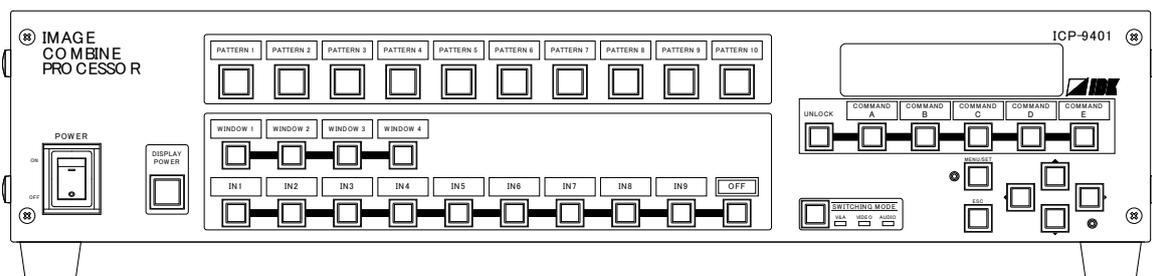


Four Window Multi-window Processor

ICP-9401

<User's Guide>

Ver.1.0.0



- Thank you for choosing our product.
- To ensure the best performance of this product, please read this User's Guide and Command Guide fully and carefully before using your switcher and keep this manual beside the product.

IDK Corporation

Trademarks

- The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing, LLC in the United States and other countries.
- PJLink is a trademark in Japan, the United States, and other countries/regions.
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Before reading this manual

- All rights reserved.
- Some of the contents in this users guide such as appearance diagrams, menu operations, communication commands, and so on may differ depending on the version.
- This User's guide is subject to change without notice. You can download the latest version from IDK's website at: <http://www.idk.co.jp/en/index.html>

The reference manual for the ICP consists of the following two volumes:

- User's Guide (this document):
Contains installation, connection, configuration ,and operating information for this product.
- Command Guide: Please download the command guide from the website above.
Provides explanations and procedures for external control using serial and LAN communications.

Included Items

Make sure all items below are included in the package.

If any items are missing or damaged, please contact us.

- One (1) ICP-9401 (main unit)
- One (1) RS-232C cable (1.8 meters; approximately 5.91 feet)
- One (1) power cable (1.8 meters; approximately 5.91 feet)
- Two (2) rack mounting brackets
- Six (6) cable clamps

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference and the user will be required to correct that interference at their own expense.

CE MARKING

This equipment complies with the essential requirements of the relevant European health, safety and environmental protection legislation.

WEEE MARKING



Waste Electrical and Electronic Equipment (WEEE), Directive 2002/96/EC (This directive is only valid in the EU.).

This equipment complies with the WEEE Directive (2002/96/EC) marking requirement.

The left marking indicates that you must not discard this electrical/electronic equipment in domestic household waste.

Safety instructions

Read and understand all safety and operating instructions before using this device. Follow all instructions and cautions as detailed in this document.

Enforcement Symbol	Description
 Warning	Indicates the presence of a hazard that may result in death or serious personal injury if the warning is ignored or the equipment is handled incorrectly.
 Caution	Indicates the presence of a hazard that may cause minor personal injury or property damage if the caution is ignored or the equipment is handled incorrectly.

Symbol	Description	Example
 Caution	This symbol is indicated to alert the user. (Warning and caution)	 Electrical Hazard
 Prohibition	This symbol is intended to prohibit the user from actions.	 Do not disassemble
 Instruction	This symbol is intended to instruct the user.	 Unplug

Warning

 Prohibition	<p>Do not place the product in any unstable place. Install the product to a horizontal and stable place. Otherwise, it may fall/turn over and lead to injury.</p>
	<p>Do not place the product in any environment with vibration. Otherwise, it may move/fall and lead to injury.</p>
	<p>Keep out any foreign objects. In order to avoid fire or electric shock, do not allow foreign objects, such as metal and paper, to enter the product from the vent holes.</p>
	<p>For power cable/ plug:</p> <ul style="list-style-type: none"> • Do not scratch, heat, or modify, including extending them. • Do not pull, put heavy stuff on them, or pinch them. • Do not bend, twist, or tie them together forcefully. <p>If they are used in those states continuously, it may cause fire or electric shock. If power cables/plugs become damaged, contact IDK.</p>
 Do not disassemble	<p>Do not repair, modify or disassemble. Since the product includes high-voltage part, those actions may cause fire or electric shock. For internal inspections or repairs, contact IDK.</p>
 Do not touch	<p>In the event of lighting or thunder, do not touch the main unit or cables such as power cable and LAN cable. Contact may cause electric shock</p>
 Instruction	<p>For installation: The product is intended to be installed by skilled technicians. For installation, please contact a system integrator or IDK. Otherwise, it may cause fire, electric shock, injury, or property damage.</p>
	<p>Set the power plug in a convenient place to unplug easily. You can easily unplug in case of any extraordinary failure or abnormal situation, and it also helps for unplugging when you do not use it for a long period.</p>
	<p>Plug the power plug into appropriate outlet completely. If the plug is plugged incompletely, it may overheat which causes electrical shock or fire. Do not use damaged plug or loosened outlet.</p>
	<p>Clean the power plug regularly. If the plug is covered in dust, it may cause fire due to reduced insulating power.</p>
 Unplug	<p>Unplug immediately if the product smokes, makes unusual noise, or smells. If you continue to use the product under those situations, it may cause electric shock or fire. After confirming that the product stops smoking, contact IDK.</p>
	<p>Unplug immediately if you drop the product or if the cabinet is damaged. If you continue to use the product under those situations, it may cause electrical shock or fire. For maintenance and repair, contact IDK.</p>
	<p>Unplug immediately if water or other objects are directed inside. If you continue to use it under those situations, it may cause electrical shock or fire. For maintenance and repair, contact IDK.</p>
For connection	
 Instruction	<p>Difference in ground potential among the product and peripheral devices may cause electric shock or damage of the device. When using cables to connect devices, including connection of long-distance transmission, unplug the power cables of all related devices. After connecting signal/control cables of each device, plug in the power cables of each device.</p>

Caution

 Prohibition	<p>Do not place the product in any place where it will be subjected to high temperatures. If the product is subjected to direct sunlight or high temperatures, it may cause fire.</p>
	<p>Do not place the product in humid, oil smoke, or dusty place. If the product is placed near humidifiers or dusty area, it may cause fire or electric shock.</p>
	<p>Do not block the vent holes. If ventilation slots are blocked, it may cause fire or failure due to internal heat.</p>
	<p>Do not put heavy items on the product. It may fall/turn over and lead to injury.</p>
	<p>Do not exceed ratings of outlet and wiring devices. If several plugs are put in an outlet, it may cause fire and electric shock.</p>
	<p>Use only the provided AC adapter and power cable. If non-compliant adapter or power cables is used, it may cause fire or electrical shock. Use the provided AC power connection cable. If you want to use your product in other countries that use different AC power cables, contact IDK.</p>
 No wet hands	<p>Do not plug or unplug with wet hands. It may cause electrical shock.</p>
 Instruction	<p>Use and store the product within the specified temperature/humidity range. If the product is used outside the range continuously, it may cause fire or electric shock.</p>
	<p>Turn off devices when they are connected to another device. It may cause fire or electric shock.</p>
 Unplug	<p>Unplug the power plug if you do not use the product for a long period. In case of defect, it may cause fire.</p>
	<p>Unplug the power plug before cleaning. It may cause electric shock.</p>

For installation

For rack mount devices:

 Instruction	<p>Mount the product to the rack meeting EIA standards, and maintain spaces above and below for air cooling. For your safety, attach an L-shape bracket in addition to the mount bracket kit for the front panel in order to balance the weight.</p>
---	--

For devices with rubber feet:

 Instruction	<p>Never insert only the screws into the holes after removing the rubber feet. It may lead to damage when the screws contact electrical circuit or parts inside of the product. To put the rubber feet back on, use only provided rubber feet and screws.</p>
---	---

Altitude:

 Instruction	<p>Do not place the product at elevations of 2,000 meters (6562 feet) or higher above sea level. Failure to do so may shorten the life of the internal parts and result in malfunctions.</p>
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1 Product outline

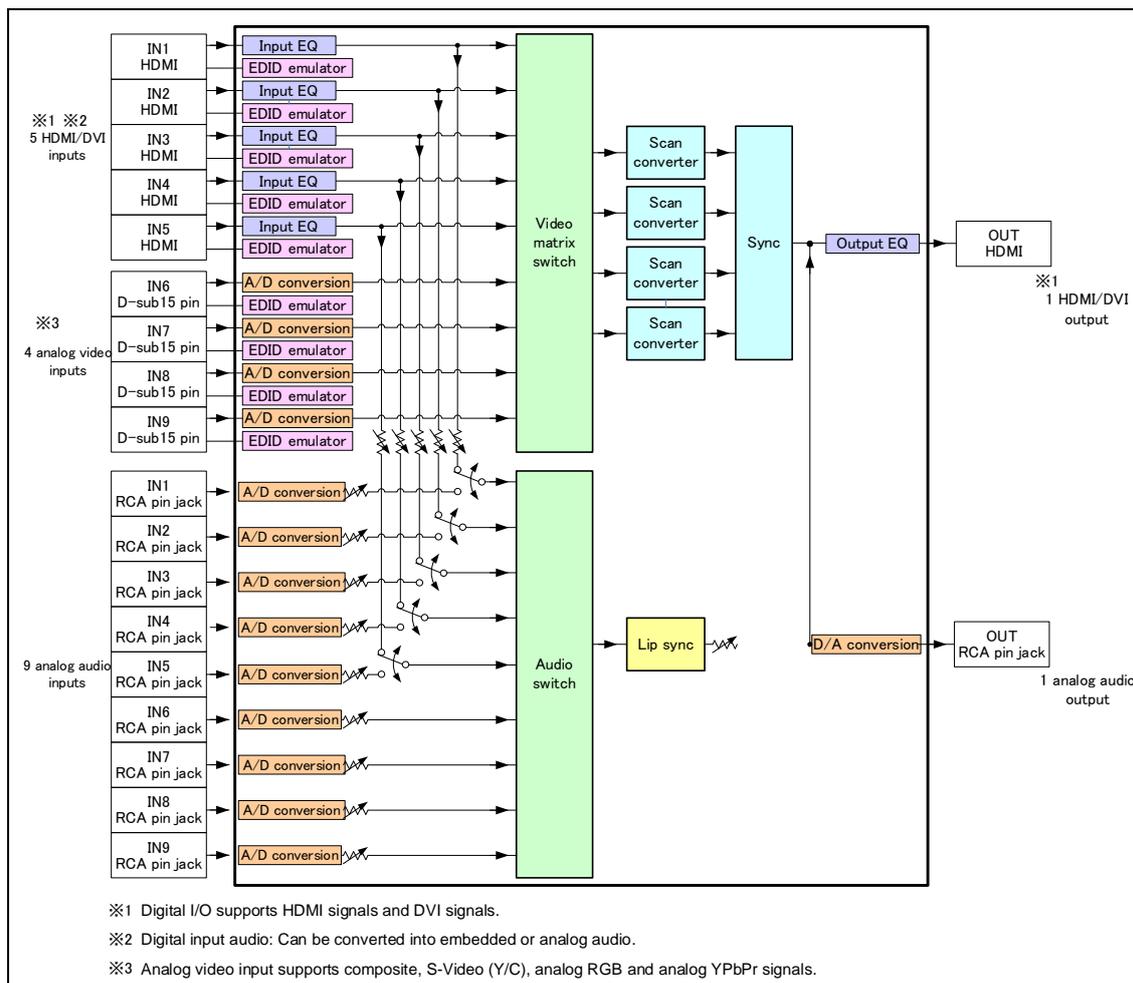
The IDK ICP-9401 Four Window Multi-Window Processor enables the simultaneous display of up to four video sources on one screen with any layout. While multi-window function is not used, ICP-9401 can also be used as a 9 inputs and 1 output truly seamless switcher with CUT/DISSOLVE/TRANSITION effects.

For video input, the ICP has five digital and four analog inputs, and it supports the following signals: HDMI, DVI, composite video, S-video, analog RGB, analog YPbPr signals. The ICP converts input video signals up to WUXGA or 1080p and outputs them as HDMI or DVI signals.

For audio input, the processor has five digital and nine analog inputs, and it outputs selected audio signals to digital audio (HDMI signals) and analog audio. You can set audio level of each input and output separately. The ICP also has the Lip Sync function to correct gaps between video and audio signals.

The ICP includes RS-232C (2 ports) and LAN as communication ports for external control, which enables you to set or edit settings remotely. You can also control peripheral devices connected to the ICP through RS-232C, LAN, and CEC by registering external control commands. For external control commands, the wait function is available to send serial commands after cooling-down time of power control of projectors and other devices passes.

You can execute external control commands using front panel keys, RS-232C, and LAN, and you can also do it when operating the input switching keys and turning on the ICP.



[Fig. 1a] I/O diagram of Video/Audio signals

2 Features

■ Video

- HDMI and DVI signals: HDCP (High-bandwidth Digital Content Protection system) is supported.
- All input video signals including sources with HDCP can be switched speedily and free from sudden screen disturbance.*¹
- Various video formats such as NTSC, PAL, VGA to QWXGA and SDTV/HDTV (D1 to D5)
- Anti-snow*²
- Analog video signals can be converted into digital video signals and can be output as HDMI or DVI signals.
- Scan converter that converts sources up to WUXGA or 1080p and outputs them as HDMI or DVI signals
- Aspect ratio control
- Cable compensation circuits for digital input and output
 - Input: up to 32.8 ft. to 98.45 ft. approx. (10 m to 30 m)
 - Output: up to 32.8 ft. to 164 ft. approx. (10 m to 50 m)

■ Audio

- Analog audio can be output as HDMI signals (embedded output) and can be separated from embedded audio of HDMI signals (analog output).
- Audio level adjustment
- Lip sync.

■ Multi window function

- Up to four images can be output to a single screen
- The following menus can be set for each window individually: Background color, Display priority. Display ON/OFF, Position size, Displaying frames, Displaying titles
- Switching window effects, CUT/FADE
- Up to 20 patterns can be registered.

■ Control input

- RS-232C, LAN

■ Control output

- Projectors can be turned off using front panel keys.
- Meets the PLink (class1) standard protocol for projector control regulated by JBMIA (Japan Business Machine and Information System Industries Association).
- Power control of display devices using CEC.*³

■ Others

- Connection Reset*⁴
- EDID emulation for all inputs
- Video and audio can switch separately
- Last memory
- Key lock

*¹ When multiple window function is active, seamless switching is available which displays a black frame or black background between two images.

When multiple window function is not active, truly seamless switching is available with transition effect of cut, dissolve, and wipe.

*² The anti-snow function automatically fixes snowy noise that is a specific symptom of HDCP-compliant

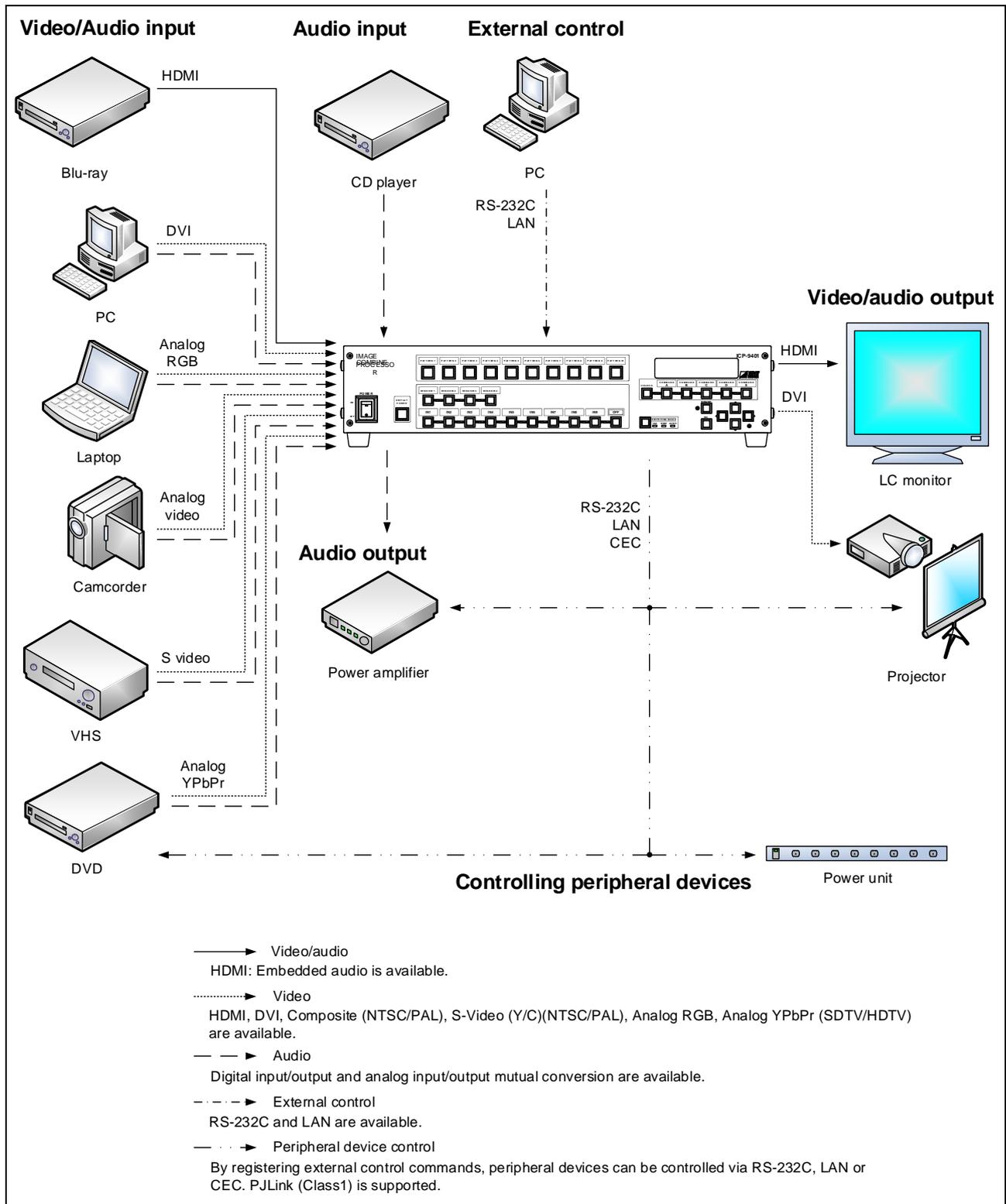
signals and mainly occurs at start-up. This feature does not work when snowy noise has already been occurred during startup or when it occurs due to bad condition of the transmission line.

*³ The display device needs to support CEC to enable this function. Some display devices cannot be controlled by CEC.

*⁴ For digital systems, some problems, such as an HDCP authentication error, can be recovered by physically disconnecting and reconnecting the digital cables. However, the Connection Reset function will fix these problems automatically without the need to physically plug and unplug the cables, by creating the same condition as if the cable were physically disconnected and reconnected. This function works only for the ICP's output.

3 Application Diagrams

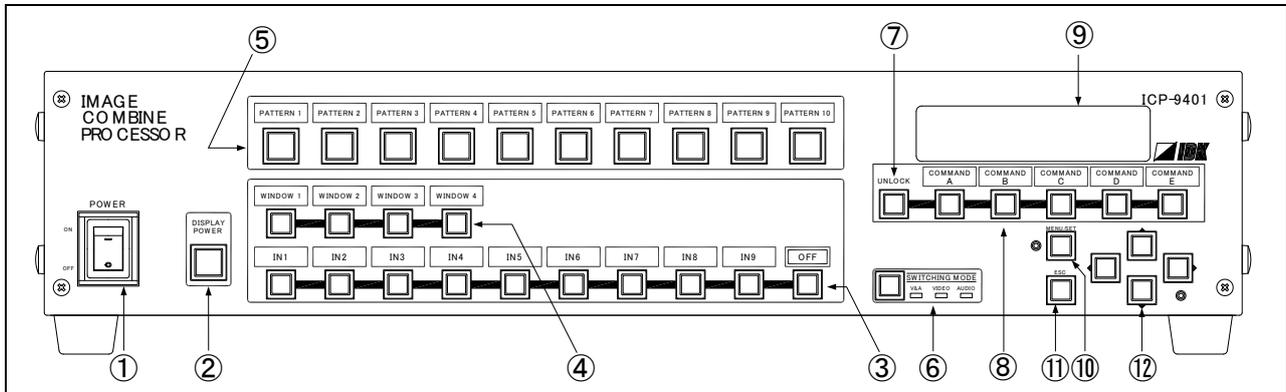
Examples of how devices can be connected to the ICP.



[Fig. 3a] Application diagram

4 Panels

4.1 Front panel



[Fig. 4.1a] Front panel

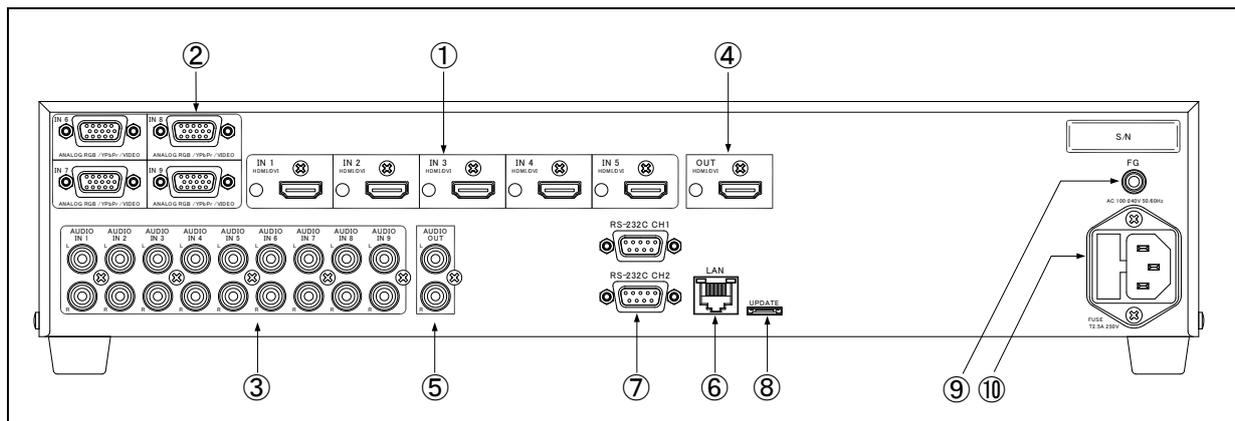
- ① Power supply switch (POWER):
Turns on/off the ICP.
- ② DISPLAY POWER keys (DISPLAY POWER)
Turns on/off connected display devices.
- ③ Input channel selection keys (IN1toIN9, OFF)
Selects video and audio outputs.
- ④ Output window selection keys (WINDOW1 to WINDOW4)
Selects output windows
- ⑤ Window pattern selection keys (PATTERN1 to PATTERN10)
Selects a registered window pattern.
- ⑥ SWITCHING MODE key (V&A, VIDEO, AUDIO)
Selects a switching mode (V&A, VIDEO,AUDIO) if an input is selected.
- ⑦ Unlock key of Control command execution keys (⑧) (UNLOCK)
Unlocks Control command execution keys (⑧)
Locks/Unlocks front panel keys by pressing and holding for 2 seconds or longer.
- ⑧ Control command execution keys (COMMAND A to COMMAND E)
Executes registered commands A to E.
- ⑨ VFD screen
Displays menus and settings.

- ⑩ MENU/SET key (MENU/SET)
Displays menus and edits/controls settings.

- ⑪ ESC key (ESC)
Finishes the current menu setting.

- ⑫ Arrow keys (▲, ▼, ◀, ▶)
Switches menu, moves cursor, and changes set values.

4.2 Rear panel



[Fig. 4.2a] Rear panel

- ① HDMI input connectors (HDMI/DVI IN1 to IN5)[※]
DVI signals can be input using an HDMI-DVI conversion cable. Since cable EQ circuit is mounted, 19.4 ft. approx./5 m or longer cable can be connected.
- ② Analog video input connectors (ANALOG RGB/YPbPr/VIDEO IN6 to IN9)
The following analog video signal formats can be input: Composite video (NTSC/PAL), S-video (Y/C) (NTSC/PAL), analog RGB (such as PCs) and analog YPbPr (SDTV/HDTV).
- ③ Audio input connectors (AUDIO IN1 to IN9)
Input connectors for stereo audio signals.
Cannot be used with embedded audio signals of HDMI input connector.
- ④ HDMI output connector (HDMI/DVI OUT)[※]
DVI signals can be input by connecting an DVI display device. Since cable EQ circuit is mounted, 19.4 ft. approx./5 m or longer cable can be connected.
- ⑤ Audio output connectors (AUDIO OUT)
Output connectors for stereo audio signals.
- ⑥ LAN port (LAN)
For external control by communication commands or web browsers.
- ⑦ RS-232C port (RS-232C CH1, CH2)
For external control by communication commands.

- ⑧ Maintenance port (UPDATE)
Not used.
Keep this port free.

- ⑨ Frame ground (FG)
For indoor ground terminal.

- ⑩ AC power connector (AC 100-240V)
For the provided power cable.

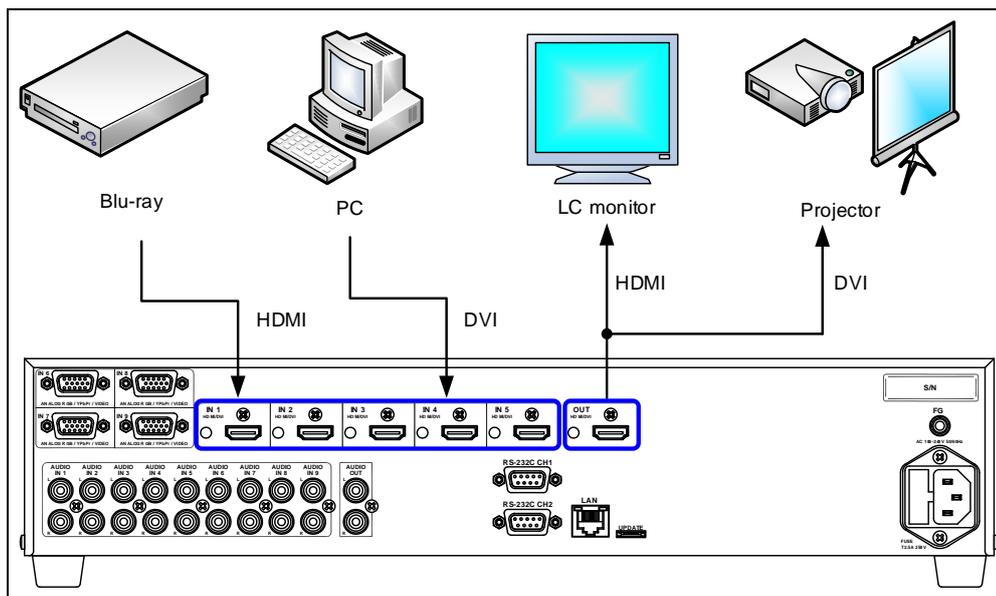
- ※ The HDMI I/O connectors support HDCP (High-bandwidth Digital Content Protection), which is a copy protection technique developed by Intel. If DVDs or other contents with copyright protection are played, both source devices (such as DVD players connected to input connectors) and display devices (connected to output connectors) are required to be HDCP compliant.

5 Installation

Since the ICP has various types of I/O connectors, make sure that shapes of the cables and connectors match when connecting cables. If you try to connect them forcibly to an unmatched cable and connector, they might be damaged. If turning on the ICP in that situation, the ICP and display devices may be damaged. Be sure to plug cables completely and install them without any stress on the cables.

5.1 Connecting Digital Input/Output Devices

For digital I/O, the HDMI output connectors are employed. These connectors can be connected not only to HDMI devices but also to DVI devices using HDMI-DVI conversion cables.



[Fig. 5.1a] Connecting digital devices

For digital I/O, the ICP has the cable equalizing circuit to correct distorted signals when a long cable is connected. The amount of equalization for the input side is set automatically, but set the amount for the output side using the following menu settings: "7.8.1 Output equalizer [OUTPUT EQUALIZER]".

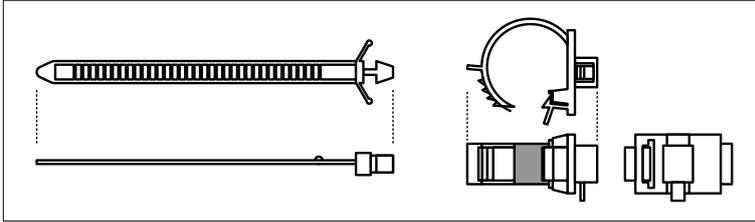
[Table 5.1] Maximum extension distance

Digital input	Up to 10 to 30 meters; approximately 98.43 feet *
Digital output	Up to 10 to 50 meters; approximately 164.04 feet *

* Extension distance depends on the connected I/O devices. The range mentioned above is the maximum extension range acquired when IDK's AWG24 cable is used and signals of 1080p 60 Hz, 24 bit/pixel (8bit/component) is input or output. For some I/O combinations, and if you use cables of other manufacturer, video may be disturbed or may not be output even if signals are within the range mentioned above.

For input and output of HDMI, use HDMI Type A (male) cables.

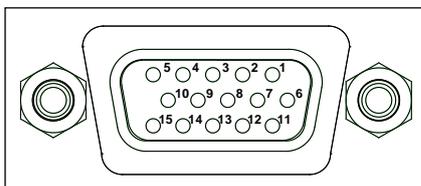
The HDMI cable does not have lock mechanism, but the provided cable clamp prevents the cable from falling off.



[Fig. 5.1b] Cable clamp

5.2 Analog Video Input Connectors

For analog video input, the HD D-Sub 15 pin connector enables not only analog RGB signals (such as PC) to be input, but also supports analog YPbPr (SDTV/HDTV), composite video (NTSC/PAL), and S-video (Y/C) (NTSC/PAL) signal inputs using a conversion cable.



