Model No. PT-TW230U/PT-TW231RU
PT-TW230E/PT-TW231RE
PT-TW230EA/PT-TW231REA

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 11)
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 22)
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.

Note
When using [Web control], [PJLink], and [Command control], set [Network control] in the [Network] menu of the projector to [On] (See page 8).
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 25)
• 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 hand (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 <ENTER> button.
You can select the sub-menu item.

Note
Unavailable items on the menu screen are grayed out and cannot be selected.
Network menu (continued)

You can change the projector name to be displayed on the network.

1. Press ▲▼ to select [Projector name], and press <ENTER> button.

2. Select characters with the ▲▼►◄ buttons and press the <ENTER> button to enter the projector name.

3. Select [Set] with the ▲▼►◄ buttons and press the <ENTER> button.
   Select [Cancel] to undo the changes and then press the <ENTER> button.

4. Select [Yes] or [No] with the ▲▼►◄ buttons and press the <ENTER> button.
NETWORK menu (continued)

Network setup
You can make detailed wired LAN settings.

1. Press ▲▼ to select [Network setup], and press <ENTER> button.
   The detailed [Network setup] 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>Setting</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 [Default 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>Default gateway * (Display of gateway address and setting)</td>
<td>Enter the gateway address if DHCP server is not used.</td>
</tr>
<tr>
<td>DNS1 (Display of Preferred DNS server address and setting)</td>
<td>Enter the DNS server address if DHCP server is not used.</td>
</tr>
<tr>
<td>DNS2 (Display of Alternate DNS server address and setting)</td>
<td>Enter the alternate DNS server address if DHCP server is not used.</td>
</tr>
</tbody>
</table>

   * "Glossary" (See page 25)

3. Press ▲▼◄► to select [Set], and press <ENTER> 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>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP</td>
<td>Off</td>
</tr>
<tr>
<td>IP address</td>
<td>192.168.10.100</td>
</tr>
<tr>
<td>Subnet mask</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>Default gateway</td>
<td>192.168.10.1</td>
</tr>
<tr>
<td>DNS 1/DNS 2</td>
<td>NONE</td>
</tr>
</tbody>
</table>
NETWORK menu (continued)

Network control
Set when you want to control the projector from a computer connected to the network.

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

2. Press <ENTER> button to select [On] or [Off] with the ▲▼ buttons.

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

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

2. Press <ENTER> button or the ▶ button to show the information of the current projector status.
NETWORK menu (continued)

AMX D.D.
This function allows the projector to be detected by AMX Device Discovery. For more details, visit http://www.amx.com/.

1. Press ▲▼ to select [AMX D.D.].

2. Press <ENTER> button and then to select [On] or [Off] with the ▲▼ buttons to allow the projector to be detected by AMX Device Discovery.

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 <ENTER> button.

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

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHCP</td>
<td>Off</td>
</tr>
<tr>
<td>IP address</td>
<td>192.168.10.101</td>
</tr>
<tr>
<td>Subnet mask</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>Default gateway</td>
<td>192.168.10.1</td>
</tr>
<tr>
<td>DNS 1/DNS 2</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 factory default settings are user1 (user privileges) or admin1 (administrator privileges) for the user name and panasonic (lowercase letters) for the password.

4. Click [OK] to display the Projector status page.
   - “Projector status” 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.
- Administrator privileges enable the use of all functions. User privileges enable the use of only “Projector status”, “Network status”, “Basic control”, “Advanced control”, and “Change password”.
- If you want to control the projector using a Web browser, set [Network control] in the network menu to [On].
- 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. **Page selection tabs**
   - Click these to switch pages.

2. **Monitor information button**
   - Click this item, and the status of the projector is displayed.

3. **Projector control button**
   - Click this item to display the projector control page.

4. **Detailed set up button**
   - Click this item to display the advanced settings page.

5. **Change password button**
   - Click this button to display the password change page.

