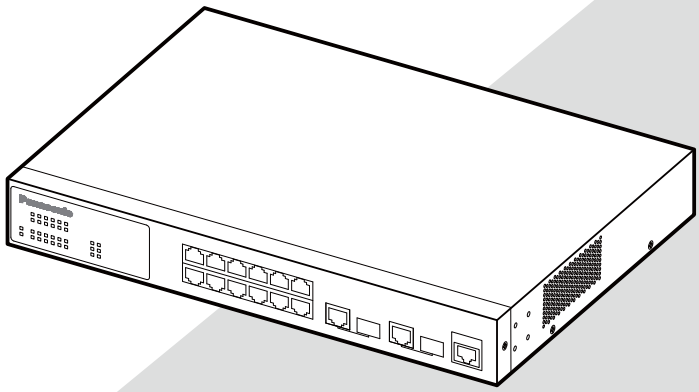
Panasonic

Operation Manual
For Menu Screens

Switch-M12PWR
Model Number: PN23129A

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



Important Safety 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.

⚠WARNIN	This symbol indicates a potential hazard that could result in serious injury or death.
⚠ CAUTIO	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	 This symbol is used to alert users to what they must

⚠WARNIN

- **Do not use power other than AC 100 - 240V.**
  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 and combustible) into the opening (such as twisted pair port, console port, SFP extension slot), and/or do not drop them into the inside of the Switching Hub.**
  Deviation could lead to fire, electric shock, and/or equipment failure.
- **Do not connect equipments other than 10BASE-T/100BASE-TX/1000BASE-T to twisted pair port.**
  Deviation could lead to fire, electric shock, and/or equipment failure.

⚠WARNIN

- **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 install any module other than the separately sold SFP module to SFP extension slot.**
  Deviation could lead to fire, electric shock, and/or equipment failure.
- **Do not connect any cable other than the separately sold console cable.**
  Deviation could lead to fire, electric shock, and/or equipment failure.
- **Do not put this Switching Hub into fire.**
  Deviation could lead to explosion and/or fire.
- **Do not use the supplied power cord for anything other than this product.**

⚠WARNIN

- **Use the bundled power cord (AC 100 − 240V specifications).**
  Deviation could lead to electric shock, malfunction, and/or equipment failure.
- **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.

⚠CAUTION

- **Handle the Switching Hub carefully so that fingers or hands may not be damaged by twisted pair port, SFP extension slot, console port, or power cord hook block.**

Important Requests on Protection from Lightning Strike

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

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.
- 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 40℃.

  When the total power supply is 140W or less, please use the Switching Hub in place where ambient temperature is from 0 to 45℃.

  When the total power supply is 110W or less, please use the Switching Hub in place where ambient temperature is from 0 to 50℃.

  Failure to meet the above conditions may result in fire, electric shock, breakdown, and/or malfunction. Please take notice because such cases are out of guarantee.

  Additionally, do not cover the bent hole of this Switching Hub.
  Deviation could lead to high internal temperature, equipment failure and/or

malfunction.

- When stacking Switching Hubs, leave a minimum of 20 mm space between them is required.

1. Panasonic will not be liable for any damage resulting from the operation not in accordance with this operation manual or the 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 question, please contact the retailer where you purchased the product.

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

Table of Contents

1. Product Outline

Switch-M12PWR is an Ethernet Switching Hub with management function having 12 ports of 10/100BASE-TX and two pairs of 10/100/1000BASE-T port and SFP extension slot, one of which is selectable.
Ports 1 to 12 support IEEE802.3af compatible PoE power supply function.

1.1. Features

- Ports 1 to 12 are 10/100BASE-TX ports corresponding to auto negotiation.
  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 IEEE802.3af. Supplying power up to 15.4W per port, and up to 170W 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))
- SSH/Telnet 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.
- VLAN function allows free grouping of up to 256 VLANs.
- The IEEE802.1s Multiple 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.
- The IEEE 802.3ad compatible tranking function is supported, allowing to aggregate the ports up to 8 ports.

1.2. Accessories

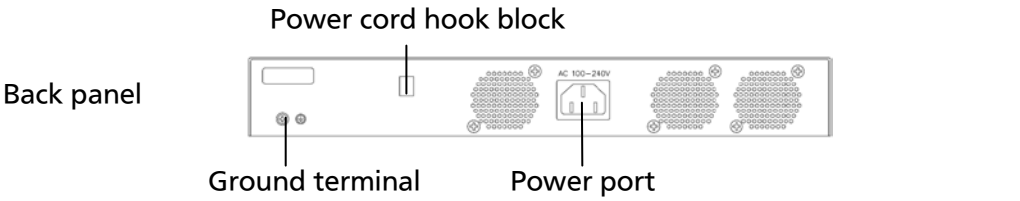
Please be sure to confirm the content.
Please contact our distributor if any of the contents are insufficient.

Quantity

- Installation Guide····· 1
- CD-ROM (PDF version of Operating Instuctions)·····..··· 1
- Mounting bracket (for 19-inch rack)·····. 2
- Mounting bracket (for wall mount)·····. 2
- Screws (for 19-inch rack)·····. 4
- Screws (for wall mount)·····. 4
- Screws (for fixing the main unit and the mounting bracket)····· 8
- Screws (for magnetic mount)····· 4
- Magnet····· 4
- Rubber foot·····. 4
- Power cord (CEE7/7)(*)····· 1

  (*) The attached power cord iss dedicated for AC 100 − 240V use.

1.3. Part Names and Functions



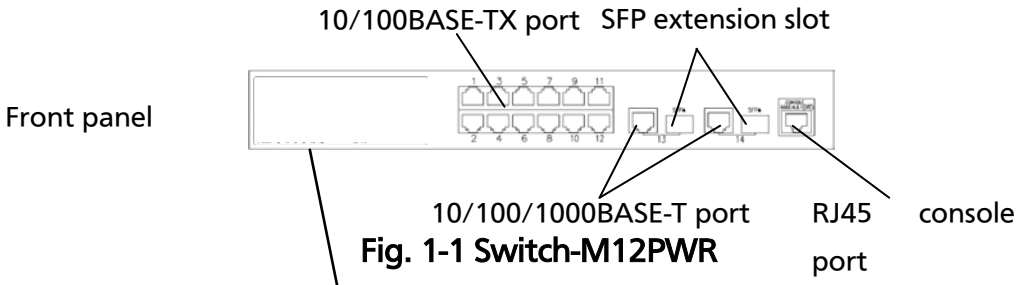


Fig. 1-1 Switch-M12PWR

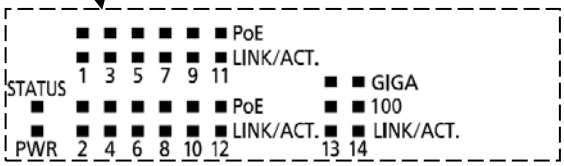


Fig. 1-2 Front LED Magnified View

1.4. LED Behavior

1.4.1. LED Behavior at Starting-up

Upon turning this Switching Hub on, all LEDs (PWR, STATUS, PoE and LINK/ACT for each port) light up. Then, the hardware self diagnosis is executed. Upon finishing the diagnosis, PWR and STATUS LEDs light in solid green. The Switching Hub is working as a Switching Hub.

- Power LED and Self-diagnosis LED

LED	Behavior	Description
Power LED (PWR)	Solid green	Power On
	Off	Power Off
Self-diagnosis LED (STATUS)	Solid green	System is operating normally.
	Solid orange	System is starting up.
	Flashing orange	System fault.
	Off	Power Off

1.4.2. LED Behavior while Operating

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

- 10/100BASE-TX port LEDs (Ports 1 to 12)

LED	Label in front	Behavior	Description
PoE LED	PoE	Solid green	Supplying power.
		Flashing orange	Overloading.
		Off	Not supplying power or no device connected.
Link/ Transmission LED	LINK/ACT.	Solid green	100 Mbps link established.
		Solid orange	10 Mbps link established.
		Flashing green	Transmitting packets at 100 Mbps.
		Flashing orange	Transmitting packets at 10 Mbps.
		Off	No device connected.

- 1000BASE-T/SFP extension slot LED (shared) (Ports 13 and 14)

LED	Label in front	Behavior	Description
Speed mode LED (GIGA)	GIGA	Solid green	1 Gbps link established.
		Off	Connected at 10/100 Mbps or no device connected.
Speed mode LED (100)	100	Solid green	100 Mbps link established.
		Off	Connected at 10 Mbps or no device connected.
Link/ Transmission LED	LINK/ACT.	Solid green	100 Mbps link established.
		Flashing green	Transmitting packets at 100 Mbps.
		Off	No device connected.

2. Installation

Switch-M12PWR can be mounted to 19-inch rack, wall, and steel products. Mounting brackets and screws are included in the package, requiring no separate purchase.

2.1. Mounting to 19-inch Rack

Two mounting brackets and eight screws (for fixing the main unit and the mounting bracket) are included in the package. Each side of the main unit has four screw holes. Fix the mounting brackets and the main unit by tightening four screws each.

Then, by using four screws (for 19-inch rack) included in this Switching Hub or procured for the lack, firmly mount the main unit in the rack.

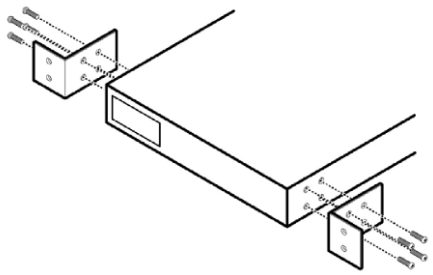


Fig. 2-1 Mounting to 19-inch Rack

2.2. Mounting to Wall

Take out the supplied two mounting brackets (for wall mount) and eight screws (for fixing
the main unit and the mounting bracket), and fix the brackets to the main unit by
tightening screws into four holes located at the sides.

Then, mount this Switching Hub firmly to the wall using the supplied four screws (for
wall mount) or your own screws..

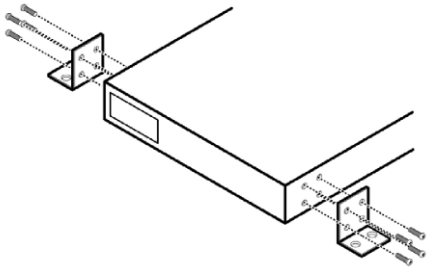


Fig. 2-2 Mounting to Wall

2.3. Mounting to Steel Product

Take out the supplied four rubber feet and four magnets, and place this Switching Hub upside down.
Attach the rubber feet to dents located at the corners of the bottom face, and fix the magnets firmly with the supplied four screws (for magnet mount).

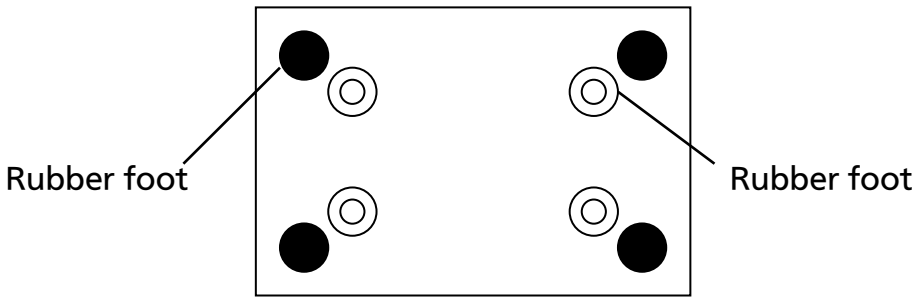


Fig. 2-3 Bottom Face

Note: Do not install the switch in such places as the unstable location, where there is strong vibration or shock, or where a person may walk under this Switching Hub.
Deviation could lead to injury or equipment failure.

3. Connection

3.1. Connecting a Twisted Pair Port

- Connection Cable

Use a CAT5-compliant straight cable (twisted pair) with 8P8C RJ45 modular plugs.

- Network Configuration

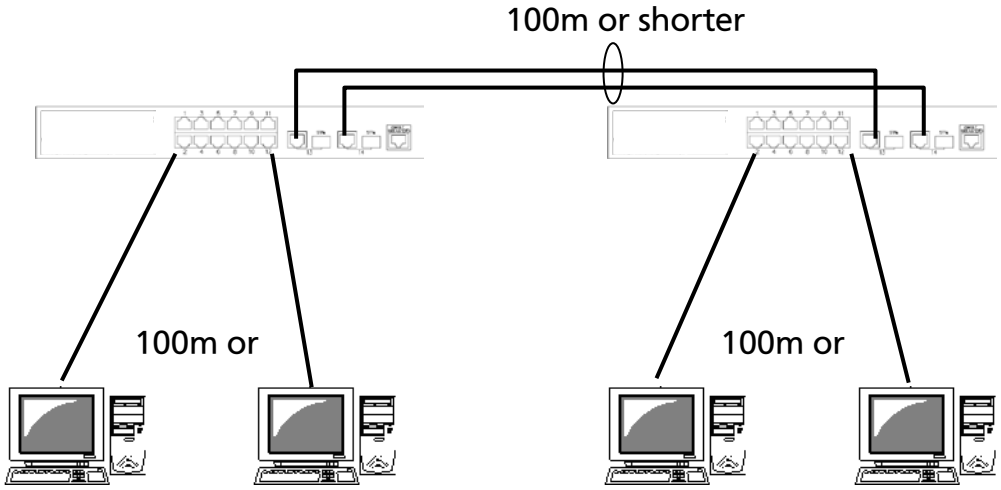


Fig. 3-1 Connection example

The length of the cable connecting this Switching Hub and a device must be 100 m or shorter. When a terminal or a LAN device with auto negotiation function is connected to 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 4.6.4.

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 Port

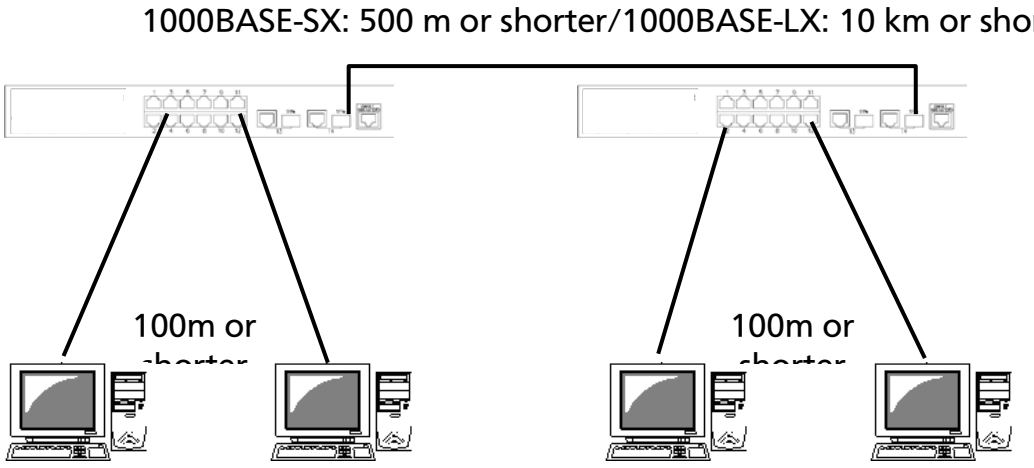


Fig. 3-2 Optical fiber cable connection example

Plugging an SFP module (optional) into an SFP extension port enables an optical fiber connection. The SFP extension port shares the port with the twisted pair port. The twisted pair port is enabled; however, the SFP extension port is automatically enabled when a fiber optical 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.

3.3. Connecting to Power

Connect the supplied power cord to the power port of this Switching Hub and connect the other end into an electric outlet. This Switching Hub operates at AC 100 to 240 V (50/60 Hz). This Switching Hub does not have a power ON/OFF switch. Plugging the power cord turns on this Switching Hub's power and it starts operating. To power off, unplug the power cord from the electric outlet.

4. Configuration

Upon power ON, this Switching Hub starts working as a Switching Hub. To use the SNMP functions and other functions, you need to configure the Switching Hub by using the console or Telnet.
In this chapter, the configuration of this Switching Hub is explained in detail.

Note: To access this Switching Hub via Telnet, this Switching Hub must have an IP address. Therefore, before accessing this Switching Hub via Telnet, configure an IP address by accessing this Switching Hub via console. For details on configuring an IP address, refer to 4.6.2.

4.1. Connecting via Console Port

Console connection requires a DEC VT100-compatible asynchronous terminal, or a terminal capable of running a VT100-compatible terminal emulator, such as HyperTerminal on Windows XP or older. Connect a terminal of this kind to the RJ45 console port of this Switching Hub.
Configure the communication mode for the asynchronous terminal as follows:

- Transmission mode: RS-232C (ITU-TS V.24 compliant)
- Emulation mode: VT100
- Transmission speed: 9600 bps
- Data length: 8 bits
- Stop bit: 1 bit
- Parity control: None
- Flow control: None

If you are using a Windows machine, refer to "Procedures for Console Port Configuration using Windows HyperTerminal."

4.2. Login

Upon connecting, a login window, similar to **Fig. 4-2-1**, is displayed. If no similar window is displayed, make sure the transmission mode of console is correct or hit the enter key.

```
================================================================================
PN23129K/PN23129A Local Management System Version 2.0.0.xx
MAC Address: 00:C0:8F:xx:xx:xx


================================================================================

Login Menu

Login:
```

Fig. 4-2-1 Login screen (Console)

If you access the Switching Hub via Telnet, the screen displays "Remote Management System" on the top, similar to **Fig. 4-2-2**.

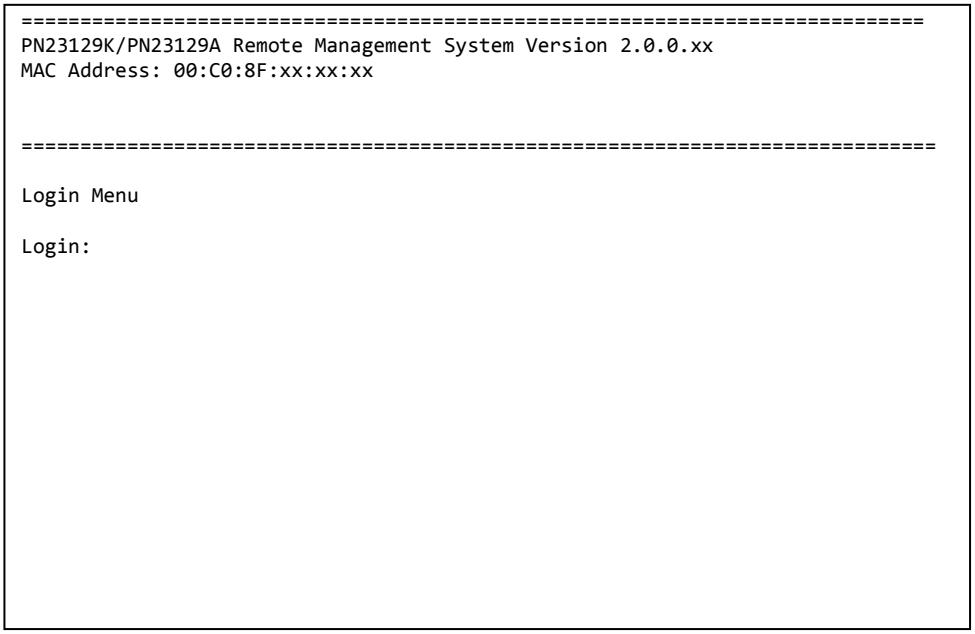


Fig. 4-2-2 Login screen (Telnet)

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

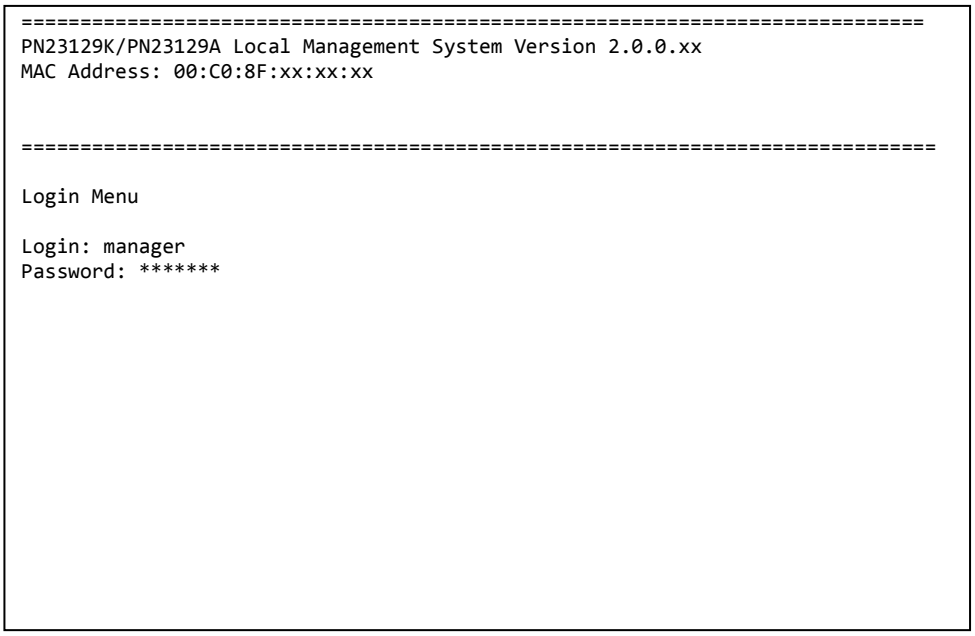


Fig. 4-2-3 Entering password

Both the login name and password can be changed. For the detailed change procedure, refer to **4.6.6.**

Note: Up to four users can access the Switching Hub concurrently via Telnet.

4.3. Basic Operations on the Screen

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

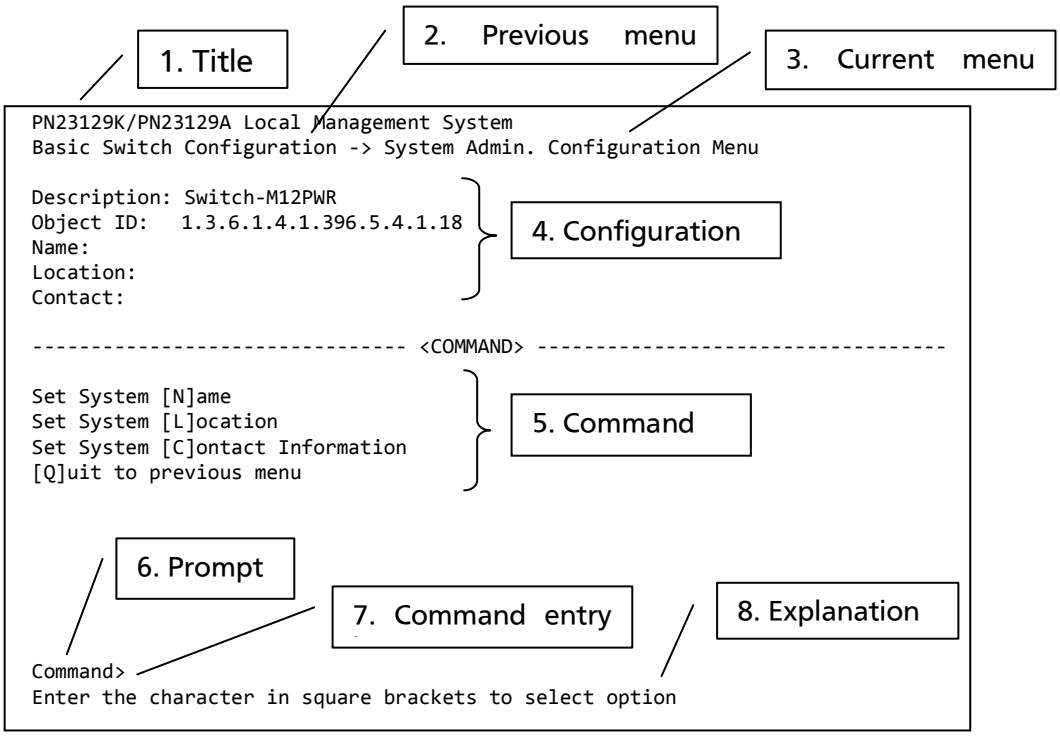


Fig. 4-3-1 Screen structure

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.
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 ([]). Enter this letter to enter the

command. If you enter a command or setting not available, an error message is shown in the explanation field.

4.4. Main Menu

After the login process, the main menu, similar to **Fig. 4-4-1**, 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.

```
PN23129K/PN23129A Local Management System

Main Menu


[G]eneral Information
[B]asic Switch Configuration...
[A]dvanced Switch Configuration...
[S]tatistics
Switch [T]ools Configuration...
Save Configuration to [F]lash
Run [C]LI
[Q]uit









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

Fig. 4-4-1 Main Menu

Screen Description

General information	Displays this Switching Hub's hardware, firmware information and address settings.
Basic Switch Configuration…	Configures this Switching Hub's basic functions (such as IP address, SNMP and port configuration).
Advanced Switch Configuration…	Configures this Switching Hub's advanced functions (such as VLAN, link aggregation, spanning tree, ACL, 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.
Quit	Logouts and returns to the login screen.

4.5. General Information Menu

On the Main Menu, pressing "G" opens the General Information Menu, as shown in **Fig. 4-5-1**. This screen displays this Switching Hub's basic information. You cannot edit shown information on this screen.

```
PN23129K/PN23129A Local Management System
Main Menu -> General Information

System up for:              000day(s), 00hr(s), 00min(s), 00sec(s)
Boot / Runtime Code Version: 1.0.0.xx / 2.0.0.xx
Hardware Information
  Version:                 Version1
  CPU Utilization:          0.00 %
  DRAM / Flash Size:        64MB / 8MB
  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:              00:C0:8F:xx:xx:xx
  IP Address:               192.168.2.13
  Subnet Mask:              255.255.255.0
  Default Gateway:          192.168.2.254
  DHCP Mode:                Disabled

Press any key to continue...
```

Fig. 4-5-1 General Information Menu

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. ("TFTP Software Upgrade" in 4.9.1 is about Runtime Code update.)	
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 installed DRAM and FLASH memory.
	DRAM User Area Size	Displays the sizes of the user area memory and unused memory.
	System Temperature	Displays the internal temperatures of the Switching Hub. The sensors measure the temperature of CPU and system.
Administration Information	Items shown here are configured in accordance with "4.6.1 System Administration Configuration."	
	Switch Name	Displays the Switching Hub name. The factory default setting is blank. For configuration details, refer to 4.6.1.
	Switch Location	Displays the Switching Hub's location. The factory default setting is blank. For configuration details, refer to 4.6.1.
	Switch Contact	Displays the contact information. The factory default setting is blank. For configuration details, refer to 4.6.1.
System Address Information	Items shown here are configured in accordance with "4.6.2 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 4.6.2.
	Subnet Mask	Displays the Switching Hub's current subnet mask. 0.0.0.0 is the factory default setting. For configuration details, refer to 4.6.2.
	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 4.6.2.
	DHCP Mode:	Displays whether to get an IP address using DHCP. For configuration details, refer to 4.6.2.

4.6. Basic Switch Configuration

On the Main Menu, pressing "B" opens the Basic Switch Configuration Menu, as shown in **Fig. 4-6-1**. On this screen, you can configure basic configuration settings, such as IP address, SNMP, and ports.

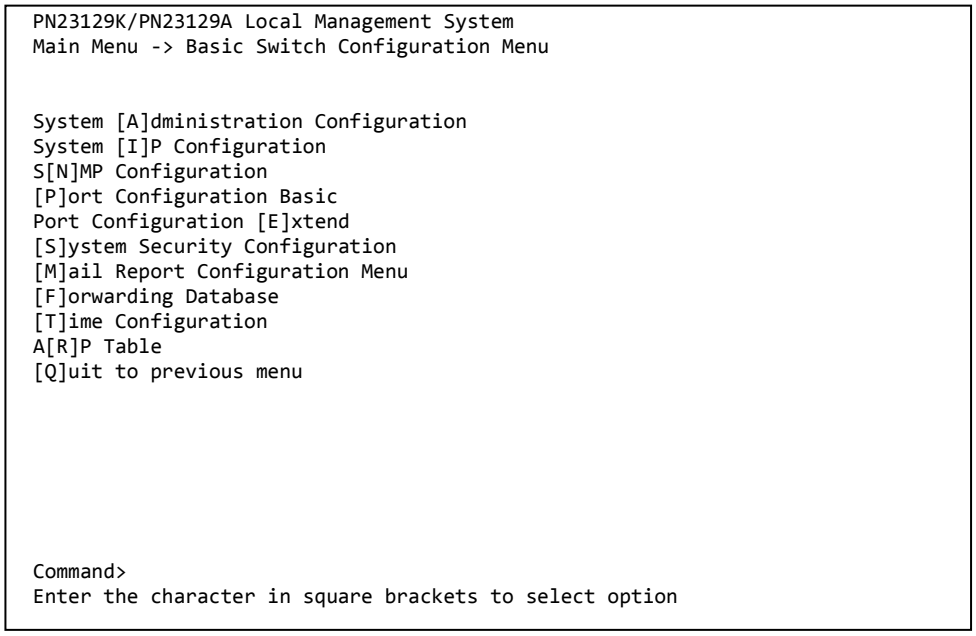


Fig. 4-6-1 Basic Switch Configuration Menu

Screen Description

System Administration Configuration	Displays the administrative information, such as Switching Hub name, location and contact information.
System IP Configuration	Configures the IP-address-related network information.
SNMP Configuration	Configures SNMP-related settings.
Port Configuration Basic	Configures basic port settings.
Port Configuration Extend	Configures extended port settings, such as port name.
System Security Configuration	Configures the security settings, such as access limitation for this Switching Hub.
Mail Report Configuration	Configures the E-mail-report transmission settings.
Forwarding Database	Displays the MAC address table.
Time Configuration	Configures the time settings, such as the SNTP-based time synchronization function and manual mode settings.
ARP Table	Displays the ARP table.
Quit to previous menu	Returns to the main menu.

4.6.1. System Administration Configuration

On the Basic Switch Configuration Menu, pressing "A" opens the System Administration Configuration Menu, as shown in **Fig. 4-6-2**. On this screen, you can set administrative information, such as device name.

```
PN23129K/PN23129A Local Management System
Basic Switch Configuration -> System Admin. Configuration Menu

Description: Switch-M12PWR
Object ID:   1.3.6.1.4.1.396.5.4.1.18
Name:
Location:
Contact:

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

Set System [N]ame
Set System [L]ocation
Set System [C]ontact Information
[Q]uit to previous menu









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

Fig. 4-6-2 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 previous menu.	

4.6.2. System IP Address Configuration

On the Basic Switch Configuration Menu, pressing "I" opens the System IP Configuration Menu, as shown in **Fig. 4-6-3**. On this screen, you can set IP-address-related settings for this Switching Hub.

```
PN23129K/PN23129A Local Management System
Basic Switch Configuration -> System IP Configuration Menu

MAC Address:       00:C0:8F:xx:xx:xx
IP Address:        0.0.0.0
Subnet Mask:       0.0.0.0
Default Gateway:    0.0.0.0
DHCP Mode:         Disabled

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

Set [I]P Address
Set Subnet [M]ask
Set Default [G]ateway
Set IP P[a]rameter
Set [D]HCP Status
Set DHCP [R]enew
[Q]uit to previous menu




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

Fig. 4-6-3 System IP 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 factory default setting.	
Subnet Mask:	Displays the current subnet mask. 0.0.0.0 is factory default setting.	
Default Gateway:	Displays the IP address of the router, set as a current default gateway. 0.0.0.0 is 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 from the DHCP server when starting up.
	Disabled:	Does not request an IP address from 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 an IP address for the Switching Hub.
M	Set/edit the subnet mask.	
		Press "M." The command prompt changes to "Enter subnet mask>." Enter a subnet mask for the Switching Hub.
G	Set/edit the IP address of the router for the default gateway.	
		Press "G." The command prompt changes to "Enter new gateway IP address>." Enter the IP address of the router, set as the default gateway.
A	Set the IP address, subnet mask and default gateway in succession.	
		Press "A." The command prompt changes to "Enter IP address>." Enter the IP address of the Switching Hub. Then, the command prompt changes to "Enter subnet mask>." Enter the subnet mask. 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 previous menu.	

Note: The above items must be set in order to use the SNMP control function and to enable a remote connection by Telnet or via WEB. Any IP addresses on the local network must be unique and no duplication is allowed. If you are unsure, consult the network administrator.

4.6.3. SNMP Configuration

On the Basic Switch Configuration Menu, pressing "N" opens the SNMP Configuration Menu, as shown in **Fig. 4-6-4**. On this screen, you can configure the SNMP agent settings.

```
PN23129K/PN23129A Local Management System
Basic Switch Configuration -> SNMP Configuration Menu


SNMP [M]anagement Configuration
SNMP [T]rap Receiver Configuration
[Q]uit to previous menu









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

Fig. 4-6-4 SNMP Configuration

Screen Description

SNMP Management Configuration	Configures the SNMP manager settings.
SNMP Trap Receiver Configuration	Configures the SNMP trap sending settings.
Quit to previous menu	Return to the previous menu.

Available commands are listed below.

M	Configure the SNMP manager settings.
	Press "M." The SNMP Management Configuration Menu opens.
T	Configure the trap sending settings.
	Press "T." The SNMP Trap Receiver Configuration Menu opens.
Q	Quit the SNMP Configuration Menu and return to the previous menu.

4.6.3.a SNMP Management Configuration

On the SNMP Configuration Menu, pressing "M" opens the SNMP Management Configuration Menu, as shown in **Fig. 4-6-5**. On this screen, you can configure the SNMP manager settings.

```
PN23129K/PN23129A 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. 4-6-5 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.
	Press "S." The command prompt changes to "Enter manager entry number>." Enter an SNMP manager entry number you wish to configure. 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 an IP address for an SNMP manager.
	Press "I." The command prompt changes to "Enter manager entry number>." Enter an SNMP Management entry number you wish to configure. Then, the command prompt changes to "Enter IP address for manager>." Enter an IP address.
R	Set access privileges for an SNMP manager.
	Press "R." The command prompt changes to "Enter manager entry number>." Enter an SNMP manager entry number you wish to configure. Then, the command prompt changes to "Enter the selection>." Press "1" for read-only permission. Press "2" for read-and-write.
C	Set a community name for an SNMP manager.
	Press "C." The command prompt changes to "Enter manager entry number>." Enter an SNMP manager entry number you wish to configure. Then, the command prompt changes to "Enter community name for manager>." Enter a community name.
Q	Return to the previous menu.

4.6.3.b. SNMP Trap Receiver Configuration

On the SNMP Configuration Menu screen, pressing "T" opens the SNMP Trap Receiver Configuration Menu screen, as shown in **Fig. 4-6-6**. On this screen, you can set the SNMP Trap sending settings.

