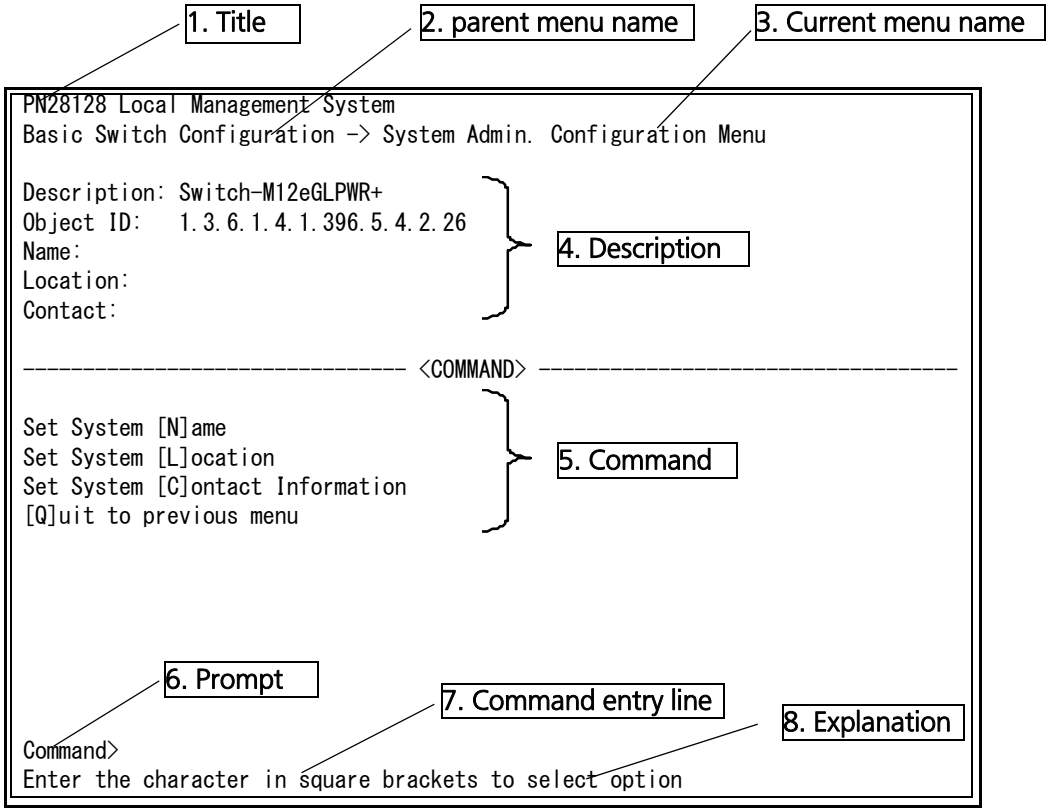


Figure 4-4 Screen structure

Screen Description

1.	Title	The title of this screen. Displays "Local Management System" while being accessed via console. Displays "Remote Management System" while being accessed via Telnet or SSH.
2.	Previous menu name	Displays the name of the parent menu. Entering the "Q" command opens the parent menu screen.
3.	Current menu name	Displays the name of the current screen.
4.	Configuration	Displays the current configuration.
5.	Command	Displays the commands available on this screen. Available commands differ on each screen. Select a command from the list.
6.	Prompt	Changes as you enter a command, indicating what you need to enter next. Follow this instruction.
7.	Command entry line	Enter a command or settings.
8.	Explanation	Displays the explanation and/or status of this screen. Also, displays an entry error message if applicable.

All operations on this screen are done by entering letters. Using a cursor or other operations are not available. Available commands (letters) differ on each screen. They are shown in the command section. One letter of each command is enclosed in square brackets ([]). If you enter a command or setting not available, an error message is shown in the explanation field.

4.3. Main Menu

After the login process, the main menu, similar to Figure 4-5, appears.
This Switching Hub has a main menu and multiple sub-menus. These menus has a tree structure, with the main menu as its root. To move to a sub-menu, enter a command letter. To return to the previous menu, press the "Q" command. The second line from the top displays the current menu name.

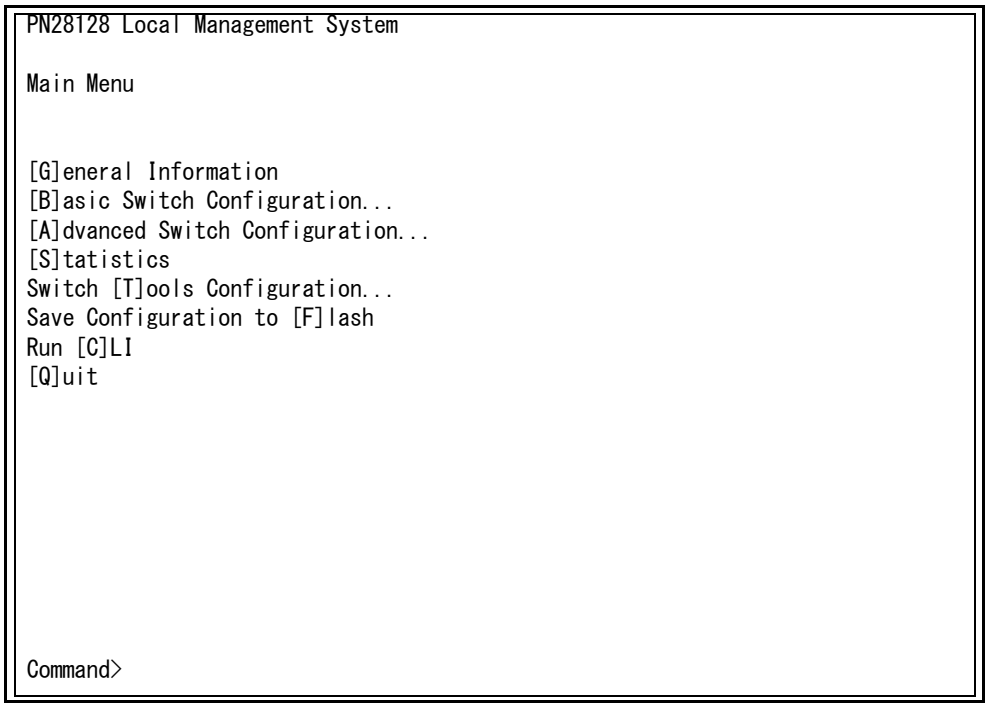


Figure 4-5 Main menu

Screen Description

General Information	Displays this Switching Hub's hardware, firmware and IP address settings.
Basic Switch Configuration	Configures this Switching Hub's basic functions (such as IP address, SNMP and port).
Advanced Switch Configuration	Configures this Switching Hub's advanced functions (such as VLAN, Link Aggregation, Spanning Tree, QoS, IEEE802.1X authentication, IGMP Snooping, and PoE).
Statistics	Displays this Switching Hub's statistical information.
Switch Tools Configuration	Set this Switching Hub's additional tools (such as firmware update, saving/reading settings, Ping, and system log).
Save Configuration to Flash	Saves this Switching Hub's settings into its internal flash memory.
Run CLI	Switches to a command line interface (CLI).
Quit	Logouts and returns to the login screen.

4.4. General Information Menu

On the Main Menu, pressing "G" opens the General Information Menu screen, as shown in Fig. 4-6. This screen displays this Switching Hub's basic information. You cannot edit shown information on this screen.

```
PN28128 Local Management System
Main Menu -> General Information

System up for:                OOOday(s), OOhr(s), OOmin(s), OOsec(s)
Boot / Runtime Code Version: x.x.x.xx / x.x.x.xx
Hardware Information
  Version:                    Versionx
  CPU Utilization:            xx.xx %
  DRAM / Flash Size:          128MB / 32MB
  DRAM User Area Size:        Free: xxxxxxxx bytes / Total: xxxxxxxx bytes
  System Fan Status:          Good
  System Temperature:         CPU/xx ,System/xx degree(s) Celsius

Administration Information
  Switch Name:
  Switch Location:
  Switch Contact:
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
  DHCP Mode:                  Disabled
Press any key to continue...
```

Fig. 4-6 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 4.8.1 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.
	System Fan Status	Displays the operation status of the installed fan. Displays "Good" when the fan is operating normally and "Fail" when it fails or stops.
	System Temperature	Displays the internal temperatures of the Switching Hub. The sensors measure the temperatures of the CPU and system.
Administration Information	Items shown here are configured in accordance with Section 4.5.1 "System Administration Configuration".	
	Switch Name	Displays the Switching Hub name. The factory default setting is blank. For configuration details, refer to Section 4.5.1.
	Switch Location	Displays the Switching Hub's location. The factory default setting is blank. For configuration details, refer to Section 4.5.1.
	Switch Contact	Displays the contact information. The factory default setting is blank. For configuration details, refer to Section 4.5.1.
System Address Information	Items shown here are configured in accordance with Section 4.5.2 "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 4.5.2.
	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 4.5.2.
	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 4.5.2.
	DHCP Mode	Displays whether to get an IP address using DHCP. For configuration details, refer to Section 4.5.2.

4.5. Basic Switch Configuration

On the Main Menu, pressing "B" opens the Basic Switch Configuration Menu screen, as shown in Fig. 4-7. On this screen, you can configure the basic configuration settings, such as IP address, SNMP, and ports.

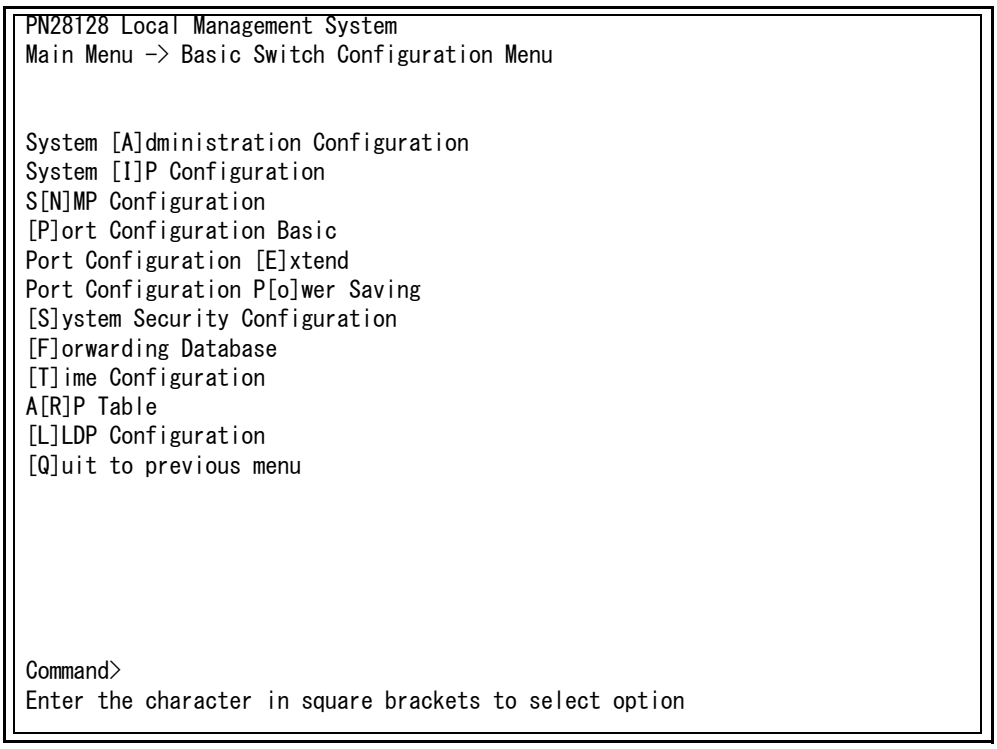


Fig. 4-7 Basic Switch Configuration Menu

Screen Description

System Administration Configuration	Configures the management information settings, such as Switching Hub name, place, and contact used for SNMP.
System IP Configuration	Configures the IP-address-related network information.
SNMP Configuration	Configures the SNMP-related settings.
Port Configuration Basic	Configure the basic settings 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.
ARP Table	Displays the ARP table.
LLDP Configuration	Configures LLDP-related settings.
Quit to previous menu	Returns to the main menu.

4.5.1. System Administration Configuration

On the Basic Switch Configuration Menu, pressing "A" opens the System Administration Configuration Menu screen, as shown in Fig. 4-8. On this screen, you can set administrative information, such as device name.

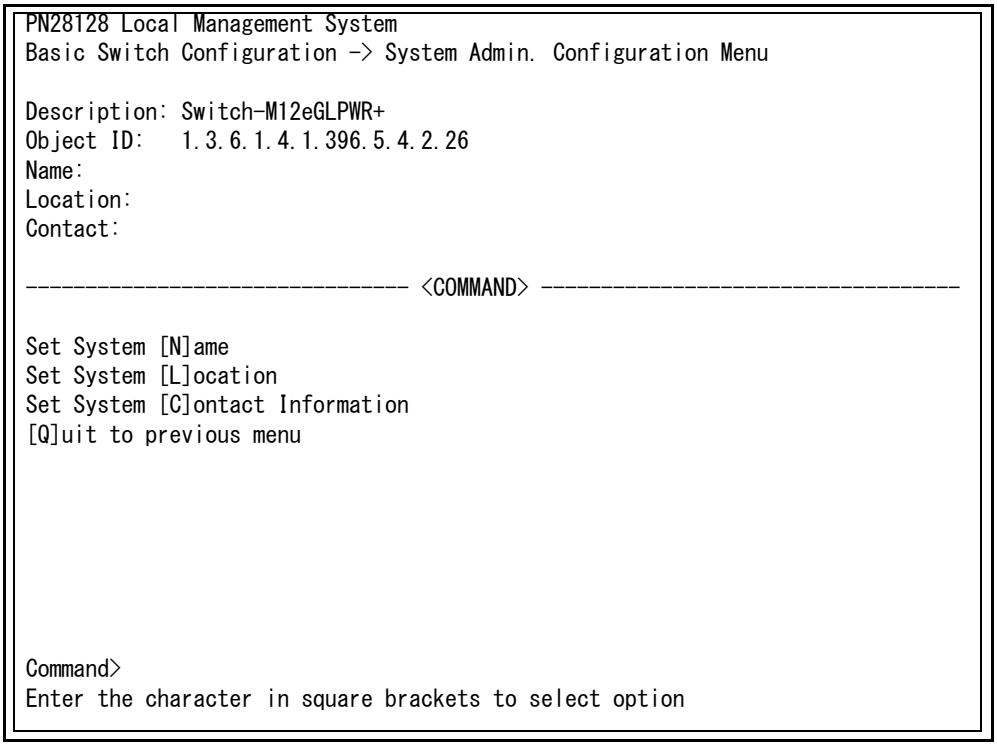


Fig. 4-8 System Administration Configuration

Screen Description

Description	Displays the system information. This item is not editable.
Object ID	Displays the ID, corresponding to MIB. This item is not editable.
Name	Displays the system name. The factory default setting is blank.
Location	Displays the device installation location. The factory default setting is blank.
Contact	Displays the contact information. 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 Switching Hub name in 50 characters or less.
L	Set/edit the device installation location information.
	Press "L." The command prompt changes to "Enter system location>." Enter a Switching Hub location in 50 characters or less.
C	Set/edit the contact information.
	Press "C." The command prompt changes to "Enter system contact>." Enter contact information in 50 characters or less.
Q	Return to the parent menu.

4.5.2. System IP Address Configuration

On the Basic Switch Configuration Menu, pressing "I" opens the System IP Configuration Menu screen, as shown in Fig. 4-9. On this screen, you can set IP-address-related settings for this Switching Hub.

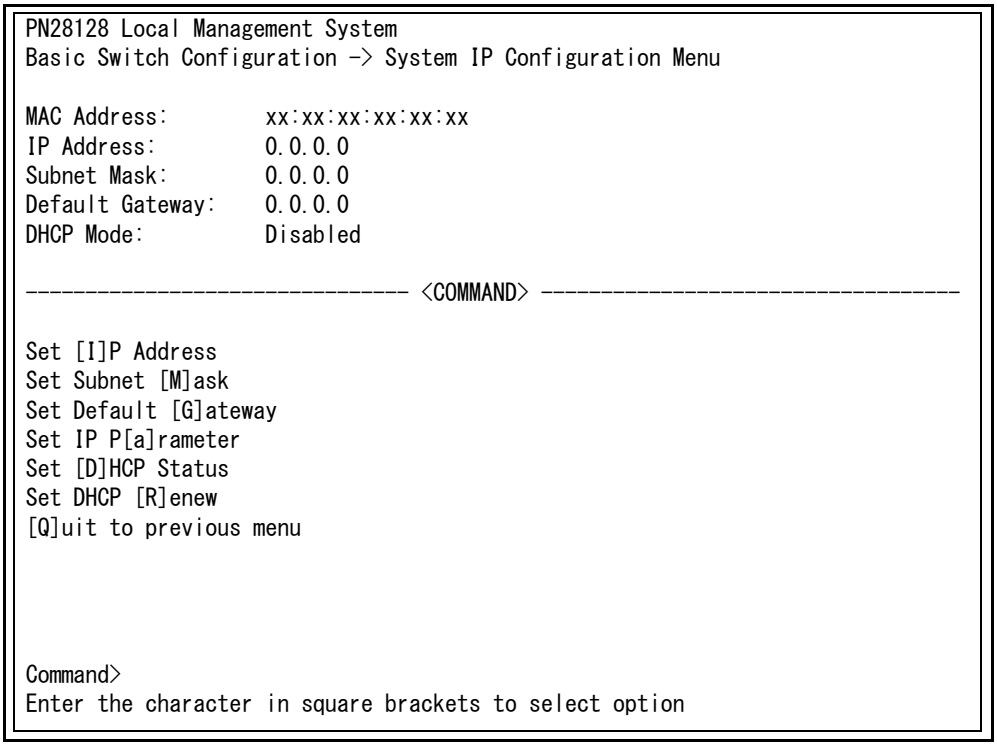


Fig. 4-9 System IP Address Configuration

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 current IP address of the router, set as a default gateway. "0.0.0.0" is the factory default setting.	
DHCP Mode	Displays the DHCP mode. If enabled, the Switching Hub requests an IP address to the DHCP server. "Disabled" is the factory default setting.	
	Enabled	Requests an IP address to the DHCP server when starting up.
	Disabled	Does not request an IP address to the DHCP server when starting up.
DHCP Renew	Renews an IP address from the DHCP server.	

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, used 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.
D	Disable/enable the DHCP mode. If enabled, an IP address is automatically obtained from the DHCP server.	
	E	Enable the DHCP mode. (A DHCP server must be operating on the network.)
	D	Disable the DHCP mode.
R	Renew an IP address from the DHCP server.	
		Press "R." The command prompt changes to "Renew DHCP (Y/N)." To renew, press "Y." Otherwise, press "N."
Q	Return to the parent menu.	

Note: Unless you configure these settings, you cannot use the SNMP management functions and remotely connect to the Switching Hub via Telnet, SSH or Web control screen. Be sure to configure them. If you are unsure, consult the network administrator. All IP addresses on the local network must be unique, and no duplications are allowed. In addition, you need to set the subnet mask and the default gateway, which are the same for other devices on the same subnet using this Switching Hub. These are used for identifying a specific device on the network in combination with IP address.

4.5.3. SNMP Configuration

On the Basic Switch Configuration Menu, pressing "N" opens the SNMP Configuration Menu screen, as shown in **Fig. 4-10**. On this screen, you can configure the SNMP agent settings.

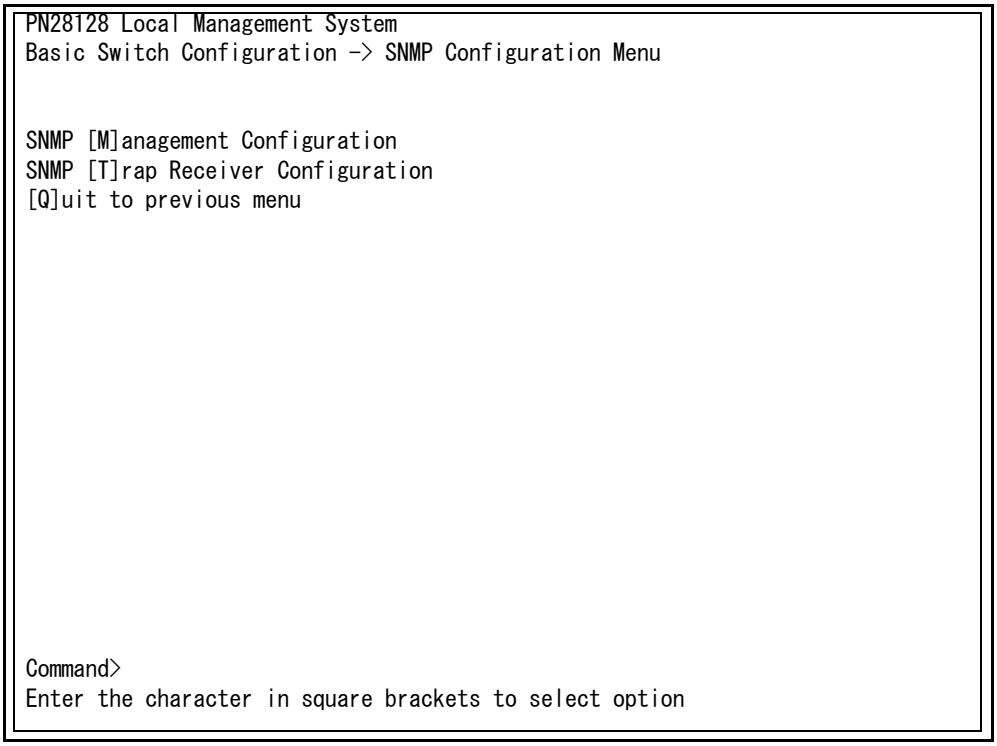


Fig. 4-10 SNMP Configuration

Screen Description

SNMP Management Configuration	Configures the SNMP manager settings. For details, refer to the next section (**4.5.3.a**).
SNMP Trap Receiver Configuration	Configures the SNMP trap sending settings. For details, refer to the next section (**4.5.3.b**).
Quit to previous menu	Return to the parent menu.

Available commands are listed below.

M	Configure the SNMP manager settings.	
		Press "M" to move to the SNMP Management Configuration Menu.
T	Configure the SNMP trap settings.	
		Press "T" to move to the SNMP Trap Receiver Configuration Menu.
Q	Quit the SNMP Configuration Menu and return to the parent menu.	

4.5.3.a. SNMP Management Configuration

On the SNMP Configuration Menu, pressing "M" opens the SNMP Management Configuration Menu screen, as shown in Fig. 4-11. On this screen, you can configure the SNMP manager settings.

```
PN28128 Local Management System
SNMP Configuration -> SNMP Management Configuration Menu

SNMP Manager List:
 No.   Status    Privilege     IP Address         Community
----  --------  -----------  ---------------  ------------------------------
  1   Enabled   Read-Write   0.0.0.0          private
  2   Enabled   Read-Only    0.0.0.0          public
  3   Disabled  Read-Only    0.0.0.0
  4   Disabled  Read-Only    0.0.0.0
  5   Disabled  Read-Only    0.0.0.0
  6   Disabled  Read-Only    0.0.0.0
  7   Disabled  Read-Only    0.0.0.0
  8   Disabled  Read-Only    0.0.0.0
  9   Disabled  Read-Only    0.0.0.0
 10   Disabled  Read-Only    0.0.0.0

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

Set Manager [S]tatus      Set Manager [I]P          [Q]uit to previous menu
Set Manager P[r]ivilege   Set Manager [C]ommunity

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

Fig. 4-11 SNMP Management Configuration

Screen Description

SNMP Manager List:	Displays the current SNMP manager settings.		
	No.	Displays the entry number on the SNMP Manager List.	
	Status	Displays the SNMP manager status.	
		Enabled	The SNMP manager is enabled.
		Disabled	The SNMP manager is disabled.
	Privilege	Displays the access privilege of the SNMP manager.	
		Read-Write	Both the read and write operations are allowed.
		Read-Only	Only the read operation is allowed.
	IP Address	Displays the IP address of the SNMP manager.	
	Community	Displays the current community name.	

Available commands are listed below.

S	Set the SNMP manager status.
	1. Press "S." The command prompt changes to "Enter manager entry number>." Enter the entry number for the SNMP manager you wish to configure. 2. Then, the command prompt changes to "Enable or Disable SNMP manger (E/D)>." Press "E" to enable the SNMP manager. Press "D" to disable it.
I	Set the IP address for an SNMP manager.
	1. Press "I." The command prompt changes to "Enter manager entry number>." Enter the entry number for the SNMP manager you wish to configure. 2. Then, the command prompt changes to "Enter IP address for manager>." Enter the IP address.
R	Set the access privileges for an SNMP manager.
	1. Press "R." The command prompt changes to "Enter manager entry number>." Enter the entry number for the SNMP manager you wish to configure. 2. Then, the command prompt changes to "Enter the selection>." Press "1" for read-only permission. Press "2" for read-and-write.
C	Set the community name for an SNMP manager.
	1. Press "C." The command prompt changes to "Enter manager entry number>." Enter the entry number for the SNMP manager you wish to configure. 2. Then, the command prompt changes to "Enter community name for manager>." Enter the community name.
Q	Return to the parent menu.

4.5.3.b. SNMP Trap Receiver Configuration

On the SNMP Configuration Menu, pressing "T" opens the SNMP Trap Receiver Configuration Menu screen, as shown in Fig. 4-12. On this screen, you can configure the SNMP Trap settings.

```
PN28128 Local Management System
SNMP Configuration -> SNMP Trap Receiver Configuration Menu

Trap Receiver List:
 No.   Status    Type    IP Address          Community
----  --------   -----   ---------------     ----------------------------
  1   Disabled   v1      0.0.0.0
  2   Disabled   v1      0.0.0.0
  3   Disabled   v1      0.0.0.0
  4   Disabled   v1      0.0.0.0
  5   Disabled   v1      0.0.0.0
  6   Disabled   v1      0.0.0.0
  7   Disabled   v1      0.0.0.0
  8   Disabled   v1      0.0.0.0
  9   Disabled   v1      0.0.0.0
 10   Disabled   v1      0.0.0.0

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

Set Receiver [S]tatus     Set Receiver [I]P          In[d]ividual Trap Config
Set Trap [T]ype           Set Receiver [C]ommunity   [Q]uit to previous menu

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

Fig. 4-12 SNMP Trap Receiver Configuration

Screen Description

Trap Receiver List:	Displays the IP addresses and the community names for the current trap receivers.		
	No.	Displays the entry number for the trap receiver.	
	Status	Displays the trap sending setting.	
		Enabled	Sends traps.
		Disabled	Does not send traps.
	Type	Displays the type of traps.	
		V1	Sends traps of SNMP v1.
		V2	Sends traps of SNMP v2.
	IP Address	Displays the IP address of the trap receiver.	
	Community	Displays the current community name, set for sending traps.	

Available commands are listed below.

S	Enable/disable the trap receiver.	
		1. Press "S." The command prompt changes to "Enter manager entry number>." Enter the entry number for the trap receiver you wish to configure. 2. Then, the command prompt changes to "Enable or Disable Trap Receiver (E/D)>." Press "E" to enable the trap receiver. Press "D" to disable it.
I	Set the IP address for the trap receiver.	
		1. Press "I." The command prompt changes to "Enter manager entry number>." Enter the entry number for the trap receiver you wish to configure. 2. Then, the command prompt changes to "Enter IP address for trap receiver>." Enter the IP address.
D	Set trap sending when the link status is changed.	
		Press "D." The screen changes to the Enable/Disable Individual Trap Menu. For detailed configuration, refer to the next section (**4.5.3.c**).
T	Set the type of traps.	
		1. Press "T." The command prompt changes to "Enter manager entry number>." Enter the entry number for the trap receiver you wish to configure. 2. Then, the command prompt changes to "Enter the selection>." Press "1" for SNMP v1. Press "2" for SNMP v2.
C	Set the community name for the trap receiver.	
		1. Press "C." The command prompt changes to "Enter manager entry number>." Enter the entry number for the trap receiver you wish to configure. 2. Then, the command prompt changes to "Enter community name for trap receiver>." Enter the community name.
Q	Return to the parent menu.	

4.5.3.c. Enable/Disable Individual Trap Menu

On the SNMP Trap Receiver Configuration Menu, pressing "D" opens the Enable/ Disable Individual Trap Menu screen, as shown in Fig. 4-13. On this screen, you can set the trap sending settings.

```
PN28128 Local Management System
SNMP Trap Receiver Configuration -> Enable/Disable Individual Trap Menu

SNMP Authentication Failure :    Disabled
Enable Link Up/Down Port:        1-14
PoE Trap Control:                Enabled
Temperature Trap Control:        Disabled
Temperature Threshold:           66 degree(s) Celsius
FAN Failure:                     Enabled

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

Enable/Disable [A]uth Fail Trap
Add Link Up/Down Trap [P]orts
[D]elete Link Up/Down Trap Ports
Enable/Disable Po[E] Trap
Enable/Disable [T]emperature Trap
[S]et Temperature Threshold
Enable/Disable [F]AN Fail Trap
[Q]uit to previous menu


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

Fig. 4-13 Enable/Disable Individual Trap

Screen Description

SNMP Authentication Failure:	Displays the trap sending settings for an SNMP authentication failure.	
	Enabled	Enables the trap sending.
	Disabled	Disables the trap sending. (Factory default setting)
Enabled Link Up/Down Port:	Displays the port number to which a trap is sent, when its link status changes. All ports are assigned in factory default setting.	
PoE Trap Control:	Displays the PoE trap control settings.	
	Enabled	Enables the trap sending. (Factory default setting)
	Disabled	Disables the trap sending.
Temperature Trap Control:	Displays the trap sending settings when the internal temperature is above or below the preset temperature.	
	Enabled	Enables the trap sending.
	Disabled	Disables the trap sending. (Factory default setting)
Temperature Threshold:	Displays the threshold temperature value to send the trap. The factory default setting is 66 degrees C.	
FAN Failure:	Displays the trap sending settings for an internal fan failure.	
	Enabled	Enables the trap sending. (Factory default setting)
	Disabled	Disables the trap sending.

Available commands are listed below.

A	Enable/disable the trap sending when an SNMP authentication fails.	
		Press "A." The command prompt changes to "Enable or Disable SNMP Authentication trap(E/D)>." Press "E" to enable the trap sending. Press "D" to disable it.
P	Add a port for which the trap is sent when its link status changes.	
		Press "P." The command prompt changes to "Enter port number>." Enter a port number. The trap is sent for this port.
D	Delete a port for which the trap is sent when its link status changes.	
		Press "D." The command prompt changes to "Enter port number>." Enter a port number. The trap is not sent for this port.
E	Enable/disable the trap sending when the power usage percentage exceeds the Power Usage Threshold For Sending Trap, as set on the PoE Global Configuration Menu.	
		Press "E." The command prompt changes to "Enable or Disable PoE trap (E/D)>." Press "E" to enable the trap sending. Press "D" to disable it.
T	Enable/disable the trap sending when the internal temperature exceeds the preset temperature.	
		Press "T." The command prompt changes to "Enable or Disable Temperature trap (E/D)>." Press "E" to enable the trap sending. Press "D" to disable it.
S	Set the temperature threshold value to send the trap for a high device internal temperature.	
		Press "S." The command prompt changes to "Enter temperature threshold>." Enter a temperature threshold value in the range from 0 to 66 degrees C to send the trap.
F	Enable/Disable the trap sending when the internal fan fails.	
		Press "E." The command prompt changes to "Enable or Disable Fan Failure trap (E/D)>." Press "E" to enable the trap sending. Press "D" to disable it.
Q	Return to the parent menu.	

Note: There are no individual setting items for loop detection and blocking trap. Traps are sent according to the SNMP trap sending settings (SNMP Trap Receiver Configuration).

4.5.4. Port Configuration Basic

On the Basic Switch Configuration Menu, pressing "P" opens the Port Configuration Basic Menu screen, as shown in **Fig. 4-14**. On this screen, you can display port status and configure port settings.