6. **Language switch button**
   - Click this button to switch language between English and Japanese.

---

**Projector status page**

Click [Status], then [Projector status] to display the Status information page.
This page displays the projector statuses established for the items shown below.

1. Displays the type of projector.
2. Displays the firmware version of the projector main unit.
3. Displays the power source status.
4. Displays the video mode status.
5. Displays the serial number of the projector.
6. Displays the firmware version of the network.
7. Displays the AV mute status.
8. Displays the volume status.
9. Displays the status of input switch.
10. Displays the intake temperature status of the projector.
11. Displays the exhaust temperature status of the projector.
12. Displays the optics module temperature status of the projector.
13. Displays the use time of the lamp.
14. Displays the self diagnostics information. (See page 13)
15. Displays the runtime of the projector.
Using Web Browser (continued)

**Error information page**

If [Error (Detail)] is displayed in the self-diagnosis information display column on the [Projector status] screen, click the part to display the details of the error.

- Depending on the nature of the error, the projector may be placed in the standby mode for its own protection.

![Projector Control Window]

**Parameter** | **Description**
--- | ---
FAN | Trouble has occurred in the fan or its drive circuit. Consult your dealer.
INTAKE AIR TEMPERATURE | Intake air temperature is high. It could be because it is used in an environment of high temperature such as close to a heating device, etc., the air intake is blocked, or the air filter is clogged.
EXHAUST AIR TEMPERATURE | Exhaust air temperature is high. Exhaust may be blocked, or [Fan control] mode may be set wrong. See [Fan control] of the Projector Operations.
OPTICS MODULE TEMPERATURE | Optics module temperature is high.
LAMP REMAIN TIME | The lamp runtime has exceeded the prescribed cumulative time, and it is now time to replace the lamp.
LAMP STATUS | The lamp has failed to light. Wait a short while for the lamp to cool off, and then turn on the power.

**Network status page**

Displays the current configuration information of the network.

![Network status page]

*Displays the configuration details of wired LAN.
Using Web Browser (continued)

**Basic control page**
To move from another page, click [Projector control], then [Basic control].

1. Power standby/on control
2. Use these to select the input signals
3. Volume adjust
4. Switches image mode
5. Operation of AV mute

**Detail control page**
Click [Projector control], then [Advanced control] to display the Detail control page.

1. Execute Auto setup function
2. Operations on Screen mode
3. Operations on Keystone function
4. Operations on Rear/Ceiling
5. Operations on Image adjust
Using Web Browser (continued)

**Change Password page**

Click [Change password].

- **Administrator mode**
  1. Administrator
  2. User

- **User account**
  1. Account
  2. Current user name input field
  3. Current password input field
  4. New user name input field
  5. New password input field
  6. New password input field (re-enter for confirmation)
  7. Button for executing password change

- **User mode**
  A user can change password only.

  1. Current password input field
  2. New password input field
  3. New password input field (re-enter for confirmation)
  4. Button for executing password change

**Note**

- When changing the administrator account, both “Current user name” and “Current password” are required.
- No account is not available.
- Administrator account and user account should be differed.
Using Web Browser (continued)

Network config page

You can change network settings on projector when connecting with the administrator authority.

- **LAN settings**

1. **Click [Detailed set up] in the menu.**

2. **Click [Change] to change the LAN settings.**
   To return to the previous window, click [Back].

3. **Complete the detailed settings and click [Next].**

   When [Next] is clicked, the next page appears, enabling you to complete the detailed settings as desired.
   Settings performed here are the same as the settings performed with the [Network] menu of the projector.

4. **Click [Submit].**

   The settings will be registered.

**Notes**

Changing the setting of LAN while connected with LAN might disconnect the connection.
Using Web Browser (continued)

**Ping test page**

This page makes it possible to check whether the network is connected to the e-mail server, POP server, DNS server, etc. Click [Detailed set up], then [Ping test] to display the Ping test page.