```
PN23129K/PN23129A 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. 4-6-6 SNMP Trap Receiver Configuration

Screen Description

Trap Receiver List:	Displays the IP address and the community name for the current trap receiver.		
	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 Trap type.	
		V1	Sends SNMPv1 traps.
		V2	Sends SNMPv2 traps.
	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.	
		Press "S." The command prompt changes to "Enter manager entry number>." Enter an entry number for the trap receiver you wish to configure. Then, the command prompt changes to "Enable or Disable Trap Receiver (E/D)>." Press "E" to enable the SNMP manager. Press "D" to disable it.
I	Set an IP address for the trap receiver.	
		Press "I." The command prompt changes to "Enter manager entry number>." Enter an entry number for the trap receiver you wish to configure. Then, the command prompt changes to "Enter IP address for trap receiver>." Enter the IP address.
D	Configure the trap sending settings when the link status changes.	
		Press "D." The screen changes to the Enable/Disable Individual Trap Menu. For configuration details, refer to the next section (4.6.3.c).
T	Configure the trap type.	
		Press "T." The command prompt changes to "Enter manager entry number>." Enter an entry number for the trap receiver you wish to configure. Then, the command prompt changes to "Enter the selection>." Press "1" to select SNMPv1 traps. Press "2" to select SNMPv2 traps.
C	Set a community name for a trap receiver.	
		Press "C." The command prompt changes to "Enter manager entry number>." Enter an entry number for a trap receiver you wish to configure. Then, the command prompt changes to "Enter community name for trap receiver>." Enter a community name.
Q	Return to the previous menu.	

4.6.3.c Enable/Disable Individual Trap

On the SNMP Trap Receiver Configuration Menu screen, pressing "D" opens the Enable/Disable Individual Trap Menu screen, as shown in **Fig. 4-6-7**. On this screen, you can set the trap sending settings.

```
PN23129K/PN23129A 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:           40 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. 4-6-7 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.
	Disabled	Disables the trap sending. (Factory default setting)
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 40 degress 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 the link status changes.	
		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 to 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 to 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 a 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 50 degress 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 previous menu.	

4.6.4. Port Configuration Basic

On the Basic Switch Configuration Menu, pressing "p" opens the Port Configuration Basic Menu, as shown in **Fig. 4-6-8**. On this screen, you can configure port status display settings and port settings.

```
PN23129K/PN23129A Local Management System
Basic Switch Configuration -> Port Configuration Basic Menu

 Port  Trunk      Type      Admin     Link       Mode      Flow Ctrl  Auto-MDI
 ----  -----  -----------  --------   ----   ------------  ---------  --------
   1    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
   2    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
   3    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
   4    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
   5    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
   6    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
   7    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
   8    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
   9    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
  10    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
  11    ---      100TX     Enabled    Down   Auto          Disabled   Disabled
  12    ---      100TX     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. 4-6-8 Port Configuration Basic Menu

Screen Description

Port	Displays the port number.	
Trunk	Displays the group number for a trunked port.	
Type	Displays the port type.	
	100TX	The port type is 10/100BASE-TX.
	1000T	The port type is 10/100/1000BASE-T.
	1000X	The port type is 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 function settings. For ports 1 to 12, 'Disabled' is the factory default setting. (The settings for Ports 13 and 14 are fixed at "Enabled.")	
	Enabled	The Auto-MDI function is enabled.
	Disabled	The Auto-MDI function is disabled.

Available commands are listed below.

N	Show the next page.		
	Press "N." The screen displays the next port.		
P	Show the previous page.		
	Pressing "P" displays the previous port.		
A	Enable/disable a port.		
	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. 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.		
	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. 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. If "N" is selected, the command prompt changes to "Enter speed for port #(10/100)>." Select a desired communication speed. 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 Giga 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.		
	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. 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 function.		
	Press "S." The command prompt changes to "Enter port number>." Enter a port number (from 1 to 14) you wish to configure. To configure all ports at once, enter "0" as the port number. 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 previous menu.		

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

4.6.5. Port Configuration Extend

On the Basic Switch Configuration Menu, pressing "e" opens the Port Configuration Extend Menu, as shown in **Fig. 4-6-9**. On this screen, you can configure port status display settings and port settings.

```
PN23129K/PN23129A Local Management System
Basic Switch Configuration -> Port Configuration Extend Menu

 Port  Trunk      Type     Link     Port Name       Jumbo     EAP Pkt FW
 ----  -----  -----------  ----  ---------------   --------   ------------
   1    ---      100TX     Down  Port_1           Disabled    Disabled
   2    ---      100TX     Down  Port_2           Disabled    Disabled
   3    ---      100TX     Down  Port_3           Disabled    Disabled
   4    ---      100TX     Down  Port_4           Disabled    Disabled
   5    ---      100TX     Down  Port_5           Disabled    Disabled
   6    ---      100TX     Down  Port_6           Disabled    Disabled
   7    ---      100TX     Down  Port_7           Disabled    Disabled
   8    ---      100TX     Down  Port_8           Disabled    Disabled
   9    ---      100TX     Down  Port_9           Disabled    Disabled
  10    ---      100TX     Down  Port_10          Disabled    Disabled
  11    ---      100TX     Down  Port_11          Disabled    Disabled
  12    ---      100TX     Down  Port_12          Disabled    Disabled
 -------------------------------- <COMMAND> -----------------------------------

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

Fig. 4-6-9 Port Configuration Extend Menu

Screen Description

Port	Displays the port number.	
Trunk	Displays the group number for a trunked port.	
Type	Displays the port type.	
	100TX	The port type is 10/100BASE-TX.
	1000T	The port type is 10/100/1000BASE-T.
	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.	
Jumbo	Displays the jumbo frame settings. For all ports, 'Disabled' is the factory default setting.	
	Enabled	Jumbo frame is enabled.
	Disabled	Jumbo frame is disabled.
EAP Pkt FW	Displays the EAP packet forwarding function settings. For all ports, 'Disabled' is the factory default setting. Set this item to "Discard" to discard EAP packets.	
	Enabled	The EAP Packet Forwarding function is enabled.
	Disabled	The EAP Packet Forwarding function is disabled.

Available commands are listed below.

N	Show the next page.	
		Press "N." The screen displays the next port.
P	Show the previous page.	
		Pressing "P" displays previous port.
A	A name can be assigned to each port.	
		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. Then, the command prompt changes to "Enter port name string>." Enter a name you wish to assign. As the change is applied, the display on the upper screen is updated automatically.
J	Enable/disable the jumbo frame forwarding function.	
		Press "J." 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. Then, the command prompt changes to "Enable or Disable jumbo 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.
E	Enable/disable the EAP packet forwarding function.	
		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. Then, the command prompt changes to "Enable or Disable EAP forward 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 previous menu.	

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

4.6.6. System Security Configuration

On the Basic Switch Configuration Menu, pressing "S" opens the System Security Configuration Menu, as shown in **Fig. 4-6-10**. On this screen, you can configure the various settings for accessing this Switching Hub for configuration and management.

```
PN23129K/PN23129A Local Management System
Basic Switch Configuration -> System Security Configuration

Console UI Idle Timeout:     5 Min.
Telnet UI Idle Timeout:      60 Min.

Telnet Server:              Enabled
SNMP Agent:                 Disabled
Web Server Status:           Enabled
IP Setup Interface:          Enabled
Local User Name:            manager
Syslog Transmission:         Disabled

------------------------------ <COMMAND> ---------------------------------
Set [C]onsole UI Time Out            Change Local [P]assword
Set [T]elnet UI Time Out             [R]ADIUS Configuration
Enable/Disable Te[l]net Server       Syslo[g] Transmission Configuration Page
Enable/Disable [S]NMP Agent          [I]P Setup Interface
[W]eb Server Status                 [Q]uit to previous menu
Enable/Disable S[y]slog Transmission
Telnet [A]ccess Limitation
Change Local User [N]ame
Command>
Enter the character in square brackets to select option
```

Fig. 4-6-10 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 the web access settings. 'Disabled' is the factory default setting.	
	Enabled:	Access is enabled.
	Disabled:	Access is disabled.
IP Setup Interface:	Displays the access settings for the IP address configuration software, bundled with the Panasonic network cameras. 'Enabled' is the factory default setting. * For instructions, refer to Appendix C.	
	Enabled:	Access is enabled.
	Disabled:	Access is disabled.
Local User Name:	Displays the current login username. 'manager' is the factory default setting.	
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.

Available commands are listed below.

C	Configure the idle timeout settings for automatically terminating a console-connected session if no input is made.
	Press "C." The command prompt changes to "Enter console idle timeout>." Enter a value from 0 to 60 (minutes). Entering "0" disables the automatic termination.
T	Configure the idle timeout settings for automatically terminating a Telnet-connected session if no input is made.
	Press "T." The command prompt changes to "Enter telnet idle timeout>." Enter a value from 1 to 60 (minutes).
N	Edit the login username.
	Press "N." The command prompt changes to "Enter current password>." Enter the current password. 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.
	Press "P." The command prompt changes to "Enter old password>." Enter the current password. After entering the correct password, the command prompt changes to "Enter new password>." Enter a new password in 12 characters. After entering the password, the command prompt changes to "Retype new password>" for confirmation. Enter the new password again.
L	Configure the Telnet access settings.
	Press "L." The command prompt changes to "Enable or Disable telnet server(E/D)>." Enter "E" to enable the access. Enter "D" to disable the access.
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 the access.
W	Configure the web 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 the access.
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 the Syslog transmission to the Syslog server.
R	Configure the access settings to access the RADIUS server. The RADIUS used in the IEEE802.1X port-based authentication.
	Press "R" to move to the RADIUS Configuration page. For configuration details, refer to the next section (4.6.5.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 (4.6.6.b).
Q	Return to the previous menu.

4.6.6.a. Telnet Access Limitation Configuration

On the System Security Configuration Menu, pressing "A" opens the Telnet Access Limitation screen, as shown in **Fig. 4-6-11**. In this screen, you can configure limitation of equipment accessing to this Switching Hub via Telnet.

```
PN23129K/PN23129A 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. 4-6-11 Telnet Access Limitation Configuration

Available commands are listed below.

<table>
<tr><td>E</td><td colspan="2">Set Enable/Disable of access limitation via Telnet.</td></tr>
<tr><td></td><td>E</td><td>Set access limitation from Telnet to Enable.</td></tr>
<tr><td></td><td>D</td><td>Set access limitation from Telnet to Disable.</td></tr>
<tr><td>A</td><td colspan="2">Set an IP address to be permitted. Five ranges can be set up.</td></tr>
<tr><td></td><td></td><td>Press "A." The command prompt changes to "Enter IP address entry number>." Enter an IP address entry number between 1 and 5. The command prompt changes to "Enter IP address>." Enter an IP address to be permitted. If IP address is correct, the command prompt changes to "Enter subnetwork mask>." Enter a range of IP address you wish to permit accessing with subnet mask format.

(Setting example)
<table>
<tr><th>No.</th><th>IP Address</th><th>Subnet Mask</th><th>Access permitted IP Address</th></tr>
<tr><td>1</td><td>192.168.1.10</td><td>255.255.255.255</td><td>192.168.1.10
(Only one unit can be accessed)</td></tr>
<tr><td>2</td><td>192.168.1.20</td><td>255.255.255.254</td><td>192.168.1.20, 192.168.1.21
(Two units can be accessed)</td></tr>
<tr><td>3</td><td>192.168.2.1</td><td>255.255.255.128</td><td>192.168.2.1 − 192.168.2.127
(127 units can be accessed)</td></tr>
<tr><td>4</td><td>192.168.3.1</td><td>255.255.255.0</td><td>192.168.3.1 − 192.168.3.254
(254 units can be accessed)</td></tr>
</table>
</td></tr>
<tr><td>D</td><td colspan="2">Delete a range of IP address that has been set up.</td></tr>
<tr><td></td><td></td><td>Press "D." The command prompt changes to "Enter IP address entry number>." Enter an IP address entry number you wish to delete.</td></tr>
<tr><td>M</td><td colspan="2">Change a range of IP address that has been set up.</td></tr>
<tr><td></td><td></td><td>Press "M." The command prompt changes to "Enter IP address entry number>." Enter an IP address entry number between 1 and 5. The command prompt changes to "Enter IP address>." Enter an IP address that has been set up. The command prompt changes to "Enter subnetwork mask>." Enter a range of IP address you wish to permit accessing with mask.</td></tr>
<tr><td>Q</td><td colspan="2">Return to the previous menu.</td></tr>
</table>

4.6.6.b. RADIUS Configuration

On the System Security Configuration Menu, pressing "R" opens the RADIUS Configuration Page screen, as shown in **Fig. 4-6-12**. In this screen, you can configure accessing to RADIUS server that is used in 802.1x port base authentication.

```
PN23129K/PN23129A 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. 4-6-12 RADIUS Configuration

Screen Description

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

Available commands are listed below.

N	Set the NAS ID (NAS Identifier).
	Press "I." The command prompt changes to "Enter NAS ID>." Enter NAS ID in 16 characters or less.
I	Set an IP address of RADIUS server.
	Press "A." The command prompt changes to "Enter IP Address for RADIUS server>." Enter an IP address.
C	Set a secret key of 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 a response time until the RADIUS server responds to authentication request.
	Press "R." The command prompt changes to "Enter response time>." Enter the response time with a value of 1 to 120 sec.
M	Set maximum number of times of retransmission of authentication request.
	Press "M." The command prompt changes to "Enter maximum retransmission>." Enter an integer number of 1 to 254.
Q	Return to the previous menu.

4.6.6.c. Syslog Transmission Configuration

On the System Security Configuration Menu, pressing "G" opens the Syslog Transmission Configuration Page screen, as shown in **Fig. 4-6-13**. In this screen, you can set Syslog server information to send a system log.

```
PN23129K/PN23129A Local Management System
System Security Configuration -> Syslog Transmission Configuration Menu

Syslog Server List:
 No.     Status        IP Address       Facility     Include SysName/IP
----  -----------   ---------------    ----------    ------------------
  1   Disabled      0.0.0.0           Facility0
  2   Disabled      0.0.0.0           Facility0









-------------------------------- <COMMAND> ----------------------------------
Set Server [S]tatus     Set Server [I]P            [Q]uit to previous menu
Set Server [F]acility   Set S[y]sName/IP Include    [C]lear Server Information


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

Fig. 4-6-13 Syslog Transmission Configuration

Screen Description

Status:	Indicates a status of Syslog Transmission.	
IP Address:	Indicates an IP address of Syslog server.	
Facility:	Indicates a value of Facility.	
Include SysName/IP:	Indicates information to be added.	
	SysName	Adds a SysName of this Switching Hub to a system log to be transmitted.
	IP Address	Adds an IP address of this Switching Hub to a system log to be transmitted.

Available commands are listed below.

S	Set a status of Syslog Transmission.
	Press "S." The command prompt changes to "Enter manager entry number>." Enter No. you wish to set. Then, the command prompt changes to "Enable or Disable Server (E/D)>." Enter "E" to enable, or "D" to disable the server.
F	Set Facility.
	Press "F." The command prompt changes to "Enter manager entry number>." Enter No. you wish to set. Then, the command prompt changes to "Enter Server Facility>." Enter a value of 0 to 7 (Local0 to Local7).
I	Set an IP address of Syslog server.
	Press "I." The command prompt changes to "Enter manager entry number>." Enter No. you wish to set. Then, the command prompt changes to "Enter IP address for manager>." Enter an IP address of Syslog server.
Y	Set information that is added to a system log to be transmitted.
	Press "Y." The command prompt changes to "Enter manager entry number>." Enter No. you wish to set. Then, the command prompt changes to "Enter Include Information>." Enter "S" when adding a SysName of this Switching Hub, or "I" when adding IP address, or "N" when not adding IP address.
C	Delete setting information of Syslog Transmission.
	Press "C." The command prompt changes to "Enter manager entry number>." Enter No. you wish to delete. Then, the command prompt changes to "Clear Syslog Server information>." Enter "Y" when deleting, or "N" when not deleting the sever information.
Q	Return to the previous menu.

4.6.7. Mail Report Configuration

On the Basic Switch Configuration Menu, pressing "M" opens the Mail Report Configuration Menu screen, as shown in **Fig. 4-6-14**. In this screen, you can set notification function of failures or operation information using E-mail.
Currently, the E-mail contents are supported Japanese only.

```
PN23129K/PN23129A Local Management System
Basic Switch Configuration -> Mail Report Configuration Menu

SMTP Server:         0.0.0.0
Dest Account 1:      <empty>
Dest Account 2:      <empty>
Dest Account 3:      <empty>
Sender Account:      <empty>

Report Destination:
Trap Destination:

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

Set SMTP [S]erver                    Add [R]eport Destination
Set [D]est Account                   Delete R[e]port Destination
Report Data [C]onfiguration           Add [T]rap Destination
Set Domain [N]ame                    Delete Tra[p] Destination
[Q]uit to previous menu



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

Fig. 4-6-14 Mail Report Configuration

Screen Description

SMTP Server1	Indicates an address of SMTP server.
Dest Account1	Indicates an e-mail address of a transmission destination.
Dest Account2	
Dest Account3	
Sender Account	Indicates an e-mail address of a transmission source.
Report Destination	Indicates the transmission destination account number as an object of report mail.
Trap Destination	Indicates the transmission destination account number as an object of trap mail.

Available commands are listed below.

S	Set an address of SMTP server.
	Press "S." The command prompt changes to "Enter new SMTP server>." Enter an address you wish to set.
D	Set a mail address of destination.
	Press "D." The command prompt changes to "Enter destination account entry number>." Enter an address number you wish to set with a value of 1-3. Then, the command prompt changes to "Add or Delete or Set destination account E-mail address (A/D/M)>." Enter "A" or "M" when you wish to add or modify, or "D" when you wish to delete.
C	Display "Report Data Configuration." For details, refer to the next section (4.7.6.a).
N	Set a domain name of mail address of sender.
	Press "N." The command prompt changes to "Enter domain name>." Enter a domain name you wish to set.
R	Add a destination to which a report is sent.
	Press "R." The command prompt changes to "Enter report destination entry number>." Enter an account number you wish to set to destination to which a report is sent with a value of 1-3.
E	Delete a destination to which a report is sent.
	Press "E." The command prompt changes to "Enter report destination entry number>." Enter an account number you wish to release the setting with a value of 1-3.
T	Add a destination to which a trap is sent.
	Press "T." The command prompt changes to "Enter trap destination entry number>." Enter an account number you wish to set to destination to which a trap is sent with a value of 1-3.
P	Delete a destination to which a trap is sent.
	Press "P." The command prompt changes to "Enter trap destination entry number>." Enter an account number you wish to release the setting with a value of 1-3.
Q	Return to the previous menu.

4.6.7.a. Report Data Configuration

On the Mail Report Configuration Menu, pressing "C" opens the Report Data Configuration screen, as shown in **Fig. 4-6-15**. In this screen, you can set content to be described in a report.

```
PN23129K/PN23129A Local Management System
Mail Report Configuration Menu -> Report Data Configuration Menu

Report Interval:      Daily          Utilization:     Detached
Sample Interval:      10 Minutes      Total Frames:    Attached
Port Info:           Enabled        Broadcasts:      Attached
Traffic Info:        Enabled        Mulitcasts:      Attached
System Log:          Enabled        Collisions:      Attached
Attach File:         Enabled        Errors:          Attached
Attached File Type:    csv
Attached Ports:
-------------------------------- <COMMAND> ----------------------------------

Set [R]eport Interval               [A]dd Attached Ports
Set [S]ample Interval               [D]elete Attached Ports
Enable/Disable [P]ort Info           Attach/Detach [U]tilization
Enable/Disable [T]raffic            Attach/Detach T[o]tal Frames
Enable/Disable System [L]og          Attach/Detach [B]roadcasts
Enable/Disable Attach [F]ile         Attach/Detach [M]ulticasts
Set Attached File T[y]pe            Attach/Detach [C]ollisions
[Q]uit to previous menu             Attach/Detach [E]rrors

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

Fig. 4-6-15 Report Data Configuration

Screen Description

Report Interval	Indicates a reporting interval.
Sample Interval	Indicates an interval to obtain samples.
Port Info	Indicates whether a port status is set as an object of notification or not.
Traffic Info	Indicates whether a traffic information is set as an object of notification or not.
System Log	Indicates whether a system logis set as an object of notification or not.
Attach File	Indicates whether to attach a content of notification to report mail or not.
Attached File Type	Indicates a type of attached file.
Attached Ports	Indicates a port number for the report.
Utilization	Indicates whether a utilization rate is set as an object of notification or not.
Total Frames	Indicates whether a total number of frames is set as an object of notification or not.
Broadcasts	Indicates whether the number of broadcasts is set as an object of notification or not.
Multicasts	Indicates whether the number of multicasts is set as an object of notification or not.

Collisions	Indicates whether the number of collisions is set as an object of notification or not.
Errors	Indicates whether the number of errors is set as an object of notification or not.

Available commands are listed below.

<table>
<tr><td>R</td><td>Set a reporting interval.</td></tr>
<tr><td></td><td>Press "R." The command prompt changes to "Set report interval to daily/weekly/monthly (D/W/M)>." Enter "D" when notifying every day, or "W" when notifying every week, or "M" when notifying every month, respectively.</td></tr>
<tr><td>S</td><td>Set an interval to obtain samples.</td></tr>
<tr><td></td><td>Press "S." The command prompt changes to "Set sample interval (1/2/3/4/5/6)>." Select a sampling interval you wish to set with a value of 1-6.
1 | 10 minutes | 2 | 30 minutes | 3 | 1 hour | 4 | 3 hours | 5 | 6 hours | 6 | 1 day</td></tr>
<tr><td>P</td><td>Set Enable/Disable for notification of port information.</td></tr>
<tr><td></td><td>Press "P." The command prompt changes to "Enable or Disable port information attached in report (E/D)>." Enter "E" to enable, or "D" to disable notification. ▪</td></tr>
<tr><td>T</td><td>Set Enable/Disable for notification of traffic information.</td></tr>
<tr><td></td><td>Press "T." The command prompt changes to "Enable or Disable traffic information attached in report (E/D)>." Enter "E" to enable, or "D" to disable notification.</td></tr>
<tr><td>L</td><td>Set Enable/Disable for notification of system log information.</td></tr>
<tr><td></td><td>Press "L." The command prompt changes to "Enable or Disable system log attached in report (E/D)>." Enter "E" to enable, or "D" to disable notification.</td></tr>
<tr><td>F</td><td>Set Enable/Disable file attachment.</td></tr>
<tr><td></td><td>Press "F." The command prompt changes to "Enable or Disable attached file in report (E/D)>." Enter "E" to enable, or "D" to disable notification.</td></tr>
<tr><td>Y</td><td>Set a type of attached file.</td></tr>
<tr><td></td><td>Press "Y." The command prompt changes to "Set attached file type to csv/txt (C/T)>." Enter "C" to be CSV format, or "T" to be text format.</td></tr>
<tr><td>A</td><td>Set a port for the report.</td></tr>
<tr><td></td><td>Press "A." The command prompt changes to "Enter port numbers (up to 14 ports)>." Enter a port number you wish to set with a value of 1-14.</td></tr>
<tr><td>D</td><td>Release a port for the report.</td></tr>
<tr><td></td><td>Press "D." The command prompt changes to "Enter port numbers (up to 14 ports)>." Enter a port number you wish to release setting with a value of 1-14.</td></tr>
<tr><td>U</td><td>Set a notification of utilization rate.</td></tr>
<tr><td></td><td>Press "U." The command prompt changes to "Attach or Detach utilization in report (A/D)>." Enter "A" to notify, or "D" not to notify utilization rate.</td></tr>
<tr><td>O</td><td>Set a notification of the number of total frames.</td></tr>
<tr><td></td><td>Press "O." The command prompt changes to "Attach or Detach total frames in report (A/D)>." Enter "A" to notify, or "D" not to notify the number of total frames.</td></tr>
<tr><td>B</td><td>Set a notification of the number of broadcasts.</td></tr>
<tr><td></td><td>Press "P." The command prompt changes to "Attach or Detach broadcasts in report (A/D)>." Enter "A" to notify, or "D" not to notify the number of broadcasts.</td></tr>
<tr><td>M</td><td>Set a notification of the number of multicasts.</td></tr>
<tr><td></td><td>Press "P." The command prompt changes to "Attach or Detach multicasts in report (A/D)>." Enter "A" to notify, or "D" not to notify the number of multicasts.</td></tr>
<tr><td>C</td><td>Set a notification of the number of collisions.</td></tr>
<tr><td></td><td>Press "P." The command prompt changes to "Attach or Detach collisions in report (A/D)>." Enter "A" to notify, or "D" not to notify the number of collisions.</td></tr>
<tr><td>E</td><td>Set a notification of the number of errors.</td></tr>
<tr><td></td><td>Press "P." The command prompt changes to "Attach or Detach total errors in report (A/D)>." Enter "A" to notify, or "D" not to notify the number of errors.</td></tr>
<tr><td>Q</td><td>Return to the previous menu.</td></tr>
</table>

4.6.8. Forwarding Database

On the Basic Switch Configuration Menu, pressing "F" opens the Forwarding Database Information Menu screen, as shown in **Fig. 4-6-16**. In this screen, a list of MAC address required for transferring packets that have been learned and recorded. It is possible to add or delete MAC address statically.

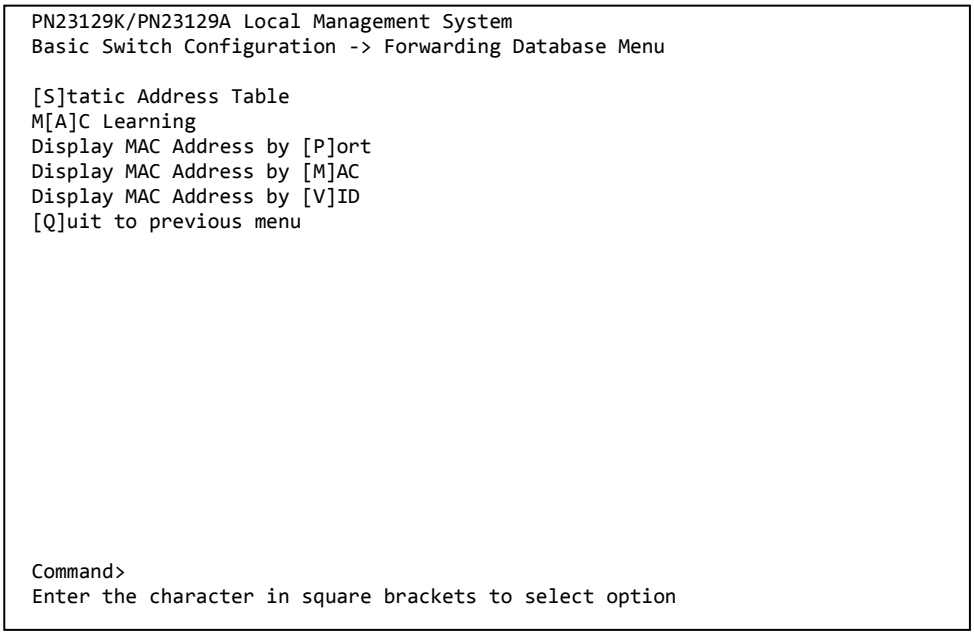


Fig. 4-6-16 Referring the MAC address table

Screen Description

Static Address Table	Adds or deletes MAC address of forwarding database.
Display MAC Address by Port	Displays MAC Address table by port.
Display MAC Address by MAC	Displays all registered MAC addresses.
Display MAC Address by VID	Displays a MAC address table by VLAN.
Quit to previous menu	Return to the previous menu.

4.6.8.a. Adding or deleting MAC address

On the Forwarding Database Information Menu, pressing "S" opens the Static Address Table Menu screen, as shown in **Fig. 4-6-17**. In this screen, you can add or delete MAC address statically .

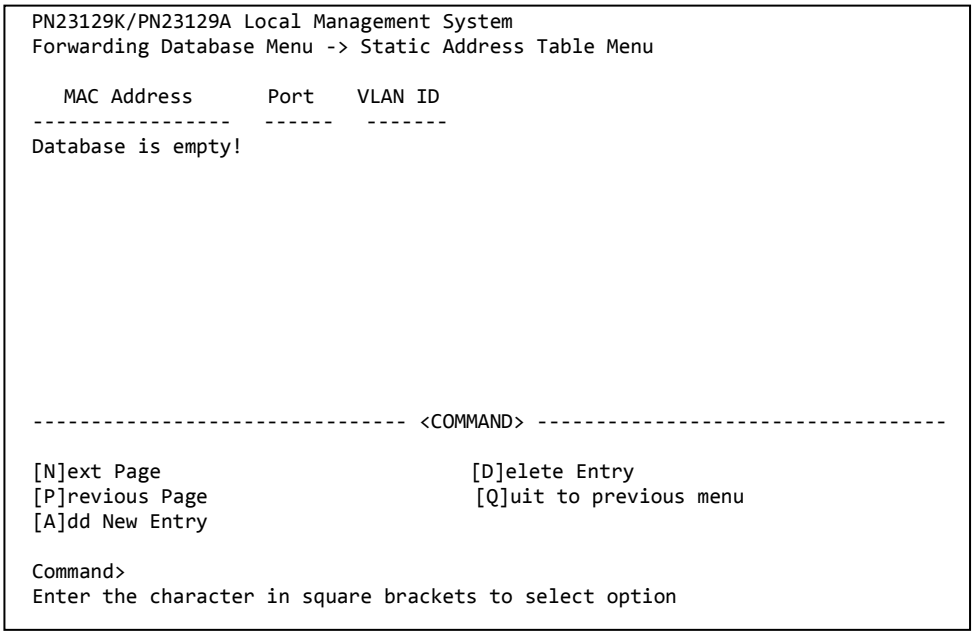


Fig. 4-6-17 Adding or deleting MAC address

Screen Description

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

Available commands are listed below.

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

4.6.8.b. Setting learning mode of MAC address

On the Forwarding Database Information Menu, pressing "A" opens the MAC Learning Menu screen, as shown in **Fig. 4-6-18**. In this screen, you can set a learning mode of MAC address by port.

```
PN23129K/PN23129A Local Management System
Forwarding Database Menu -> MAC Learning Menu

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

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

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

Fig. 4-6-18 Learning MAC address

Screen Description

Port	Displays a port number.
MAC Learning	Displays a learning method of MAC address.

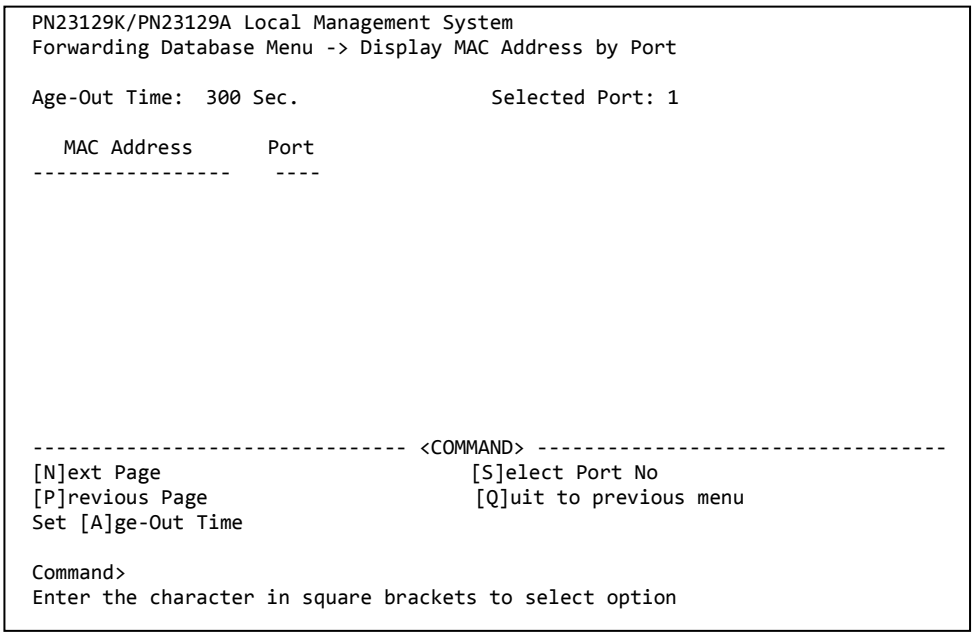
Available commands are listed below.

N	Display the next page.
	Press "N" to display the next port.
P	Display the previous page.
	Press "P" to display the previous port.
S	Switch learning mode.
	Press "S." The command prompt changes to "Select Port Number to be changed>." Enter a port number you wish to change the setting. Then, the command prompt changes to "Change MAC Learning Mode for port # (specified port number)>." Enter "A" when learning automatically, or "D" when not learning MAC Address.
Q	Return to the previous menu.

Note: When IEEE802.1X port base authentication function and MAC base authentication function are activated, the MAC Learning Mode for a port cannot be disabled in the MAC Learning Menu.

4.6.8.c Displaying 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. 4-6-19**. In this



screen, you can display MAC address table by port.

Fig. 4-6-19 Displaying MAC address table by port

Screen Description

Age-Out Time:	Displays a time to store 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 a MAC address in MAC address table.
Port	Displays a port to which the MAC address has belonged.

Available commands are listed below.

N	Display the next page.
	Press "N" to display the next port.
P	Display the previous page.
	Press "P" to display the previous port.
A	Set a time to store MAC address.
	Press "A." The command prompt changes to "Enter Age-Out time>." Enter Age-Out time with a value of 10 to 1000000 by seconds.
S	Switch a 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 previous menu.

4.6.8.d Displaying all MAC addresses

On the Forwarding Database Information Menu, pressing "M" opens the Display MAC Address by MAC screen, as shown in **Fig. 4-6-20**. In this screen, you can display all the MAC address tables in this Switching Hub.

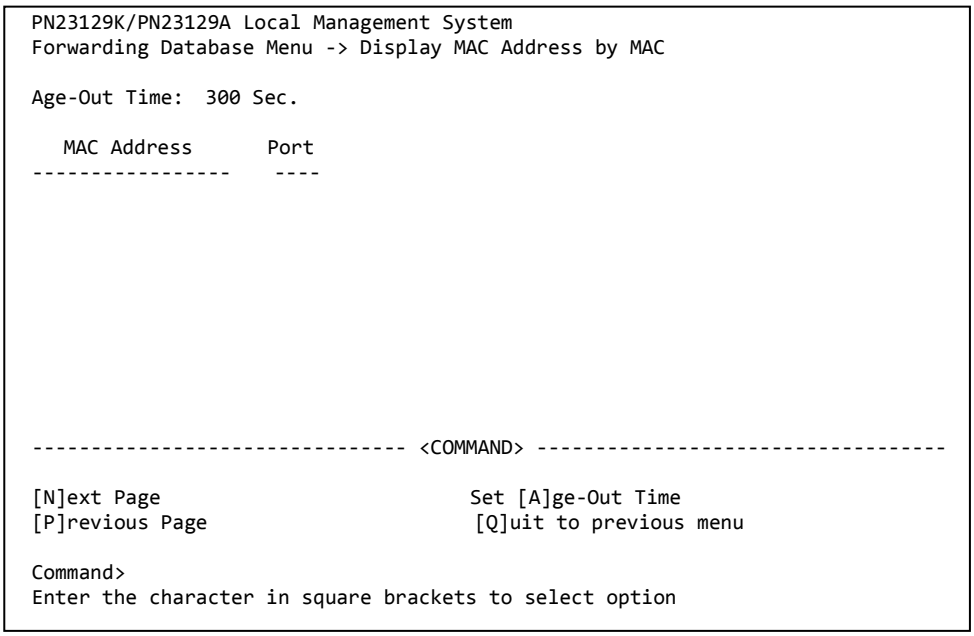


Fig. 4-6-20 Displaying all MAC addresses

Screen Description

Age-Out Time:	Displays the age-out time to store MAC address entries in forwarding database. It is equal to the time after receiving the last packet. The factory default setting is 300 seconds (5 minutes).
MAC Address	Displays the all MAC address entries.
Port	Displays the MAC address entries at each port.

Available commands are listed below.

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

4.6.8.e Displaying MAC address table by VLAN

On the Forwarding Database Information Menu, press "V." The command prompt changes to "Enter VLAN ID>." Specifying a port number opens the Display MAC Address by VLAN ID screen as shown in **Fig. 4-6-21**. In this screen, you can display MAC Address table by VLAN.

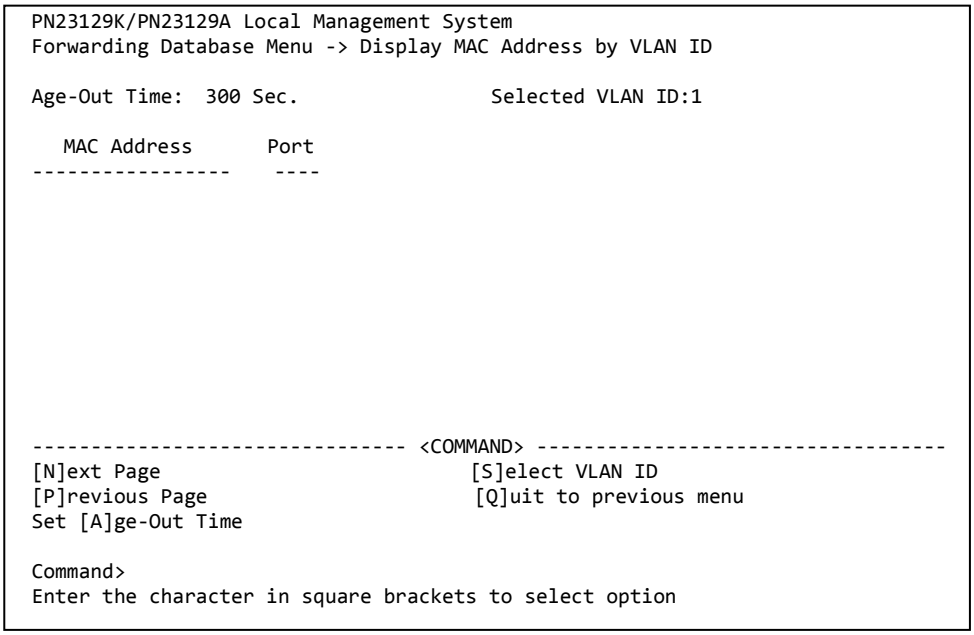


Fig. 4-6-21 Displaying MAC address table by VLAN

Screen Description

Age-Out Time:	Displays a time to store 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 a MAC address in MAC address table.
Port	Displays a port to which the MAC address has belonged.

Available commands are listed below.

N	Display the next page.
	Press "N" to display the next port.
P	Display the previous page.
	Press "P" to display the previous port.
A	Set a time to store MAC address.
	Press "A." The command prompt changes to "Enter Age-Out time>." Enter Age-Out time with a value of 10 to 1000000 by seconds.
S	Switch VLAN to be displayed.

		Press "S." The command prompt changes to "Enter VLAN ID>." Enter VLAN ID you wish to display.
Q	Return to the previous menu.	

4.6.9. Time Configuration

In this Switching Hub, it is possible to set the exact time 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. 4-6-22**. In this screen, you can configure the time setting and SNTP settings.

