Panasonic®

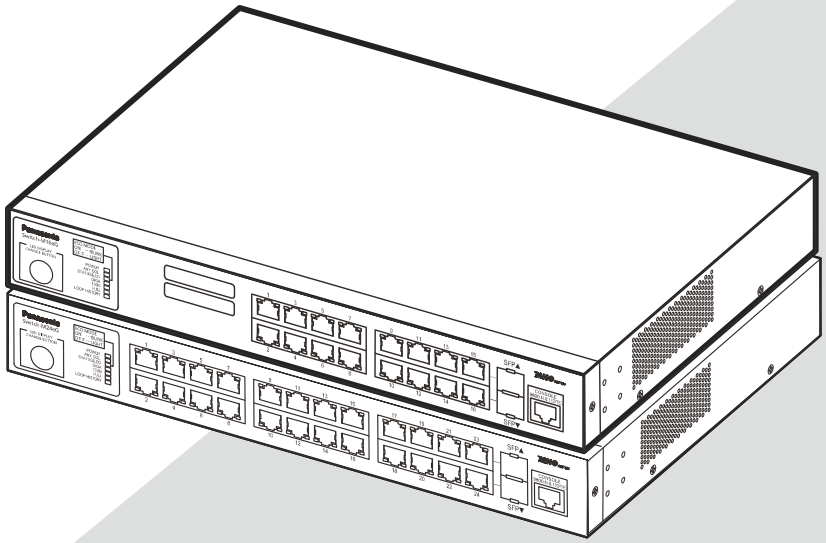
Operation Manual

CLI Screens

Layer 2 Switching Hub

Model Number: PN28160A/PN28240A

- 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 Warnings" on pages 3 to 4.**
- Any problems or damage resulting from disassembly of this Switching Hub by customers are note covered by the warranty.
- Applicable product names and model numbers are described on page 2.



This operation manual is applicable to the following Switching Hubs:

Product name	Model No.	Firmware version
Switch-M24eG	PN28240A	1.0.0.105 or higher
Switch-M16eG	PN28160A	1.0.0.105 or higher

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.

⚠ WARNING	This symbol indicates a potential hazard that could result in serious injury or death.
⚠ CAUTION	This symbol indicates safety instructions. Deviation from these instructions could lead to bodily injury and/or property damage.

■ The following symbols are used to classify and describe the type of instructions to be observed.

⃠ This symbol is used to alert users to what they must not do.	❗ This symbol is used to alert users to what they must do.

⚠ WARNING

⃠

- **Do not use power supply 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 power 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.
- **Do not place this Switching Hub in harsh environment (such as near water, high humid, and/or high dust).**
  Deviation could lead to fire, electric shock, and/or equipment failure.
- **Do not place this Switching Hub under direct sun light and/or high temperature.**
  Deviation could lead to high internal temperature and fire.

⚠WARNING

- **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.**
  Deviation could lead to fire, electric shock, and/or equipment failure.
- **Do not place this Switching Hub under direct sun light and or high temperature.**
  Deviation could lead to fire to high internal temperature and fire.

⚠WARNING

- **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.
- **Unplug the power cord if the STATUS/ECO LED (Status/ECO mode) blinks in orange (system fault).**
  Deviation, such as keeping connected for a long time, could lead to fire.
- **When this Switching Hub is installed on wall surface, mount it firmly so as not to drop down because of weight of the main body and connection cable.**
  Deviation, could lead to injury and/or equipment failure.

⚠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.**

Basic Instructions for the Use of This Product

- For inspection and/or repair, consult the shop.
- 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.
- When installing this Switching Hub using rubber feet (with built-in magnets), confirm that it does not move or fall down due to weight of cables.
- When connecting a cable, hold the Switching Hub firmly.
- Do not put a floppy disk or a magnetic card near the rubber feet (with built-in magnets). Otherwise, recorded content may be lost.
- After installing this Switching Hub on an OA desk, do not move either without dismounting it. Otherwise, the desk surface may be damaged.
- Do not touch the metal terminal of the RJ45 connector, the modular plug of connected twisted pair cable, or the metal terminal of the SFP extension slot. Do not place charged objects in the proximity of them. Static electricity could lead to equipment failure.
- Do not put the modular plug of the connected twisted pair cable on objects that can carry static charge, such as carpet. Do not place it in the proximity. Static electricity could lead to equipment failure.
- Do not put a strong shock, including dropping, to this Switching Hub. Deviation could lead to equipment failure.
- Before connecting a console cable to the console port, discharge static electricity, for example by touching metal appliance (do not discharge by touching this Switching Hub).
- Do not store and/or use this Switching Hub in the environment with the characteristics listed below.
  (Store and/or use this Switching Hub in the environment in accordance with the specification.)
  - High humidity. Possible spilled liquid (water).
  - Dusty. Possible static charge (such as carpet).
  - Under direct sunlight.
  - Possible condensation. High/low temperature exceeding the specifications environment.
  - Strong vibration and/or strong shock.
- Please use this Switching Hub in place where ambient temperature is from 0 to 50°C.
  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.

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

There are four levels in the hierarchy.

(1) User mode:
This is the default mode after login. Limited operations are allowed.

(2) Privileged mode:
This mode allows you to check the state of the Switching Hub, to edit configuration files, etc.

(3) Global configuration mode:
This mode allows you to set the general configuration of the Switching Hub.

(4) Interface configuration mode:
This mode allows you to set individual items, such as each port and each VLAN, in details.

```
M24eG> enable
M24eG# configure
M24eG(config)# interface gi0/1
M24eG(config-if)# exit
M24eG(config)# exit
M24eG#
```

Fig. 1-1 Command hierarchy

enable Command

· Enter this command to switch from the User mode to the Privileged mode.

M24eG> •••••••••••••••••••••••••••••••••• User mode
M24eG> enable •••••••••••••••••••••••••• User mode → Privileged mode
M24eG# •••••••••••••••••••••••••••••••••• Privileged mode
M24eG# disable •••••••••••••••••••••••••• Privileged mode → User mode
M24eG> •••••••••••••••••••••••••••••••••• User mode

disable Command

· Enter this command to switch from the Privileged mode to the User mode.

M24eG# •••••••••••••••••••••••••••••••••• Privileged mode
M24eG# disable •••••••••••••••••••••••••• Privileged mode → User mode
M24eG> •••••••••••••••••••••••••••••••••• User mode

configure Command

· Enter this command to switch from the Privileged mode to the Global configuration mode.

M24eG# •••••••••••••••••••••••••••••••••••• Privileged mode

M24eG# configure •••••••••••••••••••••••• Privileged mode

→ Global configuration mode

M24eG(config)# •••••••••••••••••••••••••• Global configuration mode

interface Command

· Enter this command to switch from the Global configuration mode to the Interface configuration mode.

M24eG(config)# •••••••••••••••••••••••••• Global configuration mode

M24eG(config)# interface vlan1•••••••••• Global configuration mode

→ Interface

configuration mode (vlan1)

M24eG(config-if)# exit •••••••••••••••••• Interface configuration mode

→ Global configuration mode

M24eG(config)# interface Gigabitethernet0/1

•••••••••••••• Global configuration mode

→ Interface

configuration mode (interface1)

M24eG(config-if)# exit •••••••••••••••••• Interface configuration mode

→ Global configuration mode

M24eG(config)# •••••••••••••••••••••••••• Global configuration mode

exit Command

· Enter this command to return to the previous mode.

M24eG(config-if)# exit •••••••••••••••••• Interface configuration mode

→ Global configuration mode

M24eG(config)# exit •••••••••••••••••••• Global configuration mode

→ Privileged mode

M24eG# exit •••••••••••••••••••••••••••• Privileged mode → User mode

M24eG> •••••••••••••••••••••••••••••••••• User mode

end Command

· Enter this command to switch from configuration modes to the Privileged mode.

M24eG(config-if)# end •••••••••••••••••• Interface configuration mode
→ Privileged mode

M24eG# configure

M24eG(config)# end •••••••••••••••••••• Global configuration mode
→ Privileged mode

logout Command

· Enter this command to return to the menu screen from any command mode.

M24eG(config)# logout •••••••••••••••••• Configuration mode → Menu

? Command

· Enter a question mark (?) to view available commands in that command mode.

```
M24eG> ?·
  enable - Turn on privileged mode command
  exit   - Exit current mode and down to previous mode
  logout - To logout from the CLI shell
  ping   - Send ICMP ECHO_REQUEST to network hosts
M24eG>
```

Fig. 1-2 ? command

Command History Support

· Press the ↑ (up arrow) key to view the history of the entered commands.

Command-line Completion Support

- Enter a question mark (?) immediately after a command. This will show command candidates to complete the entered command.

```
M24eG# configure
M24eG(config)# ip address
  A.B.C.D - IP address (e.g. 10.0.0.1)
M24eG(config)# ip address
```

Fig. 1-3 Command-line completion support

Abbreviated Command Entry

After entering just enough characters of a command or an argument to identify it uniquely, you can omit the rest of the command or the argument.

[Example of Abbreviated Command Entry]

- enable → en
- show running-config → sh ru

[Bad Example of Abbreviated Command Entry]

- co → Because both "configure" and "copy" are possible, an error occurs.

Symbols used in the command description are as follows:

< > : Required - You must enter this.
{ | } : Selections - Select one from the selections.
[ ] : Option - Enter as required.

Commands are case sensitive. Uppercase and lower case letters are treated as different letters.

Note that in this manual, ports are specified for Switch-M24eG (24 ports) except for a few commands. When entering a command, make sure to specify existing port numbers of your switch.

2. Basic Information Display

Enter the commands listed below in the "Privileged mode" to show this Switching Hub's basic information.

Command to show the system information (up time and version information)

M24eG#	show sys-info

Command to show the address information (MAC address and IP address information)

M24eG#	show ip conf

<Command Entry Example>

An example of executing the command to show the system information is shown below.

```
M24eG> enable
M24eG# show sys-info

(1)  System up for          : 0 days, 00:00:00
(2)  Boot Code Version      : 00.00.xx
(3)  Runtime Code version   : 1.0.0.xx

(4)  Hardware Information
(5)    Version              : Version1
(6)    DRAM Size            : 32MB
(7)    Fixed Baud Rate      : 9600bps
(8)    Flash Size           : 8MB

(9)  Administration Information
(10)   Switch Name          :
(11)   Switch Location      :
(12)   Switch Contact       :

(13) System Address Information
       MAC Address          : xx:xx:xx:xx:xx:xx
(15)   IP Address           : 0.0.0.0
(16)   Subnet Mask          : 0.0.0.0
(17)   Default Gateway      : 0.0.0.0

M24eG#
```

Fig. 2-1 Example of executing the command to show the system information

(1) System up for

Shows the Switching Hub's up duration in days and time.

(2) Boot Code Version

Shows the Switching Hub's boot code version.

(3) Runtime Code Version

Shows the Switching Hub's firmware version.

(4) Hardware Information

Shows the Switching Hub's hardware information.

(5) Version

Shows the Switching Hub's hardware version.

(6) DRAM Size

Shows the Switching Hub's DRAM memory size.

(7) Fixed Baud Rate

Shows the baud rate of the Switching Hub's console port.

(8) Flash Size

Shows the Switching Hub's flash memory size.

(9) Administration Information

Shows the Switching Hub's administration information.

(10) Switch Name

Shows the Switching Hub's current host name.

(11) Switch Location

Shows the Switching Hub's current installation location name.

(12) Switch Contact

Shows the Switching Hub's current contact information.

(13) System Address Information

Shows the Switching Hub's address information.

(14) MAC Address

Shows the Switching Hub's MAC address.

(15) IP Address

Shows the Switching Hub's current IP address in operation.

(16) Subnet Mask

Shows the Switching Hub's current subnet mask in operation.

(17) Default Gateway

Shows the Switching Hub's current default gateway in operation.

<Command Entry Example>

An example of executing the command to show the address information is shown below.

```
M24eG> enable
M24eG# show ip conf
(1)   MAC Address          : xx:xx:xx:xx:xx:xx
(2)   IP Address           : 0.0.0.0
(3)   Subnet Mask          : 0.0.0.0
(4))  Default Gateway      : 0.0.0.0
M24eG#
```

Fig. 2-2 Example of executing the command to show the address information

(1) MAC Address

Shows the Switching Hub's MAC address.

(2) IP Address

Shows the Switching Hub's current IP address in operation.

(3) Subnet Mask

Shows the Switching Hub's current subnet mask in operation.

(4) Default Gateway

Shows the Switching Hub's current default gateway in operation.

show sys-info

Shows the Switching Hub's system information (such as up time and version information).

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show ip conf

Shows the address information（such as MAC address and IP address）of the Switching Hub.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

3. Basic Switch Configuration

3.1. System Administration Configuration

Configure the host name, installation location and contact information in "Global configuration mode." Confirm the configuration information by executing the "show sys-info" command in "Privileged mode."

Command to show the system information

M24eG#	show sys-info

Command to set the host name

M24eG(config)#	hostname <hostname>

Command to delete the host name

M24eG(config)#	no hostname

Command to set the installation location

M24eG(config)#	snmp-server location <server location>

Command to delete the installation location

M24eG(config)#	no snmp-server location

Command to set the contact information

M24eG(config)#	snmp-server contact <server contact>

Command to delete the contact information

M24eG(config)#	no snmp-server contact

<Command Entry Example>

An example of executing the command to show the system information is shown below.

```
M24eG> enable
M24eG# show sys-info

 System up for          : 0 days, 00:00:00
 Boot Code Version      : xx.xx.xx
 Runtime Code version   : x.x.x.xx

 Hardware Information
   Version              : Version1
   DRAM Size            : 32MB
   Fixed Baud Rate      : 9600bps
   Flash Size           : 8MB

(1) Administration Information
(2)   Switch Name          :
(3)   Switch Location      :
(4)   Switch Contact       :

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

M24eG#
```

Fig. 3-1-1 Example of executing the command to show the system information

Terms related to this section are explained below.

(1) Administration Information

Shows the Switching Hub's administration information.

(2) Switch Name

Shows the Switching Hub's current host name.

(3) Switch Location

Shows the Switching Hub's current installation location name.

(4) Switch Contact

Shows the Switching Hub's current contact information.

show sys-info

Shows the system information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

hostname <hostname>

Sets or edits the system name.

no hostname

Deletes the system name.

[Parameter]

Parameter name	Description
<hostname>	Set the system name.

[Factory Default Setting]

Parameter name	Factory default setting
<hostname>	None

[Setting Range]

Parameter name	Setting range
<hostname>	Up to 50 one-byte characters Allowed characters: alphanumeric character (A-Z, a-z, 0-9) symbol (!@#$&_-.) white space

[Note]

Parameter name	Note
<hostname>	To set a system name containing white spaces, enclose the entire name with a pair of double-quotation marks (" "). Example: hostname "switch a"

snmp-server location <server location>

Sets or edits the installation location information.

no snmp-server location

Deletes the installation location information.

[Parameter]

Parameter name	Description
<server location>	Set the installation location.

[Factory Default Setting]

Parameter name	Factory default setting
<server location>	None

[Setting Range]

Parameter name	Setting range
<server location>	Up to 50 one-byte characters Allowed characters: alphanumeric character (A-Z, a-z, 0-9) symbol (!@#$&_-.) white space

[Note]

Parameter name	Note
<server location>	To set a location name containing white spaces, enclose it with a pair of double-quotation marks (" "). Example: snmp-server location "Office 2F"

snmp-server contact <server contact>

Sets or edits the contact information.

no snmp-server contact

Deletes the contact information.

[Parameter]

Parameter name	Description
<server contact>	Set the contact information.

[Factory Default Setting]

Parameter name	Factory default setting
<server contact>	None

[Setting Range]

Parameter name	Setting range
<server contact>	Up to 50 one-byte characters Allowed characters: alphanumeric character (A-Z, a-z, 0-9) symbol (!@#$&_-.) white space

[Note]

Parameter name	Note
<server contact>	To set contact information containing white spaces, enclose it with a pair of double-quotation marks (" "). Example: snmp-server contact "network manager"

<Configuration Example>

Overview: Set this Switching Hub's administration information (host name, installation location, and contact information).

(1) Set this Switching Hub's name to "Switch."

(2) Set this Switching Hub's installation location to "Office-2F."

(3) Set this Switching Hub's contact information to "manager."

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# hostname Switch
(2) Switch(config)# snmp-server location Office-2F
(3) Switch(config)# snmp-server contact manager
Switch(config)# exit
Switch#
```

Fig. 3-1-2 Example of configuring the Switching Hub's administration information

3.1.1. Username and Password Configuration

Configure the username and password for this Switching Hub in "Global configuration mode."

Command to set the username and password

M24eG(config)#	username <new username>

username <new username>

Sets or edits the username and password.

* Upon entering this command, you are required to enter your old password once and your new password twice to set the new password.

[Parameter]

Parameter name	Description
<new username>	Enter a new username. (Enter the current username to keep the same name.)

[Factory Default Setting]

Parameter name	Factory default setting
<new username>	None

[Setting Range]

Parameter name	Setting range
<new username>	0 to 12 one-byte characters Allowed characters: alphanumeric character (A-Z, a-z, 0-9) symbol (!@#$&_-.)

[Note]

Parameter name	Note
<new username>	None

Note: Make sure to remember the changed or new username and password.

<Configuration Example>

Overview: Set a username and password for the Switching Hub.

(1) Set a new username to "user1."

(2) Enter the current password.
(The factory default setting is "manager.")

(3) Enter a new password.

(4) Enter the new password again.

```
M24eG> en
M24eG# configure
(1) M24eG(config)# username user1
(2) Enter old password: *******
(3) Enter new password: *******
(4) Enter new password again: *******
M24eG(config)#
```

Fig. 3-1-1-1 Example of the username and password configuration

3.2. IP Address Configuration

Configure the IP address settings of this Switching Hub in "Interface configuration mode." Confirm the configuration information by executing the "show ip conf" command in "Privileged mode."

Command to show the IP address

M24eG#	show ip conf

Command to set the IP address

M24eG(config)#	ip address <ip-address> <mask> [<default-gateway>]

Command to delete the IP address

M24eG(config)#	no ip address

<Command Entry Example>

An example of executing the command to show the address information is shown below.

```
M24eG> enable
M24eG# show ip conf
(1)   MAC Address          : xx:xx:xx:xx:xx:xx
(2)   IP Address           : 0.0.0.0
(3)   Subnet Mask          : 0.0.0.0
(4)   Default Gateway      : 0.0.0.0
M24eG#
```

Fig. 3-2-1 Example of executing the command to show the address information

(1) MAC Address

Shows the Switching Hub's MAC address.

(2) IP Address

Shows the Switching Hub's current IP address in operation.

(3) Subnet Mask

Shows the Switching Hub's current subnet mask in operation.

(4) Default Gateway

Shows the Switching Hub's current default gateway in operation.

ip address <ip-address> <mask> [<default-gateway>]

Sets or edits the IP address, subnet mask and/or default gateway.

no ip address

Deletes the IP address, subnet mask and/or default gateway.

[Parameter]

Parameter name	Description
<ip-address>	Enter an IP address to be set or edited.
<mask>	Enter a subnet mask to be set or edited.
[<default-gateway>]	Enter a default gateway to be set or edited.

[Factory Default Setting]

Parameter name	Factory default setting
<ip-address>	0.0.0.0
<mask>	0.0.0.0
[<default-gateway>]	0.0.0.0

[Setting Range]

Parameter name	Setting range
<ip-address>	0.0.0.1 to 223.255.255.254
<mask>	128.0.0.0 to 255.255.255.255 (One-bits and zero-bits must be consecutive in binary.)
[<default-gateway>]	0.0.0.1 to 223.255.255.254

[Note]

Parameter name	Note
<ip-address>	None
<mask>	None
[<default-gateway>]	None

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

<Configuration Example>

(1) Set the Switching Hub's IP address to "192.168.1.1," subnet mask to "255.255.255.0" and default gateway to "192.168.1.254."

(1)

```
M24eG> enable
M24eG# configure
M24eG(config)# ip address 192.168.1.1 255.255.255.0 192.168.1.254
Interface vlan1
     my HWaddr: xx:xx:xx:xx:xx:xx
     my IPaddr: 192.168.1.1
  Options:
        subnet mask: 255.255.255.0
       IP broadcast: 192.168.1.255
            gateway: 192.168.1.254
M24eG(config)#
```

Fig. 3-2-2 Example of the address configuration

3.3. SNMP Configuration

Configure the SNMP agent setting in "Global configuration mode." Confirm the configuration information by executing the "show snmp" command in "Privileged mode."

Command to show the SNMP information

M24eG#	show snmp

Command to enable the SNMP agent

M24eG(config)#	snmp-server agent

Command to disable the SNMP agent

M24eG(config)#	no snmp-server agent

Command to set the SNMP management (access permission from/to SNMP manager)

M24eG(config)#	snmp-server community <id> <community> <ro/rw> <ip-address>

Command to delete the SNMP management (access permission from/to SNMP manager)

M24eG(config)#	no snmp-server community <id>

Command to set the SNMP trap (type, IP address, community name)

M24eG(config)#	snmp-server host <id> type <v1/v2> <ip-address> trap <community>

Command to delete the SNMP trap (type, IP address, community name)

M24eG(config)#	no snmp-server host <id>

Command to set the SNMP trap (authentication failure)

M24eG(config)#	snmp-server enable traps snmp authentication

Command to delete the SNMP trap (authentication failure)

M24eG(config)#	no snmp-server enable traps snmp authentication

Command to set the SNMP trap (notification of port link up/down status)

M24eG(config)#	snmp-server enable traps linkupdown <1-2 or 1,2,3 or 1,2,3-5>

Command to delete the SNMP trap (notification of port link up/down status)

M24eG(config)#	no snmp-server enable traps linkupdown <1-2 or 1,2,3 or 1,2,3-5>

<Command Entry Example>

An example of executing the command to show the SNMP information is shown below.

