SONY

DISPLAY CONTROLLER
ZRCT-100
ZRCT-200

PROTOCOL MANUAL
1st Edition (Revised 3)

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，
人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠ AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Revision History

The icons in this manual have the following meaning.

- $\boxed{\text{S/N*1}}$: The item is supported only in the following models and serial numbers (hereafter referred to as "S/N") only.
  - SY model of ZRCT-100 with S/N 2000101 and later
  - CN model of ZRCT-100 (All S/Ns)
  - ZRCT-200 (All S/Ns)

  Not supported in SY model of ZRCT-100 with S/N 2000001-2000100.

- $\boxed{\text{S/N*2}}$: The item is supported only in the following S/Ns.
  - SY model of ZRCT-100 with S/N 2000101 and later
  - CN model of ZRCT-100 (All S/Ns)

  Not supported in ZRCT-200 and SY model of ZRCT-100 with S/N 2000001-2000100.

- $\boxed{\text{ZRCT-100}}$: The item is supported in ZRCT-100 only.
- $\boxed{\text{ZRCT-200}}$: The item is supported in ZRCT-200 only.

1. Overview

This manual describes the basic configuration and operation to write the various commands to be used in the serial communication (USB-serial) and network communication for the controller. By using the commands described in this manual, you can operate the power supply and input selection, change the setting and obtain the device status from the external controller such as a personal computer (PC).

Glossary of terms

Terms	Formal name	Description
ADCP	Advanced Display Control Protocol	Protocol name for controlling controller over Ethernet

2. Communication Specifications

This unit can be used for the remote control operation based on serial communication (RS-232C) and network communication.
The connection specifications for communication are described below.

2-1. Serial Communication (USB-Serial)

2-1-1. Connection

USB mini cable is used for connection.
Guaranteed cable length: 15 m (However, the cable length may not be able to be guaranteed depending on the cable used.)

2-1-2. Communication Specifications

Full duplex communication channel
Asynchronous system
No flow control
Transfer rate: 38,400 bps

・ The initial value of bit configuration is as follows:
    1 start bit + 8-data bit + 1 parity bit + 1 stop bit
    Even parity ....The 1's sum total of D0 to D7 is an even number. → 0
              ....The 1's sum total of D0 to D7 is an odd number. → 1

START BIT	D0 (LSB)	D1	D2	D3	D4	D5	D6	D7 (MSB)	PARITY (EVEN)	STOP BIT

・ Parity bit
    Even parity ....The 1's sum total of D0 to D7 is an even number. → 0
              ....The 1's sum total of D0 to D7 is an odd number. → 1

2-2. Network Communication

The network communication can be controlled by a network for which Ethernet is used.
10Base-T or 100Base-TX can be automatically selected when using a network terminal.

Ethernet is a registered trademark of Xerox Corporation.

When you connect to the network by using the controller and Ethernet, perform the connection via the Ethernet router/hub or by using the Ethernet cross cable.

3. Overview of Communication

The communication services below are used to control the controller from a remote location.
• ADCP

4. Glossary of Protocol

4-1. ADCP (Advanced Display Control Protocol)

ADCP is a protocol for controlling a Display Controller from a remote location through serial and network connections. A text-based command is used for a protocol. A command can be easily sent or confirmed from the terminal program in PC.

4-1-1. Function

The controller can be controlled using commands below.

System command
This command can acquire the system status such as the power operation, power status, and error state of the controller.

Menu command
This command can switch the input terminal of the controller.

For the compatibility with the command, refer to "Supported Command List" described below.

[Protocol]

Use the protocols below when using this service through a network.

Item	Description
Protocol name	ADCP (Advanced Display Control Protocol)
Transport	TCP
Port number	53595 (Factory-setting value)
TCP connection time-out	60 seconds (Factory-setting value)
Authentication function	ON (Factory-setting value)
Authentication password	cledis (Factory-setting value) This password becomes the same as the administrator password required when gaining access to the setup page on a Web page.
Authentication system	Random number + Authentication based on the coincidence of a password to be hashed

[Setting item]

The items below can be set for this service from a Web browser. Select "Setup" in the web setup window of the controller. Then, you can set the items in "ADCP" of "Advanced Menu".

Setting item	Description
Authentication function	Existence of authentication function
Port number	Port number
Time-out	TCP connection time-out time The session of TCP is disconnected in case that TCP connection time-out time passed from when the termination of the previous communication was received.
Host address	Address of PC that can be connected Connection from all PCs is accepted when this item is not set.

Tip
Conforms to the setting of the controller. (Refer to Section 5.)

For the display example in using a PC, this manual differentiates between the characters displayed on the screen and the characters to be entered as shown below.

- Character code : S-ASCII
- □ :   Space (0x20).
- ⏎ :   Return (CR) code CR + LF (0x0D + 0x0A).

4-1-2. Serial Connection

During connection with PC as a controller, the serial connection is described in an example in which a terminal program is used.
Connect the controller PC and the display controller using a serial cable and set the terminal program of PC as described below.

Serial port setting

Setting item	Value
Port	COM port of your PC connected with the controller Example) COM6
Communication rate	38,400 bps*
Data bit	8 bits
Parity bit	EVEN*
Stop bit	1 bit*
Flow control	None

∗: Conforms to the setting of the controller. (Refer to Section 2-1-2.) Confirm the Service Manual when connection cannot be properly per-
formed.

Terminal setting

Setting item	Value
Carriage return code (Reception)	CR + LF
Carriage return code (Transmission)	CR + LF
Local echo	Yes

Open the terminal and enter a command as described below to confirm the response. (Upper-and lower-case characters are distinguished in this case.)

`power☐"on"` ⏎

Confirmation for connection succeeds if the response below is returned and if the power of the controller is turned on.

`ok` ⏎

If any response is not returned, confirm the setting of a port and terminal. If the error response below is returned, confirm the entered command.

`err_cmd"` (Command format error)
`err_val"` (Command value error)

Communication procedure

The communication between a controller (PC) and the controller starts from when a command text begins to be input from the controller side. After a carriage return code is transmitted, the controller sends a response (return data) to the controller side. The communication is then completed.

A command response is also sent back when an ASCII character code is sent. It is completed when a carriage return code CR + LF is sent.

The maximum size of a command sent to the controller is 2048 bytes including a carriage return code.

Transmit command

Command character code	Maximum size of transmit command	Command termination	Command time-out
US-ASCII Text A command and parameter are delimited using a space character (x020)	2048 bytes	Carriage return code CR + LF (0x0D + 0x0A)	When no carriage return code is sent within 60 seconds after command entry

Command response

Response	Type of error	Description
ok	No error	Normal termination
err_cmd	Command format error	No command can be recognized.
err_option	Command option error	Command option error
err_inactive	Invalid error	A command is temporarily invalidated.
err_val	Value error	The value set using a command is out of the range.
err_auth	Network authentication error	The authentication during start of network communication failed.
err_internal1	Internal communication error 1 of the controller	A communication error occurred in the controller.
err_internal2	Internal communication error 2 of the controller	A communication error occurred in the controller.

ADCP command

You can perform the setting of value, acquisition of value, acquisition of configurable selected value and acquisition of command information by using this command with the specified option.

Command name   command
Value to be set   txt_param1
Currently configurable selected value   txt_param1, txt_param2
Configurable selected value in command   txt_param1, txt_param2, txt_param3

The following formats are used respectively.

Setting of selected value: Set the selected value in command. Enclose the selected value in double quotation marks (" ").

command "txt_param1" ⏎

Return code:

ok ⏎

Acquisition of selected value: Obtain the configured selected value.

Command ? ⏎

Return code:

"txt_param1" ⏎ (The configured selected value is returned.)

Acquisition of configurable selected value: Obtain the list of currently configurable parameter selected value.

Command ? --range ⏎

Return code:

["txt_param1", "txt_param2"] ⏎

Acquisition of command information: Obtain the command information.

Command ? --info ⏎

Return code:

{"type":"cmd_type","version":"1.0","range":["txt_param1","txt_ param2","txt_ param3"]} ⏎

(The command type, command version and list of configurable maximum selected value in command are returned as the command information.)

The following are the formats in the case that the selected value is a numeric value.
For example, assume that the setting value is 88;

Setting of numeric value: Set the value in command. Type the numeric value directly without enclosing it in the double quotation marks (" ").

```
command 88 ⏎
```

Return code:

```
ok ⏎
```

Acquisition of numeric value: Obtain the configured numeric value.

```
Command ? ⏎
```

Return code:

```
88 ⏎
```
(The configured numeric value is returned.)

Acquisition of configurable selected value: Obtain the range of currently configurable parameter numeric value.

```
Command ? --range ⏎
```

Return code:

```
{"min":0,"max":100,"step":1} ⏎
```
(When the step of configurable numeric value (STEP) is "1", it is omitted.)

Acquisition of command information: Obtain the command information.

```
Command ? --info ⏎
```

Return code:

```
{"type":"cmd_type","version":"1.0","range":{"min":0,"max":100}} ⏎
```
(The command type, command version and range of configurable maximum numeric value in command are returned as the command information.)

The JSON format is used to display the values that are configured or obtained by command. The various values such as numeric value, character string, their arrays, and object can be handled by command. The following are examples displayed by the JSON format.