```
PN23129K/PN23129A Local Management System
Basic Switch Configuration -> Time Configuration Menu

Time ( HH:MM:SS )   : 09:36:43
Date ( YYYY/MM/DD ) : 2001/04/23     Monday

SNTP Server IP       : 0.0.0.0
SNTP Polling Interval : 1440 Min
Time Zone : (GMT+09:00) Osaka,Sapporo,Tokyo
Daylight Saving      : N/A

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

Set [C]lock Time
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. 4-6-22 Configuring of Time Synchronization Function: before configuration

Screen Description

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

Available commands are listed below.

C	Set time of internal clock of this Switching Hub.	
		Press "C." The command prompt changes to "Enter Date(Year) >" and enter a year. Then, the command prompt changes to "Enter Date(Month) >" and enter a month. Then, the command prompt changes to "Enter Date(Day) >" and enter a day. Then, the command prompt changes to "Enter Time(Hour) >" and enter an hour. Then, the command prompt changes to "Enter Time(Minute) >" and enter a minute. Then, the command prompt changes to "Enter Time(Sec) >" and enter a second.
P	Set an IP address of SNTP server.	
		Press "P." The command prompt changes to "Enter new IP address>." Enter an IP address of SNTP server.
I	Set an interval time for SNTP synchronization.	
		Press "I." The command prompt changes to "Enter Interval Time>." Enter an interval of time synchronization with 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, or "D" not to apply Daylight Saving. But, in case time zone is set to where daylight saving is not applied, this configuration is not available. When this Switching Hub is used domestically, this configuration is not required.
Z	Set 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 previous menu.	

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

4.6.10. ARP Table Configuration

On the Basic Switch Configuration Menu, pressing "R" opens the ARP Table screen, as shown in **Fig. 4-6-23**. In this screen, you can refer and configure ARP table.

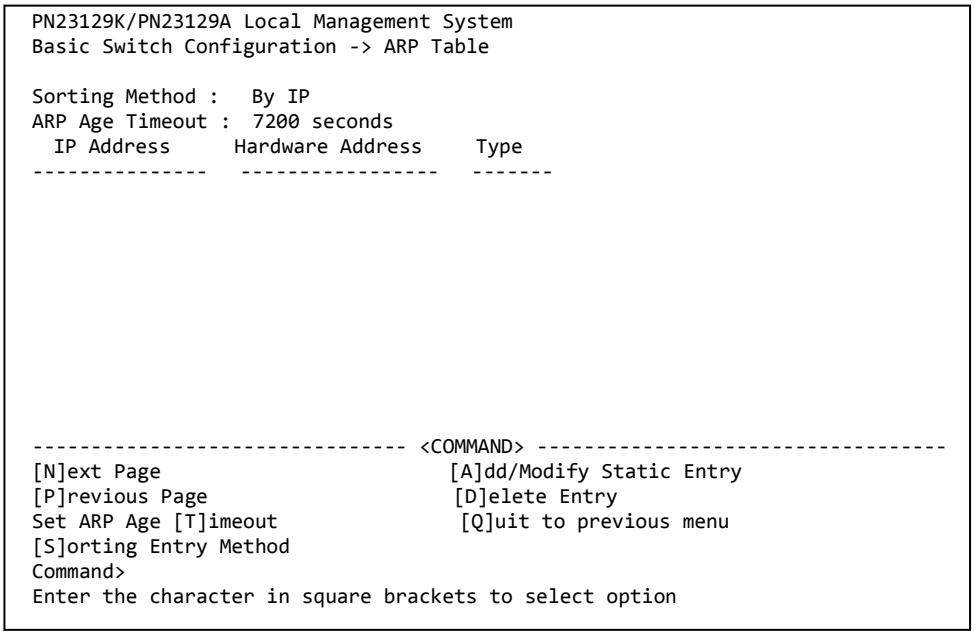


Fig. 4-6-23 ARP Table

Screen Description

Sorting Method	Displays order of displaying.
ARP Age Timeout	Displays Age-out time of ARP table.
IP Address	Displays IP address entries.
Hardware Address	Displays hardware(MAC) address on ARP table.
Type	Displays Type on ARP table.

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 an age-out time of ARP table.	
		Press "T." The command prompt changes to "Enter ARP age timeout value >." Enter Age-out time of ARP table with a value of 30 to 86400 (sec.).
S	Select order of displaying ARP table.	
		Press "S." The command prompt changes to "Select method for sorting entry to display (I/M/T)>." Enter "I" when displaying order of IP Address, or "M" when displaying order of Hardware Address, or "T" when displaying order of Type, respectively.
A	Add or correct an entry of ARP table.	
		Press "A." The command prompt changes to "Enter IP address>." Enter an IP address. Then, the command prompt changes to "Enter Hardware address>." Enter MAC Address in such way as "**:**:**:**:**:**."
D	Delete an entry of ARP table.	
		Press "D." The command prompt changes to "Enter IP address>." Enter an IP address.
Q	Return to the previous menu.	

4.7. Advanced Switch Configuration

Selecting "A" from Main Menu opens the Advanced Switch Configuration Menu screen, as shown in **Fig. 4-7-1**. In this screen, you can configure the settings of VLAN, Link aggregation, Port monitoring, Spanning tree, Access control, QoS, Storm control, IEEE802.1X authentication function, IGMP snooping, and Power Over Ethernet for this Switching Hub.

```
PN23129K/PN23129A Local Management System
Main Menu -> Advanced Switch Configuration Menu

[V]LAN Management
[L]ink Aggregation
Port [M]onitoring Configuration
Multiple [S]panning Tree Configuration
[A]ccess Control Configuration
Quality of Service [C]onfiguration
St[o]rm Control Configuration
802.1[X] Access Control Configuration
[I]GMP Snooping Configuration
[P]ower Over Ethernet Configuration
[R]RP Configuration
[Q]uit to previous menu









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

Fig. 4-7-1 Advanced Switch Configuration

Screen Description

VLAN Management	Configures VLAN related settings.
Link Aggregation	Configures link aggregation settings.
Port Monitoring Configuration	Configures port monitoring(mirroring) related settings.
Rapid Spanning Tree Configuration	Configures spanning tree related settings.
Access Control Configuration	Configures access control related settings.
Storm Control Configuration	Configures storm control function related settings.
802.1x Access Control Configuration	Configures IEEE802.1X port-based and MAC-based authentication related settings.
IGMP Snooping Configuration	Configures IGMP Snooping related settings.
Power Over Ethernet Configuration	Configures PoE related settings.
RRP Configuration	Configures ring protocol related settings.

Quit to previous menu	Quits the Advanced Switch Configuration Menu and returns to the Main menu.

4.7.1. VLAN Management

4.7.1.a. Special Features

- Corresponding to IEEE802.1Q Tag VLAN, it is possible to send frames attaching a VLAN tag (hereinafter, called as just "tag").

- Having two different parameters of VLAN ID and PVID, destination of transferring untagged frames is determined by a combination of these parameters.

- VLAN ID
  VLAN ID is 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, and VLAN ID within tag is used instead.

4.7.1.b. VLAN Management Menu

On the Advanced Switch Configuration Menu, pressing "V" opens the VLAN Management Menu screen, as shown in **Fig. 4-7-2**. In this screen, you can configure VLAN-related settings.

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> VLAN Management Menu

GVRP Status      : Disabled              Total VLANs : 4
Internet Mansion : Disabled               Uplink     :
VLAN ID  VLAN Name                       VLAN Type    Mgmt
-------  -------------------------------  ----------   ----









-------------------------------- <COMMAND> -----------------------------------
[N]ext Page              [C]reate VLAN             [S]et Port Config
[P]revious Page          [D]elete VLAN             Set [G]VRP Status
Set [M]anagement Status   C[o]nfig VLAN Member      [Q]uit to previous menu
Set [I]nternet Mansion

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

Fig. 4-7-2 VLAN Management Menu

Screen Description

GVRP	Indicates a status of GVRP.	
	Enabled	GVRP is Enabled.
	Disabled	GVRP is Disabled. (Factory default setting)
Internet Mansion:	Displays a status of Internet Mansion mode.	
	Enabled	Internet Mansion mode is enabled.
	Disabled	Internet Mansion mode is disabled. (Factory default setting)
Uplink:	Indicates an Uplink port when Internet Mansion mode is enabled.	
VLAN ID	Indicates a VLAN ID of VLAN.	
VLAN Name	Indicates a VLAN name that has been configured.	
VLAN Type	Indicates a type of VLAN.	
	Permanent	Indicates that the VLAN is the one of initial setting. 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 is possible to communicate with CPU).
	DOWN	Indicates that the VLAN is not a management VLAN.

Note: All ports belong to VLAN ID=1 (default VLAN) in factory default

setting, and the management VLAN status of VLAN ID=1 is UP.

Available commands are listed below.

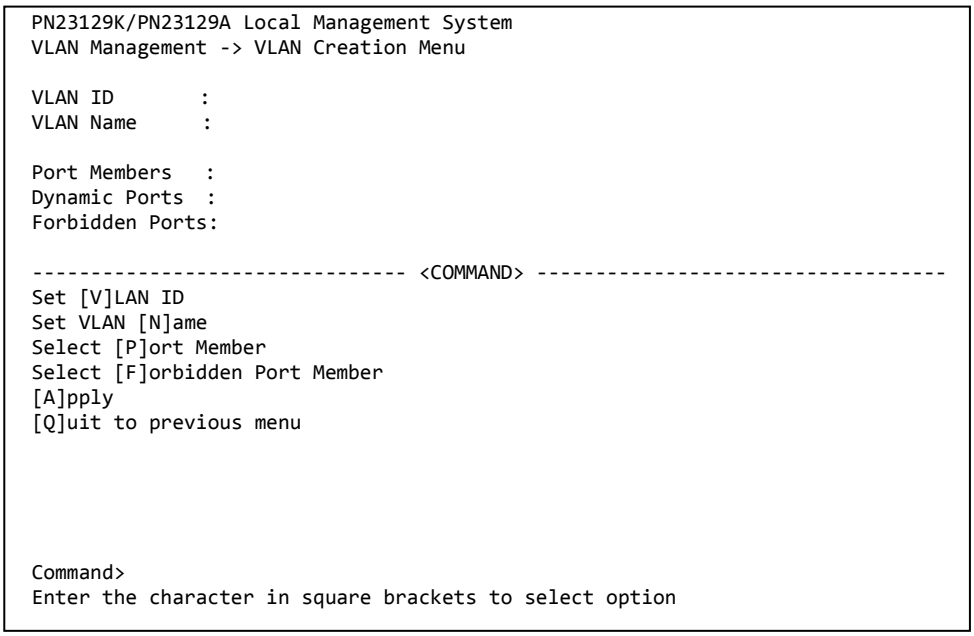
N	Display the next page.
	Press "N" to display the next page.
P	Display the previous page.
	Press "P" to display the previous page.
C	Create new VLAN.
	Pressing "C" opens the "VLAN Create Menu" screen. For details, refer to the section (4.7.1.c).
D	Delete a VLAN that has been configured.
	Press "D." The command prompt changes to "Enter VLAN ID>." Enter VLAN ID you wish to delete with a value of 2 to 4094.
M	Set the management VLAN.
	Press "R." 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	Configure Internet Mansion mode.
	Press "I." The command prompt changes to "Enable or Disable Internet Mansion Function? (E/D>." Enter "E" to enable or "D" to disable Internet Mansion mode, respectively. If you press "E", the command prompt changes to "Uplink port?>." Enter a port number you wish to configure as Uplink port. By this setting, you can set the device to be optimum environment as a Switching Hub used in Internet Mansion. By this setting, the specified port becomes an Uplink port, and other ports become possible to communicate only with downlink port. Downlink ports become impossible to communicate each other. So, it becomes possible to ensure security between each resident. **(There are some constrained conditions for use. Please execute configuration after confirming the precautions shown in the next page.)**
O	Configure a port structure in VLAN.
	Press "O." The command prompt changes to "Enter VLAN ID>." Enter VLAN ID you wish to configure with a value of 1 to 4094. Then, the screen changes to "VLAN modification Menu" screen. For details, refer to the section (4.7.1.d).
S	Configure and confirm PVID by port.
	Pressing "S" opens the "VLAN Port Configuration Menu" screen. For details, refer to the section (4.7.1.e).
G	Configure a status of GVRP.
	Press "G." The command prompt changes to "Enable or Disable GVRP status (E/D)>." Enter "E" to enable or "D" to disable GVRP, respectively.
Q	Return to the previous menu.

Note: When creating a new VLAN, PVID is not changed interlocked with this new creation.
After registering VLAN on this screen, make sure to confirm the configuration operation and configuration content on configuration screen of **Fig. 4-7-5** and **Fig. 4-7-6**.
When you wish to delete VLAN, you cannot delete VLAN if VLAN ID of VLAN to be deleted is still remained as PVID. Delete VLAN after changing PVID to other VLAN ID.

Note: When Internet Mansion mode is enabled, there are constrained conditions as the followings.
Please use the device after confirming these constrained conditions.
(1) Combined usage with Spanning Tree function is not possible.
(2) Combined usage with IGMP Snooping function is not possible.
(3) Combined usage with Link Aggregation function is not possible.
(4) Combined usage with Link Protocol function is not possible.
(5) Registering to MAC Address table with Statically is not possible.
(6) Using MAC Learning function in Section 4.6.6.b is not possible.
(7) Only the Uplink port belongs to the management VLAN.

4.7.1.c. VLAN Creation Menu

On the VLAN Management Menu, pressing "C" command opens the VLAN Creation Menu screen, as shown in **Fig. 4-7-3**. In this screen, you can



configure creating new VLAN-related settings.

Fig. 4-7-3 VLAN Creation Menu

Screen Description

VLAN ID:	Indicates the VLAN ID you wish to create.
VLAN Name:	Indicates the VLAN name you wish to create.
Port Member:	Indicates the port numbers of VLAN you wish to create.
Dynamic Ports	Indicates the Dynamic ports.
Forbidden Ports	Indicates the Forbidden ports.

Available commands are listed below.

S	Set the VLAN ID (VLAN Identifier).	
		Press "S." The command prompt changes to "Set VLAN ID->Enter VLAN ID>." Enter new VLAN ID.
N	Set a name of VLAN.	
		Press "N." The command prompt changes to "Set VLAN name->Enter VLAN name>." Enter new VLAN name in 30 characters or less.
P	Set a member of VLAN.	
		Press "P." The command prompt changes to "Enter egress port number>." Enter a port number you wish to set. When entering multiple port numbers, delimit with comma with no space, or hyphenate the continuous numbers.
F	Set a Forbidden Port.	
		Press "F." The command prompt changes to "Enter forbidden port number>." Enter a port number you wish to set. When entering multiple port numbers, delimit with comma with no space, or hyphenate the continuous numbers.
A	Configure VLAN settings.	
		By pressing "A", created VLAN is reflected.
Q	Return to the previous menu.	

Note: After creating VLAN, enter "A" instead of "Q." Unless you enter "A", VLAN is not created.

4.7.1.d. VLAN Modification Menu

On the VLAN Management Menu, pressing "o" command and specifying VLAN ID of object opens the VLAN Modification Menu screen, as shown in **Fig. 4-7-4**. In this screen, you can modify VLAN-related setting information.

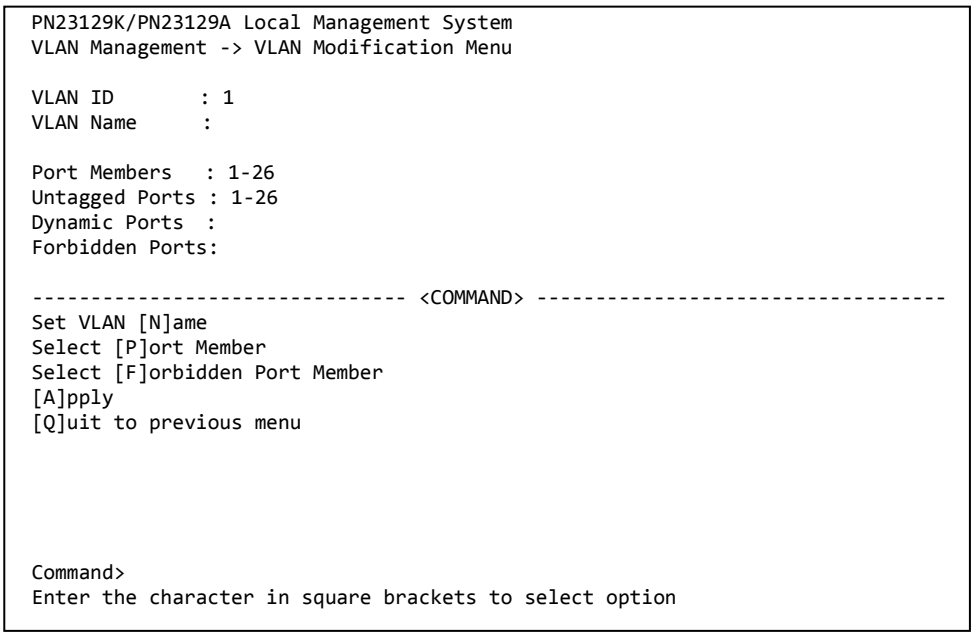


Fig. 4-7-4 VLAN Modification Menu

Screen Description

VLAN ID:	Indicates the VLAN ID you wish to create.
VLAN Name:	Indicates the VLAN Name you wish to create.
Port Member:	Indicates the port numbers of VLAN you wish to create.
Untagged Port:	Indicates ports that do not use tags.
Dynamic Ports	Indicates objective ports of Dynamic VLAN by GVRP.
Forbidden Ports	Indicates ports out of object of Dynamic VLAN by GVRP.

Available commands are listed below.

N	Set a name of VLAN.	
		Press "N." The command prompt changes to "Set VLAN name->Enter VLAN name>." Enter new VLAN name in 30 characters or less.
P	Set a member of VLAN.	
		Press "P." The command prompt changes to "Enter egress port number>." Enter a port number you wish to set. When entering multiple port numbers, delimit with comma with no space, or hyphenate the continuous numbers.
F	Set a Forbidden Port.	
		Press "F." The command prompt changes to "Enter forbidden port number>." Enter a port number you wish to set. When entering multiple port numbers, delimit with comma with no space, or hyphenate the continuous numbers.
A	Configure VLAN settings.	
		By pressing "A", created VLAN is reflected.
Q	Return to the previous menu.	

4.7.1.e. VLAN Port Configuration Menu

On the VLAN Management Menu, pressing "S" command opens the VLAN Port Configuration Menu screen, as shown in **Fig. 4-7-5**. In this screen, you can configure VLAN-related settings by port.

```
PN23129K/PN23129A Local Management System
VLAN Management -> VLAN Port Configuration Menu

Port  PVID  Acceptable Frame Type    GVRP
----  ----  ---------------------  --------
  1     1       Admit All       Disabled
  2     1       Admit All       Disabled
  3     1       Admit All       Disabled
  4     1       Admit All       Disabled
  5     1       Admit All       Disabled
  6     1       Admit All       Disabled
  7     1       Admit All       Disabled
  8     1       Admit All       Disabled

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

[N]ext page             Set [F]rame Type
[P]revious Page          Set [G]VRP Status
Set Port [V]ID           [Q]uit to previous menu



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

Fig. 4-7-5 VLAN Port Configuration Menu

Screen Description

Port	Displays a port number.	
PVID	Indicates a PVID (Port VLAN ID) that has been set to the port. PVID displays VLAN ID to which untagged packet should be transferred when it was received. The factory default setting is 1. When tagged packet was received, destination port is determined by referring the tag regardless of PVID.	
Acceptable Type	Indicates type of received frame.	
	Admit All	Receives all frames.
	Tagged Only	Receives only the tagged frames.
GVRP	Indicates a status of GVRP. For all ports, 'Disabled' is the factory default setting.	
	Enabled	GVRP is enabled.
	Disabled	GVRP 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.
V	Configure PVID settings.	
		Press "V." The command prompt changes to "Enter port number>." Enter a port number you wish to configure. Then, the command prompt changes to "Enter PVID for port #>." Enter VLAN ID you wish to modify among the already configured VLAN IDs.
F	Set type of receive packet.	
		Press "F." The command prompt changes to "Enter port number>." Enter a port number you wish to modify. 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, respectively.
G	Configure GVRP settings.	
		Press "G." The command prompt changes to "Enter port number>." Enter a port number you wish to modify. Then, the command prompt changes to "Enable or Disable port GVRP status (E/D)>." Enter "E" to enable, or "D" to disable GVRP, respectively.
Q	Return to the previous menu.	

Note: This Switching Hub is possible to assign multiple VLANs to one port. When 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 a VLAN to which it has belonged.

4.7.2. Link Aggregation

4.7.2.a About Link aggregation

Link aggregation is a function that is possible to increase bandwidth between switches by grouping multiple Switching Hub ports and connecting the grouped ports each other. Using this Link Aggregation function is called as trunking.
This Switching Hub supports the LACP (Link Aggregation Control Protocol) specified in IEEE802.3ad.

By this, it is possible to construct Link Aggregation up to 8 ports per group.

Fig. **4-7-6** and Fig**. 4-7-7** show examples of network construction using trunking.

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 of Spanning Tree mode and Internet Mansion mode is not possible.

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

Fig. 4-7-6 displays an example in which two ports of 1000BASE-T were grouped in one and between switches was connected with 2000 Mbps (one-way 1000 Mbps x 2).

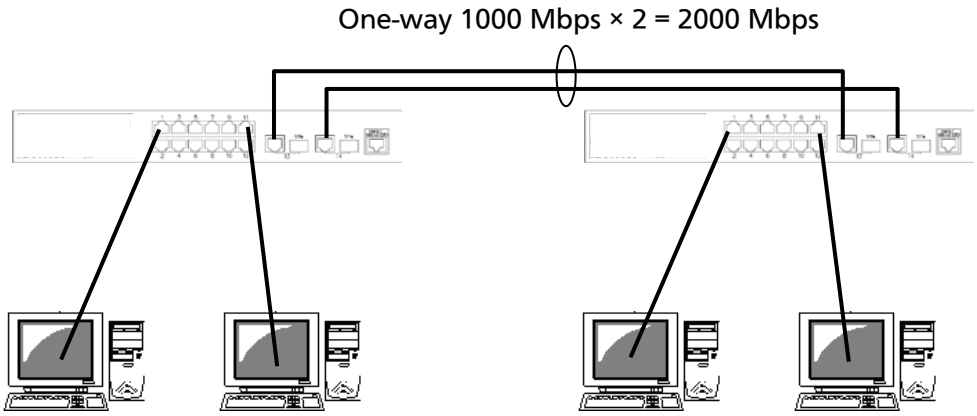


Fig. 4-7-6 Configuration example 1 using trunking

Fig. 4-7-7 is an example in which four ports of 100BASE-TX were grouped by two, and two ports of 1000BASE-T were grouped in one, and these were configured as a backbone between switches.

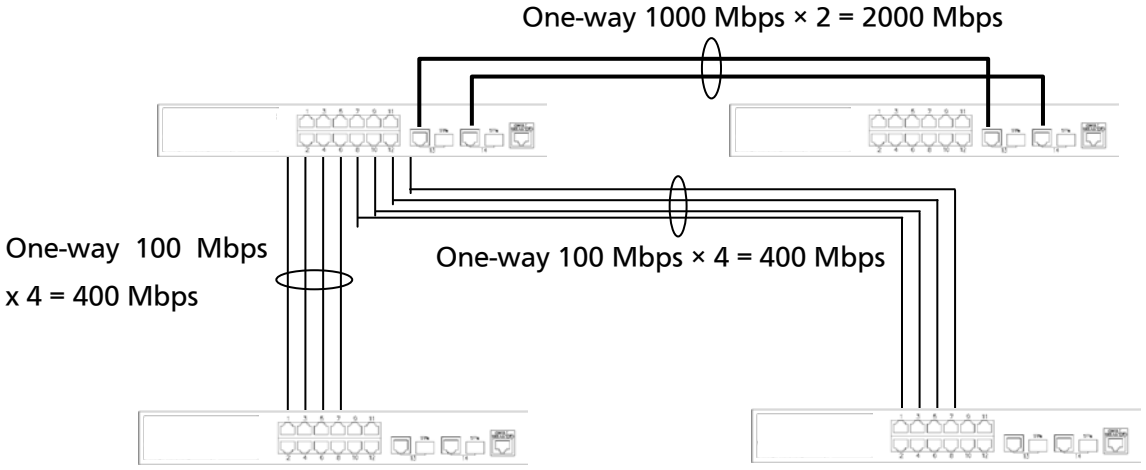


Fig. 4-7-7 Configuration example 2 using trunking

4.7.2.b. Trunk Configuration

On the Advanced Switch Configuration Menu, pressing "L" opens the Trunk Configuration Menu screen, as shown in **Fig. 4-7-8**. In this screen, you can configure trunking.

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> Trunk Configuration Menu
System Priority  : 1

 Key    Mode      Member Port List
----- -------- ------------------------------------------------------------









-------------------------------- <COMMAND> ----------------------------------
[N]ext Page           [A]dd Group Member      Set P[o]rt Priority
[P]revious Page       [R]emove Group Member    LACP [G]roup Status
Se[t] System Priority  [M]odify Group Mode     [Q]uit to previous menu

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

Fig. 4-7-8 Trunk Configuration

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.

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 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 (4.7.2.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 (4.7.2.d).
Q	Return to the previous menu.

Note: In this Switching Hub, it is possible to set members of up to 12 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 (4.7.2.c), and, when Priority value is the same to all, trunk is constructed by a member starting from the smallest port number in order.

4.7.2.c. Set Port Priority for LACP

On the Trunk Configuration Menu, pressing "o" opens the Set Port Priority screen, as shown in **Fig. 4-7-9**. In this screen, you can set priority value of trunking.

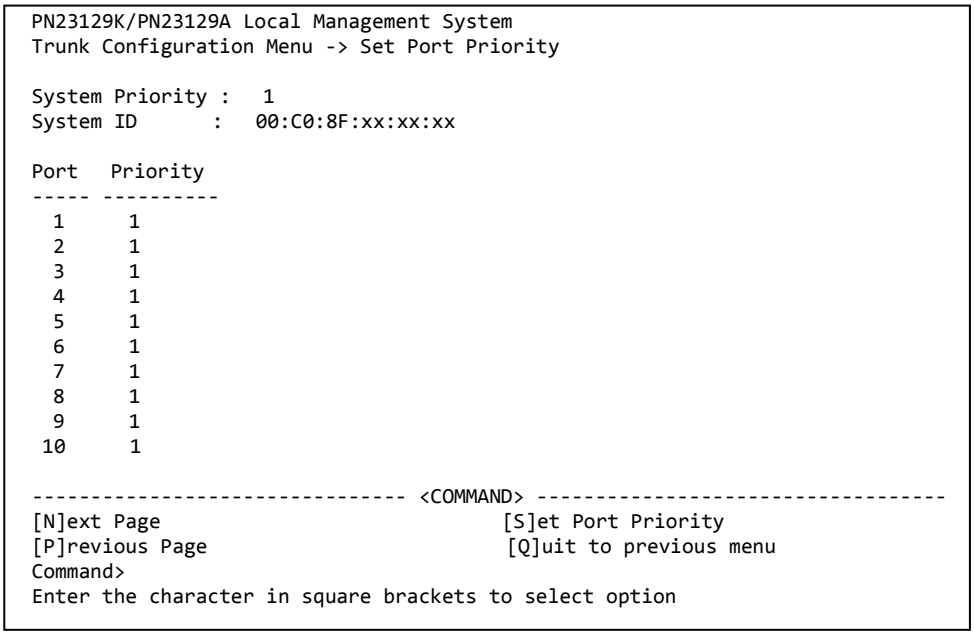


Fig. 4-7-9 Set Port Priority

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.
System ID	System ID is an identifier of this Switching Hub required for constructing trunking on the network using LACP. MAC Address of this Switching Hub becomes this System ID, and it is not possible to change this ID. Combination of System Priority value and System ID becomes a System ID in LACP.
Port	This is a port number of this Switching Hub.
Priority	This is a priority order of this Switching Hub by port in trunking. Smaller number has higher priority. It is effective when trunking group having 9 or more ports was configured. The factory default settings for each port are 1.

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 Priority value (priority order) by port.

		Press "S."
Q	Return to the previous menu.	

4.7.2.d. LACP Group Status

On the Trunk Configuration Menu, pressing "G" command and specifying Key that has become LACP group open the LACP Group Status screen, as shown in **Fig. 4-7-10**. In this screen, you can confirm the status of LACP group. (Displaying status is possible only for key of which mode is Active or Passive.)

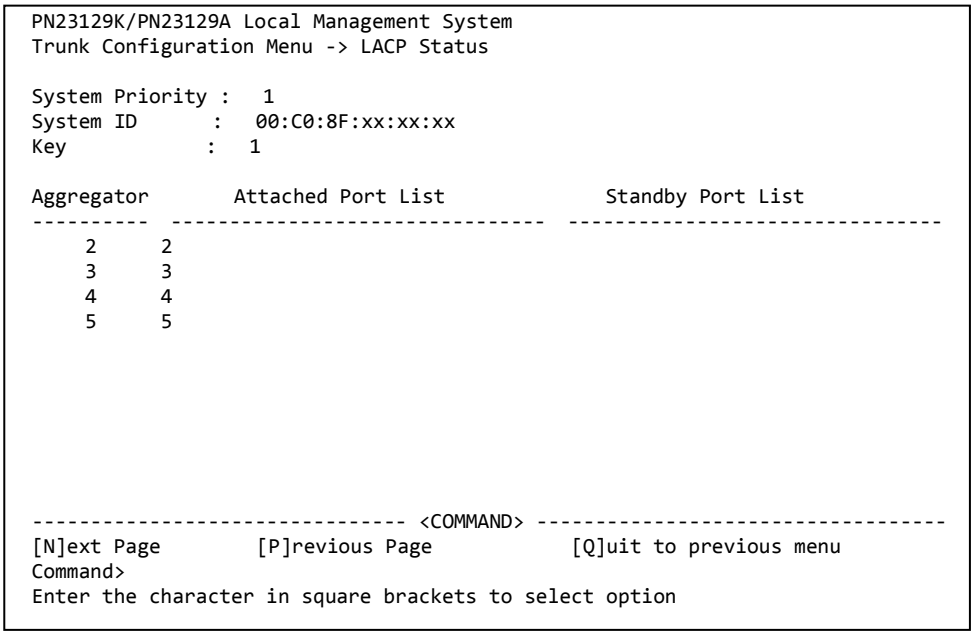


Fig. 4-7-10 LACP Group Status

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.
System ID	System ID is an identifier of this Switching Hub required for constructing trunking on the network using LACP. MAC Address of this Switching Hub becomes this System ID, and it is not possible to change this ID. Combination of System Priority value and System ID becomes a System ID in LACP.
Key	Indicates the group number of trunking.
Aggregator	Aggregator is a number of logical interface of trunking. This is the same number as the one of the port of which Priority value is the highest in the ports that are constructing trunking.
Attached Port List	This is a number of physical interface (Port) connected to logical interface (Aggregator). When a trunking group exceeding over 9 ports was configured, a port having a low Port Priority value gets into backup mode and is indicated as "Standby."
Standby Port List	When a trunking group exceeding over 9 ports was configured, a port having a low Port Priority value gets into backup mode. The relevant port is 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 previous menu.