```
M24eG> enable
M24eG# show snmp
(1) SNMP Agent: Disabled

(2) SNMP Manager List:
  (3)  (4)          (5)             (6)     (7)
  No.  Status       IP Address      Access  SNMP Community String
  ---- --------     --------------- ------  --------------------------------
  1    Enabled      0.0.0.0         ro      public
  2    Enabled      0.0.0.0         rw      private
  3    Disabled     0.0.0.0
  4    Disabled     0.0.0.0
  5    Disabled     0.0.0.0
  6    Disabled     0.0.0.0
  7    Disabled     0.0.0.0
  8    Disabled     0.0.0.0
  9    Disabled     0.0.0.0
  10   Disabled     0.0.0.0

(8) Trap Reciever List:
  (9)  (10)         (11)            (12)    (13)
  No.  Status       IP Address      Version Trap Community String
  ---- --------     --------------- ------- ------------------------------
  1    Disabled     0.0.0.0
  2    Disabled     0.0.0.0
  3    Disabled     0.0.0.0
  4    Disabled     0.0.0.0
  5    Disabled     0.0.0.0
  6    Disabled     0.0.0.0
  7    Disabled     0.0.0.0
  8    Disabled     0.0.0.0
  9    Disabled     0.0.0.0
  10   Disabled     0.0.0.0

(14) Individual Trap
(15) SNMP Authentication Failure: Disabled
(16) Login Failure              : Disabled
(17) Enable Link Up/Down Port   : all
M24eG#
```

Fig. 3-3-1 Example of executing the command to show the SNMP information

(1) SNMP Agent

Shows the SNMP agent settings.	
Enabled	The SNMP agent is enabled.
Disabled	The SNMP agent is disabled.

(2) SNMP Manager List

Lists the administrative information about SNMP manager.

(3) No.

Shows the entry number assigned to the SNMP manager.

(4) Status

Shows the status of the SNMP manager.	
Enabled	Access by the SNMP manager for the entry number is enabled.
Disabled	Access by the SNMP manager for the entry number is disabled.

(5) IP Destination

Shows the IP address of the SNMP manager.

(6) Access

Shows the access privilege of the SNMP manager.	
ro	"Read only" is allowed.
rw	Both "read" and "write" are allowed.

(7) SNMP Community String

Shows the community name to access via SNMP.

(8) Trap Reciever List

Lists the settings of the SNMP trap receivers.

(9) No.

Shows the entry number assigned to the trap receiver.

(10) Status

Shows the status of the SNMP trap receiver.	
Enabled	The SNMP trap receiver for the entry number is enabled.
Disabled	The SNMP trap receiver for the entry number is disabled.

(11) IP Destination

Shows the IP address of the SNMP trap receiver.

(12) Version

Shows the SNMP trap type.	
v1	SNMP v1 traps are sent.
v2	SNMP v2 traps are sent.

(13) Trap Community String

Shows the current community name, used for sending SNMP traps.

(14) Individual Trap

Shows the setting of SNMP trap events.

(15) SNMP Authentication Failure

Shows the status of SNMP authentication failure trap.	
Enabled	The SNMP authentication failure trap is enabled.
Disabled	The SNMP authentication failure trap is disabled.

(16) Login Failure

Shows the status of SNMP login failure trap.	
Enabled	The SNMP login failure trap is enabled.
Disabled	The SNMP login failure trap is disabled.

(17) Enable Link Up/Down Port

Shows the port number to which the trap is sent when the link status changes. ("All" indicates that all ports are targeted.)

show snmp

Shows the SNMP configuration information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

snmp-server agent

Enables the SNMP agent.

no snmp-server agent

Disables the SNMP agent.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no snmp-server agent The SNMP agent is disabled.

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

snmp-server community <id> <community> <ro / rw> <ip-address>

Sets or edits the SNMP manager administrative information.

no snmp-server community <id>

Deletes the SNMP manager administrative information.

[Parameter]

Parameter name	Description
<id>	Set the entry number of the SNMP manager.
<community>	Set the community name for the SNMP manager.
<ro/rw>	Set the access privilege of the SNMP manager.
<ip-address>	Set the IP address of the SNMP manager.

[Factory Default Setting]

Parameter name	Factory default setting
<id>	No. 1 to 2: Enabled No. 3 to 10: Disabled
<community>	No. 1: private No. 2: public
<ro/rw>	Privilege No. 1: Read-Write No. 2 to 10: Read-Only
<ip-address>	0.0.0.0

[Setting Range]

Parameter name	Setting range
<id>	1 to 10
<community>	1 to 32 one-byte alphanumeric characters
<ro/rw>	Either "ro" or "rw" (ro: Read-Only, rw: Read-Write)
<ip-address>	Class A: 1.x.x.x to 126.x.x.x Class B: 128.1.x.x to 191.254.x.x Class C: 192.0.1.x to 223.255.254.x

[Note]

Parameter name	Note
—	None

snmp-server host <id> type <v1/v2> <ip-address> trap <community>

Sets or edits the SNMP trap receiver settings.

no snmp-server host <id>

Deletes the SNMP trap receiver settings.

[Parameter]

Parameter name	Description
<id>	Set the entry number of the SNMP trap receiver.
<v1/v2>	Set the type of the SNMP trap receiver.
<ip-address>	Set the IP address of the SNMP trap receiver.
<community>	Set the community name for the SNMP trap receiver.

[Factory Default Setting]

Parameter name	Factory default setting
<id>	None. The SNMP trap receiver setting is disabled.
<v1/v2>	None
<ip-address>	0.0.0.0
<community>	None

[Setting Range]

Parameter name	Setting range
<id>	1 to 10
<v1/v2>	Either "v1" or "v2"
<ip-address>	Class A: 1.x.x.x to 126.x.x.x Class B: 128.1.x.x to 191.254.x.x Class C: 192.0.1.x to 223.255.254.x
<community>	1 to 32 one-byte alphanumeric characters

[Note]

Parameter name	Note
<server contact>	None

snmp-server enable traps snmp authentication

Enables the trap sending settings for an SNMP authentication failure.

no snmp-server enable traps snmp authentication

Disables the trap sending settings for an SNMP authentication failure.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no snmp-server enable traps snmp authentication

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

snmp-server enable traps linkupdown <port>

Adds a port to which the trap is sent when the link status changes.

no snmp-server enable traps linkupdown <port>

Deletes a port to which the trap is sent when the link status changes.

[Parameter]

Parameter name	Description
<port>	Set the target port number.

[Factory Default Setting]

Parameter name	Factory default setting
<port>	None

[Setting Range]

Parameter name	Setting range
<port>	<Switch-M24eG> 1 to 24 <Switch-M16eG> 1 to 16 Multiple ports can be set. Example: 1-3,5

[Note]

Parameter name	Note
<port>	None

<Configuration Example>

Overview: Enable the SNMP function, then set the community name and the address information.

(1) Enable the SNMP agent.

(2) Set the SNMP manager administrative information as below.
community 1, private, Read-Write, 192.168.1.200

(3) Set the SNMP manager administrative information as below.
community 2, public, Read-Only, 192.168.1.200

(4) Set the SNMP trap receiver settings as below.
trap receiver 1, SNMP v1, 192.168.1.200, community public

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# snmp-server agent
(2) M24eG(config)# snmp-server community 1 private rw 192.168.1.200
(3) M24eG(config)# snmp-server community 2 public ro 192.168.1.200
(4) M24eG(config)# snmp-server host 1 type v1 192.168.1.200 trap public
M24eG(config)# end
M24eG#
```

Fig. 3-3-2 Example of executing the command to show the SNMP information

3.4. Port Configuration

Configure the port setting in "Interface configuration mode." Confirm the configuration information by executing the "show interface info" command in "Privileged mode."

Command to show the port information

M24eG#	show interface info

Command to show the detailed port information

M24eG#	show interface [gi0/1-gi0/24]

Command to enable the port status

M24eG(config-if)#	no shutdown

Command to disable the port status

M24eG(config-if)#	Shutdown

Command to set the port mode

M24eG(config-if)#	speed-duplex < auto | {10|100}-half | {10|100}-full >

Command to enable the flow control

M24eG(config-if)#	flow-control

Command to disable the flow control

M24eG(config-if)#	no flow-control

Command to set the port name

M24eG(config-if)#	name <string>

Command to enable the Auto MDI

M24eG(config-if)#	mdix auto

Command to disable the Auto MDI

M24eG(config-if)#	no mdix auto

Command to enable the jumbo frame

M24eG(config-if)#	Jumbo

Command to disable the jumbo frame

M24eG(config-if)#	no jumbo

<Command Entry Example>

An example of executing the command to show the port information is shown below.

```
M24eG> enable
M24eG# show interface info
(1)        (2)              (3)       (4)         (5)       (6)       (7)
Interface  Name             Status    Mode        FlowCtrl  Auto-MDI  Jumbo
---------  ---------------  --------  ----------  --------  --------  --------
gi0/1      Port_1           Disabled  Auto        Disabled  Disabled  Disabled
gi0/2      Port_2           Up        100-FDx     Disabled  Disabled  Disabled
gi0/3      Port_3           Up        Auto(100F)  Enabled   Disabled  Disabled
gi0/4      Port_4           Up        Auto(100F)  Disabled  Disabled  Disabled
gi0/5      Port_5           Up        Auto(100F)  Disabled  Enabled   Disabled
gi0/6      Port_6           Up        Auto(100F)  Disabled  Disabled  Enabled
gi0/7      Port_7           Up        Auto(100F)  Disabled  Disabled  Disabled
gi0/8      Port_8           Up        Auto(100F)  Disabled  Disabled  Disabled
gi0/9      Port_9           Down      Auto        Disabled  Disabled  Disabled
gi0/10     Port_10          Down      Auto        Disabled  Disabled  Disabled
gi0/11     Port_11          Down      Auto        Disabled  Disabled  Disabled
gi0/12     Port_12          Down      Auto        Disabled  Disabled  Disabled
gi0/13     Port_13          Down      Auto        Disabled  Disabled  Disabled
gi0/14     Port_14          Down      Auto        Disabled  Disabled  Disabled
gi0/15     Port_15          Down      Auto        Disabled  Disabled  Disabled
gi0/16     Port_16          Down      Auto        Disabled  Disabled  Disabled
gi0/17     Port_17          Down      Auto        Disabled  Disabled  Disabled
gi0/18     Port_18          Down      Auto        Disabled  Disabled  Disabled
gi0/19     Port_19          Down      Auto        Disabled  Disabled  Disabled
gi0/20     Port_20          Down      Auto        Disabled  Disabled  Disabled
gi0/21     Port_21          Down      Auto        Disabled  Disabled  Disabled
gi0/22     Port_22          Down      Auto        Disabled  Disabled  Disabled
gi0/23     Port_23          Down      Auto        Disabled  Enabled   Disabled
gi0/24     Port_24          Down      Auto        Disabled  Disabled  Disabled
M24eG#
```

Fig. 3-4-1 Example of executing the command to show the port information

(1) Interface

Shows the interface name.	
gi0/1	Indicates "Gigabit Ethernet Port 1." (The number after "gi0/" indicates the port number.)

(2) Name

Shows the port name.

(3) Status

Shows the port status.	
Up	The port link is up.
Down	The port link is down.
Disabled	The port is shut down. (The port is closed, or it is disconnected by the loop detection function.)

(4) Mode

Shows the port communication speed and duplex mode (full or half).	
Auto	The auto negotiation function is enabled when the port link is down. While the link is up, the string enclosed in parentheses shows the communication speed and full-duplex/half-duplex mode.
1000F	The port is in the 1000 Mbps full-duplex mode.
100-FDx ("100F" under the "Auto" mode)	The port is in the 100 Mbps full-duplex mode.
100-HDx ("100H" under the "Auto" mode)	The port is in the 100 Mbps half-duplex mode.
10-FDx ("10F" under the "Auto" mode)	The port is in the 10 Mbps full-duplex mode.
10-HDx ("10H" under the "Auto" mode)	The port is in the 10 Mbps half-duplex mode.

(5) FlowCtrl

Shows the flow control setting.	
Enabled	The flow control is enabled.
Disabled	The flow control is disabled.

(6) Auto-MDI

Shows the Auto MDI/MDI-X setting.	
Enabled	The Auto MDI/MDI-X is enabled.
Disabled	The Auto MDI/MDI-X is disabled.

(7) Jumbo

Shows the jumbo frame setting.	
Enabled	The jumbo frame is enabled.
Disabled	The jumbo frame is disabled.

<Command Entry Example>

An example of executing the command to show the detailed port information is shown below.

```
M24eG> enable
M24eG# show interface gi0/1

(1) Interface GigabitEthernet0/1
(2)   Admin Status    : Enabled    (12) Link Status     : Up
(3)   Auto Negotiate : Enabled    (13) Duplex          : Full
(4)   Flow Control    : Disabled   (14) Speed           : 100 Mbps
(5)   CoS Priority    : 0
(6)   MDIX Mode       : Crossover  (15) Medium          : Copper
(7)   Line Protocol   : Up         (16) PVID            : 1
(8)   Line Shut-down : 60  seconds
(9)   Power-saving    : Half
(10)  Max Frame Size : 1522 bytes
(11)  Accept Frames   : VLAN tagged and untagged
M24eG#
```

Fig. 3-4-2 Example of executing the command to show the detailed port information

(1) Interface GigabitEthernet0/1

Shows the name of the interface whose detailed information is shown. (The number after "GigabitEthernet0/" indicates the port number.)

(2) Admin Status

Shows whether the port is enabled or disabled.	
Enabled	The port is enabled.
Disabled	The port is disabled.

(3) Auto Negotiate

Shows the auto negotiation setting.	
Enabled	The auto negotiation function is enabled.
Disabled	The auto negotiation function is disabled.

(4) Flow Control

Shows the flow control setting.	
Enabled	The flow control is enabled.
Disabled	The flow control is disabled.

(5) CoS Priority

Shows the priority of the queue in the QoS function.

(6) MDIX Mode

Shows the Auto MDI/MDI-X setting.	
Auto	The Auto MDI/MDI-X is enabled.
Crossover	The Auto MDI/MDI-X is disabled.

(7) Line Protocol

Shows the loop detection function setting.	
Up	The loop detection is enabled.
Disabled	The loop detection is disabled.

(8) Line Shut-down

Shows the time between the loop-detection/port-shutdown and the auto-recovery.

(9) Power-saving

Shows the MNO series power saving mode.	
Half	The MNO series power saving mode is enabled (Half).
Full	The MNO series power saving mode is enabled (Full).
Disabled	The MNO series power saving mode is disabled.

(10) Max Frame Size

Shows the maximum frame size (including a VLAN tag) that can be transmitted.

(11) Accept Frames

Shows the frame types to accept.	
VLAN tagged and untagged	Receives both frames with VLAN tags and without VLAN tags.
VLAN tagged only	Receives only VLAN-tagged frames.

(12) Link Status

Shows the port status.	
Up	The port link is up.
Down	The port link is down.
Disabled	The port is shut down. (The port is closed, or it is disconnected by the loop detection function.)

(13) Duplex

Shows the duplex mode.	
Full	Full-duplex mode.
Half	Half-duplex mode.
Auto	Waiting for a link up under the auto negotiation mode.

(14) Speed

Shows the port's communication speed mode.	
Auto	Waiting for a link up under the auto negotiation mode.
1000Mbps	The port is linked up at 1000 Mbps.
100Mbps	The port is linked up at 100 Mbps.
10Mbps	The port is linked up at 10 Mbps.

(15) Medium

Shows the connection medium.	
None	Nothing is connected to the port.
Copper	A 10/100/1000BASE-T port has been linked up.
Fiber	An SFP expansion port has been linked up.

(16) PVID

Shows the VLAN ID of the port.

show interface info

Shows the interface setting information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show interface <IFNAME>

Shows the interface name.

[Parameter]

Parameter name	Description
<IFNAME>	Set the interface name.

[Factory Default Setting]

Parameter name	Factory default setting
<IFNAME>	None

[Setting Range]

Parameter name	Setting range
<IFNAME>	<Switch-M24eG> GigabitEthernet0/1 to GigabitEthernet0/24 <Switch-M16eG> GigabitEthernet0/1 to GigabitEthernet0/16 The name can be abbreviated. Example: GigabitEthernet0/1 → gi0/1

[Note]

Parameter name	Note
<IFNAME>	None

shutdown

Shuts down a port.

no shutdown

Releases a port.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no shutdown

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

speed-duplex < auto | {10|100}-half | {10|100}-full >

Sets the port mode.

[Parameter]

Parameter name	Description	
< auto | {10|100}-half | {10|100}-full >	Set the port mode.	
	auto	Set the mode to "auto negotiation."
	10-half	Set the mode to "10 Mbps half-duplex."
	10-full	Set the mode to "10 Mbps full-duplex."
	100-half	Set the mode to "100 Mbps half-duplex."
	100-full	Set the mode to "100 Mbps full-duplex."

[Factory Default Setting]

Parameter name	Factory default setting
< auto | {10|100}-half | {10|100}-full >	auto

[Setting Range]

Parameter name	Setting range
< auto | {10|100}-half | {10|100}-full >	None

[Note]

Parameter name	Note
< auto | {10|100}-half | {10|100}-full >	None

flow-control

Enables the flow control function.

no flow-control

Disables the flow control function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no frow-control The flow control function is disabled.

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

name <string>

Sets the port name.

[Parameter]

Parameter name	Description
< string >	Set the port name.

[Factory Default Setting]

Parameter name	Factory default setting
< string >	Nothing is set.

[Setting Range]

Parameter name	Setting range
< string >	Up to 15 one-byte characters Allowed characters: alphanumeric character (A-Z, a-z, 0-9) symbol (!@#$&_-.) white space

[Note]

Parameter name	Note
< string >	To set a system name containing white spaces, enclose the entire name with a pair of double-quotation marks (" "). Example: name "port A"

mdix auto

Enables the Auto MDI/MDI-X function.

no mdix auto

Disables the Auto MDI/MDI-X function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	<Switch-M24eG> Ports 1 to 22: no mdix auto The Auto MDI/MDI-X function is disabled. Ports 23 to 24: mdix auto The Auto MDI/MDI-X function is enabled. <Switch-M16eG> Ports 1 to 14: no mdix auto The Auto MDI/MDI-X function is disabled. Ports 15 to 16: mdix auto The Auto MDI/MDI-X function is enabled.

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

jumbo

Enables jumbo frames.

no jumbo

Disables jumbo frames.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no jumbo Jumbo frame is disabled.

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	When jumbo frame is enabled, the maximum frame size is set at 9220 bytes (including a VLAN tag).

<Configuration Example 1>

Overview: Set the status of Port 1 to be closed.

(1) Move to the interface configuration mode for Port 1.

(2) Shut down Port 1.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# interface gi0/1
(2) M24eG(config-if)# shutdown
M24eG(config-if)# exit
M24eG(config)#
M24eG#
```

Fig. 3-4-3 Example of shutting down a port

<Configuration Example 2>

Overview: Set the modes of Ports 2 to 4 to be "100 Mbps full-duplex."

(1) Move to the interface configuration mode for Port 2 to 4.

(2) Set the modes of Ports 2 to 4 at 100 Mbps full-duplex.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# interface gi0/2-4
(2) M24eG(config-if)# speed-duplex 100-full
M24eG(config-if)# exit
M24eG(config)# exit
M24eG#
```

Fig. 3-4-4 Example of configuring the duplex mode for a port

<Configuration Example 3>

Overview: Enable the Auto MDI/MDI-X function for Ports 5 to 8.

(1) Move to the interface configuration mode for Port 5 to 8.

(2) Set auto to the Auto MDI/MDI-X function for Ports 5 to 8.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# interface gi0/5-8
(2) M24eG(config-if)# mdix auto
M24eG(config-if)# exit
M24eG(config)# exit
M24eG#
```

Fig. 3-4-5 Example of configuring the Auto MDI/MDI-X

3.5. System Security Configuration

Configure the system settings to access this Switching Hub in "Global configuration mode." Confirm the configuration information by executing the "show terminal length" command in "Privileged mode."

Command to show the number of lines on a screen

M24eG#	show terminal length

Command to set the number of lines on a screen

M24eG(config)#	terminal length <LENGTH>

<Command Entry Example>

An example of executing the command to show the number of lines on a screen is shown below.

(1)

```
M24eG> enable
M24eG# show terminal length
Terminal Length: 24
M24eG#
```

Fig. 3-5-1 Example of executing the command to show the number of lines on a screen

(1) Terminal Length

Shows the number of lines displayed on a screen. ("none" is shown if this value is set to "0.")

show terminal length

Shows the number of lines displayed on a screen.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

terminal length <LENGTH>

Sets the number of lines displayed on a screen.

[Parameter]

Parameter name	Description
<LENGTH>	Set the number of lines displayed on a screen. Assigning the value "0" sets no limit on the number of lines displayed on a screen.

[Factory Default Setting]

Parameter name	Factory default setting
<LENGTH>	24

[Setting Range]

Parameter name	Setting range
<LENGTH>	0, or 24 to 512

[Note]

Parameter name	Note
<LENGTH>	None

<Configuration Example>

Overview: Set the number of lines displayed on a screen to unlimited.

(1) Set no limit on the number of lines displayed on a screen.

(1)

```
M24eG> enable
M24eG# conf
M24eG(config)# terminal length 0
M24eG(config)# exit
M24eG#
```

Fig. 3-5-2 Example of configuring the number of lines displayed on a screen

3.5.1. Console Configuration

Configure the settings to access this Switching Hub via console in "Global configuration mode." Confirm the configuration information by executing the "show console" command in "Privileged mode."

Command to show the console configuration

M24eG#	show console

Command to set the console timeout

M24eG(config)#	console inactivity-timer <minutes>

<Command Entry Example>

An example of executing the command to show the console configuration is shown below.

(1)

```
M24eG> enable
M24eG# show console
Console UI Idle Timeout: 5 minutes
M24eG#
```

Fig. 3-5-1-1 Example of executing the command to show the console configuration

(1) Console UI Idle Timeout

Shows the maximum inactivity time to wait for a user input in a console session. Upon expiration, the session is automatically terminated. (If the auto disconnection is disabled, "no timeout" is shown.)

show console

Shows the maximum inactivity time to wait for a user input in a console session. Upon expiration, the session is automatically terminated.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

console inactivity-timer <minutes>

Changes the maximum inactivity time to wait for a user input in a console session. Upon expiration, the session is automatically terminated.

[Parameter]

Parameter name	Description
<minutes>	Set the maximum inactivity time in minutes to wait for a user input in a console session. Upon expiration, the session is automatically terminated.

[Factory Default Setting]

Parameter name	Factory default setting
<minutes>	5 (minutes)

[Setting Range]

Parameter name	Setting range
<minutes>	0 to 60 (minutes) Entering "0" disables the automatic disconnection.

[Note]

Parameter name	Note
<minutes>	None

<Configuration Example>

Overview: Disable the inactivity-time-based automatic disconnection of a console session.

(1) Disable the automatic disconnection for the console inactivity time.

(1)

```
M24eG> enable
M24eG# conf
M24eG(config)# console inactivity-timer 0
M24eG(config)# exit
M24eG#
```

Fig. 3-5-1-2 Example of configuring the automatic disconnection time for inactivity

3.5.2. Telnet Configuration

Configure the telnet-related settings in "Global configuration mode." Confirm the configuration information by executing the "show telnet-sever" command in "Privileged mode."

Command to show the telnet server configuration

M24eG#	show telnet-server

Command to set the telnet server timeout

M24eG(config)#	telnet-server inactivity-timer <minutes>

Command to enable the telnet access limitation

M24eG(config)#	telnet-server access-limitation enable

Command to disable the telnet access limitation

M24eG(config)#	no telnet-server access-limitation enable

Command to set the device to allow telnet access

M24eG(config)#	telnet-server <entry> <ip-address> <mask>

<Command Entry Example>

An example of executing the command to show the telnet server configuration is shown below.