```
PN28128 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. 4-14 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.	
	1000T	The port type is 10/100/1000BASE-T.
	1000X	The port type is 1000BASE-X (SFP port).
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 12 are set to "Disabled," and Ports 13 to 14 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.

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	Enable/disable a 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 "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.		
M	Configure the speed and full-duplex/half-duplex settings for each port.		
	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.		
	Mode:	A:	Enable the auto negotiation mode.
		N:	Disable the auto negotiation mode. (Fixing the speed at 1000BASE-T is not supported)
	Speed:	10:	Set at 10 Mbps.
		100:	Set at 100 Mbps.
	Duplex:	F:	Set at full-duplex.
		H:	Set at half-duplex.
F	Enable/disable the flow control.		
	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.		
S	Enable/disable the Auto MDI/MDI-X function.		
	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 14. (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.		
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.

4.5.5. Port Configuration Extend

On the Basic Switch Configuration Menu, pressing "E" opens the Port Configuration Extend Menu screen, as shown in **Fig. 4-15**. On this screen, you can display port status and configure extended port settings.

```
PN28128 Local Management System
Basic Switch Configuration -> Port Configuration Extend Menu
Global Jumbo Status: Disabled
Port  Trunk      Type      Link     Port Name       EAP Pkt FW
----  -----  ----------  ----  ---------------   ----------
  1    ---      1000T     Down  Port_1             Disabled
  2    ---      1000T     Down  Port_2             Disabled
  3    ---      1000T     Down  Port_3             Disabled
  4    ---      1000T     Down  Port_4             Disabled
  5    ---      1000T     Down  Port_5             Disabled
  6    ---      1000T     Down  Port_6             Disabled
  7    ---      1000T     Down  Port_7             Disabled
  8    ---      1000T     Down  Port_8             Disabled
  9    ---      1000T     Down  Port_9             Disabled
 10    ---      1000T     Down  Port_10            Disabled
 11    ---      1000T     Down  Port_11            Disabled
 12    ---      1000T     Down  Port_12            Disabled
-------------------------------- <COMMAND> ----------------------------------

[N]ext Page                              Set [J]umbo Status
[P]revious Page                          Set [E]AP Packet Forwarding
Set Port N[a]me                          [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-15 Port Configuration Extend Menu

Screen Description

Global Jumbo Status	Displays the jumbo frame settings. "Disabled" is the factory default setting.	
	Enabled	The jumbo frame is enabled.
	Disabled	The jumbo frame is disabled.
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.
	1000X	The port type is SFP extension port.
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.	
EAP Pkt FW	Displays the EAP Packet Forwarding function settings. For all ports, "Disabled" is the factory default setting. Set this item to "Enabled" to send EAP frames used in IEEE802.1X authentication or "Disabled" to discard them.	
	Enabled	The EAP Packet Forwarding function is enabled.
	Disabled	The EAP Packet Forwarding function 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.
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.
J	Enable/disable the jumbo frame.	
		Press "J". The command prompt changes to "Enable or Disable jumbo status (E/D)>." Press "E" to enable the jumbo frame. Press "D" to disable it. As the change is applied, the display on the upper screen is updated automatically.
E	Enable/disable the EAP Packet Forwarding function.	
		1. Press "E." 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 "Enable or Disable EAP forward status 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.
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.

4.5.6. 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. 4-16. On this screen, you can display port status and configure various power saving mode settings.

```
PN28128 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. 4-16 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.
	1000X	The port type is SFP extension port.

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, "Enabled" 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.

4.5.7. System Security Configuration

On the Basic Switch Configuration Menu, pressing "S" opens the System Security Configuration screen, as shown in Fig. 4-17. On this screen, you can configure the various settings for accessing this Switching Hub for configuration and management.

```
PN28128 Local Management System
Basic Switch Configuration -> System Security Configuration

Console UI Idle Timeout:     5 Min.
Telnet UI Idle Timeout:      5 Min.
Telnet Server:               Enabled
SNMP Agent:                  Disabled
Web Server Status:           Disabled
IP Setup Interface:          Enabled
Local User Name:             manager
Syslog Transmission:         Disabled
Login Method 1:              Local
Login Method 2:              None
-------------------------------- <COMMAND> ------------------------------------
Set [C]onsole UI Time Out             Change Local [P]assword
Set [T]elnet UI Time Out              Enable/Disable [S]NMP Agent
Enable/Disable Te[l]net Server        [I]P Setup Interface
[W]eb Server Status                   Telnet [A]ccess Limitation
LED [B]ase Mode Configuration         Syslo[g] Transmission Configuration Page
[R]ADIUS Configuration                SS[H] Server Configuration
Enable/Disable S[y]slog Transmission  L[o]gin Method
Change Local User [N]ame              [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-17 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.
SNMP Agent:	Displays the SNMP access settings. "Disabled" 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 Web browser. "Disabled" is the factory default setting.	
	Enabled:	Access is enabled.
	Disabled:	Access is disabled.
Local User Name:	Displays the current login username. "manager" is the factory default setting.	
Syslog Transmission:	Displays the settings for sending system logs to the Syslog server. "Disabled" is the factory default setting.	
	Enabled:	Sends system logs to the Syslog server.
	Disabled:	Does not send system logs to the Syslog server.
Login Method: 1/2	Displays how to check the username and password for login. The factory default setting is "Local" for 1 and "None" for 2.	
	Local	Login with the username and password set for this Switching Hub.
	RADIUS	Login with authentication from the RADIUS server.
	None	Not used. (Only Login Method 2 can be configured.)

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).
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.
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 (4.5.7.e).
R	Configure the settings to access the RADIUS server. The RADIUS is used in the IEEE802.1X authentication.	
		Press "R" to move to the RADIUS Configuration page. For configuration details, refer to the next section (**4.5.7.b**).
Y	Configure the settings for sending system logs to the Syslog server.	
		Press "Y." The command prompt changes to "Enable or Disable Syslog Transmission (E/D)>." Enter "E" to enable the Syslog transmission to the Syslog server. Enter "D" to disable it.
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.
S	Configure the SNMP access settings.	
		Press "S." The command prompt changes to "Enable or Disable SNMP Agent(E/D)>." Enter "E" to enable the access. Enter "D" to disable it.
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.
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 (**4.5.7.a**).
G	Configure the settings for sending system logs to the Syslog server.	
		Press "G" to move to the Syslog Transmission Configuration page. For configuration details, refer to the next section (**4.5.7.c**).

H	Configure the SSH server settings.	
		Press "H" to move to the SSH Server Configuration page. For configuration details, refer to the next section (**4.5.7.d**).
O	Configure the location to check the login username and password.	
		1. Press "O." The command prompt changes to "Enter manager entry number>." Press "1" to change the first location to check. Press "2" to change the second location to check. 2. Then, the command prompt changes to "Select the login method (L/R)>." Press "L" to use the username and password set for this Switching Hub. Press "R" to use the RADIUS authentication.
Q	Return to the parent menu.	

4.5.7.a. Telnet Access Limitation Configuration

On the System Security Configuration Menu, pressing "A" opens the Telnet Access Limitation screen, as shown in **Fig. 4-18**. On this screen, you can configure limitation of equipment accessing to this Switching Hub via Telnet.

```
PN28128 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. 4-18 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.	

4.5.7.b. RADIUS Configuration

On the System Security Configuration Menu, pressing "R" opens the RADIUS Configuration Page screen, as shown in Fig. 4-19. On this screen, you can configure access to the RADIUS server that is used in IEEE802.1X authentication.

```
PN28128 Local Management System
System Security Configuration -> RADIUS Configuration Menu

NAS ID: Nas1

Index Server IP Address    Shared Secret     Response Time Max Retransmission
----- ----------------- -------------------- ------------- ------------------
  1   0.0.0.0                                   10 seconds          3
  2   0.0.0.0                                   10 seconds          3
  3   0.0.0.0                                   10 seconds          3
  4   0.0.0.0                                   10 seconds          3
  5   0.0.0.0                                   10 seconds          3
--------------------------------- <COMMAND> -----------------------------------

Set [N]AS ID
Set Server [I]P
Set Shared Se[c]ret
Set [R]esponse Time
Set [M]ax Retransmission
[Q]uit to previous menu


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

Fig. 4-19 RADIUS Configuration

Screen Description

NAS ID	Displays the authentication ID (NAS Identifier).
Server IP Address	Displays the IP address of the RADIUS server. "0.0.0.0" is the factory default setting.
Shared Secret	Displays the common key (Shared Secret) that is used in authentication. The same key must be set in the server and the RADIUS client. In general, the system manager sets this secret key. The factory default setting has no secret key. Displays "encrypted" if the key is encrypted.
Response Time	Displays the maximum response time for the authentication request to the RADIUS server. The factory default setting is 10 seconds.
Maximum Retransmission	Displays the number of times of retransmission for the authentication request to the RADIUS server. The factory default setting is 3.

Available commands are listed below.

N	Set the NAS ID (NAS Identifier).	
		Press "N." The command prompt changes to "Enter NAS ID>." Enter the NAS ID in 16 characters or less.
I	Set the IP address of the RADIUS server.	
		Press "I." The command prompt changes to "Enter IP Address for RADIUS server>." Enter the IP address.

C	Set the common key of the RADIUS server.
	Press "C." The command prompt changes to "Enter secret string for server>." Enter the secret string in 20 characters or less.
R	Set the response time until the RADIUS server responds to the authentication request.
	Press "R." The command prompt changes to "Enter response time>." Enter the response time with a value of 1 to 120 (seconds).
M	Set the maximum number of times an authentication request is retransitted.
	Press "M." The command prompt changes to "Enter maximum retransmission>." Enter an integer number of 1 to 254.
M	Set the maximum number of times an authentication request is retransitted.
	1. Press "M." The command prompt changes to "Enter RADIUS server index>." Enter the applicable index. 2. The command prompt changes to "Enter maximum retransmission>." Enter an integer number of 1 to 254.
Q	Return to the parent menu.

4.5.7.c. Syslog Transmission Configuration

On the System Security Configuration Menu, pressing "G" opens the Syslog Transmission Configuration Page screen, as shown in **Fig. 4-20**. On this screen, you can configure the settings of the Syslog server to which a system log is sent.

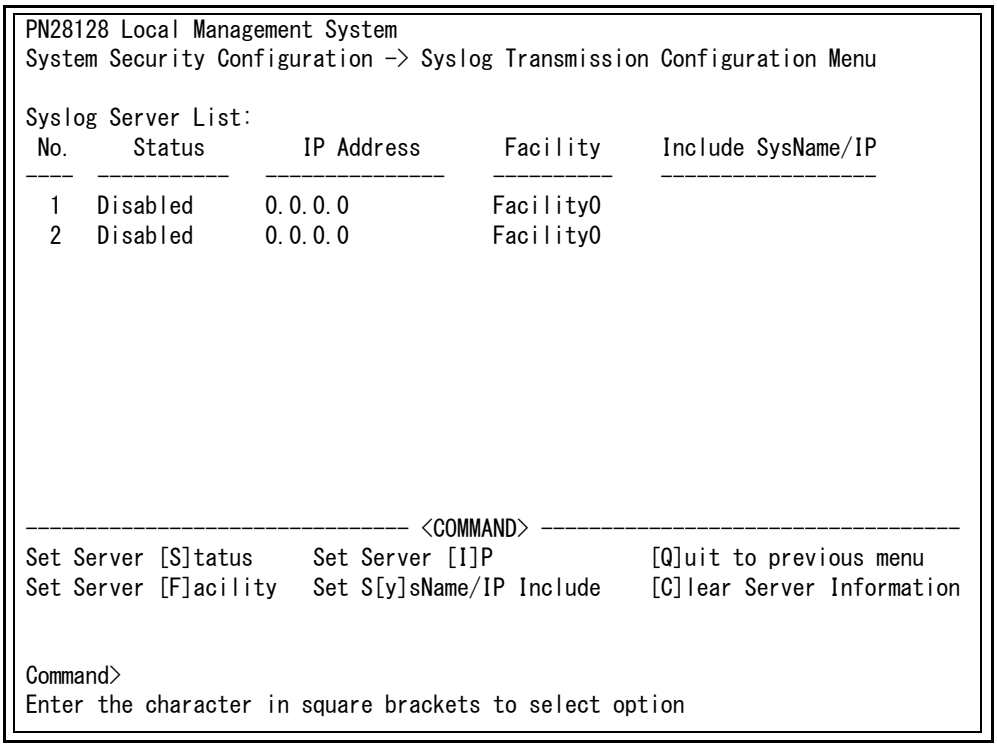


Fig. 4-20 Syslog Transmission Configuration

Screen Description

Status	Displays the status of each entry.	
	Enabled	Setting of the entry is enabled.
	Disabled	Setting of the entry is disabled.
IP Address	Displays the IP address of the Syslog server.	
Facility	Displays the value of Facility.	
Include SysName/IP	Displays information to be added.	
	SysName	Adds the SysName of this Switching Hub to the system log to be transmitted.
	IP address	Adds the IP address of this Switching Hub to the system log to be transmitted.

Available commands are listed below.

S	Set the status of Syslog Transmission.
	1. Press "S." The command prompt changes to "Enter manager entry number>." Enter a number you wish to set. 2. Then, the command prompt changes to "Enable or Disable Server (E/D)>." Enter "E" to enable the server. Enter "D" to disable it.

F	Set Facility.
	1. Press "F." The command prompt changes to "Enter manager entry number>." Enter a number you wish to set. 2. Then, the command prompt changes to "Enter Server Facility>." Enter a value of 0 to 7 (Local0 to Local7).
I	Set the IP address of the Syslog server.
	1. Press "I." The command prompt changes to "Enter manager entry number>." Enter a number you wish to set. 2. Then, the command prompt changes to "Enter IP address for manager>." Enter the IP address of the Syslog server.
Y	Set information that is added to the system log to be transmitted.
	1. Press "Y." The command prompt changes to "Enter manager entry number>." Enter a number you wish to set. 2. Then, the command prompt changes to "Enter Include Information>." Enter "S" to add the SysName of this Switching Hub, "I" to add the IP address, or "N" not to add the IP address.
C	Delete setting information of Syslog Transmission.
	1. Press "C." The command prompt changes to "Enter manager entry number>." Enter a number you wish to delete. 2. Then, the command prompt changes to "Clear Syslog Server information>." Enter "Y" to delete the server information. Enter "N" not to delete it.
Q	Return to the parent menu.

4.5.7.d. SSH Server Configuration

On the System Security Configuration Menu, pressing "H" opens the SSH Server Configuration screen, as shown in Fig. 4-21. On this screen, you can configure the SSH server settings.
This Switching Hub only supports SSHv2. Use a client that supports SSHv2 and connect to it.

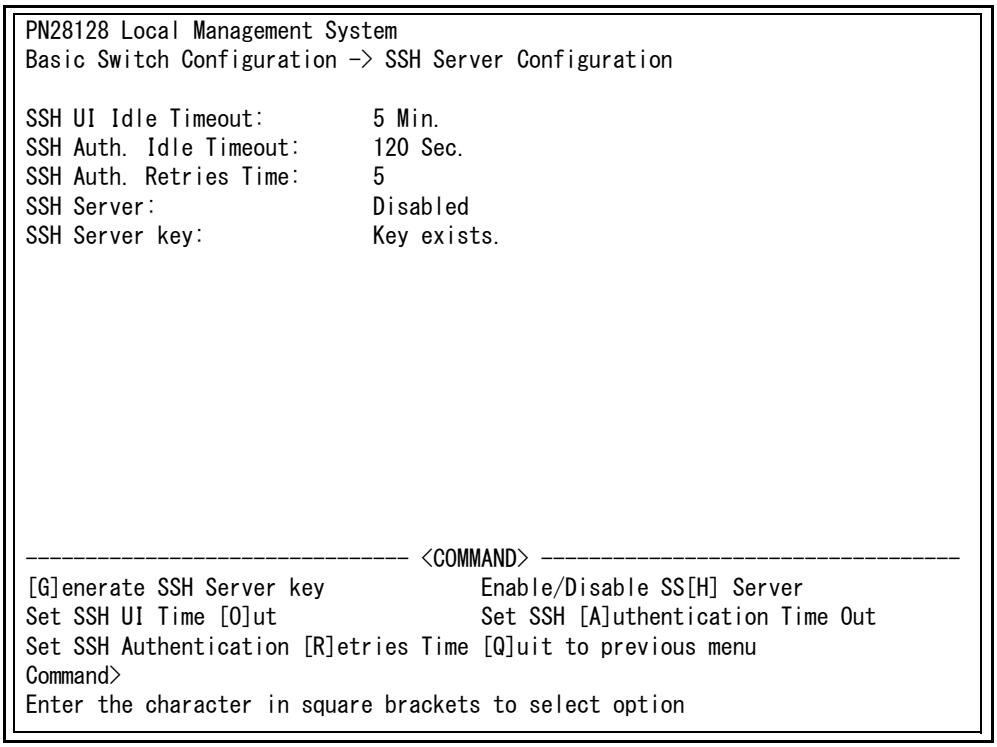


Fig. 4-21 SSH Server Configuration

Screen Description

SSH UI Idle Timeout:	Displays the idle timeout settings (in minutes) for terminating a SSH-connected session if no input is made. The factory default setting is 5 minutes.	
SSH Auth. Idle Timeout:	Displays the time to wait for a response to SSH authentication. The factory default setting is 120 seconds.	
SSH Auth. Retries Time:	Displays the number of times of retransmission of SSH authentication. The factory default setting is 5.	
SSH Server:	Displays the SSH access settings. "Disabled" is the factory default setting.	
	Enabled(SSH)	Access is enabled.
	Disabled	Access is disabled.
SSH Server key:	Displays the SSH server key status.	
	Key exists.	The server key exists.
	Key does not exist.	The server key does not exist.

Available commands are listed below.

G	Create an SSH server key.
	Press "G" to create the SSH server key.
H	Configure the SSH access settings.
	Press "H." The command prompt changes to "Enable or Disable SSH server (E/D)>." Enter "E" to enable the access. Enter "D" to disable it.
O	Configure the idle timeout settings for automatically terminating a SSH-connected session if no input is made.
	Press "O." The command prompt changes to "Enter SSH UI idle timeout>." Enter a value from 1 to 60 (minutes).
A	Configure the time to wait for a response to SSH authentication.
	Press "A." The command prompt changes to "Enter SSH authentication idle timeout>." Enter a value from 1 to 120 (seconds).
R	Configure the number of times a SSH authentication is retransmitted.
	Press "R." The command prompt changes to "Enter SSH authentication retries time>." Enter a value from 0 to 5 (times).
Q	Return to the parent menu.

4.5.7.e. LED Base Mode Configuration

On the System Security Configuration Menu, pressing "B" opens the LED Base Mode Configuration screen, as shown in Fig. 4-22. On this screen, you can configure the LED base mode settings.

```
PN28128 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. 4-22 LED Base Mode Configuration

Screen Description

LED basemode	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.

4.5.8. Forwarding Database

On the Basic Switch Configuration Menu, pressing "F" opens the Forwarding Database Menu screen, as shown in **Fig. 4-23**. On this screen, a list of MAC address tables required for transferring packets that have been learned and recorded is displayed.

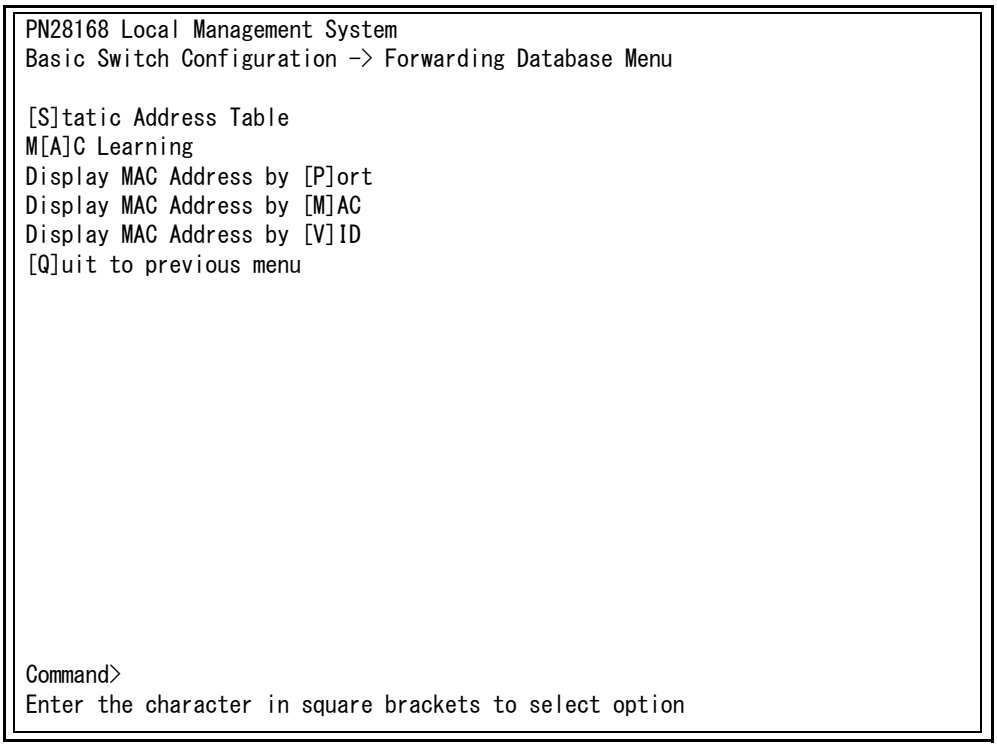


Fig. 4-23 Reference to MAC Address Table

Screen Description

Static Address Table	Adds or deletes MAC addresses. For details, refer to the next section (**4.5.8.a**).
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 (**4.5.8.b**).
Display MAC Address by Port	Displays the MAC address table by port. For details, refer to the next section (**4.5.8.c**).
Display MAC Address by MAC	Displays all registered MAC addresses. For details, refer to the next section (**4.5.8.d**).
Display MAC Address by VID	Displays the MAC address table by VLAN. For details, refer to the next section (**4.5.8.e**).
Quit to previous menu	Return to the parent menu.

4.5.8.a. Addition or Deletion of MAC Address

On the Forwarding Database Menu, pressing "S" opens the Static Address Table Menu screen, as shown in **Fig. 4-24**. On this screen, you can add or delete MAC addresses statically.

```
PN28128 Local Management System
Forwarding Database Menu -> Static Address Table Menu

   MAC Address       Port    VLAN ID
-----------------   ------   -------
Database is empty!









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

[N]ext Page                              [D]elete Entry
[P]revious Page                          [Q]uit to previous menu
[A]dd New Entry

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

Fig. 4-24 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.
	1. Press "A." The command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx)." Enter a MAC address to be added. 2. The command prompt changes to "Add new entry->Enter port number>." Enter the port number to which the MAC address belongs. 3. The command prompt changes to "Add new entry->Enter VLAN ID>." Enter the VLAN ID to which the MAC address belongs with a value of 1 to 4094.

D	Delete a MAC address that has been registered. 1. Press "D." The command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx)." Enter a MAC address to be deleted. 2. The command prompt changes to "Delete entry->Enter VLAN ID>." Enter the VLAN ID to which the MAC address belongs with a value of 1 to 4094.
Q	Return to the parent menu.

4.5.8.b. MAC Address Learning Mode Configuration

On the Forwarding Database Menu, pressing "A" opens the MAC Learning Menu screen, as shown in**Fig. 4-25**. On this screen, you can configure the learning mode settings of the MAC address by port.

```
PN28128 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. 4-25 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	Switch 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) (A/D)>." Enter "A" for MAC address auto-leaning. Otherwise, enter "D."
Q	Return to the parent menu.

Note: When IEEE802.1X port-based authentication is activated, the MAC address learning mode for a port cannot be disabled in the MAC Learning Menu.

4.5.8.c. 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. 4-26. On this screen, you can display the MAC address table by port.

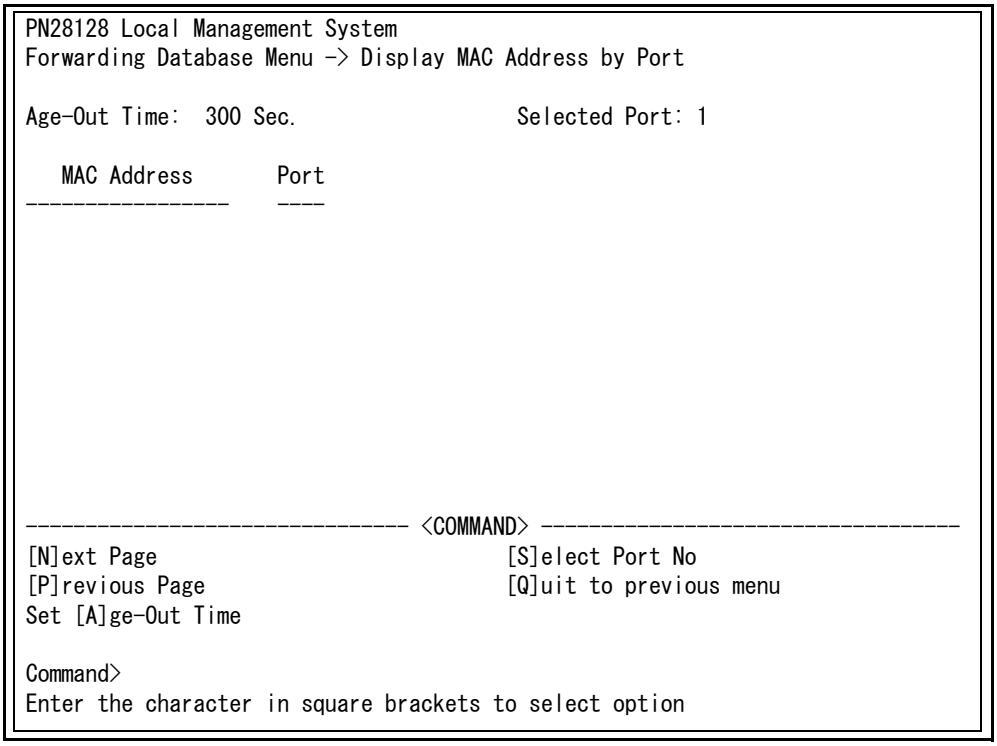


Fig. 4-26 Display of MAC Address Table by Port

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 belong.

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	Switch 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.

4.5.8.d. Display of All MAC Addresses

On the Forwarding Database Menu, pressing "M" opens the Display MAC Address by MAC screen, as shown in Fig. 4-27. On this screen, you can display all the MAC address tables in this Switching Hub.

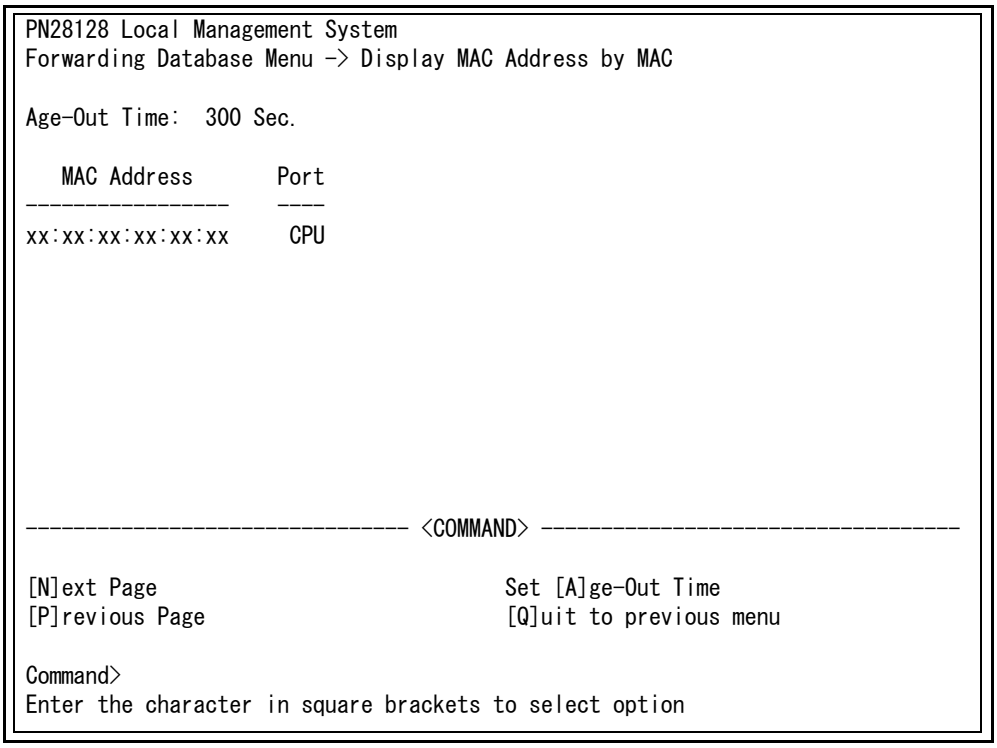


Fig. 4-27 Display of All MAC Addresses

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 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	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.

4.5.8.e. Display of MAC Address Table by VLAN

On the Forwarding Database 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. 4-28. On this screen, you can display the MAC address table by VLAN.