[Fig. 5.2a] HD D-Sub15 pin connector

[Table 5.2a] Pin assignments

Pin	Input signal			
	Analog RGB	Analog YPbPr	Composite video	S-video (Y/C)
1	Red	Pr/Cr	N.C.	N.C.
2	Green/G on Sync	Y	VIDEO	Y
3	Blue	Pb/Cb	N.C.	C
4	N.C.	N.C.	N.C.	N.C.
5	GND	N.C.	N.C.	N.C.
6	GND	GND	N.C.	N.C.
7	GND	GND	GND	GND
8	GND	GND	N.C.	GND
9	N.C.	N.C.	N.C.	N.C.
10	GND	N.C.	N.C.	N.C.
11	N.C.	N.C.	N.C.	N.C.
12	DDC data	N.C.	N.C.	N.C.
13	HD/CS	N.C.	N.C.	N.C.
14	VD	N.C.	N.C.	N.C.
15	DDC clock	N.C.	N.C.	N.C.

N.C. : No Connection

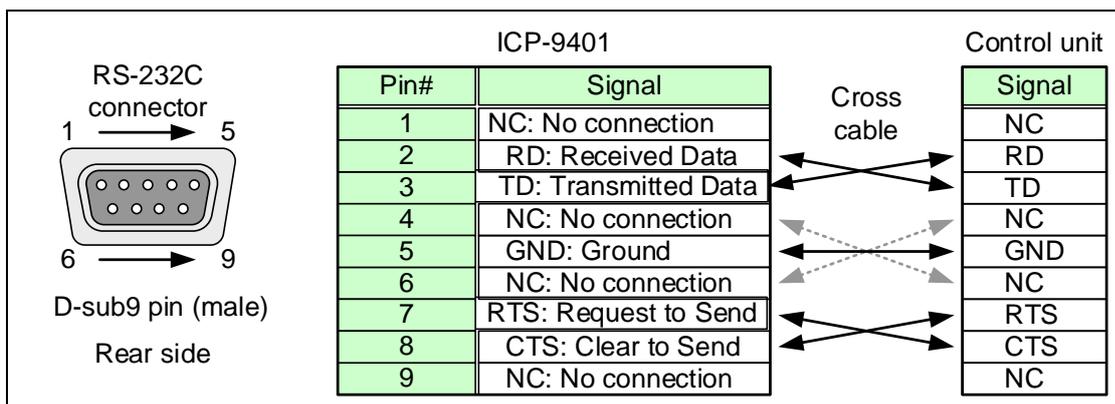
The type of input video signals is recognized automatically, but if video is not output correctly, select the signal type manually using the menu shown in section “7.6.4 Signal type of analog input [ANALOG INPUT TYPE]”.

5.3 Serial Port

External control via RS-232C is available. The ICP controls peripheral devices externally by serial communication with RS-232C connector. Connect control devices such as PCs and the ICP with a serial communication cable, and then control the ICP and acquire status using commands. For character notations of commands and configuring communication of serial terminal, see sections ASCII codes and “7.11 Serial Port Settings”, respectively.

[Table 5.3a] Spec of serial communication

Compliance standard	RS-232C
Baud rate	4800, 9600, 19200, 38400 [bps]
Data bits	8, 7 [bit]
Parity check	None, even, odd
Stop bit	1, 2 [bit]
X parameter	Invalid
Flow control	None
Delimiter	CR LF (Carriage return and line feed, 0D and 0A in hex)
Communication pattern	Full duplex



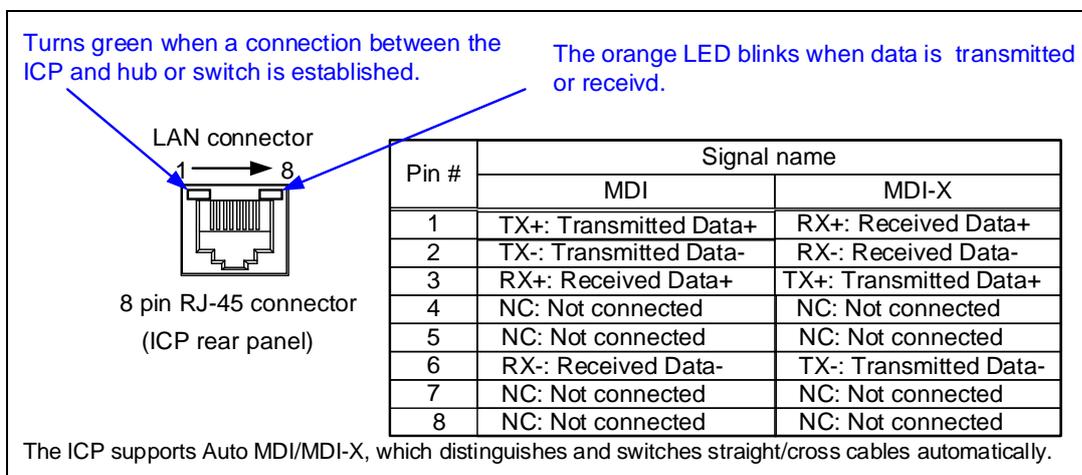
[Fig. 5.3a] RS-232C connectors and cables

5.4 LAN Port

External control via LAN is available. Use a serial communication cable to connect control devices such as PCs and the ICP, and then control the ICP and get its status using commands. For character notation of commands, refer to ASCII codes. For control using commands, use ports 23, 1100, and 6000 to 6999. Connection will be disconnected if no communication for 30 seconds or longer after connection. For setting of LAN, see section "7.12 LAN"

[Table 5.4a] Spec of LAN communication

Physical layer	10Base-T(IEEE802.3i)/100Base-TX(IEEE802.3u)
Network layer	ARP, IP, ICMP
Transport layer	TCP Port used for command control: 23, 1100, 6000 to 6999 Port used for WEB browser control (HTTP): 80, 5000 to 5999
Application layer	HTTP, TELNET



[Fig. 5.4a] LAN connector

5.4.1 The number of TCP-IP connections

The ICP can connect up to eight connections (8 ports) simultaneously. If the ICP is controlled from nine or more PCs, they may not be connected to the ICP.

For nine or more connections, use your software to establish and close TCP-IP connections for each sending and receiving communication commands. By doing so, connections are occupied and released in the ICP side so that logically eight or more connections (eight or more ports) can be connected.

Your PC software		ICP-9401
TCP-IP connection	→	(1 port is occupied → 7 ports free)
Sending command (@xxx)	→	
	←	Sending reply command (@xxx)
TCP-IP close	→	(1 port is released → 8 ports are free)

[Fig. 5.4.1a] Increasing connections

Note:

If any command is not sent from the PC side to the ICP for 30 seconds, the ICP disconnects the connection to avoid the limitation problem on the number of connections. As a result, the connection needs to be established again from the PC side after the current connection of the PC is disconnected. (Since the number of ports in the ICP is eight, if the PC is turned off while it is connected, ports are occupied permanently. To prevent this, the connection is disconnected if no communication command is sent from the PC side.)

6 Basic operations

6.1 Selecting Output Windows

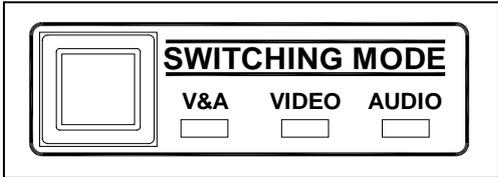
Press the desired Output window selection key (WINDOW1 to WINDOW4) to output video or audio to the windows. The LED of selected window numbers illuminates.

Press the desired Input channel selection keys to select source videos.

If "7.8.15 Output operation mode [COMBINED MODE]" is set to "SEAMLESS MODE", the Output window keys cannot be selected.

6.2 Selecting Input Channels

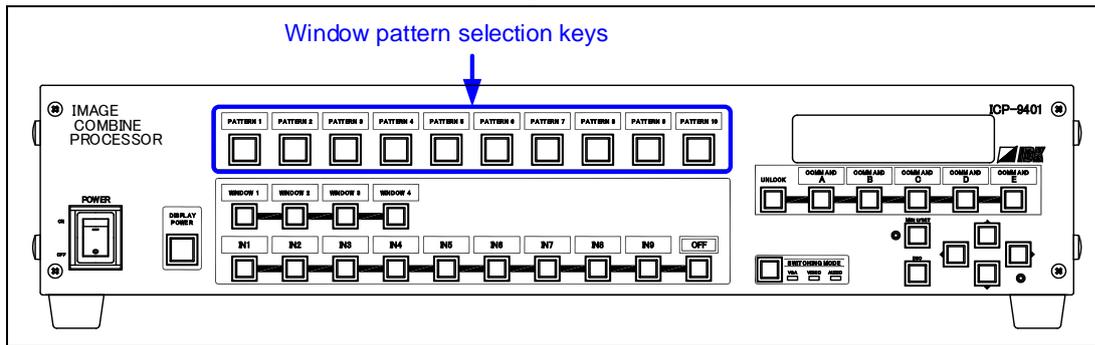
To select channels for outputting video or audio:

■ Procedure	
1	<p>Select the desired mode by the SWITCHING MODE key. Every time you press the key, the mode changes sequentially as follows:</p> <p>V&A (video & audio simultaneously; set by default) VIDEO (only video) AUDIO (only audio)</p> <p>The LED of the selected mode illuminates.</p> <div style="text-align: center;">  </div> <p>[Fig. 6.2a] SWITCHING MODE selection key</p>
2	<p>Press the desired Output window selection key (one of WINDOW1 to WINDOW4). Note: Audio can be switched only for WINDOW1; it cannot be switched for WINDOW2 to 4.</p>
3	<p>Press the desired input channel selection key (IN1 to IN9, OFF) to set a channel to output video or audio. The LEDs of the selected video/audio inputs illuminate.</p>

Command control: Switching video and audio channel simultaneously: @SSW/@GSW
Switching video channel: @SSV/@GSV
Switching audio channel: @SSA/@GSA

6.3 Selecting Window Patterns

Loading patterns saved in "7.14.6 Saving window patens [SAVE WINDOWPATTEN]".



[Fig. 6.3a] Window pattern selection keys

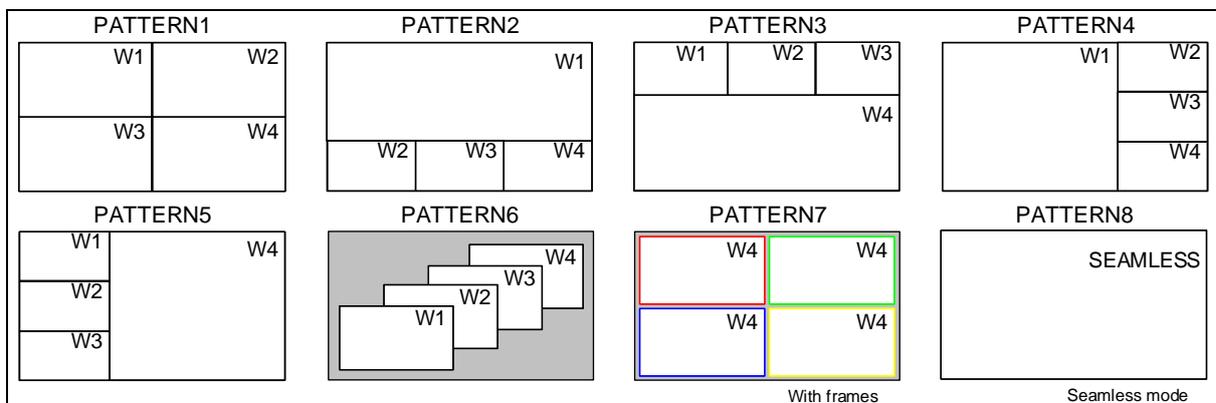
Press the desired Window pattern selection key (PATTERN1 to PATTERN10). The LED of selected pattern illuminates.

Patterns registered as No.11 to 20 can be loaded from "7.14.5 Loading pattern memory [LOAD WINDOWPATTERN]", "6.6 Executing Control Commands", and "6.8 Control by Web browser".

When one of No.11 to 20 patterns is selected, the LEDs of Window pattern selection keys do not illuminate.

Note:

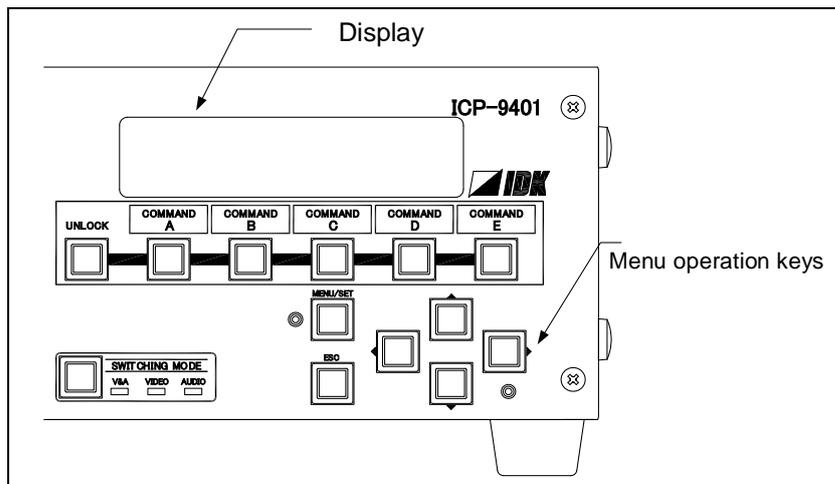
By default, sample patterns are registered for PATTERN1 to PATTERN8. Make sure to adjust them depending on the output settings.



[Fig. 6.3b] Sample patterns

6.4 Menu Operation keys

Use the following keys to set menu options:



[Fig. 6.4a] Menu operation keys

MENU/SET key: Displays menus and sets values

“ESC” key: Escapes from the menu

▲/▼ Keys: Switches menus and sets values

◀▶ keys: Moves the cursor and selects the item to be set

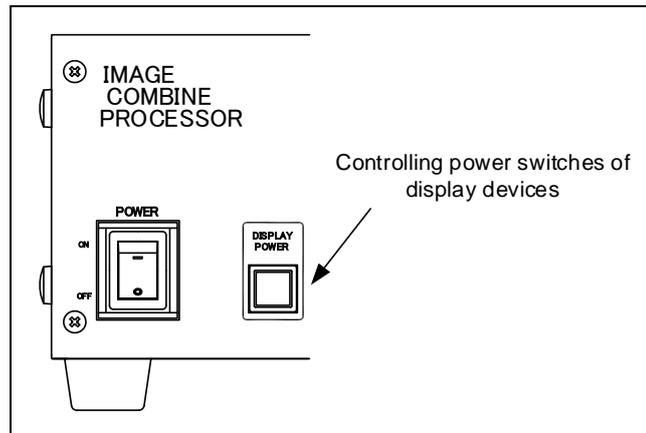
VFD screen: Displays menus and settings

If no operation is applied for 30 seconds, the brightness of VFD screen is automatically set to 25% level. To keep the brightness at 100% level at all times, change the Command AUTO LOOK in section “7.17.3 Automatic key lock for control command keys [COMMAND AUTO LOCK]”.

If you need a front panel cover (optional extra) to prevent erroneous operations, please contact us.

6.5 Turning ON/OFF Display Devices

Use the “DISPLAY POWER” keys to turn on/off the connected display devices.



[Fig. 6.5a] DISPLAY POWER keys for display devices

Since no values are registered at the factory, in order to use the front panel DISPLAY POWER keys, the settings for those keys must be first registered into system memory (“7.13.3 Control command link [COMMAND LINK]”). If you press the keys accidentally, the display device may be turned off. This can be avoided by pressing and holding the DISPLAY POWER keys for the registered number of seconds set in “7.17.4 DISPLAY POWER key pressing time length [POWER SWITCH ON]”.

When a command for turning on or off is sent to the display device and the reply command for normal transmission is received from the display device, the LED of the key turns orange (Power ON) or is turned off (power OFF). However, if the reply command is not checked, the actual power status of the display device and LED of DISPLAY POWER key sometimes do not match.

Command control: Setting for display device power switch @SDS /@GDS

6.6 Executing Control Commands

You can register up to nine control commands in ICP(COMMANDs A to I), but you can execute only five commands (COMMANDs A to E) with control front panel command execution keys. To execute COMMANDs F to I, perform "7.13.4 Command execution [COMMAND EXECUTION]" or use RS-232C or LAN. For COMMANDs A to I, nothing is registered by the factory default, so those keys will not work until their commands are registered in "7.13.3 Control command link [COMMAND LINK]".

Command control: Controlling command execution: @EXC

To execute commands associated with Control Command execution keys (COMMANDs A to E):

■ Procedure	
1	Press the "UNLOCK" key. If it is unlocked, the key illuminates.
2	Select the desired command from the Control command execution keys.
3	Execute the registered command from the control command keys.

[Fig. 6.6a] Keys for command execution

6.7 Locking/Unlocking Front keys

To lock the front panel keys, press and hold the Operation Mode selection key for 2 seconds or longer until hearing the buzzer sound. To release the key lock, do the same operation again. When the setting is changed, the status will be displayed for 1 second.

KEY LOCK !

Locked

KEY LOCK RELEASE !

Unlocked

Command control: Setting and releasing key lock: @SLS/@GLS

6.8 Control by Web browser

The ICP connected through LAN can be controlled from a WEB browser such as Microsoft Internet Explorer. To open the operation window, open a WEB browser in the PC through the same LAN network and enter the ICP's IP address into the address bar. For LAN settings, see "7.12 LAN".

Note:

We tested the ICP using Microsoft Internet Explorer 6.0, 7.0 and 8.0 for Windows. The ICP may possibly operate incorrectly on other versions and/or browsers.

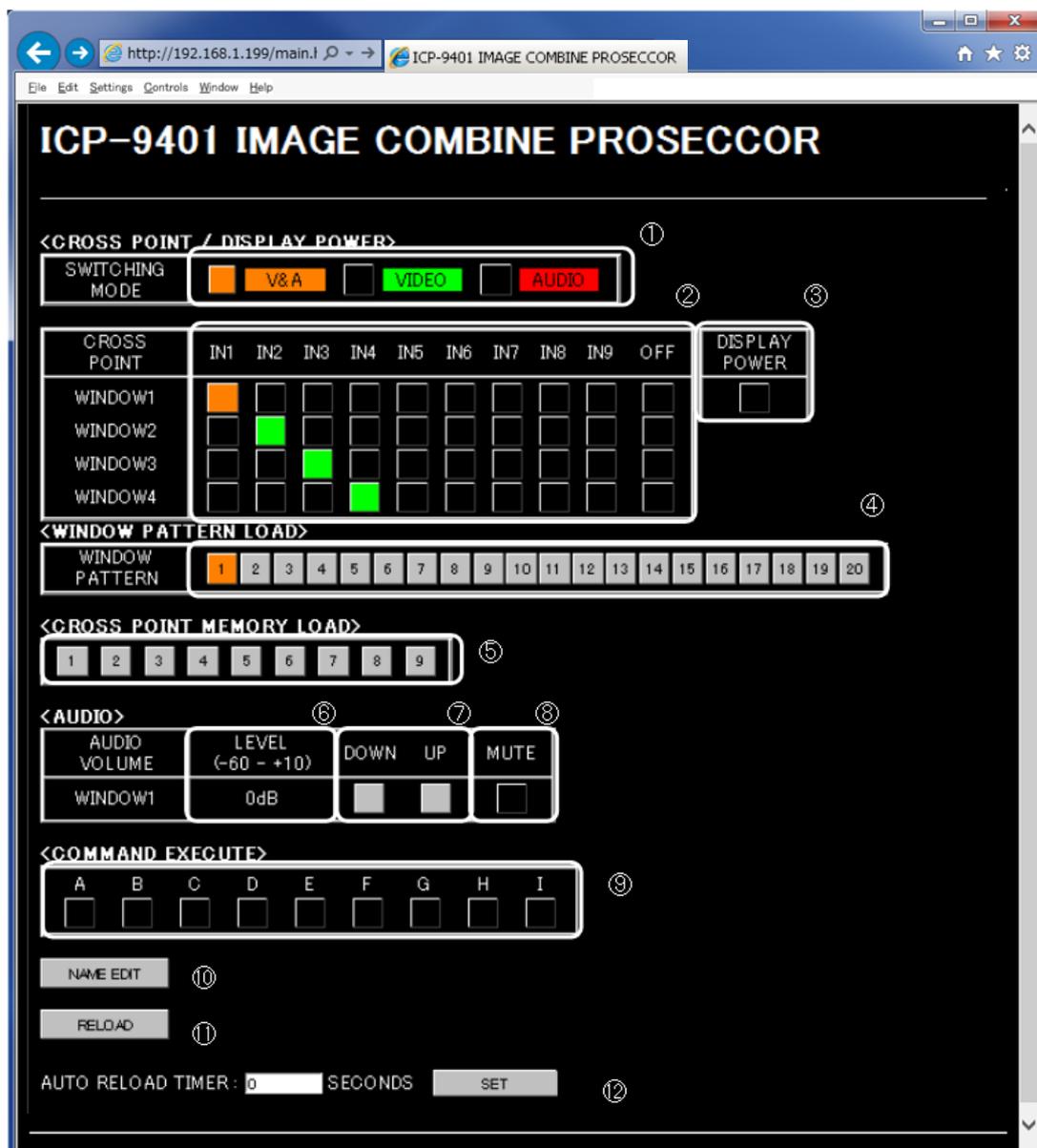
If the port number of the browser control port is set to 80 (normal setting):

Use the following format: `http://192.168.1.199`

If the port number of the browser control port is set to a number other than 80 (5000 to 5999):

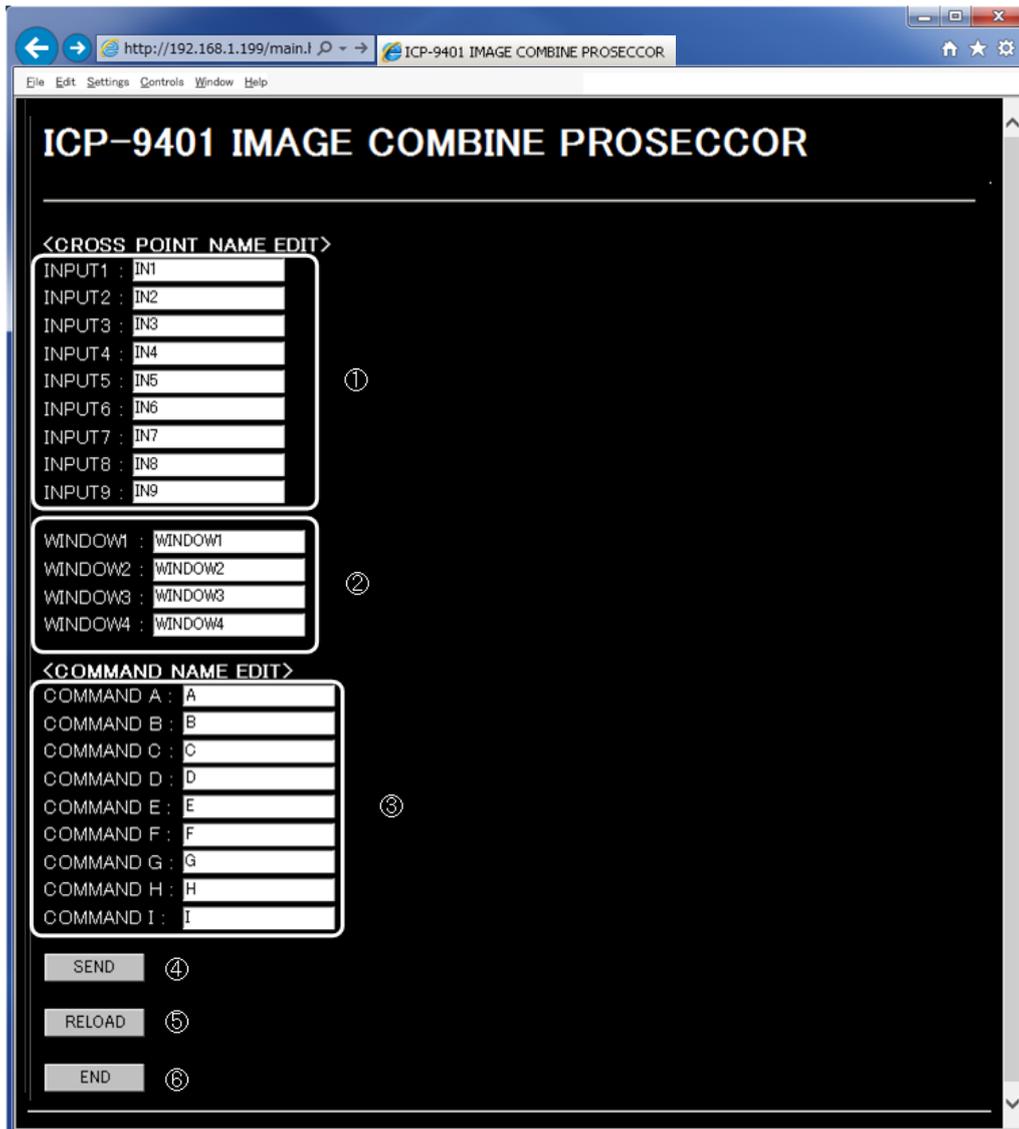
(Example: No. 5000)

Use the following format: `http://192.168.1.199:5000`



[Fig. 6.8a] WEB browser control window

- ① **SWITCHING MODE**
Sets and displays channel switching mode. Does not affect switching mode of the front panel.
WINDOW1: both video and audio WINDOW2,3,4: only video
V&A (switching video & audio simultaneously), VIDEO (switching only video), AUDIO (switching only audio)
- ② **Input channel selection (OFF, IN1 to IN9)**
Selects input channel of output video and audio.
Orange: Video & Audio; Green: only video; Red: only audio
- ③ **DISPLAY POWER**
Turns on/off connected display devices. No command is registered by factory default. To control display's power, register the command to this switch in "**7.13.3 Control command link [COMMAND LINK]**".
- ④ **WINDOW PATTERN**
Loads a registered window pattern.
- ⑤ **CROSS POINT**
Loads a registered cross point.
- ⑥ **Audio output level**
Displays the current audio output level.
- ⑦ **Audio output level (UP, DOWN)**
Turns up/down the volume 1 [dB] per click.
- ⑧ **Audio output level (MUTE)**
Turns on and off the mute function.
Red: MUTE ON; Black: MUTE OFF
- ⑨ **Control command execution (COMMAND EXECUTE)**
Executes control commands assigned to COMMAND A to I. No command is registered by factory as default. To execute control commands, register them to COMMAND A to I in advance by following instructions in section "**7.13.3 Control command link [COMMAND LINK]**".
Buttons in which control command is registered are displayed in green. However, as each command (A to I) has two planes (PLANE A and B), two commands are executed alternately if two different commands are registered to plane A and B. If PLANE B is executed, the button is displayed in green (PLANE A will be executed at the next click); if PLANE A is executed, the button displayed in orange (PLANE B will be executed at the next click).
- ⑩ **Editing input channel name, output name, control command name (NAME EDIT)**
Edits names of "CROSS POINT", "AUDIO VOLUME," and "COMMAND EXECUTE". Click this button, to open the window of **Fig. 6.8b**.
- ⑪ **Page update (RELOAD)**
Acquires the latest information of the ICP. (It can also be updated automatically by setting "AUTO RELOAD TIMER", 12, below.)
- ⑫ **Setting automatic update time (AUTO RELOAD TIMER)**
Sets time interval to receive the latest information periodically and to refresh WEB browser window. You can set the interval from 10 to 65535 seconds by 1 second. If you do not use this function, set the interval to 0 second (default).



[Fig. 6.8b] Window for editing names

- ① Input channel name (INPUT1 to INPUT9)
Enter the desired input names which will be displayed in “CROSS POINT” on **Fig. 6.8a**. IN1 to 9 are set by factory default.
- ② Output name (WINDOW1 to WINDOW4)
Enter the desired output names which will be displayed in “CROSS POINT” and “AUDIO VOLUME” on **Fig. 6.8a**. OUT1 to 4 are set by default.

- ③ Control command name (COMMAND A to COMMAND I)
Enter the desired input names which will be displayed in "COMMAND EXECUTE" on **Fig. 6.8a**. "A" to "I" are set by default.

- ④ (SEND)
Saves the names entered above (1 to 3).

- ⑤ Page update (RELOAD)
Restores to the current settings. Use this button to enter the names again.

- ⑥ (END)
Finishes editing names. Click this button to open **Fig. 6.8a**.

For 1 to 3 above, only the first 10 one-byte characters are valid even if you enter 11 or more characters. (You can use two-byte characters, but they are counted as two characters.)

6.9 Remote Control Program

IDK provides control software for creating/editing control commands, and other settings which may take time to set them from the menu. The software allows you to set those settings easily on the GUI window of Microsoft Windows.

You can control all ICP menus using the program that can be downloaded by free from our web page at: <http://www.idk.co.jp/en/index.html>

6.10 Factory Reset

You can restore settings of “6.1 Selecting Output Windows”, “6.7 Locking/Unlocking Front keys”, and “7 Settings” to the factory default by turning on the ICP while pressing the ESC key.

Hold the ESC key until you hear long-tone buzzer sound. The sound stops when the initialization is completed, and the ICP starts its normal operation.

Note:

Once you restore the settings to the factory default, you cannot put them back to the previous (user) settings.