```
M24eG> enable
M24eG# show telnet
(1) Telnet UI Idle Timeout: 5 minutes

(2) Telnet Access Limitation: Disabled
 (3)       (4)                 (5)
No.         IP Address          Subnet Mask
---     -----------------    -----------------
 1       <empty>              <empty>
 2       <empty>              <empty>
 3       <empty>              <empty>
 4       <empty>              <empty>
 5       <empty>              <empty>
M24eG#
```

Fig. 3-5-2-1 Example of executing the command to show the telnet server configuration

(1) Telnet UI Idle Timeout

Shows the maximum inactivity time to wait for a user input in a telnet client session. Upon expiration, the session is automatically terminated.

(2) Telnet Access Limitation

Shows the access limitation settings from telnet clients.	
Enabled	The access limitation from telnet clients is enabled.
Disabled	The access limitation from telnet clients is disabled.

(3) No.

Shows the entry number assigned to the access-limited address of a telnet client.

(4) IP Address

Shows the IP address or the IP address range to allow access from telnet clients. (If no IP address has been entered, <empty> is shown.)

(5) Subnet Mask

Shows the subnet mask value for IP addresses to allow access from telnet clients. (If no subnet mask value has been entered, <empty> is shown.)

show telnet-server

Shows the telnet server configuration information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

telnet-server inactivity-timer <minutes>

Sets the maximum inactivity time to wait for a user input in a telnet client session. Upon expiration, the session is automatically terminated.

[Parameter]

Parameter name	Description
<minutes>	Set the maximum inactivity time in minutes to wait for a user input in a telnet client session. Upon expiration, the session is automatically terminated.

[Factory Default Setting]

Parameter name	Factory default setting
<minutes>	5 (minutes)

[Setting Range]

Parameter name	Setting range
<minutes>	1 to 60 (minutes)

[Note]

Parameter name	Note
<minutes>	None

telnet-server access-limitation enable

Enables the access limitation from telnet clients.

no telnet-server access-limitation enable

Disables the access limitation from telnet clients.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no telnet-server access-limitation enable The access limitation from telnet clients is disabled.

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

telnet-server <entry> <ip-address> <mask>

Sets IP addresses to allow access from telnet clients when the access limitation is enabled.

[Parameter]

Parameter name	Description
<entry>	Set an entry number.
<ip-address>	Set an IP address to allow access.
<mask>	Set a subnet mask to allow access from the IP address range.

[Factory Default Setting]

Parameter name	Factory default setting
<entry>	None
<ip-address>	None
<mask>	None

[Setting Range]

Parameter name	Setting range
<entry>	Enter an entry number from 1 to 5.
<ip-address>	1.0.0.1 to 223.255.254.254
<mask>	128.0.0.0 to 255.255.255.255 (One-bits and zero-bits must be consecutive in binary.)

[Note]

Parameter name	Note
<entry>	None
<ip-address>	None
<mask>	None

<Configuration Example>

Overview: Configure the telnet connection so that the sessions are allowed only from specific network addresses (192.168.1.1 to 192.168.1.254).

(1) Enable the access limitation from telnet.

(2) Add the network address 192.168.1.0 (subnet mask 255.255.255.0), as a source address for telnet connections, to Entry No. 1.

```
     M24eG> enable
     M24eG# configure
(1)  M24eG(config)# telnet-server access-limitation enable
(2)  M24eG(config)# telnet-server 1 192.168.1.0 255.255.255.0
     M24eG(config)# exit
     M24eG#
```

Fig. 3-5-2-2 Example of configuring the telnet access limitation

3.5.3. SSH Configuration

Configure the SSH-related settings in "Global configuration mode." Confirm the configuration information by executing the "show ip ssh" command in "Privileged mode."

Command to show the SSH configuration

M24eG#	show ip ssh

Command to enable the SSH server

M24eG(config)#	crypto key generate rsa

Command to delete the SSH server

M24eG(config)#	crypto key zeroize rsa

Command to set the SSH server timeout

M24eG(config)#	ip ssh time-out <minutes>

Command to set the SSH server authentication timeout

M24eG(config)#	ip ssh authentication-timeout <seconds>

Command to set the number of SSH server authentication retries

M24eG(config)#	ip ssh authentication-retries <retries>

<Command Entry Example>

An example of executing the command to show the SSH configuration is shown below.

```
M24eG> enable
M24eG# show ip ssh

(1) SSH UI Idle Timeout:    5 Min.
(2) SSH Auth. Idle Timeout: 120 Sec.
(3) SSH Auth. Retries Time: 5
(4) SSH Server:             Enabled(SSH)
(5) SSH Server Key:         Key exists.

M24eG#
```

Fig. 3-5-3-1 Example of executing the command to show the SSH configuration

(1) SSH UI Idle Timeout

Shows the maximum inactivity time to wait for a user input in an SSH session. Upon expiration, the session is automatically terminated.

(2) SSH Auth. Idle Timeout

Shows the response timeout time for SSH authentication.

(3) SSH Auth. Retries Time

Shows the maximum number of SSH authentication retries.

(4) SSH Server

Shows whether or not the access via SSH is allowed.

(5) SSH Server Key

Shows the status of the SSH server key.

show ip ssh

Shows the SSH server configuration information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

crypto key generate rsa

Generates SSH server keys. Enables the access via SSH.

crypto key zeroize rsa

Deletes SSH server keys. Disables the access via SSH.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	crypto key zeroize rsa The access via SSH is disabled.

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	Up to two users can access the Switching Hub concurrently via SSH. For the SSH login procedure, follow the operation procedure for each SSH client.

ip ssh time-out <minutes>

Sets the maximum inactivity time to wait for a user input in an SSH session. Upon expiration, the session is automatically terminated.

[Parameter]

Parameter name	Description
<minutes>	Set the maximum inactivity time in minutes to wait for a user input. Upon expiration, the session is automatically terminated.

[Factory Default Setting]

Parameter name	Factory default setting
<minutes>	5 (minutes)

[Setting Range]

Parameter name	Setting range
<minutes>	1 to 60 (minutes)

[Note]

Parameter name	Note
<minutes>	None

ip ssh authentication-timeout <seconds>

Sets the response timeout time for SSH authentication.

[Parameter]

Parameter name	Description
<seconds>	Set the response timeout time in seconds for SSH authentication.

[Factory Default Setting]

Parameter name	Factory default setting
<seconds>	120 (seconds)

[Setting Range]

Parameter name	Setting range
<seconds>	1 to 120 (seconds)

[Note]

Parameter name	Note
<seconds>	None

ip ssh authentication-retries <retries>

Sets the maximum number of SSH authentication retries.

[Parameter]

Parameter name	Description
<retries>	Set the maximum number of SSH authentication retries. The first try is counted as a retry.

[Factory Default Setting]

Parameter name	Factory default setting
<retries>	5 (times)

[Setting Range]

Parameter name	Setting range
<retries>	0 to 5 (times)

[Note]

Parameter name	Note
<retries>	None

<Configuration Example>

Overview: Enable the access via SSH.

Set the timeout time to 40 seconds. This is the maximum inactivity time to wait for a user input. Upon expiration, the session is automatically terminated.

(1) Enable the access via SSH.

(2) Set the timeout time to 40 seconds. If no input is made before it expires, the session is automatically terminated.

```
M24eG> enable
M24eG# conf
(1) M24eG(config)# crypto key generate rsa
(2) M24eG(config)# ip ssh time-out 40
M24eG(config)# exit
M24eG#
```

Fig. 3-5-3-2 Example of the SSH server configuration

3.5.4. RADIUS Server Configuration

Configure the access settings of a RADIUS server for user login authentication in "Global configuration mode." Confirm the configuration information by executing the "show radius-server" command in "Privileged mode."

Command to show the RADIUS configuration

M24eG#	show radius-server

Command to configure the RADIUS server access settings

M24eG(config)#	radius-server host <index> ip <ip-address> [timeout <sec(s)>][retransmit <retries>] [key <string>]

Command to set the NAS ID

M24eG(config)#	dot1x nasid <string>

Command to show the login method configuration

M24eG#	show login method

Command to set the login method

M24eG(config)#	login method <index> {Local | RADIUS | None}

<Command Entry Example>

An example of executing the command to show the RADIUS configuration is shown below.

```
     M24eG# show radius-server
(1)  NAS ID: Nas1
       (2)        (3)                  (4)                 (5)              (6)
     Index Server IP address    Shared Secret     Response Time Max Retransmission
     ----- ----------------- ------------------- ------------- ------------------
       1    192.168.1.200      admin                 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
     M24eG#
```

Fig. 3-5-4-1 Example of executing the command to show the RADIUS configuration

```
     M24eG# show login method

(7)  login method 1 is Local
(8)  login method 2 is None
     M24eG#
```

Fig. 3-5-4-2 Example of executing the command to show the login method

(1) NAS ID

Shows the authentication ID (NAS Identifier). This parameter is used as a NAS-Identifier (RADIUS attribute 32) in a RADIUS packet (Access-Request) sent by this Switching Hub.

(2) Index

Shows the authentication order to RADIUS server. The authentication is carried out starting from Index No. 1. If the communications with the RADIUS server fails, then the authentication is carried out for Index No. 2 and so on in ascending order.

(3) Server IP address

Shows the IP address of RADIUS server.

(4) Shared Secret

Shows the common key (Shared Secret) that is used in authentication. The same key must be set between the server side and the client side. In general, system manager set this common

key.

(5) Response Time

Shows the maximum response time for authentication request to RADIUS server.

(6) Max Retransmission

Shows the maximum number of retransmissions of authentication request to RADIUS server.

(7) login method 1

Shows the first login method to authenticate, using the username and password.

(8) login method 2

Shows the second login method to authenticate, using the username and password.

show radius-server

Shows the RADIUS server configuration information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

radius-server host <index> ip <ip-address>

[timeout <sec(s)>][retransmit <retries>][key <string>]

Configures access settings of a RADIUS server for user login authentication.

[Parameter]

Parameter name	Description
<index>	Set the authentication order to RADIUS server.
<ip-address>	Set the IP address of RADIUS server.
<sec(s)>	Set the maximum response time for authentication request to RADIUS server.
<retries>	Set the maximum number of retransmissions of authentication request to RADIUS server.
<string>	Set the common key (Shared Secret) that is used in authentication.

[Factory Default Setting]

Parameter name	Factory default setting
<index>	None
<ip-address>	0.0.0.0
<sec(s)>	None
<retries>	None
<string>	None

[Setting Range]

Parameter name	Setting range
<index>	1 to 5
<ip-address>	Class A: 1.x.x.x to 126.x.x.x Class B: 128.1.x.x to 191.254.x.x Class C: 192.0.1.x to 223.255.254.x
<sec(s)>	1 to 120 (seconds)
<retries>	1 to 254
<string>	Up to 20 one-byte characters

[Note]

Parameter name	Note
—	None

dot1x nasid <string>

Changes the authentication ID (NAS Identifier).

[Parameter]

Parameter name	Description
<string>	Set a new authentication ID.

[Factory Default Setting]

Parameter name	Factory default setting
<string>	Nas1

[Setting Range]

Parameter name	Setting range
<string>	Up to 16 one-byte characters

[Note]

Parameter name	Note
<string>	None

show login method

Shows the login method to authenticate, using the username and password.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

login method <index> {Local | RADIUS | None}

Sets the login method to authenticate, using the username and password.

[Parameter]

Parameter name	Description	
<index>	1 : The first method for authentication. 2 : The second method for authentication.	
{Local | RADIUS | None}	Set a login method to authenticate, using the username and password.	
	Local	Login to the device is carried out by using the username and password stored in the device.
	RADIUS	Login to the device is carried out by using RADIUS server authentication.
	None	Login Method 2 is not used.

[Factory Default Setting]

Parameter name	Factory default setting
<index>	None
{Local | RADIUS | None}	1 : Local 2 : None

[Setting Range]

Parameter name	Setting range
<index>	1 to 2
{Local | RADIUS | None}	None

[Note]

Parameter name	Note
—	None

<Configuration Example>

Overview: Configure access settings of a RADIUS server for user login authentication.

(1) Configure the access settings of a RADIUS server as follows:
Authentication order: 1, IP address: 192.168.1.200, Common key for authentication: admin.

(2) Configure the first login method to a RADIUS server for authentication using the username and password.

(3) Set the second login method to the information stored locally in this Switching Hub for authentication using the username and password.

```
M24eG> enable
M24eG# conf
(1) M24eG(config)# radius-server host 1 ip 192.168.1.200 key admin
(2) M24eG(config)# login method 1 radius
(3) M24eG(config)# login method 2 local
M24eG(config)# exit
M24eG#
```

Fig. 3-5-4-3 Example of the RADIUS server access configuration

3.5.5. Configuration of the Easy IP Address Setup Function

Configure the easy IP address setup function in "Global configuration mode." Confirm the configuration information by executing the "show ip setup interface" command in "Privileged mode."

Command to show the easy IP address setup function

M24eG#	show ip setup interface

Command to enable the easy IP address setup function configuration

M24eG(config)#	ip setup interface

Command to disable the easy IP address setup function configuration

M24eG(config)#	no ip setup interface

<Command Entry Example>

An example of executing the command to show the easy IP address setup function is shown below.

```
M24eG> enable
M24eG# show ip setup interface
        (1)
 IP Setup Interface
 -------------------------
 Enabled

M24eG#
```

Fig. 3-5-5-1 Example of executing the command to show the easy IP address setup function

(1) IP Setup Interface

Shows the easy IP address setup function configuration.	
Enabled	The easy IP address setup function is enabled.
Disabled	The easy IP address setup function is disabled.

show ip setup interface

Shows the easy IP address setup function configuration.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

ip setup interface

Enables the easy IP address setup function.

no ip setup interface

Disables the easy IP address setup function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	ip setup interface The easy IP address setup function is enabled.

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

<Configuration Example>

Overview: Enable the easy IP address setup function.

(1) Enable the easy IP address setup function.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# no ip setup interface
M24eG(config)# exit
M24eG#
```

Fig. 3-5-5-2 Example of configuration of the easy IP address setup function

3.6. MAC Address Table Display, Registration, and Configuration

Configure the MAC address table and register/delete static MAC addresses in "Global configuration mode," and show the MAC address table in "Privileged mode."

Command to show the MAC address auto-learning status

M24eG#	show mac-learning

Command to show the aging time

M24eG#	show mac-address-table aging-time

Command to show the MAC address table (dynamic entries)

M24eG#	show mac-address-table mac

Command to show the MAC address table (static entries)

M24eG#	show mac-address-table static

Command to set the aging time

M24eG(config)#	mac-address-table aging-time <aging time>

Command to register the static MAC address entry

M24eG(config)#	mac-address-table static <MAC addr.> <interface name> vlan <VLAN ID>

Command to delete the static MAC address entry

M24eG(config)#	no mac-address-table static <MAC addr.> vlan <VLAN ID>

Command to enable MAC address auto-learning

M24eG(config-if)#	mac-learning

Command to disable MAC address auto-learning

M24eG(config-if)#	no mac-learning

Command to set the limit of the number of auto-learned MAC addresses

M24eG(config-if)#	mac-learning limit <limit>

Command to delete the limit of the number of auto-learned MAC addresses

M24eG(config-if)#	no mac-learning limit

<Command Entry Example>

An example of executing the command to show the MAC address auto-learning status is shown below.

```
M24eG> enable
M24eG# show mac-learning
(1)           (2)              (3)
Interface     MAC Learning     MAC Learning Limit
---------     ------------     ------------------
gi0/1         Auto             Disabled
gi0/2         Auto             Disabled
gi0/3         Auto             Disabled
gi0/4         Auto             Disabled
gi0/5         Auto             Disabled
gi0/6         Auto             Disabled
gi0/7         Auto             Disabled
gi0/8         Auto             Disabled
gi0/9         Auto             Disabled
gi0/10        Auto             Disabled
gi0/11        Auto             Disabled
gi0/12        Auto             Disabled
gi0/13        Auto             Disabled
gi0/14        Auto             Disabled
gi0/15        Auto             Disabled
gi0/16        Auto             Disabled
gi0/17        Auto             Disabled
gi0/18        Auto             Disabled
gi0/19        Auto             Disabled
gi0/20        Auto             Disabled
gi0/21        Auto             Disabled
gi0/22        Auto             Disabled
gi0/23        Auto             Disabled
gi0/24        Auto             Disabled
```

Fig. 3-6-1 Example of executing the command to show the MAC address auto-learning status

(1) Interface

Shows the interface name.	
gi0/1	Refers to "Gigabit Ethernet Port 1." (The number after "gi0/" indicates the port number.)

(2) MAC Learning

Shows the MAC address auto-learning status of each port.	
Auto	MAC address auto-learning is enabled.
Disabled	MAC address auto-learning is disabled.

(3) MAC Learning Limit

Shows the status of the limit of the number of auto-learned MAC addresses for each port.	
Disabled	The number of MAC addresses that can be auto-learned is not limited.
1 to 256	Indicates the limit of the number of auto-learned MAC addresses.

<Command Entry Example>

An example of executing the command to show the aging time is shown below.

(1)

```
M24eG> enable
M24eG# show mac-address-table aging-time
MAC address table aging time: 300 seconds.
M24eG#
```

Fig. 3-6-2 Example of executing the command to show the aging time

(1) MAC address table aging time

Shows the aging time, which is the time until the learned entries in the MAC address table are deleted.

<Command Entry Example>

An example of executing the command to show the MAC address table (dynamic entries) is shown below.

```
M24eG> enable
M24eG# show mac-address-table mac
 (1)                (2)           (3)   (4)
  MAC Address       Address Type  VLAN  Port
  ----------------  ------------  ----  ---------
  xx:xx:xx:xx:xx:xx  Dynamic      1     gi0/1
  xx:xx:xx:xx:xx:xx  Dynamic      1     gi0/1
M24eG#
```

Fig. 3-6-3 Example of executing the command to show the MAC address table (dynamic entries)

(1) MAC Address

Lists MAC address entries existing in the MAC address table.

(2) Address Type

Shows the MAC address entry type.	
Dynamic	Dynamically learned MAC address entry

(3) VLAN

Shows the VLAN ID that is learning the MAC address entry.

(4) Port

Shows the interface name.	
gi0/1	Refers to "Gigabit Ethernet Port 1." (The number after "gi0/" indicates the port number.)

<Command Entry Example>

An example of executing the command to show the MAC address table (static entries) is shown below.

```
M24eG> enable
M24eG# show mac-address-table static
 (1)                (2)           (3)    (4)
  MAC Address       Address Type  VLAN   Port
  ----------------  ------------  ----   ---------
  xx:xx:xx:xx:xx:xx  Static         1     gi0/1
  xx:xx:xx:xx:xx:xx  Static         1     gi0/1
M24eG#
```

Fig. 3-6-4 Example of executing the command to show the MAC address table (static entries)

(1) MAC Address

Lists MAC address entries existing in the MAC address table.

(2) Address Type

Shows the MAC address entry type.	
Static	Statically registered MAC address entry

(3) VLAN

Shows the VLAN ID that is learning the MAC address entry.

(4) Port

Shows the interface name.	
gi0/1	Refers to "Gigabit Ethernet Port 1." (The number after "gi0/" indicates the port number.)

show mac-address-table mac-learning

Shows the MAC address auto-learning status of each port.

show mac-address-table aging-time

Shows the MAC address table aging time.

show mac-address-table mac

Shows dynamically learned MAC address entries.

show mac-address-table static

Shows statically registered MAC address entries.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

mac-address-table aging-time <aging time>

Sets the aging time until the dynamically learned entries in the MAC address table are deleted.

[Parameter]

Parameter name	Description
<aging time>	Set the time in seconds between frame receiving and dynamic entry deletion.

[Factory Default Setting]

Parameter name	Factory default setting
<aging time>	300 (seconds)

[Setting Range]

Parameter name	Setting range
<aging time>	10 to 1000000 (seconds)

[Note]

Parameter name	Note
<aging time>	None

mac-address-table static <MAC addr.> <interface name> vlan <VLAN ID>

Statically enters a MAC address in the MAC address table.

no mac-address-table static <MAC addr.> vlan <VLAN ID>

Deletes a static MAC address from the MAC address table.

[Parameter]

Parameter name	Description
<MAC addr.>	Set the MAC address to be statically entered.
<interface name>	Set the interface name of the target port.
<VLAN ID>	Set the target VLAN ID.

[Factory Default Setting]

Parameter name	Factory default setting
<MAC addr.>	None
<interface name>	None
<VLAN ID>	None

[Setting Range]

Parameter name	Setting range
<MAC addr.>	00:00:00:00:00:01 to FF:FF:FF:FF:FF:FE
<interface name>	<Switch-M24eG> GigabitEthernet0/1 to GigabitEthernet0/24 <Switch-M16eG> GigabitEthernet0/1 to GigabitEthernet0/16 The name can be abbreviated. Example: GigabitEthernet0/1 → gi0/1
<VLAN ID>	1 to 4094

[Note]

Parameter name	Note
<MAC addr.>	None
<interface name>	None
<VLAN ID>	Set an existing VLAN ID.

mac-learning

Enables the MAC address auto-learning of each port.

no mac-learning

Disables the MAC address auto-learning of each port.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	mac-learning

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	If MAC address auto-learning is disabled, communication cannot be established unless a MAC address is registered statically.

mac-learning limit <limit>

Sets the limit of the number of auto-learned MAC addresses for each port. Assuming that the number of learned MAC addresses reaches the limit, and if a frame with new source MAC address that has not been learned is received, this frame is discarded.

no mac-learning limit

Deletes the limit of the number of auto-learned MAC addresses for each port.

[Parameter]

Parameter name	Description
limit	Set the limit of the number of auto-learned MAC addresses for each port.

