This manual explains the network operation of the projector. For information other than the network operation, such as the usage, inspection and replacement of parts, see "Operating Instructions - Projector Operations".
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Notes
The illustrations and screenshots in this manual may be different from those on your computer.
Expressions used in this document
  Pages to reference within this document are indicated as (See page ○○), and pages to reference in the supplemental “Operating Instructions - Projector Operations” are indicated as (See [○○] of the Projector Operations).
Request Regarding Security

When using this product, security breaches of the type described below are conceivable.

- Leakage of your private information via this product
- Illegal operation of this product by a malicious third-party
- Harm to or cessation of operation of this product by a malicious third-party

Be sure to implement sufficient security measures.

- Set passwords, and limit the users that are permitted login access.
- Make sure the password is as hard to guess as possible.
- Change the password periodically.
- Panasonic Corporation and its affiliated companies never directly ask customers for their password. Do not give out your password even if directly asked by a third-party representing themselves as Panasonic Corporation.
- Always use on a network that has safety protection such as a firewall implemented.

What you can do

<WEB control> (See page 10)
The following operations are possible when using Web Browser.
- Setting and adjusting the projector
- Displaying the projector status
- Setting for message transmission

<PJLink> (See page 21)
Compatible with PJLink Class 1. The following operations can be performed from a computer when PJLink protocol is used.
- Setting the projector
- Querying the projector status

<Control commands>
(Refer to “Serial terminal” in “Technical Information” of the Projector Operation manual)
You can control the projector from a computer, using the control commands of the serial terminals.
Check your computer

Necessary environment for computers to be connected

• First, check your computer to see whether or not it has a wired LAN  function.
   “Glossary” (See page 24)
• Before connecting the projector to the computer, be sure to check the following settings.

■ Wired LAN

  Check 1 For LAN cable
  • Is the cable properly connected?
  • Use shielded LAN cable (STP cable) that is compatible with category 5 or above.

  Check 2 Wired LAN settings
  <Computer with a built-in wired LAN function>
  • Is your wired LAN switched on?
  <Computer without a built-in wired LAN function>
  • Is your wired LAN adapter properly recognized?
  • Is your wired LAN adapter switched on?
  • Install the wired LAN adapter driver beforehand.
  For details on how to install the driver, refer to the instructions accompanying the wired LAN adapter.

  Check 3 For Web Browser
  • Web Browser is necessary to use WEB control.
  • Compatible OS : Windows XP/Windows Vista/Windows 7, Mac OS X v10.4/v10.5/v10.6/v10.7
  • Compatible Web Browser : Internet Explorer 7.0/8.0/9.0, Safari 4.0/5.0 (Mac OS)

Notes

Do not touch the LAN terminal or the metal part of the LAN cable, the static electricity may discharge from our hands (body) causing a malfunction.
NETWORK menu

To connect the projector and the computer by changing the setting at the time of purchase, change the setting by displaying the menu with the following procedure.

Displaying the NETWORK menu

1. Press the <MENU> button on remote control.
   The main menu appears.

2. Select [Network] with the ▲▼ buttons.
   The network menu appears.

3. Press the <SELECT> button.
   You can select the sub-menu item.

   **Note**
   Unavailable items on the menu screen are grayed out and cannot be selected.
LAN mode select
Set the Wired LAN network through the projector menu.

1. Press ▲▼ to select [LAN mode select], and press <SELECT> button or the ► button.

2. Select similar LAN environment among LAN1, LAN2 and LAN3 with the ▲▼ buttons and press the <SELECT> button.
NETWORK menu (continued)

Network setting

You can make detailed wired LAN settings.

1 Press ▲▼ to select [Network setting], and press <SELECT> button.

The detailed [Network setting] screen will be displayed.

2 Press ▲▼ to select an item, and change the setting according to the instructions.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP * (DHCP client function)</td>
<td>On: If a DHCP server exists in the network to which the projector is connected, the IP address will automatically be acquired. Off: If a DHCP server does not exist in the network to which the projector is connected, additionally set [IP address *], [Subnet mask *] and [Gateway *].</td>
</tr>
<tr>
<td>IP address * (Display of IP address and setting)</td>
<td>Enter the IP address if DHCP server is not used.</td>
</tr>
<tr>
<td>Subnet mask * (Displaying and setting the subnet mask)</td>
<td>If not using a DHCP server, enter the subnet mask.</td>
</tr>
<tr>
<td>Gateway * (Display of gateway address and setting)</td>
<td>Enter the gateway address if DHCP server is not used.</td>
</tr>
<tr>
<td>DNS (Display of Preferred DNS server address and setting)</td>
<td>Enter the DNS server address if DHCP server is not used.</td>
</tr>
</tbody>
</table>

* “Glossary” (See page 24)

3 Press ▲▼► to select [Set], and press <SELECT> button.

Save the current network settings.