Display which appears when the connection was successful.

```
PING 192.245.101.20 (192.245.101.20) 56 data bytes
64 bytes from 192.245.101.20: seq=1 ttl=64 time=1.397 ms
64 bytes from 192.245.101.20: seq=2 ttl=64 time=1.465 ms
64 bytes from 192.245.101.20: seq=3 ttl=64 time=1.418 ms
64 bytes from 192.245.101.20: seq=4 ttl=64 time=1.415 ms
--- 192.245.101.20 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 1.397/1.415/1.465 ms
```

Display which appears when the connection failed.

```
PING 192.245.101.15 (192.245.101.15) 56 data bytes
--- 192.245.101.15 ping statistics ---
4 packets transmitted, 0 packets received, 100% packet loss
```

1. Enter the IP address of the server to be tested.
2. Button for conducting the test.
**Using Web Browser (continued)**

### E-mail setup page

With this projector, if a problem occurs or if the lamp usage time reaches a set value, an e-mail message can be sent to one or more preset e-mail addresses (maximum two addresses). Click [Detailed set up], then [E-mail set up] to display the E-mail setup page.

1. Select Enable to use the e-mail function.
2. Enter the IP address or server name of the e-mail server (SMTP). The DNS server must be set if the server name is entered.
3. Enter the e-mail address of the projector. (maximum 63 characters)
4. The user can enter the location of, for example, the installed projector so that the recipient may easily identify the originator of the e-mail. (maximum 63 characters)
5. The user can modify the minimum time interval of temperature warning mail. The default value is 60 minutes. In this case, the user cannot send another mail for 60 minutes after sending previous temperature warning mail even if the set warning temperature is reached again.
6. Select the temperature of the intake sensor at which to send a warning message.

---

<table>
<thead>
<tr>
<th>1</th>
<th>Enter the E-mail Address1 of your desired recipient.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Select the conditions for sending e-mail.</td>
</tr>
</tbody>
</table>

**MAIL CONTENTS:** Select [NORMAL] or [SIMPLE].

**ERROR:** An error is detected by self-diagnosis.

**LAMP RUNTIME:** Remaining lamp service time has reached the value set in the field.

**INTAKE AIR TEMPERATURE:** Intake air temperature has reached the value set in the field.
Using Web Browser (continued)

**E-mail setup page (continued)**

1. Enter the E-mail Address2 of your desired recipient.
2. Select the conditions for sending e-mail.
   - **MAIL CONTENTS:** Select [NORMAL] or [SIMPLE].
   - **ERROR:** An error is detected by self-diagnosis.
   - **LAMP RUNTIME:** Remaining lamp service time has reached the value set in the field.
   - **INTAKE AIR TEMPERATURE:** Intake air temperature has reached the value set in the field.

**Authentication set up page**

The POP/SMTP server is set on this page when POP/SMTP authentication is required for mail transmissions. Click [Detailed set up], then [Authentication set up] to display the Authentication server setup page.

1. Select the authentication method specified by your Internet service provider.
2. Set this if SMTP authentication has been selected.
3. POP server name field
   - Available input characters: Alphanumeric characters (A - Z, a - z, 0 - 9), hyphen (-), period (.)
4. POP/SMTP server user name field
5. POP/SMTP server password field
6. Enter the port number for the SMTP server (normally “25”).
7. Enter the port number for the POP server (normally “110”).
8. Button to update settings
Using Web Browser (continued)