[Factory Default Setting]

Parameter name	Factory default setting
limit	None

[Setting Range]

Parameter name	Setting range
limit	1 to 256

[Note]

Parameter name	Note
limit	1. To use this function, MAC address auto-learning must be enabled. 2. Static MAC address is not included in the limit value.

<Configuration Example 1>

Overview: Set the MAC address table aging time.

(1) Set the time until the dynamically learned entries in the MAC address table are automatically deleted to 1,200 seconds.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# mac-address-table aging-time 1200
M24eG(config)# exit
M24eG#
```

Fig. 3-6-5 Example of setting the MAC address table aging time

<Configuration Example 2>

Overview: Disable communications with devices connected to Port 1 other than statically entered ones (MAC address: 00:00:00:00:00:01).

(1) Statically enter MAC address 00:00:00:00:00:01 in Port 1 (VLAN 1).

(2) Move to the interface configuration mode for Port 1.

(3) Disable the MAC address auto-learning of Port 1.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# mac-address-table static 00:00:00:00:00:01 gi0/1 vlan 1
(2) M24eG(config)# interface GigabitEthernet0/1
(3) M24eG(config-if)# no mac-learning
M24eG(config-if)# exit
M24eG(config)# exit
M24eG#
```

Fig. 3-6-6 Example of static MAC address entry

<Configuration Example 3>

Overview: Set the limit of the number of auto-learned MAC addresses for Port 1 to 1.

(1) Set the limit of the number of auto-learned MAC addresses for Port 1 to 1.

```
M24eG> enable
M24eG# configure
M24eG(config)# interface GigabitEthernet0/1
(1) M24eG(config-if)# mac-learning limit 1
M24eG(config-if)# exit
M24eG(config)# exit
M24eG#
```

Fig. 3-6-7 Example of setting the limit of the number of auto-learned MAC addresses

3.7. Time Configuration

Configure the time setting and time synchronization by SNTP in "Global configuration mode." Confirm the configuration information by executing the "show sntp" command in "Privileged mode."

Command to show the SNTP configuration

M24eG#	show sntp

Command to manually set the time

M24eG(config)#	sntp clocktime <date> <time>

Command to enable SNTP

M24eG(config)#	sntp enable

Command to disable SNTP

M24eG(config)#	sntp disable

Command to set the SNTP server IP address

M24eG(config)#	sntp server <ip-address>

Command to set the interval of SNTP time acquisition

M24eG(config)#	sntp polling-interval <min>

Command to enable SNTP daylight saving

M24eG(config)#	sntp daylight-saving

Command to disable SNTP daylight saving

M24eG(config)#	no sntp daylight-saving

Command to set the SNTP time zone

M24eG(config)#	sntp timezone [<location>]

Command to reacquire time

M24eG(config)#	sntp update

<Command Entry Example>

An example of executing the command to show the SNTP configuration is shown below.

```
M24eG> enable
M24eG# show sntp
(1) Clock Time            : Wed, 21 Jul 2010 12:00:00
(2) SNTP                  : Enabled
(3) SNTP Server           : 192.168.1.1
(4) SNTP Polling Interval : 60 (min)
(5) Time Zone             : (GMT+09:00) Osaka,Sapporo,Tokyo
(6) Daylight Saving       : Disabled
M24eG#
```

Fig. 3-7-1 Example of executing the command to show the SNTP configuration

(1) Clock Time

Shows the present Switching Hub clock time.

(2) SNTP

Shows the SNTP status (Enabled or Disabled).	
Enabled	The SNTP function is enabled.
Disabled	The SNTP function is disabled.

(3) SNTP Server

Shows the SNTP server address configuration.

(4) SNTP Polling Interval

Shows the time acquisition interval.

(5) Time Zone

Shows the time zone configuration.

(6) Daylight Saving

Shows the daylight saving configuration.	
Enabled	Daylight saving is enabled.
Disabled	Daylight saving is disabled.

show sntp

Shows the present time and SNTP configuration.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

sntp clocktime <date> <time>

Manually sets the time.

[Parameter]

Parameter name	Description
<date>	Set the date in YYYY/MM/DD format.
<time>	Set the time in HH:MM:SS format.

[Factory Default Setting]

Parameter name	Factory default setting
<date>	"1970/01/01"
<time>	"00:00:00"

[Setting Range]

Parameter name	Setting range
<date>	YYYY: 1970 to 2037 MM: 1 to 12 DD: 1 to 31
<time>	HH: 00 to 23 MM: 00 to 59 SS: 00 to 59

[Note]

Parameter name	Note
<date>	None
<time>	None

sntp enable

Enables the SNTP function.

sntp disable

Disables the SNTP function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	disable

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

sntp server <ip-address>

Sets an address of SNTP server.

[Parameter]

Parameter name	Description
<ip-address>	Set an IP address of SNTP server.

[Factory Default Setting]

Parameter name	Factory default setting
<ip-address>	0.0.0.0

[Setting Range]

Parameter name	Setting range
<ip-address>	0.0.0.0 to 223.254.254.254

[Note]

Parameter name	Note
<ip-address>	None

Note: If you set SNTP server to 0.0.0.0, SNTP is automatically disabled.

sntp polling-interval <min>

Sets the time acquisition interval.

[Parameter]

Parameter name	Description
<min>	Set the time acquisition interval. The unit is minutes.

[Factory Default Setting]

Parameter name	Factory default setting
<min>	1440 (minutes)

[Setting Range]

Parameter name	Setting range
<min>	1 to 1440 (minutes)

[Note]

Parameter name	Note
<min>	None

sntp daylight-saving

Enables daylight saving.

no sntp daylight-saving

Disables daylight saving.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no sntp daylight-saving

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

sntp timezone [<location>]

Sets the time zone.

[Parameter]

Parameter name	Description
<location>	Set the time zone.
None	The time zone list is displayed.

[Factory Default Setting]

Parameter name	Factory default setting
<location>	51 (Osaka, Sapporo, Tokyo)

[Setting Range]

Parameter name	Setting range
<location>	1 to 63

[Note]

Parameter name	Note
<location>	None

sntp update

Acquires time.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

Note: SNTP function must be enabled to execute the "sntp update" command.

<Configuration Example 1>

Overview: Manually set the Switching Hub clock time.

(1) Set the time to July 21, 2010, 12:00.

```
M24eG> enable
M24eG# configure
(1)M24eG(config)# sntp clocktime 2010/7/21 12:00:00
M24eG(config)# exit
M24eG#
```

Fig. 3-7-2 Example of setting the Switching Hub time

<Configuration Example 2>

Overview: Set the Switching Hub to automatically acquire time from the SNTP server at intervals of 60 minutes.

(1) Set the address of the SNTP server from which time is acquired to 192.168.1.1.

(2) Set the time acquisition interval to 60 minutes.

(3) Enable the SNTP function.

```
M24eG> enable
M24eG# configure
(1)M24eG(config)# sntp server 192.168.1.1
(2)M24eG(config)# sntp polling-interval 60
(3)M24eG(config)# sntp enable
M24eG(config)# exit
M24eG#
```

Fig. 3-7-3 Example of the SNTP server configuration

Note: If you set SNTP server to 0.0.0.0, SNTP is automatically disabled.

3.8. ARP Configuration

Configure the ARP table in "Global configuration mode." Confirm the configuration information by executing the "show arp sort ip" command in "Privileged mode."

Command to show the ARP table information

M24eG#	show arp sort ip

Command to set the ARP aging time

M24eG(config)#	arp timeout <timeout>

ARP (static) registration command

M24eG(config)#	arp <ip-address> <MAC address>

ARP (static) deletion command

M24eG(config)#	no arp <ip-address>

<Command Entry Example>

An example of executing the command to show the ARP table information is shown below.

```
M24eG> enable
M24eG# show arp sort ip
   (1)                (2)                (3)
   IP Address         HWaddress          Type
   ---------------    ----------------   ----------
   192.168.0.100      00:00:00:00:00:01  Static
M24eG#
```

Fig. 3-8-1 Example of executing the command to show the ARP table information

(1) IP Address

Lists learned IP addresses in the ARP table.

(2) HWaddress

Lists learned MAC addresses in the ARP table.

(3) Type

Shows the learning type for the ARP table.	
Dynamic	Auto-learned address information
Static	Information of an address registered according to the configuration

show arp sort ip

Shows the ARP table registration status.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

arp timeout <timeout>

Sets the timeout for the ARP table.

[Parameter]

Parameter name	Description
<timeout>	Set the timeout for the ARP table in seconds.

[Factory Default Setting]

Parameter name	Factory default setting
<timeout>	7200 (seconds)

[Setting Range]

Parameter name	Setting range
<timeout>	30 to 86400 (seconds)

[Note]

Parameter name	Note
<timeout>	None

arp <ip-address> <MAC address>

Registers addresses in the ARP table.

no arp

Deletes registered addresses in the ARP table.

[Parameter]

Parameter name	Description
<ip-address>	Set the IP address to be registered in the ARP table.
<MAC address>	Set the MAC address to be registered in the ARP table.

[Factory Default Setting]

Parameter name	Factory default setting
<ip-address>	None
<MAC address>	None

[Setting Range]

Parameter name	Setting range
<ip-address>	1.0.0.0 to 223.255.255.255
<MAC address>	Unicast address

[Note]

Parameter name	Note
<ip-address>	None
<MAC address>	None

Note: Up to 256 static and dynamic entries in total can be registered in the ARP table.

<Configuration Example 1>

Overview: Set the aging time to 14,400 seconds.

(1) Set the ARP information aging time to 14,400 seconds.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# arp timeout 14400
M24eG(config)# exit
M24eG#
```

Fig. 3-8-2 Example of setting the ARP aging time

<Configuration Example 2>

Overview: Manually register addresses in the ARP table.

(1) Manually register addresses (IP - 192.168.0.100, MAC - 00:00:00:00:00:01) in the ARP table.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# arp 192.168.0.100 00:00:00:00:00:01
M24eG(config)# exit
M24eG#
```

Fig. 3-8-3 Example of manual registration in the ARP table

4. Advanced Switch Configuration

4.1. VLAN Configuration

Features

- Corresponding to IEEE802.1Q compatible 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 a VLAN identifier placed on each frame in processing tagged frames. As for an untagged frame, ports are divided into groups by this ID, and the forwarding destination of the frame is determined by referring to this ID. Multiple VLANs can be assigned to each port.

- PVID (Port VLAN ID)
  Only one PVID can be set to each port. When an untagged frame is received, this ID determines to which VLAN the frame should be forwarded. As for a tagged frame, this ID is not referred and VLAN ID in the tag is used instead.

Configure the VLAN setting in "Global configuration mode" or "Interface configuration mode." Confirm the configuration information by executing the "show vlan all" command in "Privileged mode."

Command to show the VLAN configuration

M24eG#	show vlan {all | <vlan-id-list>}

Command to create and configure VLAN

M24eG(config)#	interface vlan<vlan-id>

Command to set the VLAN name

M24eG(config-if)#	name <name>

Command to delete the VLAN name

M24eG(config-if)#	no name

Command to set the VLAN members

M24eG(config-if)#	member <port-list>

Command to set the management VLAN

M24eG(config-if)#	management

Command to delete the management VLAN

M24eG(config-if)#	no management

Command to set the PVID

M24eG(config-if)#	pvid <vlan-id>

Command to set the frame type

M24eG(config-if)#	frame-type { all|tag-only }

<Command Entry Example>

An example of executing the command to show the VLAN configuration is shown below.

```
M24eG> enable
M24eG# show vlan all

(1) NOTE -- 'U' : Untagged port member
            'T' : Tagged port member
            '-' : Not a port member
  (2)          (3)           (4)
    VLAN-ID | Status      |Name
              Port No.(5) |1234|5678|9012|3456|7890|1234
    -------   ----------  ---- ---- ---- ---- ---- ----
    1       | static      |VLAN1
            | management  |
                          |---- ---- UUUU UUUU UUUU UUUU
    10      | static      |VLAN10
                          |UUUU ---- ---- ---- ---- --TT
    20      | static      |VLAN20
                          |---- UUUU ---- ---- ---- --TT

M24eG#
```

Fig. 4-1-1 Example of executing the command to show the VLAN configuration

(1) NOTE

Describes the symbols output when the command to show the VLAN configuration is entered.	
'U' : Untagged port member	'U' denotes an untagged port.
'T' : Tagged port member	'T' denotes a tagged port.
'-' : Not a port member	'-' denotes a port that does not belong to the VLAN-ID.

(2) VLAN-ID

Lists VLAN IDs currently registered in this Switching Hub.

(3) Status

Shows the VLAN-ID status in two lines.	
static	Indicates that the VLAN-ID has been manually registered in this Switching Hub. (Only the data for VLAN-ID 1 is created at the factory.)
management	Indicates that the VLAN is a management VLAN that responds to Ping, Telnet, and other remote access.

* The Command Entry Example shows that only VLAN 1 belongs to the management VLAN, and VLAN 10 and 20 do not.

(4) NAME

Shows the VLAN name set for the VLAN-ID.

(5) Port

Shows the port numbers that belong to the VLAN and their status (tagged/untagged). (The ports are shown in shortened form in ascending order from the left as shown below.) Port 1 ← 1234|5678|9012|3456|7890|1234 → Port 24	
U	Untagged ports are indicated with 'U.'
T	Tagged ports are indicated with 'T.'
-	Ports that do not belong to the VLAN-ID are indicated with '-.'

* The following shows the port status of M24eG VLAN-ID 10 in the Command Entry Example.

```
VLAN-ID | Status     |Name
          Port No.   |1234|5678|9012|3456|7890|1234
-------   ----------  ---- ---- ---- ---- ---- ----
10      | static     |VLAN10
                     |UUUU ---- ---- ---- ---- --TT
```

Port No.	VLAN-ID 10 member	Tagged/Untagged
1	Yes	Untagged
2	Yes	Untagged
3	Yes	Untagged
4	Yes	Untagged
5	No	-
6	No	-
7	No	-
8	No	-
9	No	-
10	No	-
11	No	-
12	No	-
13	No	-
14	No	-
15	No	-
16	No	-
17	No	-
18	No	-
19	No	-
20	No	-
21	No	-
22	No	-
23	Yes	Tagged
24	Yes	Tagged

show vlan {all | <vlan-id-list>}

Shows the VLAN configuration.

[Parameter]

Parameter name	Description	
{ all|<vlan-id-list> }	Set a VLAN to be displayed.	
	all	All VLANs are displayed.
	<vlan-id-list>	Only specified VLANs are displayed.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<vlan-id-list>	1 to 4094 Multiple VLANs can be specified. Example: 1-3,5

[Note]

Parameter name	Note
<vlan-id-list>	None

interface vlan<vlan-id>

Creates and configures VLAN. Execution of this command enables interface configuration mode for the specified VLAN.

[Parameter]

Parameter name	Description
<vlan-id>	Set the VLAN ID of the VLAN to be created.

[Factory Default Setting]

Parameter name	Factory default setting
<vlan-id>	Only VLAN 1 (default VLAN) has been created.

[Setting Range]

Parameter name	Setting range
<vlan-id>	1 to 4094

[Note]

Parameter name	Note
<vlan-id>	Execute the command in "vlan<vlan-id>" form like vlan10. No spaces are allowed between vlan and <vlan-id>.

Note: When creating a new VLAN, PVID (after-mentioned) is not changed in conjunction with this new creation. Make sure to confirm the configuration. When you wish to delete a VLAN, you cannot delete it if the VLAN ID of the VLAN to be deleted still remains as a PVID. Delete the VLAN after changing the PVID to another ID.

Note: To delete a created VLAN ID, execute the command to configure the VLAN members without setting any VLAN member parameter in interface configuration mode for the VLAN ID to be deleted. (The VLAN member is left blank.)

name <name>

Sets/Changes the name of VLAN.

no name

Deletes the name of VLAN.

[Parameter]

Parameter name	Description
<name>	Set the name of VLAN.

[Factory Default Setting]

Parameter name	Factory default setting
<name>	None

[Setting Range]

Parameter name	Setting range
<name>	Up to 32 one-byte characters Allowed characters: alphanumeric character (A-Z, a-z, 0-9) symbol (!@#$&_-.) white space

[Note]

Parameter name	Note
<name>	To set a VLAN name containing white spaces, enclose it with a pair of double-quotation marks (" "). Example: name "VLAN 1"

member <port-list>

Sets/Changes members of the VLAN.

[Parameter]

Parameter name	Description
<port-list>	Set member ports belonging to the VLAN.

[Factory Default Setting]

Parameter name	Factory default setting
<port-list>	<Switch-M24eG> VLAN1 (default VLAN): 1 to 24 <Switch-M16eG> VLAN1 (default VLAN): 1 to 16 Other VLANs: None

[Setting Range]

Parameter name	Setting range
<port-list>	<Switch-M24eG> 1 to 24 <Switch-M16eG> 1 to 16 Multiple ports can be specified. Example: 1-3,5

[Note]

Parameter name	Note
<port-list>	If you execute the command without specifying the parameter, all ports belonging to the VLAN will be cleared, and the VLAN will be deleted.

management

Sets VLAN as a management VLAN.

no management

Disables the use of VLAN as a management VLAN.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	VLAN 1: management Other than VLAN 1: no management

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

pvid <vlan-id>

Changes the PVID (Port VLAN ID). Packets sent by a configured port to the VLAN identified by the PVID are untagged. Received untagged packets are handled as packets for the VLAN identified by the PVID.

* This command is executed in interface configuration mode of each port.

[Parameter]

Parameter name	Description
<vlan-id>	Set the PVID (Port VLAN ID). Only one PVID can be set for each port.

[Factory Default Setting]

Parameter name	Factory default setting
<vlan-id>	1

[Setting Range]

Parameter name	Setting range
<vlan-id>	1 to 4094

[Note]

Parameter name	Note
<vlan-id>	None

frame-type { all|tag-only }

Changes the type of frames received by ports.

* This command is executed in interface configuration mode of each port.

[Parameter]

Parameter name	Description	
{ all|tag-only }	Set the type of received frames.	
	all	Receives all frames.
	tag-only	Receives only VLAN-tagged frames.

[Factory Default Setting]

Parameter name	Factory default setting
{ all|tag-only }	all

[Setting Range]

Parameter name	Setting range
{ all|tag-only }	Either "all" or "tag-only"

[Note]

Parameter name	Note
{ all|tag-only }	None

<Configuration Example 1>

Overview: Create VLAN with the following conditions.

- VLAN-ID: 10
- VLAN name: VLAN10
- Belonging to a management VLAN
- Member ports: 1 and 2 (untagged), 24 (tagged [PVID=1])

(1) Create VLAN10 and transits to the interface configuration mode for VLAN10.
(2) Register Ports 1, 2, and 24 as members of VLAN 10.
(3) Set the VLAN name of VLAN10 to "VLAN10."
(4) Set VLAN10 as a management VLAN.
(5) Move to the global configuration mode.
(6) Move to the interface configuration mode for Ports 1 and 2.
(7) Set PVID for Ports 1 and 2 to 10.
(Since the VLAN-ID and PVID are identical, the port is untagged.)

```
M24eG> enable
M24eG# configure
(1)M24eG(config)# interface vlan10
(2)M24eG(config-if)# member 1-2,24
(3)M24eG(config-if)# name VLAN10
(4)M24eG(config-if)# management
(5)M24eG(config-if)# exit
(6)M24eG(config)# interface gi0/1-2
(7)M24eG(config-if)# pvid 10
M24eG(config-if)# exit
M24eG(config)# exit
M24eG#
```

Fig. 4-1-2 Example of the VLAN creation configuration

* Since PVID of Port 24 is 1, the port is tagged.

<Configuration Example 2>

Overview: Delete VLAN10 created in Configuration Example 1.

(1) Move to the interface configuration mode for VLAN10.

(2) Delete member ports.

(3) Move to the global configuration mode.

(4) Move to the interface configuration mode for Ports 1 and 2.

(5) Set PVID to 1. (Factory-set PVID)

(6) Confirm that VLAN-ID 10 has been deleted.

```
M24eG> en
M24eG# configure
(1) M24eG(config)# interface vlan10
(2) M24eG(config-if)# member
(3) M24eG(config-if)# exit
(4) M24eG(config)# interface gi0/1-2
(5) M24eG(config-if)# pvid 1
M24eG(config-if)# exit
M24eG(config)# exit
M24eG#
```

Fig. 4-1-3 Example of the VLAN deletion configuration

```
(6) M24eG# show vlan 10
NOTE -- 'U' : Untagged port member
        'T' : Tagged port member
        '-' : Not a port member

    VLAN-ID|Status    |Name
           Port No.   |1234|5678|9012|3456|7890|1234
    ------- ---------- ---- ---- ---- ---- ---- ----
    VLAN<10> not available!
M24eG#
```

Fig. 4-1-4 Example of the VLAN deletion confirmation

* If "VLAN<10> not available!" is displayed, the VLAN10 deletion is completed.

4.1.1. Internet Mansion Function Configuration

Configure the Internet mansion function in "Global configuration mode." Confirm the configuration information by executing the "show internet mansion" command in "Privileged mode."

Command to show the Internet mansion configuration

M24eG#	show internet mansion

Command to configure the Internet mansion

M24eG(config)#	internet mansion <port-list>

Command to disable the Internet mansion configuration

M24eG(config)#	no internet mansion

<Command Entry Example>

An example of executing the command to show the Internet mansion configuration is shown below.

```
M24eG> enable
M24eG# show internet mansion
(1) Internet Mansion:  Enabled
(2)   Promiscuous Port Members : gi0/23-24
(3)   Internet Mansion Members : gi0/1-22
M24eG#
```

Fig. 4-1-1-1 Example of executing the command to show the Internet mansion configuration

(1) Internet Mansion

Shows the Internet mansion function status (Enabled or Disabled).	
Enabled	The Internet mansion function is enabled.
Disabled	The Internet mansion function is disabled.

(2) Promiscuous Port Members

Shows the uplink port number set during configuration of the Internet mansion function.

(3) Internet Mansion

Shows the downlink port number.

show internet mansion

Shows the Internet mansion configuration.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

internet mansion <port-list>

Configures the Internet mansion function.

no internet mansion

Disables the Internet mansion configuration.

[Parameter]

Parameter name	Description
<port-list>	Enter a port number you wish to configure as an uplink port. This setting optimizes the Switching Hub configuration for an Internet-ready mansion. The designated port is used as an uplink port. Other ports can be used for downlink communication only, and downlink ports cannot communicate with one another. Therefore, it becomes possible to ensure security between each resident.