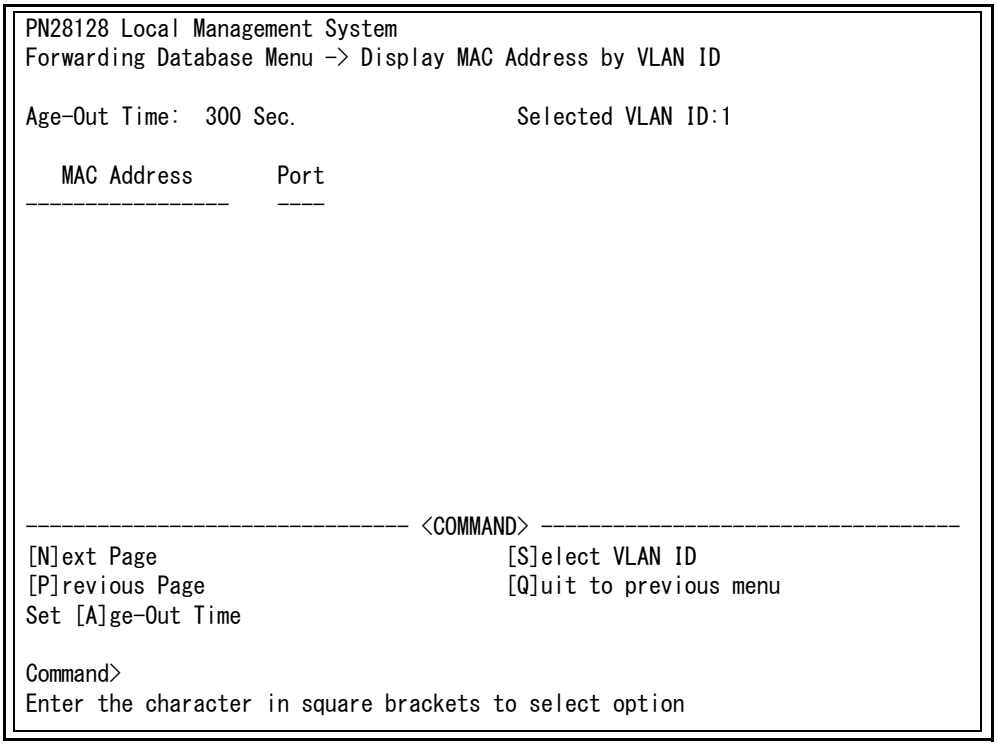


Fig. 4-28 Display of MAC Address Table by VLAN

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 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	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	Switch 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.

4.5.9. 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 Time Configuration Menu screen, as shown in **Fig. 4-29**. On this screen, you can configure the SNTP settings.

```
PN28128 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. 4-29 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.
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."

4.5.10. ARP Table Configuration

On the Basic Switch Configuration Menu, pressing "R" opens the ARP Table screen, as shown in **Fig. 4-30**. On this screen, you can refer to and configure the ARP table.

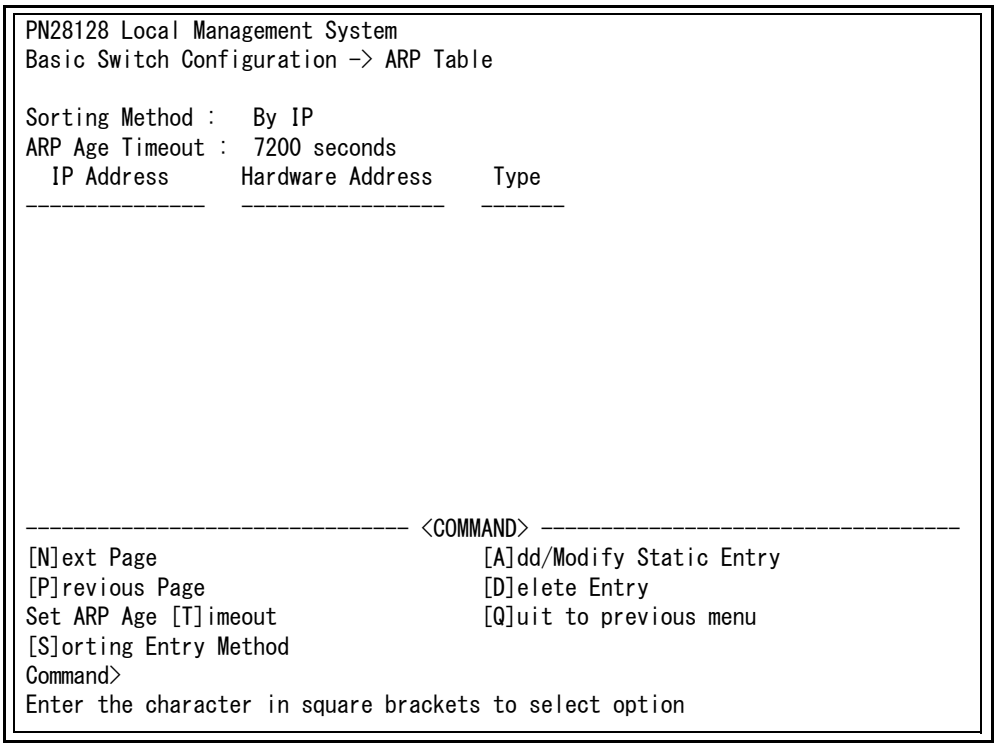


Fig. 4-30 ARP Table

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. 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.	

4.5.11. LLDP Configuration

On the Basic Switch Configuration Menu, pressing "L" opens the LLDP Configuration screen, as shown in Fig. 4-31. On this screen, you can configure the LLDP settings.

```
PN28128 Local Management System
Basic Switch Configuration -> LLDP Configuration

LLDP Status : Disabled

Port  Admin Status  Port Desc  Sys Name  Sys Desc  Sys Cap   Mgmt Addr
----  ------------  ---------  --------  --------  --------  ---------
  1   Both          Disabled   Disabled  Disabled  Disabled  Disabled
  2   Both          Disabled   Disabled  Disabled  Disabled  Disabled
  3   Both          Disabled   Disabled  Disabled  Disabled  Disabled
  4   Both          Disabled   Disabled  Disabled  Disabled  Disabled
  5   Both          Disabled   Disabled  Disabled  Disabled  Disabled
  6   Both          Disabled   Disabled  Disabled  Disabled  Disabled
  7   Both          Disabled   Disabled  Disabled  Disabled  Disabled
  8   Both          Disabled   Disabled  Disabled  Disabled  Disabled
  9   Both          Disabled   Disabled  Disabled  Disabled  Disabled
 10   Both          Disabled   Disabled  Disabled  Disabled  Disabled
-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                [S]et LLDP Status          Enable/Disable TL[V]
[P]revious Page            [L]LDP Port Admin Status   N[e]ighbor Table
[Q]uit to previous menu

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

Fig. 4-31 LLDP Configuration

Screen Description

LLDP Status	Displays the LLDP settings.	
	Enabled	Enables the LLDP.
	Disabled	Disables the LLDP.(Factory default setting)
Port	Displays the port number.	
Admin Status	Displays the LLDP status.	
	TX Only	Executes only LLDP transmission.
	RX Only	Executes only LLDP receiving.
	Both	Executes LLDP transmission and receiving. (Factory default setting)
	Disabled	Does not execute LLDP transmission and receiving.
Port Desc	Displays whether or not interface information is included in the frame of the LLDP.	
	Enabled	Included in the LLDP.
	Disabled	Not included in the LLDP. (Factory default setting)
Sys Name	Displays whether or not the host name is included in the frame of the LLDP.	
	Enabled	Included in the LLDP.
	Disabled	Not included in the LLDP. (Factory default setting)

Sys Desc	Displays whether or not system overview information is included in the frame of the LLDP.	
	Enabled	Included in the LLDP.
	Disabled	Not included in the LLDP. (Factory default setting)
Sys Cap	Displays whether or not system capability information is included in the frame of the LLDP.	
	Enabled	Included in the LLDP.
	Disabled	Not included in the LLDP. (Factory default setting)
Mgmt Addr	Displays whether or not the system IP address is included in the frame of the LLDP.	
	Enabled	Included in the LLDP.
	Disabled	Not included in the LLDP. (Factory default setting)

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	Enable/disable the LLDP.
	Press "S." The command prompt changes to "Enable or Disable (E/D)>." Press "E" to enable the LLDP. Press "D" to disable it.
L	Set the LLDP status.
	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 "Set Admin Status for port # (1-4)>." Press "1" for TX Only, "2" for RX Only, "3" for Both, or "4" to disable it.
V	Set information to be included in the LLDP frame sent from this Switching Hub.
	1. Press "V." 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 transmit TLV." Press "0" for none, "1" for Port Description, "2" for System Name, "3" for System Description, "4" for System Capability, or "5" for Management IP respectively by specifying the range.
E	Display the Neighbor Table.
	Press "E" to move to the Neighbor Table. For configuration details, refer to the next section (**4.5.11.a**).
Q	Return to the parent menu.

4.5.11.a. Display of Neighbor Table

On the LLDP Configuration, pressing "E" opens the Neighbor Table screen, as shown in **Fig. 4-32**. On this screen, you can display the Neighbor Table.

```
PN28128 Local Management System
LLDP Configuration -> Neighbor Table

Total Neighbors:   1
 No     Chassis ID           Port ID       Mgmt IP Address  Port
---  -----------------  -----------------  ---------------  ----
  1  xx:xx:xx:xx:xx:xx  xx:xx:xx:xx:xx:xx  0.0.0.0            1









--------------------------------- <COMMAND> -----------------------------------
[N]ext Page                           [D]etail
[P]revious Page                       [Q]uit to previous menu

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

Fig. 4-32 Display of Neighbor Table

Screen Description

Total Neighbors	Displays the number of entries recorded in the Neighbor Table.
No	Displays the entry number.
Chassis ID	Displays the Chassis ID for each entry.
Port ID	Displays the port ID for each entry.
Mgmt IP Address	Displays the IP address for each entry.
Port	Displays the port number that received LLDP 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.
D	Display detailed information of each entry.
	Press "D" to display detailed information of the entry. For configuration details, refer to the next section (**4.5.11.b**).
Q	Return to the parent menu.

4.5.11.b. Display of Detailed Information of Neighbor Table

On the Neighbor Table, pressing "D" opens the Neighbor Detail Information screen, as shown in Fig. 4-33. On this screen, you can display detailed information of the Neighbor Table.

```
PN28128 Local Management System
Neighbor Table -> Neighbor Detail Information

Index             : 1
Local Port        : 1
Discovered Time   : 000day(s), 00hr(s), 00min(s), 00sec(s)
Last Update Time  : 000day(s), 00hr(s), 00min(s), 00sec(s)
ChassisId         : xx:xx:xx:xx:xx:xx (MAC Address)
PortId            : xx:xx:xx:xx:xx:xx (MAC Address)
System Name       :
System Capability : x / x (Supported / Enabled)
                    (O:Other  R:Repeater  B:Bridge W:WLAN Access Point
                     r:Router T:Telephone D:DOCSIS cable device S:Station Only)
Port Description  :
System Description:




-------------------------------- <COMMAND> ---------------------------------
[N]ext Entry                          [Q]uit to previous menu
[P]revious Entry

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

Fig. 4-33 Display of Detailed Information of Neighbor Table

Screen Description,

Index	Displays the entry number.
Local Port	Displays the port number that received LLDP frames.
Discovered Time	Displays the time when the first LLDP frame was received.
Last Update Time	Displays the time when the last LLDP frame was received.
ChassisId	Displays the Chassis ID of the entry.
PortId	Displays the port ID of the entry.
System Name	Displays the system name of the entry.
System Capability	Displays the capability information of the entry.
Port Description	Displays the interface information of the entry.
System Description	Displays the overview information of the entry.

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.
Q	Return to the parent menu.

4.6. Advanced Switch Configuration

On the Main Menu, pressing "A" opens the Advanced Switch Configuration Menu screen, as shown in Fig. 4-34.
On this screen, you can configure the settings of VLAN, Link Aggregation, Port Monitoring, Spanning Tree, QoS, Storm Control, IEEE802.1X authentication, IGMP Snooping, Power Over Ethernet, Ring Protocol, and Loop detection and blocking function for this Switching Hub.

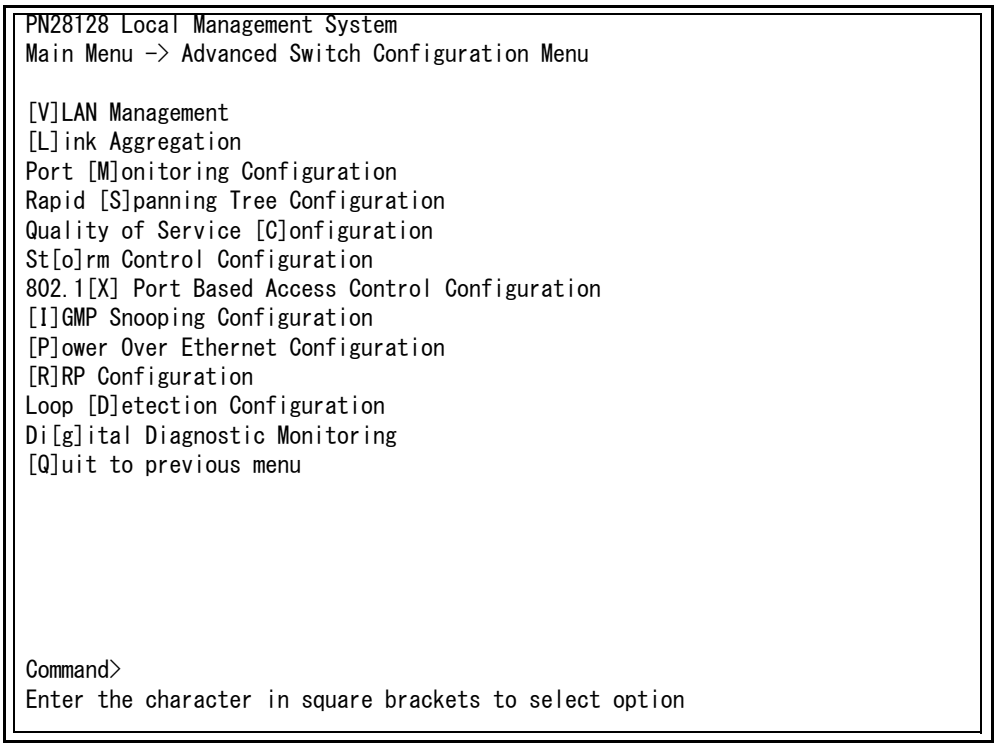


Fig. 4-34 Advanced Switch Configuration

Screen Description

VLAN Management	Configures the VLAN-related settings.
Link Aggregation	Configures the link aggregation settings.
Port Monitoring Configuration	Configures the port monitoring settings.
Rapid Spanning Tree Configuration	Configures the Spanning-Tree-related settings.
Access Control Configuration	Configures the access-control-related settings.
Quality of Service Configuration	Configure the QoS settings.
Storm Control Configuration	Configures the storm control function settings.
802.1x Port Base Access Control Configuration	Configures the IEEE802.1X/MAC-based authentication settings.
IGMP Snooping Configuration	Configures the IGMP Snooping settings.
Power Over Ethernet Configuration	Configures the PoE power supply settings.
RRP Configuration	Configures the ring protocol settings.
Loop Detection Configuration	Configures the loop detection and blocking function settings.
Digital Diagnostic Monitoring	Configures the digital diagnostic monitoring settings.
Quit to previous menu	Quits the Advanced Switch Configuration Menu and returns to the Main Menu.

4.6.1. VLAN Management

4.6.1.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.

4.6.1.b. VLAN Management Menu

On the Advanced Switch Configuration Menu, pressing "V" opens the VLAN Management Menu screen, as shown in Fig. 4-35. On this screen, you can configure the VLAN-related settings.

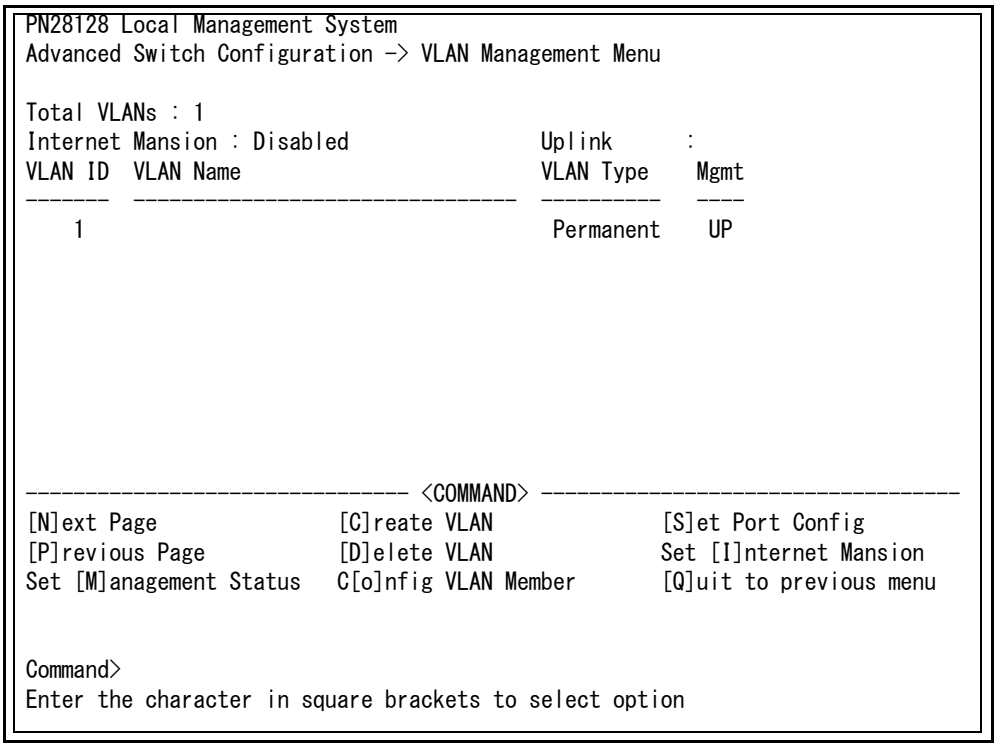


Fig. 4-35 VLAN Management Menu

Screen Description

Internet Mansion	Displays the status of the Internet Mansion mode.	
	Enabled	The Internet Mansion mode is enabled.
	Disabled	The Internet Mansion mode is disabled. (Factory default setting)
Uplink:	Displays the Uplink port when the Internet Mansion mode is enabled.	
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.

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 (**4.6.1.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.
I	Set the Internet Mansion mode.	
		Press "I." The command prompt changes to "Enable or Disable Internet Mansion Function? (E/D>." Enter "E" to enable the Internet Mansion mode. Enter "D" to disable it. If you press "E", the command prompt changes to "Uplink port?>." Enter the port number you wish to configure as Uplink port. By this setting, you can set the device to be an optimum environment as a Switching Hub used in Internet Mansion. By this setting, the specified port becomes an Uplink port, and other ports can communicate only with downlink ports. Downlink ports cannot communicate with each other. So, it is possible to ensure security between each resident. **(There are some constrained conditions for use. Please execute configuration after confirming "Precautions.")**
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**(4.6.1.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**(4.6.1.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. 4-38**.
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: When the Internet Mansion mode is enabled, the following constrained conditions are applied.
Please use the device after confirming these constrained conditions.
(1)Combined usage with the Spanning Tree function is not possible.
(2)Combined usage with the IGMP Snooping function is not possible.
(3)Combined usage with the Link Aggregation function is not possible.
(4)Combined usage with the Ring Redundant Protocol function is not possible.
(5)Registration to the MAC Address table as Static is not possible.
(6)The MAC Learning function in Section 4.5.8.b cannot be disabled.
(7)Only the Uplink port belongs to the management VLAN.

4.6.1.c. VLAN Creation Menu

On the VLAN Management Menu, pressing "C" opens the VLAN Creation Menu screen, as shown in Fig. 4-36. On this screen, you can create a VLAN.

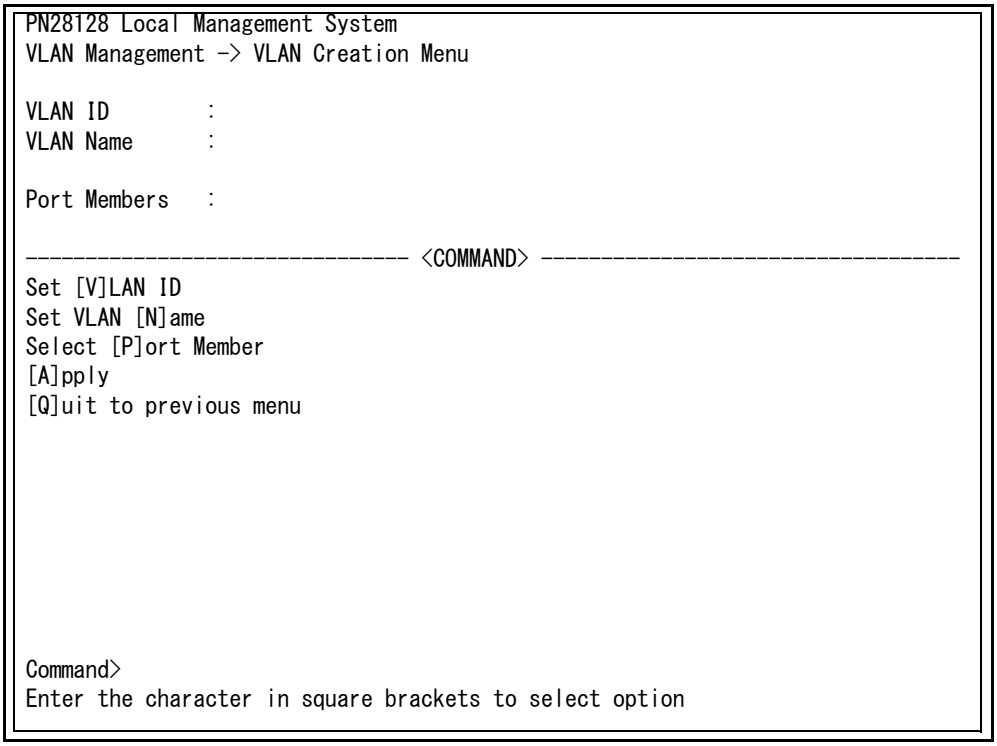


Fig. 4-36 VLAN Creation Menu

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 "S." 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 32 characters or less.
N	Set the name of the VLAN.	
		Press "N." The command prompt changes to "Enter VLAN name >." Enter the 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.
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.

4.6.1.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. 4-37**. On this screen, you can modify VLAN-related setting information.

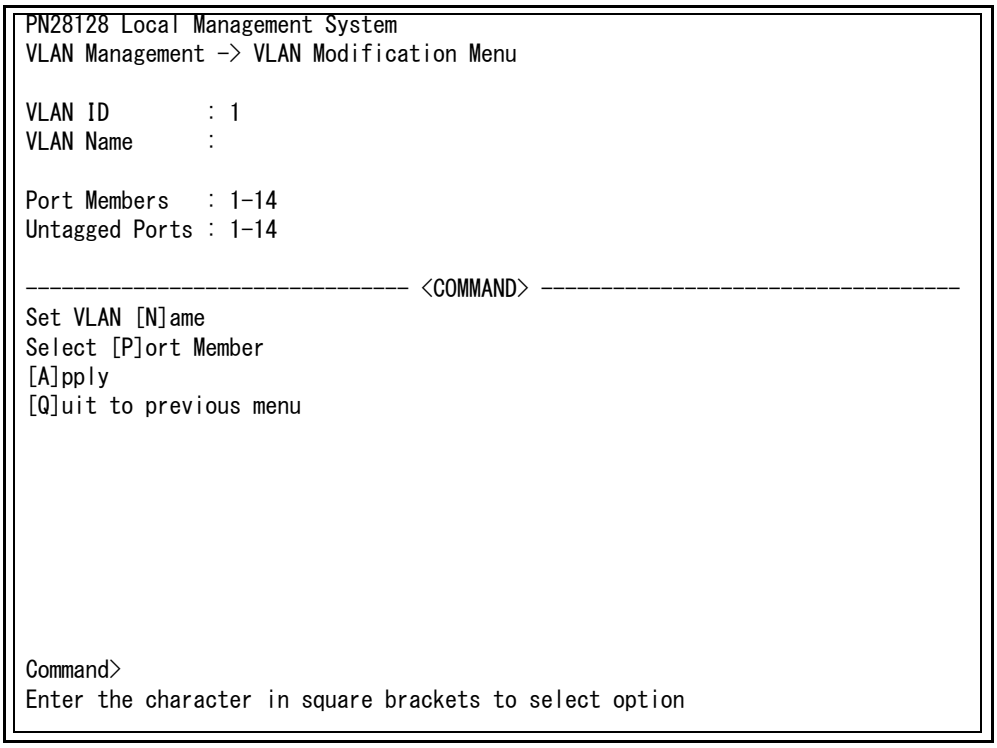


Fig. 4-37 VLAN Modification Menu

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.
Dynamic Ports	Displays ports that are targets for Dynamic VLAN by GVRP.
Forbidden Ports	Displays ports that are not targets for Dynamic VLAN by GVRP.

Available commands are listed below.

N	Set the name of the VLAN.	
		Press "N." The command prompt changes to "Enter VLAN name >." Enter the VLAN name in 32 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.	

4.6.1.e. VLAN Port Configuration Menu

On the VLAN Management Menu, pressing "S" opens the VLAN Port Configuration Menu screen, as shown in Fig. 4-38. On this screen, you can configure the VLAN-related settings by port.

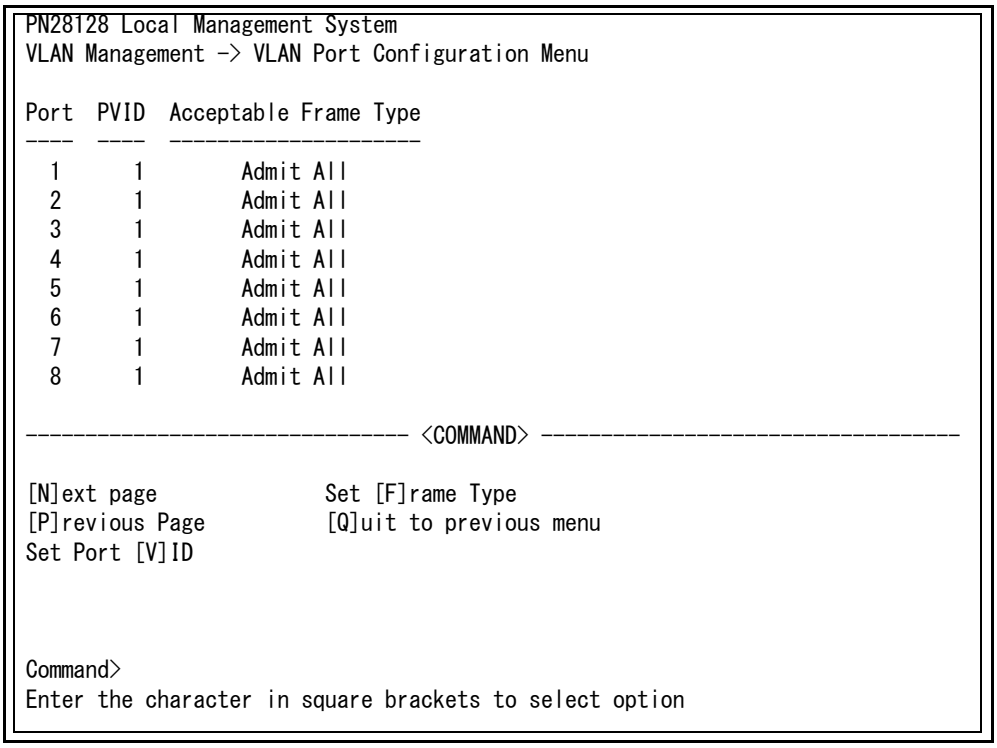


Fig. 4-38 VLAN Port Configuration Menu

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.

4.6.2. Link Aggregation

4.6.2.a. About Link Aggregation

Link Aggregation is a function that can increase the bandwidth between Switching Hubs by grouping multiple Switching Hub ports and connecting the grouped ports to each other. Using this Link Aggregation function is called trunking.
This Switching Hub supports the LACP (Link Aggregation Control Protocol) specified in IEEE802.3ad. This allows one group to include up to 8 ports.

Note: In this Switching Hub, it is not possible to construct a trunking system in which 100M-port and Giga-port are mixed.
Combined usage with the Spanning Tree mode and 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.

4.6.2.b. Link Aggregation Menu

On the Advanced Switch Configuration Menu, pressing "L" opens the Trunk Configuration Menu screen, as shown in **Fig. 4-39**. On this screen, you can configure the link aggregation settings.

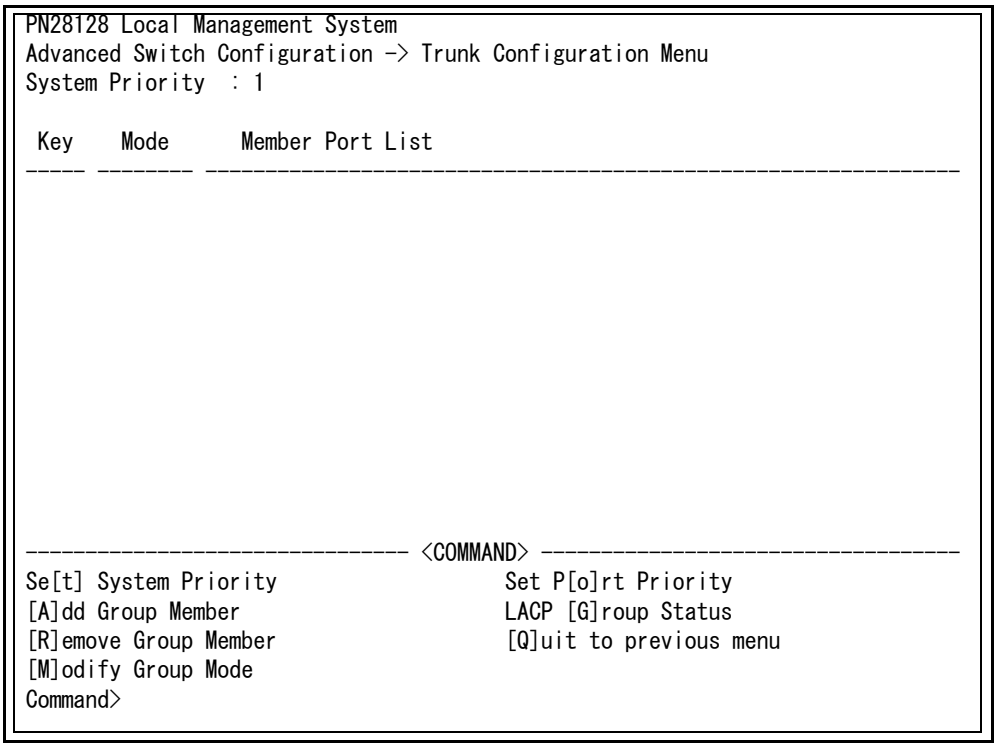


Fig. 4-39 Link Aggregation Menu

Screen Description

System Priority	System priority is an order of priority in this Switching Hub required for constructing trunking on the network using LACP. Smaller number has higher priority. The factory default setting is 1.	
Key	Indicates the group number of trunking.	
Mode	Indicates the operation mode of trunking.	
	Active	Sends out LACP packet from this Switching Hub and constructs a trunk by negotiating with other side. It is required that the other side mode is Active or Passive.
	Passive	Does not send out LACP packet from this Switching Hub and constructs a trunk by negotiating with other side using LACP packet received from other side. It is required that the other side mode is Active.
	Manual	Constructs trunking forcibly without using LACP packet. It is required that the other side is the same configuration as this side.
Members Port List	Indicates the port belonging to trunking group.	