Notes

Before using the DHCP server, make sure the DHCP server is already functioning.

For details of IP address, subnet mask, gateway and DNS, ask the network administrator.

Default wired LAN settings

The following settings are set before the projector leaves the factory.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SELECTED LAN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LAN 1</td>
</tr>
<tr>
<td>DHCP</td>
<td>OFF</td>
</tr>
<tr>
<td>IP ADDRESS</td>
<td>169.254.100.100</td>
</tr>
<tr>
<td>SUBNET MASK</td>
<td>255.255.0.0</td>
</tr>
<tr>
<td>GATEWAY ADDRESS</td>
<td>255.255.255.255</td>
</tr>
<tr>
<td>DNS ADDRESS</td>
<td>255.255.255.255</td>
</tr>
</tbody>
</table>
**Network PIN code**

The Network PIN code is to restrict the access to the projector through the network.

1. Press ▲▼ to select [Network PIN code] and press <SELECT> button.

2. Set the figures with the ▲▼ buttons and move to the next items with the ◄► buttons. Select [Set] and press the <SELECT> button to set.

   To cancel the preset [Network PIN code], select [Cancel].

**Network information**

This function shows the LAN setting environment of the currently selected projector.

1. Press ▲▼ to select [Network information].

2. Press <SELECT> button or the ► button to show the information of the current projector status.
Network factory default
You can reset the network setting to the factory default of the projector.

1. Press ▲▼ to select [Network factory default], and press <SELECT> button.

2. A confirmation box appears and select [Yes] and then press <SELECT> button. Another confirmation box appears and select [Yes] and then press <SELECT> button.

Connecting with Wired LAN

Computer operation
Connection can be made with wired LAN. However, confirm to your system administrator on network settings before changing any settings.

1. Turn on the computer.

2. Make the network setting according to your system administrator.
   If the projector settings are the default settings (See page 7), the computer can be used with the following network settings.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP</td>
<td>Off</td>
</tr>
<tr>
<td>IP address</td>
<td>169.254.100.101</td>
</tr>
<tr>
<td>Subnet mask</td>
<td>255.255.0.0</td>
</tr>
<tr>
<td>Default gateway</td>
<td>NONE</td>
</tr>
<tr>
<td>DNS</td>
<td>NONE</td>
</tr>
</tbody>
</table>
Using Web Browser

Accessing from the Web browser

1. Activate the Web browser in the personal computer.

2. Enter the IP address set by the projector into the URL input field of the Web browser.

3. Enter your “User name” and “Password”.
   The entering User Name must be “user” and it can not be changed.

4. Click [OK] to display the Initial setting page.
   “Initial setting” page is displayed.

Notes
- Avoid activating two or more Web browser simultaneously to work out setting or control actions.
- Change the password first of all.
- There are some control items used with the JavaScript function in the setting pages. If the web browser is set not to use this JavaScript function, it may not control the projector properly.
Using Web Browser (continued)

Description of each item

1. Initial setting button
   Click this item to display the Initial setting page.

2. Power & Status button
   Click this item to display the Power & Status page.

3. PC Adj. button
   Click this item to display the PC Adj. page.

4. Control button
   Click this item to display the Control page.

5. Setting button
   Click this item to display the Setting page.

6. E-mail setting button
   Click this item to display the E-mail setting page.

7. Network setting button
   Click this item to display the Network setting page.

8. Information button
   Click this item to display the Information page.

Initial setting page

After installing the projector, perform the following basic initial setting.

1. Switches display language on the setting page.
2. Indicates the model name of the projector.
3. Indicates the serial number of the projector.
4. Sets the Network PIN code to login the setting page.
5. Switches PJLink password authentication.
6. Password for PJLink function.
7. Displays the version of the firmware.
Using Web Browser (continued)

**Power & Status page**

By clicking "ON" or "Standby" button on the page, the power of the projector can be controlled.

1. Displays the status of the lamp.
2. Displays the status of the projector’s power.
3. Controls the projector power by clicking the “ON” or “Standby” button.

**PC Adj. page**

Click PC Adj. on the main menu. This function is to adjust the signal from the computer connected to the projector to obtain the proper picture image on the screen.

1. Displays the current mode of the input signal.
2. Performs automatic adjustment.
3. Performs Fine Sync adjustment.
4. Adjusts the number of total dots in the horizontal period.
5. Adjusts the phase of the clamp.
6. Adjusts the horizontal/vertical position of the image.
7. Resets the PC adjustments to the previous levels.
8. Store/Clear the PC adjustment values.
Using Web Browser (continued)

Control page

Click on the different tabs to change pages and select desired setting items.