[Factory Default Setting]

Parameter name	Factory default setting
<port-list>	None. The Internet mansion function is disabled.

[Setting Range]

Parameter name	Setting range
<port-list>	<Switch-M24eG> 1 to 24 <Switch-M16eG> 1 to 16 Up to two ports can be set. Example: 1-2 or 1,3

[Note]

Parameter name	Note
<port-list>	None

Note: When Internet mansion mode is enabled, there are constraint conditions as follows. Please confirm the conditions before use.

(1) Combined usage with the link aggregation function is not possible.

(2) Only the uplink port belongs to the management VLAN.

Note: When Internet mansion mode is enabled, all VLAN configurations are overwritten.

<Configuration Example 1>

Overview: Enable the Internet mansion function with Ports 23 and 24 set as uplink ports.

(1) Configure the Internet mansion function with Ports 23 and 24 set as uplink ports.

(2) Enter y to enable the Internet mansion function.

(All VLAN configuration and PVID of each port are reset.)

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# internet mansion 23,24
This command will remove all VLANs other than VLAN1, and the PVID of all ports will
(2) be VLAN1. [Y/N] : y
M24eG(config)# exit
M24eG#
```

Fig. 4-1-1-2 Example of configuration of the Internet mansion function

4.2. Link Aggregation Configuration

4.2.1. About Link Aggregation

Link aggregation is a function that can increase the bandwidth between Switching Hubs by dividing multiple switch ports into groups and connecting the grouped ports to each other.
When using both link aggregation and access control functions, assign a practical physical port number to a port list of access control, not a logical port created in link aggregation. For details, refer to 4.4.

The maximum number of ports and groups is as follows.

Product name	Max. number of ports/group	Max. number of groups
Switch-M24eG Switch-M16eG	8	8

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

Configure the link aggregation setting in "Global configuration mode" or "Interface configuration mode."

Command to show the link aggregation configuration

M24eG#	show aggregation-link group [Aggregation-link group ID]

Command to configure the link aggregation

M24eG(config)#	aggregation-link group <Aggregation-link group ID> <port-list>

Command to delete the link aggregation configuration

M24eG(config)#	no aggregation-link group <Aggregation-link group ID>

<Command Entry Example>

An example of executing the command to show the link aggregation configuration is shown below.

```
M24eG> enable
M24eG# show aggregation-link group
Aggregation Group <1>
  Status      : Static
  Criterion   : src-dst-mac
  Admin Ports : gi0/9-10
  Oper Ports  : gi0/9-10

Aggregation Group <2>
  Status      : Static
  Criterion   : src-dst-mac
  Admin Ports : gi0/20-24
  Oper Ports  : (none)

M24eG#
```

(1)
(2)
(3)
(4)
(5)

Fig. 4-2-1 Example of executing the command to show the link aggregation configuration

(1) Aggregation Group <1-8>

Shows the aggregation group ID.

(2) Status

Shows the aggregation group configuration status.	
Static	Indicates that the aggregation link is statically registered.

(3) Criterion

Shows the traffic distribution type.	
src-dst-mac	Traffic distribution is performed based on the destination MAC address and the target MAC address of the transmitted frame.

(4) Admin Ports

Shows the list of ports set in the aggregation group.

(5) Oper Ports

Shows the list of ports currently belonging to the aggregation group. Shows "(none)" if none of the Admin Ports are linked up.

show aggregation-link group [Aggregation-link group ID]

Shows the link aggregation configuration.

[Parameter]

Parameter name	Description
[Aggregation-link group ID]	Specify the group number of the link aggregation. If you don't specify it, all groups are displayed.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<Aggregation-link group ID>	1 to 8 (A range can be specified with a hyphen.) None (All groups are displayed.)

[Note]

Parameter name	Note
None	None

aggregation-link group <Aggregation-link group ID> <port-list>

Configures the link aggregation.

no aggregation-link group <Aggregation-link group ID>

Deletes the link aggregation.

[Parameter]

Parameter name	Description
<Aggregation-link group ID>	Specify the group number of the link aggregation.
<port-list>	Specify ports belonging to the link aggregation.

[Factory Default Setting]

Parameter name	Factory default setting
<Aggregation-link group ID>	None
<port-list>	None

[Setting Range]

Parameter name	Setting range
<Aggregation-link group ID>	1 to 8 Up to eight groups can be set for each switch.
<port-list>	<Switch-M24eG> 1 to 24 <Switch-M16eG> 1 to 16 Up to eight ports can be set for each group. Multiple ports can be specified simultaneously. Example: 1-3,5

[Note]

Parameter name	Note
<Aggregation-link group ID>	None
<port-list>	None

<Configuration Example>

Overview: Set Ports 1 to 8 in an aggregation link.

(1) Create an aggregation link as Group 1 including Ports 1 to 8.

```
M24eG> enable
M24eG# configure
(1)M24eG(config)# aggregation-link group 1 1-8
M24eG(config)# exit
M24eG#
```

Fig. 4-2-2 Example of the link aggregation configuration

4.3. Port Monitoring Configuration

Configure the port monitoring in "Interface configuration mode." Confirm the configuration information by executing the "show monitor" command in "Privileged mode."

Command to show the monitoring configuration

M24eG#	show monitor

Command to configure the port monitoring

M24eG(config-if)#	port monitor <monitored port> direction {rx|tx|both}

<Command Entry Example>

An example of executing the command to show the monitoring configuration is shown below.

```
M16eG> enable
M16eG# show monitor

(1) Port monitor status  : Disabled
(2) Monitoring direction : Both
(3) Monitoring port      : 1
(4) Monitored port       : 2

M16eG#
```

Fig. 4-3-1 Example of executing the command to show the monitoring configuration

(1) Port monitor status

Shows the status of the port monitoring function (Enabled or Disabled).	
Enabled	The port monitoring function is enabled.
Disabled	The port monitoring function is disabled.

(2) Monitoring direction

Indicates which packet should be monitored, the transmit packet or the receive packet.	
Tx	The transmit packet is monitored.
Rx	The receive packet is monitored.
Both	Both of the transmit and receive packet are monitored.

(3) Monitoring port

Shows the port number of a port to monitor other port's packets.

(4) Monitored port

Shows the port number of a port to be monitored.

show monitor

Shows the port monitoring function configuration.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

port monitor <monitored port> direction <rx|tx|both>

Enables the port monitoring function.

no port monitor

Disables the port monitoring function.

[Parameter]

Parameter name	Description	
<monitored port>	Specify a port number of a port to be monitored.	
<rx|tx|both>	Specify which packet should be monitored, the transmit packet or the receive packet.	
	Tx	The transmit packet is monitored.
	Rx	The receive packet is monitored.
	Both	Both of the transmit and receive packet are monitored.

[Factory Default Setting]

Parameter name	Factory default setting
<monitored port>	None
<rx|tx|both>	None

[Setting Range]

Parameter name	Setting range
<monitored port>	<Switch-M24eG> 1 to 24 <Switch-M16eG> 1 to 16 Multiple ports can be specified. Example: 1-3,5
<rx|tx|both>	None

[Note]

Parameter name	Note
<monitored port>	None
<rx|tx|both>	None

<Configuration Example 1>

Overview: Configure port monitoring so that Port 1 monitors packets transmitted/received on Ports 2 to 5.

(1) Move to the interface configuration mode for Port 1.

(2) Enable monitoring of packets transmitted/received on Ports 2 to 5.
(After the command is executed, the function is automatically enabled, starting monitoring.)

```
M16eG> enable
M16eG# configure
(1) M16eG(config)# interface GigabitEthernet0/1
(2) M16eG(config-if)# port monitor 2-5 direction both
M16eG(config-if)# exit
M16eG(config)# exit
M16eG#
```

Fig. 4-3-2 Example of the port monitoring configuration

<Configuration Example 2>

Overview: Disable the port monitoring function enabled as Configuration Example 1 shows.

(1) Move to the interface configuration mode for Port 1.

(2) Disable packet monitoring.

```
M16eG> enable
M16eG# configure
(1) M16eG(config)# interface GigabitEthernet0/1
(2) M16eG(config-if)# no port monitor
M16eG(config-if)# exit
M16eG(config)# exit
M16eG#
```

Fig. 4-3-3 Example of the configuration for disabling port monitoring

4.4. Access Control Configuration

Configure access control in "Global configuration mode."

When using both access control and link aggregation functions, assign a practical physical port number to a port list, not a logical port created in link aggregation.

Command to show the classifier configuration

M24eG#	show AccessControl classifier {all | <classifier-number>}

Command to show the in-profile configuration

M24eG#	show AccessControl inprofile

Command to show the out-profile configuration

M24eG#	show AccessControl outprofile

Command to show the port list configuration

M24eG#	show AccessControl portlist

Command to show the policy configuration

M24eG#	show AccessControl policy {all | <policy-number>}

Command to show the policy sequence configuration

M24eG#	show AccessControl policy-sequence port <port num> sort {policy-index | sequence}

Command to configure the classifier

M24eG(Config)#	AccessControl classifier <id> [src-mac <MAC>] [dst-mac <MAC>] [src-net <ip-mask>] [dst-net <ip-mask>] [src-port <layer4-port-list>] [dst-port <layer4-port-list>] [vlan-id <vid>] [dot1p-priority <priority>] [dscp <value>] [protocol <pro-num>] [icmp-type <icmptype>] [tcp-syn-flag{true/false}]

Command to delete the classifier

M24eG(Config)#	no AccessControl classifier <index>

Command to configure the in-profile

M24eG(Config)#	AccessControl inprofile <index> {deny | permit { dscp <dscp-value> | precedence <p-value> | cos <c-value>}}

Command to delete the in-profile

M24eG(Config)#	no AccessControl inprofile <index>

Command to configure the out-profile

M24eG(Config)#	AccessControl outprofile <index> committed-rate <unit> burst-size <volume> {deny | permit [dscp <value>]}

Command to delete the out-profile

M24eG(Config)#	no AccessControl outprofile <index>

Command to configure the port list

M24eG(Config)#	AccessControl portlist <port-list-index> <port num>

Command to delete the port list

M24eG(Config)#	no AccessControl portlist <port-list-index>

Command to configure the policy

M24eG(Config)#	AccessControl policy <index> portlist <port-list-index> classifier <c-index> policy-sequence <value> inprofile <i-index> [outprofile <o-index>]

Command to enable the policy

M24eG(Config)#	AccessControl policy <index> enable

Command to disable the policy

M24eG(Config)#	no AccessControl policy <index> enable

Command to delete the policy

M24eG(Config)#	no AccessControl policy <index>

<Command Entry Example>

An example of executing the command to show the access control is shown below.

```
M24eG> enable
M24eG# show AccessControl classifier all

 Classifier Index         :1
 VLAN ID  :Ignore (3) 802.1p Priority :Ignore (4) DSCP      :Ignore
 Protocol :Ignore (6) TCP SYN Flag    :Ignore (7)ICMP Type :Ignore
 Source MAC Addres        :Ignore      (9)  Source MAC Mask Length      :Ignore
 Destination MAC Adress   :Ignore      (11) Destination MAC Mask Length :Ignore
 Source IP Address        :Ignore      (13) Source IP Mask Length       :Ignore
 Destination IP Address   :Ignore      (15) Destination IP Mask Length  :Ignore
 Source Layer 4 Port      :Ignore      (17) Destination Layer 4 port    :Ignore

M24eG#
```

(1) (2) (5) (8) (10) (12) (14) (16)

Fig. 4-4-1 Classifier configuration display

(show AccessControl classifier all)

(1) Classifier Index

Shows the index number of the classifier.

(2) VLAN ID

Shows whether or not VLAN ID should be included in the target.

(3) 802.1p Priority

Shows whether or not IEEE 802.1p priority should be included in the target.

(4) DSCP

Shows whether or not DHCP should be included in the target.

(5) Protocol

Shows whether or not the protocol number should be included in the target.

(6) TCP SYN Flag

Shows whether or not TCP SYN flag should be included in the target.

(7) ICMP Type

Shows whether or not ICMP type should be included in the target.

(8) Source MAC Address

Shows whether or not the source MAC address should be included in the target.

(9) Source MAC Mask Length

Shows whether or not the mask length of the source MAC address should be included in the target.

(10) Destination MAC Address

Shows whether or not the destination MAC address should be included in the target.

(11) Destination MAC Mask Length

Shows whether or not the mask length of the destination MAC address should be included in the target.

(12) Source IP Address

Shows whether or not the source IP address should be included in the target.

(13) Source IP Mask Length

Shows whether or not the mask length of the source IP address should be included in the target.

(14) Destination IP Address

Shows whether or not the destination IP address should be included in the target.

(15) Destination IP Mask Length

Shows whether or not the mask length of the destination IP address should be included in the target.

(16) Source Layer 4 Port

Shows whether or not the source port number should be included in the target.

(17) Destination Layer 4 Port

Shows whether or not the destination port number should be included in the target.

```
M24eG> enable
M24eG# show AccessControl inprofile

 In-Profile Action:  (1) Total Entries:1
(2)Index(3)Deny/Permit(4)Policied-DSCP(5)Policied-Precedence(6)Policied-CoS
 -----  -----------  -------------  --------------------  ------------
 1      Permit       Ignore         Ignore                Ignore

M24eG# show AccessControl outprofile

 Out-Profile Action:  (7) Total Entries:1
(8)Index(9)Committed Rate(10)urst Size(KB)(11)any/Permit(12)olicied-DSCP
 -----  --------------  --------------  -----------  -------------
 1      1               4KB             Permit       Ignore

M24eG#
```

Fig. 4-4-2 In-profile and out-profile configuration display

(show AccessControl inprofile)

(show AccessControl outprofile)

(1) Total Entries

Shows the number of in-profile entries created.

(2) Index

Shows the in-profile index number.

(3) Deny/Permit

Shows whether or not communications are denied or permitted.	
Deny	Permits communications.
Permit	Denies communications.

(4) Policied-DSCP

Marks the DSCP value.

(5) Policied-Precedence

Marks the precedence value.

(6) Policied-CoS

Marks the CoS value.

(7) Total Entries

Shows the number of out-profile entries created.

(8) Index

Shows the out-profile index number.

(9) Committed Rate

Shows the destination MAC address.

(10) Burst Size (KB)

Shows the traffic burst size that can be transmitted exceeding the committed rate.

(11) Deny/Permit

Shows whether or not communications are denied or permitted.	
Deny	Permits communications.
Permit	Denies communications.

(12) Policied-DSCP

Marks the DSCP value.

```
M24eG> enable
M24eG# show AccessControl portlist

          (1)
Port List .  Total Entries : 1
(2) Index (3) Port List
-----     -------------------------------------------------
1         3,6-9

M24eG# show AccessControl policy 1

(4)  Policy Index                : 1    (5) Status : Enabled
(6)  Classifier Index            : 1
(7)  Source MAC Addr/Mask        : Ignore
(8)  Destination MAC Addr/Mask   : Ignore
(9)  802.1P Priority             : Ignore
(10) VLAN ID                     : Ignore
(11) Source IP Addr/Mask         : Ignore
(12) Destination IP Addr/Mask    : Ignore
(13) DSCP                        : Ignore
(14) Protocol                    : Ignore
(15) Source L4 Port              : Ignore
(16) Destination L4 Port         : Ignore
(17) TCP SYN Flag                : Ignore
(18) ICMP Type                   : Ignore
     ------------------------------------------------------------
(19) Policy Sequence     : 1
(20) In-Profile Action   : Index = 1      Action = Permit
(21) Out-Profile Action  : Index = 1      Action = Permit
     Committed Rate      : 1       Mbps   Burst Size : 4KB
(22) Port List           : Index = 1      Port = 3,6-9

M24eG#
```

Fig. 4-4-3 Display of the port list and policy configuration

(show AccessControl portlist)

(show AccessControl policy 1)

(1) Total Entries

Shows the number of port lists created.

(2) Index

Shows the port list index number.

(3) Port List

Shows a list of the target ports of the policy.

(4) Policy Index

Shows the policy index number.

(5) Status

Shows the policy status.	
Enabled	The policy is enabled.
Disabled	The policy is disabled.

(6) Classifier Index

Shows the classifier index number.

(7) Source MAC Addr/Mask

Shows the source MAC address and the mask length.

(8) Destination MAC Addr/Mask

Shows the destination MAC address and the mask length.

(9) 802.1P Priority

Shows the IEEE 802.1p priority.

(10) VLAN ID

Shows the VLAN ID.

(11) Source IP Addr/Mask

Shows the destination IP address and the mask length.

(12) Destination IP Addr/Mask

Shows the source IP address and the mask length.

(13) DSCP

Shows the DSCP value.

(14) Protocol

Shows the protocol number.

(15) Source L4 Port

Shows the source port number.

(16) Destination L4 Port

Shows the destination port number.

(17) TCP SYN Flag

Shows the TCP SYN flag.

(18) ICMP Type

Shows the ICMP type.

(19) Policy Sequence

Shows the policy sequence.

(20) In Profile Action

Shows details of the in-profile action used in the policy.

(21) Out Profile Action

Shows details of the out-profile action used in the policy.

(22) Port List Action

Shows details of the port list used in the policy.

show AccessControl classifier {all | <classifier-number>}

Shows the classifier configuration used for the access control function.

[Parameter]

Parameter name	Description	
{all | <classifier-number> }	Specify the classifier to be displayed.	
	all	The configuration of all classifiers is displayed.
	<classifier-number>	The configuration of the classifier with the specified index number is displayed.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<classifier-number>	1 to 65535

[Note]

Parameter name	Note
None	None

show AccessControl inprofile

Shows the list of the in-profile configuration used for the access control function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show AccessControl outprofile

Shows the list of the out-profile configuration used for the access control function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show AccessControl portlist

Shows the list of the port list configuration used for the access control function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show AccessControl policy {all | <policy-number>}

Shows the policy configuration used for the access control function.

[Parameter]

Parameter name	Description	
{all | <policy-number> }	Specify a policy index number to be displayed.	
	all	The configuration of all policies is displayed.
	<policy-number>	The configuration of the policy with the specified policy number is displayed.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<policy-number>	1 to 65535

[Note]

Parameter name	Note
None	None

show AccessControl policy-sequence port <port num> sort {policy-index | sequence}

Shows the list of the policy sequence configuration used for the access control function.

[Parameter]

Parameter name	Description	
<port num>	Specify a Switching Hub port number.	
{policy-index | sequence}	Specify a policy sequence display mode.	
	policy-index	The sequence is in order of the policy number.
	sequence	The sequence is in order of the sequence number.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<port num>	<Switch-M24eG> 1 to 24 <Switch-M16eG> 1 to 16 Only a single port can be specified.

[Note]

Parameter name	Note
None	None

AccessControl classifier <id>
[src-mac <MAC>] [dst-mac <MAC>] [src-net <ip-mask>]
[dst-net <ip-mask>] [src-port <layer4-port-list>] [dst-port <layer4-port-list>]
[vlan-id <vid>] [dot1p-priority <priority>] [dscp <value>] [protocol <pro-num>]
[icmp-type <0-18>] [tcp-syn-flag{true/false}]

Configures the classifier used for the access control function.

no AccessControl classifier <id>

Deletes the classifier used for the access control function.

[Parameter]

Parameter name	Description	
<id>	Specify the classifier index number.	
[src-mac <MAC>]	Specify the source MAC address.	
[dst-mac <MAC>]	Specify the destination MAC address.	
[src-net <ip-mask>]	Specify the source IP network and mask.	
[dst-net <ip-mask>]	Specify the destination IP network and mask.	
[src-port <layer4-port-list>]	Specify the TCP/UDP source port number.	
[dst-port <layer4-port-list>]	Specify the TCP/UDP destination port number.	
[vlan-id <vid>]	Specify the VLAN ID.	
[dot1p-priority <priority>]	Specify the IEEE 802.1p priority.	
[dscp <value>]	Specify the DSCP value.	
[protocol <pro-num>]	Specify the protocol type with the protocol number.	
[icmp-type <icmptype>]	Specify the ICMP type with the type number.	
[tcp-syn-flag{true/false}]	Specify whether a TCP SYN flag is set for filtering.	
	true	A TCP SYN flag is set for filtering.
	false	A TCP SYN flag is not set for filtering.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<id>	1 to 65535
<MAC>	00:00:00:00:00:00 to FF:FF:FF:FF:FF:FF
<ip-mask>	0.0.0.0/0 to 255.255.255.255/32 <Example> - 192.168.1.10/32 or 192.168.1.10 → Only one unit is specified. - 192.168.1.20/31 → Two units (192.168.1.20 and 192.168.1.21) are specified. - 192.168.2.1/25 → 127 units (192.168.2.1 to 192.168.2.127) are specified. - 192.168.2.1/24 → 254 units (192.168.2.1 to 192.168.2.254) are specified.
<layer4-port-list>	0 to 65535 You can set a range of port numbers. Example: 137-139
<vid>	1 to 4094
<priority>	0 to 7
<value>	0 to 63
<pro-num>	1 to 255 <Example> 1: ICMP, 2: IGMP, 6: TCP, 17: UDP, 46: RSVP
<icmptype>	0 to 18 <Example> 0: Echo Reply, 3: Destination Unreachable

[Note]

Parameter name	Note
None	None

AccessControl inprofile <index> {deny | permit { dscp <dscp-value> | precedence <p-value>| cos <c-value>}}

Configures the in-profile used for the access control function.

no AccessControl inprofile <index>

Deletes the in-profile used for the access control function.

[Parameter]

Parameter name	Description	
<index>	Specify the in-profile index number.	
{deny | permit { dscp <dscp-value> | precedence <p-value>| cos <c-value>}}	Specify whether packets are denied or permitted.	
	deny	Packets are denied.
	permit	Packets are permitted. You can select the value type from the following for marking at the permission. - DSCP value - ToS precedence value - CoS value

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<index>	1 to 65535
<dscp-value>	0 to 63
<p-value>	0 to 7
<c-value>	0 to 7

[Note]

Parameter name	Note
None	None

AccessControl outprofile <index> committed-rate <unit> burst-size <volume> {deny | permit [dscp <value>]}

Configures the out-profile used for the access control function.

no AccessControl outprofile <index>

Deletes the out-profile used for the access control function.

[Parameter]

Parameter name	Description	
<index>	Specify the out-profile index number.	
<unit>	Specify the committed rate in Mbps.	
<volume>	Specify the burst size with the burst size number.	
{deny | permit [dscp <value>]}	Specify whether packets are denied or permitted.	
	deny	Packets are denied.
	permit	Packets are permitted. You can select the value type from the following for marking at the permission. - DSCP value

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<index>	1 to 65535
<unit>	1 to 1000
<volume>	1 to 5 Select a number from the following to specify the burst size. 1: 4K, 2: 8K, 3: 16K, 4: 32K, 5: 64K
<dscp-value>	0 to 63

[Note]

Parameter name	Note
None	None

AccessControl portlist <port-list-index> <port num>

Configures the port list used for the access control function.

no AccessControl portlist <port-list-index>

Deletes the port list used for the access control function.

[Parameter]

Parameter name	Description
<port-list-index>	Specify the port list index number.
<port num>	Specify the Switching Hub port number.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<port-list-index>	1 to 65535
<port num>	<Switch-M24eG> 1 to 24 <Switch-M16eG> 1 to 16 Multiple ports can be specified. Example: 1-3,5

[Note]

Parameter name	Note
None	None

AccessControl policy <index> portlist <port-list-index> classifier <c-index> policy-sequence <value> inprofile <i-index> [outprofile <o-index>]

Configures the policy used for the access control function.

no AccessControl policy <index>

Deletes the policy configuration used for the access control function.

[Parameter]

Parameter name	Description
<index>	Specify the policy index number.
<port-list-index>	Specify the port list index number.
<c-index>	Specify the classifier index number.
<value>	Specify the policy sequence value.
<i-index>	Specify the in-profile index number.
[outprofile <o-index>]	Specify the out-profile index number.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<index>	1 to 65535
<port-list-index>	1 to 65535
<c-index>	1 to 65535
<value>	1 to 65535
<i-index>	1 to 65535
<o-index>	1 to 65535

[Note]

Parameter name	Note
<value>	Access control applies in ascending order of the sequence value.

AccessControl policy <index> enable

Enables access control of the specified policy.

no AccessControl policy <index> enable

Disables access control of the specified policy.

[Parameter]

Parameter name	Description
<index>	Specify the policy index number.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<index>	1 to 65535

[Note]

Parameter name	Note
None	None

<Configuration Example 1>

Overview: Configure the access control to discard packets destined for 192.168.1.0/24.

(1) Configure the classifier to target packets destined for an IP address of 192.168.1.0/24.

(2) Configure the in-profile to discard the target packets.

(3) Configure the port list to target all ports.

(4) Associate configuration items above with policy 1 and set the policy sequence to 1 for application with top priority.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# AccessControl classifier 1 dst-net 192.168.1.0/24
(2) M24eG(config)# AccessControl inprofile 1 deny
(3) M24eG(config)# AccessControl portlist 1 1-24
(4) M24eG(config)# AccessControl policy 1 portlist 1 classifier 1 policy-sequence 1
inprofile 1
M24eG(config)#
```

Fig. 4-4-4 Example of the access control configuration 1

<Configuration Example 2>

Overview: Configure the access control to mark CoS in the VLAN tag in order to have this Switching Hub preferentially control packets of IP phones that support DSCP only.