4.7.3. Port Monitoring Configuration

On the Advanced Switch Configuration Menu, pressing "M" opens the Port Monitoring Configuration Menu screen, as shown in **Fig. 4-7-11**. In this Switching Hub, when analyzing communication using a protocol analyzer, etc., it is possible to monitor other port's packet that is hidden under normal conditions because of being filtered. In this screen, you can configure a port to be monitored.

```
PN23129K/PN23129A 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. 4-7-11 Port Monitoring Configuration

Screen Description

Monitoring Port	Indicates a port number of a port that is possible to monitor other port's packet.	
Be Monitored Port(s)	Indicates a port number of a port to be monitored.	
Direction	Indicates which packet should be monitored either the transmit packet or the receive packet of a monitored port.	
	Tx	Monitors the transmit packet.
	Rx	Monitors the receive packet.
	Both	Monitors both of the transmit and receive packet.
Status	Indicates whether monitoring is executed or not.	
	Enabled	Monitoring the packet is underway.
	Disabled	Monitoring the packet is not underway.

Available commands are listed below.

S	Set a port to be monitored (port to which analyzer, etc. is connected).	
		Press "S." The command prompt changes to "Enter port number>." Enter a port number you wish to configure.
M	Configure a port to be monitored.	
		Press "M." The command prompt changes to "Enter port number>." Enter a port number you wish to monitor. (Possible to configure multiple ports)
D	Configure which packet should be monitored either the transmit packet or the receive packet.	
		Press "D." The command prompt changes to "Select port monitoring direction(R/T/B)>." Enter "R" when monitoring the receive packet, or "T" when monitoring the transmit packet, or "B" when monitoring both of the receive and transmit packet, respectively.
C	Start or stop monitoring.	
		Press "C." The command prompt changes to "Enter the select(E/D)>." Enter "E" if you wish to start (Enable) monitoring. Enter "D" if you wish to stop (Disable) monitoring.
Q	Return to the previous menu.	

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

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

4.7.4. Multiple Spanning Tree Configuration

On the Advanced Switch Configuration Menu, pressing "S" opens the Multiple Spanning Tree Configuration screen, as shown in **Fig. 4-7-12**.
This Switching Hub supports the following three modes: IEEE802.1s Multiple Spanning Tree Protocol (MSTP: **Fig. 4-7-13**), IEEE802.1w compatible Rapid Spanning Tree Protocol (RSTP: **Fig. 4-7-14**), and IEEE802.1D compatible Spanning Tree Protocol (STP: **Fig. 4-7-15**).

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> Multiple Spanning Tree Configuration

Global MSTP Status: Disabled
Protocol Version        : RSTP
MST Configuration Name   :
MST Revision Level      : 0
MST Config Digest       : 00000000000000000000000000000000

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


[E]nable/Disable Global MSTP          CIST [B]asic Port Configuration
Set MSTP Protocol [V]ersion           CIST [A]dvanced Port Configuration
Set MSTI Configuration [N]ame         MSTP Ins[t]ance Configuration
Set MSTI [R]evision Level            Designated Topology [I]nformation
CIST [C]onfiguration                Re[g]ional Topology Information
                                   [Q]uit to previous menu




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

Fig. 4-7-12 Multiple Spanning Tree Configuration

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> Multiple Spanning Tree Configuration

Global MSTP Status: Disabled
Protocol Version        : MSTP
MST Configuration Name   :
MST Revision Level      : 0
MST Config Digest       : 00000000000000000000000000000000

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


[E]nable/Disable Global MSTP          CIST [B]asic Port Configuration
Set MSTP Protocol [V]ersion           CIST [A]dvanced Port Configuration
Set MSTI Configuration [N]ame         MSTP Ins[t]ance Configuration
Set MSTI [R]evision Level            Designated Topology [I]nformation
CIST [C]onfiguration                Re[g]ional Topology Information
                                   [Q]uit to previous menu




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

Fig. 4-7-13 MSTP mode

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> Multiple Spanning Tree Configuration

Global MSTP Status: Disabled
Protocol Version        : RSTP
MST Configuration Name   :
MST Revision Level      : 0
MST Config Digest       : 00000000000000000000000000000000

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


[E]nable/Disable Global MSTP          CIST [B]asic Port Configuration
Set MSTP Protocol [V]ersion           CIST [A]dvanced Port Configuration
Set MSTI Configuration [N]ame         MSTP Ins[t]ance Configuration
Set MSTI [R]evision Level            Designated Topology [I]nformation
CIST [C]onfiguration                Re[g]ional Topology Information
                                   [Q]uit to previous menu




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

Fig. 4-7-14 RSTP mode

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> Multiple Spanning Tree Configuration

Global MSTP Status: Disabled
Protocol Version        : STP-Compatible
MST Configuration Name   :
MST Revision Level      : 0
MST Config Digest       : 00000000000000000000000000000000

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


[E]nable/Disable Global MSTP          CIST [B]asic Port Configuration
Set MSTP Protocol [V]ersion           CIST [A]dvanced Port Configuration
Set MSTI Configuration [N]ame         MSTP Ins[t]ance Configuration
Set MSTI [R]evision Level            Designated Topology [I]nformation
CIST [C]onfiguration                Re[g]ional Topology Information
                                   [Q]uit to previous menu




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

Fig. 4-7-15 STP mode

Screen Description

Global MSTP Status:	Indicates the operation status of Spanning Tree.	
	Enabled	Spanning Tree is Enabled.
	Disabled	Spanning Tree is Disabled. (Factory default setting)
Protocol Version:	Indicates a version of Spanning Tree.	
	MSTP	Operates with IEEE802.1s Multiple Spanning Tree Protocol.
	RSTP	Operates with IEEE802.1w compatible Rapid Spanning Tree Protocol.
	STP-Compatible	Operates with IEEE802.1D compatible Spanning Tree Protocol.
MST Configuration Name:	Indicates MST region name. No MST region name is the factory default setting.	
MST Revision Level:	Indicates a revision of MST region setting. The factory default setting is 0.	
MST Config Digest:	Indicates a message digest of MST configuration.	

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, respectively.
V	Configure an operation mode of Spanning Tree Protocol.	
		Press "V." The command prompt changes to "Set MSTP protocol version (S/R/M)>." Enter "S" if you wish to operate with IEEE802.1D Spanning Tree Protocol, or "R" to operate with IEEE802.1w Rapid Spanning Tree Protocol, or "M" to operate with Multiple Spanning Tree Protocol, respectively.
N	Configure a name of MSTI.	
		Press "N." The command prompt changes to "Enter configuration name>." Enter an MSTI name you wish to configure 32 characters or less.
R	Configure a revision level.	
		Press "R." The command prompt changes to "Enter revision level>." Enter the revision level with a value of 0 to 65535.
C	Configure CIST setting.	
		Press "C" to open the "CIST Configuration" screen and configure CIST setting. For configuration method, refer to the section (4.7.4.a).
B	Configure basic setting by port.	
		Press "B" to open the "CIST Basic Port Configuration" screen and configure basic setting by port. For configuration method, refer to the section (4.7.4.b).
A	Configure advanced setting by port.	
		Press "A" to open the "CIST Advanced Port Configuration" screen and configure advanced setting by port. For configuration method, refer to the section (4.7.4.c).
T	Configure MSTP instance.	
		Press "T" to open the "MSTP Instance Configuration" screen and configure MSTP instance setting. For configuration method, refer to the section (4.7.4.d).
I	Display topology information by port.	
		Press "I" to open the "Designated Topology Information" screen and refer topology information by port. For details, refer to the section (4.7.4.g).
G	Display regional topology information by port.	
		Press "I" to open the "Regional Topology Information" screen and refer regional topology information by port. For content of screen, refert to the section (4.7.4.i).
Q	Return to the previous menu.	

Note: When STP global status is changed to Enabled, response is temporarily stopped.

4.7.4.a. CIST (MST Instance 0) Configuration

On the Multiple Spanning Tree Configuration, pressing "C" opens the CIST Configuration screen, as shown in **Fig. 4-7-16**. On this screen, you can do CIST configuration.

```
PN23129K/PN23129A Local Management System
Multiple Spanning Tree Configuration -> CIST Configuration


CIST Root Port:         0            Time Since Topology Change: 0      Sec.
CIST Root Path Cost:     0            Topology Change Count:      0
CIST Root:         0000 000000000000
CIST Regional Root Cost: 0            CIST Bridge ID:       0000 000000000000
CIST Regional Root: 0000 000000000000  CIST Bridge Hello Time:    2     Sec.
                                     CIST Bridge Maximum Age:   20    Sec.
CIST Hello Time:     2    Sec.       CIST Bridge Forward Delay: 15    Sec.
CIST Maximum Age:    20   Sec.       Max Hop Count:            20
CIST Forward Delay:  15   Sec.

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

Set CIST Bridge [P]riority            Set CIST Bridge [F]orward Delay
Set CIST Bridge [H]ello Time          Set MSTP Max H[o]p Count
Set CIST Bridge [M]aximum Age         [Q]uit to previous menu



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

Fig. 4-7-16 CIST Configuration

Screen Description

CIST Root Port:	Displays the present root port.
CIST Root Path Cost:	Displays a cost from the root port to root bridge.
CIST Root:	Displays bridge ID of a root bridge.
CIST Regional Root Cost:	Displays a path cost to a regional root bridge (root bridge of CIST tree in the MST region).
CIST Regional Root:	Displays bridge ID of a regional root bridge (root bridge of CIST tree in the MST region).
Time Since Topology Change:	Displays elapsed time (sec.) from changing configuration of spanning tree.
Topology Change Count:	Displays the number of changes in configuration of spanning tree.
CIST Hello Time:	Displays an access interval with a root bridge for confirming the spanning tree configuration.
CIST Maximum Age:	Displays a timeout period of the Hello message.
CIST Forward Delay:	Displays transition time of spanning tree status, such as from Listening to Learning or Learning to Forwarding.
CIST Bridge ID:	Displays bridge ID of the Switching Hub. Bridge ID is configured with bridge priority and MAC address. The factory default setting of the bridge priority is 8000.
CIST Bridge Hello Time:	Displays the Hello time when the Switching Hub becomes the root bridge.
CIST Bridge Maximum Age:	Displays Maximum Age when the Switching Hub becomes the root bridge.
CIST Bridge Forward Delay:	Displays Forward Delay when the Switching Hub becomes the root bridge.
Max Hop Count:	Displays the maximum number of hops. (Displays a value determined by the root bridge.)

Note: This system does not allow the concurrent use of spanning tree and link aggregation. The concurrent use of spanning tree and Internet mansion mode is also not allowed. Set a unified value for the entire system in each timer parameter.

4.7.4.b CIST Basic Port Configuration

On the Multiple Spanning Tree Configuration, pressing "B" opens the CIST Basic Port Configuration screen, as shown in **Fig. 4-7-17**. On this screen, you can do CIST basic configuration for each port.

```
PN23129K/PN23129A Local Management System
Multiple Spanning Tree Configuration -> CIST Basic Port Configuration
BPDU Guard Recovery: Disabled          BPDU Guard Recovery Timer:  300 sec
Port Trunk  Link    State       Role    Pri.  Path Cost STP Status  Guard
---- -----  ----  ----------  ---------- ----- --------- ---------- --------
  1   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
  2   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
  3   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
  4   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
  5   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
  6   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
  7   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
  8   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
  9   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
 10   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
 11   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
 12   ---   Down  Forwarding  Disabled    128  200000(A)  Enabled   Disabled
------------------------------ <COMMAND> ---------------------------------
[N]ext Page          Set Port Path [C]ost         Set Port STP [S]tatus
[P]revious Page      Set Port BPDU [G]uard Status  [Q]uit to previous menu
Set Port Pr[i]ority   BPDU Guard Recovery [T]imer
[E]nable/Disable BPDU Guard Recovery
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-17 CIST Basic Port Configuration

Screen Description

BPDU Guard Recovery	Displays enable/disable of auto-recovery of BPDU guard. The factory default setting is Disabled.	
	Enabled	Auto-recovery is enabled
	Disabled	Auto-recovery is disabled
BPDU Guard Recovery Timer	Displays the time to auto-recovery. The factory default setting is 300 sec.	
Port	Displays the port number.	
Trunk	Displays the group number (key) of the trunk if trunking is set.	
Link	Displays the state of link.	
	UP	Link is established normally.
	DOWN	Link is not established.
State	Displays the present state of port.	
	Forwarding	Displays the state of normal communications based on the calculation result.
	Learning	Displays the state under calculation based on information.
	Discarding	Displays the state that calculation is not carried out.
Role	Displays the role of port in the 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.
Pri.	Displays priority of each port in the Switching Hub. Higher number has higher priority. For all ports, the factory default setting is set to 128. (A value is a multiple of 16.)	
Path Cost	Displays the cost of each port. Ports 1-12 are set to 200000 (A) and Ports 13-14 are set to 20000 (A) at factory defaut setting.	
STP Status	Displays enable/disable of the spanning tree of each port.	
	Enabled	The spanning tree is enabled.
	Disabled	The spanning tree is disabled.
Guard	Displays enable/disable of the BPDU guard of each port. 'Disabled' is the factory default setting.	
	Enabled	The BPDU guard is enabled.
	Disabled	The BPDU guard is disabled.

Available commands are listed below.

N	Display the next page.	
		Press "N" to change the display to the next page.
P	Display the previous page.	
		Press "P" to change the display to the previous page.
I	For setting priority of each port in the Switching Hub	
		Press "I" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Enter priority for port #>" is displayed. Enter a number from 0 to 255 in a multiple of 16.
C	Set a cost of each port.	
		Press "C" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Enter path cost for port #>" is displayed. Enter a number from 1 to 200000000.
S	Set enable/disable of the spanning tree of each port.	
		Press "S" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Enable or Disable STP for port # (E/D)>" is displayed. If the spanning tree is used, press "E." If not, press "D."
G	Set enable/disable of the BPDU guard of each port.	
		Press "G" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Enable or Disable BPDU guard for port # (E/D)>" is displayed. If the BPDU guard is used, press "E." If not, press "D."
E	Set enable/disable of auto-recovery of BPDU guard.	
		Press"E" to change the command prompt to "Enable or Disable BPDU Guard Recovery (E/D)>." If the auto-recovery of BPDU guard is used, press "E." If not, press "D."
T	Set the time to auto-recovery.	
		Press "T" to change the command prompt to "Enter Recovery Timer>." Enter the time in a range designated in black at the bottom of the screen.
Q	Return to the previous menu.	

4.7.4.c. CIST Advanced Port Configuration

On the Multiple Spanning Tree Configuration, pressing "A" opens the CIST Advanced Port Configuration screen, as shown in **Fig. 4-7-18**. On this screen, you can do advanced configuration on CIST for each port.

```
PN23129K/PN23129A Local Management System
Multiple Spanning Tree Configuration -> CIST Advanced Port Configuration

Port Trunk  Link    State       Role     Admin/OperEdge Admin/OperPtoP Migrat
---- -----  ----  ----------  ----------  -------------- -------------- ------
  1   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
  2   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
  3   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
  4   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
  5   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
  6   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
  7   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
  8   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
  9   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
 10   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
 11   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
 12   ---   Down  Forwarding  Disabled     False/False    Auto /False   Init.
------------------------------- <COMMAND> ---------------------------------
[N]ext Page                          Set Port P-[t]o-P Status
[P]revious Page                      Restart Port [M]igration
Set Port [E]dge Status                [Q]uit to previous menu

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

Fig. 4-8-18 CIST Advanced Port Configuration

Screen Description

Port	Displays the port number.	
Trunk	Displays the group number (key) of the trunk if trunking is set.	
Link	Displays the state of link.	
	UP	Link is established normally.
	DOWN	Link is not established.
State	Displays the present state of port.	
	Forwarding	Displays the state of normal communications based on the calculation result.
	Learning	Displays the state under calculation based on information.
	Discarding	Displays the state that calculation is not carried out.
Role	Displays the role of port in the 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 the spanning tree.	
	STP	STP is working.
	M/RSTP	MSTP or RSTP is working.
	Init.	STP is not working.

Available commands are listed below.

N	Display the next page.	
		Press "N" to change the display to the next page.
P	Display the previous page.	
		Press "P" to change the display to the previous page.
E	Set Edge Status of each port.	
		Press "E" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Set edge port for port # (T/F)>" is displayed. For True, press "T." For False, press "F."
T	Set P-to-P Status of each port.	
		Press "T" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Set point-to-point port for port # (A/T/F)>" is displayed. For Auto, press "A." For True, press "T." For False, press "F."
M	Restart the operation of the spanning tree.	
		Press "M" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Restart the protocol migration process for port #? (Y/N)>" is displayed. If you restart, press "Y." If not, press "N."
Q	Return to the previous menu.	

4.7.4.d. MST Instance Configuration

On the Multiple Spanning Tree Configuration, pressing "T" opens the MSTP Instance Configuration screen, as shown in **Fig. 4-7-19**. On this screen, you can do instances configuration on the spanning tree.

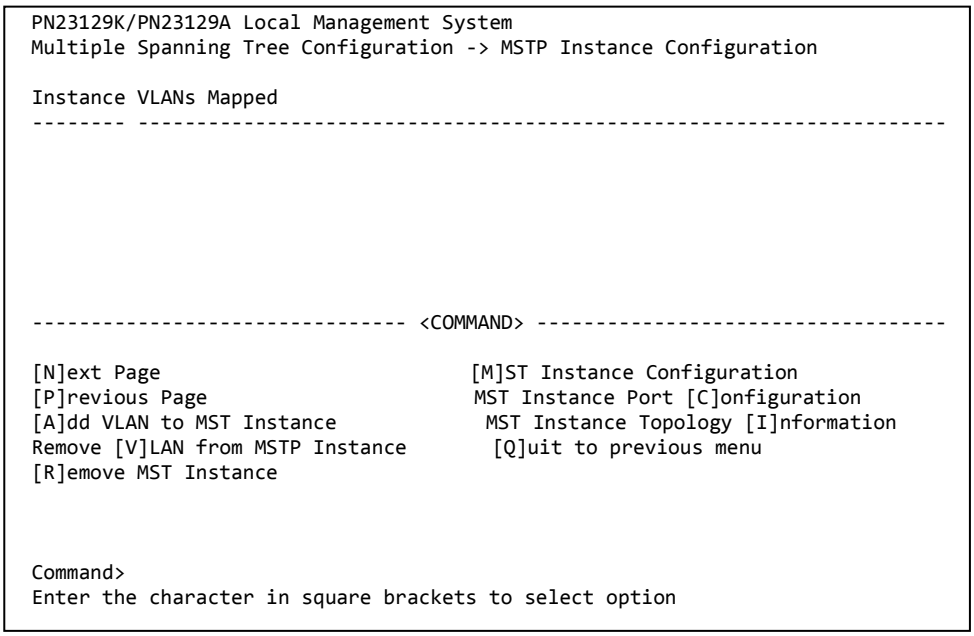


Fig. 4-7-19 MST Instance Configuration

Screen Description

Instance	Displays MST instance ID.
VLANs Mapped	Displays VLAN ID associated to MST instance.

Available commands are listed below.

N	Display the next page.
	Press "N" to change the display to the next page.
P	Display the previous page.
	Press "P" to change the display to the previous page.
A	Add VLAN ID to be associated to MST instance.
	Press "A" to change the command prompt to "Enter MSTP instance ID>." Enter MST instance ID. Then, "Enter VLAN ID>" is displayed. Enter VLAN ID to be associated.
V	Cancel association between MST instance and VLAN ID.
	Press "V" to change the command prompt to "Enter MSTP instance ID>." Enter MST instance ID. Then, "Enter VLAN ID>" is displayed. Enter VLAN ID to cancel association.
R	Delete MST instance ID.
	Press "R" to change the command prompt to "Enter MSTP instance ID>." Enter MST instance ID to be deleted.
M	Set MST instance.
	Press "M" to change the command prompt to "Enter MSTP instance ID>." Enter MST instance ID. Then, "MST Instance Configuration" is displayed. Advanced setting of MST instance becomes available. For configuration method, refer to the section (4.7.4.e).
C	Set MST instance for each port.
	Press "C" to change the command prompt to "Enter MSTP instance ID>." Enter MST instance ID. Then, "MST Instance Port Configuration" is displayed. Setting of MST instance for each port becomes available. For configuration method, refer to the section (4.7.4.f).
I	Set configuration information on MST instance.
	Press "I" to change the command prompt to "Enter MSTP instance ID>." Enter MST instance ID. Then, "MST Instance Topology Information" is displayed. Setting of configuration information on MST instance becomes available. For configuration method, refer to the section (4.7.4.g).
Q	Return to the previous menu.

4.7.4.e. MST Instance Advanced Configuration

On the MSTP Instance Configuration, pressing "M" and entering MST instance ID open the MST Instance Configuration screen, as shown in **Fig. 4-7-20**. On this screen, you can do advanced configuration of MST instance.

```
PN23129K/PN23129A Local Management System
MST Instance Configuration -> MST Instance Configuration


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

MSTI Regional Root: 800A 00C08Fxxxx  MSTI Bridge ID:      8000 00C08Fxxxx

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


Set MSTI Bridge Pr[i]ority
[Q]uit to previous menu









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

Fig. 4-7-20 Advanced Setting of MST Instance

Screen Description

MSTI Root Port:	Displays a root port number of MST instance.
MSTI Root Cost:	Displays a root path cost value of MST instance.
Time Since Topology Change:	Displays elapsed time (sec.) from changing configuration of spanning tree.
Topology Change Count:	Displays the number of changes in configuration of spanning tree.
MSTI Regional Root:	Displays bridge ID of the regional root bride of MST instance.
MSTI Bridge ID:	Displays bridge ID of MST instance.

Available commands are listed below.

I	Set bridge priority of MST instance.

		Press "I" to change the command prompt to "Enter MSTI Priority>." Enter a value for bridge priority.
Q	Return to the previous menu.	

4.7.4.f. MST Instance Port Configuration

On the MSTP Instance Configuration, pressing "C" and entering MST instance ID open the MST Instance Port Configuration screen, as shown in **Fig. 4-7-21**. On this screen, you can do MST Instance Port Configuration.

```
PN23129K/PN23129A Local Management System
MSTP Instance Configuration -> MST Instance Port Configuration

MST Instance: xx
Port  Trunk   Link     State        Role     Priority   Path Cost  STP Status
----  -----   ----   ----------   ----------  ---------  ---------  ----------
  1    ---    Down   Discarding   Disabled      128     200000(A)   Enabled
  2    ---    Down   N/A          N/A           0       0           N/A
  3    ---    Down   N/A          N/A           0       0           N/A
  4    ---    Down   N/A          N/A           0       0           N/A
  5    ---    Down   N/A          N/A           0       0           N/A
  6    ---    Down   N/A          N/A           0       0           N/A
  7    ---    Down   N/A          N/A           0       0           N/A
  8    ---    Down   N/A          N/A           0       0           N/A
  9    ---    Down   N/A          N/A           0       0           N/A
 10    ---    Down   N/A          N/A           0       0           N/A
 11    ---    Down   N/A          N/A           0       0           N/A
 12    ---    Down   N/A          N/A           0       0           N/A
-------------------------------- <COMMAND> ----------------------------------
Set Port Pr[i]ority                  [N]ext Page
Set Port Path [C]ost                 [P]revious Page
Set Port STP [S]tatus                [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-21 MST Instance Port Configuration

Screen Description

MST Instance:	Displays selected MST instance ID.	
Port	Displays the port number.	
Trunk	Displays the group number (key) of the trunk if trunking is set.	
Link	Displays the state of link.	
	UP	Link is established normally.
	DOWN	Link is not established.
State	Displays the current state of port.	
	Forwarding	Displays the state of normal communications based on the calculation result.
	Learning	Displays the state under calculation based on information.
	Discarding	Displays the state that calculation is not carried out.
	N/A	Displays the state that port is not associated to selected MST instance.
Role	Displays the role of port in the 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.
	N/A	Displays the state that port is not associated to selected MST instance.
Pri.	Displays priority of each port in the Switching Hub. Higher number has higher priority. For all ports, the factory default setting is set to 128. (A value is a multiple of 16.)	
Path Cost	Displays the cost of each port. Ports 1-12 are set to 200000 and Ports 13-14 are set to 20000 at factory default setting.	
STP Status	Displays enable/disable of the spanning tree of each port.	
	Enabled	The spanning tree is enabled.
	Disabled	The spanning tree is disabled.
	N/A	Displays the state that port is not associated to selected MST instance.

Available commands are listed below.

N	Display the next page.	
		Press "N" to change the display to the next page.
P	Display the previous page.	
		Press "P" to change the display to the previous page.
I	Set priority of each port in the Switching Hub	
		Press "I" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Enter priority for port #>" is displayed. Enter a number from 0 to 240 in a multiple of 16.
C	Set a cost of each port.	
		Press "C" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Enter path cost for port #>" is displayed. Enter a number from 1 to 200000000.
S	Set enable/disable of the spanning tree of each port.	

		Press "S" to change the command prompt to "Select port number to be changed>." Enter a port number. Then, "Enable or Disable STP for port # (E/D)>" is displayed. If the spanning tree is used, press "E." If not, press "D."
Q	Return to the previous menu.	

4.7.4.g MST Instance Topology Information

On the MSTP Instance Configuration, pressing "I" and entering MST instance ID open the MST Instance Topology Information screen, as shown in **Fig. 4-7-22**. On this screen, you can do setting MST Instance Topology Information.

```
PN23129K/PN23129A Local Management System
MSTP Instance Configuration -> MST Instance Port Configuration

MST Instance: xx
Port  Trunk   Link     State        Role     Priority   Path Cost  STP Status
----  -----   ----   ----------   ----------  ---------  ---------  ----------
  1    ---    Down   Discarding   Disabled      128     200000(A)   Enabled
  2    ---    Down   N/A          N/A           0       0           N/A
  3    ---    Down   N/A          N/A           0       0           N/A
  4    ---    Down   N/A          N/A           0       0           N/A
  5    ---    Down   N/A          N/A           0       0           N/A
  6    ---    Down   N/A          N/A           0       0           N/A
  7    ---    Down   N/A          N/A           0       0           N/A
  8    ---    Down   N/A          N/A           0       0           N/A
  9    ---    Down   N/A          N/A           0       0           N/A
 10    ---    Down   N/A          N/A           0       0           N/A
 11    ---    Down   N/A          N/A           0       0           N/A
 12    ---    Down   N/A          N/A           0       0           N/A
------------------------------- <COMMAND> -----------------------------------
Set Port Pr[i]ority                 [N]ext Page
Set Port Path [C]ost                [P]revious Page
Set Port STP [S]tatus               [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-22 MST Instance Topology Information

Screen Description

MST Instance:	Displays selected MST instance ID.	
Port	Displays the port number.	
Trunk	Displays the group number (key) of the trunk if trunking is set.	
Link	Displays the state of link.	
	UP	Link is established normally.
	DOWN	Link is not established.
Desig.Root	Displays root bridge ID.	
Desig.Cost	Displays cost under transmission.	
Desig.Bridge	Displays bridge ID of a designated bridge.	
Desig.Port	Displays port ID of a designated port. (Port ID is a combination of port priority value and port number.)	

Available commands are listed below.

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

Q	Return to the previous menu.

4.7.4.h. Designated Topology Information

On the Multiple Spanning Tree Configuration Menu, pressing "I" opens the Designated Topology information screen, as shown in **Fig. 4-7-23**. This screen displays configuration information of the spanning tree for each port.

```
PN23129K/PN23129A Local Management System
Multiple Spanning Tree Configuration -> Designated Topology Information

                      Cist          Cist         Cist          Cist
Port Trunk  Link    Desig. Root    Desig. Cost  Desig. Bridge  Desig. Port
---- -----  ----  -----------------  ----------- ----------------- -----------
  1   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 01
  2   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 02
  3   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 03
  4   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 04
  5   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 05
  6   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 06
  7   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 07
  8   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 08
  9   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 09
 10   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 0A
 11   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 0B
 12   ---   Down  8000 00C08Fxxxxxx   0          8000 00C08Fxxxxxx    00 0C
------------------------------- <COMMAND> ---------------------------------

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

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

Fig. 4-7-23 Designated Topology Information

Screen Description

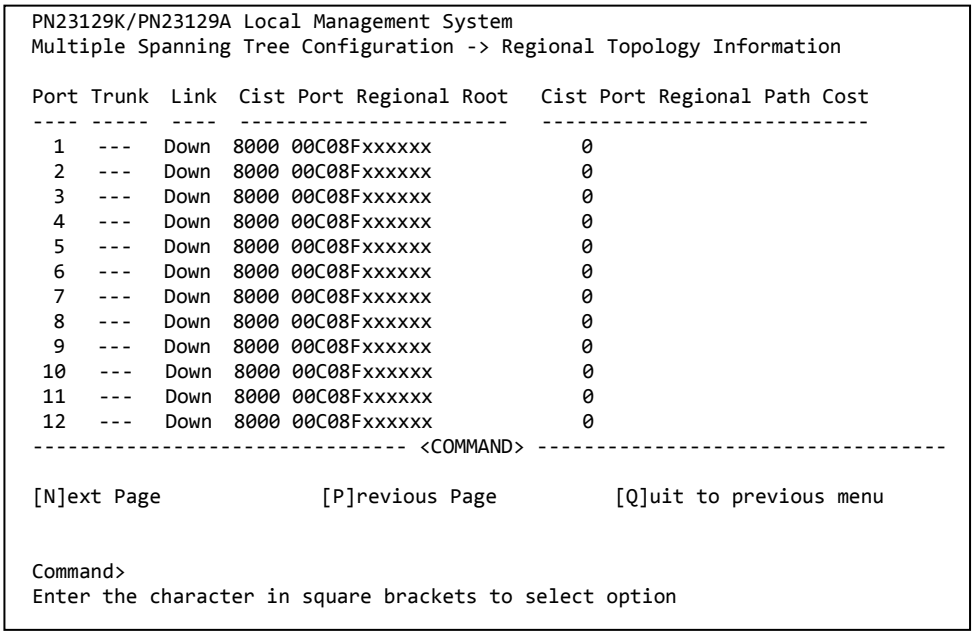
Port	Displays the port number.	
Trunk	Displays the group number (key) of the trunk if trunking is set.	
Link	Displays the state of link.	
	UP	Link is established normally.
	DOWN	Link is not established.
Cist Desig.Root	Displays root bridge ID.	
Cist Desig.Cost	Displays cost under transmission.	
Cist Desig.Bridge	Displays bridge ID of a designated bridge.	
Cist Desig.Port	Displays port ID of a designated port. (Port ID is a combination of port priority value and port number.)	

Available commands are listed below.

N	Display the next page.
	Press "N" to change the display to the next page.
P	Display the previous page.
	Press "P" to change the display to the previous page.
Q	Return to the previous menu.

4.7.4.i. Regional Topology Information

On the Multiple Spanning Tree Configuration Menu, pressing "g" opens the Regional Topology Information screen, as shown in **Fig. 4-7-24**. This screen displays configuration information of the spanning tree for each port.



```
PN23129K/PN23129A Local Management System
Multiple Spanning Tree Configuration -> Regional Topology Information

Port Trunk  Link  Cist Port Regional Root   Cist Port Regional Path Cost
---- -----  ----  ----------------------   ---------------------------
  1   ---   Down  8000 00C08Fxxxxxx             0
  2   ---   Down  8000 00C08Fxxxxxx             0
  3   ---   Down  8000 00C08Fxxxxxx             0
  4   ---   Down  8000 00C08Fxxxxxx             0
  5   ---   Down  8000 00C08Fxxxxxx             0
  6   ---   Down  8000 00C08Fxxxxxx             0
  7   ---   Down  8000 00C08Fxxxxxx             0
  8   ---   Down  8000 00C08Fxxxxxx             0
  9   ---   Down  8000 00C08Fxxxxxx             0
 10   ---   Down  8000 00C08Fxxxxxx             0
 11   ---   Down  8000 00C08Fxxxxxx             0
 12   ---   Down  8000 00C08Fxxxxxx             0
-------------------------------- <COMMAND> ----------------------------------

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


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

Fig. 4-7-24 Display of configuration information of the spanning tree for each port

Screen Description

Port	Displays the port number.	
Trunk	Displays the group number (key) of the trunk if trunking is set.	
Link	Displays the state of link.	
	UP	Link is established normally.
	DOWN	Link is not established.
Cist Port Regional Root	Displays root bridge ID.	
Cist Port Regional Path Cost	Displays cost under transmission.	

Available commands are listed below.

N	Display the next page.
	Press "N" to change the display to the next page.
P	Display the previous page.
	Press "P" to change the display to the previous page.
Q	Return to the previous menu.

4.7.5. Access Control Configuration Menu

On the Advanced Switch Configuration Menu, pressing "A" opens the Access Control Configuration Menu, as shown in **Fig. 4-7-25**. On this screen, you can set Access Control.

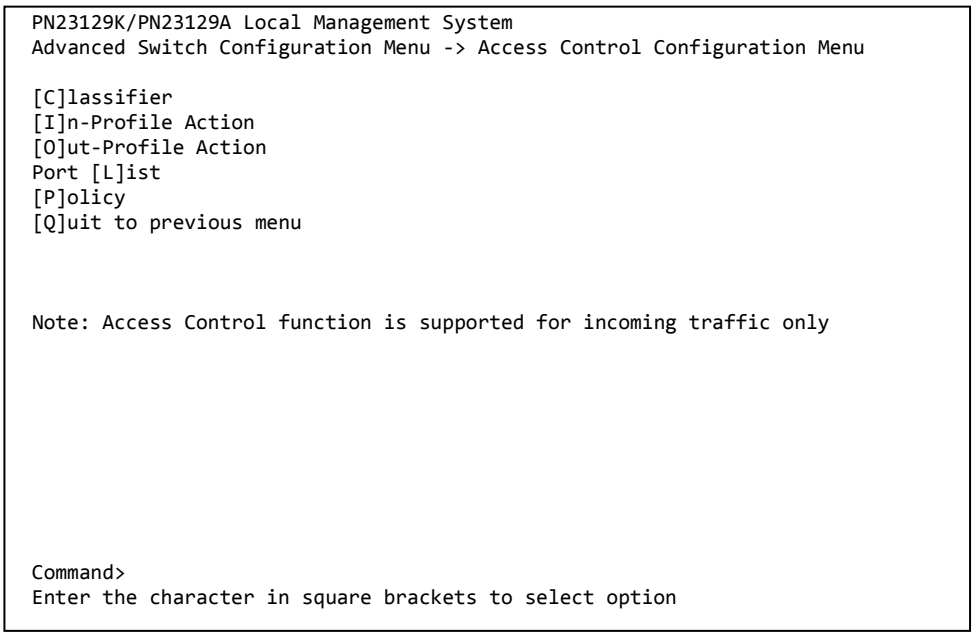


Fig. 4-7-25 Access Control Configuration

Screen Description

Classifier	Sets classifier of classifying traffic. (Maximum configurable number: 256)
In-Profile action	Sets action for input packet. (Maximum configurable number: 81)
Out-Profile action	Sets action for input packet exceeding a committed rate. (Maximum configurable number: 128)
Port list	Sets a list of applicable ports. (Maximum configurable number: 128)
Policy	Sets policy. (Maximum configurable number: 128)
Quit to previous menu	Returns to the previous menu.

4.7.5.a. Classifier Configuration Menu

On the Access Control Configuration Menu, pressing "C" opens the Classifier Configuration Menu, as shown in **Fig. 4-7-26**. On this screen, you can set classifier.