Contents of mail sent

Mail with the contents shown below is sent when the e-mail settings have been established.

```plaintext
--- Panasonic projector report (CONFIGURE) ---
Projector Type : PT-TW230
Serial No : 0000000000
--- E-mail setup data -----
TEMPERATURE WARNING SETUP
MINIMUM TIME at [60] minutes interval
INTAKE AIR TEMPERATURE Over [32degC / 89degF]
ERROR [OFF]
LAMP RUNTIME [OFF] at REMAIN [400] H
LAMP RUNTIME [OFF] at REMAIN [200] H
INTAKE AIR TEMPERATURE [OFF]

--- check system -----
FAN [OK]
INTAKE AIR TEMPERATURE [OK]
EXHAUST AIR TEMPERATURE [OK]
OPTICS MODULE TEMPERATURE [OK]
LAMP REMAIN TIME [OK]
LAMP STATUS [OK]

(Error code 00 00 00 00 00 00 00 00)
Intake air temperature : [31 degC / 87 degF]
Exhaust air temperature : [37 degC / 98 degF]
Optics module temperature : [39 degC / 102 degF]

PROJECTOR RUNTIME 1 H
LAMP ECO 500 H
LAMP NORMAL 300 H
LAMP REMAIN 2400 H

--------- Current status ---------
MAIN VERSION 1.00
NETWORK VERSION 1.00
LAMP STATUS LAMP=ON
INPUT RGB
SIGNAL NAME XGA6
SIGNAL FREQUENCY 0.00kHz / 0.00Hz

------ Wired Network configuration ------
DHCP Client OFF
IP address 192.168.10.100
MAC address 04:20:9A:00:00:00

------ Memo ------
```
Mail with the contents shown below is sent when an error has occurred.

```plaintext
--- Panasonic projector report (ERROR) ---
Projector Type          : PT-TW230
Serial No               : 000000000

----- check system -----  
FAN                           [ OK ]
INTAKE AIR TEMPERATURE       [ OK ]
EXHAUST AIR TEMPERATURE      [ OK ]
OPTICS MODULE TEMPERATURE    [ OK ]
LAMP REMAIN TIME             [ OK ]
LAMP STATUS                 [ FAILED ]

(Error code 00 40 00 00 00 00 00 08)

Intake air temperature     : [ 31 degC / 87 degF ]
Exhaust air temperature    : [ 37 degC / 98 degF ]
Optics module temperature  : [ 39 degC / 102 degF ]

PROJECTOR RUNTIME          1 H
LAMP ECO                   500 H
LAMP NORMAL                300 H
LAMP REMAIN                2400 H

--------- Current status ---------
MAIN VERSION         1.00
NETWORK VERSION      1.00
LAMP STATUS          LAMP=OFF
INPUT                NETWORK

----- Wired Network configuration -----  
DHCP Client  OFF
IP address   192.168.10.100
MAC address  04:20:9A:00:00:00

----- Memo -----
```

### Command port set up page

Set the port number to be used with command control. Click [Detailed set up] → [Command port set up].