Note: If each Switching Hub uses LACP passive mode, LACP negotiation is not executed then the packet storm may be occurred. When constructing trunking using LACP, make sure to configure one side to be Active.

Available commands are listed below.

T	Set System Priority value of this Switching Hub in LACP.	
		Press "T." The command prompt changes to "Enter system priority for LACP >."
A	Configure new trunking settings.	
		Press "A." The command prompt changes to "Enter trunk group admin key>." Enter a group number you wish to configure. The command prompt changes to "Enter port member for group key #>." Enter a port number you wish to do trunking. When entering multiple port numbers, delimit with comma (,) with no space (example: "1,2,3"), or hyphenate the continuous numbers (example: "8-12"). Then, the command prompt changes to "LACP Active, LACP Passive or Manual trunk setting(A/P/M)>." Enter "A" to make operation mode Active, or "P" to make it Passive, or "M" to make it Manual, respectively.
R	Remove trunking settings.	
		Press "R." The command prompt changes to "Enter trunk group admin key>." Enter a group number you wish to delete. The command prompt changes to "Enter port member port for group key #>." Enter a port number you wish to do rdelete. When entering multiple port numbers, delimit with comma with no space, or hyphenate the continuous numbers.
M	Modify the operation mode of trunking	
		Press "M." The command prompt changes to "Enter trunk group admin key>." Enter a group number you wish to modify. Then, the command prompt changes to "LACP Active, LACP Passive or Manual trunk setting(A/P/M)>." Enter "A" to make operation mode Active, or "P" to make it Passive, or "M" to make it Manual, respectively.
O	Set System Priority value of this Switching Hub by port in trunking.	
		Press "o" to open the "Set port Priority" screen. For method of detail setting, refer to the section (**4.6.2.c**).
G	Display a status of LACP group.	
		Press "G." The command prompt changes to "Enter trunk group number >." Enter a key of group you wish to display. (Only the group of which mode is Active or Passive can be entered.) Then, screen changes to "LACP Status." For details, refer to the section (**4.6.2.c**).
Q	Return to the parent menu.	

Note: In this Switching Hub, it is possible to set members of up to 14 ports to one group, but it is up to 8 ports that execute trunking operation. Members after the 9th port in that group get into backup mode. When a failure occurred in link of 1-8 port, one of them becomes a member that constructs trunk on behalf of that port. In this case, priority order to become a member is determined by Port Priority that is set in next section (**4.6.2.b**), and, when Priority value is the same to all, trunk is constructed by a member starting from the smallest port number in order.

4.6.2.c. Set Port Priority for LACP

On the Trunk Configuration Menu, pressing "o" opens the Set Port Priority screen, as shown in **Fig. 4-40**. On this screen, you can set the priority value of trunking.

```
PN28128 Local Management System
Trunk Configuration Menu -> Set Port Priority

System Priority :   1
System ID       :   xx:xx:xx:xx:xx:xx

Port   Priority
-----  ----------
  1       1
  2       1
  3       1
  4       1
  5       1
  6       1
  7       1
  8       1
  9       1
 10       1

-------------------------------- <COMMAND> ------------------------------------
[N]ext Page                                 [S]et Port Priority
[P]revious Page                             [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-40 Set Port Priority for LACP

Screen Description

System Priority	The system priority is the order of the priority in this Switching Hub required for constructing trunking on the network using LACP. The smaller number has higher priority. The factory default setting is "1."
System ID	The System ID is the identifier of this Switching Hub required for constructing trunking on the network using LACP. The MAC address of this Switching Hub becomes this System ID, and it is not possible to change this ID. Combination of the System Priority value and the System ID becomes the System ID in LACP.
Port	The port number of this Switching Hub.
Priority	The priority order of this Switching Hub in trunking by port. The smaller number has higher priority. For all ports, "1" is the factory default setting.

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	Set the priority value (priority order) by port.	
		Press "S."The command prompt changes to "Enter port number>." Enter a port number you wish to configure.The command prompt changes to "Enter port priority>." Enter a port priority you wish to configure priority of 0-255.
Q	Return to the parent menu.	

4.6.2.d. LACP Group Status

On the Trunk Configuration Menu, pressing "G" and specifying a key of the LACP group open the LACP Group Status screen, as shown in **Fig. 4-41**. On this screen, you can confirm the status of the LACP group. (Displaying the status is possible only for a key whose mode is Active or Passive.)

```
PN28128 Local Management System
Trunk Configuration Menu -> LACP Status

System Priority :   1
System ID       :   xx:xx:xx:xx:xx:xx
Key             :   2

Aggregator        Attached Port List              Standby Port List
----------  --------------------------------  --------------------------------
     1      1
     2      2

--------------------------------- <COMMAND> -----------------------------------
[N]ext Page         [P]revious Page             [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-41 LACP Group Status

Screen Description

System Priority	The system priority is the order of the priority in this Switching Hub required for constructing trunking on the network using LACP. The smaller number has higher priority. The factory default setting is "1."
System ID	The System ID is the identifier of this Switching Hub required for constructing trunking on the network using LACP. The MAC address of this Switching Hub becomes this System ID, and it is not possible to change this ID. Combination of the System Priority value and the System ID becomes the System ID in LACP.
Key	Displays the group number of trunking.
Aggregator	Aggregator is the number of the logical interface of trunking. This is the same number as the one of the port whose Port Priority value is the highest in the ports that are constructing trunking.
Attached Port List	This is the number of the physical interface (Port) connected to the logical interface (Aggregator). When a trunking group with more than 9 ports is configured, ports with a low Port Priority value are in backup mode and indicated as "(Standby)."
Standby port List	When a trunking group with more than 9 ports is configured, ports with a low Port Priority value are in backup mode. The applicable ports are displayed in this column.

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.
Q	Return to the parent menu.	

4.6.3. Port Monitoring Configuration

On the Advanced Switch Configuration Menu, pressing "M" opens the Port Monitoring Configuration Menu screen, as shown in Fig. 4-42. 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.

```
PN28128 Local Management System
Advanced Switch Configuration -> Port Monitoring Configuration Menu

Monitoring Port                    Be Monitored Port(s)
---------------    ------------------------------------------------------------
       1            2

Direction             Status
---------           -------------
  Both                Disabled


-------------------------------- <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. 4-42 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: Management packets such as Ping or ARP transmitted from this Switching Hub cannot be captured.

4.6.4. Rapid Spanning Tree Configuration

On the Advanced Switch Configuration Menu, pressing "S" opens the Rapid Spanning Tree Configuration Menu screen as shown in Fig. 4-43.
This Switching Hub supports the following two modes: IEEE802.1D compatible Spanning Tree Protocol (STP: Fig. 4-44) and IEEE802.1w compatible Rapid Spanning Tree Protocol (RSTP: Fig. 4-45).

```
PN28128 Local Management System
Advanced Switch Configuration -> Rapid Spanning Tree Configuration

Global RSTP Status: Disabled           Protocol Version: RSTP

Root Port:       0                     Time Since Topology Change: 0      Sec.
Root Path Cost:  0                     Topology Change Count:      0

Designated Root: 0000 000000000000     Bridge ID:            0000 000000000000
Hello Time:      2     Sec.            Bridge Hello Time:    2     Sec.
Maximum Age:     20    Sec.            Bridge Maximum Age:   20    Sec.
Forward Delay:   15    Sec.            Bridge Forward Delay: 15    Sec.

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

[E]nable/Disable Global RSTP           Set Bridge [F]orward Delay
Set RSTP Protocol [V]ersion            RSTP [B]asic Port Configuration
Set Bridge [P]riority                  RSTP [A]dvanced Port Configuration
Set Bridge [H]ello Time                Topology [I]nformation
Set Bridge [M]aximum Age               [Q]uit to previous menu


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

Fig. 4-43 Spanning Tree Configuration

```
PN28128 Local Management System
Advanced Switch Configuration -> Rapid Spanning Tree Configuration

Global RSTP Status: Enabled            Protocol Version: STP-Compatible

Root Port:       0                     Time Since Topology Change: 2      Sec.
Root Path Cost:  0                     Topology Change Count:      0

Designated Root: 8000 xxxxxxxxxxxx     Bridge ID:            8000 xxxxxxxxxxxx
Hello Time:      2     Sec.            Bridge Hello Time:    2     Sec.
Maximum Age:     20    Sec.            Bridge Maximum Age:   20    Sec.
Forward Delay:   15    Sec.            Bridge Forward Delay: 15    Sec.

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

[E]nable/Disable Global RSTP           Set Bridge [F]orward Delay
Set RSTP Protocol [V]ersion            RSTP [B]asic Port Configuration
Set Bridge [P]riority                  RSTP [A]dvanced Port Configuration
Set Bridge [H]ello Time                Topology [I]nformation
Set Bridge [M]aximum Age               [Q]uit to previous menu


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

Fig. 4-44 STP Mode

```
PN28128 Local Management System
Advanced Switch Configuration -> Rapid Spanning Tree Configuration

Global RSTP Status: Enabled            Protocol Version: RSTP

Root Port:       0                     Time Since Topology Change: 67     Sec.
Root Path Cost:  0                     Topology Change Count:      0

Designated Root: 8000 xxxxxxxxxxxx     Bridge ID:            8000 xxxxxxxxxxxx
Hello Time:      2     Sec.            Bridge Hello Time:    2     Sec.
Maximum Age:     20    Sec.            Bridge Maximum Age:   20    Sec.
Forward Delay:   15    Sec.            Bridge Forward Delay: 15    Sec.

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

[E]nable/Disable Global RSTP           Set Bridge [F]orward Delay
Set RSTP Protocol [V]ersion            RSTP [B]asic Port Configuration
Set Bridge [P]riority                  RSTP [A]dvanced Port Configuration
Set Bridge [H]ello Time                Topology [I]nformation
Set Bridge [M]aximum Age               [Q]uit to previous menu


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

Fig. 4-45 RSTP Mode

Screen Description

Global RSTP Status:	Displays the operation status of Spanning Tree.	
	Enabled	Spanning Tree is enabled.
	Disabled	Spanning Tree is disabled. (Factory default setting)
Protocol Version:	Displays the version of Spanning Tree.	
	RSTP	Operates with IEEE802.1w compatible Rapid Spanning Tree Protocol.
	STP-Compatible	Operates with IEEE802.1D compatible Spanning Tree Protocol.
Root Port:	Displays the current root port.	
Root Path Cost:	Displays the cost from the root port to the root bridge.	
Time Since Topology Change:	Displays the elapsed time (seconds) from the change of topology of Spanning Tree.	
Topology Change Count:	Displays the number of changes of topology of Spanning Tree.	
Designated Root:	Displays the bridge ID of the root bridge.	
Hello Time:	Displays the access interval with the root bridge to confirm the Spanning Tree topology.	
Maximum Age:	Displays the timeout period of the hello message.	
Forward Delay:	Displays the transition time of the Spanning Tree status, such as from Listening to Learning or from Learning to Forwarding.	
Bridge ID:	Displays the bridge ID of the Switching Hub. The bridge ID is configured with the bridge priority and the MAC address. The factory default setting of the bridge priority is 8000.	
Bridge Hello Time:	Displays the hello time when the Switching Hub becomes the root bridge.	
Bridge Maximum Age:	Displays the maximum age when the Switching Hub becomes the root bridge.	
Bridge Forward Delay	Displays the forward delay when the Switching Hub becomes the root bridge.	

Note: Spanning Tree and the Internet Mansion mode or Link Aggregation cannot be used simultaneously in this Switching Hub.

Available commands are listed below.

E	Configure ON/OFF of Spanning Tree Protocol.	
		Press "E." The command prompt changes to "Enable or Disable STP (E/D)>." Enter "E" if you wish to use or "D" if you don't wish to use.
V	Configure the operation mode of Spanning Tree Protocol.	
		Press "V." The command prompt changes to "Set RSTP protocol version (S/R)>." Enter "S" if you wish to operate with IEEE802.1D Spanning Tree or "R" to operate with IEEE802.1w Rapid Spanning Tree.
B	Configure the basic settings by port.	
		Press "B" to change to the "Basic Port Configuration" screen and configure the basic settings by port. For the configuration method, refer to the next section (**4.6.4.a).**
A	Configure the advanced settings by port.	
		Press "A" to change to the "Advanced Port Configuration" screen and configure the advanced settings by port. For the configuration method, refer to the next section (**4.6.4.b).**
P	Configure the bridge priority.	
		Press "P." The command prompt changes to "Enter bridge priority>." Enter a value within the range specified in the black band at the bottom of the screen.
H	Configure the bridge hello time.	
		Press "H." The command prompt changes to "Enter bridge hello time>." Enter a value within the range specified in the black band at the bottom of the screen.
M	Configure the bridge maximum age.	
		Press "M." The command prompt changes to "Enter bridge maximum age>." Enter a value within the range specified in the black band at the bottom of the screen.
F	Configure the bridge forward delay.	
		Press "F." The command prompt changes to "Enter bridge forward delay>." Enter a value within the range specified in the black band at the bottom of the screen.
I	Display topology information by port.	
		Press "I" to change to the "Designated Topology Information" screen and refer to topology information by port. For details, refer to the next section (**4.6.4.c**).
Q	Return to the parent menu.	

Note: All values of "Bridge Hello Time", "Bridge Maximum Age", and "Bridge Forward Delay" are related to each other. If you change one parameter, it automatically affects the setting range for other parameters. The setting range will be displayed in the black band at the bottom of the screen.

4.6.4.a. Basic Port Configuration

On the Rapid Spanning Tree Configuration Menu, pressing "B" opens the Basic Port Configuration screen, as shown in Fig. 4-46. On this screen, you can configure the Spanning Tree settings for each port.

```
PN28128 Local Management System
Rapid Spanning Tree Configuration -> Basic Port Configuration

Port  Trunk   Link     State        Role      Priority   Path Cost  STP Status
----  -----   ----   ----------   ----------  ---------  ---------  ----------
  1    ---    Down   Forwarding   Disabled       128     20000(A)    Enabled
  2    ---    Down   Forwarding   Disabled       128     20000(A)    Enabled
  3      1    Down   Forwarding   Disabled       128     20000(A)    Enabled
  4      1    Down   Forwarding   Disabled       128     20000(A)    Enabled
  5      2    Down   Forwarding   Disabled       128     20000(A)    Enabled
  6      2    Down   Forwarding   Disabled       128     20000(A)    Enabled
  7    ---    Down   Forwarding   Disabled       128     20000(A)    Enabled
  8    ---    Down   Forwarding   Disabled       128     20000(A)    Enabled
  9    ---    Down   Forwarding   Disabled       128     20000(A)    Enabled
 10    ---    Down   Forwarding   Disabled       128     20000(A)    Enabled
 11    ---    Down   Forwarding   Disabled       128     20000(A)    Enabled
 12    ---    Down   Forwarding   Disabled       128     20000(A)    Enabled
--------------------------------- <COMMAND> -----------------------------------
[N]ext Page                          Set Port Path [C]ost
[P]revious Page                      Set Port STP [S]tatus
Set Port Pr[i]ority                  [Q]uit to previous menu

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

Fig. 4-46 Basic Port Configuration

Screen Description

Port	Displays the port number.	
Link	Displays the link status.	
	UP	The link has been established successfully.
	DOWN	The link has not been established.
State	Displays the current port status.	
	Forwarding	Normal communication is executed based on the calculation result.
	Learning	Calculation is executed based on information.
	Discarding	Calculation is not executed.
Role	Displays the role of the port in Spanning Tree.	
	Designated	Operating as a designated port.
	Root	Operating as a root port.
	Alternate	Operating as an alternate port.
	Backup	Operating as a backup port.
	Disabled	STP is not working.
Priority	Displays the priority of each port in the Switching Hub. The larger number has higher priority. For all ports, "128" is the factory default setting. (The value is a multiple of 16.)	
Path Cost	Displays the cost of each port. For all ports, "Auto" is the factory default setting. In case of Auto, the cost is set automatically according to the link speed of the port.	

STP Status	Displays whether Spanning Tree of each port is enabled or disabled.	
	Enabled	Spanning Tree is enabled.
	Disabled	Spanning Tree 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.
I	Set the priority of each port in the Switching Hub.	
		1. Press "I." 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 priority for port #>." Enter a number from 0 to 255 in a multiple of 16.
C	Set the cost of each port.	
		1. Press "C." 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 path cost for port #>." Enter 0 to set the cost to Auto or a number from 1 to 200000000 to set a fixed cost.
S	Enable/disable the spanning tree of each port.	
		1. Press "S." 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 "Enable or Disable STP for port # (E/D)>." Press "E" to use Spanning Tree. Press "D" not to use it.
Q	Return to the parent menu.	

4.6.4.b. Advanced Port Configuration

On the Rapid Spanning Tree Configuration Menu, pressing "A" opens the Advanced Port Configuration screen, as shown in Fig. 4-47. On this screen, you can configure the Spanning Tree advanced settings for each port.

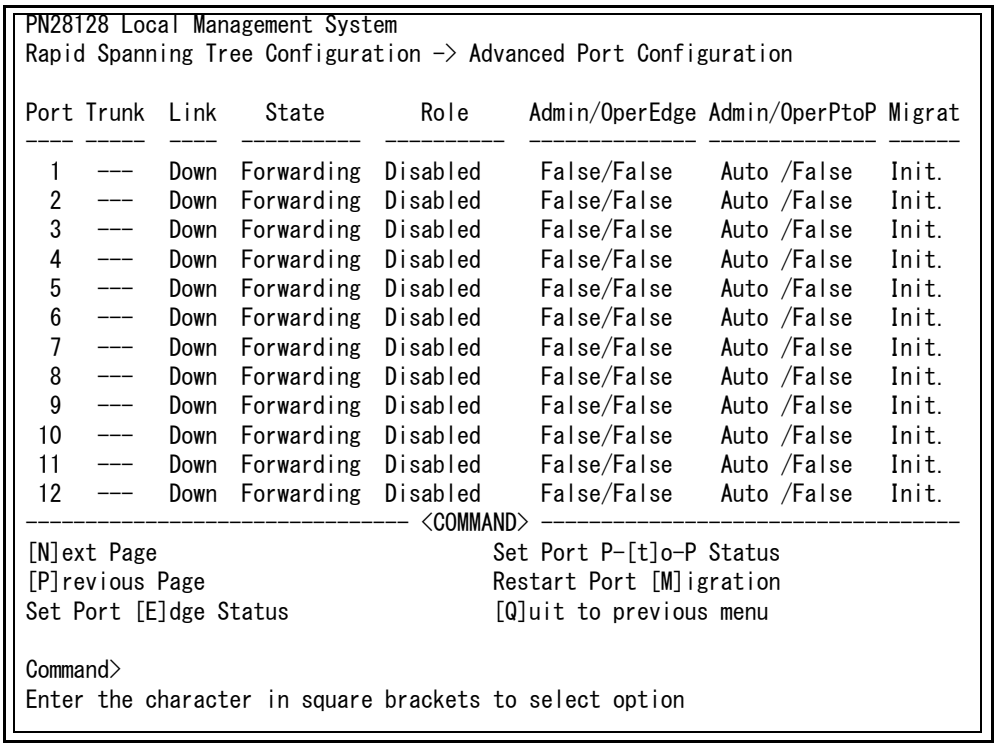


Fig. 4-47 Advanced Port Configuration

Screen Description

Port	Displays the port number.	
Link	Displays the link status.	
	UP	The link has been established successfully.
	DOWN	The link has not been established.
State	Displays the current port status.	
	Forwarding	Normal communication is executed based on the calculation result.
	Learning	Calculation is executed based on information.
	Discarding	Calculation is not executed.
Role	Displays the role of the port in Spanning Tree.	
	Designated	Operating as a designated port.
	Root	Operating as a root port.
	Alternate	Operating as an alternate port.
	Backup	Operating as a backup port.
	Disabled	STP is not working.
Admin/ OperEdge	Displays the setting of the edge port (a port that can be immediately forwarded). Admin: Administration displays the setting status, and Oper: Operation displays the actual status.	
	True	Can be set to the edge port.
	False	Cannot be set to the edge port.

Admin/ OperPtoP	Displays point-to-point connection of the Switching Hub. Admin: Administration displays the setting status, and Oper: Operation displays the actual status.	
	Auto	Automatically recognizes according to the port status. (Only Admin)
	True	P-to-P connected.
	False	Not P-to-P connected.
Migrat	Displays the current operation status of Spanning Tree.	
	STP	STP is working.
	RSTP	RSTP is working.
	Init.	STP is not working.

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	Set Edge Status of each port.	
		1. Press "E." 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 "Set edge port for port # (T/F)>." Press "T" for True or "F" for False.
T	Set P-to-P Status of each port.	
		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 "Set point-to-point for port # (A/T/F)>." Press "T" for True or "F" for False.
M	Restart the operation of Spanning Tree.	
		1. Press "M." 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 "Restart the protocol migration process for port # ? (Y/N)>." Press "Y" to restart. Otherwise, press "N."
Q	Return to the parent menu.	

4.6.4.c. Designated Topology Information

On the Rapid Spanning Tree Configuration Menu, pressing "I" opens the Designated Topology Information screen, as shown in Fig. 4-48. On this screen, you can view the Spanning Tree topology information by port.

```
PN28128 Local Management System
Rapid Spanning Tree Configuration -> Designated Topology Information

Port Trunk  Link     Desig. Root     Desig. Cost   Desig. Bridge   Desig. Port
---- -----  ----  ------------------  ----------- ------------------ -----------
  1   ---   Down  0000 000000000000   0           0000 000000000000    00 00
  2   ---   Down  0000 000000000000   0           0000 000000000000    00 00
  3   ---   Down  0000 000000000000   0           0000 000000000000    00 00
  4   ---   Down  0000 000000000000   0           0000 000000000000    00 00
  5   ---   Down  0000 000000000000   0           0000 000000000000    00 00
  6   ---   Down  0000 000000000000   0           0000 000000000000    00 00
  7   ---   Down  0000 000000000000   0           0000 000000000000    00 00
  8   ---   Down  0000 000000000000   0           0000 000000000000    00 00
  9   ---   Down  0000 000000000000   0           0000 000000000000    00 00
 10   ---   Down  0000 000000000000   0           0000 000000000000    00 00
 11   ---   Down  0000 000000000000   0           0000 000000000000    00 00
 12   ---   Down  0000 000000000000   0           0000 000000000000    00 00
-------------------------------- <COMMAND> ----------------------------------


[N]ext Page              [P]revious Page          [Q]uit to previous menu

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

Fig. 4-48 Designated Topology Information

Screen Description

Port	Displays the port number.	
Link	Displays the link status.	
	UP	The link has been established successfully.
	DOWN	The link has not been established.
Desig.Root	Displays the route bridge ID.	
Desig.Cost	Displays the cost in transmission.	
Desig.Bridge	Displays the bridge ID of the designated bridge.	
Desig.Port	Displays the port ID of the designated port. (The port ID is a combination of the port priority value and port number.)	

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.
Q	Return to the parent menu.	

4.6.5. Quality of Service Configuration

On the Advanced Switch Configuration Menu, pressing "C" opens the Quality of Service Configuration Menu screen, as shown in Fig. 4-49. On this screen, you can configure the settings of QoS (Quality of Service) of the Switching Hub.

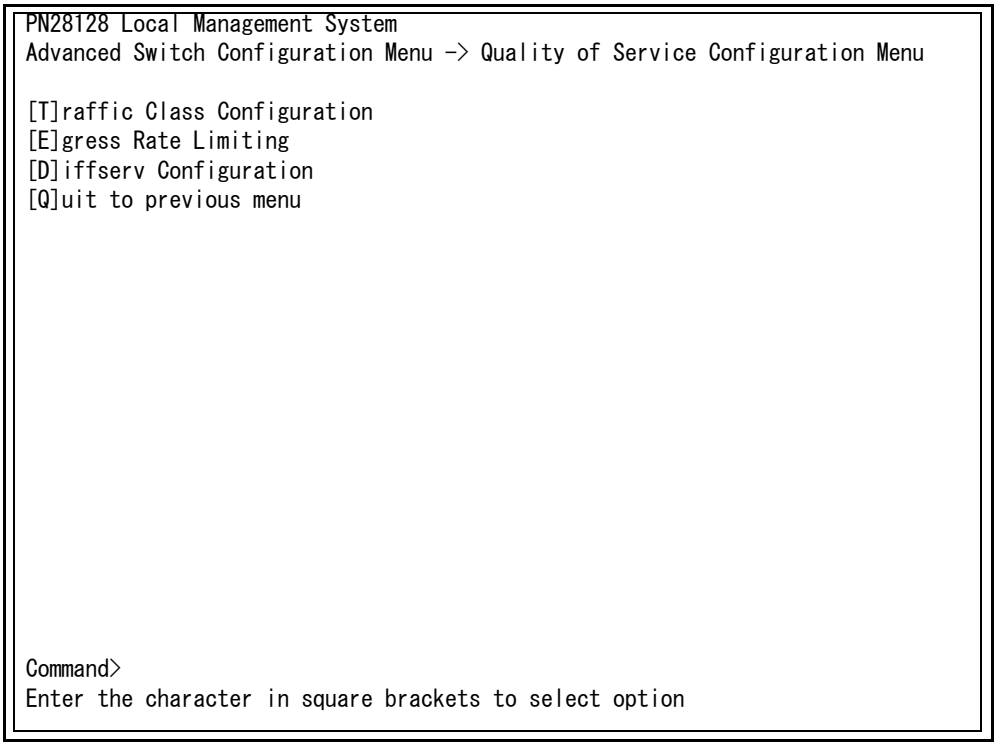


Fig. 4-49 QoS Configuration

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 (4.6.5.a).
E	Move to the bandwidth control configuration screen.	
		Press "E." The screen changes to "Egress Rate Limiting." For the configuration contents, refer to the next section (4.6.5.c).
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 (4.6.5.d).
Q	Return to the parent menu.	

4.6.5.a. Traffic Class Configuration Menu

On the Quality of Service Configuration Menu, pressing "T" opens the Traffic Class Configuration screen, as shown in **Fig. 4-50**. On this screen, you can configure the QoS and Traffic Class settings.

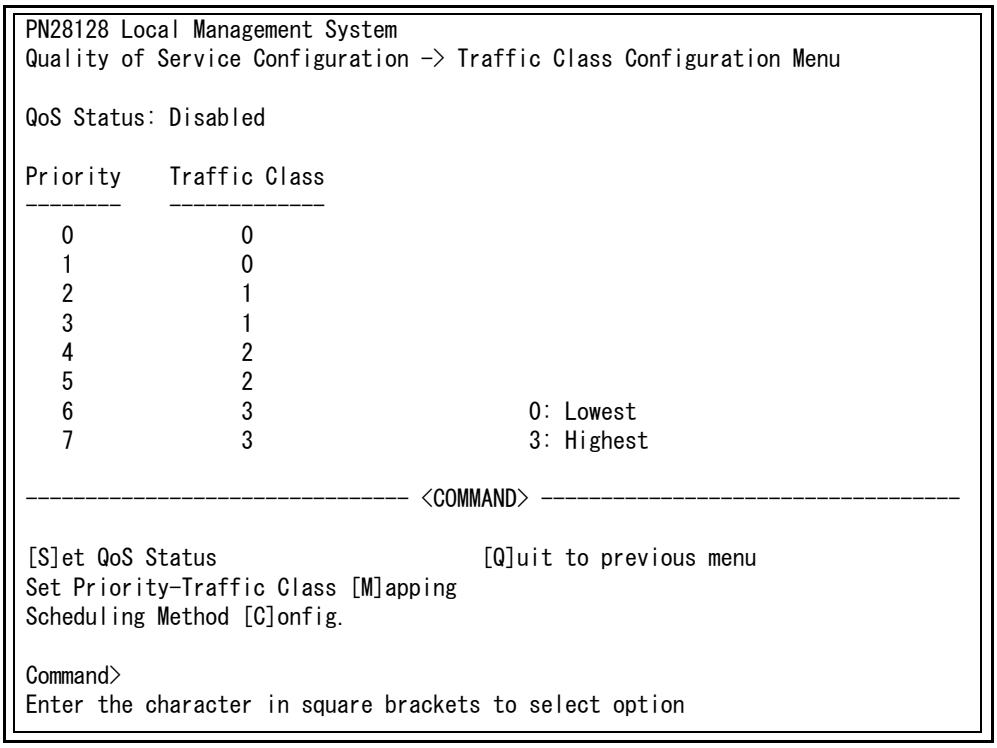


Fig. 4-50 QoS Configuration

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 7) 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.
C	Move to the scheduling method configuration screen.	
		Press "C." The screen changes to "Scheduling Method." For configuration contents, refer to the next section (**4.6.5.b**).
Q	Return to the parent menu.	

4.6.5.b. Scheduling Method

On the Quality of Service Configuration Menu, pressing "C" opens the Scheduling Method screen, as shown in **Fig. 4-51**. On this screen, you can configure the scheduling method settings.

```
PN28128 Local Management System
Quality of Service Configuration -> Scheduling Method

Scheduling Method: Strict

Traffic Class     Weight
-------------     ------
      0               1
      1               2
      2               3
      3               4

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

[S]et Scheduling Method
Set Traffic Class-Weight [M]apping
[Q]uit to previous menu




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

Fig. 4-51 Scheduling Method

Screen Description

Scheduling Method:	Displays the scheduling method of the QoS function.	
	Strict	PQ: Strict priority queuing (Factory default setting)
	Weighted Round Robin	WRR: Weighted round robin scheduling
Traffic Class	Displays the priority of packets.	
Weight	Displays the weight to distribute packets.	

Available commands are listed below.

S	Select the scheduling method of the QoS function.	
		Press "S" to change the command prompt to "Select scheduling method (S/W)>." Enter "S" to use Strict Priority Queueing or "W" to use Weighted Round Robin.
M	Set the weight to priority (Traffic Class).	
		1. Press "M" to change the command prompt to "Enter traffic class>." Enter a Traffic Class (0 to 3). 2. Then, the command prompt changes to "Enter weight for traffic class #>." Enter weight (1 to 127).
Q	Return to the parent menu.	

4.6.5.c. Egress Rate Limiting Configuration Menu

On the Quality of Service Configuration Menu, pressing "WE" opens the Egress Rate Limiting Configuration Menu screen, as shown in **Fig. 4-52**. On this screen, you can configure the bandwidth control settings.