```
PN23129K/PN23129A Local Management System
Access Control Configuration -> Classifier Configuration Menu
Multifield Classifier:              Total Entries : 1
Index  Src IP Addr/Mask   Dst IP Addr/Mask  DSCP Pro. Src L4 Port Dst L4 Port
----- ------------------ ------------------ ---- ---- ----------- -----------









-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                             M[o]dify Classifier
[P]revious Page                          [M]ore Classifier Info.
[C]reate Classifier                      [S]how Detailed Entry Info.
[D]elete Classifier                      [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-26 Classifier Configuration

Screen Description

Multifield classifier	Displays definition of each classifier.
Total Entries	Displays the number of Classifiers (number of indexes) created.
Index	Displays the classifier index number.
Scr IP Addr/Mask	Displays the source IP address.
Dst IP Addr/Mask	Displays the destination IP address.
DSCP	Displays priority information DSCP value.
Pro.	Displays protocol.
Src L4 Port	Displays the source port number of TCP/UDP.
Dst L4 Port	Displays the destination port number of TCP/UDP.

Available commands are listed below.

N	Display the next page.
	Press "N" to change the display to the next page.
P	Display the previous page.
	Press "P" to change the display to the previous page.
C	Create a new classifier.
	Press "C" to change the screen to the Create Classifier Configuration Menu. For the Create Classifier Configuration Menu, see the next section of 4.7.5.b.
D	Delete the classifier.
	Press "D" to change the command prompt to "Please enter classifier index>." Enter an index of the classifier to be deleted from 1 to 65535.
O	Modify classifier configuration.
	Press "O" to change the command prompt to the Modify Classifier Menu. Set (modify) in the same as the Create Classifier Configuration Menu.
M	Display detailed information of the classifier.
	Press "M" to display the sender MAC address, receiver MAC address, 802.1p, VLAN ID, TCP SYN flag, and ICMP type information.
S	Display further detailed classifier information.
	Press "S" to display the source MAC address, destination MAC address, VLAN ID, source IP address, destination IP address, 802.1p priority, DSCP, protocol type, TCP/UDP source port number, TCP/UDP destination port number, TCP SYN flag, and ICMP type information.
Q	Return to the previous menu.

4.7.5.b. Create Classifier Configuration Menu

On the Classifier Configuration Menu, pressing "C" opens the Create Classifier Configuration Menu, as shown in **Fig. 4-7-27**. On this screen, you can create a classifier.

```
PN23129K/PN23129A Local Management System
Classifier Configuration -> Create Classifier Configuration Menu
Classifier Index       :
Source MAC Address     :                 Source MAC Mask Length     :
Destination MAC Address :                Destination MAC Mask Length:
VLAN ID               :                 802.1p Priority           :
DSCP                  :                 Protocol                  :
Source IP Address      :                 Source IP Mask Length     :
Destination IP Address  :                Destination IP Mask Length :
Source Layer 4 Port     :                TCP SYN Flag              :
Destination Layer 4 Port:                ICMP Type                 :


------------------------------- <COMMAND> ----------------------------------
[C]lassifier Index                       S[o]urce IP Address
[S]ource MAC Address                     D[e]stination IP Address
[D]estination MAC Address                So[u]rce Layer 4 Port
[V]LAN ID                               Des[t]ination Layer 4 Port
802.1p Pr[i]ority                        IC[M]P Type
DSC[P]                                  TCP S[Y]N Flag
P[r]otocol                               [A]pply
                                        [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-27 Creating Classifier

Screen Description

Classifier Index	Displays the classifier index.
Source MAC Address	Displays the source MAC address.
Destination MAC Address	Displays the destination MAC address.
Source MAC Mask Length	Displays the bit mask length of source MAC address.
Destination MAC Mask Length	Displays the bit mask length of destination MAC address.
VLAN ID	Displays the VLAN ID.
DSCP	Displays the DSCP value.
Protocol	Displays the protocol type.
Source IP Address	Displays the source IP address.
Source Mask length	Displays the bit mask length of source IP address
Destination IP Address	Displays the destination IP address.
Destination Mask length	Displays the bit mask length of destination IP address.
Source L4 Port	Displays the source port number of TCP/UDP.
Destination L4 Port	Displays the destination port number of TCP/UDP.
802.1p Priority	Displays priority of IEEE802.1p.
TCP SYN Flag	Displays the TCP SYN flag.

ICMP Type	Displays the ICMP type.

Available commands are listed below.

C	Set a classifier index.	
		Press "C" to change the command prompt to "Enter Classifier Index>." Enter a classifier index from 1 to 65535.
S	Set a source MAC address to be filtered.	
		Press "S" to change the command prompt to "Enter source MAC address>." Enter the sender MAC address, such as xx:xx:xx:xx:xx:xx. Then, "Enter source MAC address mask length>" is displayed. Enter a bit mask length of source MAC address.
D	Set a destination MAC address to be filtered.	
		Press "D" to change the command prompt to "Enter designation MAC address>." Enter the destination MAC address, such as xx:xx:xx:xx:xx:xx. Then, "Enter destination MAC address mask length>" is displayed. Enter a bit mask length of destination MAC address.
V	Set VLAN ID to be filtered.	
		Press "V" to change the command prompt to "Enter VLAN ID>." Enter from 1 to 4094 for VLAN ID.
P	Set DSCP value to be filtered.	
		Press "P" to change the command prompt to "Enter DSCP value (0-63)>." Enter from 0 to 63 for DSCP value.
R	Set a protocol to be filtered.	
		Press "R" to change the command prompt to "Select protocol>." For TCP, enter "1." For UDP, "2." For ICMP, "3." For IGMP, "4." For RSVP, "5." For other protocols, "6."
O	Set a source IP address to be filtered.	
		Press "O" to change the command prompt to "Enter source IP address>." Enter a source IP address. Then, "Enter source IP address mask length>" is displayed. Enter a bit mask length of source IP address.
E	Set a destination IP address to be filtered.	
		Press "E" to change the command prompt to "Enter destination IP address>." Enter a destination IP address. Then, "Enter destination IP address mask length>" is displayed. Enter a bit mask length of destination IP address.
U	Set a TCP/UDP source port number to be filtered.	
		Press "U" to change the command prompt to "Choose single port or defined port range (S/D)>." To designate one, press "S." Then, the command prompt changes to "Enter source layer 4 port." Enter the source port number. To designate by a range, enter "D." Then, the command prompt changes to "Enter starting source port>" and "Enter final source port>." Enter the starting and final source port numbers.
T	Set a TCP/UDP destination port number to be filtered.	
		Press "T" to change the command prompt to "Choose single port or defined port range (S/D)>." To designate one, press "S." Then, the command prompt changes to "Enter destination layer 4 port>." Enter the destination port number. To designate by a range, enter "D." Then, the command prompt changes to "Enter starting destination port>" and "Enter final destination port>." Enter the starting and final destination port numbers.
I	Set IEEE802.1p priority to be filtered.	
		Press "I" to change the command prompt to "Enter 802.1p priority>." Enter 802.1p priority in a range from 0 to 7.

M	Set ICMP type to be filtered. (* Protocol needs to be set to ICMP.)	
		Press "M" to change the command prompt to "Enter ICMP type>." Enter ICMP type in a range from 0 to 18.
Y	Set TCP SYN Flag to be filtered. (* Protocol needs to be set to TCP.)	
		Press "Y" to change the command prompt to Set TCP SYN flag (Y/N)>." To filter by TCP SYN flag, press "Y." For no filtering or to cancel filtering, press "N." If filtered, True is displayed. If not filtered, False is displayed.
A	Apply the set contents. If not applied here, set contents are not enabled.	
Q	Return to the previous menu.	

4.7.5.c. Classifier Configuration Menu

On the Classifier Configuration Menu, pressing "M" opens the More Classifier Information screen, as shown in **Fig. 4-7-28 and Fig. 4-7-29**. On this screen, you can refer to classifier information.

```
PN23129K/PN23129A Local Management System
Access Control Configuration -> Classifier Configuration Menu
Multifield Classifier:              Total Entries : 1
Index Source MAC Addr./ Mask   Destination MAC Addr./ Mask
----- ----------------------- ------------------------------------------------
    1 Ignore                  Ignore



Press any key to continue...
```

Fig. 4-7-28 Classifier Reference 1

```
PN23129K/PN23129A Local Management System
Access Control Configuration -> Classifier Configuration Menu
Multifield Classifier:              Total Entries : 1
Index 802.1p VLAN ID TCP(SYN) ICMPTP
----- ------ ------- -------- ------------------------------------------------
    1 Ignore Ignore  Ignore   Ignore



Press any key to continue...
```

Fig. 4-7-29 Classifier Reference 2

Screen Description

Total Entries	Displays the number of the created Classifiers.
Classifier Index	Displays a classifier index.
Source MAC Address	Displays source MAC address.
Destination MAC Address	Displays destination MAC address.
802.1p Priority	Displays priority of IEEE802.1p.
VLAN ID	Displays VLAN ID.
TCP SYN Flag	Displays TCP SYN flag.
ICMP Type	Displays ICMP type.

4.7.5.d. Show Detailed Entries Information Menu

On the Classifier Configuration Menu, pressing "S" opens the Show Detailed Entries Information Menu, as shown in **Fig. 4-7-30**. On this screen, you can refer to detailed Classifier information. Classifier needs to be created in order to refer to.

```
PN23129K/PN23129A Local Management System
Classifier Configuration -> Show Detailed Entry Information Menu
Detailed Classifier Information :
--------------------------------
Classifier Index                 :  1
Source MAC Address               :  Ignore
Source MAC Address Mask Length    :  Ignore
Destination MAC Address          :  Ignore
Destination MAC Address Mask Length:  Ignore
802.1p Priority                  :  Ignore
VLAN ID                          :  Ignore
Source IP Address                :  Ignore
Source IP Address Mask Length     :  Ignore
Destination IP Address           :  Ignore
Destination IP Address Mask Length :  Ignore
DSCP                             :  48
Protocol                         :  Ignore
Source Layer 4 Port               :  Ignore
Destination Layer 4 Port          :  Ignore
TCP SYN Flag                     :  Ignore
ICMP Type                        :  Ignore


Press any key to continue...
```

Fig. 4-7-30 Reference to Detailed Classifier Information

Screen Description

Classifier Index	Displays a classifier index.
Source MAC Address	Displays the source MAC address.
Source Mask length	Displays the bit mask length of source MAC address.
Destination MAC Address	Displays the destination MAC address.
Destination Mask length	Displays the bit mask length of destination MAC address.
VLAN ID	Displays VLAN ID.
DSCP	Displays DSCP.
Protocol	Displays protocol type.
Source IP Address	Displays the source IP address.
Source Mask length	Displays the bit mask length of source IP address.
Destination IP Address	Displays the destination IP address.
Destination Mask length	Displays the bit mask length of destination IP address.
Source L4 Port	Displays the source port number of TCP/UDP.
Destination L4 Port	Displays the destination port number of TCP/UDP.

802.1p Priority	Displays priority of IEEE802.1p.
TCP SYN Flag	Displays the TCP SYN flag.
ICMP Type	Displays ICMP type.

4.7.5.e. In-Profile Action Configuration Menu

On the Access Control Configuration Menu, pressing "I" opens the In-profile Action Configuration Menu, as shown in **Fig. 4-7-31**. On this screen, you can set In-Profile.

```
PN23129K/PN23129A Local Management System
Access Control Configuration -> In-Profile Action Configuration Menu
In-Profile Action:       Total Entries : 0
Index  Deny/Permit  Policed-DSCP   Policed-Precedence  Policed-CoS
-----  -----------  -------------  ------------------  -----------









-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                            [D]elete In-Profile Action
[P]revious Page                        [M]odify In-Profile Action
[C]reate In-Profile Action              [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-31 In-Profile Configuration

Screen Description

Total Entries	Displays the number of the created in-profiles.	
Index	Displays the in-profile index number.	
Deny/Permit	Displays deny/permit of packet.	
Action	Displays an action mode in in-profile.	
	Policed-DSCP	DSCP marking status.
	Policed-Precedence	Precedence marking status.
	Policed-CoS	CoS marking status.

Available commands are listed below.

N	Display the next page.	
		Press "N" to change the display to the next page.
P	Display the previous page.	
		Press "P" to change the display to the previous page.
C	Create In-profile.	
	Press "C." The screen changes to the Create In-Profile Action Menu. See 4.7.5.f.	
D	Delete In-profile.	
		Press "D" to change the command prompt to "Enter in-profile action index>." Enter an index number of In-profile to be deleted.
M	Modify In-profile.	
		Enter "M" to change the command prompt to "Enter in-profile action index>." Enter an Index number of In-profile to be modified, and modify using the same operation as that for creating In-profile.
Q	Return to the previous menu.	

4.7.5.f. Create In-Profile Action Menu

On the In-Profile Action Configuration screen, pressing "C" opens the Create In-Profile Action Menu, as shown in **Fig. 4-7-32**. On this screen, you can create In-profile.

```
PN23129K/PN23129A Local Management System
In-Profile Action Configuration -> Create In-Profile Action Menu
Index            :
Deny/Permit      : Permit
Policed-DSCP     : Ignore
Policed-Precedence: Ignore
Policed-CoS      : Ignore









-------------------------------- <COMMAND> -----------------------------------
In-Profile Action [I]ndex               Set Policed-[C]oS
Set [D]eny/Permit                      [A]pply
Set Policed-D[S]CP                     [Q]uit to previous menu
Set Policed-[P]recedence


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

Fig. 4-7-32 In-Profile Creation

Screen Description

Index	Displays the in-profile index number.	
Deny/Permit	Displays deny/permit of packet.	
Action	Policed-DSCP	DSCP marking status.
	Policed-Precedence	Precedence marking status.
	Policed-CoS	CoS marking status.

Available commands are listed below.

I	Set the In-profile index number.	
		Press "I" to change the command prompt to "Enter in-profile action index>." Enter 1 to 65535 for index number.
D	Set deny/permit of packet.	
		Press "D" to change the command prompt to "Select Deny/Permit (1-2)>." To deny, "1." To permit, select "2."
S	Set DSCP value to be marked.	
		Press "S" to change the command prompt to "Enter DSCP value>." Enter from 0 to 63 for DSCP marking value.
P	Set precedence value to be marked.	
		Press "P" to change the command prompt to "Enter ToS precedence value>." Enter from 0 to 7 for Precedence marking value.
C	Set CoS value to be marked.	
		Press "C" to change the command prompt to "Enter CoS value>." Enter from 0 to 7 for CoS marking value.
A	Apply the set contents. If not applied here, the setting is discarded.	
Q	Return to the previous menu.	

4.7.5.g. Out-Profile Action Configuration Menu

On the Access Control Configuration Menu, pressing "O" opens the Out-Profile Action Configuration Menu, as shown in **Fig. 4-7-33**. On this screen, you can set Out-Profile.

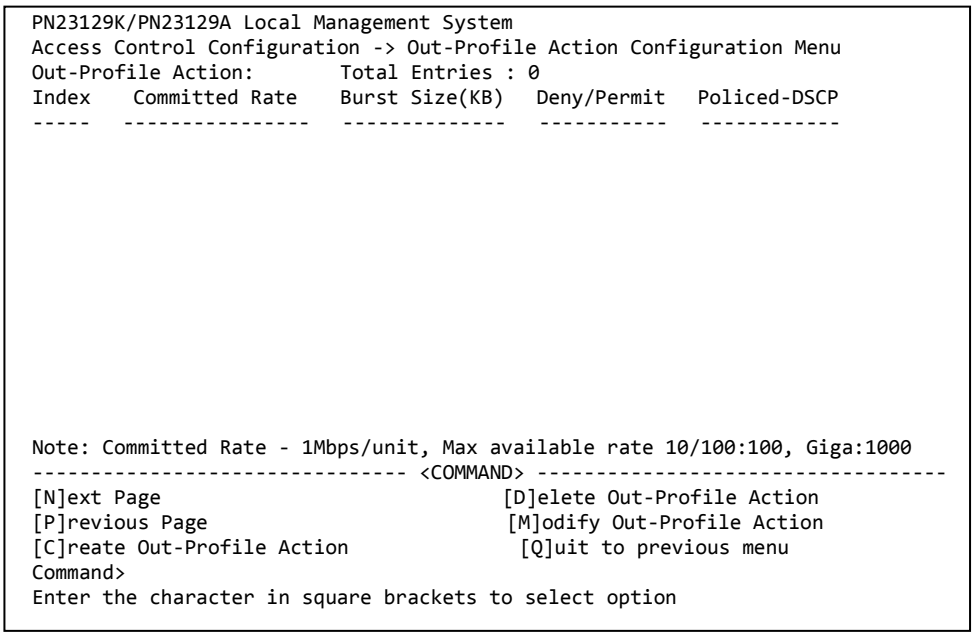


Fig. 4-7-33 Out-Profile Configuration

Screen Description

Total Entries	Displays the number of created out-profiles.	
Index	Displays the out-profile Index number.	
Committed Rate	Displays the committed rate for out-profile.	
	(1Mbps/unit)	Displays the committed rate value.
Burst Size(KB)	Displays the traffic burst size that can be transmitted exceeding the committed rate. For burst size, 4K, 8K, 16K, 32K, and 64K are used.	
Deny/Permit	Displays deny/permit of packet.	
Policed-DSCP	DSCP marking status.	

Available commands are listed below.

N	Display the next page.	
		Press "N" to change the display to the next page.
P	Display the previous page.	
		Press "P" to change the display to the previous page.
C	Create Out-Profile.	
		Press "C" to change the screen to the Create Out-Profile Action Menu. Refer to the section 4.7.5.h.
D	Delete Out-Profile.	
		Press "D" to change the command prompt to "Enter out-profile action Index>." Enter an Index number of Out-Profile to be deleted.
M	Modify Out-Profile.	
		Enter "M" to change the command prompt to "Enter out-profile action Index>." Enter an index number of out-profile to be modified, and modify using the same operation as that for creating Out-profile.
Q	Return to the previous menu.	

4.7.5.h. Create Out-Profile Action Menu

On the Out-Profile Action Configuration screen, pressing "C" opens the Create Out-Profile Action Menu, as shown in **Fig. 4-7-34**. On this screen, you can create Out-Profile.

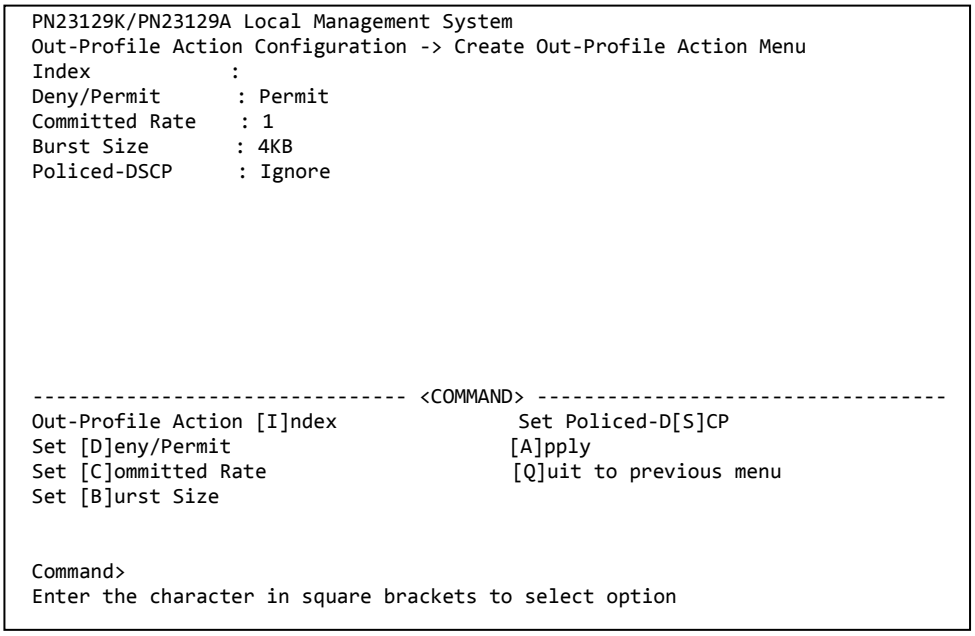


Fig. 4-7-34 Out-Profile Creation

Screen Description

Index	Displays the Out-Profile Index number.	
Committed Rate	Displays the committed rate.	
	(1Mbps/unit)	Displays the guaranteed size of committed rate.
Burst Size(KB)	Displays the traffic burst size that can be transmitted exceeding the committed rate. Select Burst Size from 4K, 8K, 16K, 32K, and 64K.	
Deny/Permit	Displays deny/permit of packet.	
Policed-DSCP	DSCP marking status for out-profile.	

Available commands are listed below.

I	Set the Out-Profile index number.	
		Press "I" to change the command prompt to "Enter Out-Profile action index>." Enter 1 to 65535 for index number.
D	Set deny/permit of packet.	
		Press "D" to change the command prompt to "Select Deny/Permit (1-2)>." To deny, select "1." To permit, select "2."
C	Set the committed rate.	
		Press "C" to change the command prompt to "Enter committed rate>." Enter from 1 to 1000 for committed rate.
B	Set the burst size.	
		Press "B" to change the command prompt to "Select burst size (1-5)>." If the traffic burst size exceeding the committed rate is 4K, press "1." If 8K, press "2." If 16K, press "3." If 32K, press "4." If 64K, press "5."
S	Set DSCP value to be marked.	
		Press "S" to change the command prompt to "Enter DSCP value>." Enter from 0 to 63 for DSCP value.
A	Apply the set contents. If not applied here, setting is not enabled.	
Q	Return to the previous menu.	

4.7.5.i. Port List Configuration Menu

On the Access Control Configuration Menu, pressing "L" opens the Port List Configuration Menu, as shown in **Fig. 4-7-35**. On this screen, you can set a port list to apply Access Control.

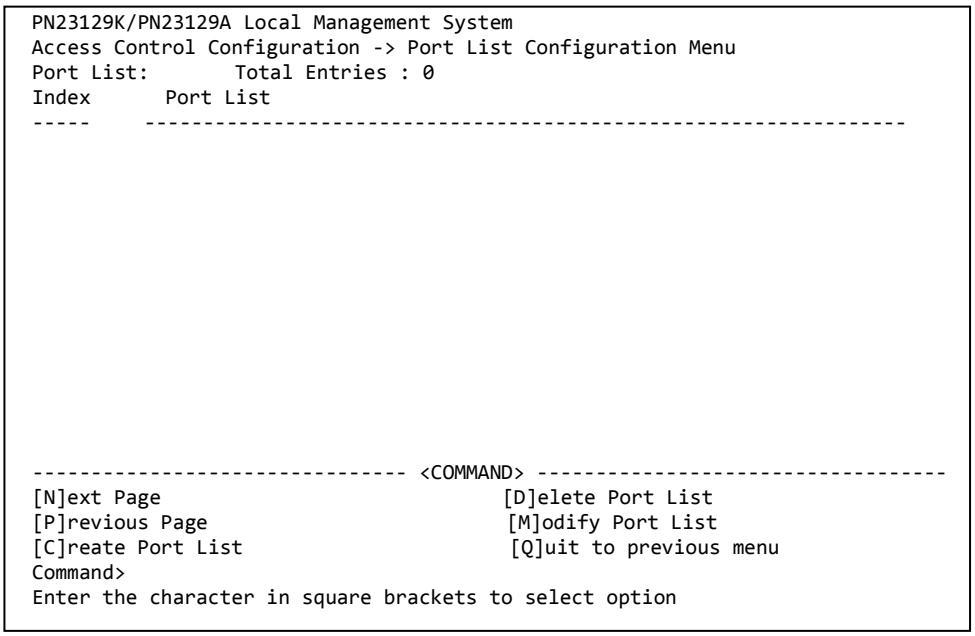


Fig. 4-7-35 Port List Configuration

Screen Description

Total Entries	Displays the number of created port lists.
Index	Displays the port list index number.
Port list	Displays the port number in the port list.

Available commands are listed below.

N	Display the next page.	
		Press "N" to change the display to the next page.
P	Display the previous page.	
		Press "P" to change the display to the previous page.
C	Creates a port list.	
		Press "C" to change the command prompt to "Enter port list index>." Enter an Index number to be executed. Then, the command prompt changes to "Enter port list number e.g.: 1,3,5-12>." Enter port numbers to be included in the list.
D	Delete the port list.	
		Press "D" to change the command prompt to "Enter port list index>." Enter an Index number to be deleted in the port list.
M	Modify the port list.	
		Enter "M" to change the command prompt to "Enter port list index>." Enter an Index number of port list to be modified, and modify using the same operation as that for creating a port list.
Q	Return to the previous menu.	

4.7.5.j. Policy Configuration Menu

On the Access Control Configuration Menu, pressing "P" opens the Policy Configuration Menu, as shown in **Fig. 4-7-36**. On this screen, you can set policy.

```
PN23129K/PN23129A Local Management System
Access Control Configuration -> Policy Configuration Menu
Policy :                              Total Entries : 0
Index Classifier Seq.  In-Profile Out-Profile PortList Status
----- ---------- ----- ---------- ----------- -------- --------









-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                             [S]how Policy Entry
[P]revious Page                         [U]pdate Policy
[C]reate Policy                         Display Sequence [B]y Port
[D]elete Policy                         [Q]uit to previous menu
[E]nable or Disable Policy
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-36 Policy Configuration

Screen Description

Total Entries	Displays the number of created policies.
Index	Displays the policy index number.
Classifier	Displays the Classifier Index number.
Seq.	Displays a sequence number indicating the order to apply policies. Policies are applied in ascending order.
In-Profile	Displays the In-profile Index number.
Out-Profile	Displays the Out-profile Index number.
Port list	Displays the port list Index number.
Status	Displays the application status of policy.

Available commands are listed below.

N	Display the next page.	
		Press "N" to change the display to the next page.
P	Display the previous page.	
		Press "P" to change the display to the previous page.
C	Create Policy.	
		Press "C" to change the screen to the Create Policy Configuration Menu. Refer to the section 4.7.5.k for the Create Policy Configuration.
D	Delete Policy.	
		Press "D" to change the command prompt to "Enter a policy index>." Enter a policy index number to be deleted.
E	Enable/disable the policy status.	
		Press "E" to change the command prompt to "Select policy index>." Enter a policy index number to be enabled/disabled. Then, the command prompt changes to "Enable or Disable Policy Entry>." Press "E" to enable, and press "D" to disable.
	Enabled	Enable Policy.
	Disabled	Disable Policy.
S	Display the policy information.	
		Press "S " to display detailed information on each policy.
U	Modify the policy.	
		Press "U" to change the command prompt to "Enter policy index>." Enter an index number to be modified. Then, carry out the same operation as that for creating a policy. Remember that modification is rejected if the policy is Enabled. If Enabled, disable the policy, and then modify it.
B	Display a sequence number of policy applied to each port.	
		Press "B" to change the command prompt to "Enter port number>." Enter a port number to display. Then, the command prompt changes to "Select policy index order or policy sequence order (I/S)>." To view a policy sequence corresponding to the policy index, press "I." To view a policy index sequence corresponding to the policy sequence, press "S."
Q	Return to the previous menu.	

4.7.5.k. Create Policy Configuration Menu

On the Policy Configuration Menu, pressing "C" opens the Create Policy Configuration menu, as shown in **Fig. 4-7-37**. On this screen, you can create a policy.

```
PN23129K/PN23129A Local Management System
Policy Configuration -> Create Policy Configuration Menu
Policy Index            :
Classifier Index        :
Policy Sequence         :
In-Profile Action Index  :
Out-Profile Action Index :
Port List Index         :









-------------------------------- <COMMAND> ----------------------------------
Set [P]olicy Index                      Select Port [L]ist Index
Select [C]lassifier Index                [A]pply Policy
Set Policy [S]equence                    [Q]uit to previous menu
Select [I]n-Profile Action Index
Select [O]ut-Profile Action Index
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-37 Creating Policy

Screen Description

Policy Index	Displays the policy index number.
Classifier Index	Displays a classifier index number created in the Classifier Configuration Menu.
Policy Sequence	Displays the sequence number.
In-Profile Index	Displays an In-profile Index number created in the In-Profile Action Configuration Menu.
Out-Profile Index	Displays an Out-profile Index number created in the Out-Profile Action Configuration Menu.
Port List Index	Displays an port list index number created in the Port List Configuration Menu.

Available commands are listed below.

P	Set a policy index number.	
		Press "P" to change the command prompt to "Enter policy index>." Enter a policy index number.
C	Set an index number of applicable classifier.	
		Press "C" to change the command prompt to "Enter classifier index>." Enter an index number of applicable classifier.
S	Set a sequence number.	
		Press "S" to change the command prompt to "Enter policy sequence>." Enter a sequence number.
I	Set an index number of applicable In-profile.	
		Press "I" to change the command prompt to "Enter in-profile index>." Enter an index number of applicable in-profile.
O	Set an index number of applicable Out-profile.	
		Press "O" to change the command prompt to "Enter in-profile index>." Enter an index number of applicable in-profile.
L	Set an index number of applicable port list.	
		Press "L" to change the command prompt to "Enter port list index>." Enter an index number of applicable port list.
A	Apply the set contents. If not applied here, setting is not enabled.	
Q	Return to the previous menu.	

4.7.6. Quality of Service Configuration

On the Advanced Switch Configuration Menu, pressing "S" opens the Quality of Service Configuration Menu, as shown in **Fig. 4-7-38**. QoS (Quality of Service) configuration of the Switching Hub is available.

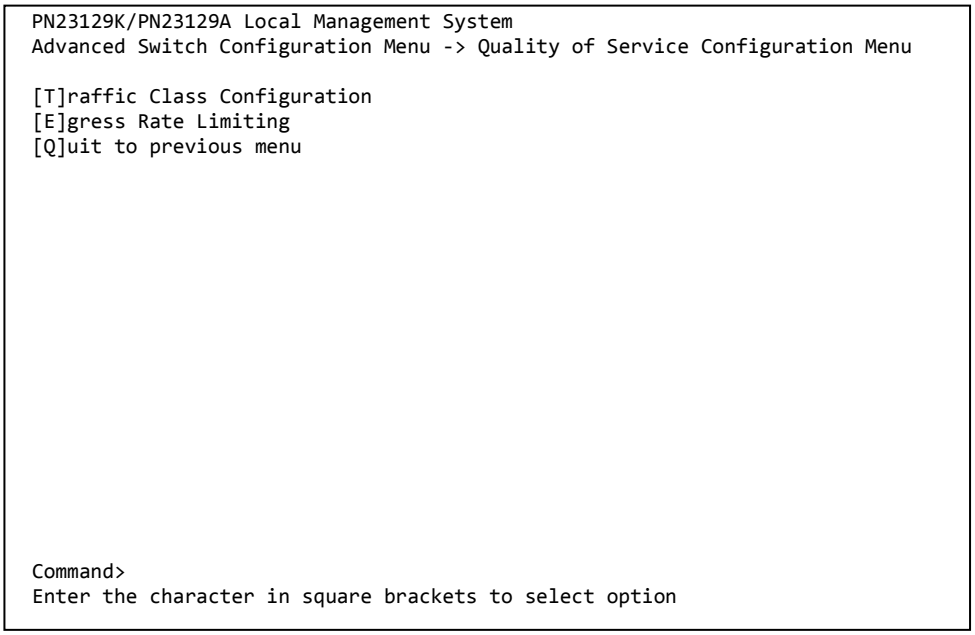


Fig. 4-7-38 QoS Configuration

Available commands are listed below.

T	Move to the QoS configuration screen in packets.	
		Press "T" to change the screen to the Traffic Class Configuration Menu. Refer to the section 4.7.6.a for how to set.
E	Move to the control configuration screen for bandwidth.	
		Press "E" to change the screen to Egress Rate Limiting. Refer to the section **4.7.7** for how to set.
Q	Return to the previous menu.	

4.7.6.a. Traffic Class Configuration

On the Quality of Service Configuration Menu, pressing "T" opens the Traffic Class Configuration screen, as shown in **Fig. 4-7-39**. On this screen, you can set QoS in packets.

```
PN23129K/PN23129A Local Management System
Quality of Service Configuration -> Traffic Class Configuration Menu

QoS Status: Disabled

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

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

[S]et QoS Status                    [Q]uit to previous menu
Set Priority-Traffic Class [M]apping
Scheduling Method [C]onfig.

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

Fig. 4-7-39 Traffic Class Configuration

Screen Description

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

Available commands are listed below.

S	Switch enabled/disabled of the QoS function.	
		Press"S" to change the command prompt to "Enable or Disable QoS (E/D)>." To enable the QoS function, press "E." To disable it, press "D."
M	Assign priority (Traffic Class) to a priority value of IEEE802.1p.	
		Press "M" to change the command prompt to "Enter Priority (E/D)>." Enter a priority value (0 to 3) to be assigned. Then, the command prompt changes to "Enter traffic class for priority #>." Enter Traffic Class (0 to 7).
C	Move to the screen for configuring a scheduling method.	
		Press "C" to change the screen to Scheduling Method. Refer to the section 4.7.6.b for how to set.
Q	Return to the previous menu.	

4.7.6.b. Configuration of Scheduling Method

On the Quality of Service Configuration Menu, pressing "C" opens the Scheduling Method screen, as shown in **Fig. 4-7-40**. On this screen, you can set a scheduling method.

```
PN23129K/PN23129A Local Management System
Quality of Service Configuration -> Scheduling Method

Scheduling Method: Strict

Traffic Class     Weight
-------------     ------
      0              1
      1              2
      2              3
      3              4
      4              5
      5              6
      6              7
      7              8

-------------------------------- <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. 4-7-40 Configuration of Scheduling Method

Screen Description

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

Available commands are listed below.

S	Select the scheduling method of QoS function.	
		Press "S" to change the command prompt to "Select scheduling method (S/W)>." if Strict Priority Queuing is used, press "S." If Weighted Round Robin is used, press "W."
M	Set weight to priority (Traffic Class).	
		Press "M" to change the command prompt to "Enter traffic class>." Enter Traffic Class (0 to 7). Then, the command prompt changes to "Enter weight for traffic class #>." Enter weight (1 to 127).
Q	Return to the previous menu.	

4.7.7. Egress Rate Limiting Configuration Menu

On the Quality of Service Configuration Menu, pressing "C" opens the Egress Rate Limiting Configuration Menu, as shown in **Fig. 4-7-41**. On this screen, you can set bandwidth control.