Character string: Value enclosed in the double quotation marks (" ").

```
"string"
```

Numeric value: Integer or decimal in decimal number.

```
88
```

Array: Comma-separated values enclosed in the square brackets [ ].

```
["item1","item2","item3"]
```

Object: Comma-separated pairs of name and value enclosed in the curly brackets { }. The name and value are separated by colon (:).

```
{"value1":10,"value2":20,"value3":30}
```

Prescription in communication
- The entry of a command is canceled if 60 seconds or more pass from when a controller begins to enter a command text until a carriage return code is issued. The data sent till then is invalidated in this case.
- After command transmission, receive the response (return data) from this unit and then send the next command. When the next command is sent without waiting for any response, the controller cannot properly receive a command and return any response. No error response may be able to be performed.
- When a communication error occurs, the project invalidates the data received till then and enters a reception wait state.
- For an undefined command or when the controller judges to be invalid, the controller sends an error code to the controller side.
- Even if data is written when the input signal of the controller is unstable, notice that the value is not reflected.

Rough standard of command response wait time
The command response wait time is approximately 30 msec to 20 seconds.

This time value is obtained under conditions in which communication is not disturbed due to some cause.

4-1-3. Network Connection

The controller can be controlled through a network using ADCP. During initial setting, this service is set to ON.
When using ADCP through a network, authentication is required to start communication if an authentication function is valid. For the authentication method, refer to the communication procedure below.
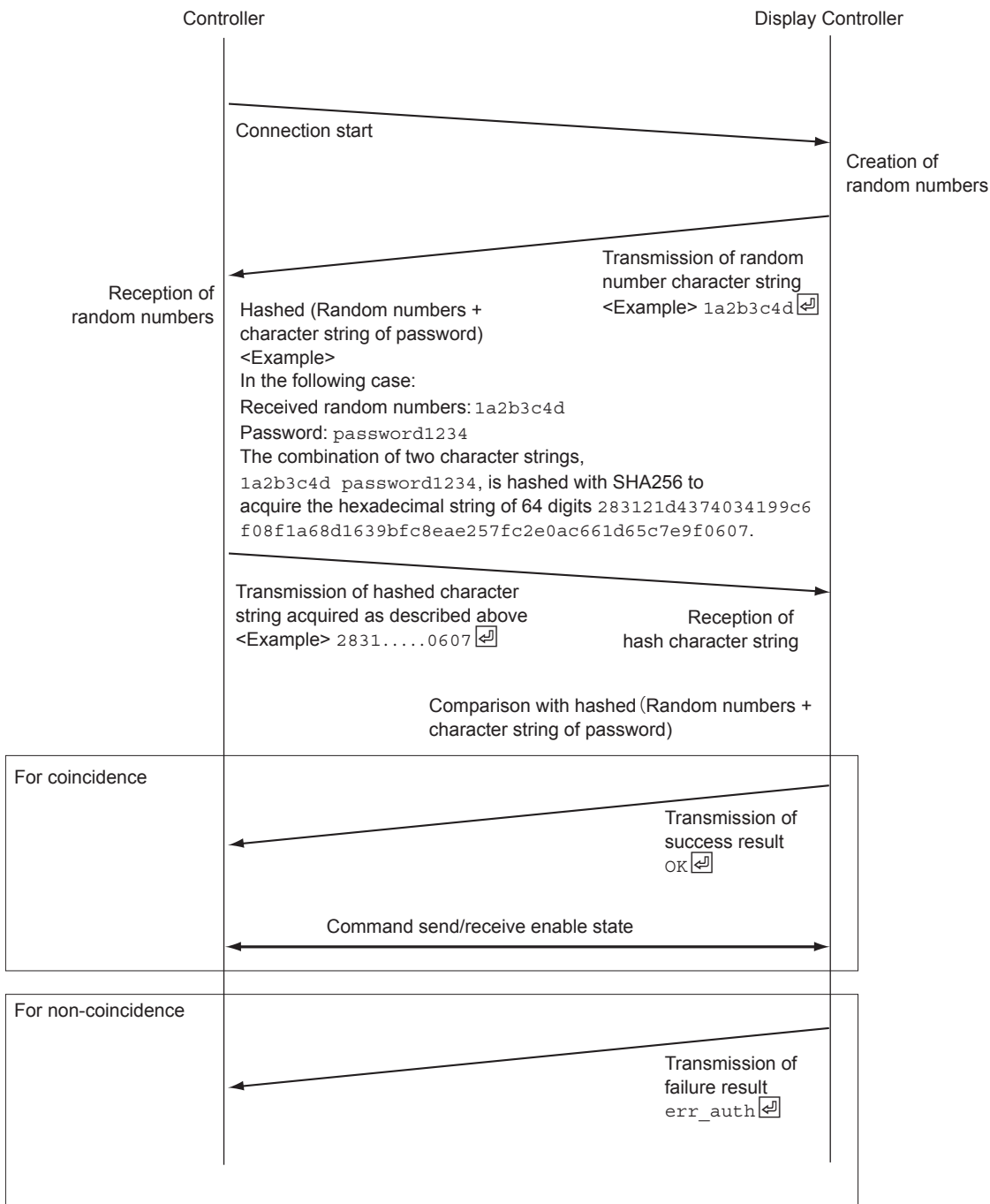During initial setting, the authentication function is validated.
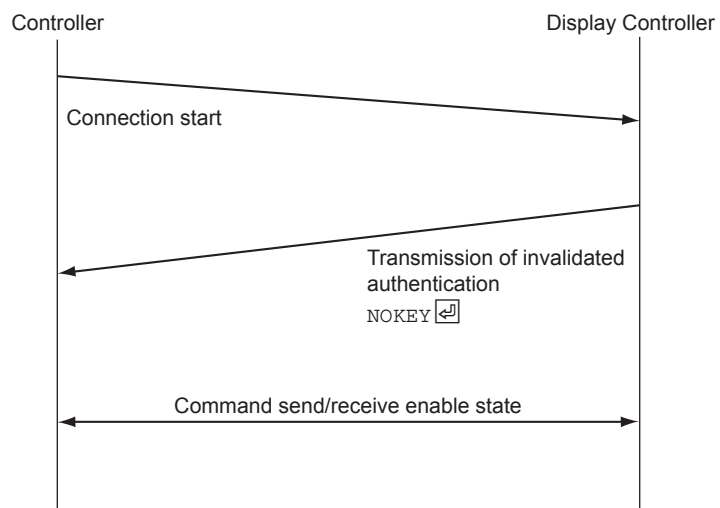
Network communication procedure

The communication sequence of ADCP via network is shown below. When an authentication function is set to ON, a character string of random numbers is sent from the display controller during connection of a controller pc to the display controller. It is required that the controller pc creates a hash character string using the random numbers and a password by the algorithm of SHA256, sends it together with a carriage return code, and executes authentication.

When an authentication function is set to OFF, a character string of "NOKEY ⏎ " is sent during connection of the display controller to a controller pc. The controller pc can directly send an ADCP command. When authentication fails, a character string of "err_auth ⏎ " is sent from the display controller.

When an authentication function is set to ON;

Controller   Display Controller

Connection start

Creation of
random numbers

Transmission of random
number character string
<Example> 1a2b3c4d ⏎

Reception of
random numbers

Hashed (Random numbers +
character string of password)
<Example>
In the following case:
Received random numbers: 1a2b3c4d
Password: password1234
The combination of two character strings,
1a2b3c4d password1234, is hashed with SHA256 to
acquire the hexadecimal string of 64 digits 283121d4374034199c6
f08f1a68d1639bfc8eae257fc2e0ac661d65c7e9f0607.

Transmission of hashed character
string acquired as described above
<Example> 2831.....0607 ⏎

Reception of
hash character string

Comparison with hashed (Random numbers +
character string of password)

For coincidence

Transmission of
success result
OK ⏎

Command send/receive enable state

For non-coincidence

Transmission of
failure result
err_auth ⏎

When an authentication function is set to OFF;

Controller   Display Controller

Connection start

Transmission of invalidated
authentication
NOKEY ↵

Command send/receive enable state

Like serial connection, a command response can be confirmed using a terminal program when a command is put into a send/receive enable state. Refer to the following for details of the setting.

Setting of network connection

Setting item	Value
Connection destination address	IP address of the controller
Port number	53595*

*: Conforms to the setting of the controller.

Terminal setting

Setting item	Value
Carriage return code (Reception)	CR + LF
Carriage return code (Transmission)	CR + LF
Local echo	Yes

Refer to the Serial Connection (Section 4-1-2) for the overview on command transmission and reception or the prescription in communication.

5. Protocol Setting of the Controller from Web Browser

Note

- When connecting this controller with the network, consult with the network administrator. The network must be secured.
- When using this controller connected with the network, access the control window via a Web browser and change the access limitation of the factory preset values. It is recommended to change the password regularly.
- When the setting on the Web browser is completed, close the Web browser to log out.
- The menu displays used for the explanation below may be different depending on the model you are using.
- Supported Web browsers are Internet Explorer and Safari.
- The menu displays only English.
- If the browser of your computer is set to [Use a proxy server] when you have access to the controller from your computer, click the check mark to set accessing without using a proxy server.