```
PN28128 Local Management System
Quality of Service Configuration -> Egress Rate Limiting Configuration Menu
Port   Bandwidth    Status
----  -----------  --------
  1       1000     Disabled
  2       1000     Disabled
  3       1000     Disabled
  4       1000     Disabled
  5       1000     Disabled
  6       1000     Disabled
  7       1000     Disabled
  8       1000     Disabled
  9       1000     Disabled
 10       1000     Disabled
 11       1000     Disabled
 12       1000     Disabled
Note: Bandwidth - 1Mbps/unit
-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                               Set [S]tatus
[P]revious Page                           [Q]uit to previous menu
Set [B]andwidth

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

Fig. 4-52 Egress Rate Limiting Configuration Menu

Screen Description

Port	Displays the port number.	
Bandwidth	Displays the bandwidth. The factory default setting is 1000. (The unit is Mbps)	
Status	Displays whether the bandwidth control settings are enabled or disabled.	
	Enabled	The bandwidth control settings are enabled.
	Disabled	The bandwidth control settings are 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.
B	Set the bandwidth.	
		1. Press "B." The command prompt changes to "Enter port number e.g.: 1, 3, 5-14>." Enter the port number to be specified. 2. The command prompt changes to "Enter bandwidth >." Enter a value from 1 to 1000.
S	Configure the bandwidth control settings.	
		1. Press "S." The command prompt changes to "Enter port number e.g.: 1, 3, 5-14>." Enter the port number to be specified. 2. Then, the command prompt changes to "Enable or Disable status (E/D)>." Enter "E" to enable the bandwidth control settings. Enter "D" to disable it.
Q	Return to the parent menu.	

4.6.5.d. DiffServ Configuration Menu

On the Quality of Service Configuration Menu, pressing "D" opens the DiffServ Configuration screen, as shown in Fig. 4-53. On this screen, you can configure the DiffServ settings using DSCP values.

```
PN28128 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. 4-53 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.	

4.6.6. Storm Control Configuration Menu

On the Advanced Switch Configuration Menu, pressing "O" opens the Storm Control Configuration Menu screen, as shown in **Fig. 4-54**. On this screen, you can configure the settings of storm control of unknown unicast, broadcast, and multicast.

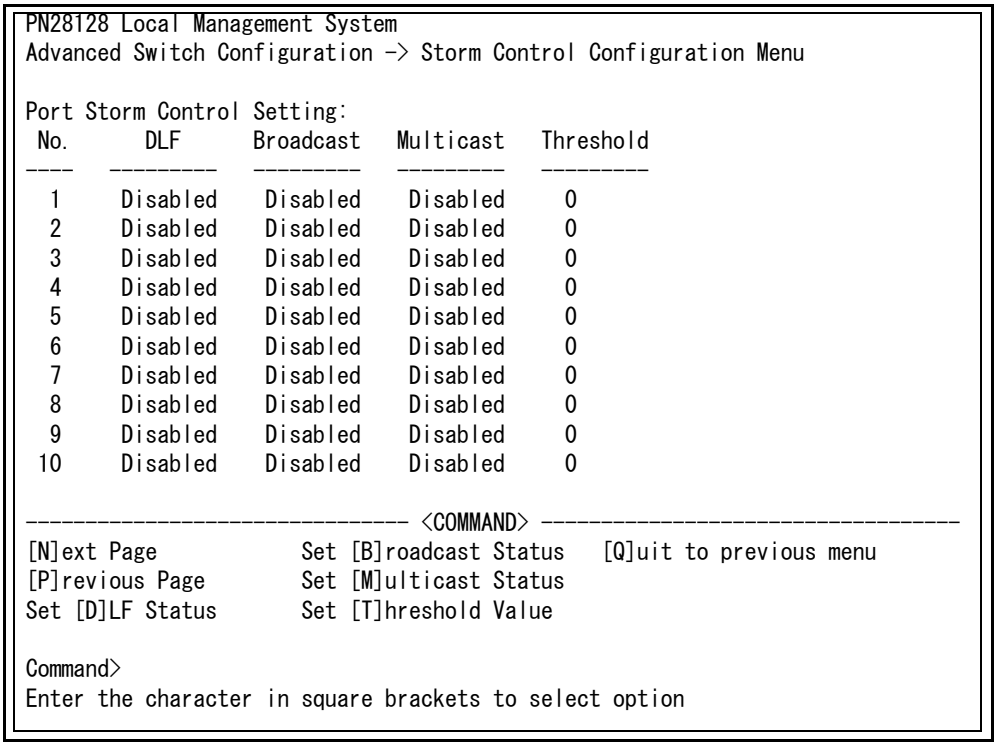


Fig. 4-54 Storm Control Configuration

Screen Description

DLF:	Enables/disables the unknown unicast storm control.	
	Enabled	The unknown unicast storm control is enabled.
	Disabled	The unknown unicast storm control is disabled. (Factory default setting)
Broadcast:	Enables/disables the broadcast storm control.	
	Enabled	The broadcast storm control is enabled.
	Disabled	The broadcast storm control is disabled. (Factory default setting)
Multicast:	Enables/disables the multicast storm control.	
	Enabled	The multicast storm control is enabled.
	Disabled	The multicast storm control is disabled. (Factory default setting)
Threshold:	Displays the threshold of the number of packets (Packet Per Second).	

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.
D	Enable/disable the unknown unicast storm control.	
		1. Press "D." The command prompt changes to "Enter port number>." Enter the port number you wish to specify. 2. Then, the command prompt changes to "Enable or Disable DLF storm control status (E/D)>." Press "E" to enable the unknown unicast storm control. Press "D" to disable it.
B	Enable/disable the broadcast storm control.	
		1. Press "B." The command prompt changes to "Enter port number>." Enter the port number you wish to specify. 2. Then, the command prompt changes to "Enable or Disable broadcast storm control status (E/D)>." Press "E" to enable the broadcast storm control. Press "D" to disable it.
M	Enable/disable the multicast storm control.	
		1. Press "M." The command prompt changes to "Enter port number>." Enter the port number you wish to specify. 2. Then, the command prompt changes to "Enable or Disable multicast storm control status (E/D)>." Press "E" to enable the multicast storm control. Press "D" to disable it.
T	Set the threshold of the number of packets (Packet Per Second).	
		1. Press "T." The command prompt changes to "Enter port number>." Enter the port number you wish to specify. 2. Then, the command prompt changes to "Enter threshold value>." Enter the threshold of the number of packets (Packet Per Second) between 0 and 262143.
Q	Return to the parent menu.	

4.6.7. Port Based Access Control Configuration Menu

On the Advanced Switch Configuration Menu, pressing "X" opens the 802.1X Access Control Configuration screen as shown in **Fig. 4-55**. On this screen, you can configure the IEEE 802.1X access control.
The supported authentication methods are EAP-MD5, TLS, and PEAP.

```
PN28128 Local Management System
Advanced Switch Configuration -> Port Based Access Control Configuration Menu
NAS ID                          : Nas1
Port No                         : 1
Port Status                     : Authorized
Port Control                    : Force Authorized
Transmission Period             : 30    seconds
Supplicant Timeout              : 30    seconds
Server Timeout                  : 30    seconds
Maximum Request                 : 2
Quiet Period                    : 60    seconds
Re-authentication Period        : 3600  seconds
Re-authentication Status        : Disabled
Re-authentication Timer Mode    : RADIUS
-------------------------------- <COMMAND> ----------------------------------
[P]ort No                               Q[u]iet Period
Port [C]ontrol                          R[e]-auth Period
[T]ransmission Period                   Re-[a]uth Status
Supp[l]icant Timeout                    [I]nitialize
Server Time[o]ut                        [R]e-auth Initialize
[M]aximum Request                       [Q]uit to previous menu
[K]ind of Re-auth Timer Mode
Command>
Enter the character in square brackets to select option
```

Fig. 4-55 IEEE802.1X Access Control Configuration

Note: When IEEE802.1X port-based authentication is activated, MAC Learning cannot be disabled.

Screen Description

NAS ID:	Displays the authentication ID (NAS Identifier).	
Port No:	Displays the port number.	
Port Status:	Displays the authentication status. Reflects the Port Control setting shown below.	
	Unauthorized	The port is not authorized.
	Authorized	The port is authorized.
Port Control:	Displays the operation mode for authentication requests.	
	Auto	The access control function is enabled. The authentication process relay is performed between the client and the authentication server.
	Force Unauthorized	The access control function is disabled. All communications are blocked.
	Force Authorized	The access control function is disabled. All communications are authorized. (Factory default setting)
Transmission Period:	The number of seconds to wait before requesting the client to reattempt authentication. The factory default setting is 30 seconds.	
Supplicant Timeout:	Displays the timeout for the client. The factory default setting is 30 seconds.	
Server Timeout:	Displays the timeout for the authentication server. The factory default setting is 30 seconds.	
Max Request:	The maximum number of times of retransmitting an authentication request. The factory default setting is 2.	
Quiet Period:	Displays the number of seconds to wait before reattempting a failed authentication. The factory default setting is 60 seconds.	
Re-authentication Period:	Displays the re-authentication time interval. The factory default setting is 3600 seconds.	
Re-authentication Status:	Displays whether the re-authentication is enabled or disabled.	
	Enabled_RADIUS	The re-authentication is performed using the value of the Re-authentication timer on the Radius server.
	Enabled_Local	The re-authentication is performed using the value of the Re-authentication timer on this Switching Hub.
	Disabled	The re-authentication is not performed. (Factory default setting)

Available commands are listed below.

P	Set the port number.	
		Press "P." The command prompt changes to "Enter port number>." Enter the port number you wish to configure.
C	Set the operation mode for authentication requests.	
		Press "C." The command prompt changes to "Select authenticator port control (A/U/F) >." Press "A" to enable the authentication function. Press "U" to disable it and block communications. Press "F" to disable it and authorize communications.
T	Set the interval time for authentication requests.	
		Press "T." The command prompt changes to "Enter Transmission Period>." Enter an integer between 1 and 65535 (seconds).
L	Set the timeout for the supplicant.	
		Press "L." The command prompt changes to "Enter Supplicant Timeout value>." Enter an integer between 1 and 65535 (seconds).
O	Set the timeout for the authentication server.	
		Press "O." The command prompt changes to "Enter Server Timeout>." Enter an integer between 1 and 65535 (seconds).
M	Set the maximum number of reattempts of authentication.	
		Press "M." The command prompt changes to "Enter Max request count>." Enter the maximum number of reattempts with an integer between 1 and 10.
U	Set the period time to wait before reattempting a failed authentication.	
		Press "U." The command prompt changes to "Enter Quiet Period>." Enter an integer between 1 and 65535 (seconds).
X	Set the maximum number of reattempts of authentication.	
		Press "X" The command prompt changes to "Enter Max request count>." Enter the maximum number of reattempts with an integer between 1 and 10.
E	Set the re-authentication time interval.	
		Press "E." The command prompt changes to "Enter re-authentication Period>." Enter an integer between 1 and 65535 (seconds).
A	Enable/disable re-authentication.	
		Press "A." The command prompt changes to "Enable or Disable re-authentication ?(E/L/D) >." Press "E" to enable the authentication using the Re-authentication timer value on the RADIUS server. Press "L" to enable the authentication using the Re-authentication timer value on this Switching Hub. Press "D" to disable it.
I	Initialize the authentication status.	
		Press "I." The command prompt changes to "Would you initialize authenticator?(Y/N)>." To initialize it, press "Y." Otherwise, press "N."
R	Initialize the re-authentication status.	
		Press "R." The command prompt changes to "Would you want to initialize re-authentication?(Y/N) >." To initialize it, press "Y." Otherwise, press "N."
Q	Return to the parent menu.	

4.6.8. IGMP Snooping Configuration

On the Advanced Switch Configuration Menu, pressing "I" opens the IGMP Snooping Configuration Menu screen as shown in **Fig. 4-56**. When you use an IP multicast application, such as a video-conference system and video/audio delivery system, this function prevents multicast packets from being sent to all ports and using up the bandwidth.
In addition, the Multicast filtering function can prevent multicast packets from being sent to any ports other than specified ones and the router port even if a multicast group is not created.

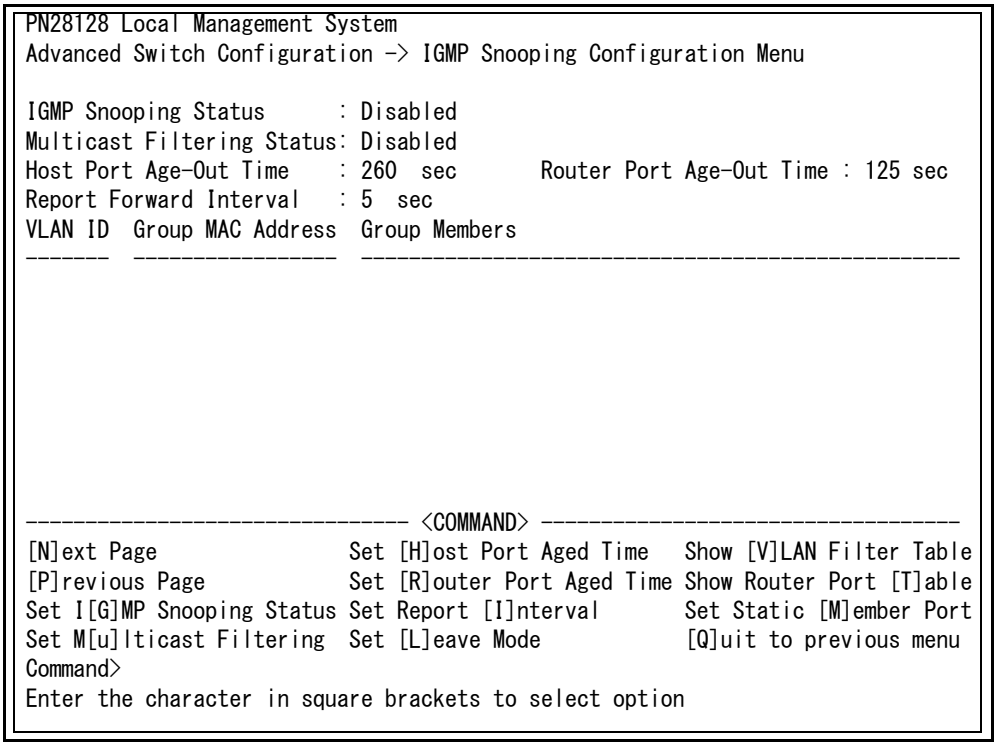


Fig. 4-56 IGMP Snooping Configuration

Screen Description

IGMP Snooping Status	Displays the IGMP Snooping function status.	
	Enabled	IGMP Snooping is enabled.
	Disabled	IGMP Snooping is disabled.
Multicast Filtering Status	Displays the Multicast filtering function status.	
	Enabled	The Multicast filtering function is enabled.
	Disabled	The Multicast filtering function is disabled.
Host Port Age-Out Time	Displays the time until the host port is automatically opened after a multicast leaves the group. The factory default setting is 260 seconds.	
Router Port Age-Out Timer	Displays the time until the router port is automatically opened. The factory default setting is 125 seconds.	
Report Forward Interval	Displays the Proxy Report waiting time. The factory default setting is 5 seconds.	
VLAN ID	Displays the VLAN ID of the multicast group.	
Group MAC Address	Displays the MAC address of the multicast group.	
Group Members	Displays member ports of the multicast 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.
G	Change the IGMP Snooping function status.	
		Press "G." The command prompt changes to "Enable or Disable IGMP snooping (E/D)>." Press "E" to enable the function. Press "D" to disable it.
U	Change the Multicast filtering function status.	
		Press "U." The command prompt changes to "Enable or Disable Multicast Filtering (E/D)>." Press "E" to enable the function. Press "D" to disable it.
H	Set the aging time of multicast group members.	
		Press "S." The command prompt changes to "Enter age out time>." Set the time between 150 and 300 seconds.
R	Set the aging time of the multicast group's router port.	
		Press "S." The command prompt changes to "Enter age out time>." Set the time between 150 and 300 seconds.
I	Set the Proxy Report waiting time.	
		Press "I." The command prompt changes to "Enter forward interval>." Set the time between 0 and 25 seconds.
L	Move to the Leave mode configuration screen.	
		Press "L" to move to the "Set Leave Mode Menu" screen. (Refer to 4.6.8.a.)
V	Move to the VLAN filter configuration screen.	
		Press "V" to move to the "Show IGMP Snooping VLAN Filter Table Menu" screen. (Refer to 4.6.8.b.)
T	Show the router port table.	
		Press "T" to move to the "Show Router Port Table Menu" screen. (Refer to 4.6.8.c.)
M	Statically set a router port.	
		1. Press "M." The command prompt changes to "Add or Delete static group member(A/D)>." Press "A" to add a router port. Press "D" to delete it. 2. Then, enter the target VLAN ID, multicast MAC address, and port number.
Q	Return to the parent menu.	

Note: The IGMP Snooping function and the Internet Mansion mode cannot be used simultaneously.

4.6.8.a. Set Leave Mode Menu

On the IGMP Snooping Configuration Menu, pressing "L" opens the Set Leave Mode Menu screen as shown in Fig. 4-57. On this screen, you can configure the settings of operation after receiving a Leave packet.

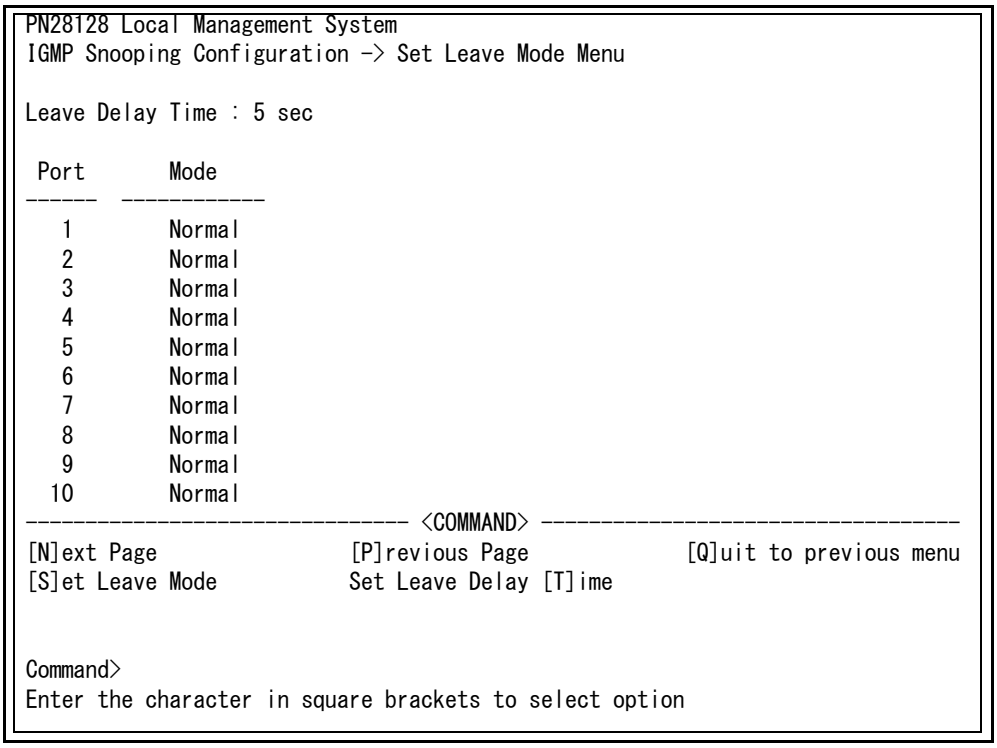


Fig. 4-57 Set Leave Mode Menu

Screen Description

Leave Delay Time	Displays the waiting time after receiving a Leave packet. The factory default setting is 5 seconds.	
Port	Displays the port number.	
Mode	Displays the operation after receiving a Leave packet.	
	Normal	Waits for the specified Leave Delay Time and then sends the Leave packet from the multicast group member. (Factory default setting)
	Immediate	Sends the Leave packet from the multicast group member immediately after receiving it.

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	Set the operation after receiving a Leave packet.	
		1. Press "S." 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 "Set leave mode (N/I)>." Press "I" to send a Leave packet to the router port immediately after receiving it. Press "N" to wait for the specified Leave Delay Time before sending it to the router port.
T	Set the waiting time after receiving a Leave packet.	
		Press "T." The command prompt changes to "Set leave delay time>." Set the time to wait after receiving a Leave packet in seconds between 1 and 10. (The factory default setting is 5 seconds)
Q	Return to the parent menu.	

4.6.8.b. VLAN Filter Configuration

On the IGMP Snooping Configuration Menu, pressing "V" opens the Show IGMP Snooping VLAN Filter Table Menu screen as shown in Fig. 4-58. On this screen, you can configure VLANs to be filtered out from the target of IGMP Snooping.

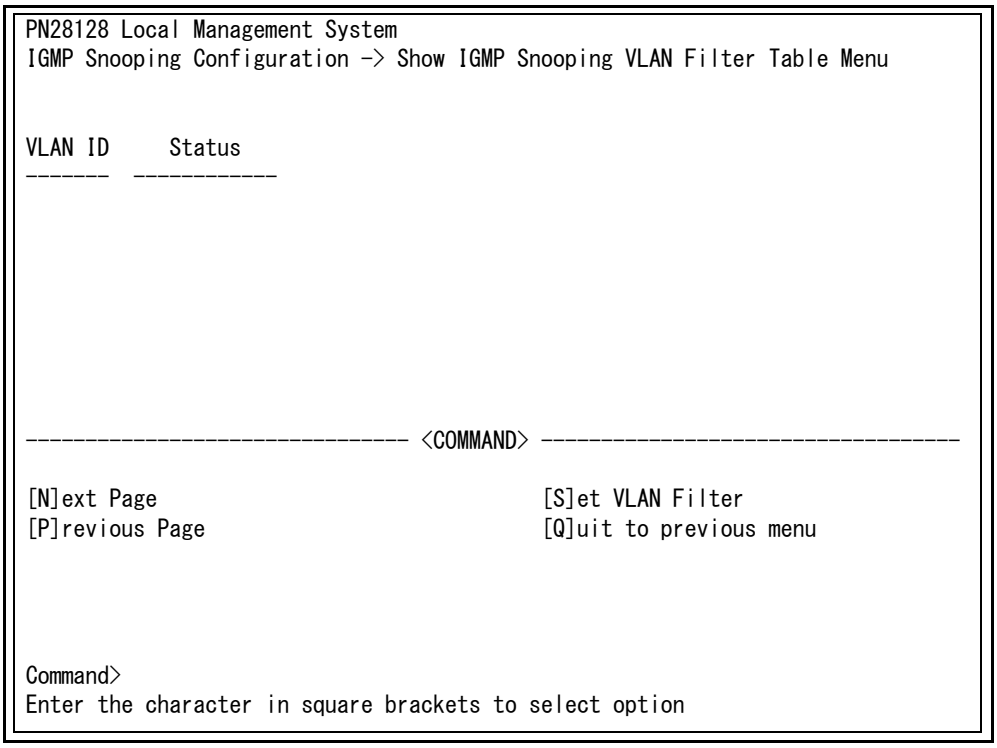


Fig. 4-58 VLAN Filter Configuration

Screen Description

VLAN ID	Displays the VLAN ID.	
Status	Displays the VLAN filter status.	
	Filtered	The VLAN filter is enabled.

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	Set a VLAN to be a target of VLAN filter.	
	Press "S." The command prompt changes to "Enter VLAN ID >." Set the VLAN ID with a value between 1 and 4094.	
Q	Return to the parent menu.	

4.6.8.c. Router Port Table Configuration

On the IGMP Snooping Configuration Menu, pressing "T" opens the Show Router Port Table Menu screen as shown in Fig. 4-59.

```
PN28128 Local Management System
IGMP Snooping Configuration -> Show Router Port Table Menu

Dynamic Detection: PIM and DVMRP

VLAN ID  Port List
-------  ------------------------------------------------------------------------

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

[N]ext Page              [P]revious Page              [Q]uit to previous menu
[S]et Static Router Port Set Dynamic [L]earning Method



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

Fig. 4-59 Router Port Table View

Screen Description

Dynamic Detection	Displays the learning method of the router port.	
	PIM and DVMRP	Learns a port that received PIM and DVMRP packets as a router port. (Factory default setting)
	IGMP Query	Learns a port that received IGMP Query as a router port.
	PIM and DVMRP, IGMP Query	Learns a port that received PIM, DVMRP, and IGMP Query as a router port.
VLAN ID	Displays the VLAN ID.	
Port List	Displays 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.
S	Statically set a router port.	
		1. Press "S." The command prompt changes to "Add or Delete Static Multicast Router Port (A/D)>." Press "A" to add a router port. Press "D" to delete it. 2. Then, the command prompt changes to "Enter port number>." Enter the port number between 1 and 14
L	Specify a learning method of the router port.	
		Press "L." The command prompt changes to "Set dynamic learning method (P/I/B)>." Press "P" for PIM/DVMRP. Press "I" for IGMP Query. Press "B" for both.
Q	Return to the parent menu.	

4.6.9. Power Over Ethernet Configuration

On the Advanced Switch Configuration Menu, pressing "P" opens the Power Over Ethernet Configuration Menu screen as shown in Fig. 4-60. On this screen, you can configure IEEE 802.3at compatible power supply settings.

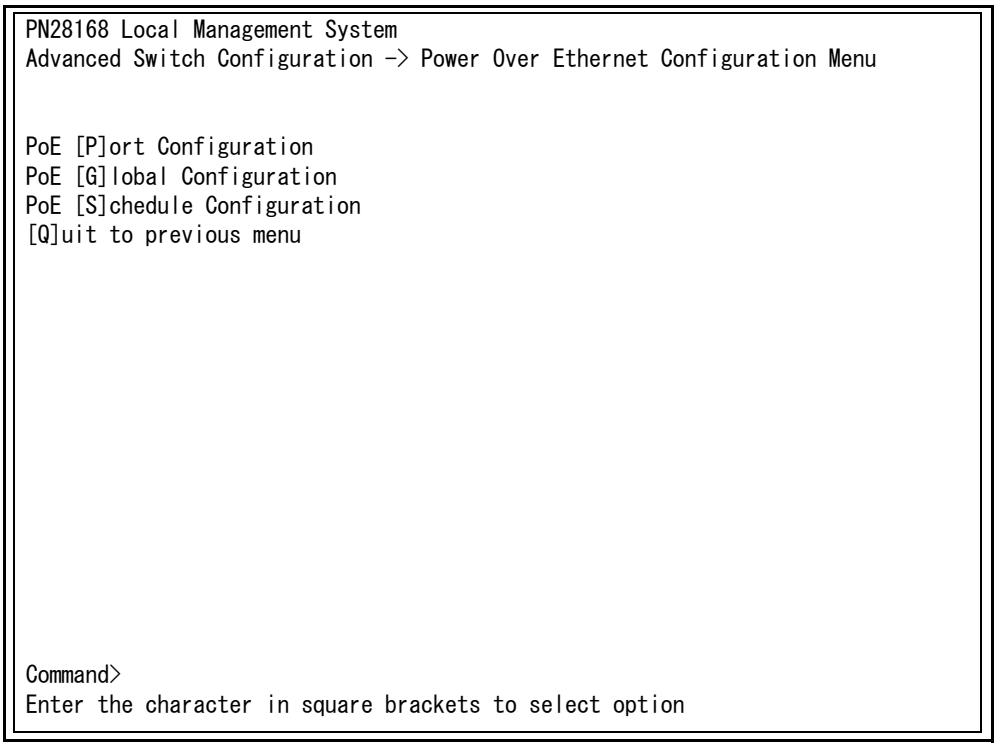


Fig. 4-60 PoE Configuration

Available commands are listed below.

P	Configure PoE for each port.	
		Press "P" to move to the "PoE Port Configuration Menu" screen. Refer to 4.6.9.a.
G	Configure the PoE settings.	
		Press "G" to move to the "PoE Global Configuration Menu" screen. Refer to 4.6.9.b.
S	Configure the PoE scheduler settings.	
		Press "S" to move to the “PoE Schedule Configuration Menu” screen. Refer to 4.6.9.c.
Q	Return to the parent menu.	

Note: This Switching Hub can supply power up to 185 W in total to terminal devices conforming to IEEE802.3af or IEEE802.3at. For each port, it can supply up to 15.4 W for a IEEE802.3af compatible device and up to 30.0 W for a IEEE802.3at compatible device, however, the total of power required for terminal devices to be connected should not exceed 185 W. Otherwise, "Overload" is displayed in Status in 4.6.9.a, and the power cannot be supplied normally.

4.6.9.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. 4-61. On this screen, you can configure the PoE settings for each port.

```
PN28128 Local Management System
Power Over Ethernet Configuration -> PoE Port Configuration Menu

No. Admin Sche. Status Layer Class Prio.   Limit(mW)  Pow.(mW) Vol.(V) Cur.(mA)
--- ----- ----- ------ ----- ----- ------ ---------- -------- ------- --------
 1   Up    -    NotPwr   -     -   Low          Auto        0       0        0
 2   Up    -    NotPwr   -     -   Low          Auto        0       0        0
 3   Up    -    NotPwr   -     -   Low          Auto        0       0        0
 4   Up    -    NotPwr   -     -   Low          Auto        0       0        0
 5   Up    -    NotPwr   -     -   Low          Auto        0       0        0
 6   Up    -    NotPwr   -     -   Low          Auto        0       0        0
 7   Up    -    NotPwr   -     -   Low          Auto        0       0        0
 8   Up    -    NotPwr   -     -   Low          Auto        0       0        0
 9   Up    -    NotPwr   -     -   Low          Auto        0       0        0
10   Up    -    NotPwr   -     -   Low          Auto        0       0        0
11   Up    -    NotPwr   -     -   Low          Auto        0       0        0
12   Up    -    NotPwr   -     -   Low          Auto        0       0        0

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

Fig. 4-61 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.
Layer	Displays the classification methods supported by the terminal device.	
	1	Power is supplied based on Physical Layer Classification.
	2	Power is supplied based on Data Link Layer Classification.
Class	Displays the class selected by the Classification function.	
Prio.	Displays the priority of power supply.	
	Crit.	Indicates the highest priority.
	High	Indicates the second highest priority.
	Low	Indicates no priority.
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.

<table>
<tr><td>S</td><td colspan="2">Set whether the power supply is enabled or disabled.</td></tr>
<tr><td></td><td></td><td>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).</td></tr>
<tr><td>I</td><td colspan="2">Set the priority for power supply.</td></tr>
<tr><td></td><td></td><td>1. Press "I." 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 selection>." Press "1" for Critical, "2" for High, or "3" for Low.</td></tr>
<tr><td>L</td><td colspan="2">Set the upper limit of power supply.</td></tr>
<tr><td></td><td></td><td>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 limit mode for port # (A/M)>." Press "A" to set the upper limit automatically or "M" to set it manually.
3. If "M" is selected, the command prompt changes to "Enter the power limit>." Enter the limit between 3000 and 30000 mW (in units of 200 mW).
As the change is applied, the display on the upper screen is updated automatically.
If the upper limit of power supply amount is set to Auto, the following values are set automatically as limiting values of the port with combination of Layer and Class after the terminal device is detected.
If the upper limit of the power supply is set to Auto, the limiting value of the port is automatically set with the Class value after the power supply terminal is detected.
<table>
<tr><td rowspan="2">Class</td><td colspan="2">Layer</td></tr>
<tr><td>1</td><td>2</td></tr>
<tr><td>0</td><td>15400</td><td>14000</td></tr>
<tr><td>1</td><td>4000</td><td>4000</td></tr>
<tr><td>2</td><td>7000</td><td>6800</td></tr>
<tr><td>3</td><td>15400</td><td>14000</td></tr>
<tr><td>4</td><td>15400</td><td>30000</td></tr>
</table></td></tr>
<tr><td>L</td><td colspan="2">Set the upper limit of power supply.</td></tr>
<tr><td></td><td></td><td>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).</td></tr>
<tr><td>Q</td><td colspan="2">Return to the parent menu.</td></tr>
</table>

Note: To supply power to a IEEE802.3at non-compatible PoE power receiving device that requires power of 15.4 W or more and does not support 2-Event Physical Layer Classification or Data Link Layer Classification, the upper limit of power supply should be set manually between 15600 to 30000 mW.

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

4.6.9.b. PoE Global Configuration Menu

On the Power Over Ethernet Configuration Menu, pressing "G" opens the PoE Global Configuration Menu as shown in **Fig. 4-62**. On this screen, you can configure the PoE settings.