```
PN23129K/PN23129A Local Management System
Quality of Service Configuration -> Egress Rate Limiting Configuration Menu
Port   Bandwidth    Status
----  -----------  --------
  1       100     Disabled
  2       100     Disabled
  3       100     Disabled
  4       100     Disabled
  5       100     Disabled
  6       100     Disabled
  7       100     Disabled
  8       100     Disabled
  9       100     Disabled
 10       100     Disabled
 11       100     Disabled
 12       100     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. 4-7-41 Egress Rate Limiting Configuration

Screen Description

Port	Displays the port number.	
Bandwidth	Displays the bandwidth. A default for ports 1 to 12 is 100, and a default for ports 13 and 14 is 1000. The unit is 'Mbps'.	
Status:	Enables/disables egress rate limiting configuration.	
	Enabled	Egress rate limiting is enabled.
	Disabled	Egress rate limiting is disabled.

Available commands are listed below.

N	Display the next page.	
		Press "N" to change the display to the next page.
P	Display the previous page.	
		Press "P" to change the display to the previous page.
B	Set a bandwidth.	
		Press "B" to change the command prompt to "Enter port number e.g.: 1, 3, 5-12>." Enter a port number to designate. Then, the command prompt changes to "Enter bandwidth>." For ports 1 to 12, enter bandwidth from 1 to 100. For ports 13 and 14, enter from 1 to 1000.
S	Set the egress rate limit status.	

		Press "S" to change the command prompt to "Enter port number e.g.: 1, 3, 5-12>." Enter a port number to designate. Then, the command prompt changes to "Enable or Disable Status (E/D)>." Press "E" to enable bandwidth control configuration, and press "D" to disable it.
Q	Return to the previous menu.	

4.7.8. Storm Control Configuration Menu

On the Advanced Switch Configuration Menu, pressing "o" opens the Storm Control Configuration Menu, as shown in **Fig. 4-7-42**. You can configure the storm control of unknown unicast, broadcast, and multicast.

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> Storm Control Configuration Menu

Port Storm Control Setting:
 No.      DLF      Broadcast   Multicast   Threshold
----   ---------   ---------   ---------   ---------
  1     Disabled    Disabled    Disabled     0
  2     Disabled    Disabled    Disabled     0
  3     Disabled    Disabled    Disabled     0
  4     Disabled    Disabled    Disabled     0
  5     Disabled    Disabled    Disabled     0
  6     Disabled    Disabled    Disabled     0
  7     Disabled    Disabled    Disabled     0
  8     Disabled    Disabled    Disabled     0
  9     Disabled    Disabled    Disabled     0
 10     Disabled    Disabled    Disabled     0

------------------------------- <COMMAND> ----------------------------------
[N]ext Page           Set [B]roadcast Status   [Q]uit to previous menu
[P]revious Page       Set [M]ulticast Status
Set [D]LF Status      Set [T]hreshold Value

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

Fig. 4-7-42 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 per second.

Available commands are listed below.

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

4.7.9. 802.1x Access Control Configuration

On the Advanced Switch Configuration Menu screen, pressing "x" opens the 802.1X Access Control Configuration screen as shown in **Fig. 4-7-43**. On this screen, you can configure the IEEE 802.1X access control.

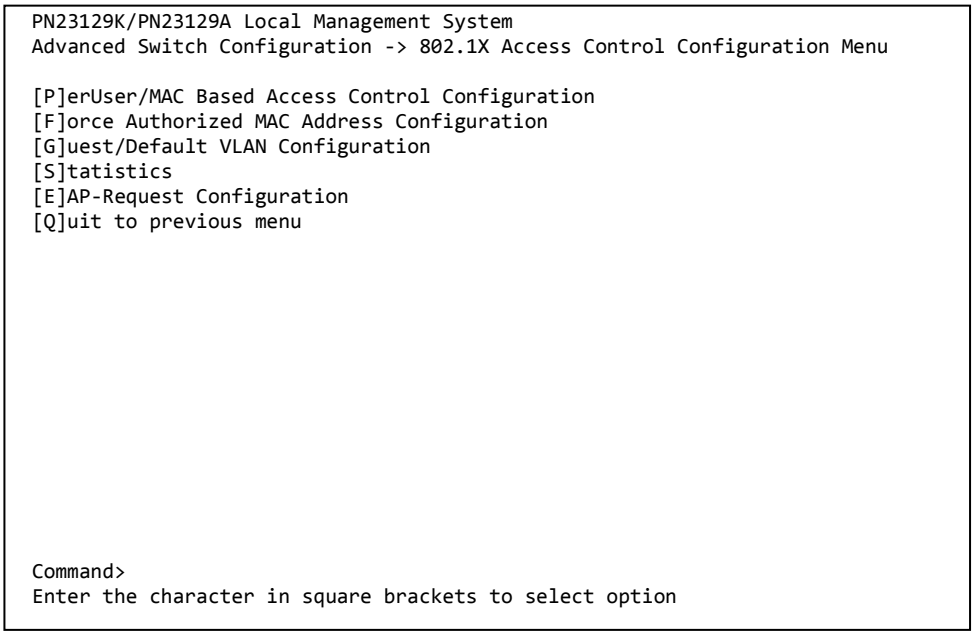


Fig. 4-7-43 IEEE 802.1X Access Control Configuration

Note: When IEEE802.1X port base authentication function and MAC base authentication function are activated, the MAC Learning Mode for a port cannot be disabled in the MAC Learning Menu.

4.7.9.a. IEEE 802.1X Port Based Access Control Configuration

On the 802.1X Access Control Configuration Menu screen, pressing "p" opens the Port Based Access control Configuration Menu as shown in **Fig. 4-7-44**. On this screen, you can configure the IEEE 802.1X port based access control.

The supported authentication methods are EAP-MD5, TLS, and PEAP.

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> Port Based Access Control Configuration Menu
NAS ID: Nas1            Port No: 1     Port Control : Force Authorized
Port Status : Authorized         Authorized MAC Address: --:--:--:--:--:--
Operational Control Direction   : Both
Administrative Control Direction: Both
Per Port Re-auth              : Disabled
Current PVID      : 1              Dynamic VLAN           : Disabled
Guest Access Mode  : Both
Transmit Period    : 30    seconds    Max Request            : 2
Supplicant Timeout : 30    seconds    Quiet Period           : 60    seconds
Serv Timeout       : 30    seconds    Re-auth Period         : 3600  seconds
Guest VLAN ID      : ----             Default VLAN ID        : ----
------------------------------ <COMMAND> ---------------------------------
[N]ext Page             [T]ransmission Period    R[e]-auth Period
Pre[v]ious Page         Q[u]iet Period          Re-[a]uth Status
[P]ort No               Ma[x]imum Request       Initiali[z]e
Port Auth [M]ode         Server Time[o]ut        [R]e-auth Initialize
Port [C]ontrol          Supp[l]icant Timeout     Delete Aut[h] MAC
Port Ctrl [D]irection    Gue[s]t Access Mode      Force Auth MAC T[i]meout
Num[b]er of Supplicant   [G]uest VLAN ID          [Q]uit to previous menu
De[f]ault VLAN ID       D[y]namic VLAN Status
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-44 IEEE 802.1X Port Based Access Control Configuration

Screen Description

NAS ID	Displays the access ID (NAS Identifier).	
Port No	Displays the port number.	
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 authentication server.
	Force Unauthorized	The access control function is disabled. All authentication requests from clients are ignored.
	Force Authorized	The access control function is disabled. The port is made accessible without authentication. (Factory default setting)
Port Status	Displays the authentication status. reflecting the Port Control setting shown below.	
	Unauthorized	Indicates that the ID is not authorized.
	Authorized	Indicates that the ID is authorized.

Authorized MAC Address	Displays the MAC address of successfully authenticated supplicant or a supplicant using Guest Access. If neither is used, this field displays "--:--:--:--:--:--."

Operational Control Direction	Displays the operation status of controlled direction by IEEE 802.1X function.	
	Both	Unless the client is authenticated, this Switching Hub does not send or receive packets from the port.
	In	Unless the client is authenticated, this Switching Hub does not receive packets from the port.
Administrative Control Direction	Displays the administrative status of controlled direction by IEEE 802.1X function.	
	Both	Unless the client is authenticated, this Switching Hub does not send or receive packets from the port.
	In	Unless the client is authenticated, this Switching Hub does not receive packets from the port.
Per Port Re-auth	Displays whether the periodic re-authentication is enabled or disabled.	
	Enabled	The periodic re-authentication is performed.
	Disabled	The periodic re-authentication is not performed. (Factory default setting)
Current PVID	Displays a current allocated PVID.	
Dynamic VLAN	Displays the dynamic VLAN operation status.	
	Disabled	The dynamic VLAN function is disabled.
	<VLAN ID>	The dynamic VLAN function is enabled, and displays the allocated VLAN ID.
Guest Access Mode	Displays the Guest Access application conditions.	
	Timeout	Guest Access is applied when a Supplicant Timeout occurs.
	Auth Fail	Guest Access is applied when authentication fails.
	Both	Guest Access is applied when either the Timeout or Auth Fail condition is matched.
Transmit Period	The number of seconds to wait before requesting the client to reattempt authentication. 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 times.	
Supplicant Timeout	Displays the timeout for the client. The factory default setting is 30 seconds.	
Quiet Period	The number of seconds to wait before reattempting a failed authentication The factory default setting is 60 seconds.	
Serv Timeout	Timeout for the authentication server The factory default setting is 30 seconds.	
Re-auth Period	Periodic re-authentication time interval The factory default setting is 3600 seconds.	
Guest VLAN ID	Displays the VLAN ID applied to Guest Access. When Guest Access is disabled, the field displays "----."	
Default VLAN ID	Displays the VLAN ID applied when the Port Control setting is changed from Auto to Force Authorized or Force Unauthorized. The default VLAN ID is also applied when VLAN information cannot be obtained from the authentication server although the dynamic VLAN is enabled and the authentication succeeded.	

Available commands are listed below.

F	Set Default VLAN ID.	
		Press "F." The command prompt changes to "Enter default VLAN ID>." Enter an integer between 1 and 4094. Enter 0 to disable the Default VLAN function.
T	Set the interval time to reattempt of authentication.	
		Press "T." The command prompt changes to "Enter Transmission Period>." Enter an integer between 1 and 65535 (seconds).
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.
O	Set timeout for the authentication server.	
		Press "O." The command prompt changes to "Enter Server Timeout>." Enter an integer between 1 and 65535 (seconds).
L	Set the timeout for the client	
		Press "L." The command prompt changes to "Enter Supplicant Timeout value>." Enter an integer between 1 and 65535 (seconds).
S	Set the Guest Access application conditions.	
		Press "S." The command prompt changes to "Select the guest access mode (T/B/A) >." Press "T" to select Supplicant Timeout, "A" to select Auth Fail, or "B" for both.
G	Specify a VLAN to be assigned when a terminal that failed authentication or that does not have a supplicant is connected.	
		Press "G." The command prompt changes to "Enter guest VLAN ID >." Enter an integer between 1 and 4094. Enter 0 to disable the Guest Access function.
Y	Enable/disable the dynamic VLAN function.	
		Press "Y." The command prompt changes to "Enable or Disable dynamic VLAN status? (E/D) >." Press "E" to enable the dynamic VLAN function. Press "D" to disable it.
E	Set the periodic 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 periodic re-authentication.	
		Press "A." The command prompt changes to "Enable or Disable re-authentication? (E/D)>." Press "E" to enable re-authentication. Press "D" to disable it.
Z	Initialize the authentication status.	
		Press "Z." 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-authenticator?(Y/N)>." To initialize it, press "Y." Otherwise, press "N."
H	Not available for Port Based mode	
I	Not available for Port Based mode	
Q	Return to the previous menu.	

Note: Our switches assign a VLAN ID in reference to the value of Attribute 81 (Tunnel Private Group Id) included in RADIUS packets from the RADIUS server.

4.7.9.b. MAC Based Access Control Configuration

On the 802.1x Port Base Access Control Configuration screen, pressing "M" changes the command prompt to "Select the Port based or MAC based auth mode (P/M) >." Pressing "M" opens the MAC Based Access Control Configuration Menu as shown in **Fig. 4-7-45**. On this screen, you can configure the MAC-based access control. The supported authentication methods are EAP-MD5, TLS, and PEAP.

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> MAC Based Access Control Configuration Menu
NAS ID: Nas1              Port No: 1     Number of Supplicant: 512
Operational Control Direction: Both   Administrative Control Direction: Both
Transmit Period: 30    sec  Max Request : 2      Supplicant Timeout: 30    sec
Quiet Period   : 60    sec  Serv Timeout: 30    sec  Re-auth Period: 3600  sec
Force Auth MAC Timeout: 3600  sec   Per Port Re-auth: Disabled
Supplicant MAC Addr  Type      MAC Control     Auth Status  Re-auth
------------------- ------- ------------------ ------------ --------




------------------------------- <COMMAND> ----------------------------------
[N]ext Page             [T]ransmission Period    R[e]-auth Period
Pre[v]ious Page         Q[u]iet Period           Re-[a]uth Status
[P]ort No               Ma[x]imum Request        Initiali[z]e
Port Auth [M]ode         Server Time[o]ut         [R]e-auth Initialize
Port [C]ontrol           Supp[l]icant Timeout     Delete Aut[h] MAC
Port Ctrl [D]irection    Gue[s]t Access Mode      Force Auth MAC T[i]meout
Num[b]er of Supplicant   [G]uest VLAN ID          [Q]uit to previous menu
De[f]ault VLAN ID       D[y]namic VLAN Status
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-45 MAC Based Access Control Configuration

Screen Description

NAS ID	Displays the access ID (NAS Identifier).	
Port No	Displays the port number.	
Number of Supplicant	Displays the number of supplicants that can be authenticated by the port. The factory default setting is 512.	
Operational Control Direction	Displays the operation status of controlled direction by IEEE 802.1X function.	
	Both	Unless the client is authenticated, this Switching Hub does not send or receive packets from the port.
	In	Unless the client is authenticated, this Switching Hub does not receive packets from the port.
Administrative Control Direction	Displays the administrative status of controlled direction by IEEE 802.1X function.	
	Both	Unless the client is authenticated, this Switching Hub does not send or receive packets from the port.
	In	Unless the client is authenticated, this Switching Hub does not receive packets from the port.

Transmit Period	The number of seconds to wait before requesting the RADIUS server to resend an authentication request 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 times.	
Supplicant Timeout	Displays the timeout for the client. The factory default setting is 30 seconds.	
Quiet Period	The number of seconds to wait before reattempting a failed authentication The factory default setting is 60 seconds.	
Serv Timeout	Timeout for the authentication server The factory default setting is 30 seconds.	
Re-auth Period	Periodic re-authentication time interval The factory default setting is 3600 seconds.	
Force Auth MAC Timeout	Displays the time between a break of communications with a terminal with a MAC address registered in Force Auth MAC Address and deletion.	
Per Port Re-auth	Displays whether the periodic re-authentication is enabled or disabled.	
	Enabled	The periodic re-authentication is performed.
	Disabled	The periodic re-authentication is not performed. (Factory default setting)
Supplicant MAC Addr	Displays the MAC address of a successfully authenticated supplicant. If a supplicant registered in Force Authorized MAC Address is communicating, this field displays its MAC address.	
Type	Displays the authentication type.	
	Dynamic	A supplicant that succeeded in the MAC based authentication.
	Static	A supplicant set by Force Authorized MAC Address Configuration.
MAC Control	Set the operation mode for authentication requests.	
	Auto	The access control function is enabled. The authentication process relay is performed between the client and authentication server.
	Force Unauthorized	The access control function is disabled. All authentication requests from clients are ignored.
	Force Authorized	The access control function is disabled. The port is made accessible without authentication. (Factory default setting)
Auth Status	Displays the authentication status.	
	Unauthorized	Indicates that the client is not authorized.
	Authorized	Indicates that the client is authorized.
Re-auth	Displays whether the periodic re-authentication is enabled or disabled.	
	Enabled	The periodic re-authentication is performed.
	Disabled	The periodic re-authentication is not performed. (Factory default setting)

Available commands are listed below.

N	Show the next page.	
		Press "N" to go to the next page.
V	Show the previous page.	
		Press "V" to go to the previous page.
B	Set the number of terminals that can be authenticated by the port.	
		Press "B." The command prompt changes to "Enter the number of supplicant >." Enter an integer between 1 and 512.
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 "D." The command prompt changes to "Select Administrative Control Direction, Both or IN? (B/I)>." Press "B" to disable packet sending and receiving by this Switching Hub. Press "I" to disable packet receiving by this Switching Hub.
Y	Not available for MAC Based mode	
D	Set the communication conditions in unauthorized status.	
		Press "D." The command prompt changes to "Select Administrative Control Direction, Both or IN? (B/I)>." Press "B" to make an authentication request for both packet sending and receiving by this Switching Hub. Press "I" to make an authentication request for only packet sending from this Switching Hub.
T	Set the time to wait before requesting for a reattempt of authentication.	
		Press "T." The command prompt changes to "Enter Transmission Period>." Enter an integer between 1 and 65535 (seconds).
L	Set the timeout for the client	
		Press "L." The command prompt changes to "Enter Supplicant Timeout value>." Enter an integer between 1 and 65535 (seconds).
O	Set timeout for the authentication server.	
		Press "O." The command prompt changes to "Enter Server Timeout>." 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.
U	Set the 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).
G	Not available for MAC Based mode	
E	Set the periodic 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 periodic re-authentication.	
		Press "A." The command prompt changes to "Select Per port or MAC address (P/M) >." Press "P" to configure the entire port. Press "M" to configure each MAC address individually. If you press "P," the command prompt changes to "Enable or Disable re-authentication ?(E/D) >." Press "E" to enable re-authentication. Press "D" to disable it. If you press "M," the command prompt changes to "Enter supplicant MAC address >." Enter the MAC address of the supplicant you wish to configure. Then, the command prompt changes to "Enable or Disable re-authentication?(E/D)>." Press "E" to enable re-authentication. Press "D" to disable it.

Z	Initialize the authentication status.	
		Press "Z." The command prompt changes to "Select the All MAC or MAC address (A/M) >." Press "A" to initialize all MAC addresses. Press "M" to initialize each MAC address individually. If you press "A," the command prompt changes to "Initialize all MAC (Y/N) >." To initialize it, press "Y." Otherwise, press "N." If you press "M," the command prompt changes to "Enter supplicant MAC address >." Enter the MAC address of the supplicant you wish to initialize. Then, the command prompt changes to "Initialize MAC **:**:**:**:**:** (Y/N) >." To initialize it, press "Y." Otherwise, press "N."
R	Initialize the re-authentication status.	
		Press "R." The command prompt changes to "Select the All MAC or MAC address (A/M) >." Press "A" to initialize all MAC addresses. Press "M" to initialize each MAC address individually. Press "A." The command prompt changes to "Would you want to initialize re-authenticator?(Y/N)>." To initialize it, press "Y." Otherwise, press "N." If you press "M," the command prompt changes to "Enter supplicant MAC address >." Enter the MAC address of the supplicant you wish to initialize. Then, the command prompt changes to "Would you want to initialize re-authenticator?(Y/N)>." To initialize it, press "Y." Otherwise, press "N."
M	Go to Port Based Access Control Configuration Menu	
		The command prompt changes to "Select the Port based or MAC based auth mode (P/M) >." Enter "P." The Port Based Access Control Configuration Menu screen appears.
S	Not available for MAC Based mode	
F	Not available for MAC Based mode	
Q	Return to the previous menu.	

4.7.9.c. Force Authorized MAC Configuration Menu

On the 802.1x Access Control Configuration screen, pressing "F" opens the Force Authorized MAC Configuration Menu as shown in **Fig. 4-7-46**. On this screen, you can configure MAC addresses of terminals to be authorized/unauthorized without IEEE 802.1X authentication.

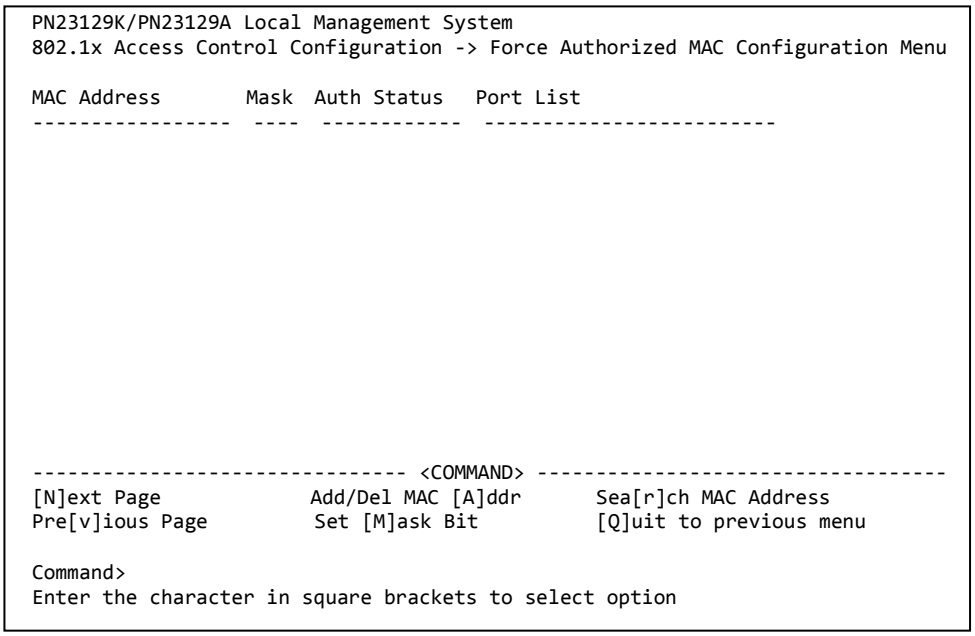


Fig. 4-7-46 Force Authorized MAC Configuration

Screen Description

MAC Address	Displays the MAC address of a client to be authorized/unauthorized for access without authentication.	
Mask	Displays the mask of the specified MAC address.	
Auth Status	Displays the status of the specified authentication.	
	Force Unauthorized	The access control function is disabled. All authentication requests from clients are ignored.
	Force Authorized	The access control function is disabled. The port is made accessible without authentication. (Factory default setting)
Port List	Displays the port to which the registered MAC address is applied.	

Available commands are listed below.

N	Show the next page.	
		Press "N" to go to the next page.
V	Show the previous page.	
		Press "V" to go to the previous page.
A	Add/delete a MAC address of a terminal to be authorized/unauthorized for access without authentication.	
		Press "A." The command prompt changes to "Add or Delete MAC address (A/D)>." Press "A" to register a terminal to be authorized/unauthorized for access without authentication. Press "D" to delete it. If you press "A" to register a terminal, the command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx) >." Enter the MAC address. Then, the command prompt changes to "Enter mask length>." Specify a mask. Then, the command prompt changes to "Select auth status (A/U) >." To authorize the terminal, press "A." Otherwise, press "U." Then, the command prompt changes to "Enter port number>." Specify the port to apply. If you press "D" to delete an address, the command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx) >." Enter the MAC address.
M	Change the mask of a registered MAC address.	
		Press "M." The command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx) >." Enter the MAC address you wish to change. Then, the command prompt changes to "Enter mask length>." Specify a mask.
R	Search for a registered MAC address.	
		Press "R." The command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx) >." Enter the MAC address you wish to search for.
Q	Return to the previous menu.	

4.7.9.d. Guest/Default VLAN Configuration Menu

On the 802.1x Access Control Configuration screen, pressing "G" opens the Guest/Default VLAN Configuration Menu as shown in **Fig. 4-7-47**. On this screen, you can configure Guest Access and the default VLAN. Guest Access is a function to assign a terminal that failed authentication or a terminal that caused supplicant timeout to a specific VLAN. The default VLAN is a VLAN assigned when the Port Control setting is changed from Auto to Force Authorized or Force Unauthorized.

```
PN23129K/PN23129A Local Management System
802.1x Access Control Configuration -> Guest/Default VLAN Configuration Menu

Port  Current PVID    Auth Status    Guest   Default
----  ------------    ------------   ------  -------
   1       1           Authorized    ----     ----
   2       1           Authorized    ----     ----
   3       1           Authorized    ----     ----
   4       1           Authorized    ----     ----
   5       1           Authorized    ----     ----
   6       1           Authorized    ----     ----
   7       1           Authorized    ----     ----
   8       1           Authorized    ----     ----
   9       1           Authorized    ----     ----
  10       1           Authorized    ----     ----
  11       1           Authorized    ----     ----
  12       1           Authorized    ----     ----
------------------------------ <COMMAND> ----------------------------------

[N]ext Page             Set [G]uest VLAN        [Q]uit to previous menu
[P]revious Page         Set [D]efault VLAN

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

Fig. 4-7-47 Guest/Default VLAN Configuration

Screen Description

Current PVID	Displays a PVID that is currently applied to the port.	
Auth Status	Displays the authentication status.	
	Unauthorized	Indicates that the client is not authorized.
	Authorized	Indicates that the ID is authorized.
Guest	Displays the VLAN ID applied to Guest Access. When Guest Access is disabled, the field displays "----."	
Default	Displays the VLAN ID applied when the Port Control setting is changed from Auto to Force Authorized or Force Unauthorized. The default VLAN ID is also applied when VLAN information cannot be obtained from the authentication server although the dynamic VLAN is enabled and the authentication succeeded.	

Available commands are listed below.

N	Show the next page.	
		Press "N" to go to the next page.
V	Show the previous page.	
		Press "V" to go to the previous page.
G	Specify a VLAN to be assigned when a terminal that failed authentication or that does not have a supplicant is connected.	
		Press "G." The command prompt changes to "Enter port number>." Enter the port you wish to configure. Then, the command prompt changes to "Enter guest VLAN ID >." Enter an integer between 1 and 4094. Enter 0 to disable the Guest Access function.
D	Set Default VLAN ID.	
		Press "D." The command prompt changes to "Enter port number>." Enter the port you wish to configure. Then, the command prompt changes to "Enter default VLAN ID >." Enter an integer between 1 and 4094. Enter 0 to disable the Default VLAN function.
Q	Return to the previous menu.	

4.7.9.e. IEEE 802.1X Statistics Menu

On the 802.1x Access Control Configuration screen, pressing "s" opens the Statistics Menu as shown in **Fig. 4-7-48**. On this screen, you can monitor the number of IEEE 802.1X packets as statistics information of the Switching Hub and thereby keep an eye on the network status. The monitoring of error packets also helps isolate problems.

```
PN23129K/PN23129A Local Management System
802.1x Access Control Configuration -> Statistics Menu
Port:  1   Refresh: 300 Sec.      Elapsed Time Since System Up: 000:00:00:00
<Counter Name>          <Total>
TxReqId                  0
TxReq                   0
TxTotal                  0
RxStart                  0
RxLogoff                 0
RxRespId                 0
RxResp                  0
RxInvalid                0
RxLenError               0
RxTotal                 0
RxVersion                0
LastRxSrcMac             00:00:00:00:00:00
-------------------------------- <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. 4-7-48 IEEE 802.1X Statistics Menu

Screen Description

Port	Displays the port number.
Refresh	Displays the refresh interval.
Elapsed Time Since System Up	Displays the time elapsed since the current counter values started to be accumulated. This is equal to the time elapsed since the boot/reboot.
Counter Name	Displays each counter name.
Total	Displays values accumulated in the counters.

Available commands are listed below.

S	Change the target port of the counter value display.	
		Press "S." The command prompt changes to "Select Port number>." Enter the port number you wish to display.
N	Show the values of the next port.	
		Press "N." The screen displays the counter values of the next port. After you reach Port 14, you cannot go back to Port 1 by pressing "N."
P	Show the values of the previous port.	
		Press "P." The screen displays the counter values of the previous port. This command is not available on the Port 1 screen.
R	Change the counter values with those accumulated after resetting the counters.	
		Press "R." The counter values are immediately changed with those accumulated after resetting the counters. The time display field on the upper right corner of the screen changes to Elapsed Time Since System Reset.
F	Set the counter refresh mode.	
		Press "F." The comment line displays "1 for start to refresh, 2 for set refresh rate." Enter 1 to cancel refresh. The refresh interval field displays "STOP," and the display is not refreshed. Enter 2 to change the refresh interval. The command prompt changes to "Input refresh time>." Enter an integer between 5 and 600 (seconds).
Q	Return to the previous menu.	

On this screen, you can display two types of counter values: Values accumulated after booting this Switching Hub or rebooting it by power-off/resetting (**Fig. 4-7-48**), and values accumulated after resetting the counters using a command (**Fig. 4-7-49**). The values accumulated after booting the Switching Hub are retained even after you reset the counter values using a command.

```
PN23129K/PN23129A Local Management System
802.1x Access Control Configuration -> Statistics Menu
Port:  1   Refresh: 300 Sec.   Elapsed Time Since System Reset: 000:00:00:00
<Counter Name>          <Total>
TxReqId                  0
TxReq                   0
TxTotal                  0
RxStart                  0
RxLogoff                 0
RxRespId                 0
RxResp                  0
RxInvalid                0
RxLenError               0
RxTotal                  0
RxVersion                0
LastRxSrcMac             00:00:00:00:00:00
------------------------------- <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. 4-7-49 Display of values accumulated after resetting the counters

Screen Description

Port	Displays the port number.
Refresh	Displays the refresh interval.
Elapsed Time Since Reset	Displays the time elapsed since resetting of the counters.
Counter Name	Displays each counter name.
Total	Displays values accumulated in the counters.

Available commands are listed below.

S	Change the target port of the counter value display.	
		Press "S." The command prompt changes to "Select Port number>." Enter the port number you wish to display.
N	Show the values of the next port.	
		Press "N." The screen displays the counter values of the next port. After you reach Port 14, you cannot go back to Port 1 by pressing "N."
P	Show the values of the previous port.	
		Press "P." The screen displays the counter values of the previous port. This command is not available on the Port 1 screen.
U	Change the counter values with those accumulated since the boot.	
		Press "U." The counter values accumulated after resetting the counters are immediately changed with those accumulated after the system boot.
R	Change the counter values with those accumulated after resetting the counters.	
		Press "R." All counter values are immediately reset to 0 and displayed.
F	Set the counter refresh mode.	
		Press "F." The comment line displays "1 for start to refresh, 2 for set refresh rate." Enter 1 to cancel refresh. The refresh interval field displays "STOP," and the display is not refreshed. Enter 2 to change the refresh interval. The command prompt changes to "Input refresh time>." Enter an integer between 5 and 600 (seconds).
Q	Return to the previous menu.	

The counters are described below.

TxReqId	The number of EAP Request Identify frames sent by this Switching Hub
TxReq	The number of EAP Request frames sent by this Switching Hub
TxTotal	The total number of all types of EAP frames sent by this Switching Hub
RxStart	The number of EAPOL Start frames received from supplicants
RxLogoff	The number of EAPOL Logoff frames received from supplicants
RxRespId	The number of EAP Response Identify frames received from supplicants
RxResp	The number of EAP Response frames received from supplicants
RxInvalid	The number of EAPOL frames received from supplicants whose frame type cannot be recognized
RxLenError	The number of EAPOL frames received from supplicants whose packet body length field is invalid
RxTotal	The total number of valid EAP frames received from supplicants
RxVersion	The number of EAP frames received in IEEE 802.1X version 1 format from supplicants
LastRxSrcMac	The MAC address of the sender of the last EAPOL frame received by this Switching Hub

4.7.9.f. EAP-Request Configuration Menu

On the 802.1x Access Control Configuration screen, pressing "E" opens the EAP-Request Configuration Menu as shown in **Fig. 4-7-50**. On this screen, you can configure EAP Request sending in MAC-based access control mode.

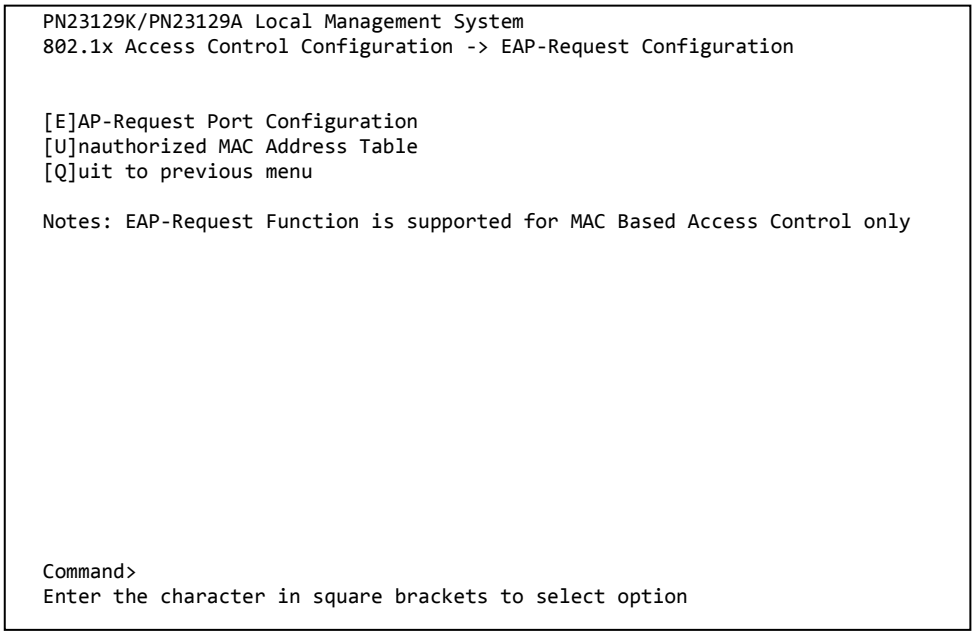


Fig. 4-7-50 EAP-Request Configuration

Note: Enable this function if you use Windows XP/2000 or other supplicant that does not send EAPOL Start frames.

4.7.9.f.1. EAP-Request Port Configuration Menu

On the EAP-Request Configuration screen, pressing "E" opens the EAP-Request Port Configuration Menu as shown in **Fig. 4-7-51**. On this screen, you can configure EAP Request sending for each port in MAC-based access control mode.

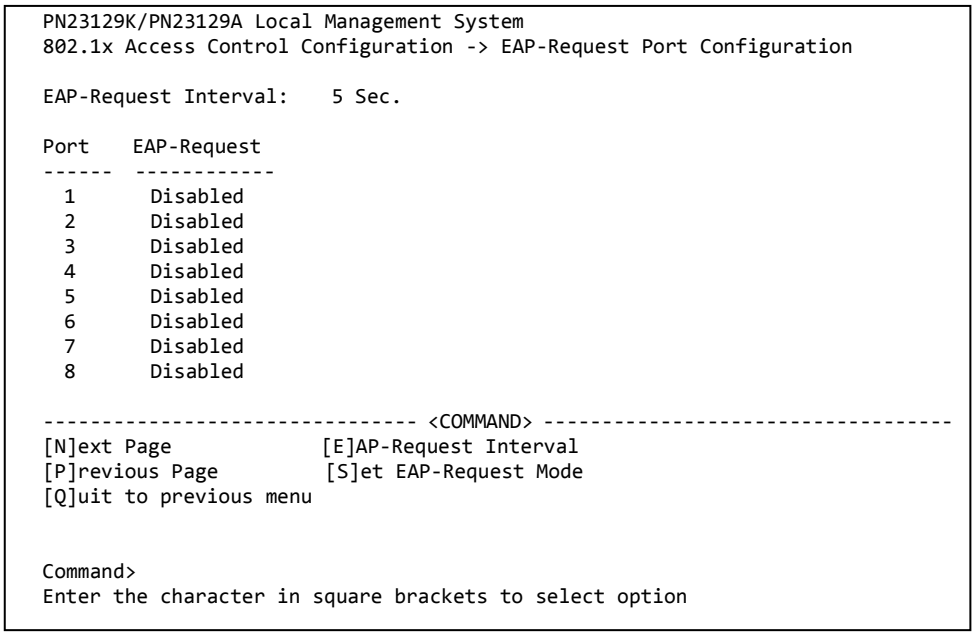


Fig. 4-7-51 EAP-Request Port Configuration

Screen Description

EAP-Request Interval	Displays the EAP-Request sending interval.	
Port	Displays the port number.	
EAP-Request	Displays the EAP Request sending status.	
	Enabled	EAP Request is periodically sent.
	Disabled	EAP Request is not sent. (Factory default setting)

Available commands are listed below.

N	Show the next page.	
	Press "N" to go to the next page.	
P	Show the previous page.	
	Press "P" to go to the previous page.	
E	Set the EAP Request sending interval.	
	Press "E." The command prompt changes to "Enter new interval>." Enter a value within the range specified in the black band at the bottom of the screen.	
S	Change the EAP request mode.	

		Press "S." The command prompt changes to "Enter port number>." Enter the port number for which you wish to change the setting. Then, the command prompt changes to "Enable or Disable EAP-Request ?(E/D) >." Press "E" to enable EAP-Request. Press "D" to disable it.
Q	Return to the previous menu.	

4.7.9.f.2. Unauthorized MAC Address Table Menu

On the EAP-Request Configuration screen, pressing "U" opens the Unauthorized MAC Address Table Menu as shown in **Fig. 4-7-52**. This screen displays terminals that are unauthorized in MAC-based access control mode.
(If you enable EAP Request sending in the manner described in 4.7.9.f.1, then the EAP Request is sent to the unauthorized MAC addresses shown on this screen.)