Displaying the control window of the controller with a web browser
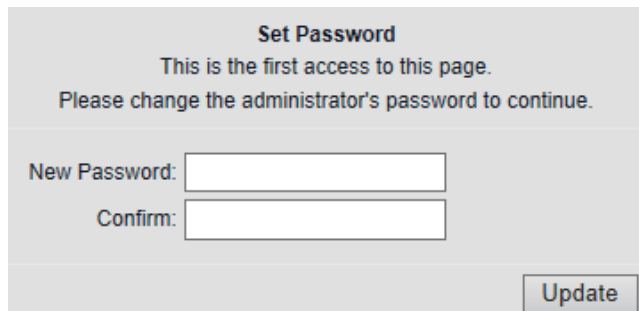
1. Connect the LAN cable.
2. Start a web browser on the computer, enter the following in the address field, then press the Enter key on your computer.
   http://xxx.xxx.xxx.xxx
   (xxx.xxx.xxx.xxx: IP address for the controller Factory-setting IP Address: 192.168.6.10)

When you access the Setup page for the first time, input "admin" as the user name and "cledis" as the password in the authentication dialog.
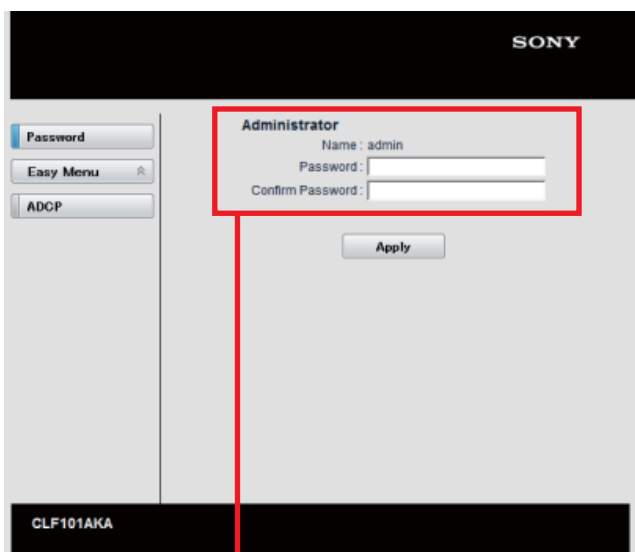When you log in for the first time, the window that prompts you to change the password is displayed. Follow the instructions on the screen to change the password.
The name of the administrator is preset to "admin."

Entry area for [Administrator]

The password can be changed in the Password page in the Setup page.
When you change the password, input a new password after deleting the password (*****) that was set.
The password of the administrator should be 8 to 16 characters that includes both alphabet and numeric characters.
Alphabet is case-sensitive.
The default password "cledis" cannot be set as a new password.

Note

If you forget your password, consult with qualified Sony personnel.
When you contact qualified Sony personnel, you may be notified of a special password to reset the password. (The password is for resetting and limited in use.)

Setting the control protocol of the controller

Change the settings for the control protocol on the Setup page. Entered values will not be applied unless you click on [Apply].
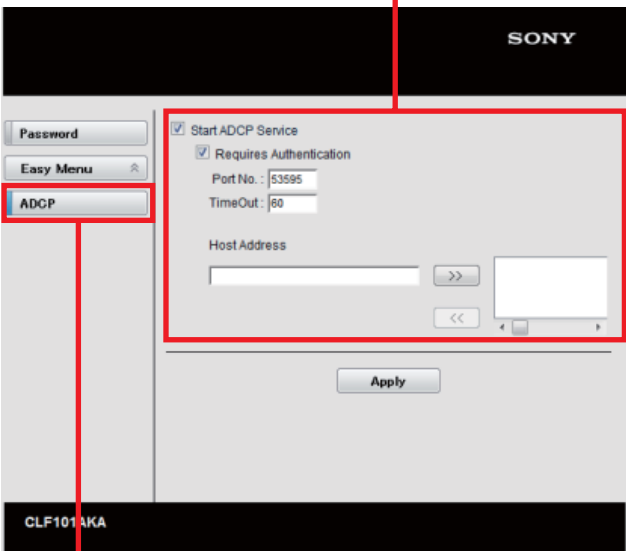
1. Click on [Advanced Menu] to display the buttons for more settings.
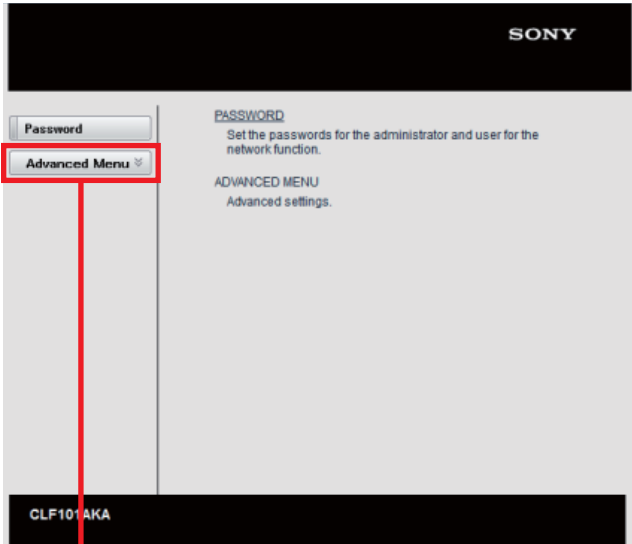
Advanced Menu button

2. Set ADCP.

ADCP Service setting area

ADCP button

Start ADCP Service:

Set ADCP to enabled or disabled. Items for ADCP are enabled only when this function is enabled. The function is enabled at the factory default.

-Requires Authentication:

Set the authentication for ADCP to enabled or disabled. The password is the same as that of the Web page administrator.

-Port No.:

Input the server port of ADCP. The factory default setting is "53595".

-Timeout:

Input the time (seconds) until ADCP communication is terminated in case it is disconnected.
The factory default setting is "60".

-Host Address:

Input the IP address that the ADCP server is allowed to receive. If no IP address is input, receiving commands will be allowed from any IP address. From the moment the IP address is input, access will be allowed only from that input IP address. For security reasons, it is recommended to input an IP address to restrict access.

6. Error Code List

Display controller

Error code	ADCP Response	Category	Symptom/Cause/Remedy
001	err_controller_power_cpu	Power abnormality	Symptom/Cause: The power block of the CPU-463 board is defective. Remedy: Replace the CPU-463 board.
002	ZRCT-100 err_controller_power_dif		Symptom/Cause: The power block of the DIF-244 board is defective. Remedy: Replace the DIF-244 board.
	ZRCT-200 err_controller_power_vif		Symptom/Cause: The power block of the VIF-67 board is defective. Remedy: Replace the VIF-67 board.
003	err_controller_power_pif		Symptom/Cause: The power block of the PIF-55 board is defective. Remedy: Replace the PIF-55 board.
012	ZRCT-100 err_controllerr_temp_dif	Temperature abnormality	Symptom/Cause: The temperature abnormality of the DIF-244 board was detected. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the display controller. ・Replace the fan. ・Replace the DIF-244 board.
	ZRCT-200 err_controllerr_temp_vif		Symptom/Cause: The temperature abnormality of the VIF-67 board was detected. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the display controller. ・Replace the fan. ・Replace the VIF-67 board.
013	err_controllerr_temp_pif		Symptom/Cause: The temperature abnormality of the PIF-55 board was detected. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the display controller. ・Replace the fan. ・Replace the PIF-55 board.
017	err_controller_temp_unit		Symptom/Cause: The temperature abnormality of the Unit was detected. Remedy: ・Replace the UP-13 board. ・Replace the UC-1 board.
S/N*1 023	err_controller_board_pif	Board discriminant abnormality	Symptom/Cause: Board discriminant abnormality of the PIF-55 board was detected. Remedy: ・Check if the suitable repair part is used. ・Replace the PIF-55 board.
050	err_controller_version	Version abnormality	Symptom/Cause: The system version abnormality was detected. Remedy: ・Update the software. ・Replace the DIF-244 board. ZRCT-100 ・Replace the VIF-67 board. ZRCT-200 ・Replace the PIF-55 board.

Display unit

u**** = Port and Unit Number
Example) u1206 = Port12-Unit6

Error code	ADCP Response	Category	Symptom/Cause/Remedy
102	err_u****_power_vdd1 err_u****_power_vdd2	Power	Symptom/Cause: The cell drive power supply (VDD1, VDD2) is defective. Remedy: ・Replace the UP-13 board. ・Replace the UC-1 board.
104	err_u****_power_ac		Symptom/Cause: The power block is defective. Remedy: Replace the PS-903 board.
110	err_u****_temp_atmos	Temperature	Symptom/Cause: An abnormality was detected in the temperature sensor of the display unit. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the array.
111	err_u****_temp_uc		Symptom/Cause: An abnormality was detected in the temperature Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature of the operating environment. ・Replace the fan. ・Replace the UC-1 board.
113	err_u****_temp_cell1_1 err_u****_temp_cell1_2 err_u****_temp_cell1_3 err_u****_temp_cell1_4 err_u****_temp_cell2_1 err_u****_temp_cell2_2 err_u****_temp_cell2_3 err_u****_temp_cell2_4 err_u****_temp_cell3_1 err_u****_temp_cell3_2 err_u****_temp_cell3_3 err_u****_temp_cell3_4		Symptom/Cause: The temperature of cell (1 to 12) is abnormal. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the array. ・Replace the cell.
121	err_u****_uc_board_1 err_u****_uc_board_2 err_u****_uc_board_3 err_u****_uc_board_4 err_u****_uc_board_5 err_u****_uc_board_6	Board	Symptom/Cause: The following are the possible abnormalities in the UC-1 board. ・The block to start the power is defective. ・The block to shut down the power is defective. ・The power supply block is defective. ・The memory IC (flash) data is abnormal. ・The IC setting is abnormal. Remedy: Replace the UC-1 board.
122	err_u****_up_board_1 err_u****_up_board_2 err_u****_up_board_3 err_u****_up_board_4 err_u****_up_board_5 err_u****_up_board_6 err_u****_up_board_7 err_u****_up_board_8 err_u****_up_board_9 err_u****_up_board_10 err_u****_up_board_11 err_u****_up_board_12		Symptom/Cause: The UP-13 board or cell (1 to 12) is abnormal. Remedy: ・Replace the UP-13 board. ・Replace the cell. ・Replace the UC-1 board.
130	err_u****_comm_internal err_u****_comm_rs485 err_u****_picture	Connection/ Communication	Symptom/Cause: ・The internal harness/cable is pulled out or broken. ・The LAN cable is abnormal. ・The video signal is not input correctly. Remedy: ・Check if the cable is not loosened or pulled out. ・Check if there is any breaking of cable. ・Check if the video signal format that has been input from the display controller is compatible with the system.