[Table 6.10a] Factory default

*①: Set for each window

②: Set for each input/input signal

③: Set for each input

④: Set for each bitmap

Function	Factory default	Set for each I/O/bmp*
INPUT CHANNEL	Channel selection: INPUT OFF SWITCHING MODE: V&A	①
Window selection	WINDOW1	-
Window pattern	No pattern is selected.	-
RESOLUTION	AUTO(Set automatically from EDID)	-
MONITOR ASPECT	RESOLUTION (Aspect ratio of output resolution)	-
INPUT ASPECT	AUTO-1	②
ASPECT PROCESS	LETTER BOX or SIDE PANEL	②
INPUT OVER SCAN	NTSC/PAL/SDTV: 105% HDTV/VESA(PC): 100%	②
INPUT POSITION	Horizontal/Vertical: 0	②
INPUT SIZE	Horizontal/Vertical: The number of pixels of output resolution	②
INPUT MASKING	Left/Top: 0 Right/Bottom: The number of pixels of output resolution (without masking)	②
OUTPUT POSITION	Horizontal/Vertical: 0	①
OUTPUT SIZE	Horizontal/Vertical: The number of pixels of output resolution	①
OUTPUT MASKING	Left/Top: 0 Right/Bottom: The number of pixels of output resolution (without masking)	①
BACKGROUND COLOR	R/G/B: 0 (black)	①
TEST PATTERN	Pattern output: OFF Scroll: OFF	-

Function	Factory default	Set for each I/O/bmp*
FRAME OUTPUT	OFF	①
FRAME COLOR	R/G/B: 0 (Black)	①
FRAME SIZE	3pix	①
TELOP OUTPUT	OFF	①
TELOP BACKCOLOR	R/G/B: 0 (Black)	①
TELOP FONTCOLOR	R/G/B: 255 (White)	①
TELOP FONTSIZE	12x12	①
TELOP POSITION	TOP-LEFT	①
TELOP CONTENTS	WINDOW NO: ON INPUT NAME: ON VIDEO TIMING: ON AUDIO STATUS: OFF	-
TELOP VIEWTIME	3sec	-
IMAGE POSITION	H/V: 0	①
IMAGE ZOOMRATE	100.00%	①
IMAGE INVERT	OFF	①
OVERLAY PRIORITY	1:W1 2:W2 3:W3 4:W4	-
WINDOW INVISIBLE	OFF	①
ENTIRE BACKCOLOR	R/G/B : 0 (Black)	-
INPUT BRIGHTNESS	100%	②
INPUT CONTRAST	R/G/B: 100%	②
INPUT HUE	0°	②
INPUT SATURATION	100%	②
SETUP LEVEL	0.0%	②
OUTPUT BRIGHTNESS	100%	①
OUTPUT CONTRAST	R/G/B: 100%	①
INPUT VIDEO DETECT	10000 ms. (10 seconds)	③
HDCP INPUT ENABLE	ENABLE	③
INPUT EQUALIZER	ON	③
ANALOG INPUT TYPE	AUTO	②
INPUT OFF CHECK	ON	③
H TOTAL DOTS	0 (when signals are detected, it is set automatically)	②
H START	0 (when signals are detected, it is set automatically)	②
H DISPLAY	0 (when signals are detected, it is set automatically)	②
V START	0 (when signals are detected, it is set automatically)	②
V DISPLAY	0 (when signals are detected, it is set automatically)	②
AUTO START POS	ON	②
UNKNOWN TIMING	ON	-
Device data registered by user	All 99 data is not registered	②
TRACKING	0 (when signals are input, it is set automatically)	②

Function	Factory default	Set for each I/O/bmp*
OUTPUT EQUALIZER	OFF	-
OUTPUT MODE	HDMI YCbCr4:4:4 MODE (outputs with the most suitable mode depending on the connected display device)	-
SYNC OUTPUT	ON	-
VIDEO OUTPUT	BLUE	①
VIDEO SWITCHING	FREEZE→FADE OUT-IN	①
SWITCHING SPEED	350 ms.	①
WIPE COLOR	R/G/B: 0(black)	-
PATTERN SWITCHING	FADE OUT-IN	-
PATTERN SW SPEED	350ms	-
HDCP OUTPUT MODE	ALWAYS	-
HDCP ERROR RETRY	ETERNITY (Retrying continuously until HDCP authentication succeeds)	-
DEEP COLOR OUTPUT	24-BIT COLOR	-
CEC CONNECTION	NOT CONNECTED	-
COMBINED MODE	COMBINED MODE	-
OUTPUT LEVEL	±0 dB	-
OUTPUT MUTE	OFF	-
AUDIO INPUT SELECT	AUTO (For HDMI signals, digital audio is effective; for other signals, analog audio is effective)	③
INPUT OFFSET	±0 dB	②
OUTPUT LIP SYNC	0	-
INPUT LIP SYNC	0	②
SAMPLING FREQUENCY	AUTO(Set automatically from EDID)	-
OUTPUT CONNECTOR	ANALOG & DIGITAL	-
TEST TONE	Test tone : OFF Speaker : ALL	-
EDID DATA	INTERNAL EDID	③
PC RESOLUTION	For IN 1 to IN 5: 1080p (1920x1080) For IN 6 to IN 9: UXGA (1600x1200)	③
AV RESOLUTION	AUTO	③
DEEP COLOR INPUT	24-BIT COLOR	③
AUDIO FORMAT	Linear PCM 48 kHz	③
MONITOR EDID COPY	All 8 data is not registered.	-

Function	Factory default	Set for each I/O/bmp*
PARAMETERS	Baud rate: 9600 bps Data length: 8 bit Parity: None Stop bit: 1 bit	-
FUNCTION	RECEIVER	-
IP ADDRESS	192.168.1.199	-
SUBNET MASK	255.255.255.0	-
GATEWAY ADDRESS	192.168.1.200	-
FUNCTION	RECEIVER	-
PORT NUMBER	Connection 1 to 3: 1100 Connection 4 to 6: 23 Connection 7 to 8: 80	-
COMMAND EDIT	All 32 commands are not registered.	-
RECV COMMAND EDIT	All 32 commands are not registered.	-
COMMAND LINK	All 91 commands are not registered.	-
INVALID TIME	0 ms.	-
FLASH TIME	For control command execution key: OFF (does not blink) For display device power switch: EXECUTION (blinks while control command is executed)	-
CROSS POINT MEMORY	All nine are not controlled channel.	-
PATTERN MEMORY	Sample patterns are registered for 1 to 8.	-
CROSSPOINT LINK	OFF (Loads channel when the pattern is registered.)	-
STARTUP	LAST CHANNEL (Starts up with settings, which are set at the time of turns off the ICP last time.)	-

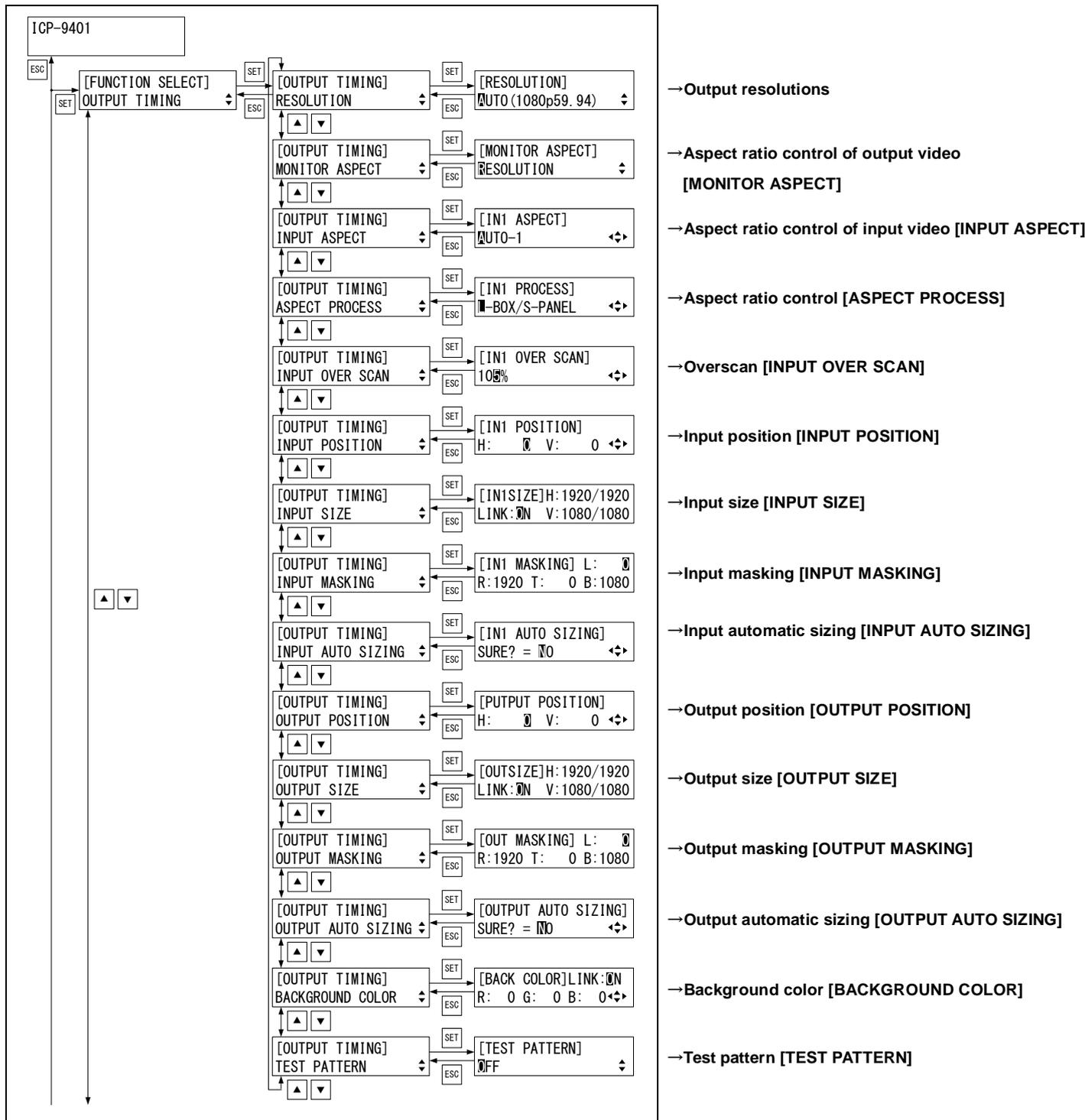
Function	Factory default	Set for each I/O/bmp*
BITMAP OUTPUT	OFF	-
BACKGROUND COLOR	R/G/B: 255 (white)	④
ASPECT	AUTO	④
POSITION	CENTER	④
POWER ON BITMAP	OFF	-
DIVIDE MEMORY	Divide: None Memory size: Assigns 128 blocks to 1 bitmap	-
DISPLAY POWER	OFF	-
COMMAND KEY	AUTO (Starts up with settings which were set on the ICP before the last power down.)	-
KEY LOCK	AUTO (Starts up with settings which were set on the ICP before the last power down)	-
KEY LOCK MODE	Disabled	-
	For all keys	-
BUZZER	ON	-
COMMAND AUTO LOCK	ON	-
POWER SWITCH ON	0ms (0 second)	-
TOP DISPLAY	NORMAL	-

6.11 Startup Time

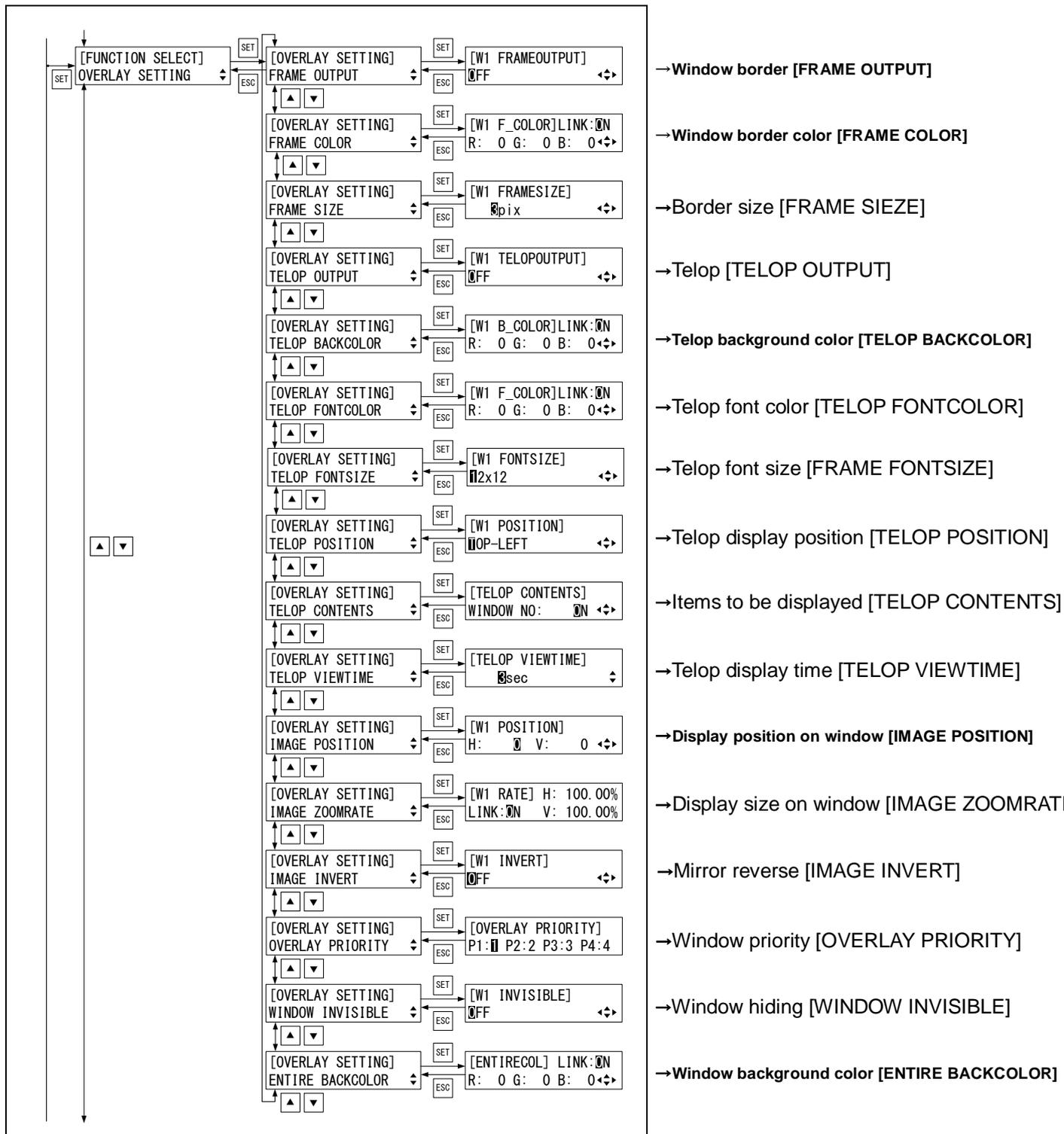
The ICP can receive communication commands about 3 seconds after it is turned on. It can output video and audio and can be operated from the front panel about 12 seconds after it is turned on. However, if "POWER ON BITMAP" ("7.15.6 Bitmap output at startup [POWER ON BITMAP]") is set to ON, it may take longer.

7 Settings

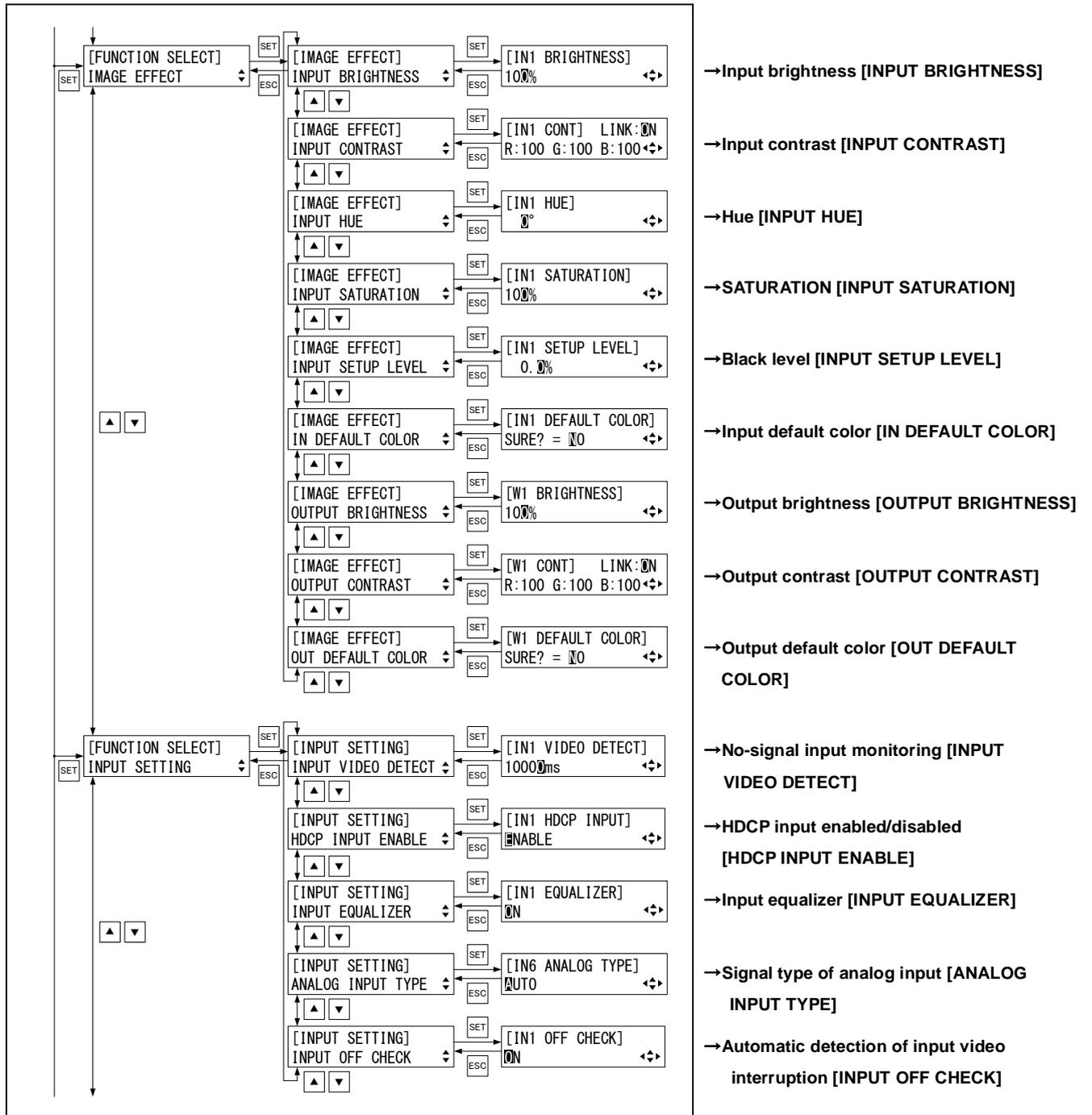
7.1 Menu List



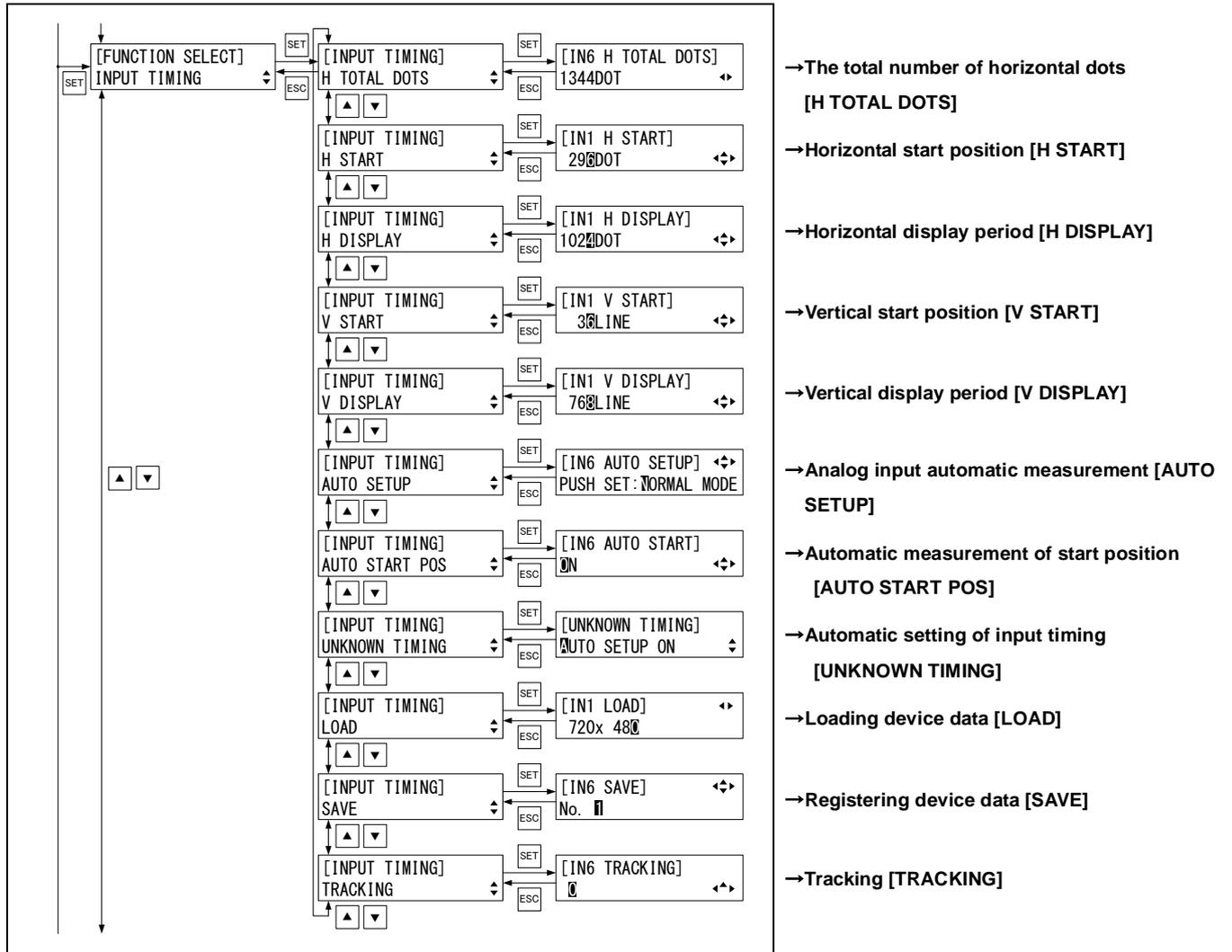
[Fig. 7.1a] Menu list (1/9)



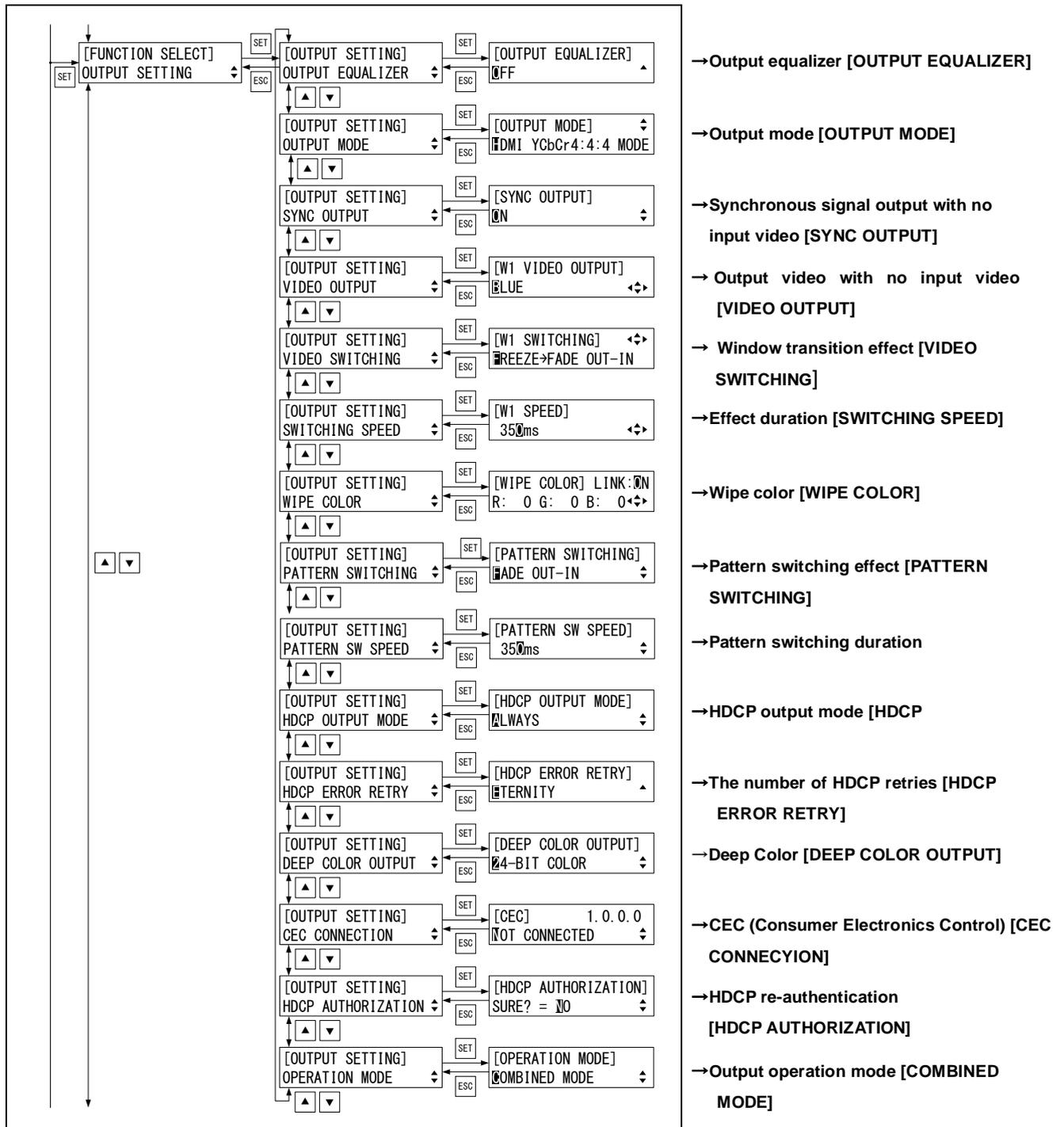
[Fig. 7.1b] Menu list (2/9)



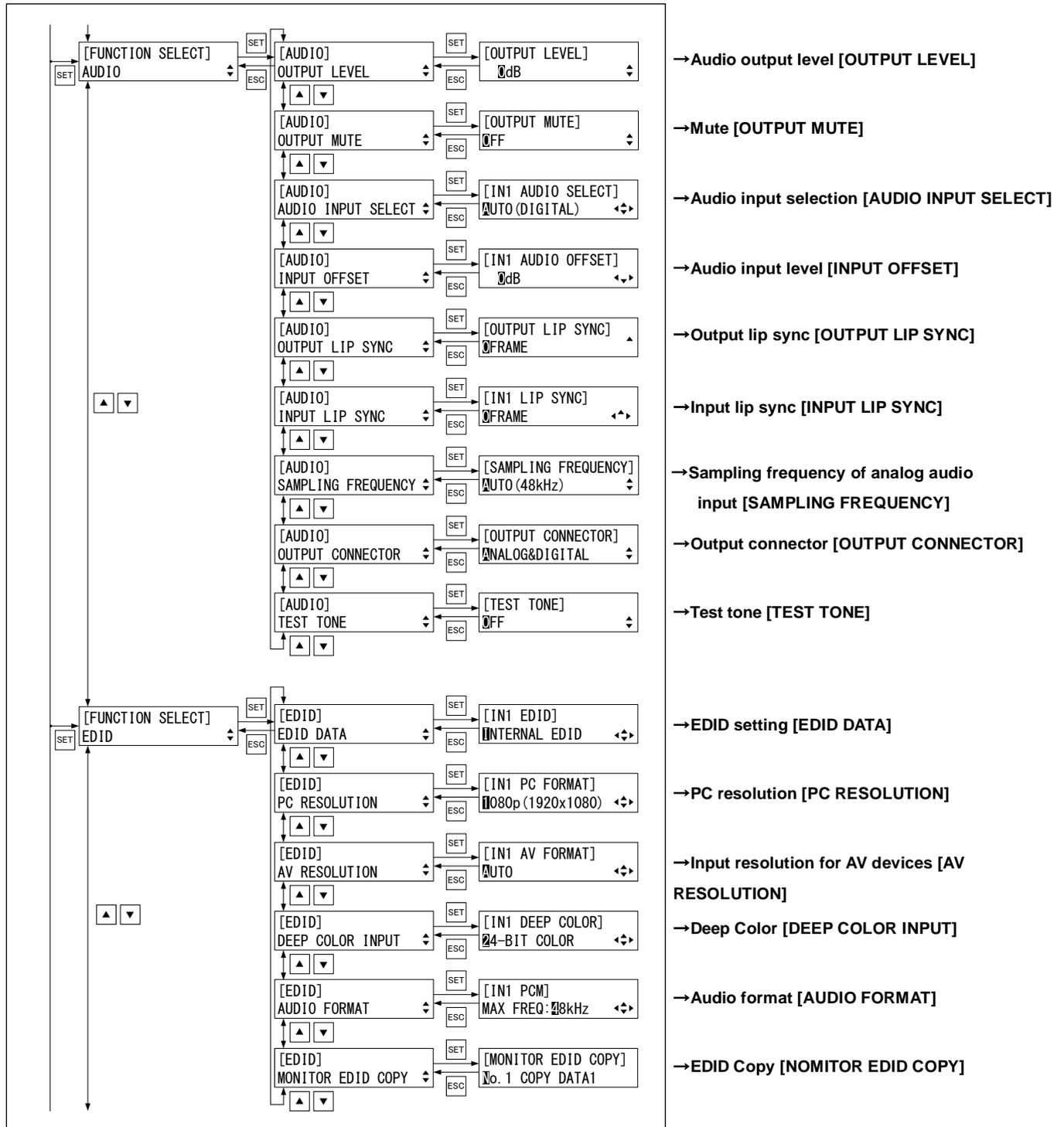
[Fig. 7.1c] Menu list (3/9)