```
PN23129K/PN23129A Local Management System
802.1x Access Control Configuration -> Unauthorized MAC Address Table

Age-Out Time:   300 Sec.    Display by:     Selected Port:

MAC Address        Port
-----------------   ----









-------------------------------- <COMMAND> ----------------------------------
[N]ext Page                              Display MAC Address by [M]AC
Pre[v]ious Page                          Display MAC Address by [P]ort
Set Age-Out [T]ime                       Add/Del Unauth MAC [A]ddress
[Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-52 Unauthorized MAC Address Table

Screen Description

Age-Out Time	Displays the time of saving unauthorized MAC addresses. It is equal to the time after receiving the last packet. The factory default setting is 300 seconds (5 minutes).
Display by	Displays the display method.
Select Port	Displays the selected port number.
MAC Address	Displays unauthorized MAC addresses.
Port	Displays ports to which the MAC addresses belong.

Available commands are listed below.

N	Show the next page.
	Press "N." The screen displays the next port.
V	Show the previous page.
	Press "V." The screen displays the previous port.
T	Set the time of saving unauthorized MAC addresses.
	Press "T." The command prompt changes to "Enter new age-out time>." Set the time in seconds between 0 and 65535. Setting the value to 0 disables the timeout.
M	Show all unauthorized MAC addresses.
	Press "M" to show all unauthorized MAC addresses.
P	Show unauthorized MAC addresses of each port.
	Press "P." The command prompt changes to "Enter port number>." Enter the port number you wish to display.
A	Add/delete unauthorized MAC addresses.
	Press "A." The command prompt changes to "Add or Delete MAC address (A/D) >." Enter either. The command prompt changes to "Enter MAC Address(xx:xx:xx:xx:xx:xx) >." Enter the MAC address. The command prompt changes to "Enter port number>." Enter the port number.
Q	Return to the previous menu.

4.7.10. IGMP Snooping Configuration

On the Advanced Switch Configuration Menu, pressing "I" opens the IGMP Snooping Configuration Menu as shown in **Fig. 4-7-53**. 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 group is not created.

```
PN23129K/PN23129A Local Management System
Advanced Switch Configuration -> IGMP Snooping Configuration Menu

IGMP Snooping Status     : Disabled
Multicast Filtering Status: Disabled      IGMP Snooping Querier    : Disabled
Host Port Age-Out Time    : 260  sec      Router Port Age-Out Time : 125 sec
Report Forward Interval   : 5  sec
VLAN ID  Group MAC Address  Group Members
-------  -----------------  --------------------------------------------------









-------------------------------- <COMMAND> ----------------------------------
[N]ext Page              Set [H]ost Port Aged Time   Show [V]LAN Filter Table
[P]revious Page          Set [R]outer Port Aged Time Show Router Port [T]able
Set I[G]MP Snooping Status Set Report [I]nterval      Set Static [M]ember Port
Set M[u]lticast Filtering  Set [L]eave Mode          [Q]uit to previous menu
Set Querier [C]onfiguration
Command>
Enter the character in square brackets to select option
```

Fig. 4-7-53 IGMP Snooping Configuration

Screen Description

IGMP Snooping Status	Displays whether IGMP Snooping is enabled or disabled.	
	Enabled	IGMP Snooping is enabled.
	Disabled	IGMP Snooping is disabled.
Multicast Filtering Status	Displays whether the multicast filtering function is enabled or disabled.	
	Enabled	The multicast filtering function is enabled.
	Disabled	The multicast filtering function is disabled.
IGMP Snooping Querier	Displays whether IGMP Snooping Querier is enabled or disabled.	
	Enabled	IGMP Snooping Querier is enabled.
	Disabled	IGMP Snooping Querier is disabled.
Host Port Age-Out Time	Displays the time between leaving a multicast group and automatically opening the host port. The factory default setting is 260 seconds.	
Router Port Age-Out Timer	Displays the time before 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	Show the next page.
	Press "N." The screen displays the next page.
P	Show the previous page.
	Press "P." The screen displays the previous page.
G	Enable IGMP Snooping.
	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	Enable multicast filtering.
	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.
C	Set IGMP snooping Querier.
	Press "C." The Set Querier Configuration Menu opens. (Refer to 4.7.10.d.)
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	Set the operation after receiving a Leave packet.
	Press "L." The Set Leave Mode Menu opens. (Refer to 4.7.10.a.)
V	Set a VLAN to be filtered.
	Press "V." The Show IGMP Snooping VLAN Filter Table Menu opens. (Refer to 4.7.10.b.)
T	Show router ports.
	Press "T." The Show Router Port Table Menu opens. (Refer to 4.7.10.c.)
M	Statically set a router port.
	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. Then, enter the target VLAN ID, multicast MAC address, and port number.
Q	Return to the previous menu.

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

4.7.10.a. Set Leave Mode Menu

On the IGMP Snooping Configuration Menu, pressing "L" opens the Set Leave Mode Menu as shown in **Fig. 4-7-54**. On this screen, you can set the operation after receiving a Leave packet.

```
PN23129K/PN23129A Local Management System
IGMP Snooping Configuration -> Set Leave Mode Menu

Leave Delay Time : 5 sec

 Port      Mode
------  ------------
   1       Normal
   2       Normal
   3       Normal
   4       Normal
   5       Normal
   6       Normal
   7       Normal
   8       Normal
   9       Normal
  10       Normal
-------------------------------- <COMMAND> ----------------------------------
[N]ext Page              [P]revious Page           [Q]uit to previous menu
[S]et Leave Mode          Set Leave Delay [T]ime


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

Fig. 4-7-54 Set Leave Mode Menu

Screen Description

Leave Delay Time	Displays the waiting time after receiving a Leave packet.
Port	Displays the port number.
Mode	Displays the operation after receiving a Leave packet.

Available commands are listed below.

N	Show the next page.	
		Press "N." The screen displays the next page.
P	Show the previous page.	
		Press "P." The screen displays the previous page.
S	Set the operation after receiving a Leave packet.	
		Press "S." The command prompt changes to "Select port number to be changed>." Enter the port number you wish to configure. 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. (Factory default setting is 5 seconds.)

Q	Return to the previous menu.

4.7.10.b. VLAN Filter Configuration

On the IGMP Snooping Configuration Menu, pressing "V" opens the Show IGMP Snooping VLAN Filter Table Menu as shown in **Fig. 4-7-55**. On this screen, you can configure VLANs to be filtered out from the target of IGMP Snooping.

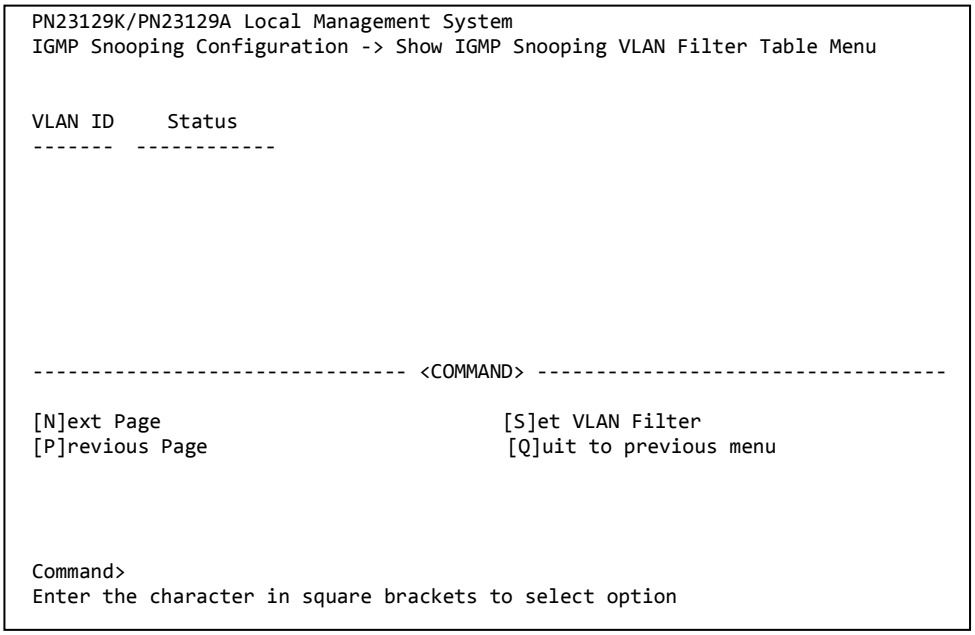


Fig. 4-7-55 VLAN Filter Configuration

Screen Description

VLAN ID	Displays VLAN ID.
Status	Displays the filter status.

Available commands are listed below.

N	Show the next page.
	Press "N." The screen displays the next page.
P	Show the previous page.
	Press "P." The screen displays the previous page.
S	Set a VLAN to be filtered.
	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 previous menu.

4.7.10.c. Router Port Table Configuration

On the IGMP Snooping Configuration Menu, pressing "T" opens the Show Router Port Table Menu as shown in **Fig. 4-7-56**.

```
PN23129K/PN23129A 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. 4-7-56 Router Port Table view

Screen Description

VLAN ID	Displays VLAN ID.
Port List	Displays the port list.

Available commands are listed below.

N	Show the next page.	
		Press "N." The screen displays the next page.
P	Show the previous page.	
		Press "P." The screen displays the previous page.
S	Statically set a router port.	
		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. After the entry, the command prompt changes to "Enter port number>." Enter the port number between 1 and 14.
L	Dynamically specify a router port.	
		Press "L." The command prompt changes to "Set dynamic learning method (P/I/B)>." Press "P" for PIM/DVMRP dynamic learning. Press "I" for IGMP Query. Press "B" for both.
Q	Return to the previous menu.	

4.7.10.d. Set Querier Configuration Menu

On the IGMP Snooping Configuration Menu, pressing "C" opens the Set Querier Configuration Menu as shown in **Fig. 4-7-57**.

```
PN23129K/PN23129A Local Management System
IGMP Snooping Configuration -> Set Querier Configuration Menu

Querier Status     : Disabled    Current Role: Querier

IGMP Version       : Version 2
Query Interval     : 60
Max Response Time  : 10
Querier Timeout    : 120
TCN Query Count    : 2           TCN Query Pending Count    : 2
TCN Query Interval : 10




-------------------------------- <COMMAND> ----------------------------------
Set Qu[e]rier Status      Set IGMP [V]ersion         Set Query [I]nterval
Set [M]ax Response Time   Set Querier [T]imeout      Set TCN Query [C]ount
Set TCN Query I[n]terval  [Q]uit to previous menu


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

Fig. 4-7-57 IGMP Snooping Querier Configuration

Screen Description

Querier Status	Displays whether IGMP Snooping Querier is enabled or disabled.	
Current Role	Displays the IGMP Snooping Querier status.	
	Querier	This Switching Hub is serving as Querier.
	None	Since there is another device that sends queries, this Switching Hub has stopped sending queries.
IGMP Version	Displays the version of IGMP queries to be sent.	
Querier Interval	Displays the query sending interval.	
Max Response Time	Displays the time to wait for a response to a query.	
Querier Timeout	Displays the time before determining that there is no longer another Querier.	
TCN Query Count	Displays the number of queries sent when an STP topology change is made.	
TCN Query Pending Count	Displays the number of pending queries to be sent when an STP topology change is made.	
TCN Query Interval	Displays the interval of sending queries when an STP topology change is made.	

Available commands are listed below.

E	Configure the IGMP Snooping Querier function.	
		If you press "E," the command prompt changes to "Enable or Disable querier status (E/D)>." Press "E" to enable the function. Press "D" to disable it.
V	Set the version of IGMP queries to be sent.	
		If you press "V," the command prompt changes to "Enter IGMP version (1/2)>." Press "1" to use Version 1. Press "2" to use Version 2.
I	Set the IGMP query sending interval.	
		Press "I." The command prompt changes to "Enter query interval >." Enter a value between 1 and 18000 (seconds).
M	Set the IGMP query response waiting time.	
		Press "M." The command prompt changes to "Enter max response time >." Enter a value between 1 and 25 (seconds).
T	Set the time before determining that there is no longer another Querier.	
		Press "T." The command prompt changes to "Enter querier timeout >." Enter a value between 60 and 600 (seconds).
C	Set the number of queries sent when an STP topology change is made.	
		Press "C." The command prompt changes to "Enter TCN query count >." Enter a value between 1 and 10 (the number of times).
N	Set the interval of sending queries when an STP topology change is made.	
		Press "N." The command prompt changes to "Enter TCN query interval >." Enter a value between 1 and 10 (seconds).
Q	Return to the previous menu.	

4.7.11. Power Over Ethernet Configuration

On the Advanced Switch Configuration Menu, pressing "P" opens the Power Over Ethernet Configuration Menu as shown in **Fig. 4-7-58**. You can configure IEEE 802.3af power supply.

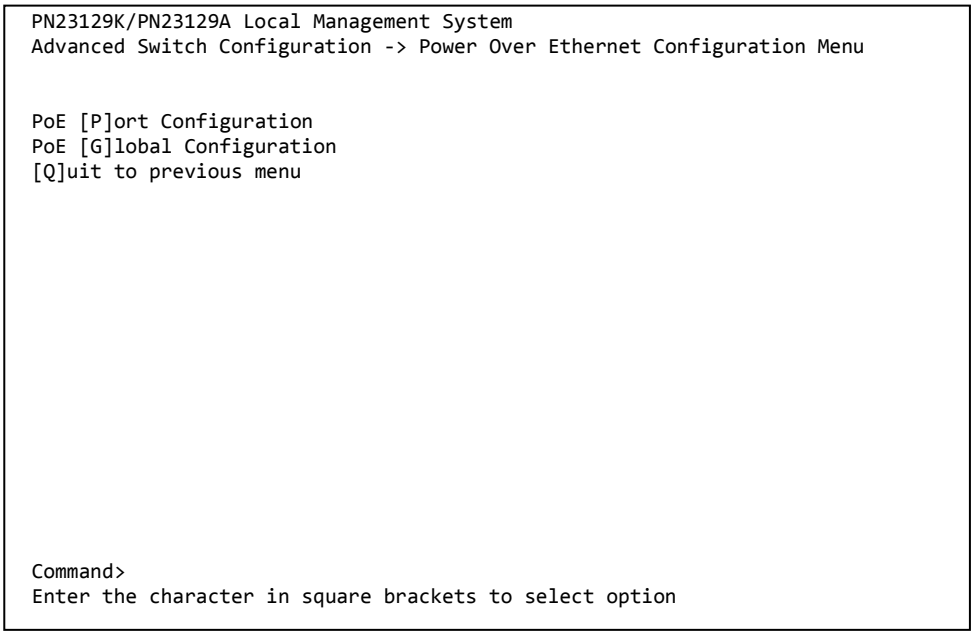


Fig. 4-7-58 PoE configuration

Available commands are listed below.

P	Configure PoE for each port.
	Press "P." The PoE Port Configuration Menu opens. Refer to 4.7.11.a.
G	Configure PoE for the entire Switching Hub.
	Press "G." The PoE Global Configuration Menu opens. Refer to 4.7.11.b.
Q	Return to the previous menu.

Note: This Switching Hub can supply a maximum of 175 W in total to IEEE 802.3af power devices. It can supply a maximum of 15.4 W to each port in accordance with the IEEE 802.3af standard. However, ensure that the total power required by terminals connected to ports 1 through 12 will not exceed 175 W. If this limit is exceeded, the Status field displays "Overload" as shown in 4.7.11.a, which means that power supply is impossible.

4.7.11.a. PoE Port Configuration Menu

On the Power Over Ethernet Configuration Menu, pressing "P" opens the PoE Port Configuration Menu as shown in **Fig. 4-7-59**. On this screen, you can configure the power supply for each port.

```
PN23129K/PN23129A Local Management System
Power Over Ethernet Configuration -> PoE Port Configuration Menu

No. Admin  Status       Class Prio.  Limit(mW)  Pow.(mW)   Vol.(V)   Cur.(mA)
--- ----- -------------- ----- ------ --------- --------- --------- ----------
 1   Up   Not Powered       0  Low       15400         0         0          0
 2   Up   Not Powered       0  Low       15400         0         0          0
 3   Up   Not Powered       0  Low       15400         0         0          0
 4   Up   Not Powered       0  Low       15400         0         0          0
 5   Up   Not Powered       0  Low       15400         0         0          0
 6   Up   Not Powered       0  Low       15400         0         0          0
 7   Up   Not Powered       0  Low       15400         0         0          0
 8   Up   Not Powered       0  Low       15400         0         0          0
 9   Up   Not Powered       0  Low       15400         0         0          0
10   Up   Not Powered       0  Low       15400         0         0          0
11   Up   Not Powered       0  Low       15400         0         0          0
12   Up   Not Powered       0  Low       15400         0         0          0

-------------------------------- <COMMAND> ----------------------------------
Set PoE Port Admin [S]tatus          Set PoE Port Power [L]imit
[Q]uit to previous menu              Set PoE Port Pr[i]ority

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

Fig. 4-7-59 PoE Port Configuration Menu

Screen Description

Admin:	Displays whether or not power supply is possible.	
	Up	Displays that power supply is possible.
	Down	Displays that power supply is not possible.
Status:	Show the power supply status.	
	Powered	Displays that power is supplied.
	Not Powered	Displays that power is not supplied.
	Overload	Displays that power exceeding the limit is supplied.
Class	Displays the class selected by the classification function.	
Prio.	Displays the power supply priority.	
	Crit.	Displays that top priority is given.
	High	Displays that priority second to Crit. is given.
	Low	Displays that the lowest priority is given.
Limit	Displays the upper limit of power supply amount. (in units of 200 mW)	
Pow.	Displays the amount of power supply. (in units of 100 mW)	
Vol.	Displays the voltage.	
Cur.	Displays the current.	

Available commands are listed below.

S	Set whether the power supply is enabled or disabled.	
		Press "S." The command prompt changes to "Select port number to be changed>." Enter the port number for which you wish to change the setting. Press "0" to change the settings of all ports at a time. 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). When you complete the setting change, the display on the screen is automatically updated.
I	Set the power supply priority.	
		Press "I." The command prompt changes to "Select port number to be changed>." Enter the port number for which you wish to change the setting. Press "0" to change the settings of all ports at a time. Then, the command prompt changes to "Enter the selection >." Press "1" for "Critical." Press "2" for "High." Press "3" for "Low." When you complete the setting change, the display on the screen is automatically updated.
L	Set the upper limit of supplied power.	
		Press "L." The command prompt changes to "Select port number to be changed>." Enter the port number for which you wish to change the setting. Press "0" to change the settings of all ports at a time. Then, the command prompt changes to "Enter the power limit>." Enter the limit between 3000 and 15400 mW (in units of 200 mW). When you complete the setting change, the display on the screen is automatically updated.
Q	Return to the previous menu.	

4.7.11.b. PoE Global Configuration

On the Power Over Ethernet Configuration Menu, pressing "G" opens the PoE Global Configuration Menu as shown in **Fig. 4-7-60**. On this screen, you can configure PoE for the entire Switching Hub.

```
PN23129K/PN23129A Local Management System
Power Over Ethernet Configuration -> PoE Global Configuration Menu

Power Budget :                          170W
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. 4-7-60 PoE Global Configuration

Screen Description

Power budget:	Displays the maximum amount of power this Switching Hub can supply.
Power Consumption:	Displays the amount of power supplied by this Switching Hub.
Power usage threshold for sending trap	Displays the power supply threshold for sending a trap.
Power Management Method	Displays the power supply management method. The factory default setting is "Deny next port connection."

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 for sending a trap. When you complete the setting change, the display on the screen is automatically updated.
M	Set the power supply management method.	

		Press "M." The command prompt changes to "Enter the power management method>." Enter the management method. Press "0" to supply power to a newly connected terminal by shutting down power supply from a low-priority port. Press "1" to disable power supply to any newly connected terminals regardless of the priority setting. When you complete the setting change, the display on the screen is automatically updated.
Q	Return to the previous menu.	

4.7.12. Ring Redundant Protocol Configuration

On the Advanced Switch Configuration Menu screen, pressing "R" opens the Ring Redundant Protocol Configuration screen as shown in **Fig. 4-7-61**. On this screen, you can configure the Ring Redundant Protocol (RRP).

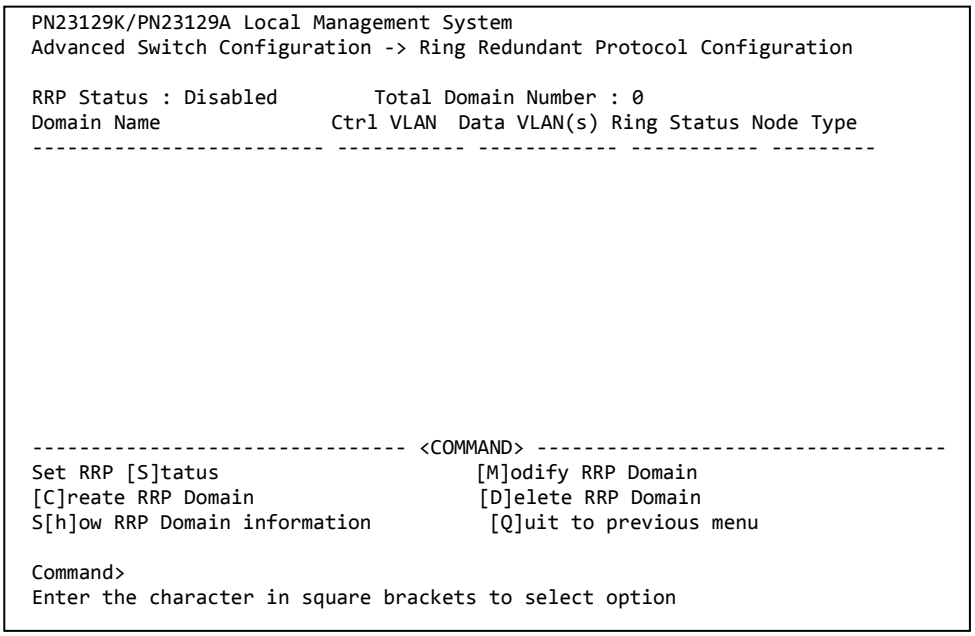


Fig. 4-7-61 Ring Redundant Protocol Configuration Menu

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 eight 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	Displays that the Ring Redundant Protocol function is disabled.
	Complete	Displays that a ring topology has been correctly established. This status is displayed for the master nodes only.
	Failed	Displays that a ring topology has not been established. This status is displayed for the master nodes only.
	Link-Up	Displays that a ring topology has been correctly established. This status is displayed for the transit nodes only.
	Link-Down	Displays that a ring topology has not been established. This status is displayed for the transit nodes only.
	Pre-Forwarding	Displays that a ring topology is being established. This status is displayed for the transit nodes only.
Node Type	Displays the node role.	
	Master	Displays that the Switching Hub controls the ring operation. Each domain has only one master node.
	Transit	Displays 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 RRP Domain Creation Menu opens. For details, refer to the next section (**4.7.12.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 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 RRP Domain Modification Menu opens. For details, refer to the next section (**4.7.12.b**).
H	Show 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 RRP Domain information Menu opens. For details, refer to the next section (**4.7.12.c**).
Q	Return to the previous menu.

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

4.7.12.a. RRP Domain Creation Menu

On the Ring Redundant Protocol Configuration screen, pressing "C" opens the RRP Domain Creation Menu as shown in **Fig. 4-7-62**. On this screen, you can create and configure a new RRP domain.

```
PN23129K/PN23129A Local Management System
RRP Management -> RRP Domain Creation Menu

RRP Domain Name  :                          RRP Node Type :
Primary Port     :
Secondary Port   :
Polling Interval : 1                         Fail Period : 2
Control VLAN     :
Data VLAN        :


------------------------------- <COMMAND> ----------------------------------
Set RRP Domain [N]ame                 Set Node [T]ype
Set [P]rimary Port                   Set [S]econdary Port
Set P[o]lling Interval                Set [F]ail Period
Set [C]ontrol VLAN                   Set [D]ata VLAN
[A]pply                             [Q]uit to previous menu




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

Fig. 4-7-62 RRP Domain Creation Menu

Screen Description

RRP Domain Name	Displays the domain name.	
RRP Node Type	Displays the node role.	
	Master	Displays that the Switching Hub controls the ring operation. Each domain has only one master node.
	Transit	Displays 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 a 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 (1-10) 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 (1-10) 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 (2-4094) 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.	
		Press "D." The command prompt changes to "Enter Data VLAN ID >." Enter the VLAN ID (1-4094) 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 previous 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.

4.7.12.b. RRP Domain Modification Menu

On the Ring Redundant Protocol Configuration screen, pressing "M" opens the RRP Domain Modification Menu as shown in **Fig. 4-7-63**. On this screen, you can modify RRP domain settings.

```
PN23129K/PN23129A Local Management System
RRP Management -> RRP Domain Modification Menu

RRP Domain Name  : ring                    RRP Node Type : Transit
Primary Port     : 13
Secondary Port   : 14
Polling Interval : 1                       Fail Period : 2
Control VLAN     : 100
Data VLAN        : 1


------------------------------- <COMMAND> ---------------------------------
Set RRP Domain [N]ame                Set Node [T]ype
Set [P]rimary Port                   Set [S]econdary Port
Set P[o]lling Interval               Set [F]ail Period
Set [C]ontrol VLAN                   Set [D]ata VLAN
[A]pply                             [Q]uit to previous menu




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

Fig. 4-7-63 RRP Domain Modification Menu

Screen Description

RRP Domain Name	Displays the domain name.	
RRP Node Type	Displays the node role.	
	Master	Displays that the Switching Hub controls the ring operation. Each domain has only one master node.
	Transit	Displays 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 a 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 (1-10) 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 (1-10) 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 (2-4094) 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.	
		Press "D." The command prompt changes to "Enter Data VLAN ID >." Enter the VLAN ID (1-4094) 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 previous 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.

4.7.12.c. RRP Domain information Menu

On the Ring Redundant Protocol Configuration screen, pressing "H" opens the RRP Domain information Menu as shown in **Fig. 4-7-64**. On this screen, you can check RRP domain information.

```
PN23129K/PN23129A Local Management System
RRP Management -> RRP Domain information Menu

RRP Domain Name      : ring
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         : 100
Data VLAN           : 1



Press any key to continue...
```

Fig. 4-7-64 RRP Domain information Menu

Screen Description

RRP Domain Name	Displays the domain name.	
Node Type	Displays the node role.	
	Master	Displays that the Switching Hub controls the ring operation. Each domain has only one master node.
	Transit	Displays that the Switching Hub is not a master node.
Ring Status	Displays the ring status.	
	IDLE	Displays that the Ring Redundant Protocol function is disabled.
	Complete	Displays that a ring topology has been correctly established. This status is displayed for the master nodes only.
	Failed	Displays that a ring topology has not been established. This status is displayed for the master nodes only.
	Link-Up	Displays that a ring topology has been correctly established. This status is displayed for the transit nodes only.
	Link-Down	Displays that a ring topology has not been established. This status is displayed for the transit nodes only.
	Pre-Forwarding	Displays that a 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	Displays that the domain is invalid.
	Fowarding	Displays normal communication status.
	Down	Displays that the port does not link up.
	Blocking	Displays that 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
Secondory Port	Displays the secondary port.	
Secondory Port Status	Displays the secondary port status.	
	Unknown	Displays that the domain is invalid.
	Fowarding	Displays normal communication status.
	Down	Displays that the port does not link up.
	Blocking	Displays that no frames other than control frames are not received.
Secondory 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.	

4.8. Statistics

On the Main Menu, pressing "S" opens the Statistics Menu as shown in **Fig. 4-8-1**. 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

```
PN23129K/PN23129A Local Management System
Main Menu -> Statistics Menu
 Port:  1   Refresh: 300 Sec.      Elapsed Time Since System Up: 000:00:00:00
 <Counter Name>          <Total>                 <Avg./s>
 Total RX Bytes          0                       0
 Total RX Pkts           0                       0
 Good Broadcast          0                       0
 Good Multicast          0                       0
 CRC/Align Errors        0                       0
 Undersize Pkts          0                       0
 Oversize Pkts           0                       0
 Fragments               0                       0
 Jabbers                 0                       0
 Collisions              0                       0
 64-Byte Pkts            0                       0
 65-127 Pkts             0                       0
 128-255 Pkts            0                       0
 256-511 Pkts            0                       0
 512-1023 Pkts           0                       0
 Over 1024 Pkts          0                       0
 -------------------------------- <COMMAND> ----------------------------------
 [N]ext  [P]revious  [S]elect Port  Re[f]resh Mode  Since [R]eset  [Q]uit
 Command>
 Enter the character in square brackets to select option
```

status. The monitoring of error packets also helps isolate problems.

Fig. 4-8-1 Statistics: Values accumulated after reboot

Screen Description

Port	Displays the port number.
Refresh	Displays the refresh interval.
Elapsed Time Since System Up	Displays the time elapsed since the current counter values started to be accumulated. This is equal to the time elapsed since the boot/reboot.
Counter Name	Displays each counter name.
Total	Displays values accumulated in the counters.
Avg./s	Displays the average per second of each value.

Available commands are listed below.

S	Change the target port of the counter value display.	
		Press "S." The command prompt changes to "Select Port number>." Enter the port number you wish to display.
N	Show the values of the next port.	
		Press "N." The screen displays the counter values of the next port. After you reach Port 14, you cannot go back to Port 1 by pressing "N."
P	Show the values of the previous port.	
		Press "P." The screen displays the counter values of the previous port. This command is not available on the Port 1 screen.
r	Change the counter values with those accumulated after resetting the counters.	
		Press "r." The counter values are immediately changed with those accumulated after resetting the counters. The time display field on the upper right corner of the screen changes to Elapsed Time Since System Reset.
f	Set the counter refresh mode.	
		Press "f." The comment line displays "1 for start to refresh, 2 for set refresh rate." Enter 1 to cancel refresh. The Refresh parameter displays "STOP," and the display is not refreshed. Enter 2 to change the refresh interval. The command prompt changes to "Input refresh time>." Enter the refresh interval. The Refresh parameter is displayed accordingly.
Q	Return to the previous menu.	

On this screen, you can display two types of counter values: Values accumulated after booting this Switching Hub or rebooting it by power-off/ resetting (**Fig. 4-8-1**), and values accumulated after resetting the counters using a command (**Fig. 4-8-2**). The values accumulated after booting the Switching Hub are retained even after you reset the counter values using a command. The counter value is automatically updated in about 10 seconds.