1 Displays the different tabs of the page.

- **Input**
  This function is to select the input mode and source mode of the projector.

1 Selects the input mode of the projector or the signal source of the input.

- **System**

1 Displays the system of signal input to the projector.
Using Web Browser (continued)

Control page (continued)

■ Sound

This function is to adjust the sound of the projector.

1  Adjusts the sound volume from the speaker.
2  Suppresses the sound.

■ Image adj.

This function is to adjust the projected picture image and save the image mode.

1  Adjusts picture contrast.
2  Adjusts picture brightness.
3  Adjusts picture color saturation.
4  Adjusts picture hue.
5  Sets a color temperature mode.
6  Adjusts each white balance respectively.
7  Adjusts picture sharpness.
8  Switches brightness of darker part of the picture.
9  Switches noise reduction mode.
10 Switches progressive mode.
11 Resets the Image adjustment to previous levels.
12 Stores the Image adjustment levels.
13 Loads the Image mode.
Using Web Browser (continued)

### Setting page

Click on the different tabs to change pages and select desired setting items.

1. Displays the different tabs of the page.

#### Screen setting

This function is to adjust the screen mode of the projector.

1. Switches the screen mode.
2. Sets the image top/bottom and left/right reversed.
3. Sets the image left/right reversed.
4. Sets the aspect.
5. Sets the similar color of the wall or the school blackboard.
6. Resets the Screen settings.
Using Web Browser (continued)

**Setting page (continued)**

<table>
<thead>
<tr>
<th>Setting 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Setting 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
</tbody>
</table>
Using Web Browser (continued)

Setting page (continued)

Setting 3

1. Displays the filter counter.
2. Sets the time to indicate the filter warning message on the screen.
3. Sets all of the projector control items to the factory default setting.
4. Sets the black out image and mute the sound temporarily.
5. Sets the image to freeze mode.
6. Sets the closed caption function.

Note

- The factory default function sets all of the projector control items to the factory default setting except Logo, PIN code lock, PIN code lock, Lamp Corres. Value, Filter counter, Lamp runtime and PJ time.

E-mail setting page

This projector has an E-mail function which can send an alert message to users or an administrator if it detects an abnormality on the projector or run out of the life span of the lamp.

1. Enter server name or IP address of the SMTP server. (up to 60 characters)
2. Enter Port number of the SMTP server. (from 1 to 65535)
3. Enter e-mail address of administrator.
4. Enter e-mail address of the user to send mail when the projector has an abnormality.
5. Sets authentication setting option.
6. Sets user authentication setting option when selecting “SMTP Auth” in above column.
7. Enter SMTP user ID. (up to 63 characters)
8. Enter SMTP password. (up to 63 characters)
9. Enter server name or IP address of the POP server. (up to 60 characters).
10. Enter Port number of the POP server. (from 1 to 65535)
E-mail setting page (continued)

Error message for sending alert mail

1 Error message for missing SMTP server.

Registering and deleting E-mail addresses

To check or delete the registered addresses.

Option selection for sending alert mail

To check the condition items under which alert mail will be sent.
E-mail setting page (continued)

- **Examples: Type and contents of alert mail**
  When the projector has an abnormality, the following alert messages are sent to the registered E-mail address according to your selected condition. Administrator or user can take an efficient action quickly by receiving this message. This is very useful to maintain and service the projector.
  The following are examples of received messages.

- **When internal PJ temperature is too high:**

  ```
  TITLE: Message from projector
  Projector Model Name: model name
  TCP/IP: 192.168.10.100 Projector Name: PT-CW230
  
  *The Projector lamp is turned off, because internal projector temperature is too high. Wait for the completion of the cooling process and make sure the projector has been turned into Standby. Then turn the projector on again.
  If the Indicator continues flashing, check the air filter for dust accumulation.
  ```

- **When PJ needs service:**

  ```
  TITLE: Message from projector
  Projector Model Name: model name
  TCP/IP: 192.168.10.100 Projector Name: PT-CW230
  
  *Maintenance requirement from Projector is detected.
  Check up LED status of projector and consult with the dealer.
  MCI 3.3V OK
  MAIN ALL NG
  ```

- **Note**
  - The projector lamp was turned off, because the projector power circuit failed.
  - Unplug the AC power cord and plug it, and then turn on the projector once again to verify operation. If the problem still persists, unplug the AC power cord and ask servicing to a qualified service personnel with the error information.