(1) Configure the classifier to target packets with DSCP set to 32.

(2) Configure the in-profile to mark the target packets with a CoS value of 6.

(3) Configure the port list to set uplink ports 22 to 24 as target ports of the access control.

(4) Configure the out-profile to discard traffic exceeding 100 Mbps.

(5) Associate configuration items above with policy 2 and set the policy sequence to 10.

```
    M24eG> enable
    M24eG# configure
(1) M24eG(config)# AccessControl classifier 5 dscp 32
(2) M24eG(config)# AccessControl inprofile 5 permit cos 6
(3) M24eG(config)# AccessControl outprofile 5 committed-rate 100 burst-size 5 deny
(4) M24eG(config)# AccessControl portlist 5 22-24
(5) M24eG(config)# AccessControl policy 2 portlist 5 classifier 5 policy-sequence 10
    inprofile 5 outprofile 5
    M24eG(config)#
```

Fig. 4-4-5 Example of the access control configuration 2

4.5. QoS (Quality of Service) Configuration

Configure the QoS settings in "Global configuration mode." Confirm the basic information by executing the "show mls qos" command in "Privileged mode."

Command to show the QoS configuration

M24eG#	show mls qos

Command to show the CoS-to-que mapping configuration

M24eG#	show priority-queue cos-map

Command to enable the QoS function

M24eG(config)#	mls qos

Command to disable the QoS function

M24eG(config)#	no mls qos

Command to configure the CoS-to-que mapping

M24eG(config)#	priority-queue cos-map <priority> <traffic class>

<Command Entry Example>

An example of executing the command to show the QoS configuration is shown below.

```
M24eG> enable
M24eG# show mls qos
(1) Quality of Service Status:  Disabled
M24eG# show priority-queue cos-map
(2) Priority (3) CoS Queue
--------    ---------
   0            0
   1            0
   2            1
   3            1
   4            2
   5            2
   6            3
   7            3
M24eG#
```

Fig. 4-5-1 Example of executing the command to show the QoS configuration

(1) Quality of Service Status

Shows the QoS operation status.	
Enabled	QoS is enabled.
Disabled	QoS is disabled.

(2) Priority

Shows the priority level of the VLAN frame.

(3) CoS Queue

Shows the priority level of the queue.

show mls qos

Shows the QoS configuration information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show priority-queue cos-map

Shows the frame priority level and mapping between the CoS value and queue.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

mls qos

Enables the QoS function.

no mls qos

Disables the QoS function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no mls qos （The QoS function is disabled.）

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

priority-queue cos-map <PRIORITY> <QUEUE>

Changes the frame priority level and mapping between the CoS value and queue.

[Parameter]

Parameter name	Description
<PRIORITY>	Priority level of the frame (CoS value)
<QUEUE>	Traffic class corresponding to the priority level

[Factory Default Setting]

Parameter name	Factory default setting
<PRIORITY>	The factory default mapping (initial state) is as follows.
<QUEUE>	

Priority	CoS Queue
0	0
1	0
2	1
3	1
4	2
5	2
6	3
7	3

[Setting Range]

Parameter name	Setting range
<PRIORITY>	0 to 7
<QUEUE>	0 to 3

[Note]

Parameter name	Note
<PRIORITY>	None
<QUEUE>	None

<Configuration Example>

Overview: Enable the QoS function and configure the mapping.

(1) Map the Priority value 0 to the Queue 1.

(2) Map the Priority value 1 to the Queue 0.

(3) Enable the QoS function.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# priority-queue cos-map 0 1
(2) M24eG(config)# priority-queue cos-map 1 0
(3) M24eG(config)# mls qos
M24eG(config)# exit
M24eG#
```

Fig. 4-5-2 Example of the QoS configuration

4.6. Bandwidth Control Configuration

Configure the bandwidth control in "Interface configuration mode." Confirm the basic information by executing the "show egress-rate-limit" command in "Privileged mode."

Command to configure the bandwidth control

Interface configuration mode	egress-rate-limit [<unit(1Mbps/unit)>]

Command to enable the bandwidth control

Interface configuration mode	egress-rate-limit

Command to disable the bandwidth control

Interface configuration mode	no egress-rate-limit

Command to show the bandwidth control configuration

Privileged mode	show egress-rate-limit

<Command Entry Example>

An example of executing the command to show the bandwidth control configuration is shown below.

```
M24eG> enable
M24eG# show egress-rate-limit
(1) Port      (2) Bandwidth    (3) Status
  ---------    ------------    ---------
  1            1000            disabled
  2            1000            disabled
  3            1000            disabled
  4            1000            disabled
  5            1000            disabled
  6            1000            disabled
  7            1000            disabled
  8            1000            disabled
  9            1000            disabled
  10           1000            disabled
  11           1000            disabled
  12           1000            disabled
  13           1000            disabled
  14           1000            disabled
  15           1000            disabled
  16           1000            disabled
  17           1000            disabled
  18           1000            disabled
  19           1000            disabled
  20           1000            disabled
  21           1000            disabled
  22           1000            disabled
  23           1000            disabled
  24           1000            disabled
M24eG#
```

Fig. 4-6-1 Example of executing the command to show the bandwidth control configuration

(1) Port

Shows the port number.

(2) Bandwidth

Shows the bandwidth. The factory default setting is 1000. (The unit is Mbps.)

(3) Status

Shows the bandwidth control status (Enabled or Disabled).	
enabled	The bandwidth control is enabled.
disabled	The bandwidth control is disabled.

egress-rate-limit [<unit(1Mbps/unit)>]

Changes the configuration of bandwidth control.

[Parameter]

Parameter name	Description
<unit(1Mbps/unit)>	Set the bandwidth.

[Factory Default Setting]

Parameter name	Factory default setting
<unit(1Mbps/unit)>	1000 (Mbps)

[Setting Range]

Parameter name	Setting range
<unit(1Mbps/unit)>	1 to 1000

[Note]

Parameter name	Note
<unit(1Mbps/unit)>	None

egress-rate-limit

Enables the bandwidth control function.

no egress-rate-limit

Disables the bandwidth control function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	disabled

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show egress-rate-limit

Shows the configuration of bandwidth control.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

<Configuration Example>

Overview: Enable the bandwidth control for Port 1, and set the bandwidth.

(1) Enable the bandwidth control function.

(2) Set the bandwidth to 100 (Mbps).

```
M24eG> enable
M24eG# configure
M24eG(config)# interface gi0/1
(1) M24eG(config-if)# egress-rate-limit
(2) M24eG(config-if)# egress-rate-limit 100
M24eG(config-if)# end
M24eG#
```

Fig. 4-6-2 Example of the bandwidth control configuration

4.7. Storm Control Configuration

Configure the storm control in "Interface configuration mode." Confirm the configuration information by executing the "show storm-control" command in "Privileged mode."

Command to enable the storm control (broadcast)

M24eG(config-if)#	storm-control broadcast

Command to disable the storm control (broadcast)

M24eG(config-if)#	no storm-control broadcast

Command to enable the storm control (multicast)

M24eG(config-if)#	storm-control multicast

Command to disable the storm control (multicast)

M24eG(config-if)#	no storm-control multicast

Command to enable the storm control (unicast)

M24eG(config-if)#	storm-control unicast

Command to disable the storm control (unicast)

M24eG(config-if)#	no storm-control unicast

Command to set the threshold value

M24eG(config-if)#	storm-control threshold <pps>

Command to show the storm control configuration

M24eG#	show storm-control

<Command Entry Example>

An example of executing the command to show the storm control configuration is shown below.

```
M24eG> enable
M24eG# show storm-control
(1)  Interface  (2) DLF          Broadcast      Multicast      (3) 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
     11             disabled       disabled       disabled       0
     12             disabled       disabled       disabled       0
     13             disabled       disabled       disabled       0
     14             disabled       disabled       disabled       0
     15             disabled       disabled       disabled       0
     16             disabled       disabled       disabled       0
     17             disabled       disabled       disabled       0
     18             disabled       disabled       disabled       0
     19             disabled       disabled       disabled       0
     20             disabled       disabled       disabled       0
     21             disabled       disabled       disabled       0
     22             disabled       disabled       disabled       0
     23             disabled       disabled       disabled       0
     24             disabled       disabled       disabled       0
M24eG#
```

Fig. 4-7-1 Example of executing the command to show the storm control configuration

(1) Interface

Shows the interface for operating the storm control function.

(2) DLF/Broadcast/Multicast

Shows the status of storm control for unicast packets with unknown destination (Destination Lookup Fail), broadcast packets, or multicast packets.	
enabled	The storm control is enabled.
disabled	The storm control is disabled.

(3) Threshold

Shows the threshold value for the number of packets (Packet Per Second).

show storm-control

Shows the storm control configuration.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

storm-control broadcast

Enables the storm control for broadcast packets.

no storm-control broadcast

Disables the storm control for broadcast packets.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no storm-control broadcast (The storm control for broadcast packets is disabled.)

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

storm-control multicast

Enables the storm control for multicast packets.

no storm-control multicast

Disables the storm control for multicast packets.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no storm-control multicast (The storm control for multicast packets is disabled.)

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

storm-control unicast

Enables the storm control for unicast packets with unknown destination.

no storm-control unicast

Disables the storm control for unicast packets with unknown destination.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	no storm-control unicast (The storm control for unicast packets with unknown destination is disabled.)

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

storm-control threshold <pps>

Sets the storm control threshold.

[Parameter]

Parameter name	Description
<pps>	Set the threshold to control the reception of unicast packets with unknown destination, broadcast packets, or multicast packets. The unit is the number of packets received per second (Packet Per Second).

[Factory Default Setting]

Parameter name	Factory default setting
<pps>	0

[Setting Range]

Parameter name	Setting range
<pps>	0 to 262143

[Note]

Parameter name	Note
<pps>	The threshold is not a total number of thresholds for unknown destination unicast, broadcast, and multicast packets. The threshold is applied to each packet in each type.

<Configuration Example>

Overview: Enable the storm control for broadcast packets on Port 1. Set the threshold for receiving broadcast packets to 10000 pps.

(1) Move to the interface configuration mode for Port 1.

(2) Enable the storm control for broadcast packets on Port 1.

(3) Set the threshold for receiving broadcast packets on Port 1 to 10000 pps.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# interface gi0/1
(2) M24eG(config-if)# storm-control broadcast
(3) M24eG(config-if)# storm-control threshold 10000
M24eG(config-if)# end
M24eG#
```

Fig. 4-7-2 Example of the storm control configuration

4.8. LED Base Mode Configuration

Configure the LED base mode in "Global configuration mode." Confirm the configuration information by executing the "show led base-mode" command in "Privileged mode."

Command to show the LED base mode

M24eG#	show led base-mode

Command to configure the LED base mode

M24eG(config)#	led base-mode <status | eco>

<Command Entry Example>

An example of executing the command to show the LED base mode is shown below.

```
M24eG> enable
M24eG# show led base-mode
(1) System LED base-mode:  Status
M24eG#
```

Fig. 4-8-1 Example of executing the command to show the LED base mode

(1) System LED base-mode

Shows the LED base mode.	
Status	Operating in the status mode.
Eco	Operating in the eco mode.

show led base-mode

Shows the LED base mode configuration.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

led base-mode <status | eco>

Configures the LED base mode.

[Parameter]

Parameter name	Description	
<status | eco>	Configure the LED base mode.	
	status	Automatically Switching Hubs to the status mode if the LED display change button is not pressed for 1 minute.
	eco	Automatically switches to the eco mode if the LED display change button is not pressed for 1 minute.

[Factory Default Setting]

Parameter name	Factory default setting
<status | eco>	status

[Setting Range]

Parameter name	Setting range
<status | eco>	Either "status" or "eco"

[Note]

Parameter name	Note
<status | eco>	None

<Configuration Example>

Overview: Change the LED base mode.

(1) Set to the eco mode.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# led base-mode eco
M24eG(config)# exit
M24eG#
```

Fig. 4-8-2 Example of the LED base mode configuration

Note: Change in configuration of the LED base mode is automatically saved.

4.9. Line Configuration

Configure the settings related to loop detection function and the power saving mode in "Interface configuration mode."

4.9.1. Loop Detection Configuration

Enable or disable the loop detection function and configure the auto-recovery in "Interface configuration mode." Confirm the loop history by executing the "show line loopback history" command in "Privileged mode."

Command to show the loop history

M24eG#	show line loopback history [tail <line>]

Command to delete the loop history

M24eG#	line loopback history clear

Command to enable the loop detection function

M24eG(config-if)#	line loopback

Command to disable the loop detection function

M24eG(config-if)#	no line loopback

Command to enable the auto-recovery function

M24eG(config-if)#	line loopback shutdown <sec>

Command to disable the auto-recovery function

M24eG(config-if)#	no line loopback shutdown

<Command Entry Example>

An example of executing the command to show the loop history is shown below.

```
M24eG> enable
M24eG# show line loopback history
(1) Jan 01 06:34:17 kern.info [LINE-PROTOCOL] The loop detected on port 1.
(2) Jun 01 06:35:17 kern.info [LINE-PROTOCOL] Port1 auto recovery.
(3) Jan 01 10:39:26 kern.info [LINE-PROTOCOL] The loop detected between port 2 and port 3.
M24eG#
```

Fig. 4-9-1 Example of executing the command to show the loop history

(1) History display example 1

Shows that a loop was detected on Port 1 at 6:34:17 on January 1st, and was shut off.

(2) History display example 2

Shows that auto-recovery was executed from the shut-off state of Port 1 at 6:35:17 on January 1st.

(3) History display example 3

Shows that loops were detected on Port 2 and Port 3 at 10:39:26 on January 1st, and were shut off.

Note: For details of loop history messages, refer to the section of system log in chapter 10.

show line loopback history [tail <line>]

Shows the log of events occurred to the Switching Hub.

[Parameter]

Parameter name	Description
<line>	Set the number of lines to be displayed from the log end.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<line>	1 to 64

[Note]

Parameter name	Note
None	None

line loopback

Enables the loop detection/shut-off function.

no line loopback

Disables the loop detection/shut-off function.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	<Switch-M24eG> Ports 1 to 22: line loopback Ports 23 to 24: no line loopback <Switch-M16eG> Ports 1 to 14: line loopback Ports 15 to 16: no line loopback

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

line loopback shutdown <sec>

Enables the auto-recovery function.

no line loopback shutdown

Disables the auto-recovery function.

[Parameter]

Parameter name	Description
<sec>	Set the time between the loop shut-off and the auto-recovery. The unit is seconds.

[Factory Default Setting]

Parameter name	Factory default setting
<sec>	60

[Setting Range]

Parameter name	Setting range
<sec>	60 to 86400

[Note]

Parameter name	Note
<sec>	None

<Configuration Example>

Overview: Configure the loop detection/shut-off function and the auto-recovery function.

(1) Move to the interface configuration mode for Port 1.

(2) Enable the loop detection/shut-off function of Port 1.

(3) Set the auto-recovery time to 300 seconds, which is the period after detecting a loop on Port 1 and shutting down the port.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# interface gi0/1
(2) M24eG(config-if)# line loopback
(3) M24eG(config-if)# line loopback shutdown 300
M24eG(config-if)# end
M24eG#
```

Fig. 4-9-2 Example of configuration of the loop detection/shut-off and auto-recovery functions

Note: For loop detection, a unique frame is used. If a loop detection frame is received on a port whose loop detection/shut-off function is disabled, the destination port is shut down.

4.9.2. Configuration of MNO Series Power Saving Mode

Configure the MNO series power saving mode in "Interface configuration mode."
The MNO series power saving mode is our unique function for automatically detecting the port connection status and minimizing power consumption if not connected. This Switching Hub supports two modes: the Half mode for giving priority to connectivity with other device, and the Full mode for minimizing power consumption.

Command to configure the MNO series power saving mode

M24eG(config-if)#	line power-saving <disable | full | half>

line power-saving <disable | full | half>

Configures the MNO series power saving mode.

[Parameter]

Parameter name	Description	
<disable | full | half>	Configure the MNO series power saving mode.	
	disable	The MNO series power saving mode is disabled.
	full	The MNO series power saving mode is enabled.
	half	The MNO series power saving mode that gives priority to connectivity with other device is adopted.

[Factory Default Setting]

Parameter name	Factory default setting
<disable | full | half>	half

[Setting Range]

Parameter name	Setting range
<disable | full | half>	Either "disable", "full", or "half"

[Note]

Parameter name	Note
<disable | full | half>	None

<Configuration Example>

Overview: Enable the MNO series power saving mode on all ports.

(1) Move to the interface configuration mode for Ports 1 to 24.

(2) Enable the MNO series power saving mode on Ports 1 to 24.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# interface gi0/1-24
(2) M24eG(config-if)# line power-saving full
M24eG(config-if)# end
M24eG#
```

Fig. 4-9-3 Example of executing the command to configure the MNO series power saving mode

4.9.3. Line Configuration Display

Confirm the configuration of loop detection/shut-off function and MNO series power saving mode in "Interface configuration mode."

Command to show the configuration of MNO series power saving mode

M24eG#	show line configuration

<Command Entry Example>

An example of executing the command to show the MNO series power saving mode is shown below.

```
M24eG> enable
M24eG# show line configuration
(1)Interface (2)Status (3)Mode       (4)Loop detection (5)Power-saving
gi0/1       Down      Auto           Enabled           Half
gi0/2       Down      Auto           Enabled           Half
gi0/3       Down      Auto           Enabled           Half
gi0/4       Down      Auto           Enabled           Half
gi0/5       Down      Auto           Enabled           Half
gi0/6       Down      Auto           Enabled           Half
gi0/7       Down      Auto           Enabled           Half
gi0/8       Down      Auto           Enabled           Half
gi0/9       Down      Auto           Enabled           Half
gi0/10      Down      Auto           Enabled           Half
gi0/11      Down      Auto           Enabled           Half
gi0/12      Down      Auto           Enabled           Half
gi0/13      Down      Auto           Enabled           Half
gi0/14      Down      Auto           Enabled           Half
gi0/15      Down      Auto           Enabled           Half
gi0/16      Down      Auto           Enabled           Half
gi0/17      Down      Auto           Enabled           Half
gi0/18      Down      Auto           Enabled           Half
gi0/19      Down      Auto           Enabled           Half
gi0/20      Down      Auto           Enabled           Half
gi0/21      Down      Auto           Enabled           Half
gi0/22      Down      Auto           Enabled           Half
gi0/23      Down      Auto           Disabled          Half
gi0/24      Down      Auto           Disabled          Half
M24eG#
```

Fig. 4-9-4 Example of executing the command to show the MNO series power saving mode

(1) Interface

Shows the interface name.	
gi0/1	Refers to "Gigabit Ethernet Port 1." (The number after "gi0/" indicates the port number.)

(2) Status

Shows the port status.	
Up	The port link is up.
Down	The port link is down.
Disabled	The port is shut down. (The port is closed, or it is disconnected by the loop detection/shut-off function.)

(3) Mode

Shows the port communication speed and duplex mode (full or half).	
Auto	The auto negotiation function is enabled when the port link is down. While the link is up, the string enclosed in parentheses shows the communication speed and full-duplex/half-duplex mode.
1000F	The port is in the 1000 Mbps full-duplex mode.
100-FDx ("100F" under the "Auto" mode)	The port is in the 100 Mbps full-duplex mode.
100-HDx ("100H" under the "Auto" mode)	The port is in the 100 Mbps half-duplex mode.
10-FDx ("10F" under the "Auto" mode)	The port is in the 10 Mbps full-duplex mode.
10-HDx ("10H" under the "Auto" mode)	The port is in the 10 Mbps half-duplex mode.

(4) Loop detection

Shows the status of the loop detection/shut-off function.	
Enabled	The loop detection/shut-off function is enabled.
Disabled	The loop detection/shut-off function is disabled.

(5) Power-saving

Shows the status of the MNO series power saving mode.	
Disabled	The MNO series power saving mode is disabled.
Full	The MNO series power saving mode is enabled.
Half	The MNO series power saving mode of giving priority to connectivity with other device.

4.10. Port Group Configuration

Configure port grouping in "Global configuration mode." If a port group is configured, ports designated as members of the port group can communicate only among member ports in the same group. Each port can be assigned to multiple port groups. Confirm the configuration information by executing the "show port-group" command in "Privileged mode."

Command to show the port group information

M24eG#	show port-group

Command to configure port grouping

M24eG(config)#	port-group <ID> name <Name> member <Portlist>

Command to enable port grouping

M24eG(config)#	port-group <ID> enable

Command to disable port grouping

M24eG(config)#	no port-group <ID> enable

<Command Entry Example>

An example of executing the command to show the port group information is shown below.