7. Warning Code List

Display controller

Error code	Category	Category	Symptom/Cause/Remedy
212	ZRCT-100 warn_controller_temp_dif	DIF temperature warning	Symptom/Cause: The temperature abnormality of the DIF-244 board was detected. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the display controller. ・Replace the DIF-244 board.
	ZRCT-200 warn_controller_temp_vif	VIF temperature warning	Symptom/Cause: The temperature abnormality of the VIF-67 board was detected. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the display controller. ・Replace the VIF-67 board.
213	warn_controller_temp_pif	PIF temperature warning	Symptom/Cause: The temperature abnormality of the PIF-55 board was detected. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the display controller. ・Replace the PIF-55 board.
214	warn_controller_temp_ps	PS temperature warning	Symptom/Cause: The temperature abnormality of the PS-906 board was detected. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the display controller. ・Replace the PS-906 board.
215	warn_controller_fan1_no_rotation warn_controller_fan1	Fan (front) rotation warning	Symptom/Cause: The front fan is abnormal. ・The fan operation is stopped. ・The rotational speed of fan is decreased. ・The fan performance is degraded. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Replace the fan (front).
216	warn_controller_fan2_no_rotation warn_controller_fan2	Fan (rear) rotation warning	Symptom/Cause: The rear fan is abnormal. ・The fan operation is stopped. ・The rotational speed of fan is decreased. ・The fan performance is degraded. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Replace the fan (rear).
220	warn_controller_tempsensor_if	IF temperature sensor warning	Symptom/Cause: The temperature sensor abnormality of the IF-1295 board was detected. Remedy: ・ Check if the air intake hole of the fan is not blocked. ・ Lower the temperature around the display controller. ・ Replace the IF-1295 board.
222	ZRCT-100 warn_controller_tempsensor_dif	DIF temperature sensor warning	Symptom/Cause: The temperature sensor abnormality of the DIF-244 board was detected. Remedy: ・Check if the air intake hole of the fan is not blocked. ・Lower the temperature around the display controller. ・Replace the DIF-244 board.
	ZRCT-200 warn_controller_tempsensor_vif	VIF temperature sensor warning	Symptom/Cause: The temperature sensor abnormality of the VIF-67 board was detected. Remedy: ・ Check if the air intake hole of the fan is not blocked. ・ Lower the temperature around the display controller. ・ Replace the VIF-67 board.

Error code	Category	Category	Symptom/Cause/Remedy
223	warn_controller_tempsensor_pif	PIF temperature sensor warning	Symptom/Cause: The temperature sensor abnormality of the PIF-55 board was detected. Remedy: • Check if the air intake hole of the fan is not blocked. • Lower the temperature around the display controller. • Replace the PIF-55 board.
224	warn_controller_tempsensor_ps	PS temperature sensor warning	Symptom/Cause: The temperature sensor abnormality of the PS-906 board was detected. Remedy: • Check if the air intake hole of the fan is not blocked. • Lower the temperature around the display controller. • Replace the PS-906 board.
230	warn_controller_unit_adr	Controller layout warning	Symptom/Cause: There is a mismatch in the display controller layout settings. Remedy: • Check the Controller Connection setting. (Refer to Section 6-3-1 in the Installation Manual.) • Check if the setting is made in the order of signal output of the sync (linked) signal connection (daisy chain). • Turn the power off and on again. • Replace the sync (linked) signal connection cable (category 7 cable) between the LINK IN/OUT connectors. • Replace the PIF-55 board of the display controller that is in the abnormal layout state.
233	warn_controller_link_pif warn_controller_sync_pif warn_controller_signal_pif	PIF connection warning	Symptom/Cause: • The Link connection between the display controllers is abnormal. • The connection between the DIF-244 board and PIF-55 board is abnormal. (ZRCT-100) • The connection between the VIF-67 board and PIF-55B board is abnormal. (ZRCT-200) Remedy: • Check if the cable is not loosened or pulled out. • Check if there is any breaking of cable. • Check the Controller Connection setting. (Refer to Section 6-3-1 in the Installation Manual.) • Check if the setting is made in the order of signal output of the sync (linked) signal connection (daisy chain). • Turn the power off and on again. • Replace the sync (linked) signal connection cable (category 7 cable) between the LINK IN/OUT connectors. • Replace the PIF-55 board. • Replace the DIF-244 board. (ZRCT-100) • Replace the VIF-67 board. (ZRCT-200)
240	warn_controller_update_cpu (ZRCT-100) warn_controller_update_dif1 (ZRCT-100) warn_controller_update_dif2 (ZRCT-100) warn_controller_update_dif3 (ZRCT-100) warn_controller_update_dif4 (ZRCT-200) warn_controller_update_vif1 (ZRCT-200) warn_controller_update_vif2 (ZRCT-200) warn_controller_update_vif3 (ZRCT-200) warn_controller_update_vif4 warn_controller_update_dp_split warn_controller_update_dp_rev warn_controller_update_pif	Update warning	Symptom/Cause: The various kinds of software are not updated correctly Remedy: • Update the software again. • Replace the DIF-244 board. (ZRCT-100) • Replace the VIF-67 board. (ZRCT-200) • Replace the PIF-55 board.

Display Unit

Error code	Category	Category	Symptom/Cause/Remedy
310	warn_u****_temp_board warn_u****_temp_atmos	Temperature/Fan	Symptom/Cause: An abnormality was detected in the temperature sensor of the display unit. Remedy: ・ Check if the air intake hole of the fan is not blocked. ・ Lower the temperature around the array.
313	warn_u****_temp_cell1_1 warn_u****_temp_cell1_2 warn_u****_temp_cell1_3 warn_u****_temp_cell1_4 warn_u****_temp_cell2_1 warn_u****_temp_cell2_2 warn_u****_temp_cell2_3 warn_u****_temp_cell2_4 warn_u****_temp_cell3_1 warn_u****_temp_cell3_2 warn_u****_temp_cell3_3 warn_u****_temp_cell3_4		Symptom/Cause: The temperature of cell (1 to 12) is abnormal. Remedy: ・ Check if the air intake hole of the fan is not blocked. ・ Lower the temperature around the array. ・ Replace the cell.
315	warn_u****_fan_r_no_rotation warn_u****_fan_r_rotation_realtime warn_u****_fan_r_rotation_log		Symptom/Cause: The fan on the right side (when viewed from rear) is abnormal. ・ The fan operation is stopped. ・ The rotational speed of fan is decreased. ・ The fan performance is degraded. Remedy: ・ Check if the air intake hole of the fan is not blocked. ・ Check the operating time of the display unit. 　For details on the check method of the operating time, refer to "Display unit information" in "6-5. Main Screen" in the Installation Manual. ・ Replace the fan.
316	warn_u****_fan_l_no_rotation warn_u****_fan_l_rotation_realtime warn_u****_fan_l_rotation_log		Symptom/Cause: The fan on the left side (when viewed from rear) is abnormal. ・ The fan operation is stopped. ・ The rotational speed of fan is decreased. ・ The fan performance is degraded. Remedy: ・ Check if the air intake hole of the fan is not blocked. ・ Check the operating time of the display unit. 　For details on the check method of the operating time, refer to "Display unit information" in "6-5. Main Screen" in the Installation Manual. ・ Replace the fan.
321	warn_u****_uc_diag	Board	Symptom/Cause: The UC-1 board is abnormal. Remedy: ・ Turn the power off and on again. ・ Check if the UC-1 board temperature is not abnormal. If it is abnormal, replace the UC-1 board.
322	warn_u****_up_diag		Symptom/Cause: The UP-13 board is abnormal. Remedy: ・ Turn the power off and on again. ・ Check if the UP-13 board temperature is not abnormal. If it is abnormal, replace the UP-13 board.
330	warn_u****_comm_rs485 warn_u****_comm_rs485_cmd warn_u****_picture	Connection/ Communication	A communication error has occurred. ・ The LAN cable is abnormal. ・ The video signal is not input correctly. ・ The communication portion of the UC-1 board is defective. ・ Replace the LAN cable. ・ Replace the UC-1 board. ・ Check if the video signal format that has been input from the display controller is compatible with the system.