- **When PJ lamp replacement time is reached:**

  ```
  TITLE: Message from projector
  Projector Model Name: model name
  TCP/IP: 192.168.10.100 Projector Name: PT-CW230
  
  *The projector lamp has reached replacement time.
  Lamp ON 3000 h
  ```

- **Note**
  - Replace it with a new lamp immediately and reset the lamp counter. If the projector is used without resetting the lamp counter, the alert mail is sent to users in every power-on of the projector. This alert mail will not be sent when unchecking the mail sending condition "When PJ lamp replacement time is reached".
Using Web Browser (continued)

**Network page**
The IP Address, Subnet Mask, Default Gateway, DNS (Domain Name Server) and projector name are setup on this menu.

1. Displays the selected LAN mode.
2. Sets DHCP configuration.
3. Sets IP address of the projector.
4. Sets Subnet mask.
5. Sets IP address of the default gateway (Router).
6. Sets IP address of the DNS server. Must be set when using the e-mail function.
7. Sets name of the projector. (64 characters maximum)

**Information page**
This page is to display the basic information of the projector status. Click Update button to update the information.

1. Displays selected input and source.
2. Displays selected signal system.
3. Displays input signal status.
4. Displays screen mode.
5. Displays lamp status with an icon.
6. Displays the security (PIN code lock) status.
7. Displays the accumulated run time of the projector.
8. Displays the run time (Corresponding value) of the lamp.
9. Displays the accumulated run time of the filter.
10. Displays MAC address of the projector.
11. Displays the IP address of the projector.
PJLink protocol

The network function of the projector supports PJLink class 1, and the PJLink protocol can be used to perform projector setting and projector status query operations from a computer.

Control commands

The following table lists the PJLink protocol commands that can be used to control the projector.

<table>
<thead>
<tr>
<th>Command</th>
<th>Control details</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWR</td>
<td>Power supply control</td>
<td>Parameters&lt;br&gt;0 = Standby&lt;br&gt;1 = Power ON</td>
</tr>
<tr>
<td>POWR ?</td>
<td>Power supply status query</td>
<td>Parameters&lt;br&gt;0 = Standby&lt;br&gt;1 = Power ON&lt;br&gt;2 = Cool-down in progress</td>
</tr>
<tr>
<td>INPT</td>
<td>Input selection</td>
<td>Parameters</td>
</tr>
<tr>
<td>INPT ?</td>
<td>Input selection query</td>
<td>Parameters&lt;br&gt;11 = RGB 1&lt;br&gt;12 = RGB 2&lt;br&gt;13 = RGB 3&lt;br&gt;21 = VIDEO 1&lt;br&gt;22 = VIDEO 2&lt;br&gt;23 = VIDEO 3&lt;br&gt;31 = DIGITAL 1</td>
</tr>
<tr>
<td>AVMT</td>
<td>AV MUTE control</td>
<td>Parameters</td>
</tr>
<tr>
<td>AVMT ?</td>
<td>AV MUTE status query</td>
<td>Parameters&lt;br&gt;30 = AV MUTE mode off&lt;br&gt;31 = AV MUTE mode on</td>
</tr>
<tr>
<td>ERST ?</td>
<td>Error status query</td>
<td>Parameters&lt;br&gt;1st byte : Indicates fan errors, range 0 – 2&lt;br&gt;2nd byte : Indicates lamp errors, range 0 – 2&lt;br&gt;3rd byte : Indicates temperature errors, range 0 – 2&lt;br&gt;4th byte : Fixed at 0&lt;br&gt;5th byte : Indicates filter errors, range 0 – 2&lt;br&gt;6th byte : Indicates other errors, range 0 – 2&lt;br&gt;Definitions for each value from 0 to 2 are as follows.&lt;br&gt;0 = No error known&lt;br&gt;1 = Warning&lt;br&gt;2 = Error</td>
</tr>
<tr>
<td>LAMP ?</td>
<td>Lamp status query</td>
<td>Parameters&lt;br&gt;1st digits (1 – 5 digits) : Lamp cumulative operating time&lt;br&gt;2nd digit : 0 = Lamp off, 1 = Lamp on</td>
</tr>
<tr>
<td>INST ?</td>
<td>Input selection list query</td>
<td>The followings are returned as parameters.&lt;br&gt;“11, 12, 13, 21, 22, 23, 31”</td>
</tr>
<tr>
<td>NAME ?</td>
<td>Projector name query</td>
<td>The name set for [Projector name] in [Network setting] is returned.</td>
</tr>
<tr>
<td>INF1 ?</td>
<td>Manufacturer name query</td>
<td>“Panasonic” is returned.</td>
</tr>
<tr>
<td>INF2 ?</td>
<td>Model name query</td>
<td>Answer the model name with either “CW230” or “CX200”.</td>
</tr>
<tr>
<td>INF0 ?</td>
<td>Other information query</td>
<td>Information such as version number is returned.</td>
</tr>
<tr>
<td>CLSS ?</td>
<td>Class information query</td>
<td>“4” is returned.</td>
</tr>
</tbody>
</table>