![Diagram of Command port set up page with instructions](image-url)
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>Parameters</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWR</td>
<td>Power supply control</td>
<td>0 = Standby, 1 = Power ON</td>
<td></td>
</tr>
<tr>
<td>POWR ?</td>
<td>Power supply status query</td>
<td>0 = Standby, 1 = Power ON, 2 = Cool-down in progress</td>
<td></td>
</tr>
<tr>
<td>INPT</td>
<td>Input selection</td>
<td>Parameters</td>
<td></td>
</tr>
<tr>
<td>INPT ?</td>
<td>Input selection query</td>
<td>11 = RGB 1, 12 = RGB 2, 13 = RGB 3, 21 = VIDEO 1, 22 = VIDEO 2, 23 = VIDEO 3, 31 = DIGITAL 1</td>
<td></td>
</tr>
<tr>
<td>AVMT</td>
<td>AV MUTE control</td>
<td>Parameters</td>
<td></td>
</tr>
<tr>
<td>AVMT ?</td>
<td>AV MUTE status query</td>
<td>30 = AV MUTE mode off, 31 = AV MUTE mode on</td>
<td></td>
</tr>
<tr>
<td>ERST ?</td>
<td>Error status query</td>
<td>Parameters</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1st byte: Indicates fan errors, range 0 – 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd byte: Indicates lamp errors, range 0 – 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3rd byte: Indicates temperature errors, range 0 – 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4th byte: Fixed at 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5th byte: Indicates filter errors, range 0 – 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6th byte: Indicates other errors, range 0 – 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Definitions for each value from 0 to 2 are as follows.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 = No error known, 1 = Warning, 2 = Error</td>
<td></td>
</tr>
<tr>
<td>LAMP ?</td>
<td>Lamp status query</td>
<td>Parameters</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1st digits (1 – 5 digits): Lamp cumulative operating time</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd digit: 0 = Lamp off, 1 = Lamp on</td>
<td></td>
</tr>
<tr>
<td>INST ?</td>
<td>Input selection list query</td>
<td>The followings are returned as parameters.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>“11, 12, 13, 21, 22, 23, 31”</td>
<td></td>
</tr>
<tr>
<td>NAME ?</td>
<td>Projector name query</td>
<td>The name set for [Projector name] in [Network] is returned.</td>
<td></td>
</tr>
<tr>
<td>INF1 ?</td>
<td>Manufacturer name query</td>
<td>“Panasonic” is returned.</td>
<td></td>
</tr>
<tr>
<td>INF2 ?</td>
<td>Model name query</td>
<td>Answer the model name with either “TW230” or “TW231R”.</td>
<td></td>
</tr>
<tr>
<td>INF0 ?</td>
<td>Other information query</td>
<td>Information such as version number is returned.</td>
<td></td>
</tr>
<tr>
<td>CLSS ?</td>
<td>Class information query</td>
<td>“4” is returned.</td>
<td></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 15). 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

When WEB Control administrator rights password is set (Protect mode)

Connection method

1) Obtain the IP address and port number (Initial set value = 1024) of the projector and make a request for connection to the projector.

Acquire the IP address from the menu screen of the projector, and the port number from the WEB control page.

**IP address**: Obtain from MAIN MENU → [Network] → [Network status]

**Port No.**: Acquire from the WEB control “Detailed set up” → “Command port set up” page

2) There is a response from the projector.

Response data

<table>
<thead>
<tr>
<th>Data section</th>
<th>Blank</th>
<th>Mode</th>
<th>Blank</th>
<th>Random number section</th>
<th>Termination symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>“NTCONTROL”</td>
<td>0x20</td>
<td>‘1’</td>
<td>0x20</td>
<td>“zzzzzzzz” (ASCII code hexadecimal number)</td>
<td>0x0d</td>
</tr>
<tr>
<td>(ASCII string)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 bytes</td>
<td>1 byte</td>
<td>1 byte</td>
<td>1 byte</td>
<td>8 bytes</td>
<td>1 byte</td>
</tr>
</tbody>
</table>

Mode : 1 = Protect mode

3) Generate a 32-byte hash value from the following data using MD5 algorithm.

“xxxxxx:yyyyy:zzzzzzzz”

xxxxxx : Administrator rights user name for WEB CONTROL (Default user name is “admin1”)

yyyyy : Password of above administrator rights user (Default password is “panasonic”)

zzzzzzzz : 8-byte random number obtained in Step 2

Command transmission method

Transmit using the following command format.

Transmitted data

<table>
<thead>
<tr>
<th>Header</th>
<th>Data section</th>
<th>Termination symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hash value (See above &lt;Connection method&gt;)</td>
<td>‘0’ 0x30</td>
<td>(CR) 0x0d</td>
</tr>
<tr>
<td>32 bytes</td>
<td>1 byte</td>
<td>Undefined length</td>
</tr>
</tbody>
</table>

Receive data

<table>
<thead>
<tr>
<th>Header</th>
<th>Data section</th>
<th>Termination symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘0’ 0x30</td>
<td>Control command (ASCII string)</td>
<td>(CR) 0x0d</td>
</tr>
<tr>
<td>1 byte</td>
<td>Undefined length</td>
<td>1 byte</td>
</tr>
</tbody>
</table>