8. Correspondence of ADCP Command

8-1. System Command

A system command can acquire the projector power operation and the power, error, or warning status. The type of a command is classified as follows:
- sys_sel command type: Sets the selected value for turning on and off the power.
- sys_stat command type: Acquires the status.
- sys_var command type: Sets the network address.

8-1-1. Command Type: sys_sel

By optional designation, the command of a sys_sel command type can set values and acquire values, settable choices, and command information.
Command name `command`
Value to be set `txt_param1`
Settable choice `txt_param1, txt_param2`
In the case described above, commands conform to the formats below, respectively.

Setting of value
   Transmitting example: `command "txt_param1"` ⏎   Sets the selected value using a command. The selected value is enclosed with double quotation marks (" ").

Returning example: `ok` ⏎

Inquiry of value:
   Transmitting example: `command ?` ⏎   Acquires the selected value of the set parameter.

   Returning example: `"txt_param1"` ⏎   The selected value that has been set is returned with the value being enclosed in double quotation marks (" ").

Inquiry of value range:
   Transmitting example: `command ? --range` ⏎   Acquires a list of parameter-selected values that can be set.

   Returning example: `["txt_param1","txt_param2"]` ⏎

Inquiry of command information:
   Transmitting example: `command ? --info` ⏎   Acquires the command information.
   Returning example: `{"type":"sys_sel","version":"1.0","range":["txt_param1",`
           `"txt_param2"]}` ⏎
           A command type, command version, and a list of selected values that can be set using a command are returned as command information.

1. Command list

Function	Command	Parameter/response	Remarks
Power on/off operation	power*1	"on"	Power on operation
		"off"	Power off operation
IPv4 network setting	ipv4_network_ setting*2	"start"	Setting start
		"apply"	Setting reflection
S/N*1 Controller mode setting	controller_mode	"master"	Set controller mode (master).
		"slave"	Set controller mode (slave).
ZRCT-200 Unit power on/off	unit_power	"on"	Unit power on
		"off"	Unit power off

∗1: A value cannot be acquired. Use the power_status ? command of a sys_stat command type when acquiring the power state.

2. Command example

power "on" ⏎

ok ⏎

∗2: During network setting, set an address after sending "start". Then, send "apply" and reflect the setting.

Example

ipv4_network_setting "start" ⏎

ipv4_network_setting "apply" ⏎

Note

Set each address using the network setting command of a sys_var command category when selecting "manual". Then, send "apply" and reflect the setting.

Example

ipv4_network_setting "start" ⏎

ipv4_ip_address "XXX.XXX.XXX.XXX" ⏎

ipv4_sub_net_mask "XXX.XXX.XXX.XXX" ⏎

ipv4_default_gateway "XXX.XXX.XXX.XXX" ⏎

ipv4_network_setting "apply" ⏎

8-1-2. Command Type: sys_stat

By optional designation, the command of a sys_stat command type can acquire values and command information. Command name: In the case of `"command"`, the following format is used.

Acquisition of value:

Transmitting example: `command:command ?` ⏎   The system status information is inquired.

Returning example: `"txt_param"` ⏎   When the information of single system status is returned.

`["txt_param1","txt_param2"]` ⏎   When using the command that handles multiple items in response, it is returned in the JSON array format.

`[{"val1":100},{"val2":200}]` ⏎   In the timer and version information, the name of each value and the JSON associative array of the value are returned in the array format.

Acquisition of command information:

Transmitting example: `command ? --info` ⏎   The command information is inquired.

Returning example: `{"type":"sys_stat","version":"1.0"}` ⏎

1. Command list

Function	Command	Response	Remarks
Power status acquisition for Controller	`power_status ?`	`"standby"`	Standby
		`"on"`	Power on
		`"updating"`	System Updating
		`"startup"`	Starting up
		`"shutting_down"`	Shutting down
		`"initializing"`	Initializing
Power status acquisition for Controller and Display Unit	`power_status_list ?`	`"standby"`	Standby
		`"on"`	Power on
		`"startup"`	Starting up
		`"shutting_down"`	Shutting down
		`"initializing"`	Initializing
		`"updating"`	System updating
Error status acquisition	`error ?`	Example) `["err_controller_power_cpu","err_u1206_temp_cell_1"]`	The JSON array data of a factor is as follows:
		`"no_err"`	No error
		`"err_controller_power_cpu"`	Power supply error CPU board
		(ZRCT-100) `"err_controller_power_dif"`	Power supply error DIF board
		(ZRCT-200) `"err_controller_power_vif"`	Power supply error VIF board
		`"err_controller_power_pif"`	Power supply error PIF board
		(ZRCT-100) `"err_controllerr_temp_dif"`	Temperature error DIF board
		(ZRCT-200) `"err_controllerr_temp_vif"`	Temperature error VIF board
		`"err_controller_temp_pif"`	Temperature error PIF board

Function	Command	Response	Remarks
Error status acquisition	error ?	`"err_controller_temp_unit"`	Temperature error Display Unit
		`"err_controller_version"`	System version mismatch
		S/N*1 `"err_controller_board_pif"`	PIF board mismatch
		`"err_u****_power_vdd1"`	**** = Port and Unit Number Example) u1206 = Port12 – Unit6
		`"err_u****_power_vdd2"`	Power supply error Display Unit(Vdd1)
		`"err_u****_power_ac"`	Power supply error Display Unit(AC)
		`"err_u****_temp_uc"`	Temperature error Display Unit(UC board)
		`"err_u****_temp_atmos"`	Temperature error Display Unit(Atmos)
		`"err_u****_temp_cell1_1"`	Temperature error Display Unit(cell1)
		`"err_u****_temp_cell1_2"`	Temperature error Display Unit(cell2)
		`"err_u****_temp_cell1_3"`	Temperature error Display Unit(cell3)
		`"err_u****_temp_cell1_4"`	Temperature error Display Unit(cell4)
		`"err_u****_temp_cell2_1"`	Temperature error Display Unit(cell5)
		`"err_u****_temp_cell2_2"`	Temperature error Display Unit(cell6)
		`"err_u****_temp_cell2_3"`	Temperature error Display Unit(cell7)
		`"err_u****_temp_cell2_4"`	Temperature error Display Unit(cell8)
		`"err_u****_temp_cell3_1"`	Temperature error Display Unit(cell9)
		`"err_u****_temp_cell3_2"`	Temperature error Display Unit(cell10)
		`"err_u****_temp_cell3_3"`	Temperature error Display Unit(cell11)
		`"err_u****_temp_cell3_4"`	Temperature error Display Unit(cell12)
		`"err_u****_uc_board_1"`	UC Board error Display Unit
		`"err_u****_uc_board_2"`	UC Board error Display Unit
		`"err_u****_uc_board_3"`	UC Board error Display Unit
		`"err_u****_uc_board_4"`	UC Board error Display Unit
		`"err_u****_uc_board_5"`	UC Board error Display Unit
		`"err_u****_uc_board_6"`	UC Board error Display Unit
		`"err_u****_up_board_1"`	UP Board error Display Unit
		`"err_u****_up_board_2"`	UP Board error Display Unit
		`"err_u****_up_board_3"`	UP Board error Display Unit
		`"err_u****_up_board_4"`	UP Board error Display Unit
		`"err_u****_up_board_5"`	UP Board error Display Unit
		`"err_u****_up_board_6"`	UP Board error Display Unit
		`"err_u****_up_board_7"`	UP Board error Display Unit
		`"err_u****_up_board_8"`	UP Board error Display Unit
		`"err_u****_up_board_9"`	UP Board error Display Unit
		`"err_u****_up_board_10"`	UP Board error Display Unit
		`"err_u****_up_board_11"`	UP Board error Display Unit
		`"err_u****_up_board_12"`	UP Board error Display Unit
		`"err_u****_comm_internal"`	Internal connection error
		`"err_u****_comm_rs485"`	RS485 communication error
		`"err_u****_picture"`	Video input error

Function	Command	Response	Remarks

Warning status acquisition	`warning ?`	Example)
		`["warn_controller_temp_dif",`
		`" warn_controller_fan1"]`
			The JSON array data of a factor is as follows:

		`"no_warn"`	No warning
		(ZRCT-100) `"warn_signal_freq_dvi1"`	Signal frequency over DVI1
		(ZRCT-100) `"warn_signal_freq_dvi2"`	Signal frequency over DVI2
		(ZRCT-100) `"warn_signal_freq_dvi3"`	Signal frequency over DVI3
		(ZRCT-100) `"warn_signal_freq_dvi4"`	Signal frequency over DVI4
		`"warn_signal_freq_dp1_1"`	Signal frequency over DP1_1
		`"warn_signal_freq_dp1_2"`	Signal frequency over DP1_2
		`"warn_signal_freq_dp2_1"`	Signal frequency over DP2_1
		`"warn_signal_freq_dp2_2"`	Signal frequency over DP2_2
		(ZRCT-200) `"warn_signal_freq_hdmi1"`	Signal frequency over HDMI1
		(ZRCT-200) `"warn_signal_freq_hdmi2"`	Signal frequency over HDMI2
		(S/N*1) `"warn_3d_duty_cycle"`	3D duty cycle warning
		(S/N*1) `"warn_3d_frequency"`	3D frequency warning
		(S/N*1) `"warn_3d_no_sync_signal"`	No 3D sync signal
		`"warn_controller_unit_adr"`	Unit address mismatch
		`"warn_controller_update_cpu"`	Update failure CPU
		(ZRCT-100) `"warn_controller_update_dif1"`	Update failure DIF1
		(ZRCT-100) `"warn_controller_update_dif2"`	Update failure DIF2
		(ZRCT-100) `"warn_controller_update_dif3"`	Update failure DIF3
		(ZRCT-100) `"warn_controller_update_dif4"`	Update failure DIF4
		(ZRCT-200) `"warn_controller_update_vif1"`	Update failure VIF1
		(ZRCT-200) `"warn_controller_update_vif2"`	Update failure VIF2
		(ZRCT-200) `"warn_controller_update_vif3"`	Update failure VIF3
		(ZRCT-200) `"warn_controller_update_vif4"`	Update failure VIF4
		`"warn_controller_update_pif"`	Update failure PIF
		(ZRCT-100) `"warn_controller_temp_dif"`	Temperature warning DIF
		(ZRCT-200) `"warn_controller_temp_vif"`	Temperature warning VIF
		`"warn_controller_temp_pif"`	Temperature warning PIF
		`"warn_controller_signal_pif"`	Signal warning PIF
		`"warn_controller_link_pif"`	Link warning PIF
		`"warn_controller_sync_pif"`	Sync warning PIF
		`"warn_controller_temp_ps"`	Temperature warning PS