```
PN28128 Local Management System
Power Over Ethernet Configuration -> PoE Global Configuration Menu

Power Budget :                          185W
Power Consumption :                     0W
Power Usage Threshold For Sending Trap:  50 %
Power Management Method :  Deny next port connection, regardless of priority


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

Set Power [U]sage
Set Power [M]anagement Method
[Q]uit to previous menu









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

Fig. 4-62 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.	
Power Usage Threshold for Sending Trap	Displays the power supply threshold for sending a trap. "50 %" is the factory default setting.	
Power Management Method	Displays the power supply method when the supplied power exceeds Power Budget. "Deny next port connection, regardless of priority" is the factory default setting.	
	Deny next port connection, regardless of priority	Stops power supply to the port connected immediately before Power Budget was exceeded.
	Low priority port will be shut down	Stops power supply to the port with the lowest priority. If multiple ports have the same priority, power supply to a port with a larger port number is stopped.

Available commands are listed below.

U	Set the threshold for sending a trap.	
		Press "U." The command prompt changes to "Enter power usage threshold>." Enter the threshold to send a trap.
M	Set the method to manage power supply.	
		Press "M." The command prompt changes to "Enter the power management method>." Select and enter the management method. Enter "0" to shut down the port with low priority and to supply power to the one newly connected. Enter "1" not to supply power to the port connected next regardless of the value of priority.
Q	Return to the parent menu.	

Note: When the power supply amount is 169.5 W or less, if a IEEE802.3at compatible PoE power receiving device that consumes power of 15.4 W or more has been newly connected and the power supply amount exceeds 185 W, power supply to a port with a lower priority is always stopped regardless of the Power Management Method settings. (If multiple ports have the same priority, power supply to a port with a larger port number is stopped.)

4.6.9.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. 4-63**. On this screen, you can configure the PoE scheduler settings.

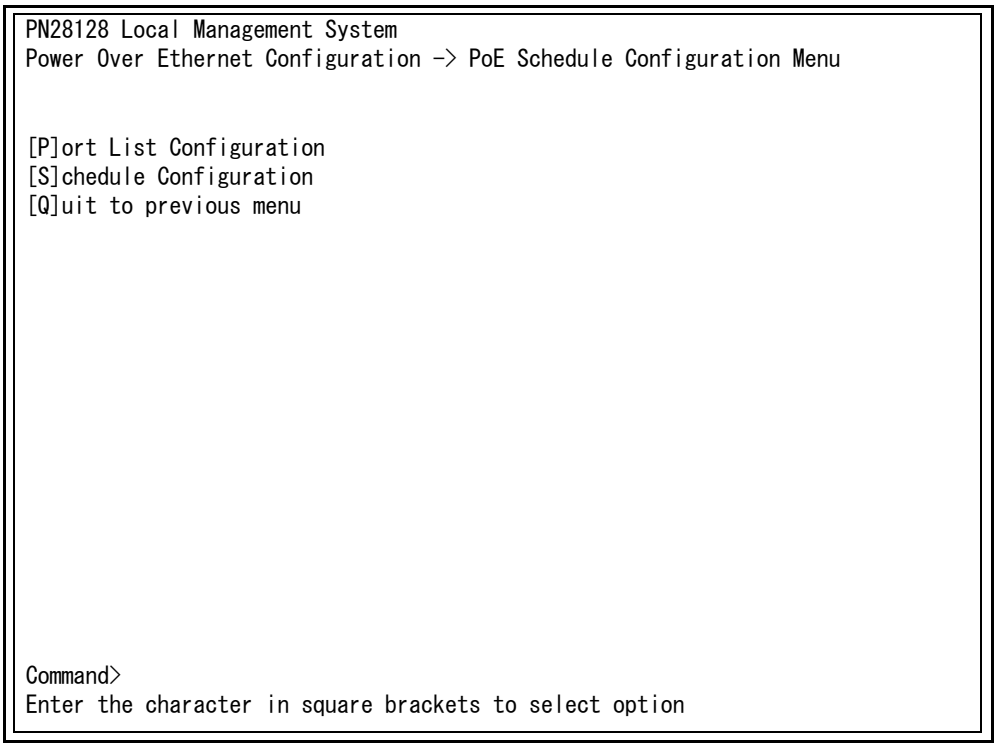


Fig. 4-63 PoE Configuration

Available commands are listed below.

P	Set a port list.	
		Press "P" to move to the "Port List Configuration Menu" screen. Refer to 4.6.9.c.1.
S	Set a schedule.	
		Press "P" to move to the "Schedule Configuration Menu" screen. Refer to 4.6.9.c.3.
Q	Return to the parent menu.	

4.6.9.c.1. Port List Configuration Menu

On the PoE Schedule Configuration Menu, pressing "P" opens the Port List Configuration Menu screen, as shown in **Fig. 4-64**. On this screen, you can set/delete a port number to be operated on the PoE scheduler.

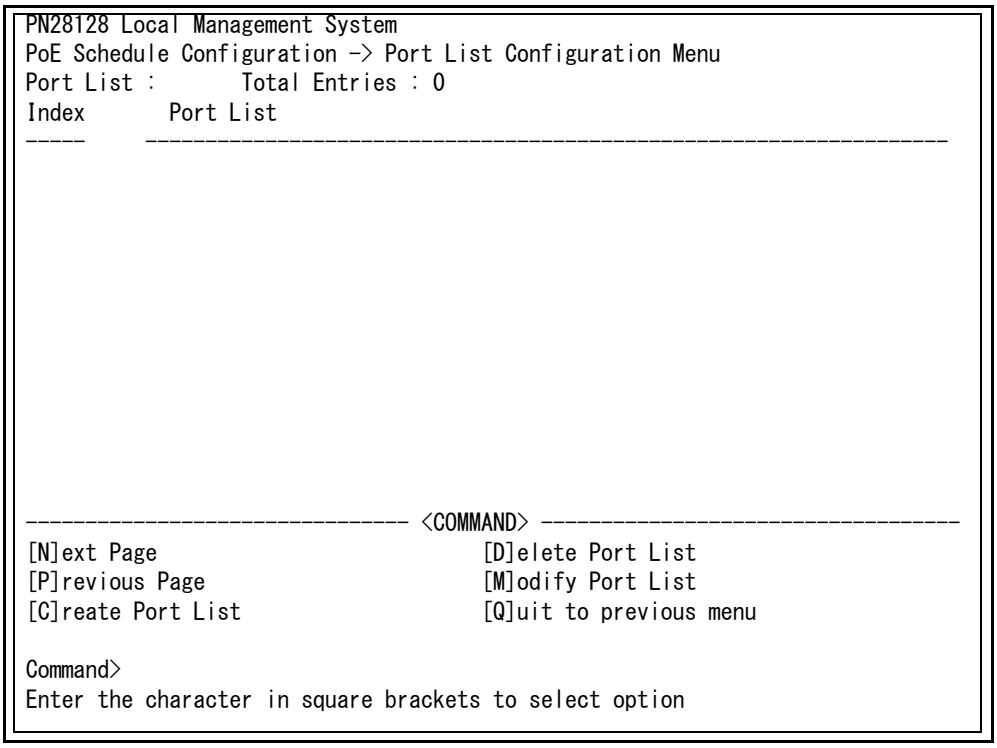


Fig. 4-64 Port List Configuration Menu

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 4.6.9.c.2.
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.	

4.6.9.c.2. Port List Creation Menu

On the Port List Configuration Menu, pressing "C" opens the Port List Creation Menu screen, as shown in Fig. 4-65. On this screen, you can set/delete a port number for which the PoE scheduler is operated.

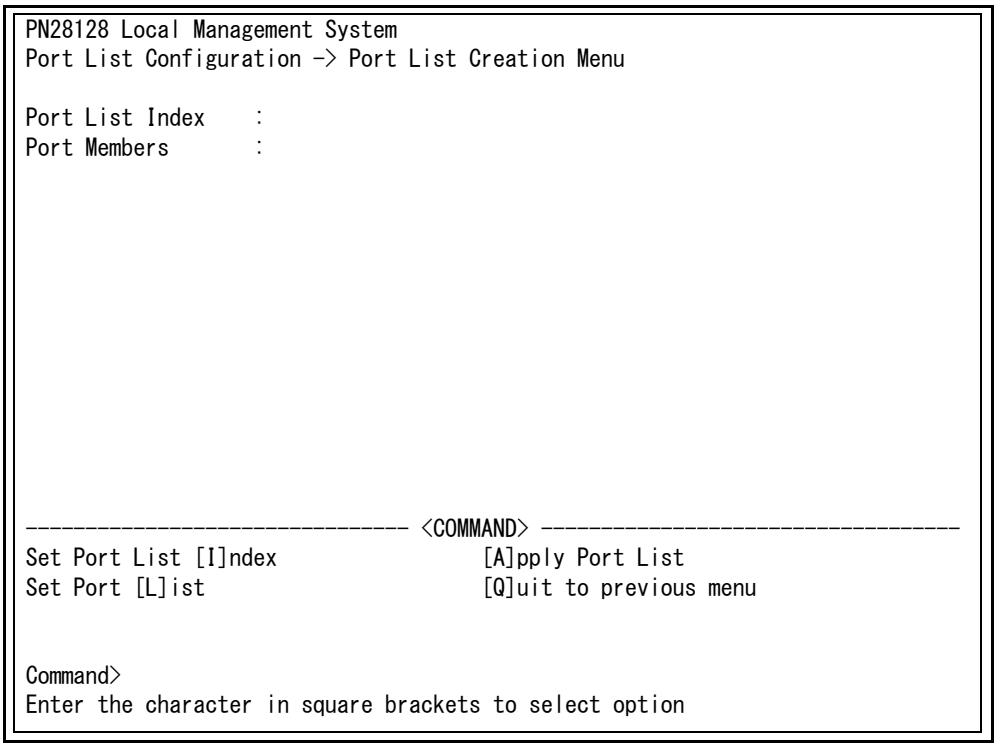


Fig. 4-65 Port List Creation Menu

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.	

4.6.9.c.3. Schedule Configuration Menu

On the PoE Schedule Configuration Menu, pressing "S" opens the Schedule Configuration Menu screen, as shown in Fig. 4-66. 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.

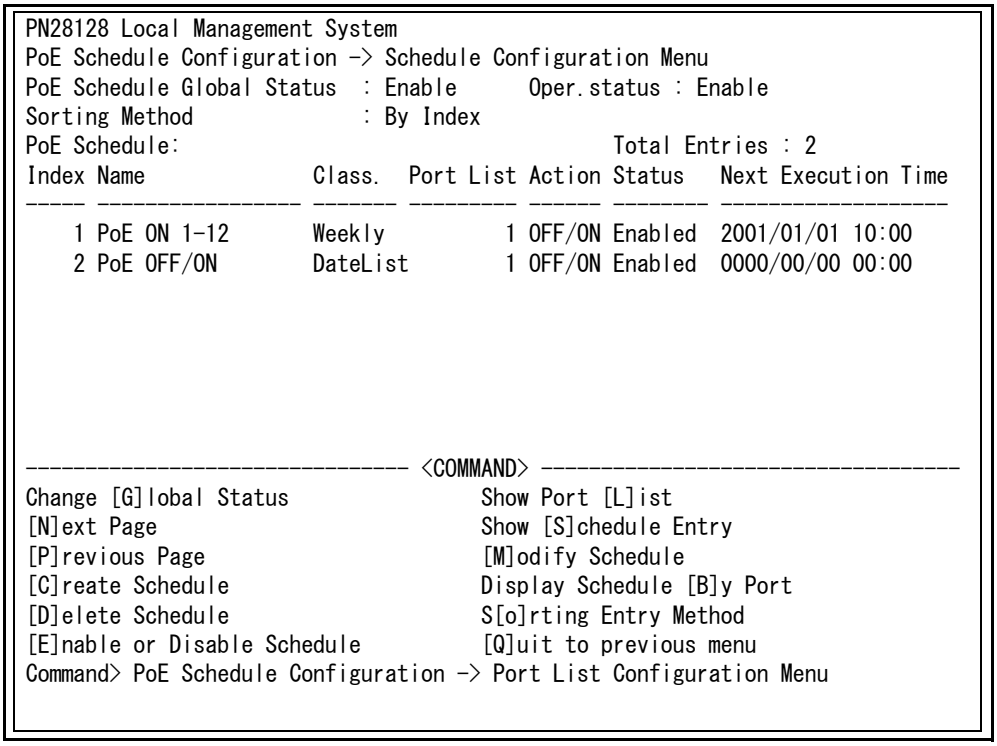


Fig. 4-66 Schedule Configuration Menu

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.	

4.6.9.c.4. Create Schedule Configuration Menu

On the PoE Schedule Configuration Menu, pressing "S" opens the Create Schedule Configuration Menu screen, as shown in Fig. 4-67. 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.

```
PN28128 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. 4-67 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.	

4.6.9.c.5. Date list Configuration Menu

On the PoE Schedule Configuration Menu, pressing "S" opens the Date list Configuration Menu screen, as shown in Fig. 4-68. On this screen, you can configure the settings of the date list of the PoE scheduler.

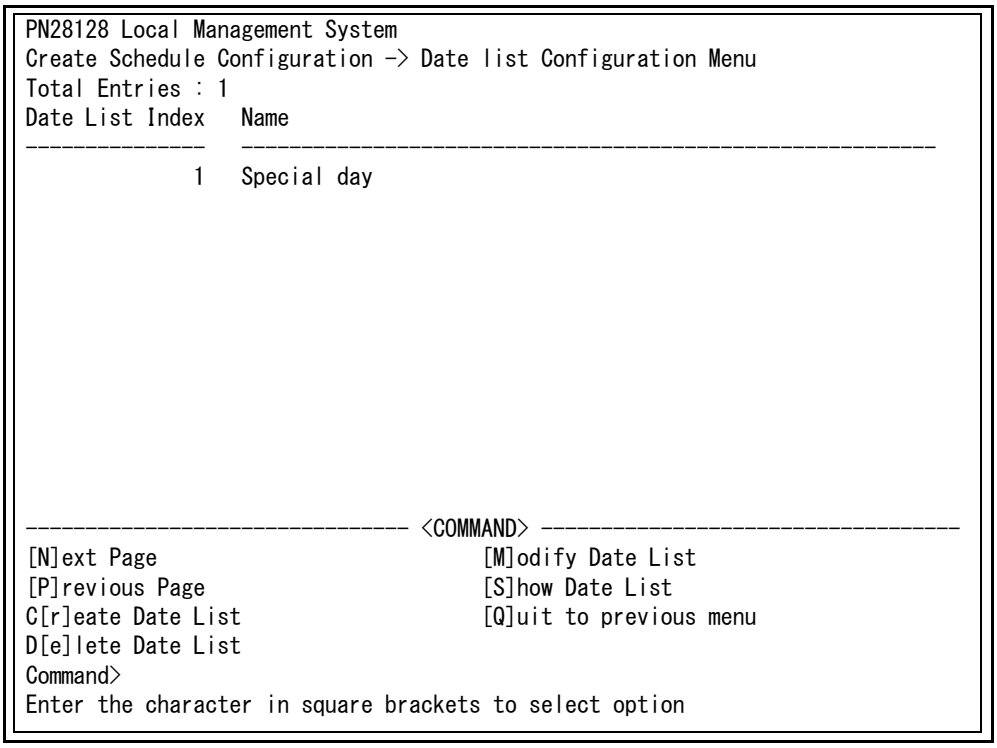


Fig. 4-68 Date list Configuration Menu

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.	

4.6.9.c.6. Create Date List Menu

On the PoE Schedule Configuration Menu, pressing "S" opens the Create Date List Menu screen, as shown in Fig. 4-69. 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.

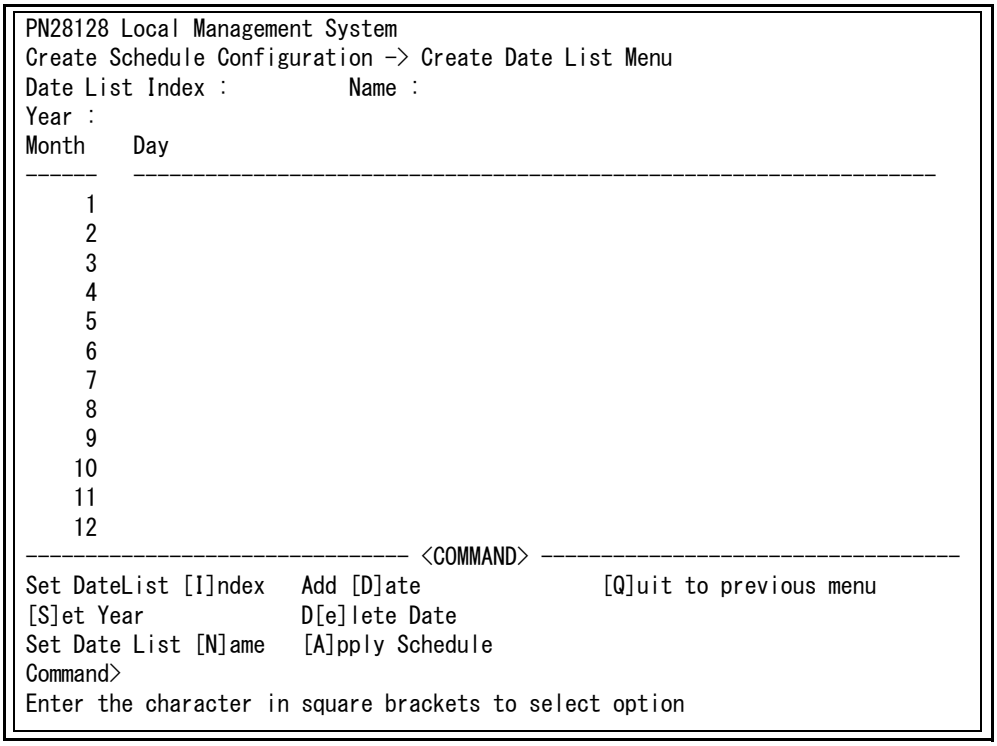


Fig. 4-69 Create Date List Menu

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.	

4.6.10. Ring Redundant Protocol Configuration

On the Advanced Switch Configuration Menu, pressing "R" opens the Ring Redundant Protocol Configuration screen as shown in Fig. 4-70. On this screen, you can configure the Ring Redundant Protocol (RRP) settings.

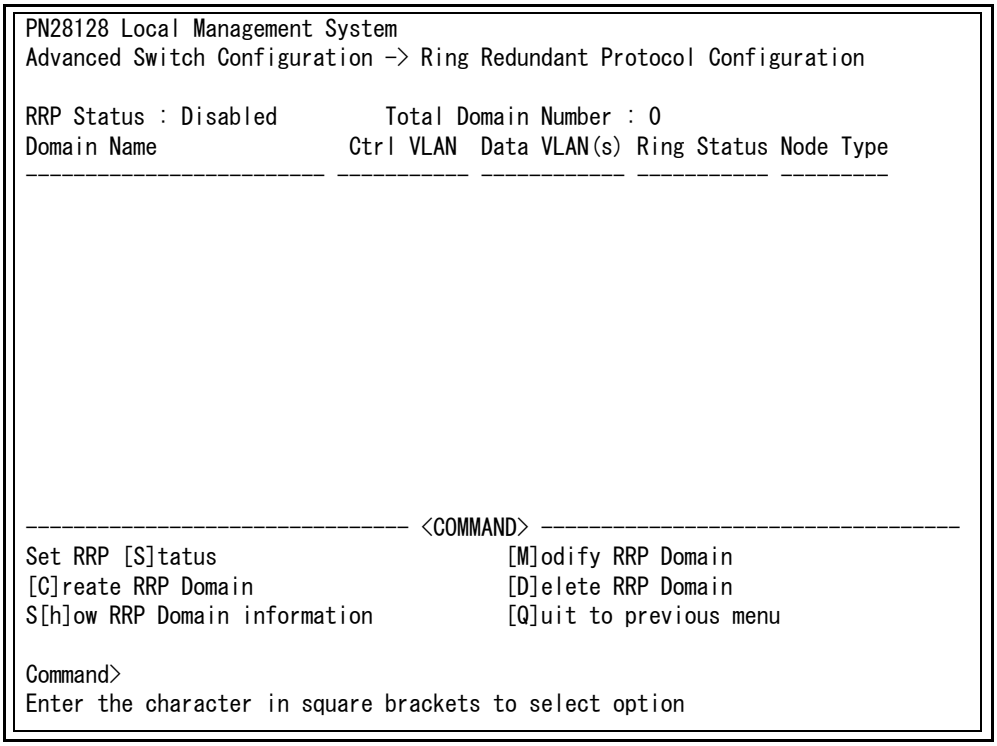


Fig. 4-70 Ring Redundant Protocol Configuration Menu

Screen Description

RRP Status	Displays the Ring Redundant Protocol function status.	
	Enabled	The Ring Redundant Protocol function is enabled.
	Disabled	The Ring Redundant Protocol function is disabled. (Factory default setting)
Domain Name	Displays the domain name.	
Total Domain Number	Displays the number of registered domains. (Up to 1 groups can be registered.)	
Ctrl VLAN	Displays the control VLAN ID.	
Data VLAN(s)	Displays the data VLAN ID.	
Ring Status	Displays the ring status.	
	IDLE	The Ring Redundant Protocol function is disabled.
	Complete	The ring topology has been correctly established. This status is displayed for the Master nodes only.
	Failed	The ring topology has not been established. This status is displayed for the Master nodes only.
	Link-Up	The ring topology has been correctly established. This status is displayed for the Transit nodes only.
	Link-Down	The ring topology has not been established. This status is displayed for the Transit nodes only.
	Pre-Forwarding	The ring topology is being established. This status is displayed for the Transit nodes only.

Node Type	Displays the node role.	
	Master	Indicates that the Switching Hub controls the ring operation. Each domain has only one master node.
	Transit	Indicates that the Switching Hub is not a master node.

Available commands are listed below.

S	Enable/disable the Ring Redundant Protocol function.	
		Press "S." The command prompt changes to "Enable or Disable RRP status (E/D)>." Press "E" to enable the function. Press "D" to disable it.
C	Create a new domain.	
		Press "C." The screen changes to "RRP Domain Creation Menu." For details, refer to the next section (4.6.10.a).
D	Delete a domain.	
		Press "D." The command prompt changes to "Enter RRP Domain Name >." Enter the domain name you wish to delete.
M	Modify the domain settings.	
		Press "M." The command prompt changes to "Enter RRP Domain Name >." Enter the domain name for which you wish to modify the settings. Then, the screen changes to "RRP Domain Modification Menu." For details, refer to the next section (4.6.10.b).
H	Display the domain information.	
		Press "H." The command prompt changes to "Enter RRP Domain Name >." Enter the domain name whose information you wish to view. Then, the screen changes to "RRP Domain information Menu." For details, refer to the next section (4.6.10.c).
Q	Return to the parent menu.	

Note: The Ring Redundant Protocol function and the Internet Mansion mode cannot be used simultaneously.

Note: Disable the Loop detection and blocking function for a port configuring the ring protocol. For detailed loop detection and blocking function settings, refer to 4.6.11.

4.6.10.a. RRP Domain Creation Menu

On the Ring Redundant Protocol Configuration Menu, pressing "C" opens the RRP Domain Creation Menu screen as shown in Fig. 4-71. On the screen, you can create a RRP domain.

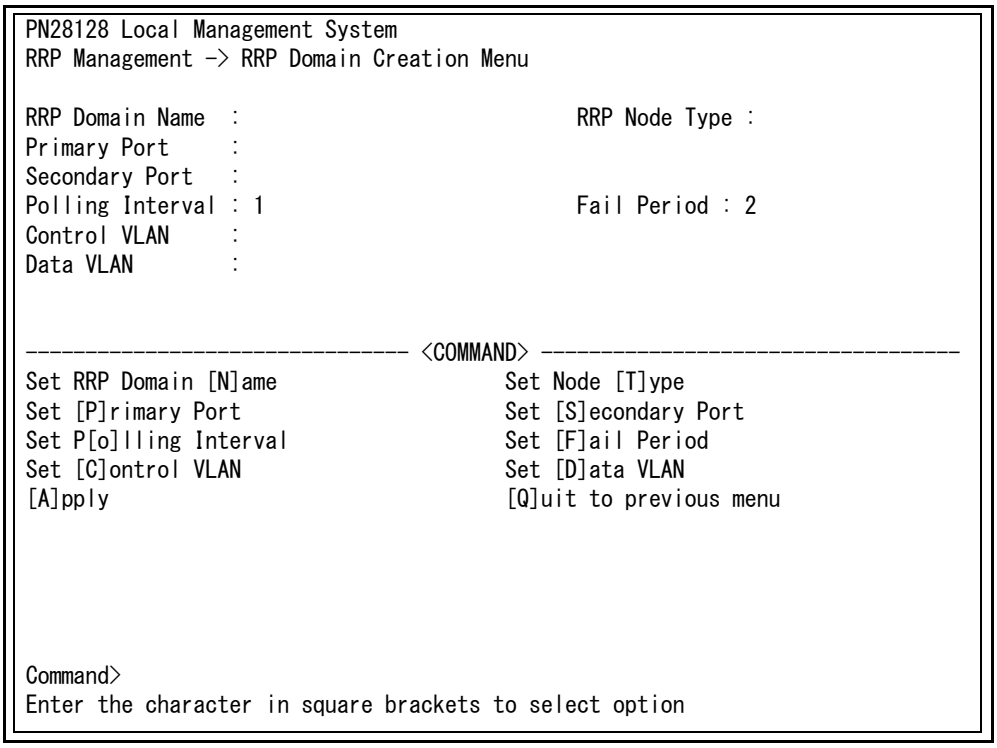


Fig. 4-71 RRP Domain Creation Menu

Screen Description

RRP Domain Name	Displays the domain name.	
RRP Node Type	Displays the node role.	
	Master	Indicates that the Switching Hub controls the ring operation. Each domain has only one master node.
	Transit	Indicates that the Switching Hub is not a master node.
Primary Port	Displays the primary port.	
Secondary Port	Displays the secondary port.	
Polling Interval	Displays the polling interval.	
Fail Period	Displays the timeout for polling.	
Control VLAN	Displays the control VLAN ID.	
Data VLAN	Displays the data VLAN ID.	

Available commands are listed below.

N	Set the domain name.	
		Press "N." The command prompt changes to "Enter RRP Domain Name>." Enter the name of the domain to be configured in 25 characters or less.
T	Set the node role.	
		Press "N." The command prompt changes to "Enter RRP Node Type (M/T) >." Press "M" to set the domain for a master node. Press "T" to set the domain for a transit node.
P	Set the primary port.	
		Press "P." The command prompt changes to "Enter RRP Primary Port >." Enter the port number you wish to set as a primary port.
S	Set the secondary port.	
		Press "S." The command prompt changes to "Enter RRP Secondary Port >." Enter the port number you wish to set as a secondary port.
O	Set the polling interval.	
		Press "O." The command prompt changes to "Enter RRP Polling Interval>." Enter a value between 1 and 2 (seconds) as the polling interval.
F	Set the timeout for polling.	
		Press "F." The command prompt changes to "Enter RRP Fail Period>." Enter a value between 2 and 5 (seconds) as the timeout for polling.
S	Set the control VLAN ID.	
		Press "S." The command prompt changes to "Enter Control VLAN ID >." Enter the VLAN ID (2 to 4094) you wish to set as a control VLAN. When entering two or more port numbers, separate them with a comma without a space, or use a hyphen for consecutive numbers.
D	Set the data VLAN ID.	
		The command prompt changes to "Enter Data VLAN ID >." Enter the VLAN ID (1 to 4094) you wish to set as a data VLAN. When entering two or more VLAN IDs, separate them with a comma without a space, or use a hyphen for consecutive numbers.
A	Set a domain.	
		Press "A" to apply your settings.
Q	Return to the parent menu.	

Note: If you press "Q" (Quit) after setting a domain, your settings will not be applied. Be sure to press "A" (Apply) to apply your domain settings.

4.6.10.b. RRP Domain Modification Menu

On the Ring Redundant Protocol Configuration Menu, pressing "M" opens the RRP Domain Modification Menu screen as shown in **Fig. 4-72**. On this screen, you can modify the RRP domain settings.

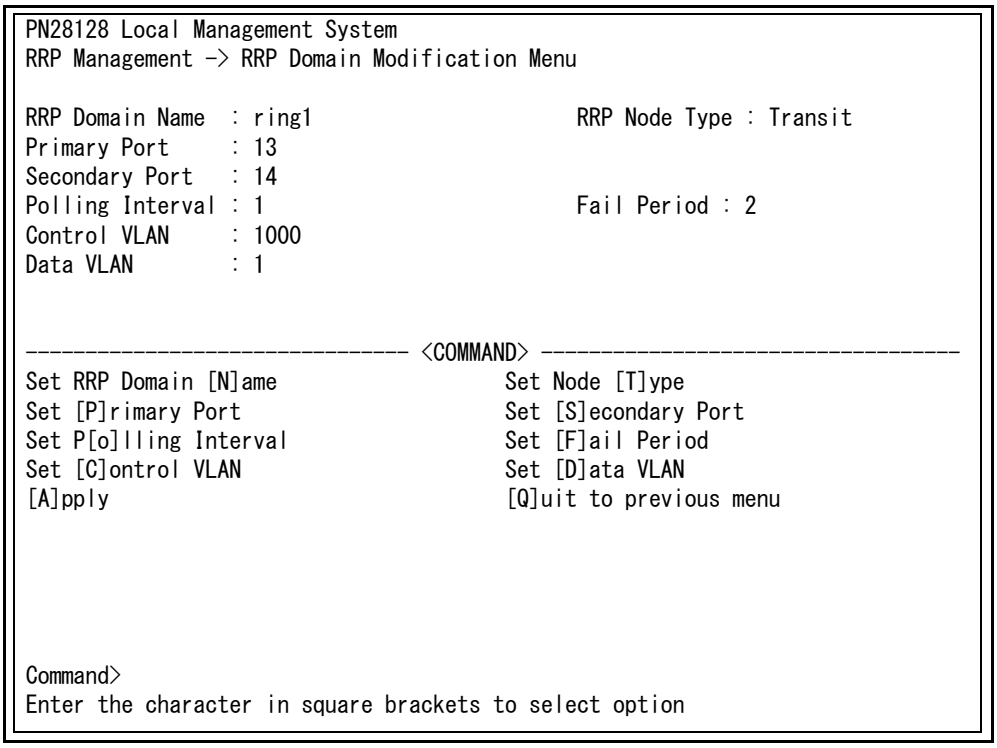


Fig. 4-72 RRP Domain Modification Menu

Screen Description

RRP Domain Name	Displays the domain name.	
RRP Node Type	Displays the node role.	
	Master	Indicates that the Switching Hub controls the ring operation. Each domain has only one master node.
	Transit	Indicates that the Switching Hub is not a master node.
Primary Port	Displays the primary port.	
Secondary Port	Displays the secondary port.	
Polling Interval	Displays the polling interval.	
Fail Period	Displays the timeout for polling.	
Control VLAN	Displays the control VLAN ID.	
Data VLAN	Displays the data VLAN ID.	

Available commands are listed below.

N	Set the domain name.	
		Press "N." The command prompt changes to "Enter RRP Domain Name>." Enter the name of the domain to be configured in 25 characters or less.
T	Set the node role.	
		Press "N." The command prompt changes to "Enter RRP Node Type (M/T) >." Press "M" to set the domain for a master node. Press "T" to set the domain for a transit node.
P	Set the primary port.	
		Press "P." The command prompt changes to "Enter RRP Primary Port >." Enter the port number you wish to set as a primary port.
S	Set the secondary port.	
		Press "S." The command prompt changes to "Enter RRP Secondary Port >." Enter the port number you wish to set as a secondary port.
O	Set the polling interval.	
		Press "O." The command prompt changes to "Enter RRP Polling Interval>." Enter a value between 1 and 2 (seconds) as the polling interval.
F	Set the timeout for polling.	
		Press "F." The command prompt changes to "Enter RRP Fail Period>." Enter a value between 2 and 5 (seconds) as the timeout for polling.
S	Set the control VLAN ID.	
		Press "S." The command prompt changes to "Enter Control VLAN ID >." Enter the VLAN ID (2 to 4094) you wish to set as a control VLAN. When entering two or more port numbers, separate them with a comma without a space, or use a hyphen for consecutive numbers.
D	Set the data VLAN ID.	
		The command prompt changes to "Enter Data VLAN ID >." Enter the VLAN ID (1 to 4094) you wish to set as a data VLAN. When entering two or more VLAN IDs, separate them with a comma without a space, or use a hyphen for consecutive numbers.
A	Set a domain.	
		Press "A" to apply your settings.
Q	Return to the parent menu.	

Note: If you press "Q" (Quit) after setting a domain, your settings will not be applied. Be sure to press "A" (Apply) to apply your domain setting modifications.

4.6.10.c. RRP Domain information Menu

On the Ring Redundant Protocol Configuration Menu, pressing "H" opens the RRP Domain information Menu screen as shown in Fig. 4-73. On this screen, you can check RRP domain information.