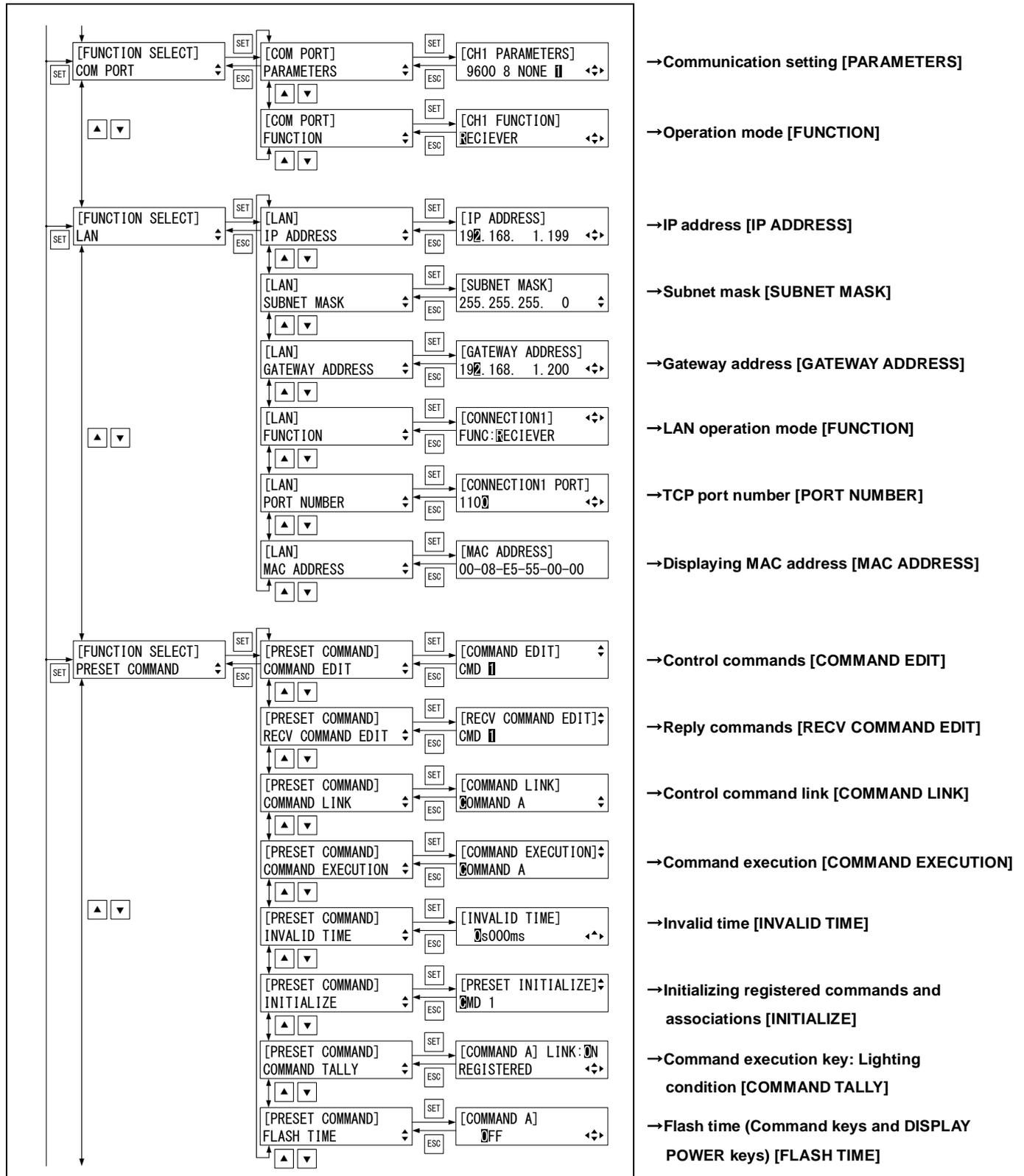
[Fig. 7.1d] Menu list (4/9)



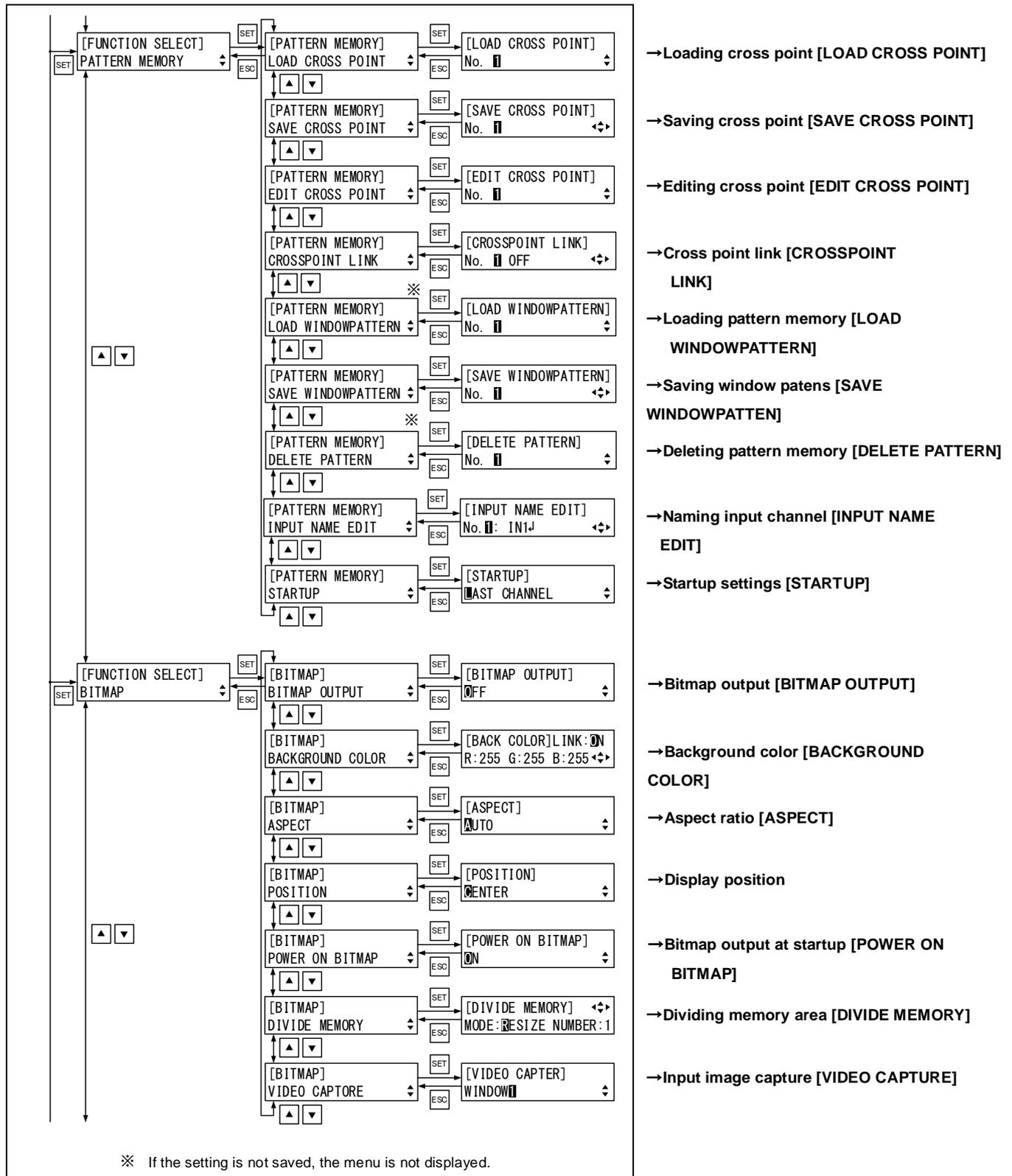
[Fig. 7.1e] Menu list (5/9)



[Fig. 7.1f] Menu list (6/9)

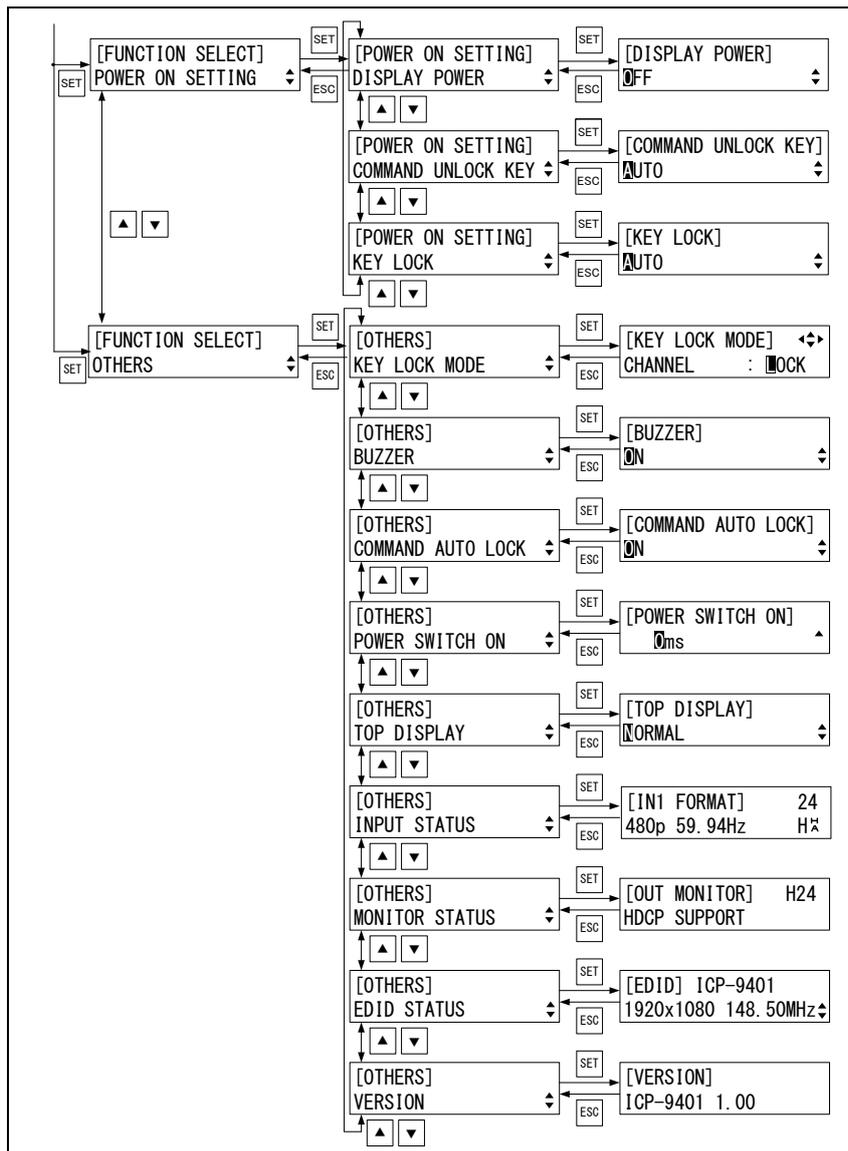


[Fig. 7.1g] Menu list (7/9)



- Loading cross point [LOAD CROSS POINT]
- Saving cross point [SAVE CROSS POINT]
- Editing cross point [EDIT CROSS POINT]
- Cross point link [CROSSPOINT LINK]
- Loading pattern memory [LOAD WINDOWPATTERN]
- Saving window patens [SAVE WINDOWPATTEN]
- Deleting pattern memory [DELETE PATTERN]
- Naming input channel [INPUT NAME EDIT]
- Startup settings [STARTUP]
- Bitmap output [BITMAP OUTPUT]
- Background color [BACKGROUND COLOR]
- Aspect ratio [ASPECT]
- Display position
- Bitmap output at startup [POWER ON BITMAP]
- Dividing memory area [DIVIDE MEMORY]
- Input image capture [VIDEO CAPTURE]

[Fig. 7.1h] Menu list (8/9)



- DISPLAY POWER keys
[DISPLAY POWER]
- Control command UNLOCK key
[COMMAND UNLOCK KEY]
- Key lock [KEY LOCK]
- Setting key lock mode [KEY LOCK MODE]
- Key buzzer [BUZZER]
- Automatic key lock for control command keys [COMMAND AUTO LOCK]
- DISPLAY POWER key pressing time length [POWER SWITCH ON]
- Top VFD screen [TOP DISPLAY]
- Input signal status [INPUT STATUS]
- Display device status [MONITOR STATUS]
- EDID of display device [EDID STATUS]
- Version information [VERSION]

[Fig. 7.1i] Menu list (9/9)

The following menus can be set separately as follows, and those setting units are shown on the top right of each section in this manual:

For each window

You can set the menu for each window separately.

For each input port/input signal

You can set the menu for each input and input signals separately.
(For details, see “7.2 Input Signal Automatic Detection”)

For each input

You can set the menu for each input separately.

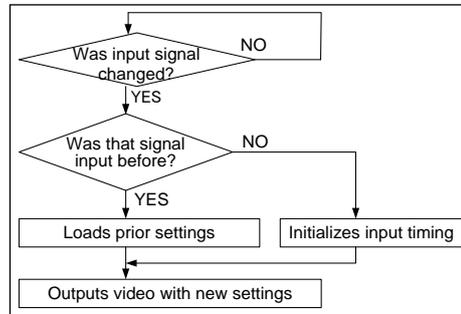
For each bitmap

You can set the menu for each output and bitmap separately.

7.2 Input Signal Automatic Detection

The ICP continuously monitors input signals. If input signals that have been input before, they are output with the same size and quality of view used previously. If input signals are not matched with any signal settings that have been input before, only settings of input timing is initialized and other settings are not changed.

Adjust the size and quality of view as necessary.



[Fig. 7.2a] How signals are recognized

The ICP saves data of 50 input devices for each channel, and the data is used to check whether the input signals have been input before or not. To save the data of the 51st device, the oldest data that have not been input recently will be deleted, instead.

	IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN9
1	1080i	1080i	UXGA	UXGA	WXGA	NTSC	NTSC	WXGA	UXGA
2	720p	480i	WXGA	VGA	SVGA	XGA	WXGA	720p	720p
3	480i		SXGA+						
4	XGA								
5	SXGA								
6	UXGA								
⋮									
49	VGA								
50	1080p								

Memory area for 50 devices per channel

When new signals are input, the oldest data will be overwritten.

[Fig. 7.2b] Memory table per channel

The data of the following settings are stored for each input signal.

7.3 Setting Position, Size, and Masking

7.3.3 Aspect ratio control of input video [INPUT ASPECT]

7.3.4 Aspect ratio control [ASPECT PROCESS]

7.3.5 Overscan [INPUT OVER SCAN]

7.3.6 Input position [INPUT POSITION]

7.3.7 Input size [INPUT SIZE]

7.3.8 Input masking [INPUT MASKING]

7.5 Video Correction

7.5.1 Input brightness [INPUT BRIGHTNESS]

7.5.2 Input contrast [INPUT CONTRAST]

7.5.3 Hue [INPUT HUE]

7.5.4 SATURATION [INPUT SATURATION]

7.5.5 Black level [INPUT SETUP LEVEL]

7.6 Input Settings

7.6.4 Signal type of analog input [ANALOG INPUT TYPE]

7.7 Input Timing Settings

7.7.1 The total number of horizontal dots [H TOTAL DOTS]

7.7.2 Horizontal start position [H START]

7.7.3 Horizontal display period [H DISPLAY]

7.7.4 Vertical start position [V START]

7.7.5 Vertical display period [V DISPLAY]

7.7.7 Automatic measurement of start position [AUTO START POS]

7.7.11 Tracking [TRACKING]

7.9 Audio Settings*

7.9.4 Audio input level [INPUT OFFSET]

7.9.6 Input lip sync [INPUT LIP SYNC]

* Only if digital audio input is selected, settings of Input level and lip sync will be saved.

7.3 Setting Position, Size, and Masking

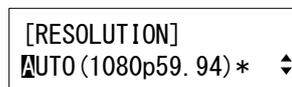
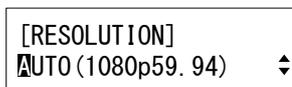
7.3.1 Output resolutions [RESOLUTION]

If you select "AUTO", the optimum resolution is automatically applied.*

If you want to select a resolution other than "AUTO", select the same resolution as the display device so that the video is displayed more clearly.

If you change the output resolution, relative display position and size of the output video are not changed.

* If you select "AUTO", the ICP finds the optimal resolution from EDID (see section "7.10 EDID" for details) of the display device and displays the current resolution in brackets on the VFD screen. If the ICP cannot load EDID from the display device, it outputs the video with the resolution used the last time and displays a "*" after the current output resolution. Available output resolutions of the ICP are as follows and they can only be selected manually. If the resolution of the display device is not found, the closest resolution is used and a "*" is displayed after the resolution as well.



[With the optimum resolution]

[EDID cannot be load or without identical optimum resolution]

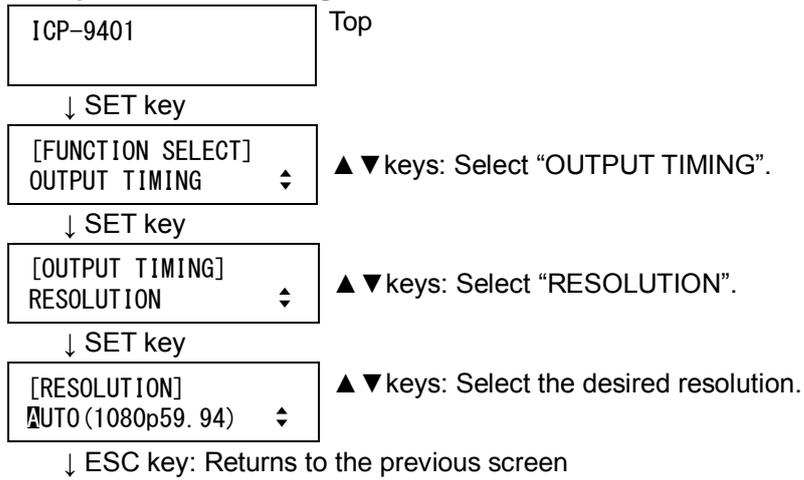
- | | | | |
|---|--------------------------|-------------------------|---------------------------|
| { | • AUTO [Default] | • WXGA+@60 (1440x900) | • 720p@50 (1280x720) |
| | • VGA@60 (640x480) | • WXGA++@60 (1600x900) | • 720p@59.94 (1280x720) |
| | • SVGA@60 (800x600) | • UXGA@60 (1600x1200) | • 720p@60 (1280x720) |
| | • XGA@60 (1024x768) | • WSXGA+@60 (1680x1050) | • 1080i@50 (1920x1080) |
| | • WXGA@60 (1280x768) | • VESAHD@60 (1920x1080) | • 1080i@59.94 (1920x1080) |
| | • WXGA@60 (1280x800) | • WUXGA@60 (1920x1200) | • 1080i@60 (1920x1080) |
| | • Quad-VGA@60 (1280x960) | | • 1080p@50 (1920x1080) |
| | • SXGA@60 (1280x1024) | • 480i@59.94 (720x480) | • 1080p@59.94 (1920x1080) |
| | • WXGA@60 (1360x768) | • 480p@59.94 (720x480) | • 1080p@60 (1920x1080) |
| | • WXGA@60 (1366x768) | • 576i@50 (720x576) | |
| | • SXGA+@60 (1400x1050) | • 576p@50 (720x576) | |

Numbers following "@" are vertical synchronous frequency. For outputting high definition, 50Hz/59.94Hz/60Hz can be selected.

480i/480p/576i/576p/720p/1080i/1080p are the timings of CEA-861E standard. Others are timings meeting VESA DMT standard or VESA CVT standard. VESAHD@60 and WUXGA@60: Reduced Blanking

Note :

If connecting an IDK's distribution amplifier between the ICP and display device and set the resolution to "AUTO", set the EDID of the distribution amplifier to "EXTERNAL" which enables the ICP to load the EDID from the display device.

1. To set output resolution using menu:**2. To set output resolutions using commands:**

- @SOT Set output resolution
- @GOT Get output resolution
- @GTD Get actual output resolution

7.3.2 Aspect ratio control of output video [MONITOR ASPECT]

This setting will be used to restore the aspect ratio to the normal ratio in “7.3.3 Aspect ratio control of input video [INPUT ASPECT]”.

{	• RESOLUTION [Default]	• 5:3
	• 4:3	• 16:9
	• 5:4	• 16:10

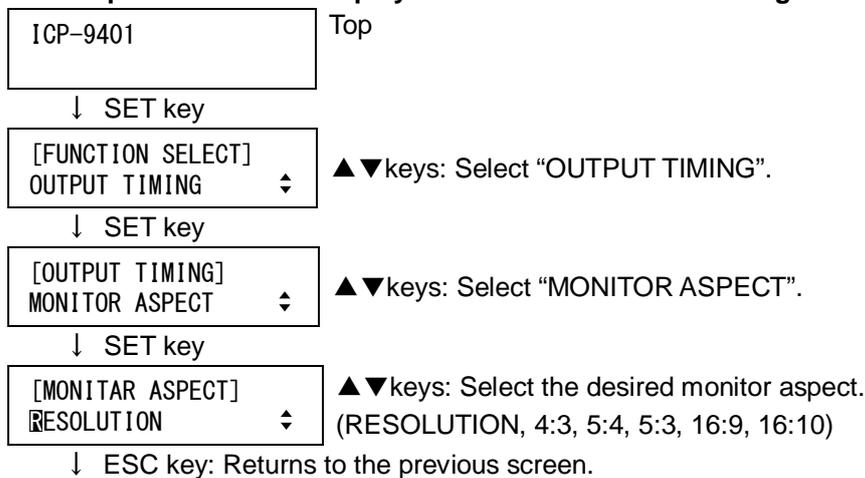
If you select “RESOLUTION”, the ICP finds that a display device whose aspect ratio is the same as that is selected in “7.3.1 Output resolutions [RESOLUTION]” is connected.

[Table 7.3.2a] Output resolution and aspect ratio

Output resolution	Aspect ratio	Output resolution	Aspect ratio	Output resolution	Aspect ratio
VGA(640x480)	4:3	WXGA(1360x768)	16:9	VESAHD(1920x1080)	16:9
SVGA(800x600)	4:3	WXGA(1366x768)	16:9	WUXGA(1920x1200)	16:10
XGA(1024x768)	4:3	SXGA+(1400x1050)	4:3	480i,p(720x480)	4:3
WXGA(1280x768)	5:3	WXGA+(1440x900)	16:10	576i,p(720x576)	4:3
WXGA(1280x800)	16:10	WXGA++(1600x900)	16:9	720p(1280x720)	16:9
Quad-VGA(1280x960)	4:3	UXGA(1600x1200)	4:3	1080i,p(1920x1080)	16:9
SXGA(1280x1024)	5:4	WSXGA+(1680x1050)	16:10		

If aspect ratio of the target display device and the ratio set in “7.3.1 Output resolutions” differ, you can select an aspect ratio of the display device from “4:3”, “5:4”, “5:3”, “16:9”, and “16:10”.

1. To select aspect ratio of the display device to be connected using menu:



2. To select aspect ratio of the display device to be connected using commands:

- @SUM: Set display aspect ratio
- @GUM: Get display aspect ratio

7.3.3 Aspect ratio control of input video [INPUT ASPECT]

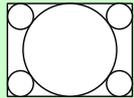
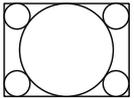
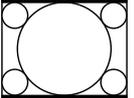
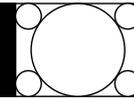
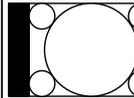
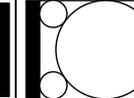
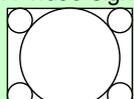
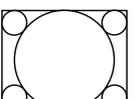
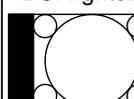
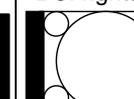
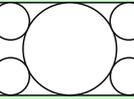
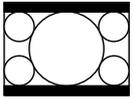
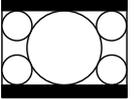
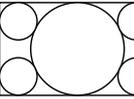
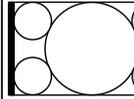
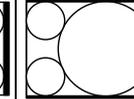
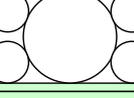
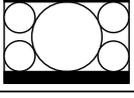
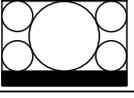
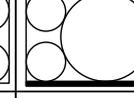
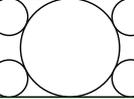
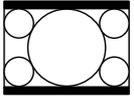
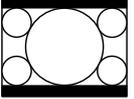
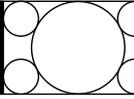
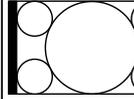
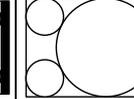
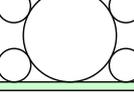
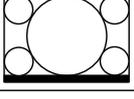
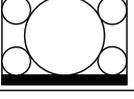
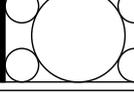
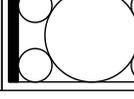
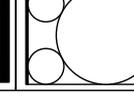
For each input port/input signal

- | | | | |
|---|--------------------|-------------------|-------------------|
| { | • AUTO-1 [Default] | • 14:9 | • 14:9 SIDE PANEL |
| | • AUTO-2 | • 16:9 LETTER BOX | • FULL |
| | • 4:3 | • 14:9 LETTER BOX | • THROUGH |
| | • 16:9 | • 4:3 SIDE PANEL | |

If you select "AUTO-1" or "AUTO-2", the aspect ratio will be restored automatically to the original ratio according to the settings of "7.3.2 Aspect ratio control of output video [MONITOR ASPECT]" and "7.3.4 Aspect ratio control [ASPECT PROCESS]".

"AUTO-1" and "AUTO-2" work differently only when letter box signals are input. "AUTO-1" processes them as video signals of 16:9 or 14:9 while "AUTO-2" sets them as 4:3. Normally, no problem occurs if you set the aspect ratio to "AUTO-1", but some DVD players and other devices display subtitles or setup menus on the area that does not have letter box signal video, which may not be displayed within the screen. In such case, set the aspect to "AUTO-2" to display the whole video.

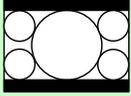
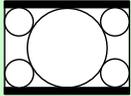
[Selecting "LETTER BOX/SIDE PANEL" for aspect ratio restoration processing]

Input signal	Aspect ratio of connected display device*				
	4:3	5:4	5:3	16:9	16:10
4:3 video signal 		BC: top&bottom 	BC: right&left 	BC: right&left 	BC: right&left 
5:4 video signal 	BC: right&left 		BC: right&left 	BC: right&left 	BC: right&left 
5:3 video signal 	BC: top&bottom 	BC: top&bottom 		BC: right&left 	BC: top&bottom 
16:9 video signal 	BC: top&bottom 	BC: top&bottom 	BC: top&bottom 		BC: top&bottom 
16:10 video signal 	BC: top&bottom 	BC: top&bottom 	BC: right&left 	BC: right&left 	
14:9 video signal 	BC: top&bottom 	BC: top&bottom 	BC: right&left 	BC: right&left 	BC: right&left 

*The aspect ratio selected for the display device will be the base. BC=Background color (Default: black)

[Fig. 7.3.3a] Aspect ratio control-1 (1/2)

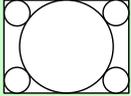
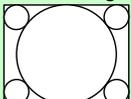
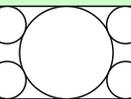
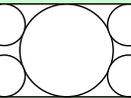
[Selecting "LETTER BOX/SIDE PANEL" for aspect ratio restoration processing]

Input signal	Aspect ratio of destination display device*					
	4:3	5:4	5:3	16:9	16:10	
16:9 letter box 	AUTO-1					
	Cut: top&bottom BC: top&bottom	Cut: top&bottom BC: top&bottom	Cut: top&bottom BC: top&bottom	Cut: top&bottom	Cut: top&bottom BC: top&bottom	
	AUTO-2					
		BC: top&bottom	BC: right&left	BC: right&left	BC: right&left	
	14:9 letter box 	AUTO-1				
		Cut: top&bottom BC: top&bottom	Cut: top&bottom BC: top&bottom	CUT: top&bottom BC: right&left	CUT: top&bottom BC: right&left	CUT: top&bottom BC: right&left
AUTO-2						
		BC: top&bottom	BC: right&left	BC: right&left	BC: right&left	

*The aspect ratio selected for the display device will be the base.

[Fig. 7.3.3b] Aspect ratio control-1(2/2)

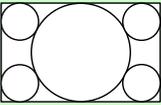
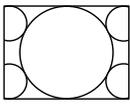
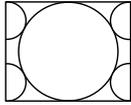
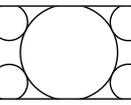
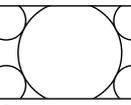
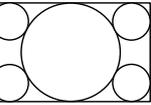
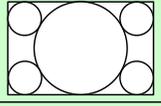
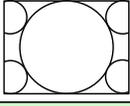
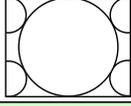
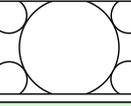
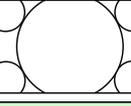
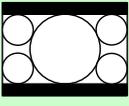
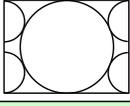
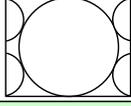
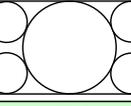
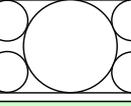
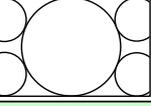
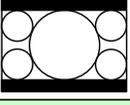
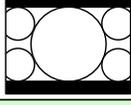
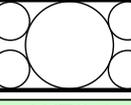
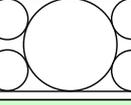
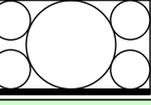
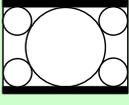
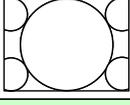
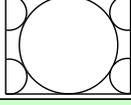
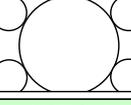
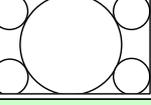
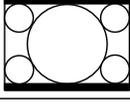
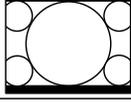
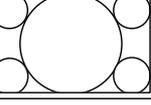
[Selecting "SIDE CUT/TOP BOTTOM CUT" for aspect ratio restoration processing]

Input signal	Aspect ratio of destination display device*				
	4:3	5:4	5:3	16:9	16:10
4:3 video signal 		Cut:right&left	Cut:top&botto m	Cut:top&botto m	Cut:top&botto m
5:4 video signal 	Cut:top&bottom		Cut:top&bottom	Cut:top&bottom	Cut:top&bottom
5:3 video signal 	Cut:right&left	Cut:right&left		Cut:top&bottom	Cut:right&left
16:9 video signal 	Cut:right&left	Cut:right&left	Cut:right&left		Cut:right&left

*The aspect ratio selected for the display device will be the base.