Function	Command	Response	Remarks
Warning status acquisition	`warning ?`	`"warn_controller_fan1_no_rotation"`	Fan warning
		`"warn_controller_fan1"`	
		`"warn_controller_fan2_no_rotation"`	
		`"warn_controller_fan2"`	
		`"warn_controller_tempsensor_if"`	Temp sensor warning
		ZRCT-100 `"warn_controller_tempsensor_dif"`	
		ZRCT-200 `"warn_controller_tempsensor_vif"`	Temp sensor warning
		`"warn_controller_tempsensor_pif"`	
		`"warn_controller_tempsensor_ps"`	
		`"warn_controller_update_dp_split"`	Update failure DP firmware
		`"warn_controller_update_dp_rev"`	
		`"warn_u****_update"`	Update failure Display Unit
		`"warn_u****_recovery"`	
		`"warn_u****_temp_board"`	Temperature warning Display Unit
		`"warn_u****_temp_atmos"`	
		`"warn_u****_temp_cell1_1"`	
		`"warn_u****_temp_cell1_2"`	
		`"warn_u****_temp_cell1_3"`	
		`"warn_u****_temp_cell1_4"`	
		`"warn_u****_temp_cell2_1"`	
		`"warn_u****_temp_cell2_2"`	
		`"warn_u****_temp_cell2_3"`	
		`"warn_u****_temp_cell2_4"`	
		`"warn_u****_temp_cell3_1"`	
		`"warn_u****_temp_cell3_2"`	
		`"warn_u****_temp_cell3_3"`	
		`"warn_u****_temp_cell3_4"`	
		`"warn_u****_fan_r_no_rotation"`	Fan warning Display Unit
		`"warn_u****_fan_r_rotation_realtime"`	
		`"warn_u****_fan_r_rotation_log"`	
		`"warn_u****_fan_l_no_rotation"`	
		`"warn_u****_fan_l_rotation_realtime"`	
		`"warn_u****_fan_l_rotation_log"`	
		`"warn_u****_uc_diag"`	Diag warning UC board
		`"warn_u****_up_diag"`	Diag warning UP board
		`"warn_u****_comm_rs485"`	RS485 communication warning
		`"warn_u****_comm_rs485_cmd"`	RS485 command warning
		`"warn_u****_picture"`	Picture warning

Timer acquisition	`timer ?`	Example)
		`[{"controller":3400},`
		`{"u0101":2300},`
		`{"u0201":3000}]`
			JSON object array of each timer value

Function	Command	Response	Remarks
Model name acquisition Serial number acquisition	`modelname ?`	Example) `"CLF101AKA"`	Model name (Controller)
	`modelname_list ?`	Example) `[{"controller":"CLF101AKA"},{"u0101":"CLX101ASA"},{"u0102":"CLX101ASA"},… ,{"u1206":"CLX101ASA"}]`	Model name (Controller and Display Unit)
	`serialnum ?`	Example) `"1234567"`	Serial number (Controller)
	`serialnum_list ?`	Example) `[{"controller":1234567},{"u0101":1234567},{"u0102":1234567},… ,{"u1206":1234567}]`	Serial number (Controller and Display Unit)
Firmware version acquisition	`version ?`	Example) `[{"controller":"1.23.0"},{"u0101":"1.23.0"},{"u0102":"1.23.0"},{"u0103":"1.23.0"},… ,{"u1206":"1.23.0"}]`	Object array of each software version
Error log	`error_log_led_display01 ?`	Example) `{"current_time":1234.56.78.900,"log":[["234.56.78.999","111-22-33","on"],["234.56.79.000","111-22-33","off"],["234.56.80.000","111-22-34","on"],…]}`	Error occurred history
Input signal status acquisition	`input_stream_list ?`	Example) `{"DVI1":"1080/60p","DVI2":"1080/60p","DVI3":"1080/60p","DVI4":"1080/60p", "DP1-1":"1920x2160/120p","DP1-2":"Invalid","DP2-1":"1920x2160/120p","DP2-2":"Invalid"}`	The JSON array data of a factor is as follows:
		`"<H resolution>x<V resolution>/<FrameRate>"`	Resolution and FrameRate(Hz)
		`"Invalid"`	For no signal
MAC address acquisition	`mac_address ?`	Example) `"08-12-34-ab-cd-ef"`	MAC address character string
Temperature	`temperature ?`	Example) `[{"controller":25.1},{"u0101_ambient":30.0},{"u0101_board":30.0},{"u0101_cell1":30.0},{"u0101_cell2":"on"},… ,{"u1206_cell11":30.0},{"u1206_cell12":30.0}]`	The JSON array data of a factor is as follows:
S/N*1 3D status	`3d_status ?`	Example) `"3d"`	2D or 3D
S/N*1 Controller sync status	`controller_sync_status ?`	Example) `"no_sync"`	Sync status
S/N*1 Unit connected number	`unit_connected_num ?`	Example) `"6,1,6,6,2,6,4,6,3,6,5,0"`	Connection number of each port

2. Command example

```
power_status ?⏎
"standby"⏎
```

8-1-3. Command Type: sys_var

You can set and obtain the items of special value representation with the command of the "sys_var" command type. Command name: In the case of `"command"`, the following format is used.
Setting of value:

   Transmitting example: `command "192.168.0.1"` ⏎

   Returning example: `ok` ⏎

Inquiry of value:

   Transmitting example: `command ?` ⏎

   Returning example: `"192.168.0.1"` ⏎

Inquiry of settable value range:

   Transmitting example: `command ? --range` ⏎

   Returning example: `{"min":"0.0.0.0","max":"255.255.255.255"}` ⏎

1. System numeric command

Function	Command	Parameter/response
(IPv4) IP address setting/acquisition	`ipv4_ip_address` `ipv4_ip_address ?`	IPv4 address character string Example) `"192.168.0.1"`
(IPv4) subnet mask setting/acquisition	`ipv4_sub_net_mask` `ipv4_sub_net_mask ?`	
(IPv4) default gateway address setting/acquisition	`ipv4_default_gateway` `ipv4_default_gateway ?`	

2. Command example

`ipv4_ip_address ?` ⏎

`"192.168.0.1"` ⏎

8-2. Menu Command

8-2-1. Command Type: menu_sel/menu_val/menu_exec

By optional designation, the command of a menu_sel/menu_val/menu_exec command type can set and acquire menu values, and acquire command information. Command name: In the case of `"cmd"`, the following format is used.

Command Type		Set Direct	Reset	Query Value
menu_sel	Transmitting example	cmd "item" ⏎	cmd --reset ⏎	cmd ? ⏎
	Returning example	ok ⏎	ok ⏎	"item" ⏎
menu_num	Transmitting example	cmd 10 ⏎	cmd --reset ⏎	cmd ? ⏎
	Returning example	ok ⏎	ok ⏎	10 ⏎
menu_exec	Transmitting example	cmd ⏎	—	—
	Returning example	ok ⏎		

Command Type Query		Range	Command info
menu_sel	Transmitting example	cmd --range ⏎	cmd --info ⏎
	Returning example	"item" ⏎	{"type":"menu_sel","version":"1.0","range":["item","item2"]} ⏎
menu_num	Transmitting example	cmd --range ⏎	cmd --info ⏎
	Returning example	{"min":0,"max":10} ⏎	{"type":"menu_num","version":"1.0","range":{"min":0,"max":10}} ⏎
menu_exec	Transmitting example	—	cmd --info ⏎
	Returning example		{"type":"menu_exec","version":"1.0"} ⏎