Error response

<table>
<thead>
<tr>
<th>Error message</th>
<th>Termination symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ERR1&quot;</td>
<td>Undefined control command</td>
</tr>
<tr>
<td>&quot;ERR2&quot;</td>
<td>Out of parameter range</td>
</tr>
<tr>
<td>&quot;ERR3&quot;</td>
<td>Busy state or no-acceptable period</td>
</tr>
<tr>
<td>&quot;ERR4&quot;</td>
<td>Timeout or no-acceptable period</td>
</tr>
<tr>
<td>&quot;ERR5&quot;</td>
<td>Wrong data length</td>
</tr>
<tr>
<td>&quot;ERRA&quot;</td>
<td>Password mismatch</td>
</tr>
<tr>
<td>4 bytes</td>
<td>1 byte</td>
</tr>
</tbody>
</table>

23
Control commands via LAN (continued)

When WEB Control administrator rights password is not set (Non-protect mode)

Connection method

1) Obtain the IP address and port number (Initial set value = 1024) of the projector and make a request for connection to the projector.

Acquire the IP address from the menu screen of the projector, and the port number from the WEB control page.

**IP address:** Obtain from MAIN MENU → [Network] → [Network status]

**Port No.:** Acquire from the WEB control "Detailed set up" → "Command port set up" page

2) There is a response from the projector.

Response data

<table>
<thead>
<tr>
<th>Data section</th>
<th>Blank</th>
<th>Mode</th>
<th>Termination symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;NTCONTROL&quot;</td>
<td></td>
<td>'0'</td>
<td>(CR)</td>
</tr>
<tr>
<td>(ASCII string)</td>
<td>0x20</td>
<td>0x30</td>
<td>0x0d</td>
</tr>
<tr>
<td>9 bytes</td>
<td>1 byte</td>
<td>1 byte</td>
<td>1 byte</td>
</tr>
</tbody>
</table>

Mode : 0 = Non-protect mode

Command transmission method

Transmit by the following command format.

Transmitted data

<table>
<thead>
<tr>
<th>Header</th>
<th>Data section</th>
<th>Termination symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>'0'</td>
<td>'0'</td>
<td>(CR)</td>
</tr>
<tr>
<td>0x30</td>
<td>0x30</td>
<td>0x0d</td>
</tr>
<tr>
<td>1 byte</td>
<td>1 byte</td>
<td>Undefined length</td>
</tr>
</tbody>
</table>

Receive data

<table>
<thead>
<tr>
<th>Header</th>
<th>Data section</th>
<th>Termination symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>'0'</td>
<td>'0'</td>
<td>(CR)</td>
</tr>
<tr>
<td>0x30</td>
<td>0x30</td>
<td>0x0d</td>
</tr>
<tr>
<td>1 byte</td>
<td>1 byte</td>
<td>Undefined length</td>
</tr>
</tbody>
</table>

Receive data

<table>
<thead>
<tr>
<th>Error message</th>
<th>Termination symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ERR1&quot;</td>
<td>Undefined control command</td>
</tr>
<tr>
<td>&quot;ERR2&quot;</td>
<td>Out of parameter range</td>
</tr>
<tr>
<td>&quot;ERR3&quot;</td>
<td>Busy state or no-acceptable period</td>
</tr>
<tr>
<td>&quot;ERR4&quot;</td>
<td>Timeout or no-acceptable period</td>
</tr>
<tr>
<td>&quot;ERR5&quot;</td>
<td>Wrong data length</td>
</tr>
<tr>
<td>&quot;ERRA&quot;</td>
<td>Password mismatch</td>
</tr>
</tbody>
</table>

4 bytes
## 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>Default gateway</td>
<td>The devices that are used for different network standards from yours. Default 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 default 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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