```
PN23129K/PN23129A 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 Mode  Since [R]eset  [Q]uit
 Command>
 Enter the character in square brackets to select option
```

Fig. 4-8-2 Display of values accumulated after resetting the counters

Screen Description

Port	Displays the port number.
Refresh	Displays the refresh interval.
Elapsed Time Since Reset	Displays the time elapsed since resetting of the counters.
Counter Name	Displays each counter name.
Total	Displays values accumulated in the counters.
Avg./s	Displays the average per second of each value.

Available commands are listed below.

S	Change the target port of the counter value display.	
		Press "S." The command prompt changes to "Select Port number>." Enter the port number you wish to display.
N	Show the values of the next port.	
		Press "N." The screen displays the counter values of the next port. After you reach Port 14, you cannot go back to Port 1 by pressing "N."
P	Show the values of the previous port.	
		Press "P." The screen displays the counter values of the previous port. This command is not available on the Port 1 screen.
u	Change the counter values with those accumulated since the boot.	
		Press "u." The counter values accumulated after resetting the counters are immediately changed with those accumulated after the system boot.
r	Change the counter values with those accumulated after resetting the counters.	
		Press "r." All counter values are immediately reset to 0 and displayed.
f	Set the counter refresh mode.	
		Press "f." The comment line displays "1 for start to refresh, 2 for set refresh rate." Enter 1 to cancel refresh. The Refresh parameter displays "STOP," and the display is not refreshed. Enter 2 to change the refresh interval. The command prompt changes to "Input refresh time>." Enter the refresh interval. The Refresh parameter is displayed accordingly.
Q	Return to the previous menu.	

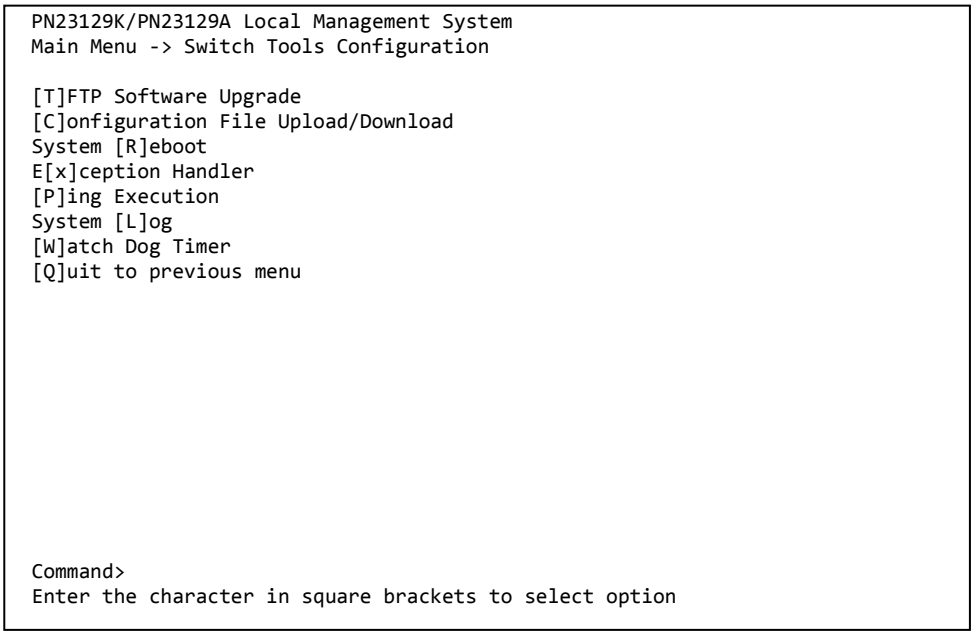
The counters are described below.

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	<When the Jumbo status is disabled> Displays the number of packets having a packet length greater than 1518 bytes. <When the Jumbo status is enabled> Displays the number of packets having a packet length greater 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 less 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 having a packet length of 64 bytes.
65-127 Pkts	Displays the total number of packets having a packet length of 65 to 127 bytes.
128-255 Pkts	Displays the total number of packets having a packet length of 128 to 255 bytes.
256-511 Pkts	Displays the total number of packets having a packet length of 256 to 511 bytes.
512-1023 Pkts	Displays the total number of packets having a packet length of 512 to 1023 bytes.
Over 1024 Pkts	Displays the total number of packets having a packet length of 1024 bytes or greater. * This field is displayed when the Jumbo status is disabled.
1024-1518 Pkts	Displays the total number of packets having a packet length of 1024 to 1518 bytes. * This field is displayed when the Jumbo status is enabled.

Note: By factory default, this screen is set to refresh about every 10 seconds. Therefore, both the console and Telnet timeouts do not occur.

4.9. Switch Tools Configuration

On the Main Menu, pressing "T" opens the Switch Tools Configuration screen as shown in **Fig. 4-9-1**. 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.

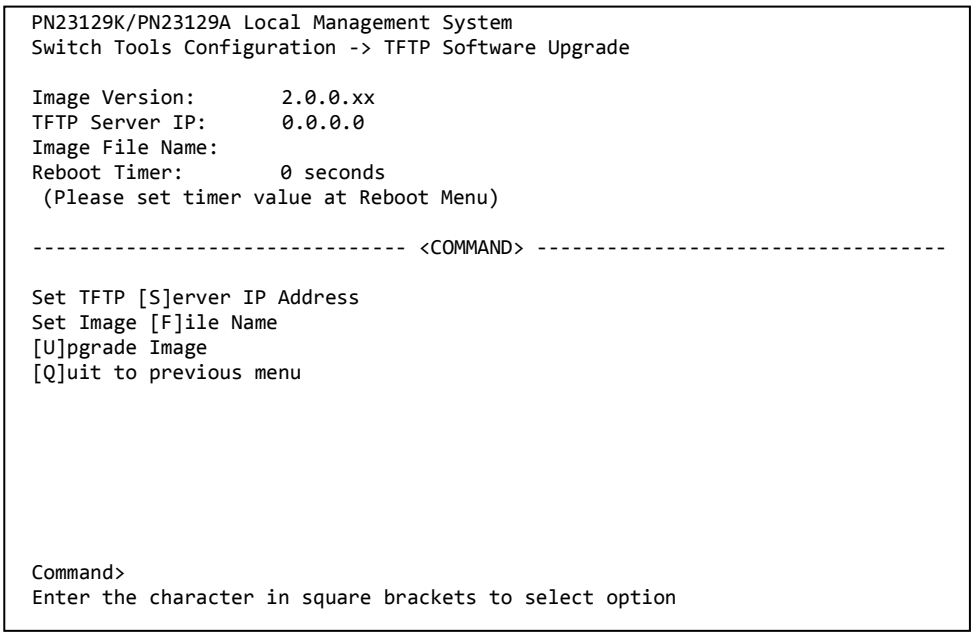
Fig. 4-9-1 Switch Tools Configuration

Screen Description

TFTP Software Upgrade	Configure and execute firmware upgrade of this Switching Hub.
Configuration File Upload/Download	Configure and execute upload/download of the configuration of this Switching Hub.
System Reboot	Configure and execute reboot of this Switching Hub.
Ping Execution	Execute ping from this Switching Hub.
System Log	View the system log of this Switching Hub.
Watch Dog Timer	Configure the Watch Dog function.
Quit to previous menu	Quit the Switch Tools Configuration Menu and return to the Main menu.

4.9.1. TFTP Software Upgrade

On the Switch Tools Configuration Menu, pressing "T" opens the TFTP Software Upgrade screen as shown in **Fig. 4-9-2**. On this screen, you can



execute and configure firmware upgrades.

Fig. 4-9-2 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 rebooting after downloading the firmware. You can set the time in the 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 of the downloaded program in 30 characters or less.
U	Start the upgrade.	
		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 upgrade. If you find any incorrect setting, press "N" to reset the settings.

Q	Return to the previous menu.

When the download starts, the screen shown in **Fig. 4-9-3** opens, and you can check the download status. After the download completes, the system automatically reboots, and the login screen opens.

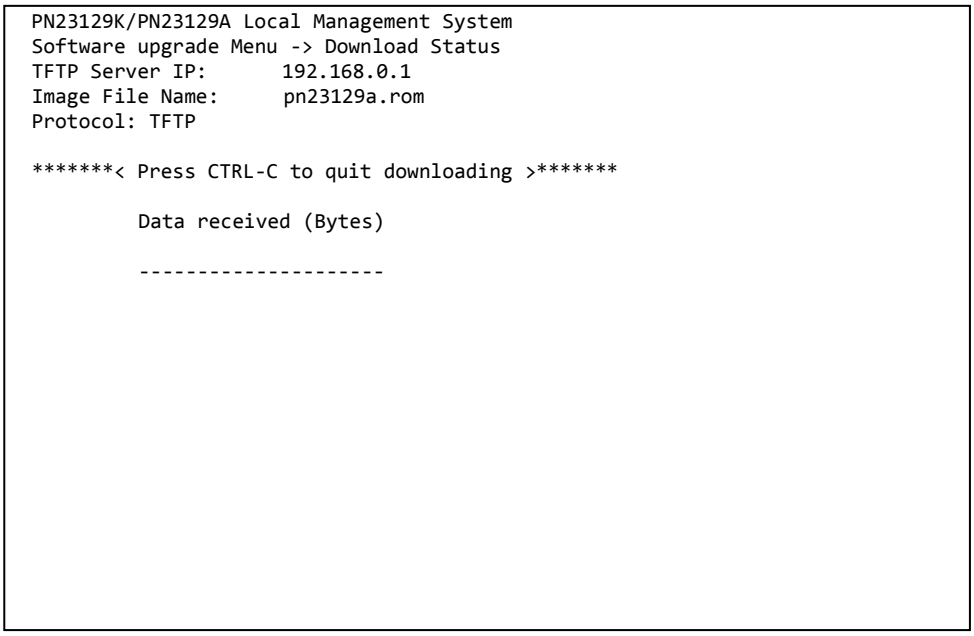


Fig. 4-9-3 Download in process

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.

4.9.2. Configuration File Upload/Download

On the Switch Tools Configuration Menu, pressing "C" opens the Configuration File Upload/Download Menu as shown in **Fig. 4-9-4**. On this screen, you can execute and configure upload/download of the configuration file of this Switching Hub to/from a PC.

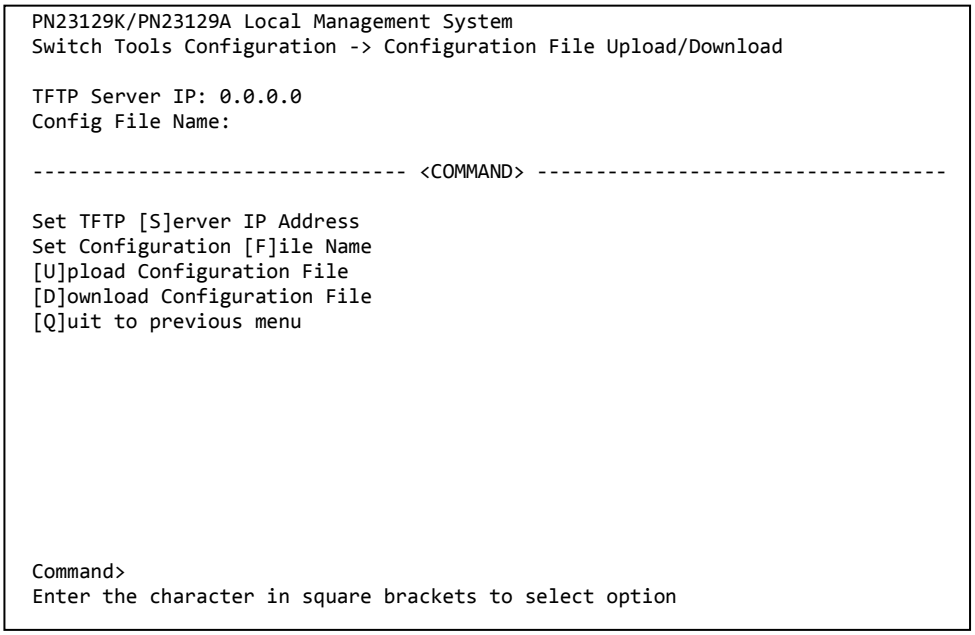


Fig. 4-9-4 Configuration File Upload/Download

Screen Description

TFTP Server IP:	Displays the IP address of the TFTP server that executes upload/download 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 the configuration file.	
		Press "S." The command prompt changes to "Enter IP address of TFTP server>." Enter the IP address of the TFTP server.
F	Set the name of the configuration file to be uploaded/downloaded.	
		Press "F." The command prompt changes to "Enter file name>." Specify the file name of the downloaded program in 30 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 find any incorrect setting, press "N" to reset the settings.
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 download. If you find any incorrect setting, press "N" to reset the settings.
Q	Return to the previous menu.	

4.9.3. System Reboot

On the Switch Tools Configuration Menu, pressing "R" opens the System Reboot Menu as shown in **Fig. 4-9-5**. On this screen, you can reboot this Switching Hub.

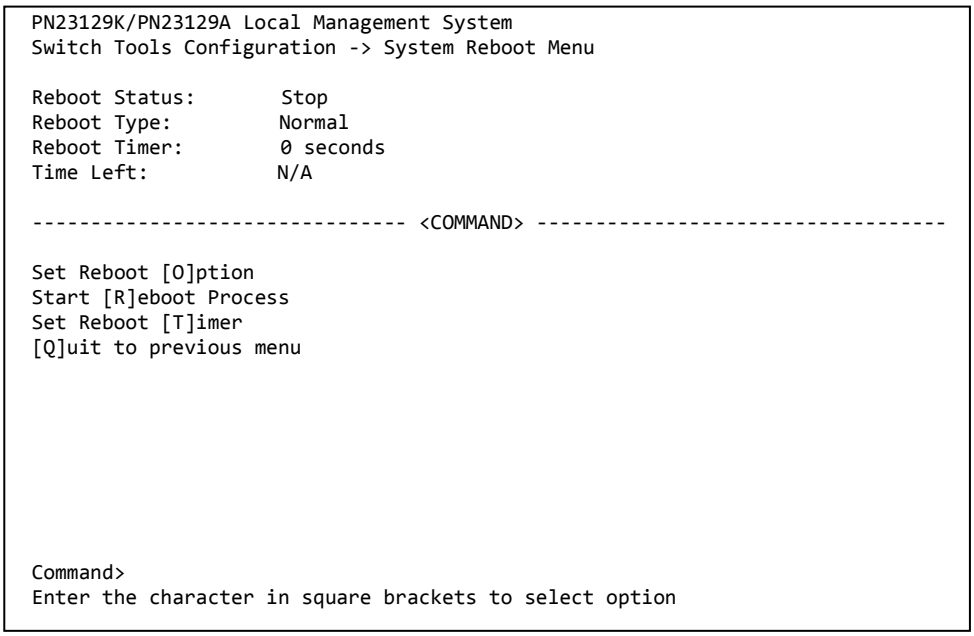


Fig. 4-9-5 System Reboot

Screen Description

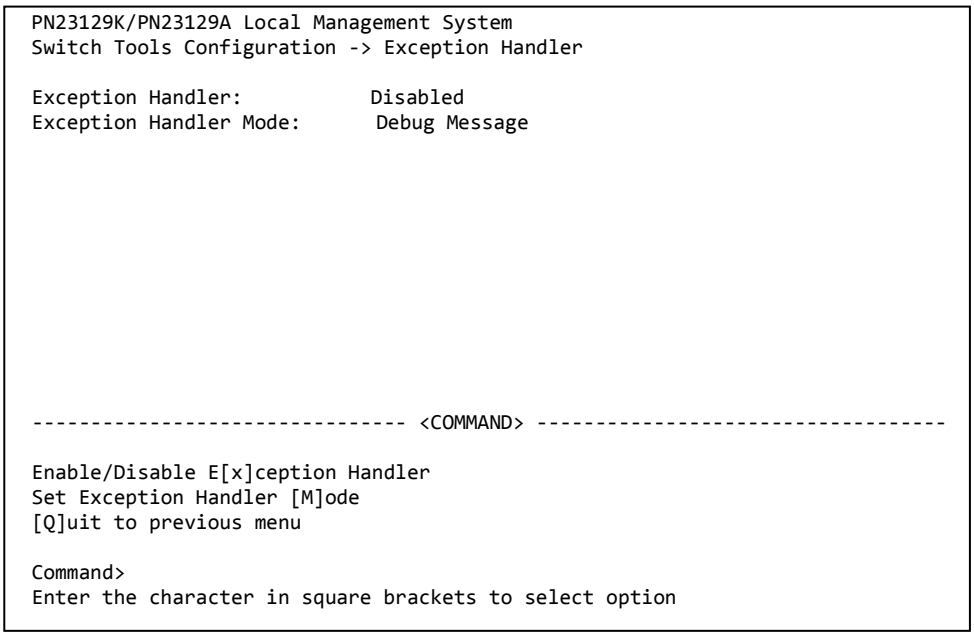
Reboot Status	Displays whether or not the reboot command is executed.	
	Stop	Displays that the reboot command is not executed.
Reboot Type	Displays the reboot type. The factory default setting is "Normal."	
	Normal	Normal reboot is executed.
	Factory Default	All settings are reset to factory default.
	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 seconds.	
Time Left	Displays the time left before the system actually reboots 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 one 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 reboots.	
		Press "T" to change the command prompt to "Enter Reboot Timer>." Enter a value between 0 and 86400 seconds (24 hours).
Q	Return to the previous menu.	

4.9.4. Exception Handler

On the Switch Tools Configuration Menu, pressing "x" opens the Exception Handler screen as shown in **Fig. 4-9-6**. On this screen, you can configure the



exception handling operations.

Fig. 4-9-6 Exception Handler configuration screen

Screen Description

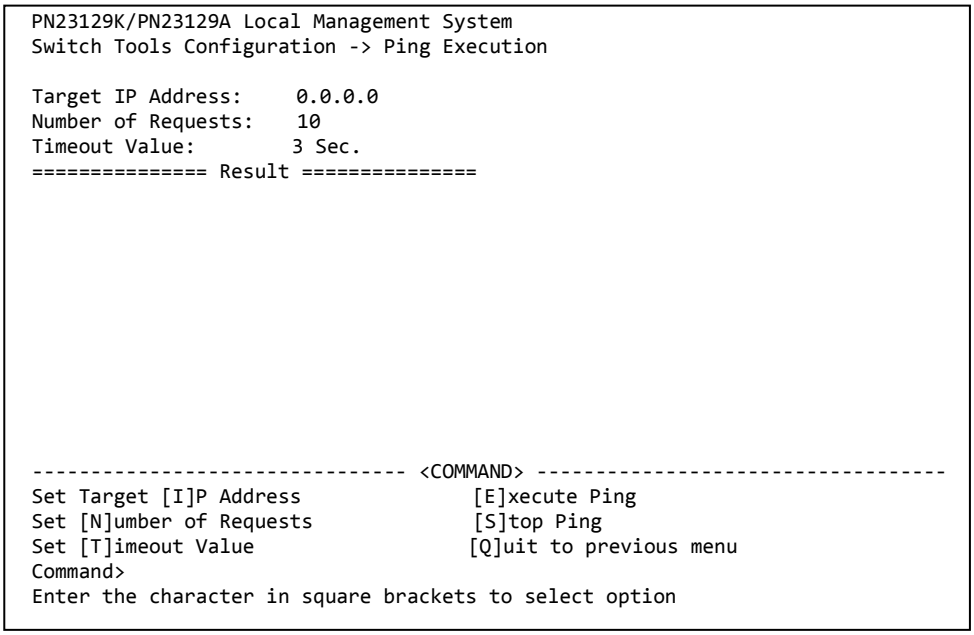
Exception Handler	Displays the exception handling function status.
Exception Handler Mode	Displays the exception handling method.

Available commands are listed below.

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

4.9.5. Ping Execution

On the Switch Tools Configuration Menu, pressing "P" opens the Ping Execution screen as shown in **Fig. 4-9-7**. On this screen, you can execute the ping command from the Switching Hub to confirm communications with



connected terminals and other devices.

Fig. 4-9-7 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 previous menu.	

```
PN23129K/PN23129A Local Management System
Switch Tools Configuration -> Ping Execution

Target IP Address:     192.168.0.1
Number of Requests:    10
Timeout Value:         3 Sec.
=============== Result ===============
     No. 1                    0.30 ms
     No. 2                    0.30 ms
     No. 3                    0.30 ms
     No. 4                    0.30 ms
     No. 5                    0.30 ms
     Waiting for response…




-------------------------------- <COMMAND> ----------------------------------
Set Target [I]P Address               [E]xecute Ping
Set [N]umber of Requests              [S]top Ping
Set [T]imeout Value                  [Q]uit to previous menu
Command>
Enter the character in square brackets to select option
```

Fig. 4-9-8 Display during ping execution

4.9.6. System Log

On the Switch Tools Configuration Menu, pressing "L" opens the System Log Menu as shown in **Fig. 4-9-9**. 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.

```
PN23129K/PN23129A Local Management System
Switch Tools Configuration -> System Log Menu

Entry  Time(YYYY/MM/DD HH:MM:SS)                    Event
-----  -------------------------   ------------------------------------------




--------------------------------- <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. 4-9-9 System Log

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

Note: A maximum of 1024 events are recorded. The event is deleted from an old event.

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.	
	System Cold Start	Indicates that this Switching Hub started.
	Login from console	Indicates a login from the console port.
	Login from telnet, xxx.xxx.xxx.xxx	Indicates a login via Telnet.
	Configuration changed	Indicates that the configuration was changed.
	Runtime code changes	Indicates that the firmware was changed.
	Configuration file upload	Indicates that the configuration file was transferred to the TFTP server.
	Configuration file download	Indicates that the configuration file was transferred from the TFTP server.
	(Bridge)Topology Change	Displays that the spanning tree topology was changed.
	Reboot: Normal	Indicates that this Switching Hub rebooted.
	Reboot: Factory Default	Indicates that this Switching Hub rebooted to return settings to factory default.
	Reboot: Factory Default Except IP	Indicates that this Switching Hub rebooted to return settings except the IP address to factory default.
	Not authorized! (IP: xxx.xxx.xxx.xxx)	Indicates that an unauthorized manager accessed by SNMP.
	SNTP first update to yyyy/mm/dd hh:mm:ss	Indicates that time data was obtained by accessing the SNTP server.
	Found other multicast router. Stopped querier function.	Indicates that the function was stopped because another IGMP querier exists.
	Other multicast router is expired. Restarted querier function.	Indicates that the function was restarted because another IGMP querier no longer exists.
	FAN status changed from good to failed.	Indicates that a fan problem occurred.
	Temperature over threshold.	Indicates that the internal temperature exceeded the threshold.
	Temperature under threshold.	Indicates that the internal temperature decreased below the threshold.
	! Stus: xxxxxxxx IP: x Code: x Add: xxxxxxxx ! Tsk: "xxxx" P:xxxxxxxxx Pri: xx	Indicates the system information when an exception was raised.
	Port-*xx* Link-up	Indicates that the port was linked up.
	Port-*xx* Link-down	Indicates that the port was linked down.
	Port-*xx* Power ON notification	Indicates that the power supply to the target port is turned on.
	Port-*xx* Power OFF notification	Indicates that the power supply to the target port is turned off.

	(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.

Available commands are listed below.

N	Show the next page.	
		Press "N." The screen displays the next page.
P	Show the previous page.	
		Press "P." The screen displays the previous page.
C	Clear all logs.	
		Press "C" to clear all logs.
S	Show 10 logs in front of specified entry log number.	
		Press "S." The command prompt changes to " Select entry log number>." Enter the entry log number you wish to display.
I	Configure for individual record of a system log.	
		Press "I." The Enable/Disable Individual System Log Menu opens. Refer to 4.9.6.a.
Q	Return to the previous menu.	

4.7.6.a. Enable/Disable Individual System Log Menu

On the System Log Menu, pressing "I" opens the Enable/Disable Individual System Log Menu, as shown in **Fig. 4-9-10**. On this screen, you can set configuration for individual record of a system log.

```
PN23129K/PN23129A 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. 4-9-10 Enable/Disable Eindividual System Log

Screen Description

Link UP/DOWN	Displays the setting of recording Link UP/Down event in System Log.	
	Enabled	The Link UP/Down event is recorded. (Factory default setting)
	Disabled	The Link UP/Down event is not recorded.
PoE ON/OFF	Displays the setting of recording PoE ON/OFF event in System Log.	
	Enabled	The PoE ON/OFF event is recorded. (Factory default setting)
	Disabled	The PoE ON/OFF event is not recorded.

Available commands are listed below.

L	Enable/disable the setting of recording Link UP/Down event.	
		Press "L." The command prompt changes to " Enable or Disable Link UP/DOWN Log (E/D)>." Press "E" to enable the setting of recording Link UP/Down, and press "D" to disable it.
O	Enable/disable the setting of recording PoE ON/OFF event.	
		Press "L." The command prompt changes to " Enable or Disable PoE ON/OFF Log (E/D)>." Press "E" to enable the setting of recording PoE ON/OFF, and press "D" to disable it.
Q	Return to the previous menu.	

4.9.7. Watch Dog Timer Menu

On the Switch Tools Configuration Menu, pressing "W" opens the Watch Dog Timer Menu as shown in **Fig. 4-9-11**. On this screen, you can enable/disable the Watch Dog function.

```
PN23129K/PN23129A Local Management System
Switch Tools Configuration -> Watch Dog Timer Menu

Watch Dog Timer:           Disabled









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

Set [W]atch Dog Timer
[Q]uit to previous menu

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

Fig. 4-9-11 Watch Dog Timer Menu

Screen Description

Watch Dog Timer	Displays the Watch Dog function status.

Available commands are listed below.

W	Switch enabled/disabled of the QoS function.	
		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 previous menu.	

4.10. Save Configuration to Flash

On the Main Menu, pressing "F" opens the Save Configuration to Flash screen as shown in **Fig. 4-10-1**. Execute this command to save the Switching Hub configuration to built-in memory. On this screen, the command prompt displays "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.

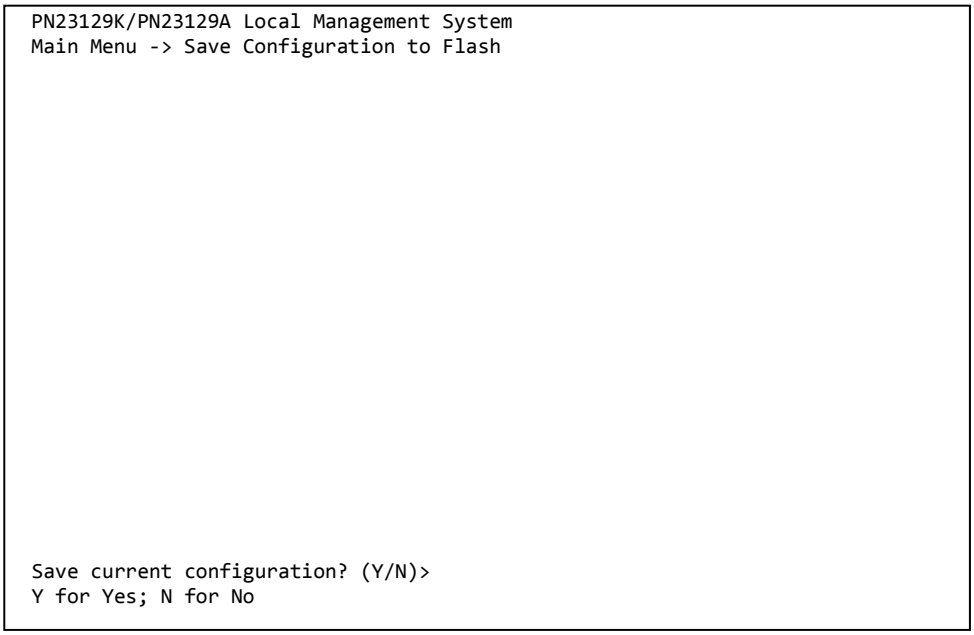


Fig. 4-10-1 Save Configuration to Flash screen: Confirm whether to save or not

4.11. Command Line Interface (CLI)

On the Main Menu, pressing "C" opens the screen as shown in **Fig. 4-11-1**.
On this screen, you can use the command line for configuration instead of the menu. Refer to the separate volume, "Command Line Interface Manual" for configuration procedures. Enter "logout" at the command prompt to return to the Menu from CLI.

Fig. 4-11-1 Command Line Interface (CLI)

4.12. Logout

On the Main Menu, if you access from the console port, pressing "Q" opens the login screen as shown in **Fig. 4-2-1**. If you access using Telnet, then pressing "Q" terminates the connection.

Follow the login procedures shown in section 4.2 to log in again.

You are automatically logged out after the time set in the timeout field shown in section 4.6.6 System Security Configuration has elapsed.

Appendix A. Specifications

○ Interface

– Twisted-pair ports Ports 1 - 12 (RJ45 connector)

✧ Transmission system IEEE 802.3 10BASE-T
IEEE 802.3u 100BASE-TX

– Twisted-pair ports Ports 13 - 14 (RJ45 connector)

✧ Transmission system IEEE 802.3 10BASE-T
IEEE 802.3u 100BASE-TX
IEEE 802.3ab 1000BASE-T

– SFP extension slots Ports 13 and 14
(Select either of RJ45 or SFP for use)

✧ Transmission system IEEE 802.3z 1000BASE-SX/1000BASE-LX

– Console port x 1 (RJ45 connector)

✧ Compliant with RS-232C (ITU-TS V.24)

○ Switching hub system

– Store and forward

– Forwarding rate 10BASE-T: 14,880 pps
100BASE-TX: 148,800 pps
1000BASE-T/SFP: 1,488,000 pps

– MAC address table 16 K entries/unit

– Buffer memory 1 M bytes/unit

– Flow control IEEE 802.3x (full duplex)
Back pressure (half duplex)

○ Major functions

- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree Protocol
- IEEE 802.1s Multiple Spanning Tree Protocol
- IEEE 802.1Q Tag VLAN (256 VLANs max.)
- IEEE 802.1ad Link aggregation
  (Capable of establishing up to eight ports in 7 groups)
- IEEE 802.1p QoS function
  (Eight levels of Priority Queue supported)
- IEEE 802.1X Port-based authentication
  (EAP-MD5/TLS/PEAP supported)
- IEEE 802.3x Flow control
- IEEE 802.3af PoE power supply
  Maximum power supply: 15.4 W per port, 170 W in total
  (Supply method: Alternative B; using idle line, 4, 5, 7, and 8)

○ Agent specifications

- SNMP v2c (RFC1157)
- TELNET (RFC854)
- TFTP (RFC783)
- BOOTP (RFC951)
- SNTP (RFC1769)

○ Supported MIB

- MIB II (RFC1213)
- Bridge-MIB (RFC1493)
- SNMPv2-MIB (RFC1907)
- IF-MIB (RFC2233)
- Radius-Authentication-Client-MIB (RFC 2618)
- P-Bridge-MIB (RFC 2674)
- Q-Bridge-MIB (RFC 2674)
- RMON-MIB (RFC2819) Groups 1, 2, 3, and 9
- Power-Ethernet-MIB (RFC 3621)
- RSTP-MIB (IEEE 802.1w)

- IEEE8021-PAE-MIB (IEEE802.1X)
- IEEE8023-LAG-MIB (IEEE 802.3ad)

○ Power supply specifications

- Power supply: AC 100-240 V, 50/60 Hz, 3.5 A
- Power consumption: Normally, Max. 231 W (24 W when not supplying power),
  Min. 18 W

○ Environment specifications

- Operating temperature: 0 - 40°C (with total power supply of 170 W or less)
  0 - 45°C (with total power supply of 140 W or less)
  0 - 50°C (with total power supply of 110 W or less)
  (Caution)
  Failure to meet the above conditions may result in fire, electric shock, breakdown, and/or malfunction.
  Please take notice because such cases are out of guarantee.
- Operating humidity: 20 - 80% RH (no condensation)
- Storage temperature: -20 - +70°C
- Storage humidity: 10 - 90% RH (no condensation)

○ External specifications

- Dimensions (Depth): 44 mm (Height) x 330 mm (Width) x 230 mm
  (Excluding protruding sections)
- Mass (Weight): 2,900 g

Appendix B. Procedures for Console Port Configuration using Windows HyperTerminal

Connect a Windows-based PC to this Switching Hub with a console cable and follow the procedures shown below to activate HyperTerminal.

(If your PC is using Windows Vista or later, you need to install a terminal emulator first.)

(1) On Windows, click Start on Task Bar > All Programs > Accessories > Communications > HyperTerminal.
(2) The Connection Description window opens. Enter a name (e.g. Switch), choose an icon, and click OK.
(3) The Connect To window opens. Click on the pull-down menu of the Connect Using field, choose **COM1**, and click OK.
Note that the above setting applies to cases where the console cable is connected to COM1.
(4) At the COM1 Properties window, click on the pull-down menu of the Bits per second field, and choose **9600**.
(5) Click on the pull-down menu of the Flow control field, choose **None**, and click OK.
(6) Click File in the main menu of HyperTerminal and choose Properties.
(7) The <name> Properties window appears (<name>: the name you entered in step 2 is indicated). Click the Settings tab and click on the pull-down menu of the Emulation field. In the list, choose **VT100** and click OK.
(8) Configure this Switching Hub in accordance with section 4 of the Operation Manual.
(9) After completing the configuration, click File in the main menu of HyperTerminal and Exit. Click Yes when asked if you want to disconnect the terminal. Then click Yes when asked if you want to save the session for HyperTerminal configuration.
(10) A file named "<name>.ht" (<name>: the name you entered in step 2 is indicated) is created in the HyperTerminal window.

From the next session, you can activate HyperTerminal by double-clicking "<name>.ht" and configure this Switching Hub by following step 8.

Appendix C. Easy IP Address Setup Function

The following are points to note when using an 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. “MNO series Support Tool” Ver.1.0.0.0

[User-settable items]
- IP address, subnet mask and default gateway
- System name
  * Settable with only the software of Panasonic System Networks Co., Ltd.
    The software displays "Camera name."
- If you use this function for configuration, "Enabled" is automatically displayed in the Web Server Status.

[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 the factory defaults.
  * You can check the current settings because the list is displayed even after the time limit elapses.
- The following function of the software of Panasonic System Networks Co., Ltd. cannot be used.
  – Auto setup function

* Please contact each manufacturer for information about network cameras.

Troubleshooting

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

◆ LED indicators

■ The power LED (PWR) is not lit.

● Check if the power cord is disconnected.

→ Please confirm that the power cord is securely connected to the power port.

■ The link/send & receive LED (LINK/ACT.) is not lit.

● Is the cable correctly connected to the target port?

● Is each terminal connected to the target port compliant with its specifications?

● Auto-negotiation may have failed.

→ Set the port of this Switching Hub or the terminal to half-duplex mode.

◆ Communications fail.

■ Communications with all ports are impossible or slow.

● Are the communication speed and mode settings correct?

→ If the communication mode signal cannot be properly obtained, apply half-duplex mode.

Switch the communication mode of the connection target to half-duplex mode.

Do not fix the communication mode of the connected terminal to full-duplex mode.

● Is the bandwidth usage rate of the backbone network to which this Switching Hub is connected excessively high?

→ Try separating this Switching Hub from the backbone network.

◆ PoE power supply is impossible.

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

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

● Is the PoE-ready terminal connected to the port compliant with the

IEEE 802.3af standard?

After-sales Service

1. Warranty card

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

2. Repair request

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

- ◆ **Product name** ◆ **Model No.**
- ◆ **Product serial No.** (11 alphanumeric characters labeled on the product)
- ◆ **Firmware version** (The number after "Ver." labeled on the unit package)
- ◆ **Problem status (Please give as concrete information as possible.)**

- Within the warranty period:
  Repair service will be provided in accordance with the conditions stipulated in the warranty card.
  Please bring your product and warranty card in the shop where you purchased it.
- After the warranty period expires:
  If our check determines that your product is repairable, a chargeable repair service is available upon your request.
  Please contact the shop where you purchased the product.

3. Inquiries about after-sales service and the product

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

Memo (Fill in for future reference)

<table>
<tr><td rowspan="2">Date of purchase</td><td colspan="2" rowspan="2"></td><td>Product Name</td><td>Switch-M12PWR</td></tr>
<tr><td>Model No.</td><td>PN23129A</td></tr>
<tr><td rowspan="2">Firmware version (*)</td><td>Boot Code</td><td colspan="3"></td></tr>
<tr><td>Runtime Code</td><td colspan="3"></td></tr>
<tr><td rowspan="2">Serial No.</td><td colspan="5"></td></tr>
<tr><td colspan="5">(11 alphanumeric characters labeled on the product)</td></tr>
<tr><td>Shop/Sales company</td><td colspan="5">Tel:</td></tr>
<tr><td>Customer service contact</td><td colspan="5">Tel:</td></tr>
</table>

(* You can check the version on the screen described in section 4.5 of the Operation Manual — Menu Screens.)

Panasonic Eco Solutions Networks Co., Ltd.

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