1. Command list

Function	Command	Selected value/ numeric value	Remarks	Type
Input terminal selection command	input	ZRCT-100 "dvi1_2_3_4"	DVI terminal 1-2-3-4	menu_sel
		"dp1"	DisplayPort terminal 1	
		S/N*1 "dp2"	DisplayPort terminal 2	
		"dp1_2"	DisplayPort terminal 1-2	
		ZRCT-200 "hdmi1"	HDMI terminal 1	
		ZRCT-200 "hdmi2"	HDMI terminal 2	
Adjustment of contrast	contrast	<val>		menu_num
Adjustment of brightness	brightness	<val>		
Selection of color temperature	color_temp	"d93"	9300K	menu_sel
		"d65"	6500K	
		"d50"	5000K	
		ZRCT-200 "dci"	DCI	
		"custom1"	Custom 1	
		"custom2"	Custom 2	
		"custom3"	Custom 3	
		ZRCT-200 "custom4"	Custom 4	
Fine adjustment of custom color temperature Gain R	coltemp_gain_r	<val>		menu_num
Fine adjustment of custom color temperature Gain G	coltemp_gain_g	<val>		
Fine adjustment of custom color temperature Gain B	coltemp_gain_b	<val>		
Fine adjustment of custom color temperature Bias R	coltemp_bias_r	<val>		
Fine adjustment of custom color temperature Bias G	coltemp_bias_g	<val>		
Fine adjustment of custom color temperature Bias B	coltemp_bias_b	<val>		
Selection of color space	color_space	ZRCT-100 "srgb"	SRGB	menu_sel
		ZRCT-100 "native"	Native	
		S/N*2 "bt2020"	BT2020	
		S/N*2 "adobe_rgb"	Adobe_RGB	
		S/N*2 "dci"	DCI	
		ZRCT-200 "custom1"	sRGB	
		ZRCT-200 "custom2"	Native	
		ZRCT-200 "custom3"	AdobeRGB	

Function	Command	Selected value/ numeric value	Remarks	Type
Selection of color space	`color_space`	ZRCT-200 `"custom4"`	DCI_P3	menu_sel
		ZRCT-200 `"custom5"`	BT.2020	
		ZRCT-200 `"custom6"`	custom1	
		ZRCT-200 `"custom7"`	custom2	
		ZRCT-200 `"custom8"`	custom3	
		ZRCT-200 `"custom9"`	custom4	
		ZRCT-200 `"custom10"`	custom5	
Selection of gamma mode	`gamma_correction`	ZRCT-100 `"1.8"`	1.8	
		ZRCT-100 `"2.2"`	2.2	
		ZRCT-100 `"2.6"`	2.6	
		S/N*2 `"dicom_sim"`	DICOM_SIM	
		ZRCT-200 `"custom1"`	1.8	
		ZRCT-200 `"custom2"`	2.2	
		ZRCT-200 `"custom3"`	2.6	
		ZRCT-200 `"custom4"`	DICOM_SIM	
		ZRCT-200 `"custom5"`	custom1	
		ZRCT-200 `"custom6"`	custom2	
		ZRCT-200 `"custom7"`	custom3	
		ZRCT-200 `"custom8"`	custom4	
		ZRCT-200 `"custom9"`	custom5	
		ZRCT-200 `"custom10"`	custom6	
DisplayPort Dual high frame rate mode	`dp_dual_hfr`	`"on"`	ON (Default)	
		`"off"`	OFF	
Selection of direct power on	`direct_powon`	`"on"`	ON	
		`"off"`	OFF (Default)	
Display Unit power on delay time	`unit_power_on_delay`	<val>	0-65535 (ms)	menu_num
Adjustment of video shift (H)	`pic_shift_h_ch`	<val>	Select the input terminal with Suffix. Example) `pic_shift_h_ch --dp1 320` Set Input-DP1 terminal to 320pix shift.	

Function	Command	Selected value/numeric value	Remarks	Type
Adjustment of video shift (V)	`pic_shift_v_ch`	<val>	Select the input terminal with Suffix. Example) `pic_shift_h_ch --dvi1_2_3_4 640` Set Input-DVI1-2-3-4 terminal to 640pix shift.	menu_num
(S/N*1) Light output mode	`light_output_mode`	`"high"`	High	menu_sel
		`"mid"`	Middle	
		`"low"`	Low	
		`"full"`	Full (Default)	
(S/N*1) 3D format	`3d_format`	`"framesequential"`	Frame sequential (Default)	
		`"dualinput"`	Dual input	
(S/N*1) Sync input channel	`sync_input_channel`	`"video_input"`	Video input (Default)	
		`"sync_input"`	Sync input	
(S/N*1) 3D input delay	`active_3d_input_delay`	<val>		
(S/N*1) 3D sync inversion	`3d_sync_inversion`	`"on"`	ON	
		`"off"`	OFF (Default)	
(S/N*1) Fan mode	`unit_fan_mode`	`"mid"`	Middle (Default)	
		`"low"`	Low	
		`"stop"`	Stop	
(S/N*1) Light delay	`light_delay`	<val>		
(S/N*1) DisplayPort dual 3D 4K	`dp_dual_3d_4k`	`"on"`	ON (Default)	
		`"off"`	OFF	
(ZRCT-200) 2D-3D selection	`2d3d_sel`	`"2d"`	2D (Default)	
		`"3d"`	3D	
(ZRCT-200) Picture mode	`picture_mode`	`"mode1"`	Mode1	
		`"mode2"`	Mode2	
		`"mode3"`	Mode3	
		`"mode4"`	Mode4	
		`"mode5"`	Mode5	
		`"mode6"`	Mode6	
		`"mode7"`	Mode7	
		`"mode8"`	Mode8	
		`"mode9"`	Mode9	
		`"mode10"`	Mode10	
(ZRCT-200) Picture mode reset	`picture_mode_reset`	–	Reset picture mode settings	menu_exec
(ZRCT-200) Dynamic range	`dynamic_range`	`"auto"`	Select the input terminal with Suffix. Example) `dynamic_range --hdmi1 "limited"` Set Input-HDMI1 terminal to Limited Range.	menu_sel
		`"limited"`		
		`"full"`		
(ZRCT-200) HDR	`hdr`	`"off"`	OFF	
		`"slog3"`	S-Log3	
		`"st2084"`	ST.2084	
		`"hlg"`	ITU-R BT.2100 (HLG)	
		`"slog3_live"`	S-Log3 (Live)	

Function	Command	Selected value/ numeric value	Remarks	Type
ZRCT-200 HDMI signal format	`hdmi_signal_format`	`"standard"`	Select the input terminal with Suffix. Example) `hdmi_signal_format --hdmi1 "enhanced"` Set Input-HDMI1 terminal to Enhanced Format.	menu_sel
		`"enhanced"`		
ZRCT-200 DisplayPort stream format	`stream_format`	`"single"`	"single" : Single stream mode (Default) "dual" : Dual stream mode Select the input terminal with Suffix. Example) `stream_format --dp1 "single"` Suffix: dp1/dp2/dp1_2	
		`"dual"`		
ZRCT-200 *1 Blank	`blank`	`"on"`	ON (Blank a picture)	
		`"off"`	OFF (Show a picture)(Default)	

∗1: Available only for a controller that is set to "master" in "Controller mode setting" Function.

2. Command example

(Classification is specified using menu_sel command Suffix.)

Setting of value
  Transmitting example: `command --suffix "txt_param1"`↵   Sets the selected value of a parameter. Returning example: `ok`↵

Inquiry of value:
  Transmitting example: `command -suffix ?`↵   Acquires the selected value of a parameter that has been set. Returning example:
         `"txt_param1"`↵

Inquiry of value range:
  Transmitting example: `command --suffix ? --range`↵   Acquires a list of parameter selected values that can be set.

  Returning example: `["txt_param1","txt_param2"]`↵

Inquiry of command information:
  Transmitting example: `command ? --suffix --info`↵   Acquires the command information.
  Returning example:`{"type":"sys_sel","version":"1.0","range":["txt_param1","txt_param2"]}`↵
          A command category, command version and a list of parameter-selected values that can be set using a command are returned as command information.

8-3. Advanced Command

The following is the ADCP command correspondence list to be used for the advanced for the experts.
The type of a command is classified as follows.

Advanced command type for experts

Command type	Function
`pat_unit_adj_led_display01`	Displays the adjustment test pattern for experts
(S/N*1) `unit_allocation_adr`	Set physical address of unit allocation for experts
(S/N*1) `unit_picture_adr`	Set picture address of unit allocation for experts
(S/N*1) `unit_adjacent_adr`	Set adjacent address of unit allocation for experts

8-3-1. Command Type: pat_unit_adj_led_display

The command of test pattern command type can transmit, reflect the test pattern, and acquire the command information.
For example, the following formats are used.

Transmission of value		
The format of range and value is described as the JSON array data.		
Table value	Transmitting example:	`pat_unit_adj_led_display [1,0,7,0,898,898,898,0,0,0,0,0,0,0,0]` `Gray 75%`
	Returning example:	`ok`
Acquisition of command information		
Table value	Transmitting example:	`pat_unit_adj_led_display ? --info` `Inquires the command information`

	Returning example:	`{"type":"pattern_param","version":"1.0",`
		`range:{`
		`"enable":{"min":0,"max":1},`
		`"pattern":{"min":0,"max":9},`
		`"color":{"min":0,"max":7},`
		`"invert":{"min":0,"max":1},`
		`"f_Rlv":{"min":0,"max":1023},`
		`"f_Glv":{"min":0,"max":1023},`
		`"f_Blv":{"min":0,"max":1023},`
		`"b_Rlv":{"min":0,"max":1023},`
		`"b_Glv":{"min":0,"max":1023},`
		`"b_Blv":{"min":0,"max":1023},`
		`"h_start_pos":{"min":0,"max":4096},`
		`"v_start_pos":{"min":0,"max":4096},`
		`"h_width":{"min":0,"max":4096},`
		`"v_width":{"min":0,"max":4096},`
		`"h_pitch":{"min":0,"max":4096},`
		`"v_pitch":{"min":0,"max":4096}}`
		`}`

8-3-2. Command Type: unit_allocation_adr

The command of unit allocation address command type can transmit, reflect the allocation, and acquire the command information.
For example, the following formats are used.
∗ You should specify unit for each port follow the daisy chain.