```
M24eG> enable
M24eG# show port-group
(1)         (2)                 (3)                                  (4)
Total Groups : 3
Group ID  Group Name        Group Member                         Status
--------  ----------------  -----------------------------------  --------
1         Group_1           1-2                                  Enabled
2         Group_2           2-4                                  Disabled

M24eG#
```

Fig. 4-10-1 Example of executing the command to show the port group information

(1) Group ID

Shows the port group ID.

(2) Group Name

Shows the port group name.

(2) Group Member

Shows member ports in the port group.

(3) Status

Shows the status of port grouping.	
Enabled	Port grouping is enabled.
Disabled	Port grouping is disabled.

show port-group

Shows the port group configuration.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

port-group <ID> name <Name> member <Portlist>

Creates a port group.

no port-group <ID>

Deletes a port group.

[Parameter]

Parameter name	Description
<ID>	Set a port group ID. You can set up to 256 port groups.
<Name>	Set a port group name.
<PortList>	Set member ports belonging to the port group.

[Factory Default Setting]

Parameter name	Factory default setting
<ID>	None
<Name>	None
<PortList>	None

[Setting Range]

Parameter name	Setting range
<ID>	1 to 256
<Name>	Up to 15 one-byte characters Allowed characters: alphanumeric character (A-Z, a-z, 0-9) symbol (!@#$&_-.) white space
<PortList>	<Switch-M24eG> 1 to 24 <Switch-M16eG> 1 to 16 Multiple ports can be specified. Example: 1-3,5

[Note]

Parameter name	Note
<ID>	None
<Name>	None
<PortList>	None

port-group <ID> enable

Enables port grouping.

no port-group <ID> enable

Disables port grouping.

[Parameter]

Parameter name	Description
<ID>	Specify the port group ID.

[Factory Default Setting]

Parameter name	Factory default setting
<ID>	port-group <ID> enable Port grouping is enabled at the time of configuration.

[Setting Range]

Parameter name	Setting range
<ID>	1 to 256

[Note]

Parameter name	Note
<ID>	None

<Configuration Example 1>

Overview: Set up port group 1 and port group 2. Port 3 is to be the shared port. Then, disable the port group 2.

(1) Set up port group 1 (member ports: 1 to 3).

(2) Set up port group 2 (member ports: 2 to 4).

(3) Disable the port group 2.

```
M24eG> enable
M24eG# configure
(1) M24eG(config)# port-group 1 name Group_1 member 1-3
(2) M24eG(config)# port-group 2 name Group_2 member 2-4
(3) M24eG(config)# no port-group 2 enable
M24eG(config)# end
M24eG#
```

Fig. 4-10-2 Example of the port group configuration

5. Statistical Information Display

Show the statistical information of packet counters in "Privileged mode."

Command to show the statistical information (normal)

M24eG#	show interface counters [IFNAME]

Command to show the statistical information (error)

M24eG#	show interface counters error [IFNAME]

<Command Entry Example>

Displayed below are the normal counters and the error counters for the port 24.

```
M24eG> enable
M24eG# show interface counters gi0/24
Interface GigabitEthernet0/24 is active, which has statistics
    Inbound:
        Total Octets:  135616937
        BroadcastPkts:  802649, MulticastPkts:  195421
        UnicastPkts:  5019, Non-unicastPkts:  998008
    Outbound:
        Total Octets:  1932746
        UnicastPkts:  27577, Non-unicastPkts:  62
    Inbound packets distribution:
        64 Octets:  527240, 65to127 Octets:  290459
        128to255 Octets:  19582, 256to511 Octets:  175625
        512to1023 Octets:  17739, 1024to1518 Octets:  21
M24eG# show interface counters error gi0/24
Interface GigabitEthernet0/24 is active, which has statistics
    Inbound:
        FragmentsPkts:  0, UndersizePkts:  0, OversizePkts:  0
        DisacrdsPkts:  605385, ErrorPkts:  0, UnknownProtos:  0
        AlignError:  0, CRCAlignErrors:  0, Jabbers:  0, DropEvents:  0
    Outbound:
        Collisions:  0, LateCollision:  0
        SingleCollision:  0, MultipleCollision:  0
        DisacrdsPkts:  0, ErrorPkts:  0
M24eG#
```

Fig. 5-1 Example of display of the port statistical information (counters)

<Command Entry Example>

Displayed below are the error counters for the link-up port 1 and the link-down port 2.

```
M24eG> enable
M24eG# show interface counters error gi0/1-2
Interface GigabitEthernet0/1 is active, which has statistics
    Inbound:
        FragmentsPkts:  0, UndersizePkts:  0, OversizePkts:  1
        DisacrdsPkts:  625074, ErrorPkts:  2, UnknownProtos:  0
        AlignError:  0, CRCAlignErrors:  1, Jabbers:  0, DropEvents:  0
    Outbound:
        Collisions:  0, LateCollision:  0
        SingleCollision:  0, MultipleCollision:  0
        DisacrdsPkts:  0, ErrorPkts:  0
Interface GigabitEthernet0/2 is inactive, no available statistics
M24eG#
```

Fig. 5-2 Example of display of the port statistical information (error counters)

<Command Entry Example>

Displayed below are the counters for the port 24 when jumbo frame is enabled.

```
M24eG> enable
M24eG# show interface counters gi0/24
Interface GigabitEthernet0/24 is active, which has statistics
    Inbound:
        Total Octets:  135616937
        BroadcastPkts:  802649, MulticastPkts:  195421
        UnicastPkts:  5019, Non-unicastPkts:  998008
    Outbound:
        Total Octets:  1932746
        UnicastPkts:  27577, Non-unicastPkts:  62
    Inbound packets distribution:
        64 Octets:  527240, 65to127 Octets:  290459
        128to255 Octets:  19582, 256to511 Octets:  175625
        512to1023 Octets:  17739, Over1024 Octets:  21
M24eG#
```

Fig. 5-3 Example of display of the port statistical information (counters) when jumbo frame is enabled

show interface counters [IFNAME]

Shows the statistical information (normal).

[Parameter]

Parameter name	Description
[IFNAME]	Specify the interface name.

[Factory Default Setting]

Parameter name	Factory default setting
[IFNAME]	None

[Setting Range]

Parameter name	Setting range
[IFNAME]	<Switch-M24eG> gi0/1 to gi0/24 (A range can be specified with a hyphen.) None (All ports are displayed.) <Switch-M16eG> gi0/1 to gi0/16 (A range can be specified with a hyphen.) None (All ports are displayed.)

[Note]

Parameter name	Note
[IFNAME]	None

Note: If the specified interface is not connected, statistical information is not displayed.

show interface counters error [IFNAME]

Shows the statistical information (error).

[Parameter]

Parameter name	Description
[IFNAME]	Specify the interface name.

[Factory Default Setting]

Parameter name	Factory default setting
[IFNAME]	None

[Setting Range]

Parameter name	Setting range
[IFNAME]	<Switch-M24eG> gi0/1 to gi0/24 (A range can be specified with a hyphen.) None (All ports are displayed.) <Switch-M16eG> gi0/1 to gi0/16 (A range can be specified with a hyphen.) None (All ports are displayed.)

[Note]

Parameter name	Note
[IFNAME]	None

Note: If the specified interface is not connected, statistical information is not displayed.

6. Configuration File Transfer

You can transfer the configuration information of this Switching Hub to TFTP server or retrieve it from TFTP server in "Privileged mode."

Command to transfer the configuration file

M24eG#	copy running-config tftp <ip-address> <filename>

Command to retrieve the configuration file

M24eG#	copy tftp <ip-address> <filename> running-config

copy running-config tftp <ip-address> <filename>

Transfers the configuration information of this Switching Hub to TFTP server using a specified file name.

copy tftp <ip-address> <filename> running-config

Retrieves the configuration file with a specified name from a specified TFTP server.

[Parameter]

Parameter name	Description
<ip-address>	Specify the IP address of TFTP server.
<filename>	Specify the configuration file name.

[Factory Default Setting]

Parameter name	Factory default setting
<ip-address>	None
<filename>	None

[Setting Range]

Parameter name	Setting range
<ip-address>	1.0.0.1 to 223.255.254.254
<filename>	1 to 39 one-byte alphanumeric characters

[Note]

Parameter name	Note
<ip-address>	None
<filename>	None

<Configuration Example>

Overview: Transfer the current configuration information to a TFTP server whose IP address is 192.168.1.1, specifying the file name as "switch-1.cfg".

(To cancel the TFTP transfer process, press Ctrl+C during transfer.)

```
M24eG> enable
M24eG# copy running-config tftp 192.168.1.1 switch-1.cfg
M24eG#
```

Fig. 6-1 Example of transferring the configuration information (this Switching Hub → TFTP server)

<Configuration Example>

Overview: Reflect the configuration file on a TFTP server to this Switching Hub.

(1) Retrieve the configuration file "switch-2.cfg" from a TFTP server whose IP address is 172.16.1.1.

(2) Save the retrieved configuration information. (For details, refer to chapter 11.)

(To cancel the TFTP transfer process, press Ctrl+C during transfer.)

```
M24eG> enable
(1) M24eG# copy tftp 172.16.1.1 switch-2.cfg running-config
(2) M24eG# copy running-config startup-config
Configuration saved to startup_config
M24eG#
```

Fig. 6-2 Example of transferring the configuration information (TFTP server → this Switching Hub)

Note: The configuration information is not automatically saved in this Switching Hub just by retrieving the configuration file from the TFTP server. Make sure to save the configuration information.

7. Firmware Upgrade

You can upgrade the firmware version of this Switching Hub in "Privileged mode."

Firmware upgrade command

M24eG#	copy tftp <ip address> <file_name> image

copy tftp <ip address> <file_name> image

Upgrades the firmware version, and automatically reboots.

If the reboot timer is set as in section 8.3, the reboot timer starts and the Switching Hub is rebooted after the set time.

[Parameter]

Parameter name	Description
<ip-address>	Set the IP address of the TFTP server.
<filename>	Set the file name of the firmware.

[Factory Default Setting]

Parameter name	Factory default setting
<ip-address>	None
<filename>	None

[Setting Range]

Parameter name	Setting range
<ip-address>	1.0.0.1 to 223.255.254.254
<filename>	1 to 39 one-byte alphanumeric characters

[Note]

Parameter name	Note
<ip-address>	None
<filename>	None

Note: Make sure not to turn off power while upgrading. Otherwise, the Switching Hub may not be able to boot up.

<Configuration Example>

Overview: Upgrade the firmware version.

(1) Upgrade the firmware with the file named pn28240v1000.rom on a TFTP server whose IP address is 192.168.1.1.

(2) It is an indicator showing that download is in progress.
(To cancel the TFTP transfer process, press Ctrl+C during transfer.)

(3) The downloaded firmware is verified and saved.

(4) The system is automatically rebooted when upgrade is successful.

```
M24eG> enable
(1) M24eG# copy tftp 192.168.1.1 pn28240v1000.rom image
    This command will proceed system firmware update [Y/N] : y
(2) /
    Verifying Firmware File ..............................  PASSED
    Firmware File Size ...................................  1823015 bytes
    Verifying Checksum ...................................  0x4deb
    Check Firmware Type ..................................  FIRMWARE
(3) Checking Firmware Version ............................  x.x.x.xx, PASSED
    Unmount File System ..................................  OK
    Erasing Flash Memory .................................  OK
    Writing Flash Memory .................................  OK

(4) Firmware successfully update!! System is rebooting ...
```

Fig. 7-1 Example of upgrading the firmware version

8. Reboot

You can perform a reboot of the Switching Hub in "Privileged mode." Reboot type can be selected from the following three options: "Normal," "Restore to the factory default settings," and "Restore to the factory default settings except for IP address."

8.1. Normal Reboot

Reboot of the Switching Hub is executed.

Reboot command

M24eG#	reboot normal

reboot normal

Reboots the Switching Hub.

[Parameter]

Parameter name	Description	
normal	Specify an option for the reboot type of the Switching Hub.	
	normal	Reboot

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

<Configuration Example>

Overview: Perform a reboot.

(1) Execute the reboot command.

(2) In execution confirmation, press "y" to continue, and "n" to cancel.

```
M24eG> enable
(1) M24eG# reboot default
(2) Are you sure to reboot the system?(Y/N) y
```

Fig. 8-1-1 Example of reboot

8.2. Restoration to Factory Default Settings

You can entirely initialize saved configuration and system information, and restore to the factory default settings in "Global configuration mode."

Reboot timer configuration command

M24eG(config)#	reboot {default | default-except-ip}

reboot {default | default-except-ip}

After the system is rebooted, initializes all stored configuration and system information and restores them to the factory default settings.

[Parameter]

Parameter name	Description	
{ default | default-except-ip}	Specify an option for the reboot type of the Switching Hub.	
	Default	Restores to the factory default settings after reboot.
	default-except-ip	Restores to the factory default settings after reboot, except for the IP address setting.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

Note: Once initialized, the configuration and system information cannot be restored. Pay full attention on execution.

<Configuration Example>

Overview: Initialize the configuration to restore to the factory default settings.

(1) Restore to the factory default settings.

(2) In execution confirmation, press "y" to continue, and "n" to cancel.

```
    M24eG> enable
(1) M24eG# reboot default
(2) Are you sure to reboot the system?(Y/N) y
```

Fig. 8-2-1 Example of reboot

8.3. Reboot Timer Configuration

You can reboot the Switching Hub after a set time from execution of the reboot command by setting the reboot timer in advance.

Reboot timer configuration command

M24eG(config)#	reboot timer <time>

reboot timer <time>

Changes the time period between execution of the reboot command and reboot of the Switching Hub.

[Parameter]

Parameter name	Description
<time>	Set the time until the Switching Hub is rebooted by seconds.

[Factory Default Setting]

Parameter name	Factory default setting
<time>	0 (Reboot timer is disabled.)

[Setting Range]

Parameter name	Setting range
<time>	0 to 86400

[Note]

Parameter name	Note
<time>	None

<Configuration Example>

Overview: Set the time until the Switching Hub reboot to 10 seconds, and execute the reboot.

(1) Set the reboot timer to 10 seconds.

(2) Execute the reboot command.

(3) Press "y" in reboot confirmation.

(4) The Switching Hub is rebooted after 10 seconds according to the reboot timer. (To cancel the reboot, press Ctrl and C.)

```
    M24eG> enable
    M24eG# configure
(1) M24eG(config)# reboot timer 10
    M24eG(config)# exit
(2) M24eG# reboot normal
(3) Are you sure to reboot the system?(Y/N) y
(4) The system will reboot 10 seconds later. You can press CTRL+c to cancel it.
    M24eG#
```

Fig. 8-3-1 Example of executing the reboot timer

9. Ping Execution

You can confirm connectivity using the ping command.

Ping command

All modes	ping <IP address> [-n <count>] [-w <timeout>]

ping <IP address> [-n <count>] [-w <timeout>]

Confirm connectivity to specified IP address.

[Parameter]

Parameter name	Description
<IP address>	Specify the IP address of a target host.
<count>	Set the number of ping requests to send.
<timeout>	Set the timeout in seconds.

[Factory Default Setting]

Parameter name	Factory default setting
<IP address>	None
<count>	3
<timeout>	3

[Setting Range]

Parameter name	Setting range
<IP address>	0.0.0.1 to 223.255.255.255
<count>	1 to 10
<timeout>	1 to 5

[Note]

Parameter name	Note
<IP address>	None
<count>	None
<timeout>	None

<Execution Example 1>

Overview: Test connectivity to the host.

(1) Test connectivity to the host whose IP address is 192.168.1.10 five times, setting the timeout to 2 seconds.

(2) Request number and response time are displayed.

(3) Connectivity test results are displayed.

```
(1) M24eG> ping 192.168.1.10 -w 2 -n 5
    M24eG> PING 192.168.1.10 (192.168.1.10): 56 data bytes
(2) 64 bytes from 192.168.1.10:  icmp_seq=0 time<10 ms
    64 bytes from 192.168.1.10:  icmp_seq=1 time<10 ms
    64 bytes from 192.168.1.10:  icmp_seq=2 time<10 ms
    64 bytes from 192.168.1.10:  icmp_seq=3 time<10 ms
    64 bytes from 192.168.1.10:  icmp_seq=4 time=10 ms

    ----192.168.1.10 PING Statistics----
(3) 5 packets transmitted, 5 packets received, 0% packet loss
    round-trip (ms)  min/avg/max = 0/2/10

    M24eG>
```

Fig. 9-1 Example of ping execution 1

<Execution Example 2>

Overview: Test connectivity to a host that does not exist.

(1) Test connectivity to the host whose IP address is 192.168.0.1, which does not exist.

(2) A timeout error is displayed because there is no response.

(3) Connectivity test results are displayed.

```
(1) M24eG> ping 192.168.0.1
    M24eG> PING 192.168.0.1 (192.168.0.1): 56 data bytes
(2) Error:  Request timed out!
    Error:  Request timed out!
    Error:  Request timed out!

    ----192.168.0.1 PING Statistics----
(3) 3 packets transmitted, 0 packets received, 100% packet loss

    M24eG>
```

Fig. 9-2 Example of ping execution 2

10. System Log Display

Display or delete the system log in "Privileged mode."

Command to show the system log

M24eG#	show syslog [tail <line>]

Command to delete the system log

M24eG#	syslog clear

<Command Entry Example>

Ten most recent system logs are displayed.

```
M24eG> enable
M24eG# show syslog tail 10
(1)     (2)       (3)          (4)        (5)
Jan 01 09:01:55 kern.info [SYSTEM] Reboot the system!
Jan 01 09:00:12 kern.info [PORT] Port-1 link-up.
Jan 01 09:00:38 kern.info [SNTP] SNTP first update to 2010/06/28 15:00:53.
Jun 28 15:00:55 kern.info [SYSTEM] Login from console.
Jun 29 19:21:04 kern.info [SYSTEM] Configuration changed!
Jun 30 10:43:31 kern.info [PORT] Port-17 link-up.
Jun 30 10:43:32 kern.info [LINE-PROTOCOL] The loop detected between port18 and port17.
Jun 30 10:43:33 kern.info [PORT] Port-18 link-down.
Jun 30 10:44:34 kern.info [LINE-PROTOCOL] Port17 auto recovery.
Jan 01 09:05:47 kern.info [PORT] Port-23 link-up.
```

Fig. 10-1 Example of executing the command to show system logs

(1) Mmm dd

Shows the date on which the log was recorded.

(2) hh:mm:ss

Shows the time at which the log was recorded.

(3) kern.xxxx

Shows the importance of the log.	
emerg	Indicates "abnormality."
err	Indicates "error."
warn	Indicates "warning."
info	Indicates "information."

(4) Shows the log classification.

ARL	A log relating to MAC address table
CLI	A log relating to CLI
CONSOLE	A log relating to console
LINE-PROTOCOL	A log relating to loop detection function
PORT	A log relating to port
SNMP	A log relating to SNMP
SNTP	A log relating to SNTP
SYSTEM	A log relating to system
TELNET	A log relating to telnet
VLAN	A log relating to VLAN
DOT1X	A log relating to IEEE802.1X (This function is not supported.)

(5) Details of logs are as follows.

ARL	
err	Memory allocation fail!
	Indicates that allocation of memory for MAC address table has failed.
CLI	
warn	Get reboot timer fail.
	Indicates that the operation of reboot timer has failed.
info	Reboot: Factory Default Except IP.
	Indicates that the Switching Hub was rebooted in the mode to return settings other than IP addresses to the factory default.
	Reboot: Factory Default.
	Indicates that the Switching Hub was rebooted in the mode to return all settings to the factory default.
	Reboot: Normal.
	Indicates that the Switching Hub was rebooted.
CONSOLE	
info	Login from console
	Indicates that the login operation was executed via console, and was successful.
LINE-PROTOCOL	
info	PortX auto recovery.
	Indicates that Port X has auto-recovered from shutoff after loop detection.
	The loop detected between portA and portB.
	Indicates that a loop was detected between Port A and Port B.
	The loop detected on portX.
	Indicates that a loop was detected on Port X.
PORT	
err	PortX hardware register set fail in port initialization!

info	Indicates that port initialization has failed due to hardware error.
	Port-X link-down
	Indicates that Port X was linked down.
	Port-X link-up
	Indicates that Port X was linked up.
SNMP	
info	Not authorized!(IP: IP ADDRESS)
	Indicates that an unauthorized IP address has accessed SNMP.
	System authentication failure.
	Indicates that SNMP authentication has failed.
SNTP	
err	sendto: No route to host
	Indicates that communication has failed due to no transmission route to configured SNTP server.
	recvfrom: Operation timed out
	Indicates that time-out occurred in time synchronization with SNTP server.
info	SNTP first update to 2010/05/31 18:15:11
	Indicates the initial time of synchronization with SNTP server after booting the Switching Hub.
	SNTP update to YYYY/MM/DD HH:MM:SS.
	Indicates the time synchronized with SNTP server.
SYSTEM	
emerg	System exception in thread:THREAD freeMem:FREE_MEM!
	System information indicating that exception handler is called in the Switching Hub. THREAD indicates the thread name, and FREE_MEM indicates the free memory capacity.
err	Cannot open running-config file running_config!
	Indicates that access to "running_config" file has failed.
	Cannot save to configuration file, file not found!
	Indicates that saving of configuration file has failed because the file was not found.
	TFTP module initialization failed!
	Indicates that TFTP execution has failed due to system error.
	Cannot execute Ping by system error!
	Indicates that Ping execution has failed due to system error.
warn	Duplication of IP address IP ADDRESS (MAC ADDRESS).
	Indicates that IP address of the Switching Hub is already used and conflicting.
	Write configuration to primary file failed
	Indicates that saving of the configuration has failed.

info	Configuration changed
	Indicates that the configuration was changed.
	Configuration file download
	Indicates that download of configuration file from TFTP server was successful.
	Configuration file upload
	Indicates that upload of configuration file to TFTP server was successful.
	Failure: Reload system default-config!
	Indicates that the system was booted with factory default setting due to failure in reading configuration.
	Firmware upgrade via CLI!
	Indicates that the firmware was upgraded via CLI command interface.
	Reboot the system!
	Indicates that the Switching Hub was rebooted.
	System Cold Start.
	Indicates that the power of the Switching Hub was turned on.
	System MAC address found: MAC ADDRESS
	Indicates the MAC address of the Switching Hub.
	Write configuration to primary file success.
	Indicates that configuration was successfully saved.
TELNET	
info	Login failure(IP: IP ADDRESS).
	Indicates that the login operation was executed via telnet, but failed.
	Login from telnet. (IP: IP ADDRESS)
	Indicates that the login operation was executed via telnet, and was successful.
	Logout by user(IP: IP ADDRESS).
	Indicates that connection via telnet was terminated by user.
	Logout due to time out(IP:IP ADDRESS).
	Indicates that connection via telnet was terminated due to timeout.
VLAN	
err	Port add failed(vlan_id=A, port_id=B).
	Indicates that addition of PVID has failed. "A" indicates VLAN ID, and "B" indicates port number.
	Port delete failed(vlan_id=A, port_id=B).
	Indicates that deletion of PVID has failed. "A" indicates VLAN ID, and "B" indicates port number.
	PVID set failed(vlan_id=A, port_id=B).
	Indicates that configuration of PVID has failed. "A" indicates VLAN ID, and "B" indicates port number.
	VLAN entry allocate failed.

	Indicates that allocation of VLAN entry has failed.
	VLAN X create failed.
	Indicates that creation of VLAN ID "X" has failed.
	VLAN X destory failed.
	Indicates that deletion of VLAN ID "X" has failed.
	VLAN X: interface list add failed.
	Indicates that addition of interface to VLAN ID "X" has failed.
DOT1X	
info	802.1x authentication is enabled!
	Indicates that IEEE802.1X authentication function was enabled. **(This function is not supported.)**
	802.1x initialization done!
	Indicates that IEEE802.1X authentication function was initialized. **(This function is not supported.)**

show syslog [tail <line>]

Shows the log of events occurred to the Switching Hub.

[Parameter]

Parameter name	Description
<line>	Set the number of lines to be displayed from the log end.

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
<line>	1 to 256

[Note]

Parameter name	Note
None	None

syslog clear

Clears all logs.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

<Example of use>

Overview: Display system logs of the Switching Hub, and then delete the logs.

(1) Display the system logs of the Switching Hub.

(2) Delete the system logs of the Switching Hub.

(3) Confirm that the system logs of the Switching Hub are deleted.