```
PN28128 Local Management System
RRP Management -> RRP Domain information Menu

RRP Domain Name      : Ring1
RRP Node Type        : Transit
RRP Ring Status      : Idle

Primary Port         : 13
Primary Port Status  : Down
Primary Port Role    : Upstream

Secondary Port       : 14
Secondary Port Status: Down
Secondary Port Role  : Downstream

Polling Interval     : 1
Fail Period          : 2

Control VLAN         : 1000
Data VLAN            : 1



Press any key to continue...
```

Fig. 4-73 RRP Domain information Menu

Screen Description

RRP Domain Name	Displays the domain name.	
Node Type	Displays the node role.	
	Master	Indicates that the Switching Hub controls the ring operation. Each domain has only one master node.
	Transit	Indicates that the Switching Hub is not a master node.
Ring Status	Displays the ring status.	
	IDLE	The Ring Redundant Protocol function is disabled.
	Complete	The ring topology has been correctly established. This status is displayed for the Master nodes only.
	Failed	The ring topology has not been established. This status is displayed for the Master nodes only.
	Link-Up	The ring topology has been correctly established. This status is displayed for the Transit nodes only.
	Link-Down	The ring topology has not been established. This status is displayed for the Transit nodes only.
	Pre-Forwarding	The ring topology is being established. This status is displayed for the Transit nodes only.
Primary Port	Displays the primary port.	

Primary Port Status	Displays the primary port status.	
	Unknown	The domain is disabled.
	Forwarding	Normal communication is executed.
	Down	The port does not link up.
	Blocking	No frames other than control frames are not received.
Primary Port Role	Displays the primary port role.	
	Upstream	Operating as an upstream port.
	Downstream	Operating as a downstream port.
Secondary Port	Displays the secondary port.	
Secondary Port Status	Displays the secondary port status.	
	Unknown	The domain is disabled.
	Forwarding	Normal communication is executed.
	Down	The port does not link up.
	Blocking	No frames other than control frames are not received.
Secondary Port Role	Displays the secondary port role.	
	Upstream	Operating as an upstream port.
	Downstream	Operating as a downstream port.
Polling Interval	Displays the polling interval.	
Fail Period	Displays the timeout for polling.	
Ctrl VLAN	Displays the set control VLAN ID.	
Data VLAN(s)	Displays the set data VLAN ID.	

4.6.11. Loop Detection Configuration Menu

On the Advanced Switch Configuration Menu, pressing "D" opens the Loop Detection Configuration Menu screen as shown in **Fig. 4-74**. 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.

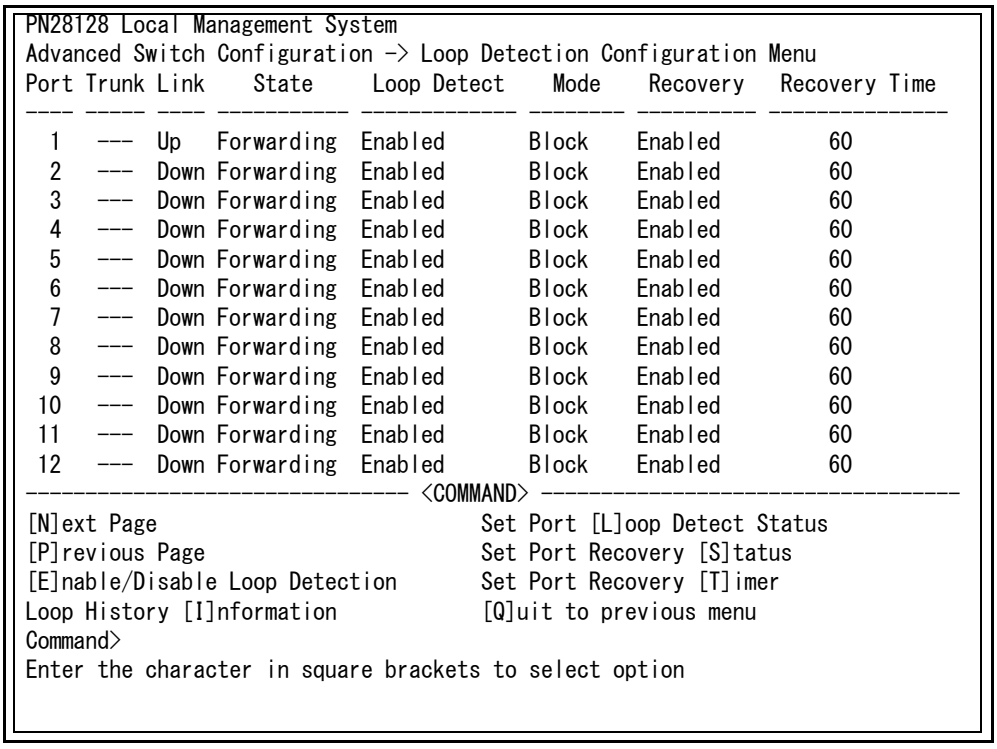


Fig. 4-74 Loop Detection Configuration Menu

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 12)
	Disabled	The Loop detection and blocking function is disabled. (Factory default setting: Ports 13 to 14)

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.

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.

4.6.11.a. Loop History Information

On the Loop Detection Configuration Menu, pressing "I" opens the Loop History Information screen, as shown in Fig. 4-75. On this screen, you can view the loop detection date and time and a list of event information.

```
PN28128 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 4
   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. 4-75 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.	

4.6.12. Digital Diagnostic Monitoring Menu

On the Advanced Switch Configuration Menu, pressing "G" opens the Digital Diagnostic Monitoring Menu screen as shown in **Fig. 4-76**. On this screen, you can change the information of Digital Diagnostic Monitoring.

```
PN28128 Local Management System
Advanced Switch Configuration -> Digital Diagnostic Monitoring Menu

Limit Trap Status    : Disabled

SFP Port Number      : 1               Transceiver Type      : Unknown
Vendor Name          :                  Vendor Product Number :
Vendor Serial Number :
              RX Power      TX Power      Temp          Voltage     Bias Current
              (dBm)         (dBm)         (deg. C)      (V)         (mA)
              ------------  ------------  ------------  ----------  ------------
Status            None          None          None          None         None
High Alarm     0.0000(A)     0.0000(A)     0.0000(A)     0.0000(A)    0.0000(A)
High Warning   0.0000(A)     0.0000(A)     0.0000(A)     0.0000(A)    0.0000(A)
Low Alarm      0.0000(A)     0.0000(A)     0.0000(A)     0.0000(A)    0.0000(A)
Low Warning    0.0000(A)     0.0000(A)     0.0000(A)     0.0000(A)    0.0000(A)
-------------------------------- <COMMAND> ------------------------------------

[N]ext SFP Port             Set [R]x Power Limit      Set T[e]mp Limit
[P]revious SFP Port         Set [T]x Power Limit      Set [B]ias Current Limit
Set Limit Trap [S]tatus     Set [V]oltage Limit       [Q]uit to previous menu

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

Fig. 4-76 Digital Diagnostic Monitoring Configuration

Screen Description

Limit Trap Status	Displays the trap sending settings for change state.
SFP Port Number	Displays the port to insert SFP modules.
Transceiver Type	Displays the type of SFP modules.
Vendor Name	Displays the vendor name of SFP modules.
Vendor Product Number	Displays the vendor product number of SFP modules.
Vendor Serial Number	Displays the vendor serial number of SFP modules.
Rx Power(dBm)	Displays the Rx power of SFP modules.
Tx Power(dBm)	Displays the Tx power of SFP modules.
Temp(deg.C)	Displays the temperature of SFP modules.
Voltage(V)	Displays the voltage of SFP modules.
Bias Current(mA)	Displays the bias current of SFP modules.
Status	Displays the state of SFP modules.
High Alarm	Displays the upper threshold of alarm.
High Warning	Displays the upper threshold of warning.
Low Alarm	Displays the lower threshold of alarm.
Low Warning	Displays the lower threshold of warning.

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 trap sending settings for change state.	
		Press "S." The command prompt changes to "Enable or Disable Limit trap (E/D)>." Press "E" to enable the trap sending. Press "D" to disable it.
R	Configure the threshold of Rx power.	
		Press "R." The command prompt changes to "Auto or Manual (A/M)>." Press "A" to set the information of SFP modules automatically. Press "M" to set it manually. The command prompt changes to "High or Low (H/L)>." Press "H" to set the upper. Press "L" to set the lower. The command prompt changes to "Alarm or Warning (A/W)>." Press "A" to set the alarm. Press "w" to set the warning. The command prompt changes to "Enter value>." please enter the value.
T	Configure the threshold of Tx power.	
		Press "T." The command prompt changes to "Auto or Manual (A/M)>." Press "A" to set the information of SFP modules automatically. Press "M" to set it manually. The command prompt changes to "High or Low (H/L)>." Press "H" to set the upper. Press "L" to set the lower. The command prompt changes to "Alarm or Warning (A/W)>." Press "A" to set the alarm. Press "w" to set the warning. The command prompt changes to "Enter value>." please enter the value.
V	Configure the threshold of voltage.	
		Press "V." The command prompt changes to "Auto or Manual (A/M)>." Press "A" to set the information of SFP modules automatically. Press "M" to set it manually. The command prompt changes to "High or Low (H/L)>." Press "H" to set the upper. Press "L" to set the lower. The command prompt changes to "Alarm or Warning (A/W)>." Press "A" to set the alarm. Press "w" to set the warning. The command prompt changes to "Enter value>." please enter the value.
E	Configure the threshold of temperature.	
		Press "E." The command prompt changes to "Auto or Manual (A/M)>." Press "A" to set the information of SFP modules automatically. Press "M" to set it manually. The command prompt changes to "High or Low (H/L)>." Press "H" to set the upper. Press "L" to set the lower. The command prompt changes to "Alarm or Warning (A/W)>." Press "A" to set the alarm. Press "w" to set the warning. The command prompt changes to "Enter value>." please enter the value.
B	Configure the threshold of bias current.	
		Press "B." The command prompt changes to "Auto or Manual (A/M)>." Press "A" to set the information of SFP modules automatically. Press "M" to set it manually. The command prompt changes to "High or Low (H/L)>." Press "H" to set the upper. Press "L" to set the lower. The command prompt changes to "Alarm or Warning (A/W)>." Press "A" to set the alarm. Press "w" to set the warning. The command prompt changes to "Enter value>." please enter the value.
Q	Return to the parent menu.	

4.7. Statistics

On the Main Menu, pressing "S" opens the Statistics Menu screen as shown in Fig. 4-77. 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.

```
PN28128 Local Management System
Main Menu -> Statistics Menu
Port:  1   Refresh: 300 Sec.      Elapsed Time Since System Up: 000:06:28:03
<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. 4-77 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	Switch 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.
P	Display the values of the previous port.	
		Press "P." The screen displays the counter values of the previous port.

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 stop to refreshing,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. 4-77), and values accumulated after resetting the counters (Fig. 4-78). The values accumulated after booting the Switching Hub are retained even after you reset the counters.

```
PN28128 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. 4-78 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	Switch 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.
P	Display the values of the previous port.	
		Press "P." The screen displays the counter values of the previous port.
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 stop to refreshing,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.

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.

4.8. Switch Tools Configuration

On the Main Menu, pressing "T" opens the Switch Tools Configuration screen as shown in Fig. 4-79. On this screen, you can use and configure the Switching Hub tools for firmware upgrade, upload/download of configuration files, system reboot, log viewing, etc.

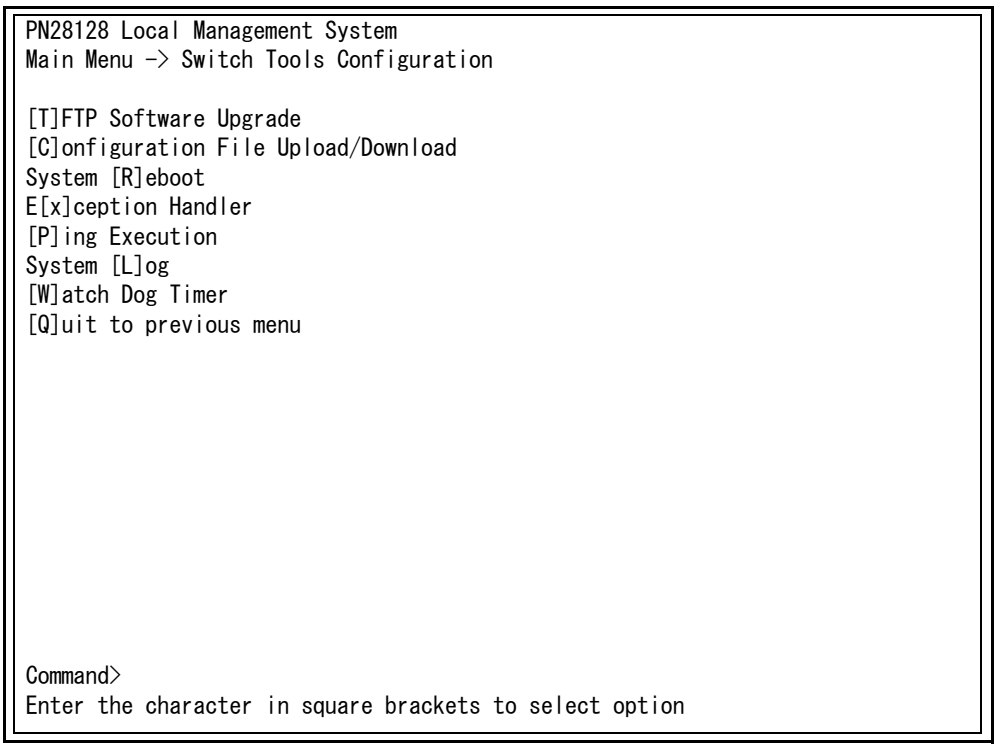


Fig. 4-79 Switch Tools Configuration

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.

4.8.1. TFTP Software Upgrade

On the Switch Tools Configuration Menu, pressing "T" opens the TFTP Software Upgrade screen as shown in Fig. 4-80. On this screen, you can execute and configure firmware upgrades.

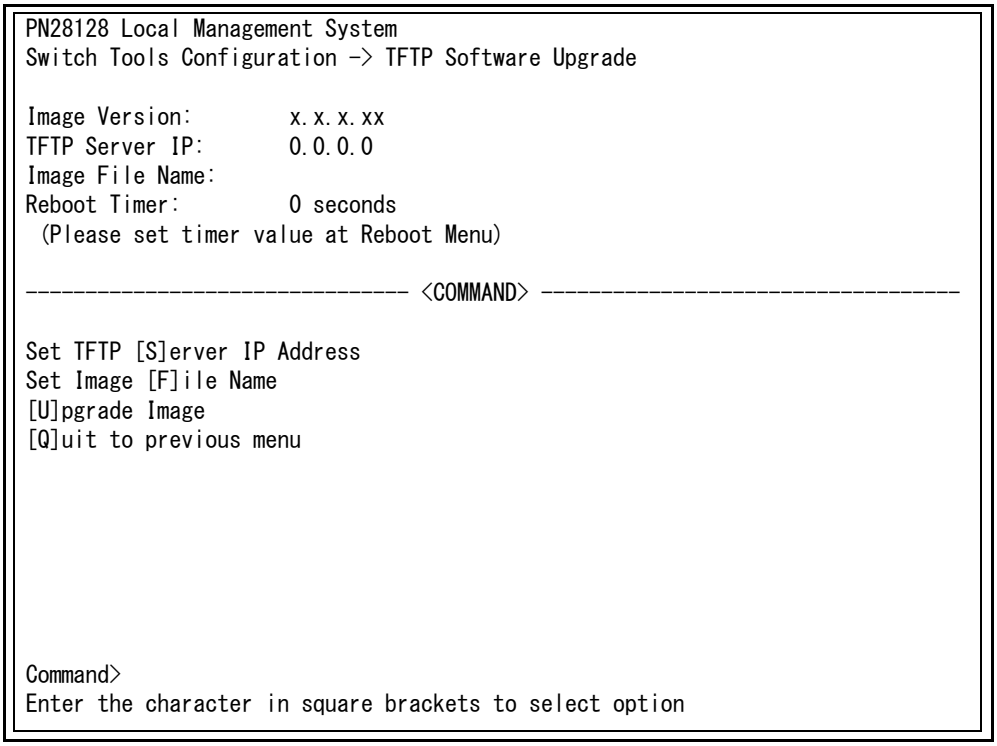


Fig. 4-80 TFTP Software Upgrade

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. 4-81 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.

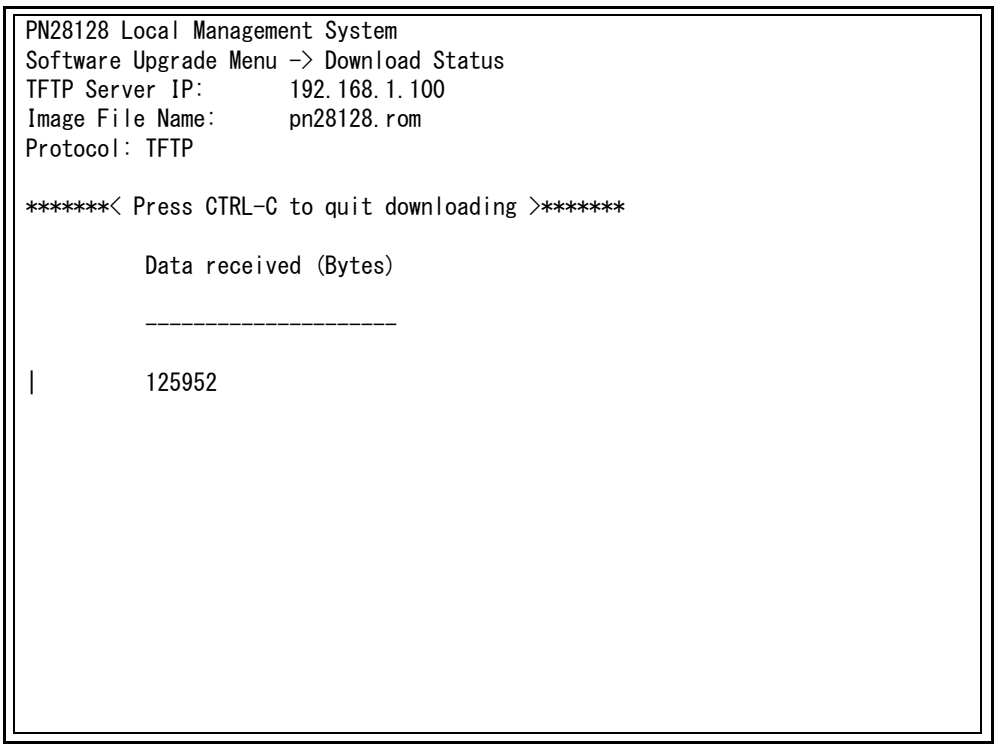


Fig. 4-81 Download in Process

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.

Note: Never power off this Switching Hub during upgrade of the firmware.

4.8.2. Configuration File Upload/Download

On the Switch Tools Configuration Menu, pressing "C" opens the Configuration File Upload/Download Menu screen as shown in **Fig. 4-82**. On this screen, you can execute and configure upload/download of the configuration file of this Switching Hub to/from a PC.

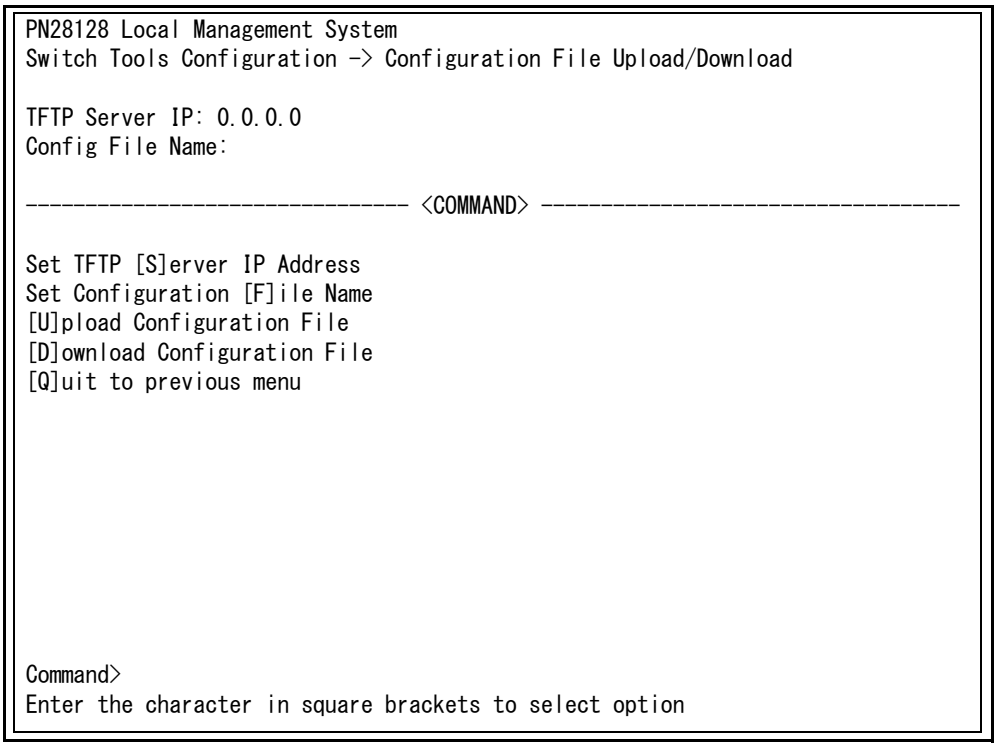


Fig. 4-82 Configuration File Upload/Download

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 39 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.	

4.8.3. System Reboot

On the Switch Tools Configuration Menu, pressing "R" opens the System Reboot Menu screen as shown in Fig. 4-83. On this screen, you can reboot this Switching Hub.

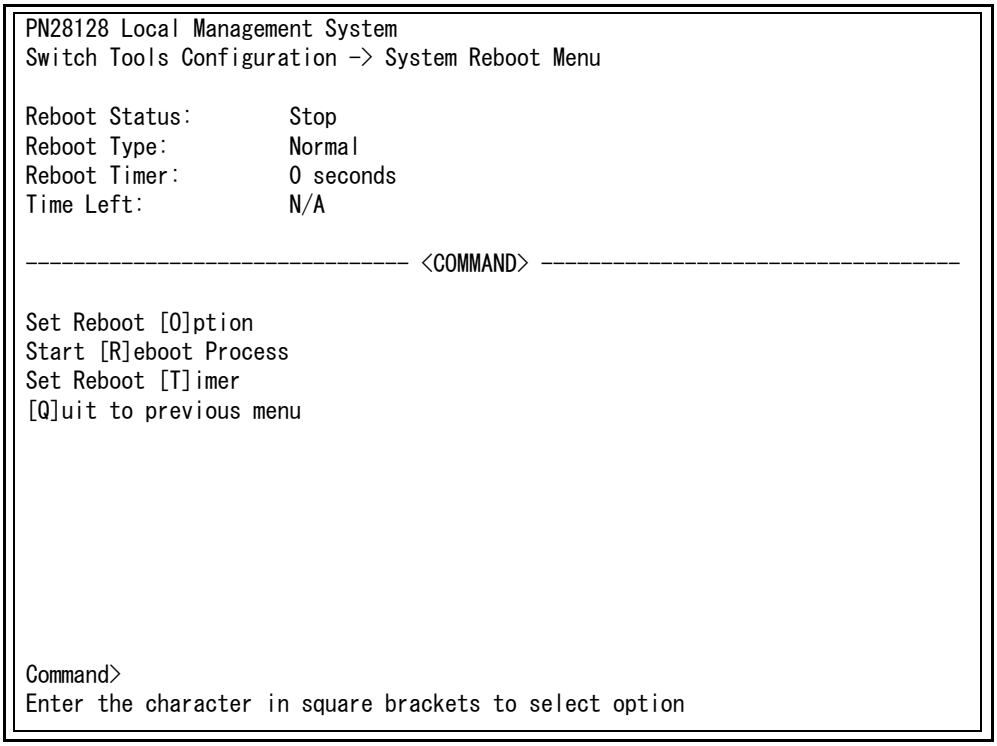


Fig. 4-83 System Reboot

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.	

4.8.4. Exception Handler

On the Switch Tools Configuration Menu, pressing "x" opens the Exception Handler screen as shown in Fig. 4-84. On this screen, you can configure the exception handling operations.

```
PN28128 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. 4-84 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.
M	Set the exception handling method.	
		Press "M." The command prompt changes to "Select Exception Handler Mode (M/R)>." Press "M" to display the debug message or "R" to reboot
Q	Return to the parent menu.	

4.8.5. Ping Execution

On the Switch Tools Configuration Menu, pressing "P" opens the Ping Execution screen as shown in Fig. 4-85. On this screen, you can execute the ping command from the Switching Hub to confirm communications with connected terminals and other devices.

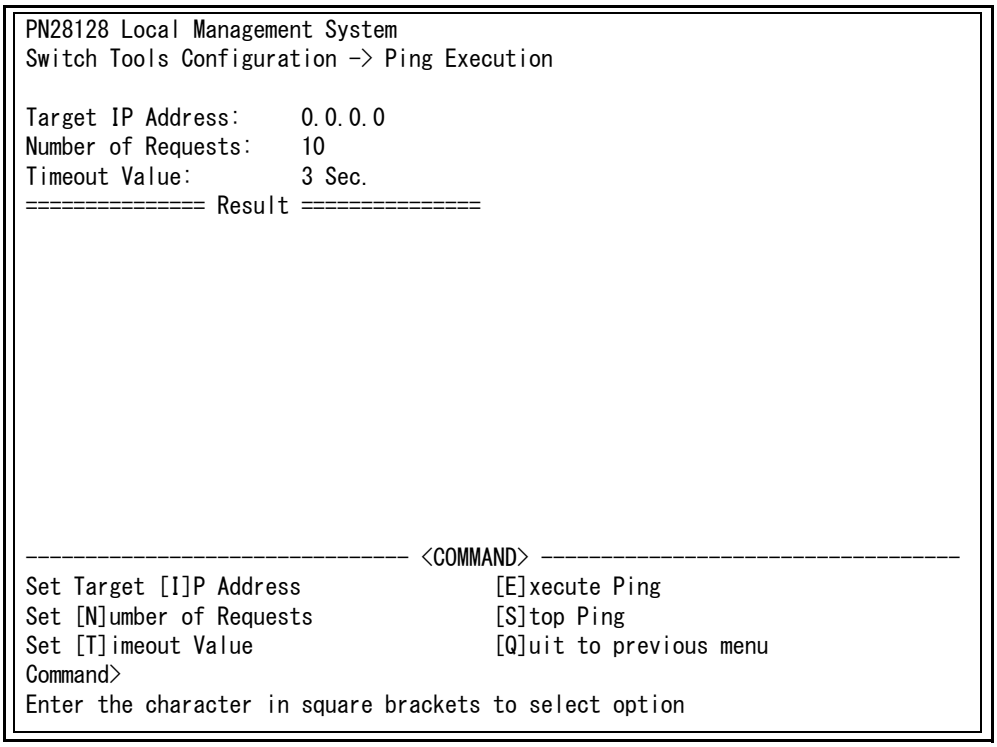


Fig. 4-85 Ping Execution

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.	