[Fig. 7.3.3c] Aspect ratio control-2(1/2)

[Selecting "SIDE CUT/TOP BOTTOM CUT" for aspect ratio restoration processing]

Input signal	Aspect ratio of destination display device*				
	4:3	5:4	5:3	16:9	16:10
16:10 video signal 	Cut: right&left 	Cut: right&left 	Cut: top&bottom 	Cut: top&bottom 	
14:9 video signal 	Cut: right&left 	Cut: right&left 	Cut:top&bottom 	Cut:top&bottom 	Cut:top&bottom 
16:9 letter box signal 	AUTO-1				
	Cut:top&bottom, right&left 	Cut:top&bottom, right&left 	Cut:top&bottom, right&left 	Cut:top&botto 	Cut:top&bottom, right&left 
	AUTO-2				
		Cut: right&left 	Cut:top&bottom 	Cut:top&bottom 	Cut:top&bottom 
14:9 letter box signal 	AUTO-1				
	Cut:top&bottom, right&left 	Cut:top&bottom, right&left 	Cut:top&bottom 	Cut:top&bottom 	Cut:top&bottom 
	AUTO-2				
		Cut: right&left 	Cut:top&bottom 	Cut:top&bottom 	Cut:top&bottom 

*The aspect ratio selected for the display device will be the base.

[Fig. 7.3.3d] Aspect ratio control-2(2/2)

Aspect ratios of analog composite video signals (NTSC/PAL), S-Video signals (T/C) (NTSC/PAL), and analog YPbPr signals (SDTV/HDTV) are restored based on ID-1 signals and WSS signals, while aspect ratio of HDMI signals is restored based on packets called InfoFrame. ID-1 and WSS signals include recognition signals of aspect ratio in order to switch the aspect ratio automatically. InfoFrame contains the same kind of the identification data of aspect ratio.

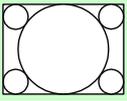
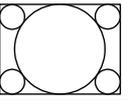
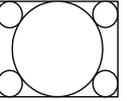
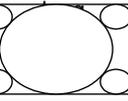
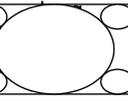
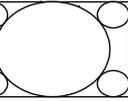
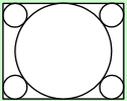
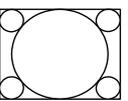
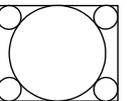
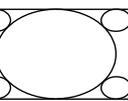
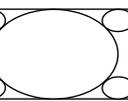
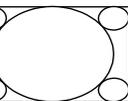
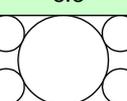
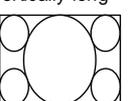
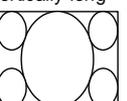
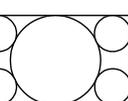
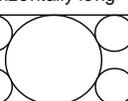
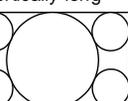
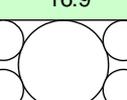
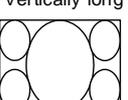
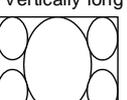
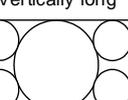
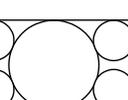
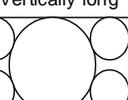
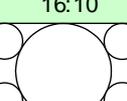
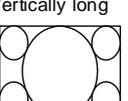
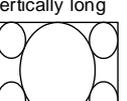
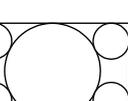
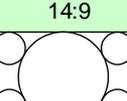
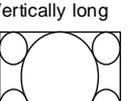
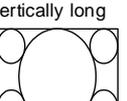
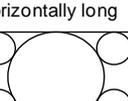
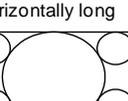
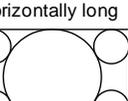
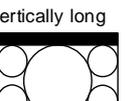
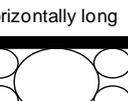
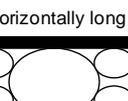
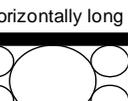
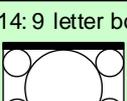
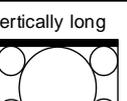
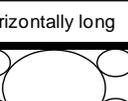
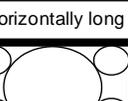
Even with "AUTO-1" or "AUTO-2", the aspect ratio is not restored if recognition signals with valid aspect ratio is not input. (If any of analog composite video signals (NTSC/PAL), S-Video signals (NTSC/PAL), analog YPbPr signals (SDTV), or HDMI signals (SDTV) is input, the ICP performs in the same way as when the input aspect ratio is 4:3; if analog YPbPr signals (HDTV) and HDMI signals (HDTV) are input, it performs as when the input aspect ratio is 16:9.)

If no recognition signals with valid aspect ratio is input or if you use the fixed aspect ratio, you can select "4:3", "16:9", "14:9", "16:9 LETTER BOX", "14:9 LETTER BOX", "4:3 SIDE PANEL", or "14:9 SIDE PANEL".

Settings of "4:3", "16:9", "14:9", "16:9 LETTER BOX", "14:9 LETTER BOX", "4:3 SIDE PANEL" and "14:9 SIDE

PANEL” are valid only if TV signals are input. If PC signals are input and even if you select “AUTO-1”, “AUTO-2”, “4:3”, “16:9”, “14:9”, “16:9 letter box”, “14:9 letter box”, “4:3 side panel”, or “14:9 side panel”, the aspect ratio will be selected automatically based on the aspect ratio of the input signals.

If you select “FULL”, video is displayed on the full screen at all times regardless of input video signals, settings of “7.3.2 Aspect ratio control of output video [MONITOR ASPECT]” and “7.3.4 Aspect ratio control [ASPECT PROCESS]”.

Input signal	Aspect ratio of destination display device				
	4:3	5:4	5:3	16:9	16:10
4:3 		Vertically long 	Horizontally long 	Horizontally long 	Horizontally long 
5:4 	Horizontally long 		Horizontally long 	Horizontally long 	Horizontally long 
5:3 	Vertically long 	Vertically long 		Horizontally long 	Vertically long 
16:9 	Vertically long 	Vertically long 	Vertically long 		Vertically long 
16:10 	Vertically long 	Vertically long 	Horizontally long 	Horizontally long 	
14:9 	Vertically long 	Vertically long 	Horizontally long 	Horizontally long 	Horizontally long 
16:9 letter box 		Vertically long 	Horizontally long 	Horizontally long 	Horizontally long 
14:9 letter box 		Vertically long 	Horizontally long 	Horizontally long 	Horizontally long 

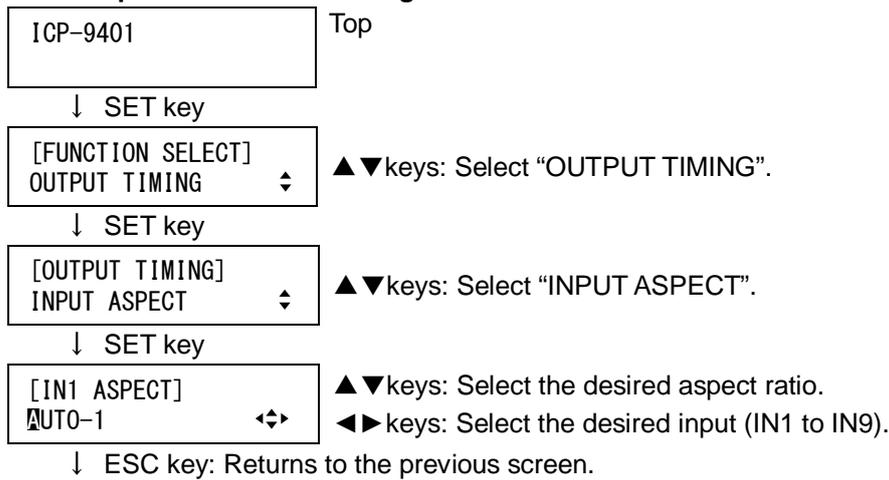
*The aspect ratio selected for the display device will be the base.

[Fig. 7.3.3] Full screen display

Note:

If you select “THROUGH”, the input video is displayed with pixel ratio of 1:1 regardless of settings of “7.3.2 Aspect ratio control of output video [MONITOR ASPECT]” and “7.3.4 Aspect ratio control [ASPECT PROCESS]”.

1. To set the aspect ratio control using menu:



2. To set the aspect ratio control using commands:

- @SAP: Set aspect ratio
- @GAP: Get aspect ratio

7.3.4 Aspect ratio control [ASPECT PROCESS]

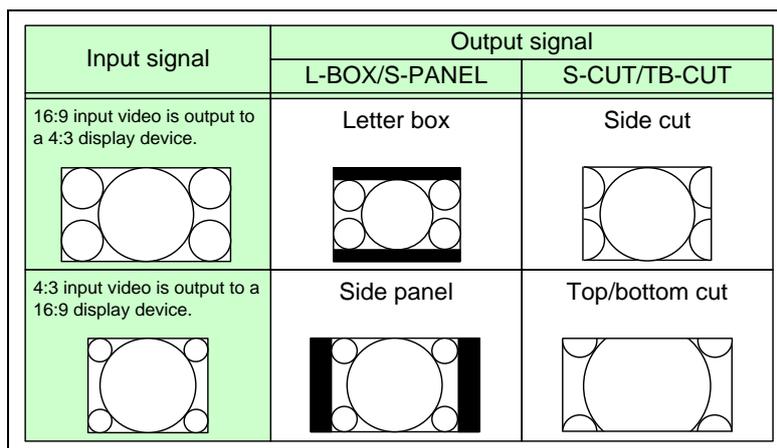
For each input port/input signal

You can select a processing of aspect ratio control.

- Letter box/Side panel: L-BOX/S-PANEL [Default]
- Side cut/Top bottom cut: S-CUT/TB-CUT

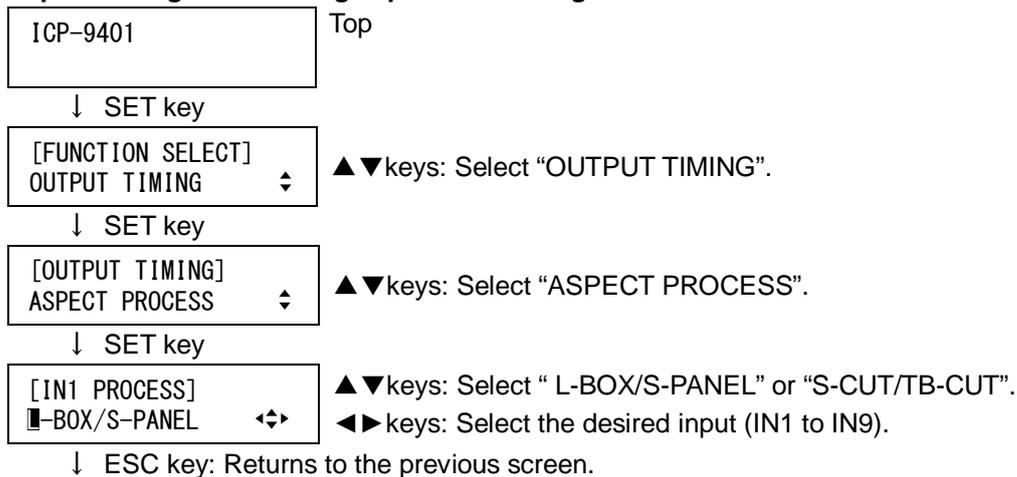
“L-BOX/S-PANEL”: The input video is displayed in the center, and the background color set in “7.3.14 Background color [BACKGROUND COLOR]” is displayed on the blank areas (top/bottom and right/left).

“S-CUT/TB-CUT”: Part of the top/bottom or right/left is cut off, and the background color is not displayed. Also if you select “S-CUT/TB-CUT”, part of the input video is not displayed.



[Fig. 7.3.4a] Restoring aspect ratio

1. To set processing for restoring aspect ratio using menu:



2. To set processing for restoring aspect ratio using commands:

- @SAR: Set aspect ratio restoration
- @GAR: Get aspect ratio restoration

For each input port/input signal

7.3.5 Overscan [INPUT OVER SCAN]

- The enlargement rate: 100% to 115%

[Default values]:

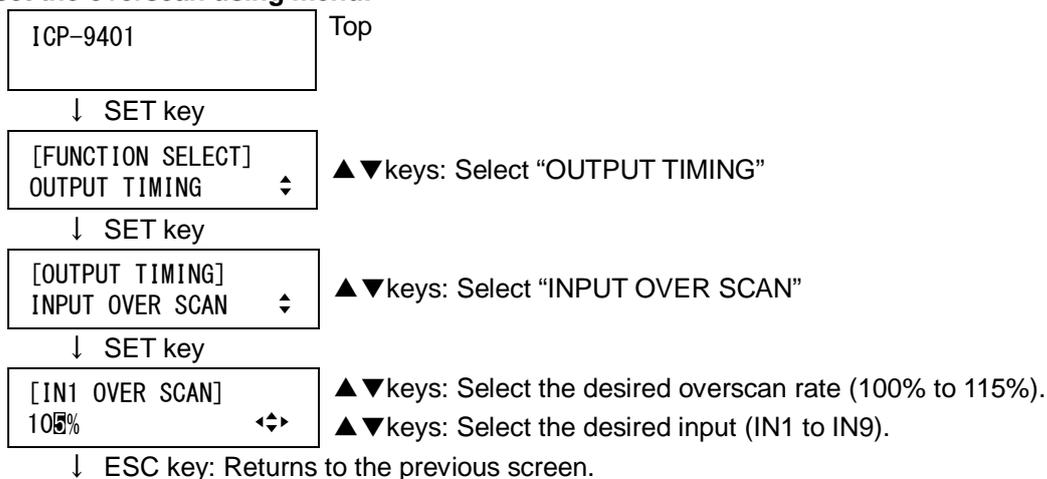
105% for NTSC/PAL/SDTV

100% for HDTV/VESA: On the full screen

The effective display areas of NTSC/PAL/SDTV are narrowed slightly during edit. If they are displayed without any change, areas without videos (usually black bars) are displayed on edges. To avoid this problem, input videos are enlarged slightly, called Overscan.

HDTV and VESA are displayed on the full effective display area. (Some HDTV signals include areas which display black bars on the edges depending on sources.)

1. To set the overscan using menu:



2. To set the overscan using commands:

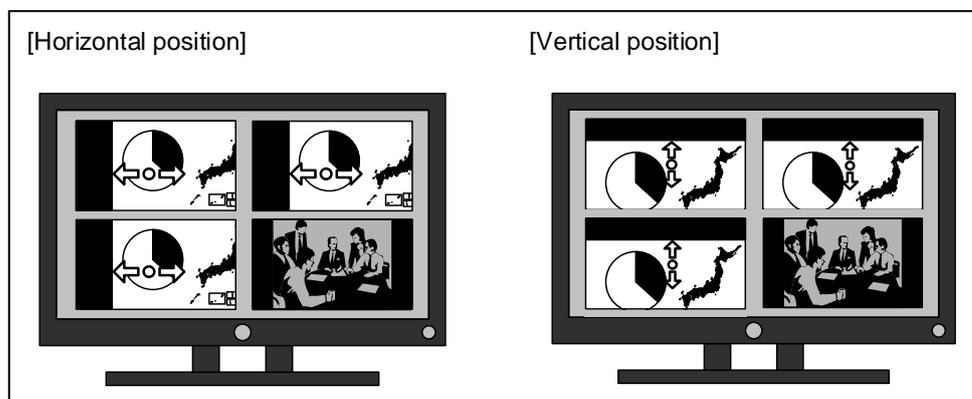
- @SOV: Set overscan
- @GOV: Get overscan

7.3.6 Input position [INPUT POSITION]

For each input port/input signal

You can set the display position of the input video using the pixel position on the output window.

- Horizontal position: Changed in a unit of pixel [Default]: 0
- Vertical position: Changed in a unit of line [Default]: 0



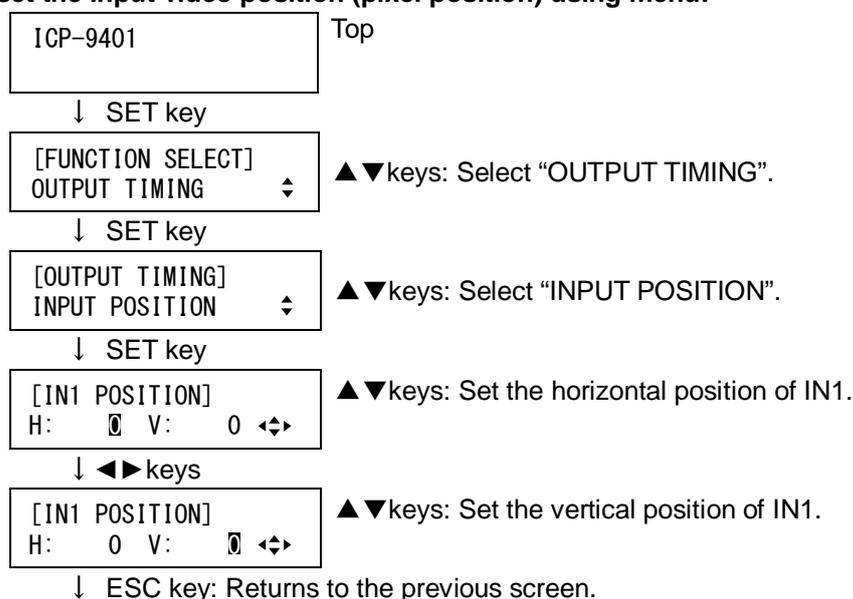
[Fig. 7.3.6a] Input position

The setting range depends on “7.3.1 Output resolutions [RESOLUTION]” and “7.3.7 Input size [INPUT SIZE]”, and the minimum settable values of the top, bottom, right and left are the values to disappear from the screen.

If the display position exceeds the settable range by changing display size, the display position will be set to the maximum value automatically.

Default is 0, and the video is displayed starting from the upper left of window.

1. To set the input video position (pixel position) using menu:



2. To set the input video position (pixel position) using commands:

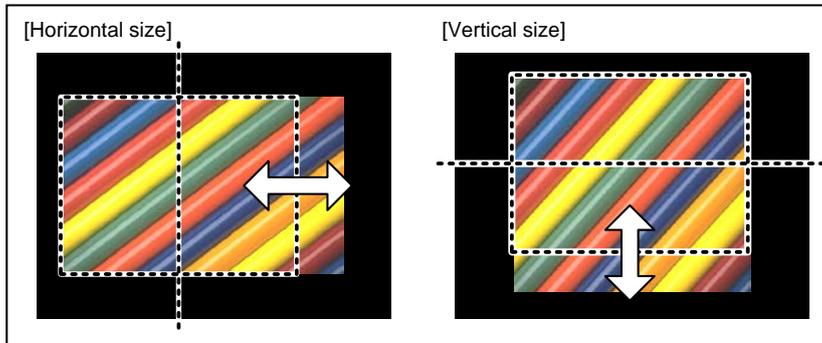
- @SNP: Set input position
- @GNP: Get input position

For each input port/input signal

7.3.7 Input size [INPUT SIZE]

You can set the display size of input video using the number of pixels. The video size is scaled based on the upper left of the input video set in "7.3.6 Input position [INPUT POSITION]".

- Horizontal size: Scaled in a unit of pixel [Default]: Horizontal output resolution
- Vertical size: Scaled in a unit of line [Default]: Vertical output resolution

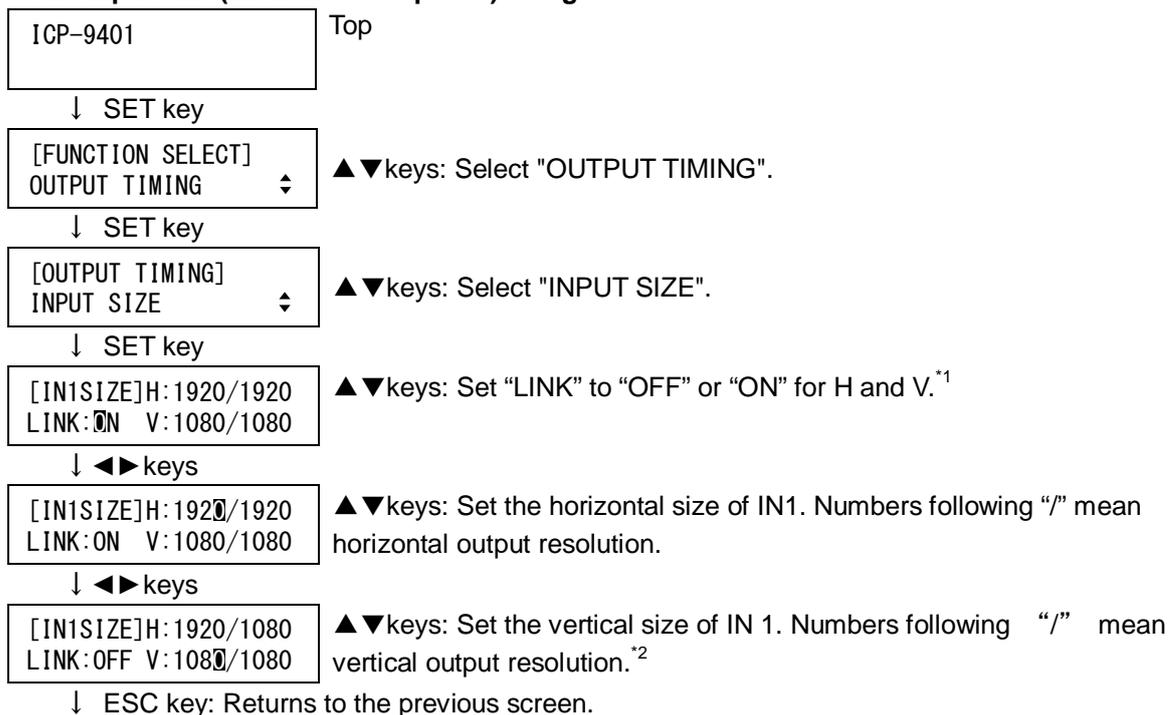


[Fig. 7.3.7a] Input size

The set range and default value depend on settings of "7.3.1 Output resolutions [RESOLUTION]", and the range is quarter to quadruple of the output resolution.

Default is the same as the resolution setting, and the video is displayed on the full screen of the window.

1. To set the input size (the number of pixels) using menu:



^{*1} If you set "LINK" to "ON", only horizontal size can be set. If you set the horizontal size, the current aspect ratio is kept and the vertical size is also set. If either horizontal or vertical size reaches the limit, you cannot set the larger values.

^{*2} Only if you set "LINK" to "OFF", you can set the vertical size.

2. To set the input size (the number of pixels) using commands:

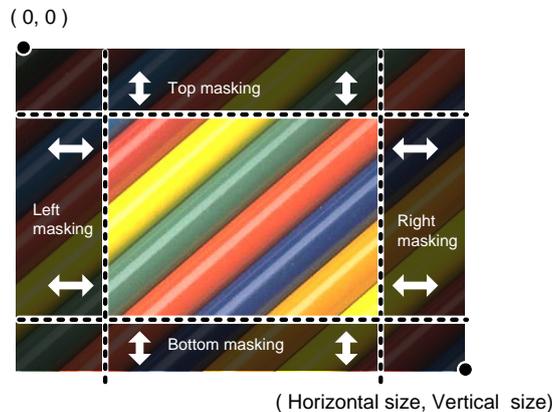
- @SNS: Set input size
- @GNS: Get input size

7.3.8 Input masking [INPUT MASKING]

For each input port/input signal

You can hide any unnecessary area (top/bottom and right/left) by setting the masking of the input video.

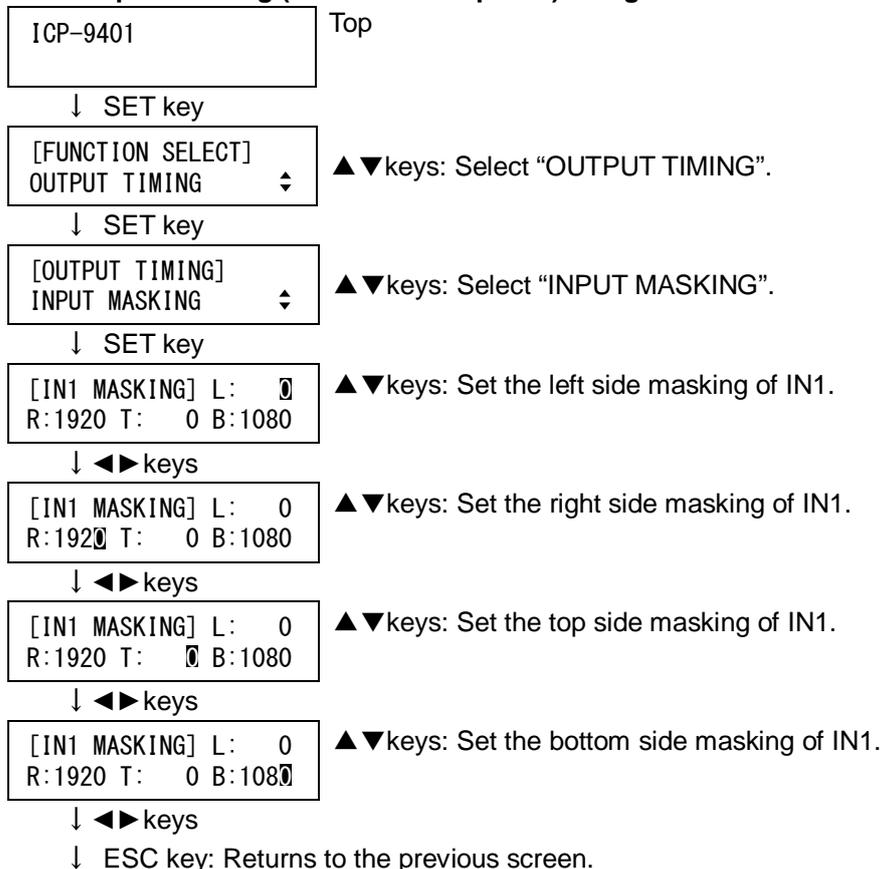
- Left side masking: Masked in a unit of pixel [Default]: 0
- Right side masking: Masked in a unit of pixel [Default]: Horizontal input size
- Top side masking: Masked in a unit of line [Default]: 0
- Bottom side masking: Masked in a unit of line [Default]: Vertical input size



[Fig. 7.3.8a] Input masking

The range of set values depends on settings of “7.3.6 Input position [INPUT POSITION]”, “7.3.7 Input size [INPUT SIZE]” and masking. If you change the display position or display size, the display range before changing is kept and settings of masking are automatically changed. Default value (no masking) of the left/top sides is 0 while that of the right/bottom sides is the input size setting.

1. To set the input masking (the number of pixels) using menu:



2. To set the input masking (the number of pixels) using commands:

@SNM: Set input masking

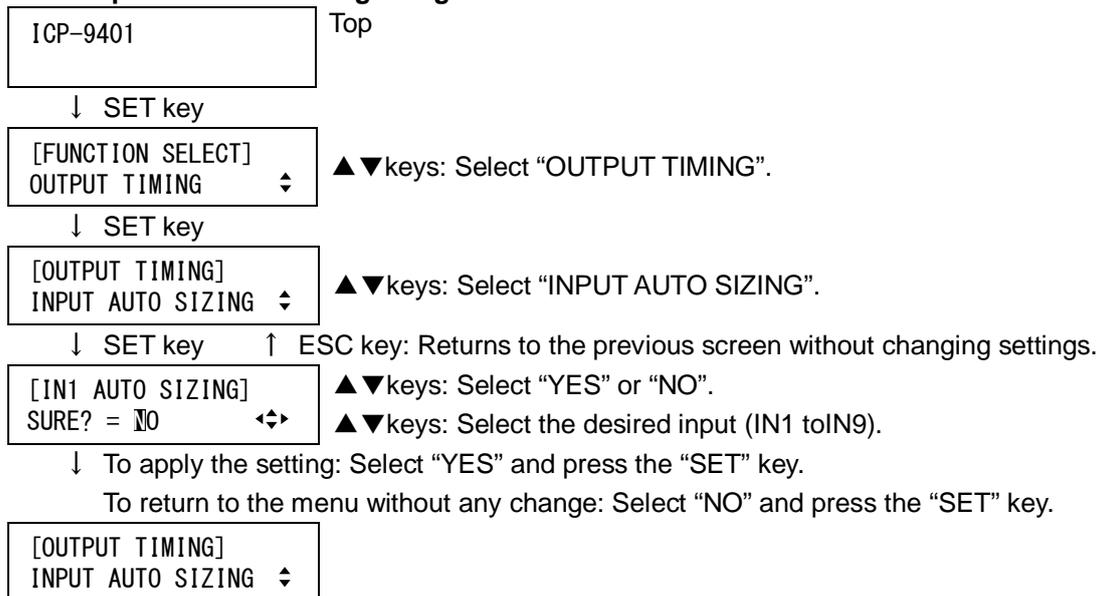
@GNM: Get input masking

7.3.9 Input automatic sizing [INPUT AUTO SIZING]

For each input port/input signal

You can adjust input signals optimally (displaying input video on the full window), and as a result the following settings will be initialized automatically: "7.3.3 Aspect ratio control of input video [INPUT ASPECT]", "7.3.5 Overscan [INPUT OVER SCAN]", "7.3.6 Input position [INPUT POSITION]", "7.3.7 Input size [INPUT SIZE]", and "7.3.8 Input masking [INPUT MASKING]". It may not work if aspect ratios of the input signal and display device do not match or depending on some settings.

1. To set the input automatic sizing using menu:



2. To set the input automatic sizing using commands:

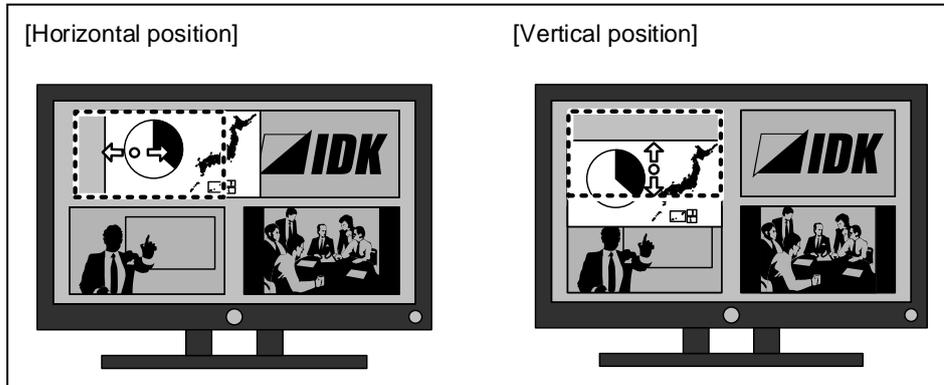
@IAS: Input automatic sizing

7.3.10 Output position [OUTPUT POSITION]

For each window

You can set the display position of the output video by the pixel position of on the output screen.