```
M24eG> enable
(1) M24eG# show syslog
Jan 01 20:14:34 kern.info [PORT] Port1 is authorized!
Jan 01 20:14:34 kern.info [LINE-PROTOCOL]  The loop detected on port 1.
Jan 01 20:16:00 kern.info [PORT] Port1 is authorized!
Jan 01 20:16:00 kern.info [LINE-PROTOCOL]  The loop detected on port 1.
Jan 01 20:17:06 kern.info [PORT] Port1 is authorized!
Jan 01 20:17:06 kern.info [LINE-PROTOCOL]  The loop detected on port 1.
Jan 01 22:42:29 kern.info [SYSTEM] Success:  Reload system default-config!
Jan 01 22:42:32 kern.info [CLI]  System reboot via CLI.
Jan 01 22:42:32 kern.info [SYSTEM] Reboot the system!
(2) M24eG# syslog clear
(3) M24eG# show syslog
Syslog history is empty!
M24eG#
```

Fig. 10-2 Example of display and deletion of system logs

11. Save and Display of Configuration Information

Save and display the configuration information in "Privileged mode."

Command to show the running configuration information

M24eG#	show running-config

Command to show the saved configuration information

M24eG#	show startup-config

Command to save the configuration information

M24eG#	copy running-config startup-config

copy running-config startup-config

Saves the configuration information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show running-config

Shows the configuration information that is currently running.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

show startup-config

Shows the saved configuration information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

<Configuration Example>

Overview: Save the current configuration, and then display the saved configuration information.

(1) Save the current configuration to the Switching Hub.

(2) Display the saved configuration information.

```
M24eG> enable
(1) M24eG# copy running-config startup-config
Configuration saved to startup_config
(2) M24eG# show startup-config
! -- M24eG start of config file --
! -- Software Version : x.x.x.xx -
! -- Save date : 20xx/xx/xx xx:xx:xx
!
enable
config
!
ip address 192.168.0.1 255.255.255.0 192.168.0.254
!
terminal length 0
led base-mode status
console inactivity-timer 0
telnet-server inactivity-timer 60
!
password manager:426D5A334B743077674359486F:1D0258C2440A8D19E716292B231E3190
!
interface vlan1
 member 1-24
 exit

  ～～～～～～～～～～～～ abbreviated ～～～～～～～～～～～～
interface GigabitEthernet0/23
!
interface GigabitEthernet0/24
!
exit
!
! -- end of configuration --
M24eG#
```

Fig. 11-1 Example of saving the configuration and displaying the saved configuration information

12. Obtaining Technical Support Information

Obtain the technical support information in "Privileged mode." It is useful if obtained before making inquiry.
It is recommended to set the console length to "0," because display contents are extremely large.

Command to show the technical support information

M24eG#	show tech

show tech

Obtains the technical support information.

[Parameter]

Parameter name	Description
None	None

[Factory Default Setting]

Parameter name	Factory default setting
None	None

[Setting Range]

Parameter name	Setting range
None	None

[Note]

Parameter name	Note
None	None

<Configuration Example>

Obtain the technical support information.

```
M24eG> enable
M24eG# show tech
***** System clock *****
...

***** System CPU load *****
...

***** BSD Syslog Protocol (RFC-3164) *****
...

***** System running configuration *****
...

***** System information *****
...

***** Interface operating status *****
...

***** Interface configuration *****
...

***** Interface packet counter *****
...

***** Interface error packet counter *****
...

***** IEEE 802.1Q Virtual Local Area Networks (VLAN) *****
...

***** IEEE 802.3 Link Aggregation *****
...

***** System ARP information *****
...

***** Dynamic unicast MAC addresses aging time *****
...

***** MAC address table *****
...

***** System startup configuration *****
...
M24eG#
```

Fig. 12-1 Example of executing the command to show the technical information

Appendix A. Specifications

Refer to **"Operation Manual – Menu Screens"** for your Switching Hub to read the specifications.

Appendix B. Procedures for Console Port Connection 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 chapter 4 of the Operation Manual for Menu screen.

(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 Address Setup Software" V3.01/V4.00/V4.24R00
Panasonic System Networks Co., Ltd.; "Easy Config" Ver3.10R00
Panasonic Eco Solutions Networks Co., Ltd.; "Support Tool" Ver.1.2.0.0

[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 shows "Camera name."

[Restrictions]

- The time for accepting setting changes is limited to 20 minutes after power-on to ensure security.
  However, you can change settings regardless of the time limit if the IP address, subnet mask, default gateway, user name and password values are 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.

Appendix D. Example of Network Configuration using Loop Detection Function and Its Precautions

Example of configuration using loop detection function

By using the loop detection function, you can prevent a loop failure that is likely to be caused in a downstream Switching Hub that the user directly uses.

In addition, if a downstream Switching Hub is connected with a device, such as a hub without loop detection function, and a loop failure occurs under the device, the downstream Switching Hub shuts down the corresponding port to prevent the failure from extending to the entire network.

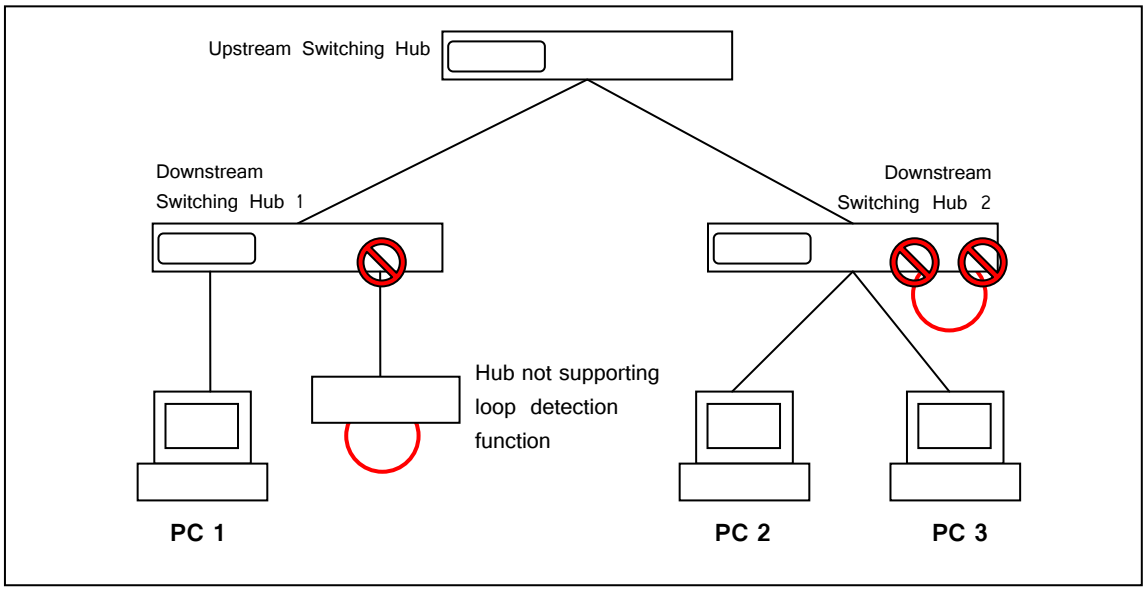
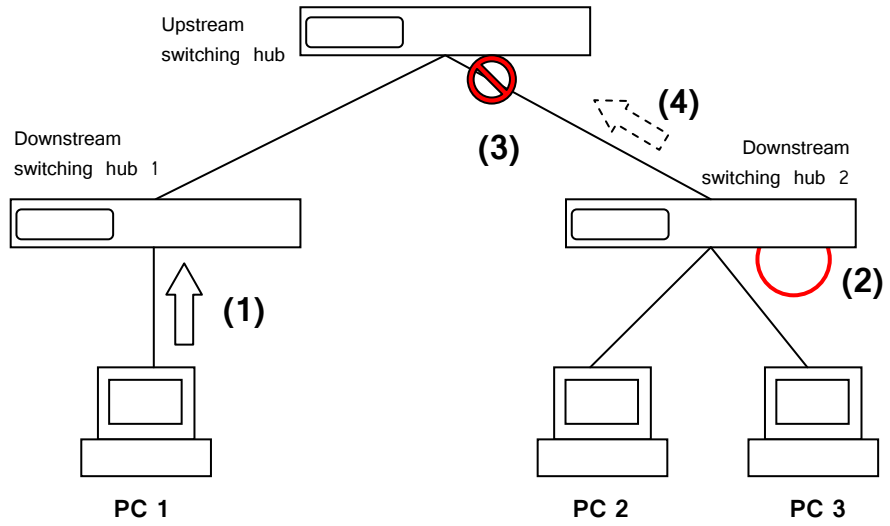


Fig. 1 Example of configuration using loop detection function

Precautions in using loop detection function
– Disable loop detection at upstream port(s)

If a network is consisted of only Switching Hubs equipped with loop detection function, an upstream switching hub may detect on ahead and block a loop occurred in a downstream switching hub. This may block all communications to the downstream switching hub.

To minimize the communication failure by loop detection, disable the loop detection function of the upstream switching hub so that only a port of the switching hub causing loop will be blocked. You need to examine this type of network configuration and the switching hub settings.



[Conditions of occurrence]

(1) Communications between PC1 and PC2, and between PC1 and PC3.

(2) A loop occurs in downstream switching hub 2.

(3) The upstream switching hub detects the loop first, and blocks the uplink port of downstream switching hub 2. (Normally, only a port having loop connection is shut down.)

(4) The uplink port of downstream switching hub 2 is linked down, and communications to all other switching hubs are blocked.

Fig. 2 Precautions in using loop detection function

Appendix E. MIB List

The MIB list of this Switching Hub is as follows.

<port_num> is a port number.
<ip_address> is an IP address.

1.1. system group			
MIB object	**Access**	**Identifier**	**Remarks**
sysDescr	RO	sysDescr.0	
sysObjectID	RO	sysObjectID.0	
sysUpTime	RO	sysUpTimeInstance.0	
sysContact	R/W	sysContact.0	
sysName	R/W	sysName.0	
sysLocation	R/W	sysLocation.0	
sysServices	RO	sysServices.0	
sysORLastChange	RO	sysORLastChange.0	
sysORID	RO	sysORID.1	
sysORDescr	RO	sysORDescr.1	
sysORUpTime	RO	sysORUpTime.1	
1.2. interfaces group			
MIB object	**Access**	**Identifier**	
ifNumber	RO	ifNumber.0	
ifIndex	RO	ifIndex.<port_num>	
ifDescr	RO	ifDescr.<port_num>	
ifType	RO	ifType.<port_num>	
ifMtu	RO	ifMtu.<port_num>	Shows the size without a header (1500 bytes).
ifSpeed	RO	ifSpeed.<port_num>	Shows the maximum port speed (1 Gbps).
ifPhysAddress	RO	ifPhysAddress.<port_num>	
ifAdminStatus	R/W	ifAdminStatus.<port_num>	Supports up and down.
ifOperStatus	RO	ifOperStatus.<port_num>	
ifOLastChange	RO	ifOLastChange.<port_num>	
ifInOctets	RO	ifInOctets.<port_num>	
ifInUcastPkts	RO	ifInUcastPkts.<port_num>	
ifInNUcastPkts	RO	ifInNUcastPkts.<port_num>	
ifInDiscards	RO	ifInDiscards.<port_num>	
ifInErrors	RO	ifInErrors.<port_num>	
ifInUnknownProtos	RO	ifInUnknownProtos.<port_num>	
ifOutOctets	RO	ifOutOctets.<port_num>	
ifOutUcastPkts	RO	ifOutUcastPkts.<port_num>	
ifOutNUcastPkts	RO	ifOutNUcastPkts.<port_num>	
ifOutDiscards	RO	ifOutDiscards.<port_num>	
ifOutErrors	RO	ifOutErrors.<port_num>	
ifOutQLen	RO	ifOutQLen.<port_num>	
ifSpecific	RO	ifSpecific.<port_num>	

1.3. IP group			
MIB object	**Access**	**Identifier**	
ipForwarding	R/W	ipForwarding.0	
ipDefaultTTL	R/W	ipDefaultTTL.0	
ipInReceives	RO	ipInReceives.0	
ipInHdrErrors	RO	ipInHdrErrors.0	
ipInAddrErrors	RO	ipInAddrErrors.0	
ipInUnknownProtos	RO	ipInUnknownProtos.0	
ipInDiscards	RO	ipInDiscards.0	
ipInDelivers	RO	ipInDelivers.0	
ipOutRequests	RO	ipOutRequests.0	
ipOutDiscards	RO	ipOutDiscards.0	
ipOutNoRoutes	Ro	ipOutNoRoutes.0	
ipReasmTomeout	RO	ipReasmTomeout .0	
ipReasmReqds	RO	ipReasmReqds.0	
ipReasmOKs	RO	ipReasmOKs.0	
ipReasmFails	RO	ipReasmFails.0	
ipFragOKs	RO	ipFragOKs.0	
ipFragFails	RO	ipFragFails.0	
ipFragCreates	RO	ipFragCreates.0	
ipRoutingDiscards	RO	ipRoutingDiscards	
ipAdEntAddr	RO	ipAdEntAddr.<ip_address>	
ipAdEntIfIndex	RO	ipAdEntIfIndex.<ip_address>	
ipAdEntNetMask	RO	ipAdEntNetMask.<ip_address>	
ipAdEntBcastAddr	RO	ipAdEntBcastAddr.<ip_address>	
ipAdEntReasmMaxSize	RO	ipAdEntReasmMaxSize.<ip_address>	
ipNetToMediaIfIndex	RO	ipNetToMediaIfIndex.<ip_address>	
ipNetToMediaPhysAddress	RO	ipNetToMediaPhysAddress.<ip_address>	
ipNetToMediaNetAddress	RO	ipNetToMediaNetAddress.<ip_address>	
ipNetToMediaType	RO	ipNetToMediaType.<ip_address>	
1.4. TCP group			
MIB object	**Access**	**Identifier**	
tcpRtoAlgorithm	RO	tcpRtoAlgorithm.0	
tcpRtoMin	RO	tcpRtoMin.0	
tcpRtoMax	RO	tcpRtoMax.0	
tcpMaxConn	RO	tcpMaxConn.0	
tcpPassiveOpens	RO	tcpPassiveOpens.0	
tcpAttemptFails	RO	tcpAttemptFails.0	
tcpEstabResets	RO	tcpEstabResets.0	
tcpCurrEstab	RO	tcpCurrEstab.0	
tcpInSegs	RO	tcpInSegs.0	
tcpOutSegs	RO	tcpOutSegs.0	
tcpRetransSegs	RO	tcpRetransSegs.0	
tcpInErrs	RO	tcpInErrs.0	
tcpOutRsts	RO	tcpOutRsts.0	
tcpConnState	RO		

tcpConnLocalAddress	RO		
tcpConnLocalPort	RO		
tcpConnRemAddress	RO		
tcpConnRemPort	RO		

1.5. UDP group

MIB object	Access	Identifier	
udpInDatagrams	RO	udpInDatagrams.0	
udpNoPorts	RO	udpNoPorts.0	
udpInErrors	RO	udpInErrors.0	
udpOutDatagrams	RO	udpOutDatagrams.0	
udpLocalAddress	RO		
udpLocalPort	RO		

1.6. SNMP group

MIB object	Access	Identifier	
snmpInPkts	RO	snmpInPkts.0	
snmpOutPkts	RO	snmpOutPkts.0	
snmpInBadVersions	RO	snmpInBadVersions.0	
snmpInASNParseErrs	RO	snmpInASNParseErrs.0	
snmpInTotalReqVars	RO	snmpInTotalReqVars.0	
snmpInTotalSetVars	RO	snmpInTotalSetVars.0	
snmpInGetRequests	RO	snmpInGetRequests.0	
snmpInGetNexts	RO	snmpInGetNexts.0	
snmpInSetRequests	RO	snmpInSetRequests.0	
snmpInGetResponses	RO	snmpInGetResponses.0	
snmpInTraps	RO	snmpInTraps.0	
snmpOutGetResponses	RO	snmpOutGetResponses.0	
snmpOutTraps	RO	snmpOutTraps.0	

1.7. dot1dBase group

MIB object	Access	Identifier	
dot1dBaseBridgeAddress	RO	dot1dBaseBridgeAddress.0	
dot1dBaseNumPorts	RO	dot1dBaseNumPorts.0	
dot1dBaseType	RO	dot1dBaseType.0	
dot1dBasePort	RO	dot1dBasePort.<port_num>	
dot1dBasePortIfIndex	RO	dot1dBasePortIfIndex.<port_num>	
dot1dBasePortCircuit	RO	dot1dBasePortCircuit.<port_num>	
dot1dBasePortDelayExceededDiscards	RO	dot1dBasePortDelayExceededDiscards.<port_num>	
dot1dBasePortMtuExceededDiscards	RO	dot1dBasePortMtuExceededDiscards.<port_num>	

1.8. dot1dTp group

MIB object	Access	Identifier	
dot1dTpLearnedEntryDiscards	RO	dot1dTpLearnedEntryDiscards.0	
dot1dTpAgingTime	R/W	dot1dTpAgingTime.0	
dot1dTpFdbAddress	RO		
dot1dTpFdbPort	RO		
dot1dTpFdbStatus	RO		
dot1dTpPort	RO	dot1dTpPort.<port_num>	
dot1dTpPortMaxInfo	RO	dot1dTpPortMaxInfo.<port_num>	

	dot1dTpPortInFrames	RO	dot1dTpPortInFrames.<port_num>	
	dot1dTpPortOutFrames	RO	dot1dTpPortOutFrames.<port_num>	
	dot1dTpPortInDiscards	RO	dot1dTpPortInDiscards.<port_num>	
2.1. Supporting trap				
	Trap description	**Access**	**Identifier**	
	Linku Up/Down			
	Login Failure			
	Authentication Failure			
	mnoLoopDetection			ObjectID: 1.3.6.1.4.1.396.5.5.2.1
	mnoLoopRecovery			ObjectID: 1.3.6.1.4.1.396.5.5.2.2

Troubleshooting

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

1. LED indicators

* The POWER LED is not lit.
  - Is the power cord connected?
    → Please confirm that the power cord is securely connected to the power port.
* The port LED (left) is not lit in Status mode.
  - Is the Switching Hub set to Status mode?
    If the Switching Hub is set to the ECO mode, all LEDs are turned off regardless of terminal connection state.
  - Is the cable correctly connected to the target port?
  - Is the cable appropriate to use?
  - Is each terminal connected to the relevant port conforming with 10BASE-T, 100BASE-TX, or 1000BASE-T standard?
  - Auto-negotiation may have failed.
    → Set the port of this Switching Hub or the terminal to half-duplex mode.
* The port LED (right) lights in orange.
  - A loop has occurred. By removing the loop, orange LED will be turned off.
* LOOP HISTORY LED blinks in orange.
  - This is to notify that there is a port in which a loop is occurring, or has been removed within 3 days.

2. Communications are slow.

* 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 link up?
    → If the power saving mode is set to "Full," change it to "Half" or "Disabled."
  - Is not the utilization ratio of the network to which this Switching Hub is connected too high?
    → Try separating this Switching Hub from the network.
  - Doesn't the port LED (right) light in orange?
    → When the port LED (right) lights in orange, the port has been shut down by loop detection function. After removing the loop under this port, wait for the auto-recovery time set in loop detection function, or unblock the port on the configuration screen.

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.

Memo （Fill in for future reference.）

Date of purchase	/ /	Product name	Switch-M
		Model No.	PN28
Firmware version （＊）	Boot Code		
	Runtime Code		
Serial No.			
	（11 alphanumeric characters labeled on the product）		
Shop/Sales company	Tel:		
Customer service contact	Tel:		

（＊ You can check the version on the screen described in chapter 3 of this manual.）

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