Transmission of value		
The format of range and value is described as the JSON array data.		
Table value	Transmitting example:	`unit_allocation_adr [[1,6],[1,5],[1,4],[1,3],[1,2],[1,1]] --port=1`
	Returning example:	`Ok`
Acquisition of command information		
Table value	Transmitting example:	`unit_allocation_adr ? --info` `Inquires the command information`

	Returning example:	`{ "type":"unit_val",`
		`  "version":"1.0",`
		`  "range":{`
		`  "port" : {"min":1,"max":12},`
		`  "unit_per_port" : {"min":6,"max":6},`
		`  "unit_allocation_adr" :`
		`  [{"min":0,"max":1440},{"min":0,"max":1440}]`
		`  }`
		`}`

Supplemental information

It is necessary to set the physical connection information of the controller and the unit as the horizontal coordinate as seen from the front.

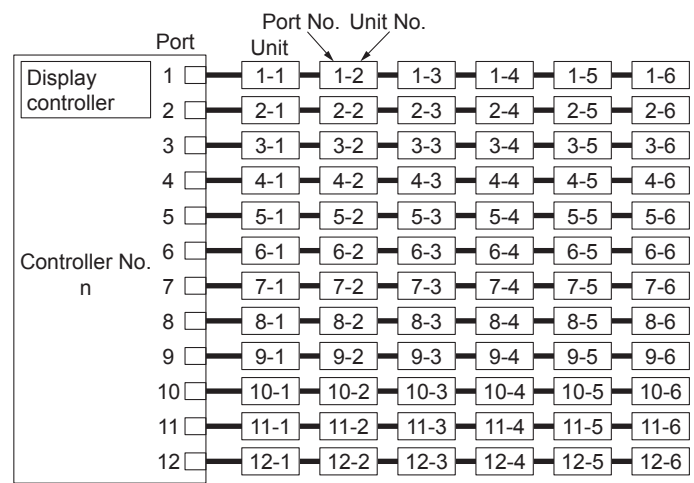Define the unit at the top left as viewed from the front as coordinates (1, 1).
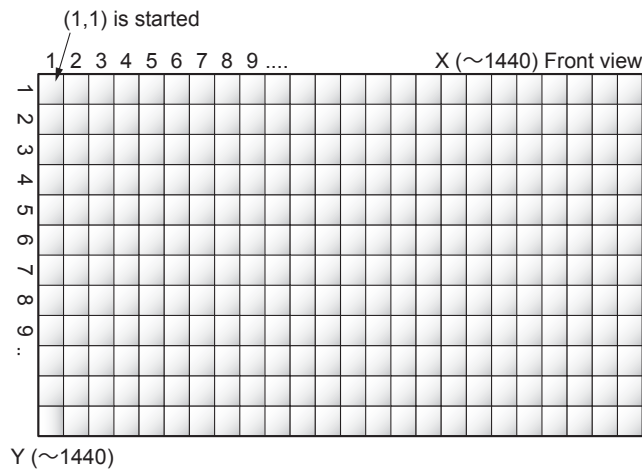

Fig. Physical Connection address

Fig. Horizontal coordinate seen from the front

8-3-3. Command Type: unit_picture_adr

The command of unit picture address command type can transmit, reflect the allocation, and acquire the command information.

For example, the following formats are used.

Transmission of value		
The format of range and value is described as the JSON array data.		
Table value	Transmitting example:	`unit_pictur_adr` `[[0,0],[0,360],[0,720],[0,1080],[0,1440],[0,1800]] --port=1`
	Returning example:	`Ok`
Acquisition of command information		
Table value	Transmitting example:	`unit_picture_adr ? --info --port=1 (you can select port1 to 12)` `Inquires the command information`

	Returning example:	`In the case of port1-6`
		`{ "type":"unitval",`
		`  "version":"1.0",`
		`  "range":{`
		`  "port" : {"min":1,"max":12},`
		`  "unit_per_port" : {"min":6,"max":6},`
		`  "unit_picture_adr_port" :`
		`  [{"min":0,"max":1600},{"min":0,"max":1800}]`
		`  }`
		`}`
		
		`In the case of port7-12`
		`{ "type":"unitval",`
		`  "version":"1.0",`
		`  "range":{`
		`  "port" : {"min":1,"max":12},`
		`  "unit_per_port" : {"min":6,"max":6},`
		`  "unit_picture_adr_port" :`
		`  [{"min":1920,"max":35200},{"min":0,"max":1800}]`
		`  }`
		`}`

Supplemental information

Set the image cutout position (Pixel X, Y) for distributing the 4K image input to the display controller to each Unit. It is 320 in width and 360 pixels in length.
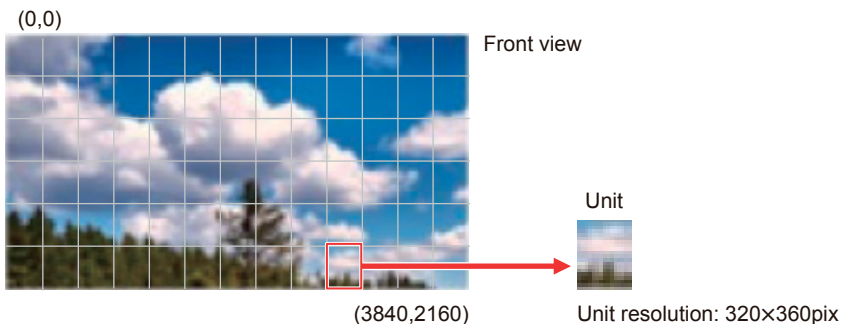

Fig. Picture allocation address

8-3-4. Command Type: unit_adjacent_adr

The command of unit adjacent address command type can transmit, reflect the allocation, and acquire the command information.
For example, the following formats are used.

Transmission of value		
The format of range and value is described as the JSON array data.		

Table value	Transmitting example:	`unit_adjacent_adr`
		`[[[0,0,0],[1,1,1],[1,1,2],[1,1,3],[1,1,4],[1,1,5],[1,1,6],[1,2,1]],`
		`[[1,2,2],[1,2,3],[1,2,4],[1,2,5],[1,2,6],[1,3,1],[1,3,2],[1,3,3]],`
		`[[1,3,4],[1,3,5],[1,3,6],[1,4,1],[1,4,2],[1,4,3],[1,4,4],[1,4,5]],`
		`[[1,4,6],[1,5,1],[1,5,2],[1,5,3],[1,5,4],[1,5,5],[1,5,6],[1,6,1]],`
		`[[1,6,2],[1,6,3],[1,6,4],[1,6,5],[1,6,6],[1,7,1],[1,7,2],[1,7,3]],[`
		`[1,7,4],[1,7,5],[1,7,6],[1,8,1],[1,8,2],[1,8,3],[1,8,4],[1,8,5]]]`
		`--port=1`

	Returning example:	`Ok`
Acquisition of command information		
Table value	Transmitting example:	`unit_adjacent_adr ? --info` `Inquires the command information`

	Returning example:	`In the case of port1-6`
		`{ "type":"unitval",`
		`  "version":"1.0",`
		`  "range":{`
		`  "port" : {"min":1,"max":12},`
		`  "unit_per_port" : {"min":6,"max":6},`
		`  "unit_adjacent_adr" :`
		`  [{"min":0,"max":20},{"min":0,"max":12},{"min":0,"max":6}]`
		`  }`
		`}`

Supplemental information

When setting up, it is necessary to set the connector number, port number and unit number of all adjacent units for each unit. (It will do it automatically if you are using DCS)
For protocols, set in the order of top left, top, top right, left, right, bottom left, bottom, bottom right when viewed from the front.
These settings are necessary to keep the temperature characteristics between units balanced.

			Front view
Top left	Top	Top right	
Left	Target unit	Right	
Bottom left	Top	Bottom right	

Revision History

Date	History	Contents
2016.11	1st Edition 9-932-529-01	—
2017. 3	Revised 1 9-932-529-02	・**Modifications:** 　4-1-2. Serial Connection 　5. Protocol Setting of the Controller from Web Browser 　6. Error Code List 　7. Warning Code List 　8-1-1. Command Type: sys_sel 　8-1-2. Command Type: sys_stat 　8-2-1. Command Type: menu_sel/menu_val/menu_exec 　8-3. Advanced Command ・**Additions:** 　8-3-2. Command Type: unit_allocation_adr 　8-3-3. Command Type: unit_picture_adr 　8-3-4. Command Type: unit_adjacent_adr
2018. 1	Revised 2 9-932-529-03	Added the model: ZRCT-200 ・**Modifications:** 　4-1-2. Serial Connection 　4-1-3. Network Connection 　6. Error Code List 　7. Warning Code List 　8-1-2. Command Type: sys_stat 　8-2-1. Command Type: menu_sel/menu_val/menu_exec
2019. 3	Revised 3 9-932-529-04	・**Modifications:** 　5. Protocol Setting of the Controller from Web Browser 　8-1-1. Command Type: sys_sel 　8-1-2. Command Type: sys_stat 　8-2-1. Command Type: menu_sel/menu_val/menu_exec

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