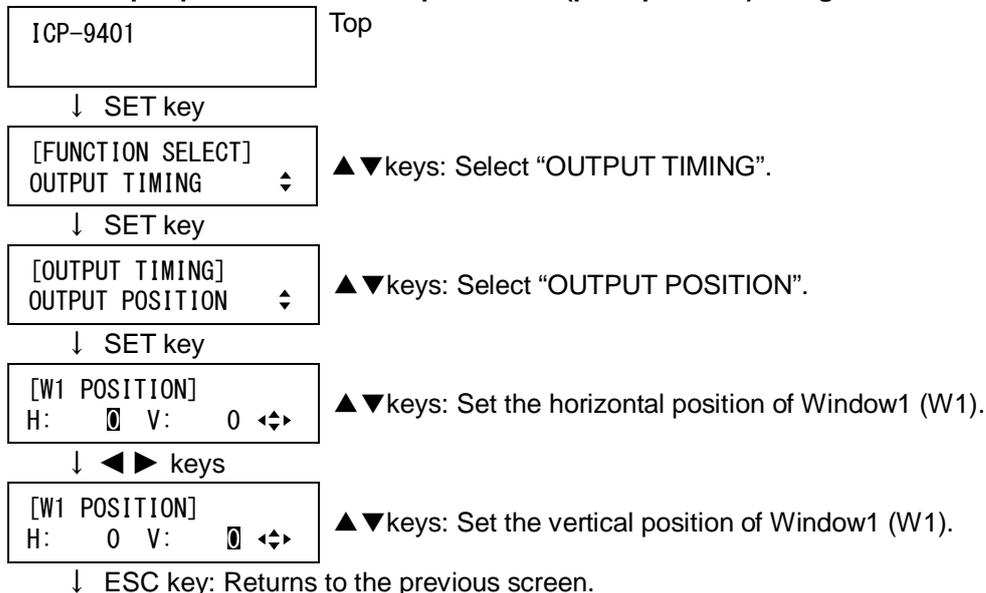
- Horizontal position: Changed in a unit of pixel [Default]: 0
- Vertical position: Changed in a unit of line [Default]: 0



[Fig. 7.3.10a] Output position

The setting range depends on settings of “7.3.1 Output resolutions [RESOLUTION]” and “7.3.11 Output size [OUTPUT SIZE]”. Values can be set unless video disappears from the top, bottom and right, left of the screen. If the display position exceeds the settable range by changing display size, the display position will be set to the maximum value automatically. Default is 0, and the video is displayed from the upper left of the display device.

1. To set the output position on the output screen (pixel position) using menu:



2. To set the output position on the output screen (pixel position) using commands:

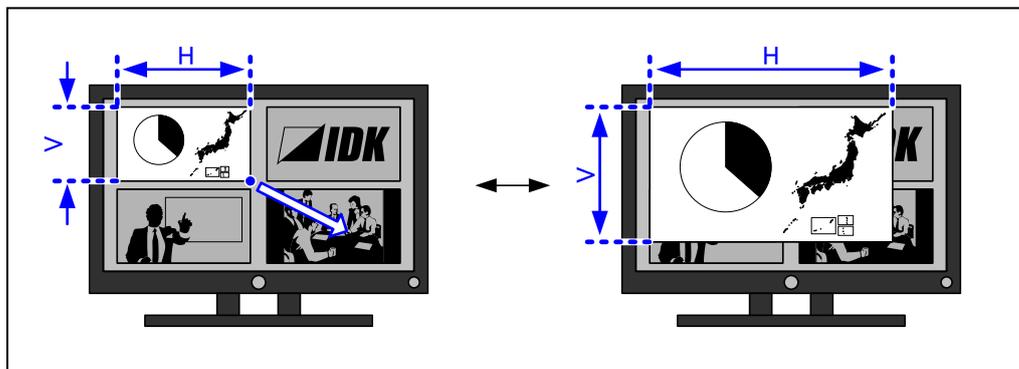
- @SOP: Set output position
- @GOP: Get output position

For each window

7.3.11 Output size [OUTPUT SIZE]

You can set the display size of the output video based on the upper left of the output video set in "7.3.10 Output position [OUTPUT POSITION]".

- Horizontal size: Scaled in a unit of pixel [Default]: Horizontal output resolution
- Vertical size: Scaled in a unit of line [Default]: Vertical output resolution



[Fig. 7.3.11a] Output size

The setting range and default values vary depending on the setting of "7.3.1 Output resolutions [RESOLUTION]". The range can be between quarter to four times of the output resolution. For example, if the output resolution is XGA(1024 × 768), the horizontal size can be between 256(1024 ÷ 4) and 4096(1024 × 4) and the vertical size can be between 192(768 ÷ 4) and 3072(768 × 4). The default is the value of the resolution, and the video is displayed on the full screen.

1. To set the output size (the number of pixels) using menu:

- | | |
|---|--|
| ICP-9401 | Top |
| ↓ SET key | |
| [FUNCTION SELECT]
OUTPUT TIMING | ▲▼keys: Select "OUTPUT TIMING". |
| ↓ SET key | |
| [OUTPUT TIMING]
OUTPUT SIZE | ▲▼keys: Select "OUTPUT SIZE". |
| ↓ SET key | |
| [W1 SIZE]H: 1920/1920
LINK: ON V: 1080/1080 | ▲▼ keys: Set "LINK" to "OFF" or "ON" for H and V.* ¹ |
| ↓ ◀▶ keys | |
| [W1 SIZE]H: 1920/1920
LINK: ON V: 1080/1080 | ▲▼ keys: Set the horizontal display size of Window1 (W1). Numbers following "/" mean horizontal output resolution. |
| ↓ ◀▶ keys | |
| [W1 SIZE]H: 1920/1920
LINK: OFF V: 1080/1080 | ▲▼ keys: Set the vertical display size of Window1 (W1). Numbers following "/" mean vertical output resolution.* ² |
| ↓ ESC key: Returns to the previous screen. | |

*¹ If you set "LINK" to ON", only horizontal size can be set. If you set the horizontal size, the current aspect ratio is kept and vertical size is also set. If either horizontal or vertical size reaches the limit, you cannot set the larger values.

² Only if you set "LINK" to "OFF", you can set the vertical size.

To set the output size (the number of pixels) using commands:

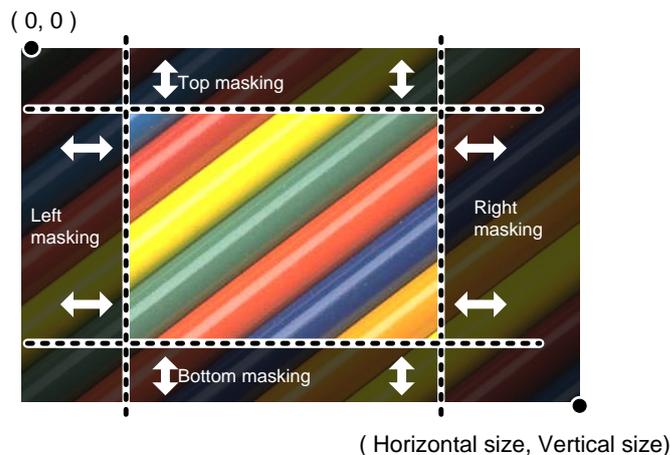
- @SOS: Set output size
- @GOS: Get output size

7.3.12 Output masking [OUTPUT MASKING]

For each window

You can hide unnecessary part (top/bottom and right/left) by setting masking.

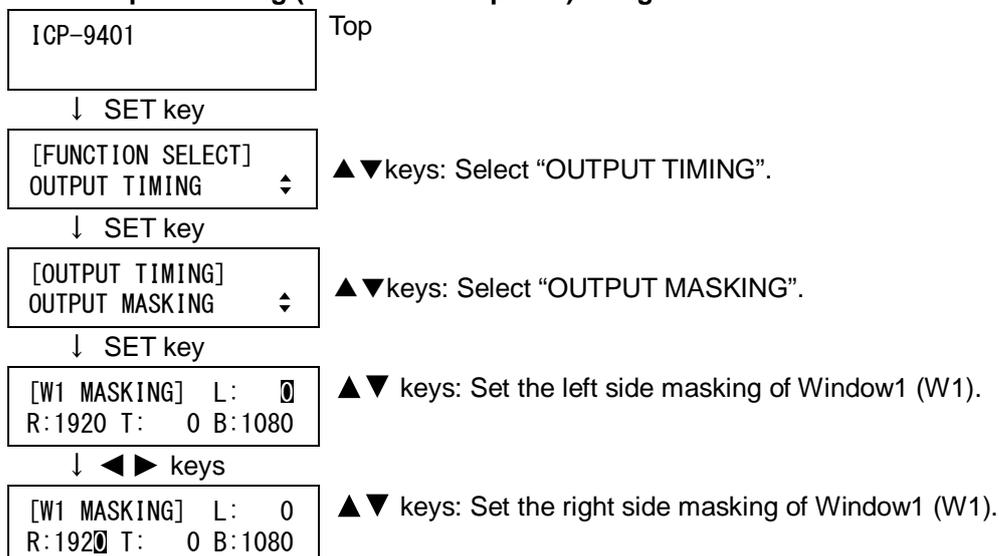
- Left side masking: Masked in a unit of pixel [Default]: 0
- Right side masking: Masked in a unit of pixel [Default]: Horizontal output resolution
- Top side masking: Masked in a unit of line [Default]: 0
- Bottom side masking: Masked in a unit of line [Default]: Vertical output resolution

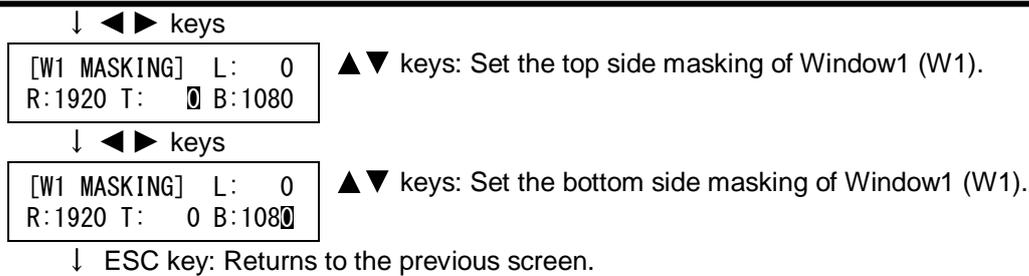


[Fig. 7.3.12a] Output masking

The range of set values depends on settings of "7.3.1 Output resolutions [RESOLUTION]", "7.3.10 Output position [OUTPUT POSITION]", "7.3.11 Output size [OUTPUT SIZE]" and masking. If you change the output resolution, position or size, the display range before that change is kept and the settings of masking are automatically changed. Default values (no masking) of the left and top sides are 0 while that of the right and bottom sides are the input size.

1. To set the output masking (the number of pixels) using menu:





2. To set the output masking (the number of pixels) using commands:

@SOM: Set output masking

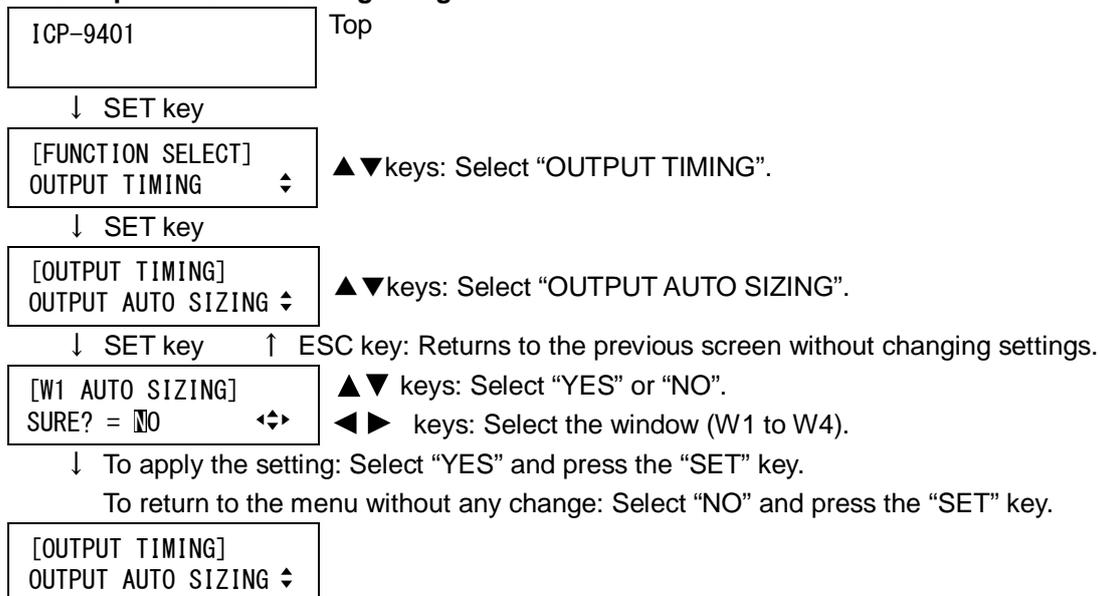
@GOM: Get output masking

7.3.13 Output automatic sizing [OUTPUT AUTO SIZING]

For each window

This function adjusts output signals optimally to display video on the full screen, and as a result, the following settings will be initialized automatically: "7.3.10 Output position [OUTPUT POSITION]", "7.3.11 Output size [OUTPUT SIZE]", and "7.3.12 Output masking [OUTPUT MASKING]". It may not work depending on some settings.

1. To set the output automatic sizing using menu:



2. To set the output automatic sizing using commands:

@OAS: Input automatic sizing

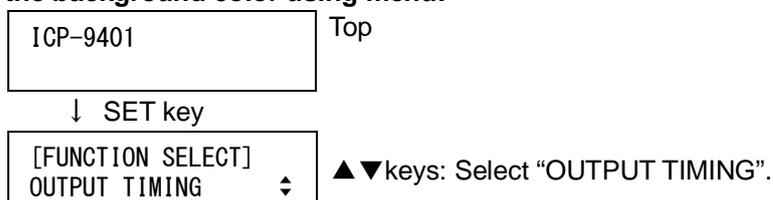
7.3.14 Background color [BACKGROUND COLOR]

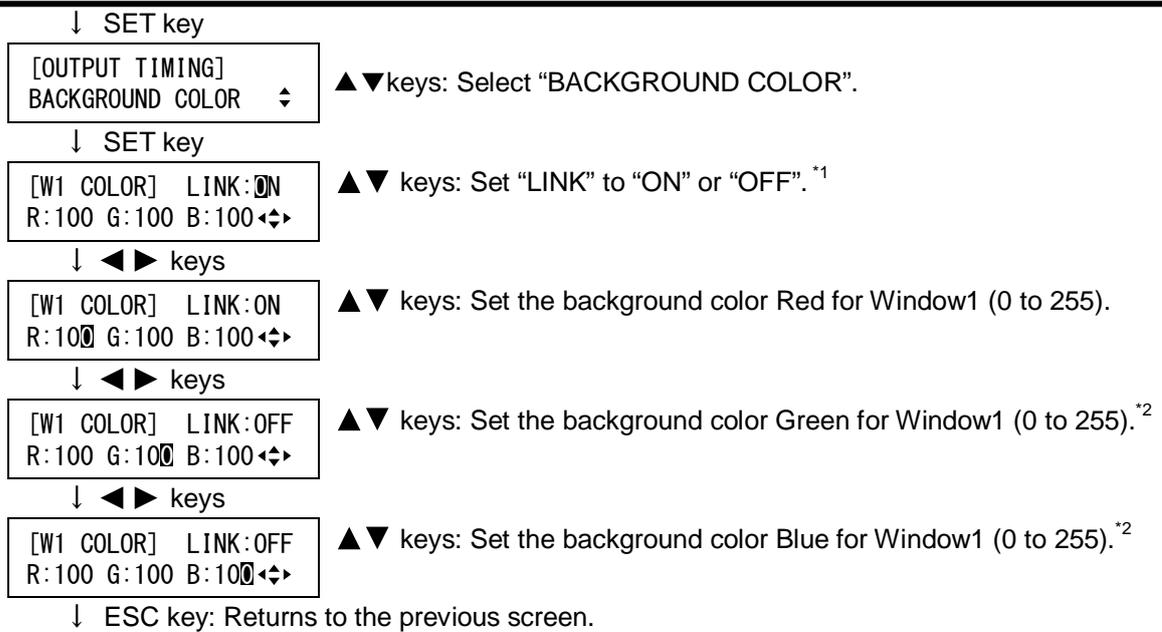
For each window

You can select a color from an approximately 16.7-million combinations of Red, Green, and Blue.

- Background color: Red, Green, and Blue: 0 to 255 [Default]: all colors: 0

1. Set the background color using menu:





^{*1} If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) are also changed associated with the settings of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) are also increased (+2).

^{*2} Only if you set "LINK" to "OFF", you can set the background colors Green and Blue.

2. Set the background color using commands:

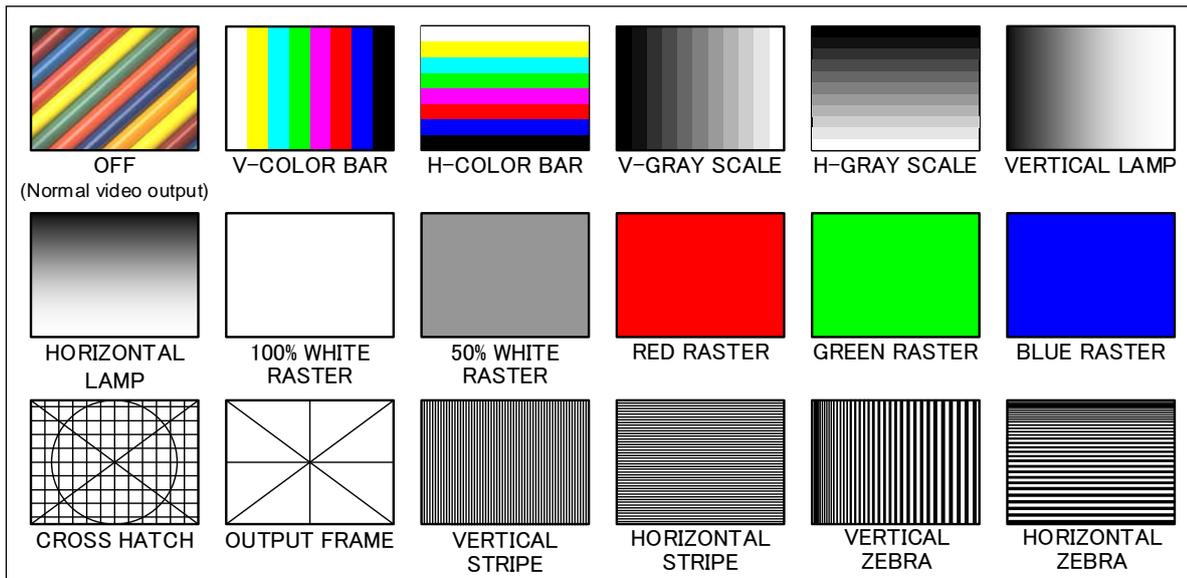
@SBC: Set background color

@GBC: Get background color

7.3.15 Test pattern [TEST PATTERN]

You can output a test pattern instead of output video.

- OFF [Default]
- V-COLOR BAR
- H-COLOR BAR
- V-GRAY SCALE
- H-GRAY SCALE
- VERTICAL LAMP
- HORIZONTAL LAMP
- 100% WHITE RASTER
- 50% WHITE RASTER
- RED RASTER
- GREEN RASTER
- BLUE RASTER
- CROSS HATCH
- OUTPUT FRAME
- VERTICAL STRIPE
- HORIZONTAL STRIPE
- VERTICAL ZEBRA
- HORIZONTAL ZEBRA

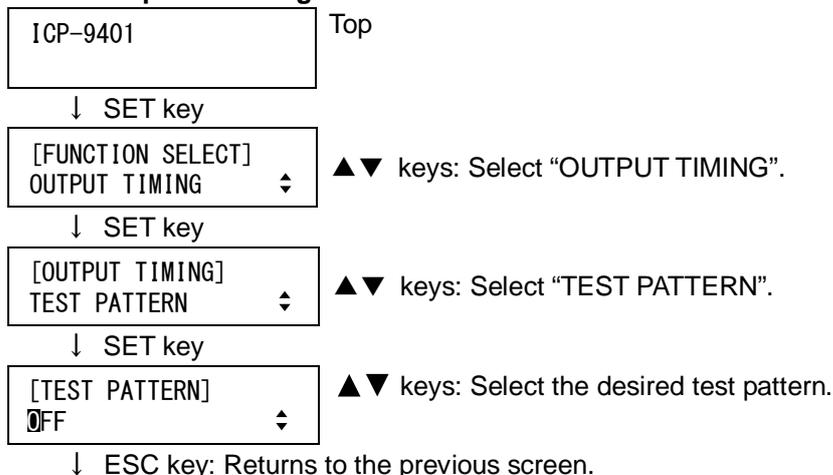


[Fig. 7.3.15a] Test patterns

Notes:

- For test patterns other than “OUTPUT FRAME”: Video is output on the full screen at the resolution set in “7.3.1 Output resolutions [RESOLUTION]”, and the display position and size will be invalid.
- While a test pattern is displayed, all settings of “7.5 Video Correction” will be invalid.

1. To set the test pattern using menu:



2. To set the test pattern using commands:

- @STP: Set test pattern
- @GTP: Get test pattern

7.4 Window configuration

You can set the window configuration. Only if you set “7.8.15 Output operation mode [COMBINED MODE]” to “COMBINED MODE”, up to four image sources can be output.

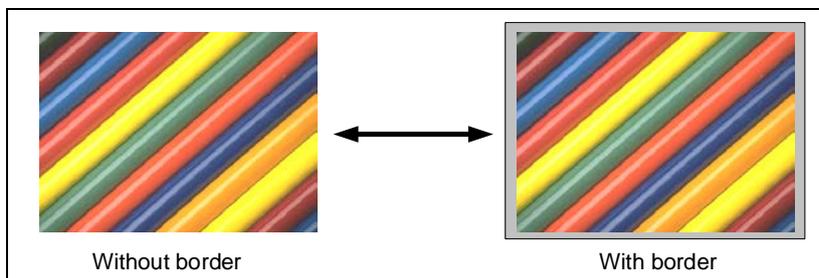
If you change any settings of output and others while a telop and border is displayed, the telop and border disappears and appears again after the setting is finished. At that time, the output image may be interrupted.

7.4.1 Window border [FRAME OUTPUT]

For each window

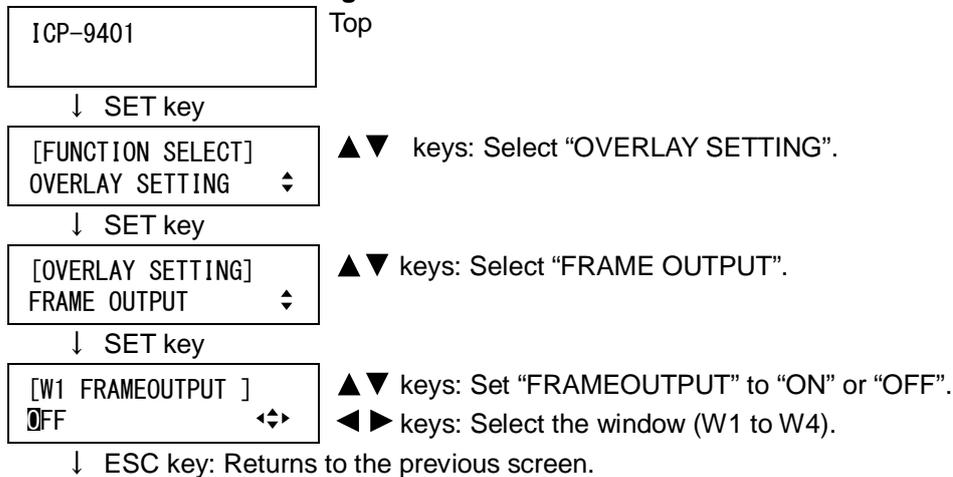
You can set window border of each window. Frames are displayed outside of the window.

- ON: Border is displayed.
- OFF: Border is not displayed. [Default]



[Fig. 7.4.1a] Window border

1. To set the window border using menu:



3. To set the border using commands:

- @SFO: Set border display
- @GFO: Get border display

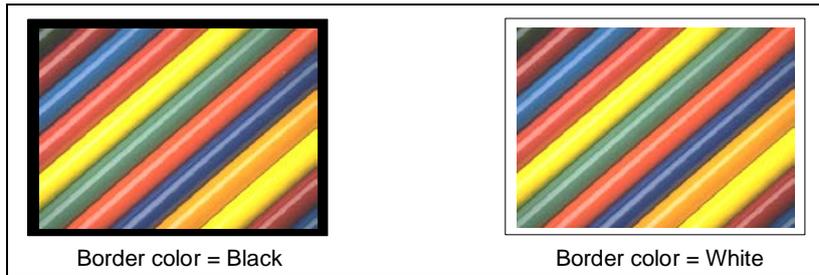
7.4.2 Window border color [FRAME COLOR]

For each window

You can set the border color of each window.

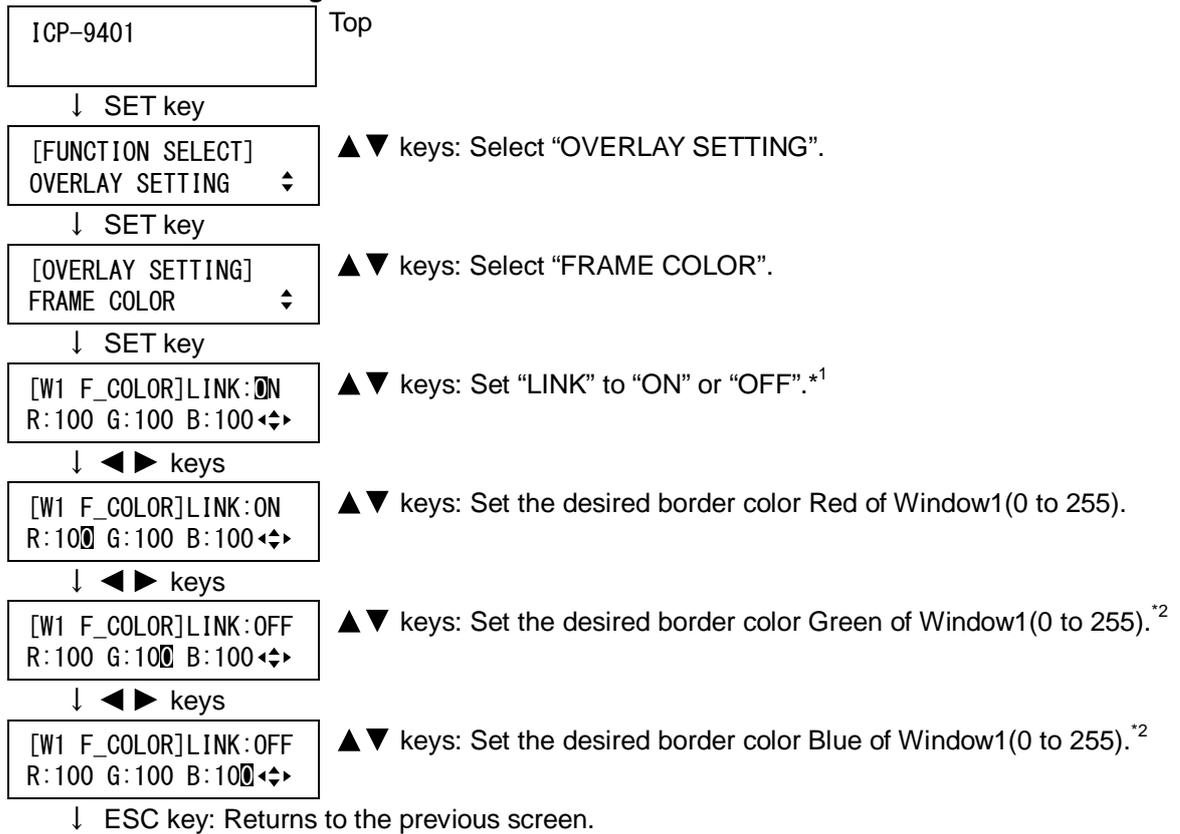
If you use the front key, the setting will be applied after you release the key (value can be selected by holding the key for a while).

- Border color (Red) (0 to 255 Default:0)
- Border color (Green) (0 to 255 Default:0)
- Border color (Blue) (0 to 255 Default:0)



[Fig. 7.4.2a] Window border color

1. To set the border color using menu:



¹ If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) are also changed associated with the settings of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) are also increased (+2).

² Only if you set "LINK" to "OFF", you can set the border colors of Green and Blue.