PJLink security authorization

When using PJLink with security authorization, either of the password set for administrator privileges and the password set for user privileges with Web browser control can be used as the password for PJLink (See page 10). When using PJLink without security authorization, set use without the password for administrator privileges and the password for user privileges of Web browser control.

For specifications regarding PJLink, refer to the Japan Business Machine and Information System Industries Association website.

URL http://pjlink.jbmia.or.jp/
Control commands via LAN

Use of telnet
You can control the projector by using the telnet application*1 installed on your computer. Normally, the telnet application is available on your computer.
* The telnet 10000 port is used to control the projector.

■ Control
(For example, in case of using the telnet application of Windows XP Professional.)

1) Select Run... submenu from Start menu  on the computer. Type “telnet” onto the Open text area on the displayed window and press OK button.

![Image of telnet application]

2) The telnet application will start and the following window will be displayed. Type as below to connect the projector.

> open 192.168.1.201 10000 [return]

![Image of telnet window]

* Use the IP address assigned to the projector.

3) When communication is established correctly, the word “PASSWORD:” appears on the window. Type the login password (Network PIN code*2) for the projector and then press “Enter” key on the keyboard. If you do not set up the Network PIN code, just press “Enter” key.

When the word “Hello” is replied, login has been succeeded.

* The password “1234” is used for the example.

![Image of telnet window with password entered]

*1 Further instructions about the telnet application, please see the on-line guide on your computer.

*2 The password is a Network PIN code decided item “Network PIN code setting”. If the authentication of the entered password is failed 4 times continuously, the communication will be disconnected automatically. Please try again for the connection.
Use of telnet (continued)

4) Type the commands, refer to below table, to control the projector and then press “Enter” key for termination. For example, type “C00” which is a command to turn on the projector, and press “Enter” key. Confirm the projector is turning on.

* Enter with ASCII 64-byte capital characters and one-byte characters.

To disconnect the communication, press "Ctrl" key and "]" key at the same time, type "close" and then press "Enter" key on the Keyboard.
> close [return]

Command list table

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>C00</td>
<td>Power on</td>
</tr>
<tr>
<td>C02</td>
<td>Power off</td>
</tr>
<tr>
<td>C09</td>
<td>Volume up</td>
</tr>
<tr>
<td>C0A</td>
<td>Volume down</td>
</tr>
<tr>
<td>C0B</td>
<td>Audio Mute on</td>
</tr>
<tr>
<td>C0C</td>
<td>Audio Mute off</td>
</tr>
<tr>
<td>C1C</td>
<td>Menu display on</td>
</tr>
<tr>
<td>C1D</td>
<td>Menu display off</td>
</tr>
</tbody>
</table>

**Note**

* If the password or any command is not entered for more than 30 seconds, the communication will be disconnected automatically. Please try again for the connection.
Glossary

<table>
<thead>
<tr>
<th>Item</th>
<th>Descriptions</th>
<th>See page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP</td>
<td>Abbreviation for Dynamic Host Configuration Protocol. This function automatically assigns IP addresses to the connected equipment. If a device with the DHCP server function is present within a LAN, it automatically assigns IP addresses to the connected equipment</td>
<td>7</td>
</tr>
<tr>
<td>Gateway</td>
<td>The devices that are used for different network standards from yours. Gateway enables a connection with other network, by adjusting bilateral differences such as communication protocols. If no gateway is specified for the IP address of access destination, data will be sent to the host set as the gateway.</td>
<td>7</td>
</tr>
<tr>
<td>IP address</td>
<td>Internet Protocol (IP) is a protocol for distributing data, and the address corresponding to the data distribution destination is called the IP address. The same IP address cannot be used within the same LAN.</td>
<td>7</td>
</tr>
<tr>
<td>LAN</td>
<td>Abbreviation for Local Area Network. This is a network with a relatively narrow range such as inside a company.</td>
<td>4</td>
</tr>
<tr>
<td>Subnet</td>
<td>This limits the range of the IP addresses assigned to computers in order to divide the network into a number of sections during TCP/IP connection. The value used to divide the network at this time is called the subnetmask.</td>
<td>7</td>
</tr>
</tbody>
</table>

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