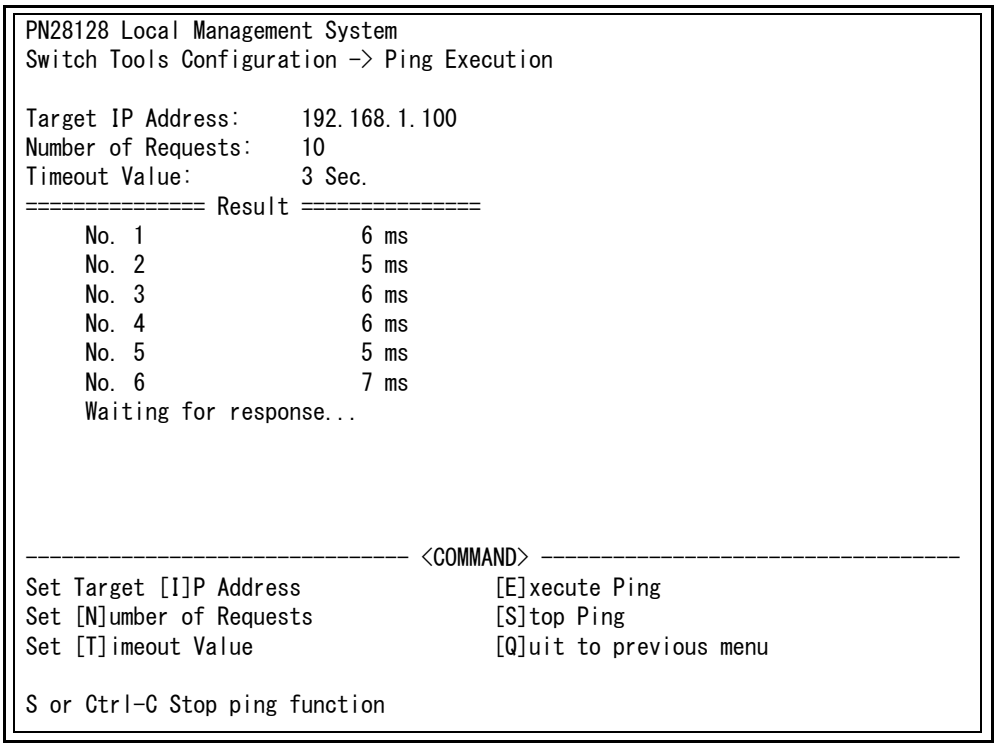


Fig. 4-86 Display during Ping Execution

4.8.6. System Log

On the Switch Tools Configuration Menu, pressing "L" opens the System Log Menu screen as shown in Fig. 4-87. 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.

```
PN28128 Local Management System
Switch Tools Configuration -> System Log Menu

Entry  Time(YYYY/MM/DD HH:MM:SS)                    Event
-----  --------------------------  ------------------------------------------
   1   0000/00/00 00:00:00         Reboot: Factory Default Except IP
   2   0000/00/00 00:00:00         Login from console
   3   0000/00/00 00:00:00         (Bridge) Topology Change









--------------------------------- <COMMAND> -----------------------------------
[N]ext Page
[P]revious Page
[C]lear System Log
[S]elect Entry Log number
[I]ndividual System Log config
[Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-87 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.

Note: The event can save maximum of 1024, remove from the date old event.

System Log Description

Login from console	Indicates a login from the console.
Login failed from console	Indicates a login authentication failure from the console.
Login from telnet <IP: xxx.xxx.xxx.xxx>	Indicates a login from the host with IP address xxx.xxx.xxx.xxx via Telnet.
Login from SSH <IP: xxx.xxx.xxx.xxx>	Indicates a login from the host with IP address xxx.xxx.xxx.xxx via SSH.

Login failed from telnet <IP: xxx.xxx.xxx.xxx>	Indicates a login authentication failure from the host with IP address xxx.xxx.xxx.xxx via Telnet.
Login failed from SSH <IP: xxx.xxx.xxx.xxx>	Indicates a login authentication failure from the host with IP address xxx.xxx.xxx.xxx via SSH.
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.
Reboot: Exception..	Indicates that this Switching Hub was rebooted due to exception handling.
Configuration changed	Indicates that the configuration was changed.
Switch start	Indicates that this Switching Hub was booted.
Runtime changes from xxx.xxx.xxx.xxx	Indicates that firmware was downloaded from IP xxx.xxx.xxx.xxx and updated.
Configuration file uploaded	Indicates that the configuration file was uploaded via TFTP.
Configuration file downloaded	Indicates that the configuration file was downloaded via TFTP.
Port-xx link-down	Indicates that Port xx was linked down.
Port-xx link-up	Indicates that Port xx was linked up.
Enter Command Line Interface	Indicates that the user moved from the configuration menu to CLI (Command Line Interface).
xx:xx:xx:xx:xx:xx was authorized at port xx.	Indicates that IEEE802.1X authentication succeeded on Port xx from the terminal with xx:xx:xx:xx:xx:xx .
xx:xx:xx:xx:xx:xx was rejected at port xx.	Indicates that IEEE802.1X authentication failed on Port xx from the terminal with xx:xx:xx:xx:xx:xx .
Authentication failure	Indicates that an unauthorized manager accessed by SNMP.
Port-xx Power ON notification	Indicates that the PoE power supply to Port xx is turned on.
Port-xx Power OFF notification	Indicates that the PoE power supply to Port xx is turned off.
SNTP first update to yyyy/mm/dd	Indicates that the time was retrieved via SNTP for the first time.
FAN status changed from good to failed	Indicates that a fan problem occurred.
FAN status changed from failed to good.	Indicates that the internal fan recovered.
Sensor access error	Indicates that the internal sensor cannot be accessed.
(Bridge) Topology Change	Indicates that a topology change occurred in the Spanning Tree function.
PortX auto recovery.	Indicates that Port X automatically recovered from being blocked after loop detection.
The loop detected between portA and portB.	Indicates that a loop was detected between Port A and Port B.
The loop detected on portX.	Indicates that a loop was detected in Port X.
(RRP) FDB Flush	Indicates that Forwarding Database was flushed.
(RRP) Ring Recover	Indicates that a ring topology was restored. This log is displayed for the Master nodes only.
(RRP) Ring Failure	Indicates that a ring topology problem occurred. This log is displayed for the Master nodes only.

(RRP) Change to Link-Up Status	Displays that a ring topology has been established. This log is displayed for the Transit nodes only.
(RRP) Change to Link-Down Status	Indicates that a ring topology problem occurred. This log is displayed for the Transit nodes only.
(RRP) Change to Pre-Forwarding Status	Displays that a ring topology is being established. This log is displayed for the Transit nodes only.
(DDM) {Rx power|Tx power|Temperature|Voltage|Bias current} is {exceeded|fell} {high|low} {alarm|warning} on Portx.	Indicates that SFP module status was changed. Rx power: Indicates that SFP Rx power status was changed. Tx power: Indicates that SFP Tx status was changed. Temperature: Indicates that SFP temperature status was changed. Voltage: Indicates that SFP voltage status was changed. Bias current: Indicates that SFP bias current status was changed. exceeded: Indicates that SFP status exceeded the threshold. fell: Indicates that SFP status recovered from threshold. high: Indicates that upper limit. low: Indicates that lower limit. alarm: Indicates the alarm. warning: Indicates the warning.
(TRAP)Usage power is above the threshold	Indicates that the PoE power supply exceeded the threshold.
(TRAP)Usage power is below the threshold	Indicates that the PoE power supply exceeded the threshold and then decreased below the threshold.
(TRAP)System authentication failure	Indicates that authentication from the SNMP manager failed.
(TRAP)System Cold Start	Indicates that this Switching Hub was booted.

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 logs.	
		Press "C" to clear all logs.
S	Displayed the entry log number.	
		Press "S"The command prompt changes to "Select entry log number>."Set the range from 1 to1024, 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(4.8.6.a.).
Q	Return to the parent menu.	

4.8.6.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. 4-88**. This screen change the state of events for events of save syslog.

```
PN28128 Local Management System
System Log -> Enable/Disable Individual System Log Menu

Link UP/DOWN      :Enabled
PoE ON/OFF        :Enabled









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

Set [L]ink UP/DOWN Log
Set P[o]E OFF/ON Log
[Q]uit to previous menu









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

Fig. 4-88 System Log

Link UP/DOWN	Display the configure of enable/disable the save syslog when the link status changes.	
	Enabled	Enable of save syslog.(Factory default)
	Disabled	Disable of save syslog.
PoE PN/OFF	Display the configure of enable/disable the save syslog when the PoE supply status changes.	
	Enabled	Enable of save syslog.(Factory default)
	Disabled	Disable of save syslog.

Available commands are listed below.

L	Configure of enable/disable the save syslog when the link status changes.	
		Press "L." The command prompt changes to "Enable or Disable Link UP/DOWN Log(E/D)>." Press "E" to enable of save syslog. Press "D" to disable it.
O	Configure of enable/disable the save syslog when the PoE supply status changes.	
		Press "O." The command prompt changes to "Enable or Disable PoE ON/OFF Log(E/D)>." Press "E" to enable of save syslog. Press "D" to disable it.
Q	Return to the parent menu.	

4.8.7. Watch Dog Timer Menu

On the Switch Tools Configuration Menu, pressing "W" opens the Watch Dog Timer Menu screen, as shown in Fig. 4-89. On this screen, you can configure the Watch Dog Timer function settings.

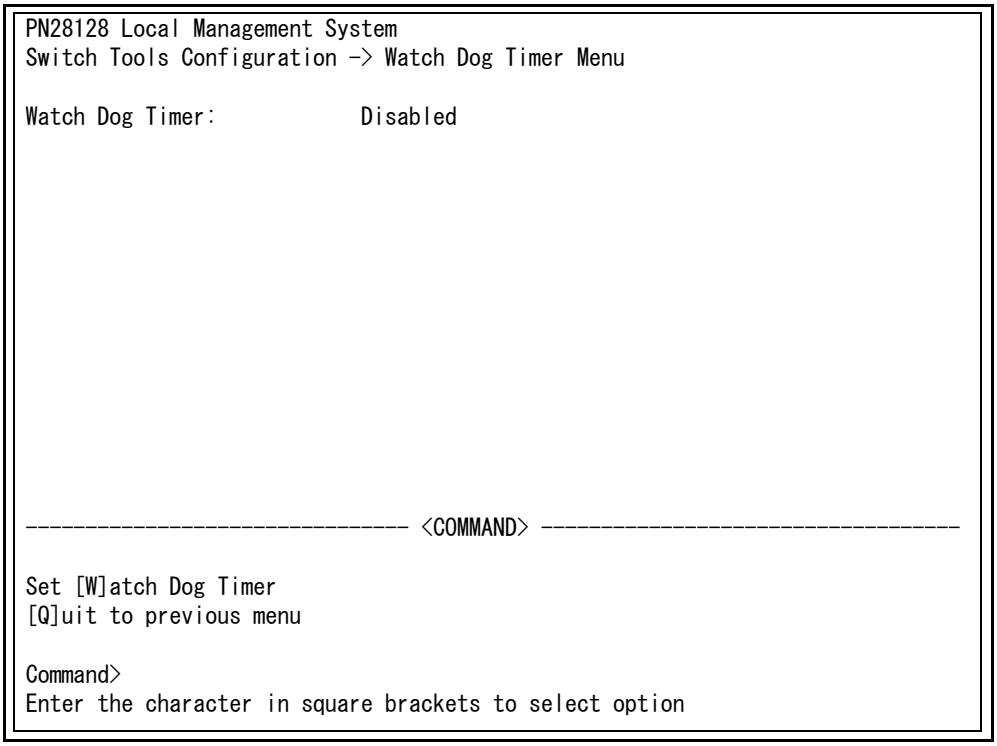


Fig. 4-89 Watch Dog Timer Menu

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	Switch 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.	

4.9. Save Configuration to Flash

On the Main Menu, pressing "F" opens the Save Configuration to Flash screen as shown in Fig. 4-90. 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.

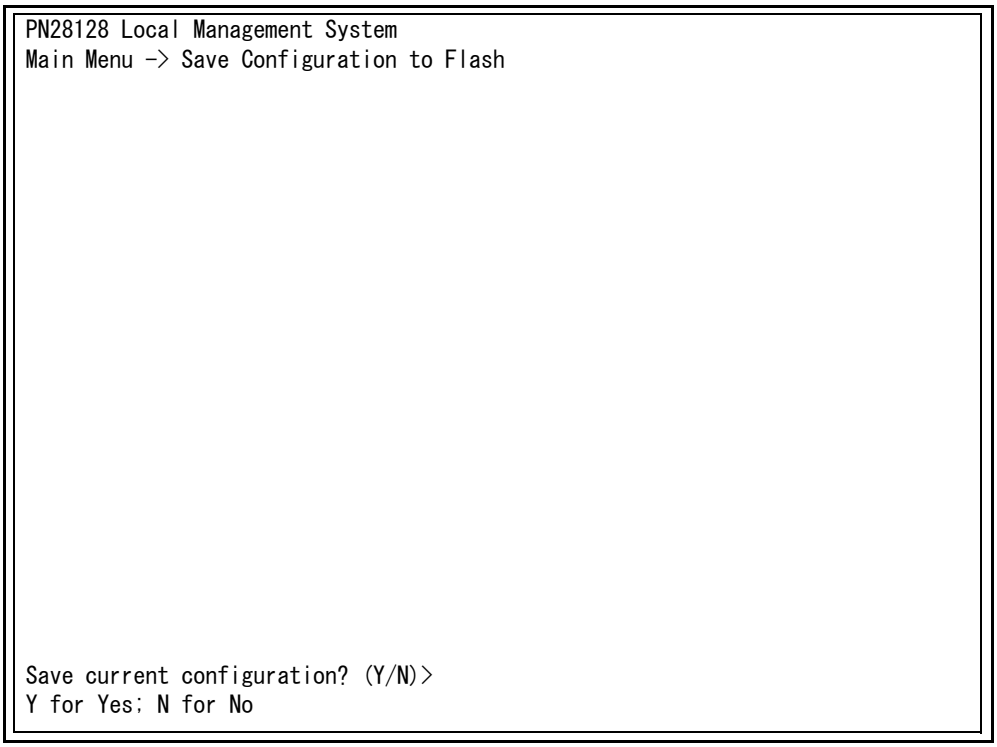


Fig. 4-90 Save Configuration to Flash Screen: Confirm Whether to Save or Not

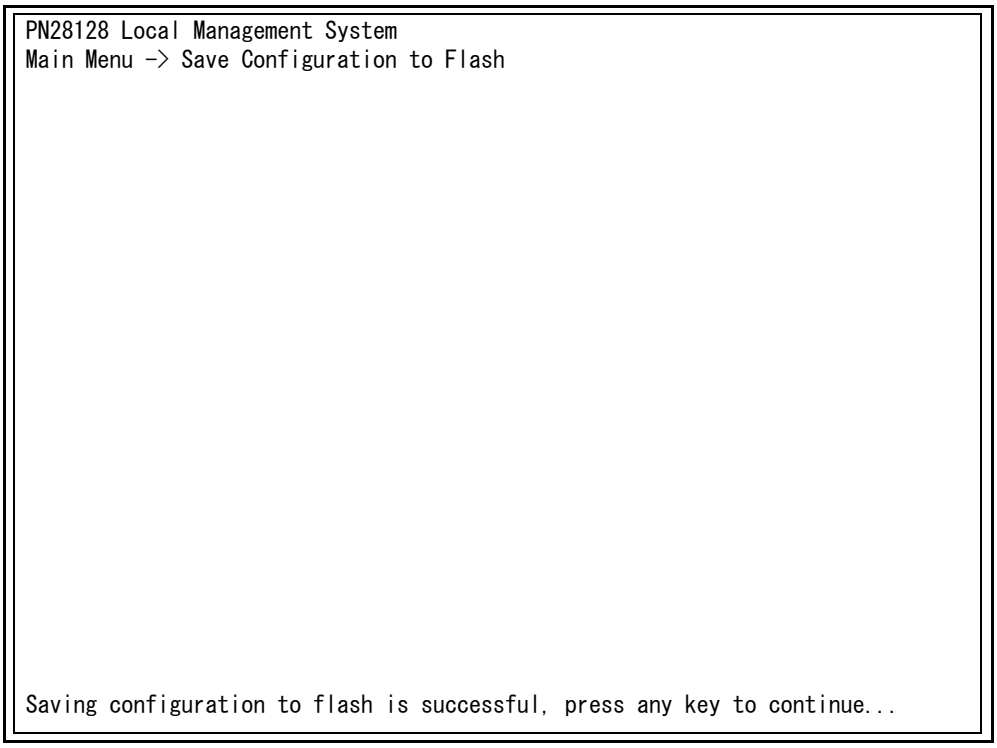


Fig. 4-91 Save Configuration to Flash Screen: Completed

4.10.Command Line Interface (CLI)

On the Main Menu, pressing "C" opens the screen as shown in Fig. 4-92.
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.

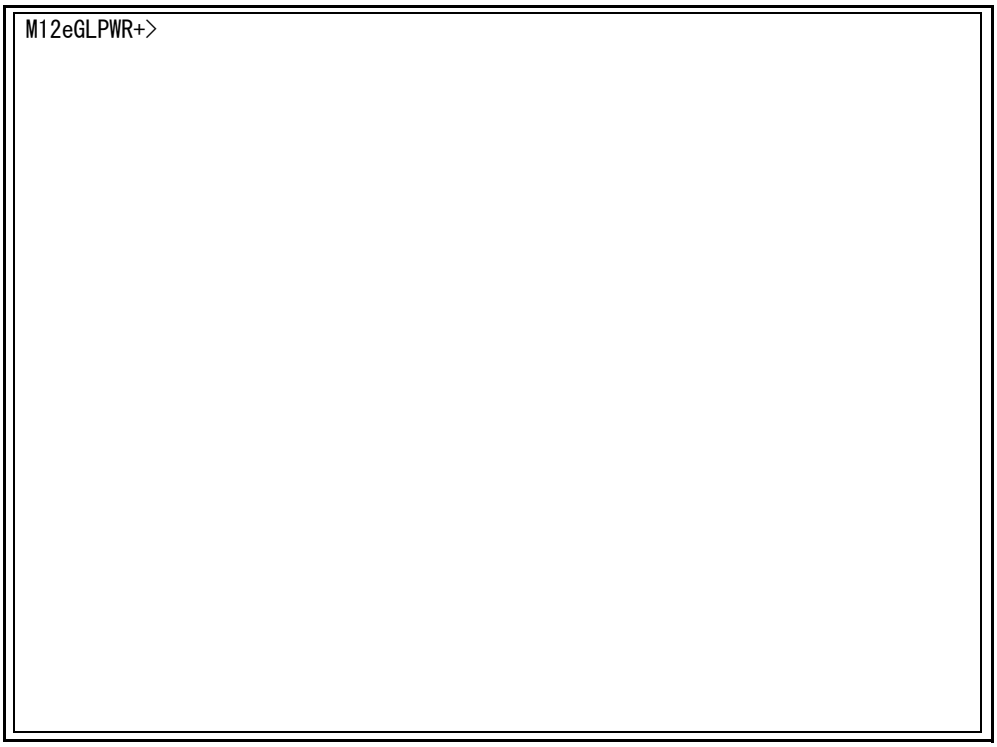


Fig. 4-92 Command Line Interface (CLI)

4.11.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 4.1 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 4.5.7 System Security Configuration has elapsed.

5. Appendix

5.1.Specifications

○ Interface

- Twisted-pair ports: Ports 1 to 14 (RJ45 connector)
  - ✧ Transmission system IEEE802.3 10BASE-T
    IEEE802.3u 100BASE-TX
    IEEE802.3ab 1000BASE-T

- SFP extension slots: Ports 13 to 14 (Select either of RJ45 connector or SFP for use)
  - ✧ Transmission system IEEE802.3z 1000BASE-SX/1000BASE-LX

- 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 512KB/unit

- Flow control
  IEEE802.3x (full-duplex)
  Back pressure (half-duplex)

○ Major functions

- IEEE802.1D Spanning Tree Protocol
- IEEE802.1w Rapid Spanning Tree Protocol
- IEEE802.1Q Tag VLAN (256 VLANs max.)
- IEEE802.3ad Link aggregation
  (Capable of establishing up to eight ports in seven groups)
- IEEE802.1p QoS function (Four levels of Priority Queue supported)
- IEEE802.1X Port-based authentication
  (EAP-MD5, TLS, and PEAP authentication methods are supported)
- IEEE802.3x Flow control
- IEEE802.3at PoE+ power supply function (Max. 30.0 W)
  (Supply method: Alternative A; using unused conductors 1, 2, 3, 6)
- Port monitoring Capable of monitoring multiple ports
- IGMP snooping Multicast filtering supported

- Ring protocol — Capable of ring configuration of up to 1 domain
- Digital Diagnostic Monitoring

○ Management methods
- SNMP, Telnet, SSH,WEB, and serial console

○ Agent specifications
- SNMPv1/v2c (RFC1157, RFC1901)
- TELNET (RFC854)
- SSHv2 (RFC4251 to 4254, RFC4716)
- TFTP (RFC783)
- SNTPv3 (RFC1769)

○ Supported MIB
- MIB II (RFC1213) except at(3),epg(8) groups.
- Power-Ethernet-MIB (RFC 3621)
  [Note: pethPsePortPowerPriority not supported]

○ Power supply specifications
- Power supply — AC 100-240 V, 50/60 Hz, 4.5 A
- Power consumption — Normally, Max. 242 W, Min. 16.8 W

○ Environment specifications
- Operating temperature — 0 to 50 degrees C
- Operating humidity — 20 to 80 % RH (no condensation)
- Storage temperature — -20 to 70 degrees C
- Storage humidity — 10 to 90 % RH (no condensation)

○ External specifications
- Dimensions — 44 mm (Height) x 330 mm (Width) x 230 mm (Depth)
  (Excluding protruding sections)
- Mass (Weight) — 3,000 g

5.2. Procedures for Configuration Using ZEQUO assist Plus

You can configure the Switching Hub via Console, Telnet, or SSHv2 using a terminal emulator software. Our free support application, called "ZEQUO assist Plus", is also included it.
(Please refer theoperation manual included in ZEQUO assist Plus archive file for more detail.)

(1) Upzip the archive file "ZEQUOASSISTPLUS_vxxxx.zip" include in attached CD-ROM.
(2) Run "ZEQUOASSIST.exe" and set login ID and password for this application.
(3) Click "The MNO series" button in the "ZEQUO assist Launcher".
(4) Click "Terminal Emulator" button in the ZEQUO assist main window.
(5) Check "Console" in "Terminal emulator connection method" field and choose the COM port number.
(6) Click "Start a terminal emulator" button.

5.3. Easy IP Address Setup Function

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

[Known compatible software]
Panasonic Corporation "Easy IP Setup" V3.01/V4.00/V4.24R00
Panasonic System Networks Co., Ltd. "Easy Config" Ver3.10R00
Panasonic Eco Solutions Networks Co., Ltd. " ZEQUO assist" Ver2.1.1.1

[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.

5.4. 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 switch that the user directly uses.
If you connect a hub that does not support the Loop detection and blocking function to a downstream switch, and a loop failure occurs in the switch, the downstream switch port that caused a loop is blocked to prevent a loop failure from affecting the entire network.

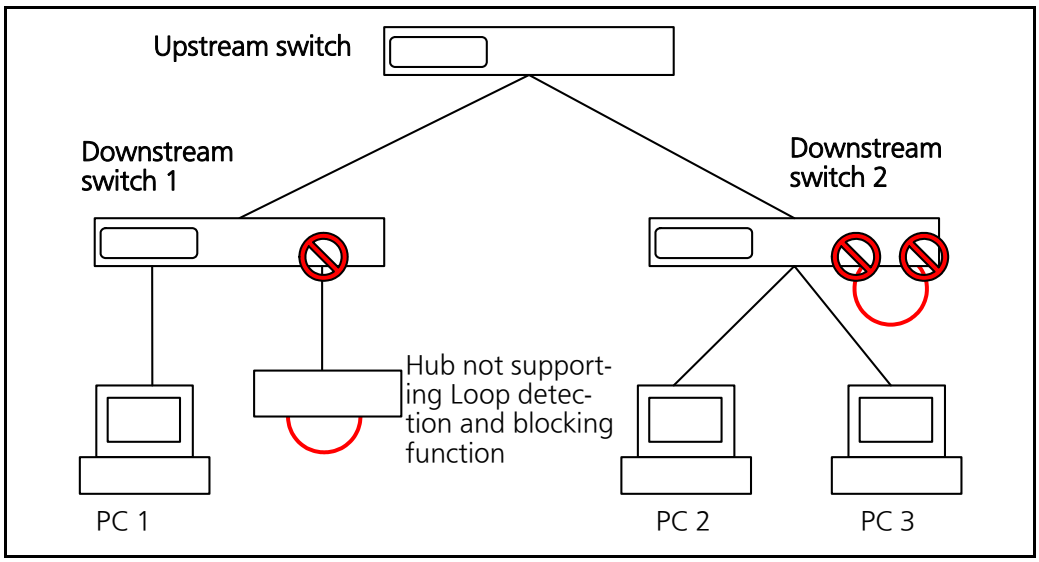
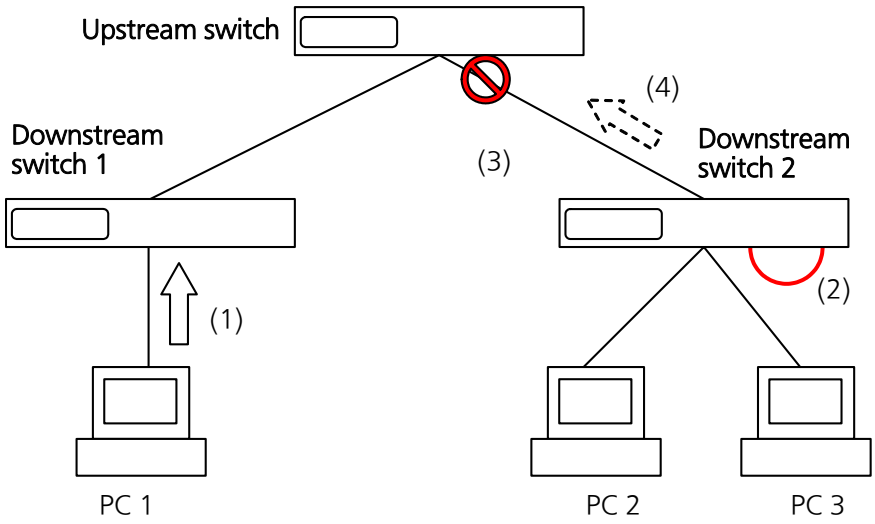


Figure 5-1 Configuration example using the Loop detection and blocking function

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

If you configure a network only with switches having the Loop detection and blocking function, the upstream switch may detect a loop occurring on the downstream switch first depending on the condition. Then, all communications to the downstream switch 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 switch. Then, network configuration and switch settings need to be changed to block only the port having a loop on the switch.



[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 switch 2.
(3) The upstream switch detects the loop first and blocks the uplink port on downstream switch 2. (Normally, only the loop-connected port is blocked.)
(4) The uplink port on downstream switch 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 problems, please take the following steps to check.

◆ LED

■ The POWER LED (Power) is not lit.

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

Note: If used at a temperature out of the operating temperature range, the protection equipment becomes activated and PoE power supply stops.The default operating temperature range is 0 to 50 degrees C.

■ The Port LED is not lit in Status mode.

- ● Is the cable correctly connected to the target port?
- ● Is the cable appropriate to use?
- ● Is the terminal connected to the relevant port conforming with 10BASE-T,100BASE-TX, or 1000BASE-T standard?
- ● Auto-negotiation may have failed.Check the port settings of this Switching Hub or the terminal settings.

■ The Port LED (Left) lights in failed.

Check the port settings of this Switching Hub or the terminal settings.

■ LOOP HISTORY LED Blinks in green.

- ● This is no notify that there is a port in which a loop is occurring, or has been removed within 3 days.

◆ Communications are slow.

- ● Are the communication speed and mode settings correct? If the proper communication mode signal cannot be obtained, apply half-duplex mode. Please reconfirm auto negotiation setting.
- ● Is not the utilization ratio of the network to which this Switching Hub is connected too high? Try separating this Switching Hub from the network.

◆ Communications fail.

- ● Is the link-up correct? If embedded saving mode is set to Full, change the setting to Half or Disabled.
- ● Is the Port LED (right) lit in orange? If the Port LED (right) lit in orange, the port is shut down by the loop detection function. Eliminate the loop connection of the device connected to the port first, and then wait longer than the time required for automatic recovery from the shutdown by the loop detection function, or release the port shutdown from the setting screen.

◆ PoE power supply is impossible.

■ Power is not supplied to a Powered Device.

- If you use an STP cable, PoE power supply may not be possible depending on the installation environment. In such cases, use a UTP cable.
- Is a CAT5e or better straight cable (RJ45-8/8) used?
- Is the cable connected to the port 1 to 12 that supports PoE power supply?
- Ensure that either the port alone or the entire equipment is not overloaded.
- Is the Powered Device connected to the port compliant with the IEEE802.3at (30W) standard?

■ Port LED (right) is blinking orange:

- Ensure that the total power supply demand from PoE-powered devices does not exceed 185 W.

■ When the power supply is suddenly shut off

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

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, dealer (company) name, etc., have been entered in the warranty card and then receive it from the shop. Read it carefully, and then 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 "Trouble-shooting" section in this manual, please use the Memo shown on the next page and make a repair request with the following information to your dealer.

- ◆ Product name ◆ Model number
- ◆ Product serial number (an 11-digit number attached on the back of the main unit.)
- ◆ 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 your dealer.
- ● 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 your dealer.

Memo (Fill in for future reference)

<table>
<tr><td rowspan="2">Date of purchase</td><td colspan="5" rowspan="2"></td><td>Model name</td><td colspan="4">Switch-M12eGLPWR+</td></tr>
<tr><td>Model number</td><td colspan="4">PN28128-</td></tr>
<tr><td rowspan="2">Firmware version (*)</td><td colspan="3">Boot Code</td><td colspan="6"></td></tr>
<tr><td colspan="3">Runtime Code</td><td colspan="6"></td></tr>
<tr><td rowspan="2">Serial number</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="10">(An 11-digit number labeled on the product)</td></tr>
<tr><td>Store/dealer</td><td colspan="10">Tel</td></tr>
<tr><td>Customer service contact</td><td colspan="10">Tel</td></tr>
</table>

(* Check screen is described in Section 4.4 of the Operation Manual - Menu Interface.)

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