1. To set the border color using commands:

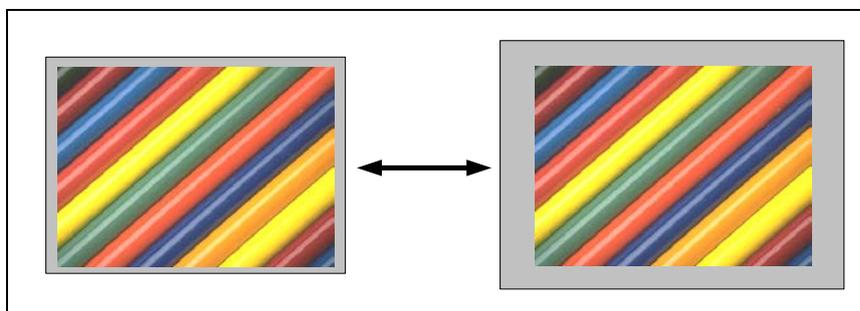
- @SCO: Set border color
- @GCO: Get border color

For each window

7.4.3 Border size [FRAME SIZE]

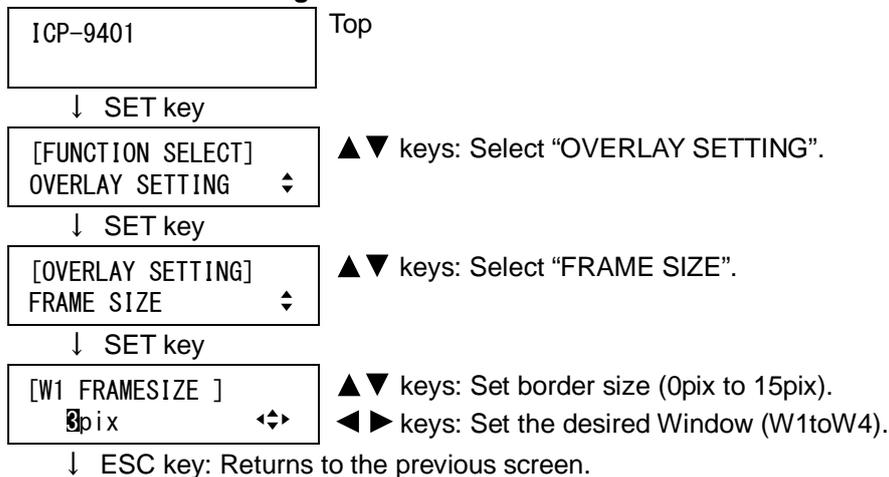
You can set the border width of each window. The width is applied to all sides (top, bottom, right, and left). If you use the front key, the setting will be applied after you release the key (value can be selected by holding the key for a while).

- Border size: 0 to 15 pixels Default: 3 pixels



[Fig. 7.4.3a] Border size

1. To set the border size using menu:



2. To set the border size using size:

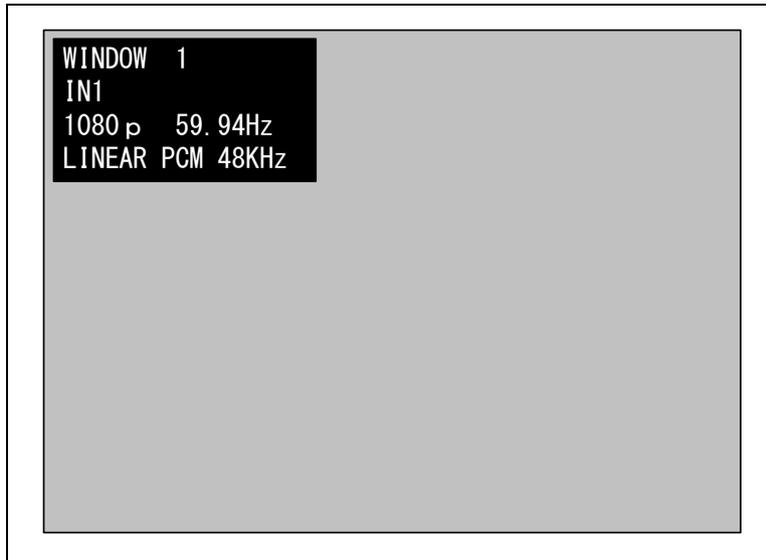
- @SFW: Set border size
- @GFW: Get border size

7.4.4 Telop [TELOP OUTPUT]

For each window

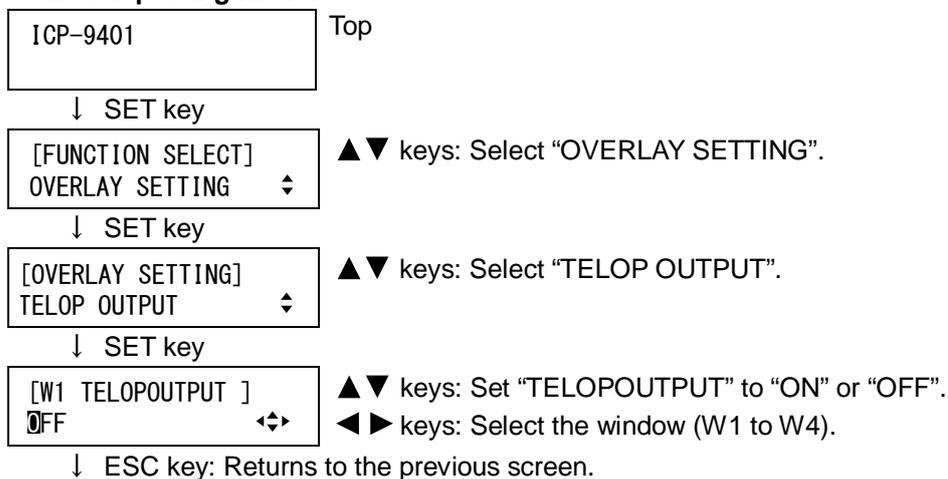
You can set the telop of each window. The telop contents vary depending on "7.4.9 Items to be displayed [TELOP CONTENTS]".

- ON: Telop is displayed.
- OFF: Telop is not displayed [Default]



[Fig. 7.4.4a] Telop example

1. To set the telop using menu:



2. To set the telop using commands:

@STO: Set telop display

@GTO: Set telop display

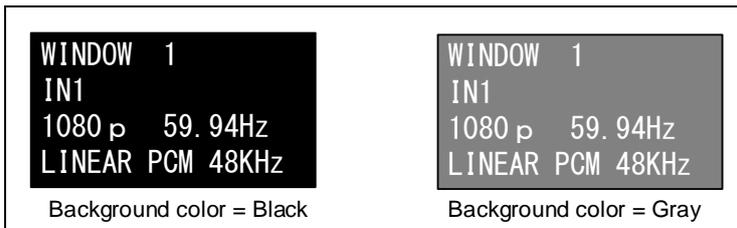
7.4.5 Telop background color [TELOP BACKCOLOR]

For each window

You can set telop background color of each window.

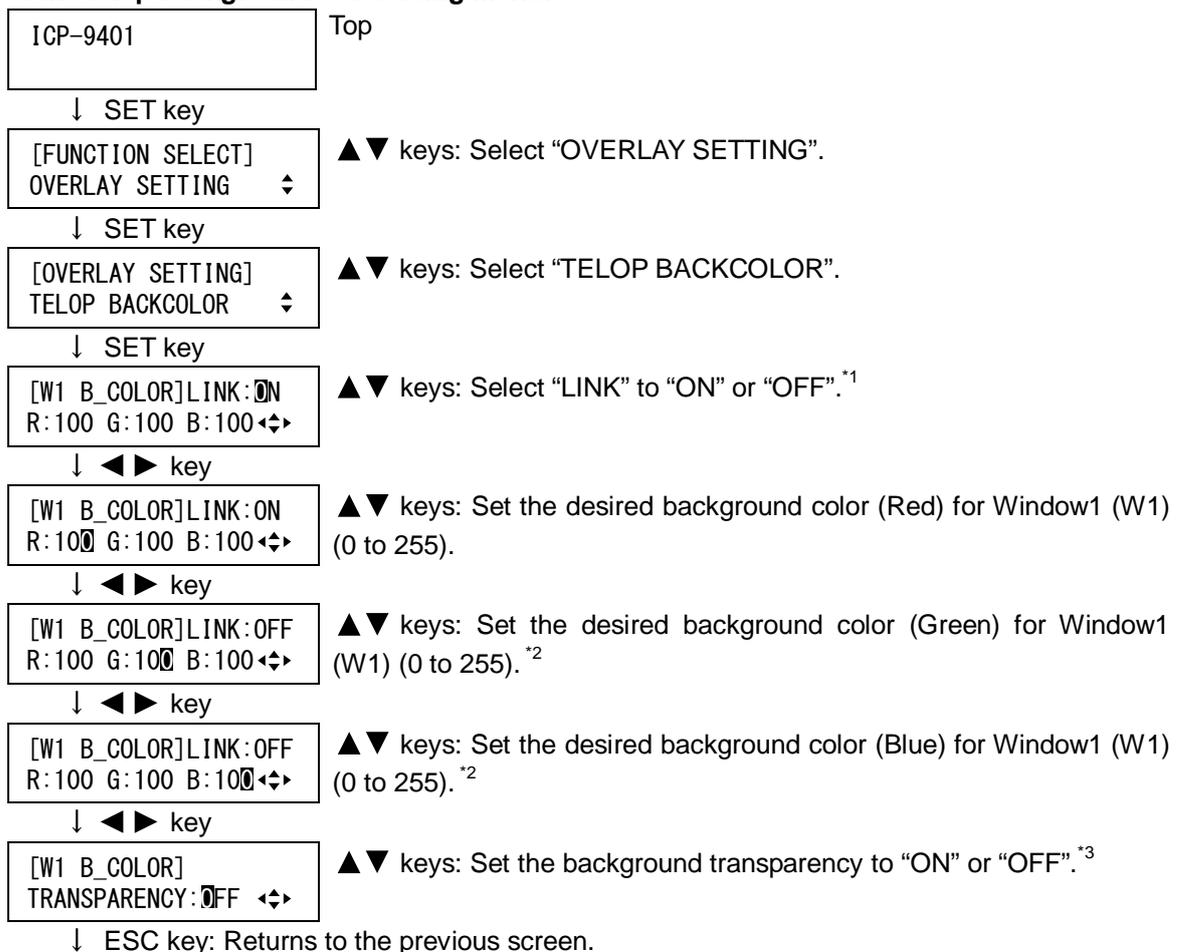
If you use the front key, the setting will be applied after you release the key (value can be selected by holding the key for a while).

- Telop background color (Red):(0 to 255 Default: 0)
- Telop background color (Green):(0 to 255 Default: 0)
- Telop background color (Blue):(0 to 255 Default: 0)
- Telop background transparency: (ON, OFF Default: OFF)



[Fig. 7.4.5a] Telop background

1. To set the telop background color using menu:



*1 If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) are also changed associated with the settings of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) are also increased (+2). If one of these three colors reaches the limiting value, it cannot be changed any further.

² Only if you set "LINK" to "OFF", you can set the background colors of Green and Blue.

³ If "TRANSPARENCY" is set to "ON", the background will be transparent regardless of settings of Red, Green, and Blue.

2. To set the telop background color using menu:

@STB: Set telop background color

@GTB: Get telop background color

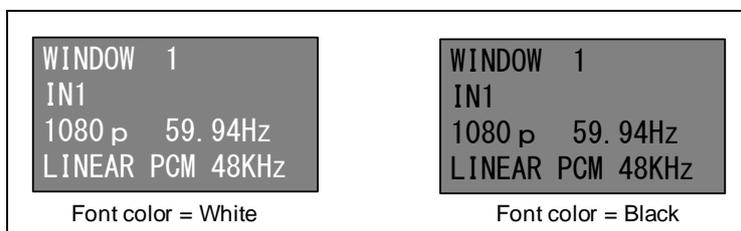
7.4.6 Telop font color [TELOP FONTCOLOR]

For each window

You can set telop font color of each window.

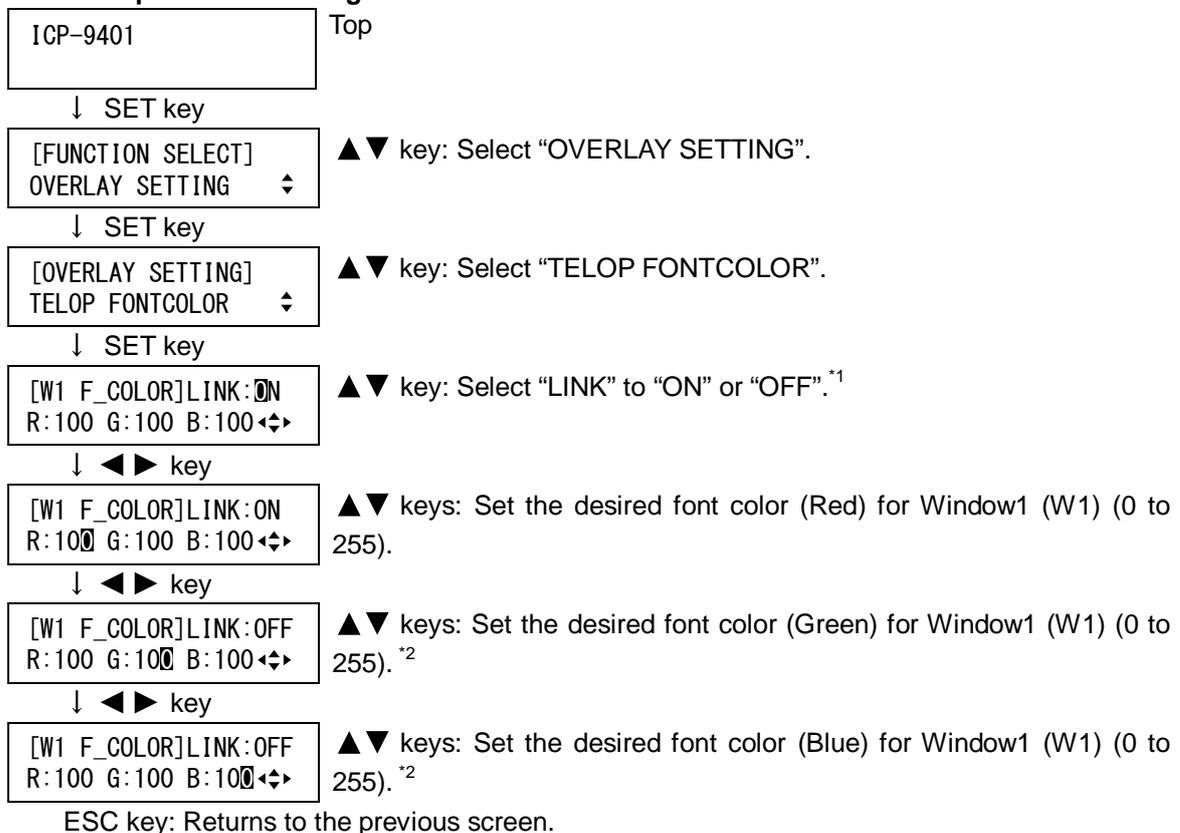
If you use the front key, the setting will be applied after you release the key (value can be selected by holding the key for a while).

- Telop font color (Red): (0 to 255 Default: 255)
- Telop font color (Green): (0 to 255 Default: 255)
- Telop font color (Blue): (0 to 255 Default: 255)



[Fig. 7.4.6a] Telop font color

1. To set the telop font color using menu:



^{*1} If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) are also changed

associated with the settings of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) are also increased (+2). If one of these three colors reaches the limiting value, it cannot be changed any further.

² Only if you set "LINK" to "OFF", you can set the colors of Green and Blue.

2. To set the telop font color using commands:

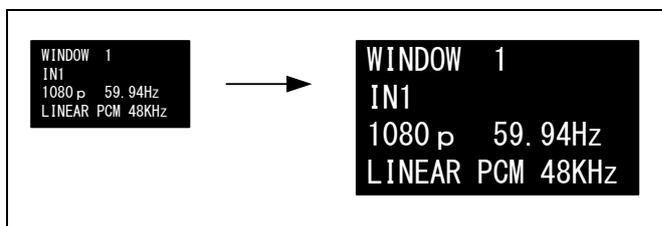
- @STC: Set telop font color
- @GTC: Get telop font color

7.4.7 Telop font size [FRAME FONTSIZE]

For each window

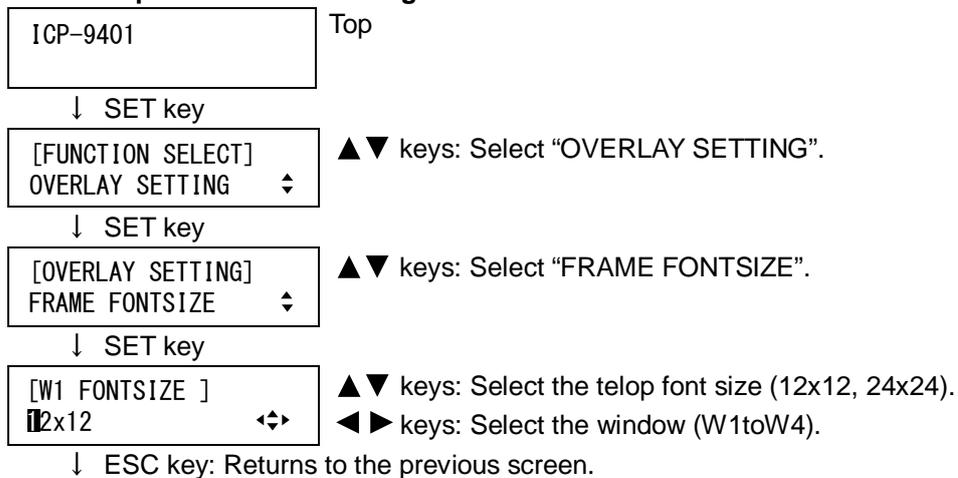
You can set telop font size of each window.

- 12x12 [Default]
- 24x24



[Fig. 7.4.7a] Telop font size

1. To set the telop character size using menu:



2. To set the telop font size using commands:

- @ SFS: Set telop font size
- @ GFS: Get telop font size

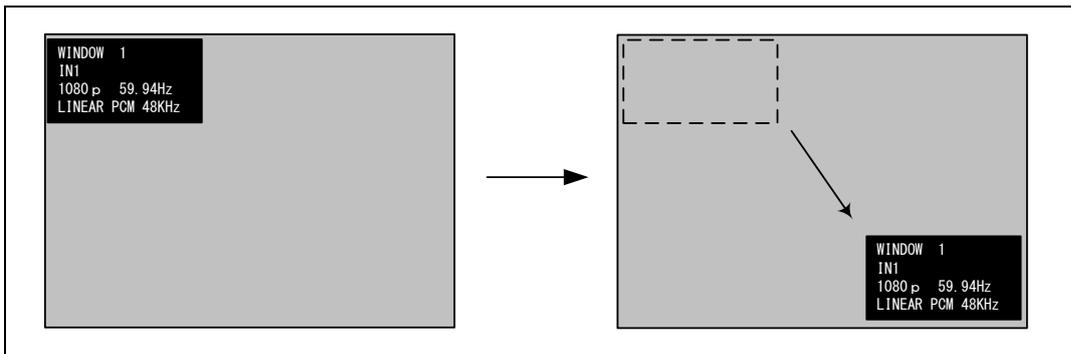
7.4.8 Telop display position [TELOP POSITION]

For each window

You can set telop display position size of each window.

If you use the front key, the setting will be applied after you release the key (value can be selected by holding the key for a while).

- {
- TOP-LEFT [Default] • BOTTOM-LEFT
 - TOP-CENTER • BOTTOM-CENTER
 - TOP-RIGHT • BOTTOM-RIGHT



[Fig. 7.4.8a] Telop position

1. To set the telop position using menu:

ICP-9401 Top

↓ SET key

[FUNCTION SELECT]
OVERLAY SETTING ▾

▲▼ keys: Select "OVERLAY SETTING".

↓ SET key

[OVERLAY SETTING]
TELOP POSITION ▾

▲▼ keys: Select "TELOP POSITION".

↓ SET key

[W1 POSITION]
TOP-LEFT ◀▶

▲▼ keys: Set the desired telop position of Window1 (W1).

↓ ◀▶ keys

[W2 POSITION]
TOP-LEFT ◀▶

▲▼ keys: Set the desired telop position of Window2 (W2).

↓ ESC key: Returns to the previous screen.

2. To set the telop position using commands:

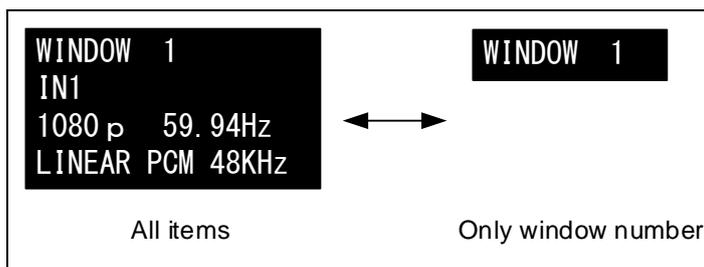
- @STA: Set telop position
- @GTA: Get telop position

7.4.9 Items to be displayed [TELOP CONTENTS]

You can set the items to be displayed as the telop

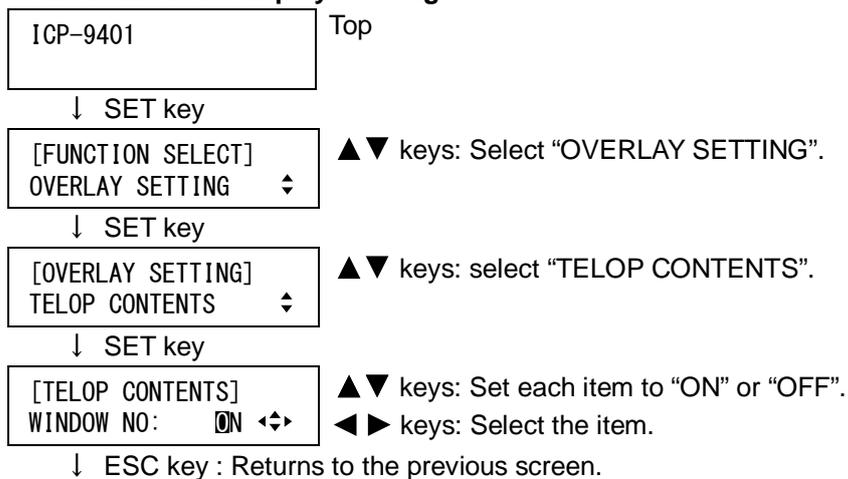
- Window number: WINDOW NO
- Input channel name: INPUT NAME^{*1}
- Input video signal status: VIDEO TIMING
- Input audio signal status: AUDIO STATUS^{*2}

^{*1} Input channel name: Name of the selected input video channel and can be changed in "7.14.8 Naming input channel [INPUT NAME EDIT]" for each input channel.



[Fig. 7.4.9a] Items to be displayed

1. To set the items to be displayed using menu:



2. To set the items to be displayed using commands:

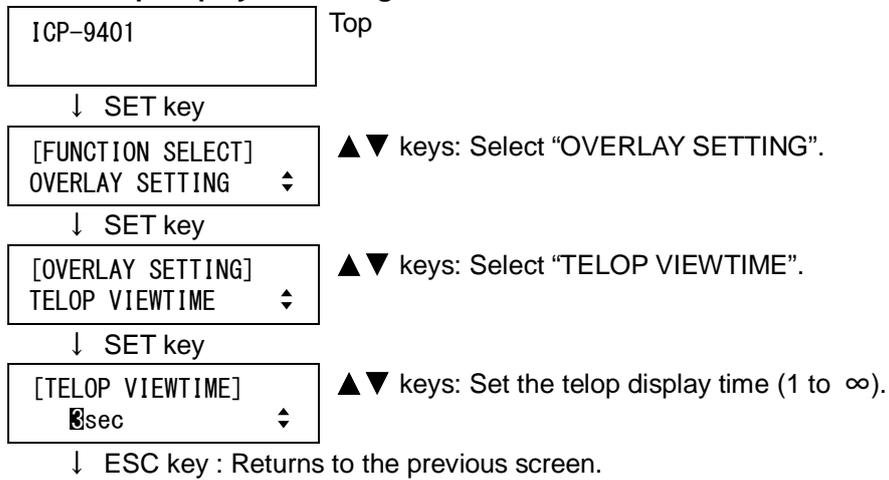
- @ STN: Set items to be displayed
- @ GTN: Get items to be displayed

7.4.10 Telop display time [TELOP VIEWTIME]

You can set the telop display time for when a preset pattern is used and keys/input channel are switched.

- Telop display time: 1 to ∞ seconds Default: 3 seconds

1. To set the telop display time using menu:



2. To set the telop display time using commands:

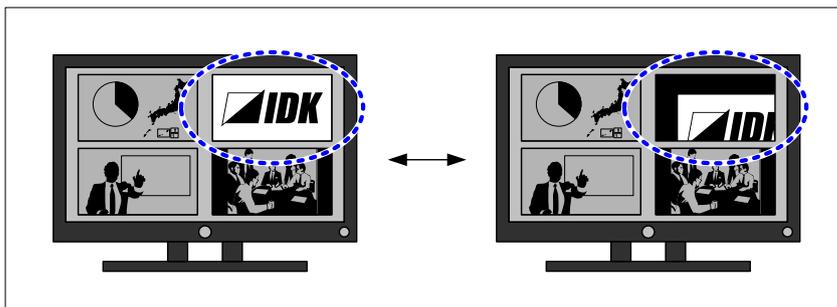
- @ STV: Set telop display time
- @ GTV: Set telop display time

7.4.11 Display position on window [IMAGE POSITION]

You can set where the image is displayed on the window.

For each window

- Horizontal position: Changed in a unit of pixel [Default]: 0
- Vertical position: Changed in a unit of line [Default]: 0

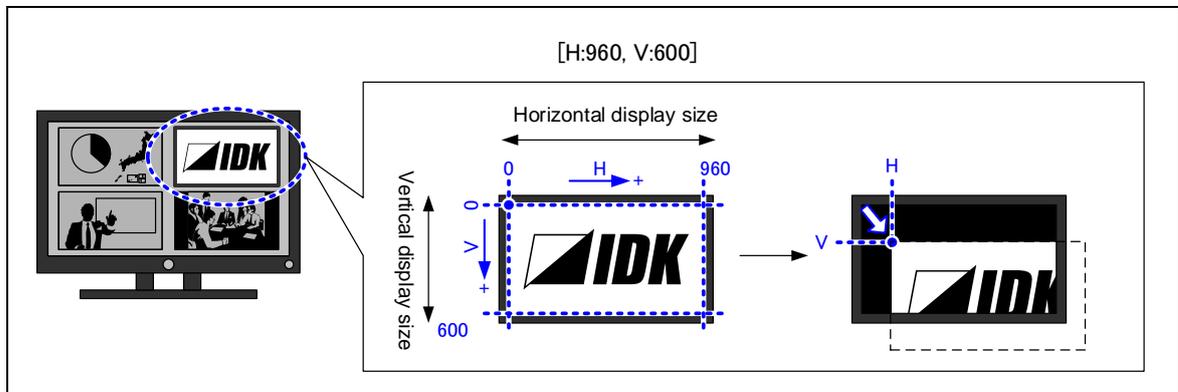


[Fig. 7.4.11a] Changing display position on a window

The setting range depends on "7.3.11 Output size [OUTPUT SIZE]", and the minimum settable values of the top, bottom, right and left are the values to disappear from the screen.

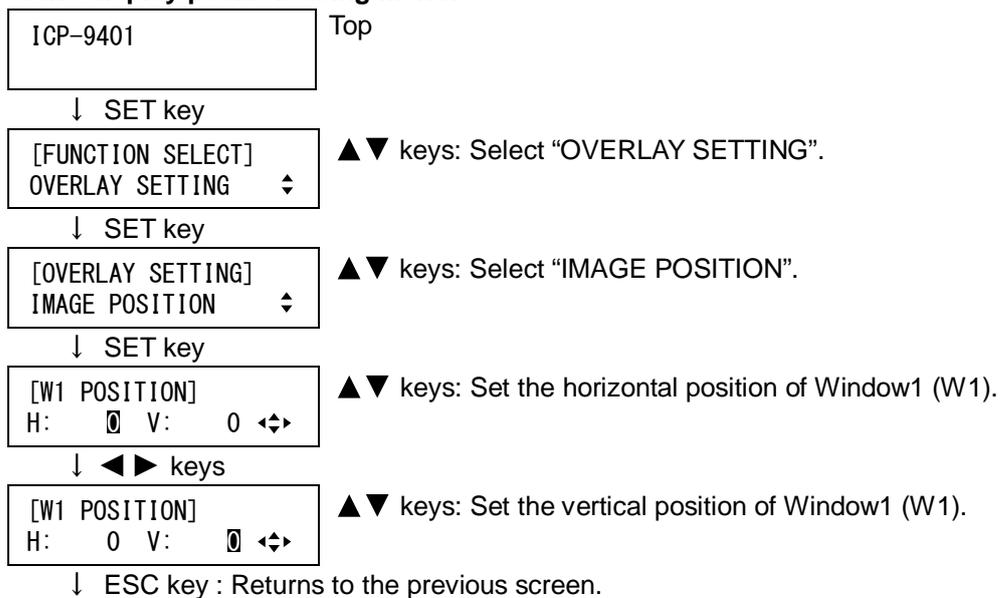
If the display position exceeds the settable range by changing display size, the display position will be set to the maximum value automatically.

Default is 0, and the video is displayed starting from the upper left of the display device.



[Fig. 7.4. 11b] Example of display position

1. To set the display position using menu:



2. To set the display position using menu:

- @ SQP: Set display position on window
- @ GQP: Get display position on window

7.4.12 Display size on window [IMAGE ZOOMRATE]

For each window

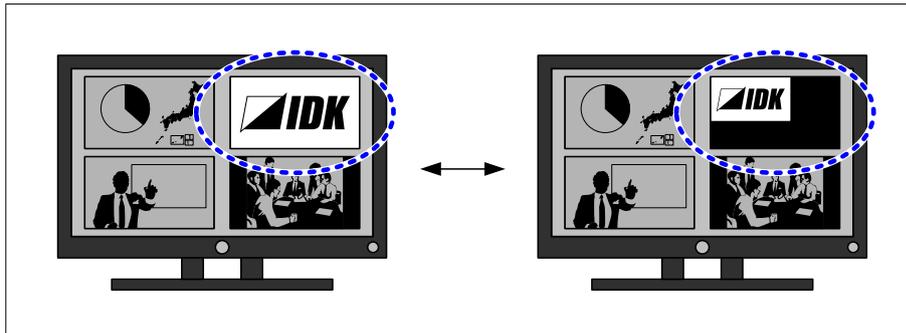
You can set the display size on the window.

- Horizontal size: 20.00% to 500.00% (by 0.05%) Default: 100.00%
- Vertical size: 20.00% to 500.00% (by 0.05%) Default: 100.00%

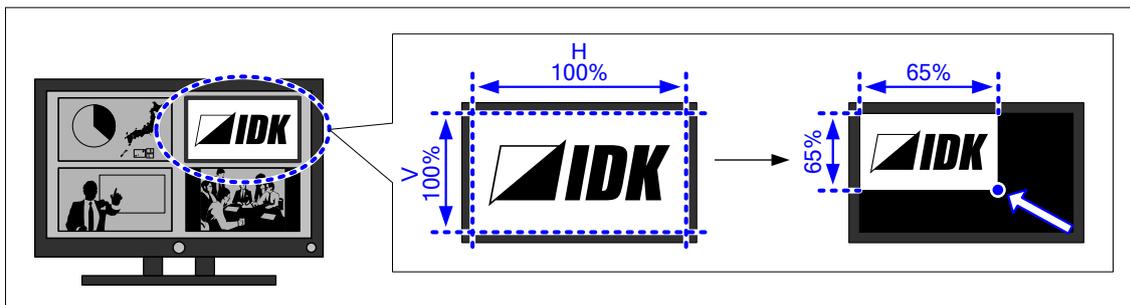
Set the scaling value according to the setting of “7.3.11 Output size [OUTPUT SIZE]”.

The setting will be applied to the image after aspect ratio correction.

If the set values of horizontal and vertical sizes are not the same, the aspect ratio cannot be kept.



[Fig. 7.4.12a] Changing image size



[Fig. 7.4.12b] Example

1. To set the display size using menu:

- | | |
|--|--|
| ICP-9401 | Top |
| ↓ SET key | |
| [FUNCTION SELECT]
OVERLAY SETTING ▾ | ▲▼ keys: Select “OVERLAY SETTING”. |
| ↓ SET key | |
| [OVERLAY SETTING]
IMAGE ZOOMRATE ▾ | ▲▼ keys: Select “IMAGE ZOOMRATE”. |
| ↓ SET key | |
| [W1 RATE]H: 100.00%
LINK: ON V: 100.00% | ▲▼ keys: Set “LINK” to “ON” or “OFF”. ^{**1} |
| ↓ ◀▶ keys | |
| [W1 RATE]H: 100.00%
LINK: ON V: 100.00% | ▲▼ keys: Set the horizontal size of Window1 (20.00% to 500.00%). |
| ↓ ◀▶ keys | |

[W1 RATE]H: 100.00%
LINK:OFF V: 100.00%

▲▼ keys: Set the vertical size of Window1 (20.00% to 500.00%).^{*2}

↓ ESC key : Returns to the previous screen.

^{*1} If you set "LINK" to "ON", you can set only horizontal size. When the horizontal size is set, the vertical size is also changed with the current aspect ratio. If horizontal or vertical size reaches the limit value, it cannot be changed any more.

^{*2} Only if you set "LINK" to "OFF", you can set the vertical size.

2. To set the display size using commands:

@SQS: Set display size

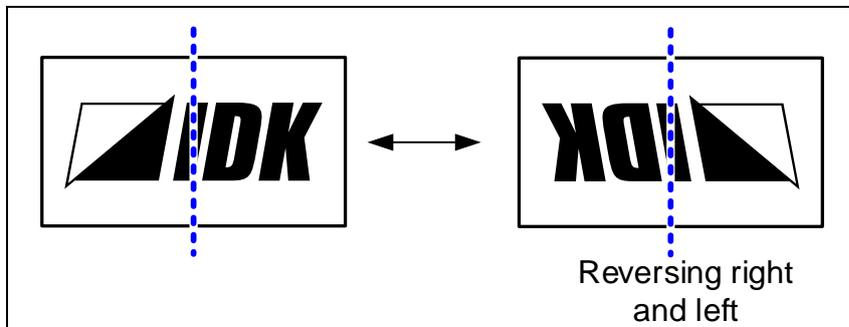
@GQS: Get display size

7. 4. 13 Mirror reverse [IMAGE INVERT]

For each window

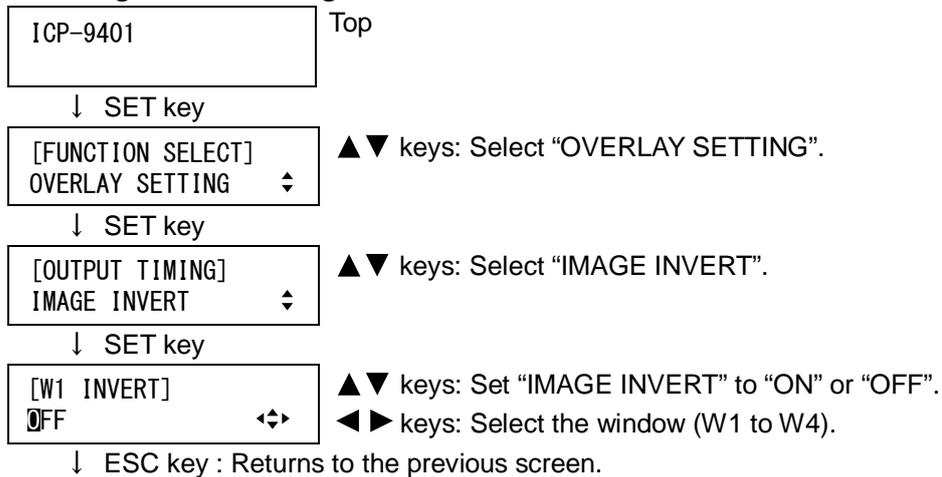
The image can be reversed right and left.

- ON
- OFF [Default]



[Fig. 7.4.13a] Output reverse

1. To reverse right and left using menu:



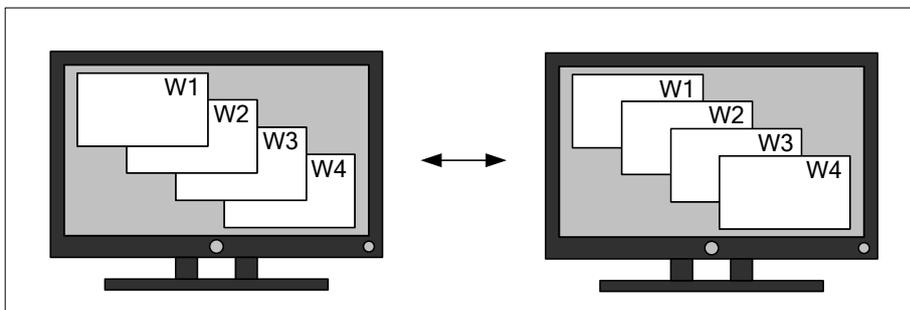
2. To reverse right and left using commands:

- @SOI: Set image reverse
- @GOI: Get image reverse

7.4.14 Window priority [OVERLAY PRIORITY]

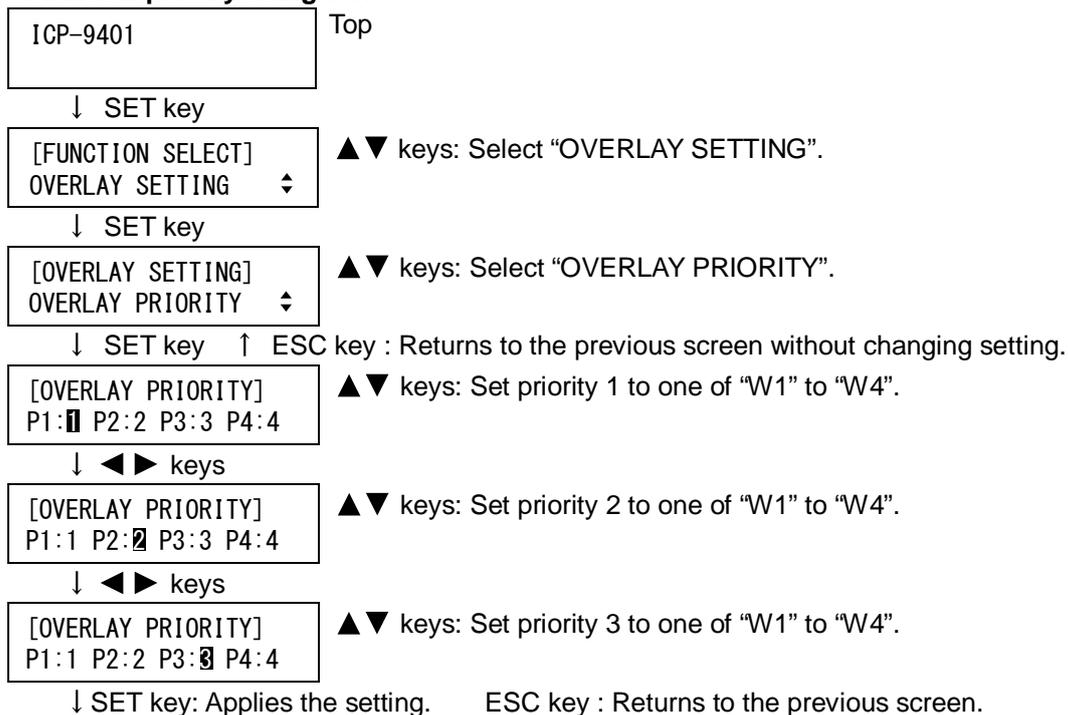
You can set how the windows will overlap one another.

- P1: Priority 1: displayed in front of all the other window: W1 to W4 Default:W1
- P2: Priority 2: second place: W1 to W4 Default: W2
- P3: Priority 3: third place: W1 to W4 Default: W3
- P4: Priority 4: fourth place: W1 to W4 Default: W4



[Fig. 7.4.14a] Window priority

1. To set window priority using menu:



Note:

If you do not press the "SET" key, the window priority is not changed. Make sure to press the "SET" key.

2. To set window priority using menu:

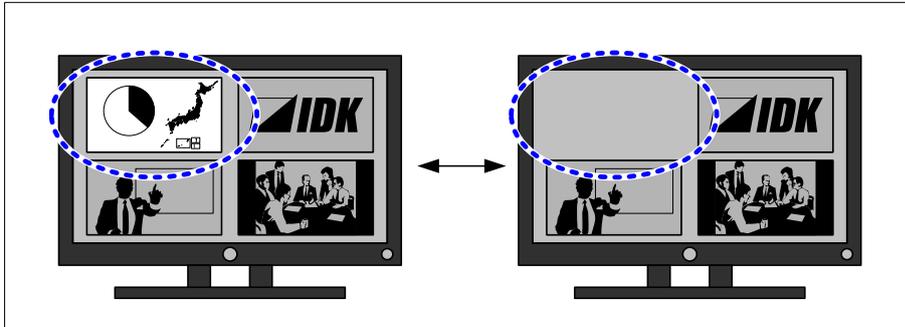
- @SPR: Set window priority
- @GPR: Get window priority

7.4.15 Window hiding [WINDOW INVISIBLE]

For each window

You can hide windows as needed.

- Not hidden (displayed): OFF [Default]
- Hidden (not displayed): ON



[Fig. 7.4.15a] Window hiding

1. To set window hiding using menu:

- | | |
|---|---|
| ICP-9401 | Top |
| ↓ SET key | |
| [FUNCTION SELECT]
OVERLAY SETTING ▾ | ▲▼ keys: Select "OVERLAY SETTING". |
| ↓ SET key | |
| [OVERLAY SETTING]
WINDOW INVISIBLE ▾ | ▲▼ keys: Select "WINDOW INVISIBLE". |
| ↓ SET key | |
| [W1 INVISIBLE]
OFF ◀▶ | ▲▼ keys: Set "WINDOW INVISIBLE" to "ON" or "OFF".
◀▶ keys: Select the window (W1toW4). |
| ↓ ESC key : Returns to the previous screen. | |

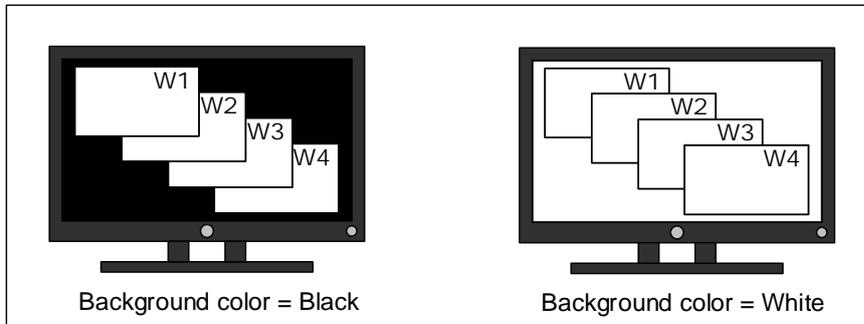
2. To set window hiding using commands:

- @SWV: Set window hiding
- @GWV: Get window hiding

7.4.16 Window background color [ENTIRE BACKCOLOR]

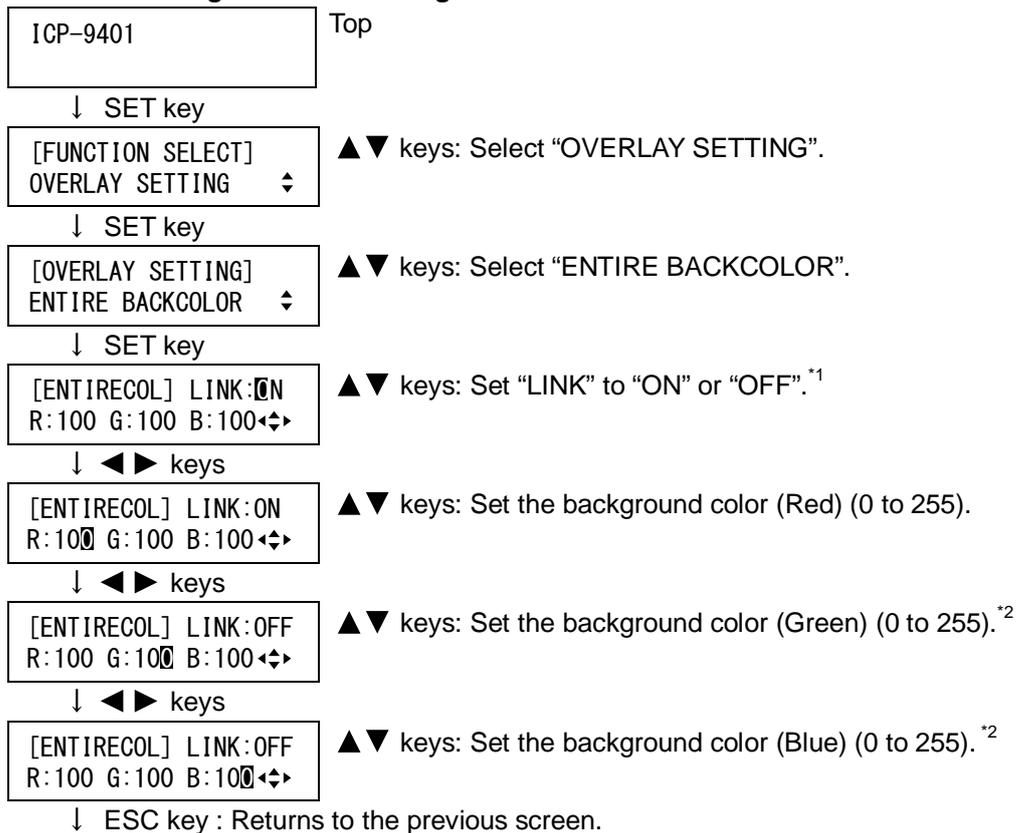
You can set the window background color.

- Red: 0 to 255 Default: 0
- Green: 0 to 255 Default: 0
- Blue: 0 to 255 Default: 0



[Fig. 7.4.16a] Background color

1. To set window background color using menu:



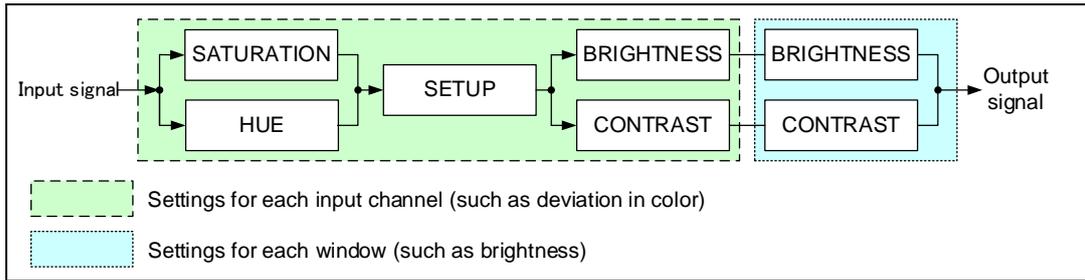
^{*1} If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) are also changed according to the setting of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) are also increased (+2).

^{*2} Only if you set "LINK" to "OFF", you can set the background color for Green and Blue individually.

2. To set window background color using menu:

- @SEB: Set background color
- @GEB: Get background color

7.5 Video Correction



[Fig. 7.5a] Video Correction

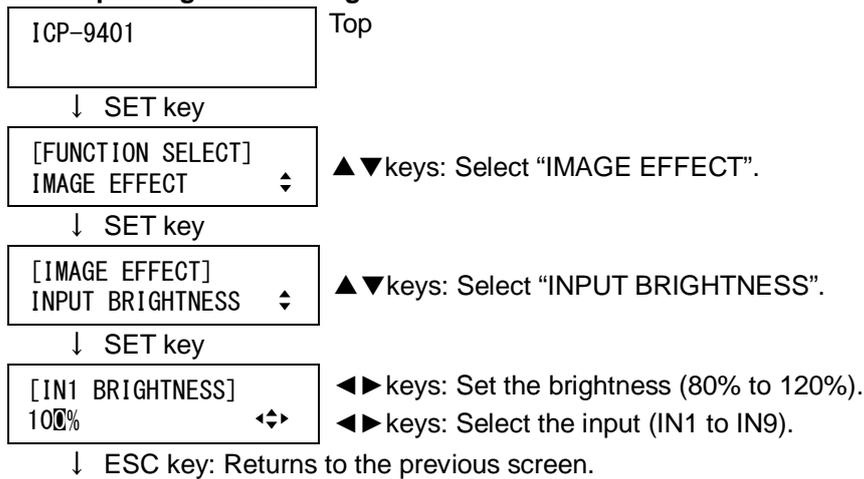
7.5.1 Input brightness [INPUT BRIGHTNESS]

For each input port/input signal

You can set the brightness of the input video.

- Brightness: 80% to 120% [Default]: 100%
 If you increase the value, the whole level will be increased as well; if you reduce the value, the whole level will be reduced.

1. To set the input brightness using menu:



2. To set the input brightness using commands:

- @SBR: Set input brightness
- @GBR: Get input brightness

7.5.2 Input contrast [INPUT CONTRAST]

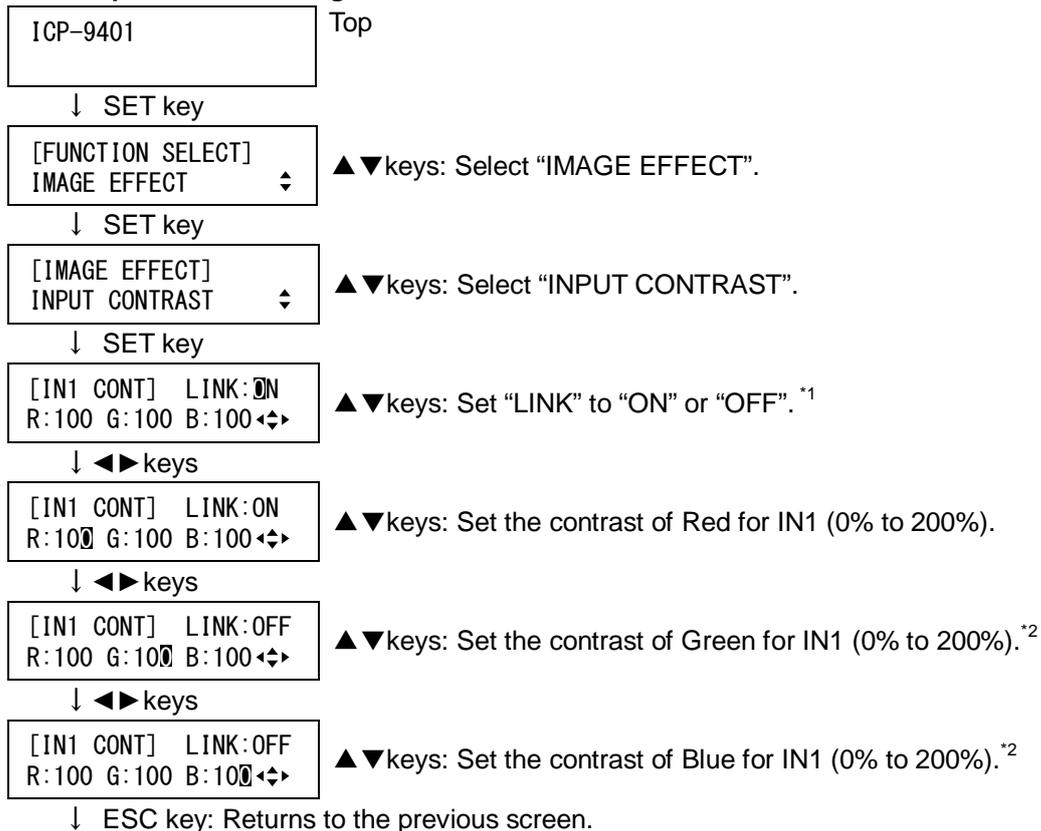
For each input port/input signal

You can set the contrast (Red, green, blue can be set separately) for input contrast.

- Contrast Red: 0% to 200% [Default]: 100%
- Contrast Green: 0% to 200% [Default]: 100%
- Contrast Blue: 0% to 200% [Default]: 100%

If you increase the value, the amplitude will be increased as well; if you reduce the value, the amplitude will be reduced.

1. To set the input contrast using menu:



^{*1} If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) are also changed associated with the settings of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) are also increased (+2). If one of these three colors reaches the limiting value, it cannot be changed any further.

^{*2} Only if you set "LINK" to "OFF", you can set the contrasts of Green and Blue.

2. To set the input contrast using commands:

@SCO: Set input contrast

@GCO: Get input contrast

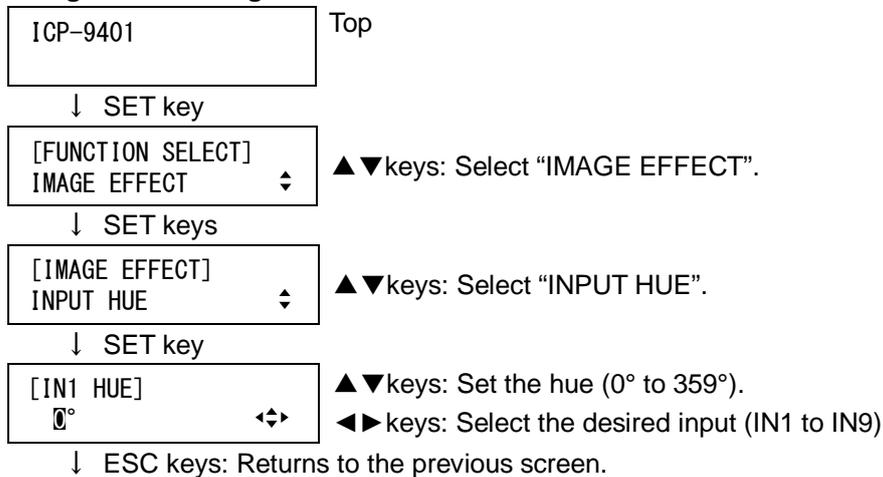
7.5.3 Hue [INPUT HUE]

For each input port/input signal

You can set the hue of input video:

- HUE: 0° to 359° [Default]: 0°

1. To setting the hue using menu:



2. To set the hue using commands:

- @SHU: Set hue
- @GHU: Get hue

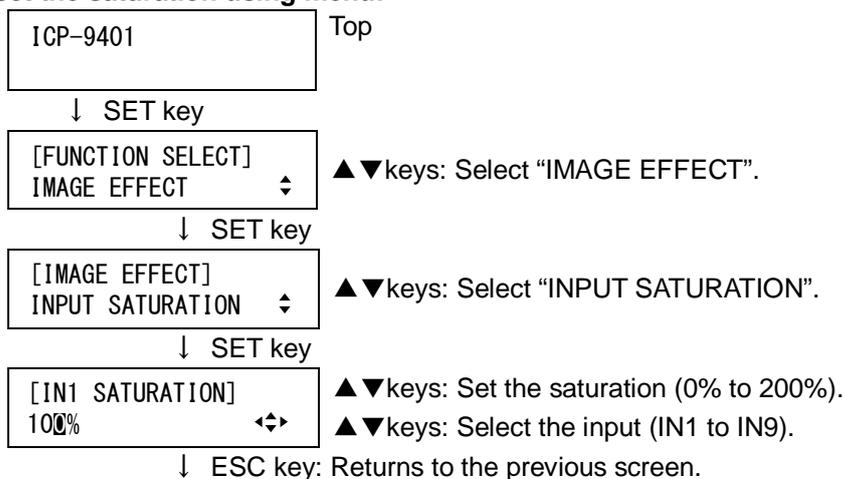
7.5.4 SATURATION [INPUT SATURATION]

For each input port/input signal

You can set the saturation of input video:

- Saturation: 0% to 200% [Default]: 100%
If you reduce the value, the color becomes weaker and goes to monochrome. (0%: full monochrome) If you increase the value, the color becomes more vivid.

1. To set the saturation using menu:



2. To set the saturation using commands:

- @SST: Set saturation
- @GST: Get saturation

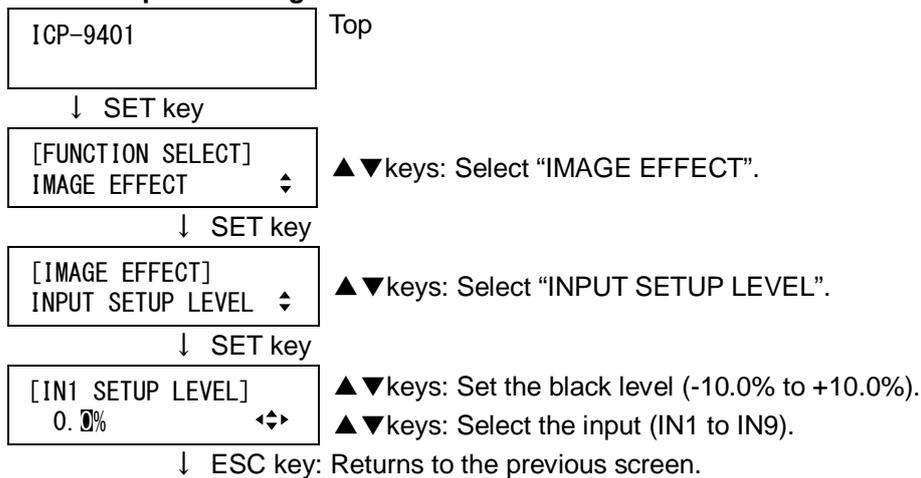
7.5.5 Black level [INPUT SETUP LEVEL]

For each input port/input signal

You can set the black level of the input video:

- Setup level: -10.0% to +10.0% by 0.5% step [Default]: $\pm 0.0\%$
 If black level of output video is low (light black), set the level toward the minus direction.
 If black level is high (dark black), set the level toward the plus direction.
 Even if you change the black level, the white level is not changed.

1. To set the setup level using menu:



2. To set the setup level using commands:

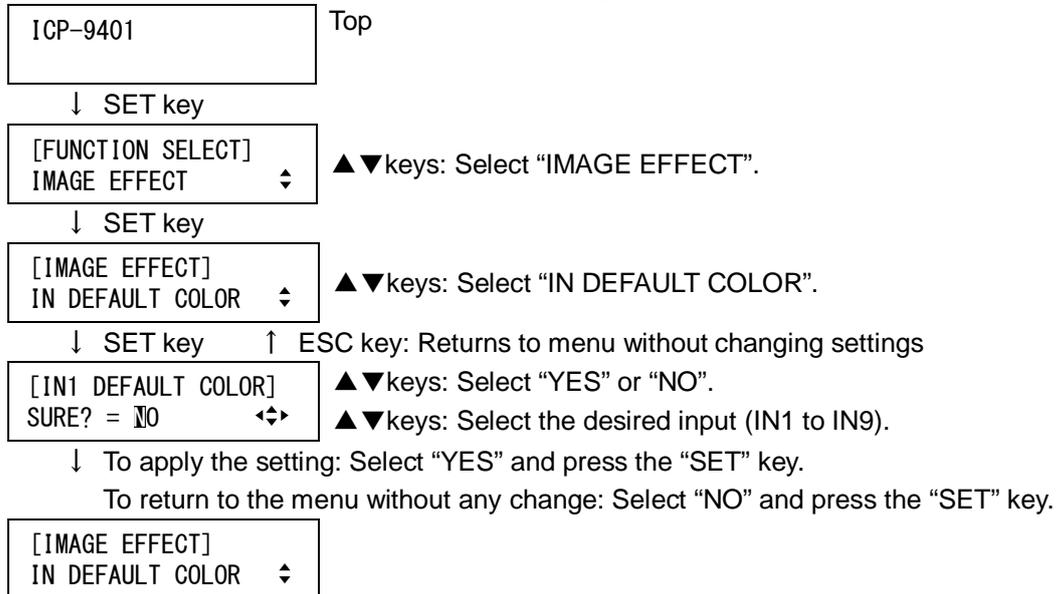
- @SSU: Set black level
- @GSU: Get black level

For each input port/input signal

7.5.6 Input default color [IN DEFAULT COLOR]

You can initialize settings of the following menus: "7.5.1 Input brightness [INPUT BRIGHTNESS]", "7.5.2 Input contrast [INPUT CONTRAST]", "7.5.3 Hue [INPUT HUE]", "7.5.4 SATURATION [INPUT SATURATION]", and "7.5.5 Black level [INPUT SETUP LEVEL]".

1. To initialize the settings of input default color using menu:



2. To initialize the settings of input default color using commands:

@IDC: Input default color

7.5.7 Output brightness [OUTPUT BRIGHTNESS]

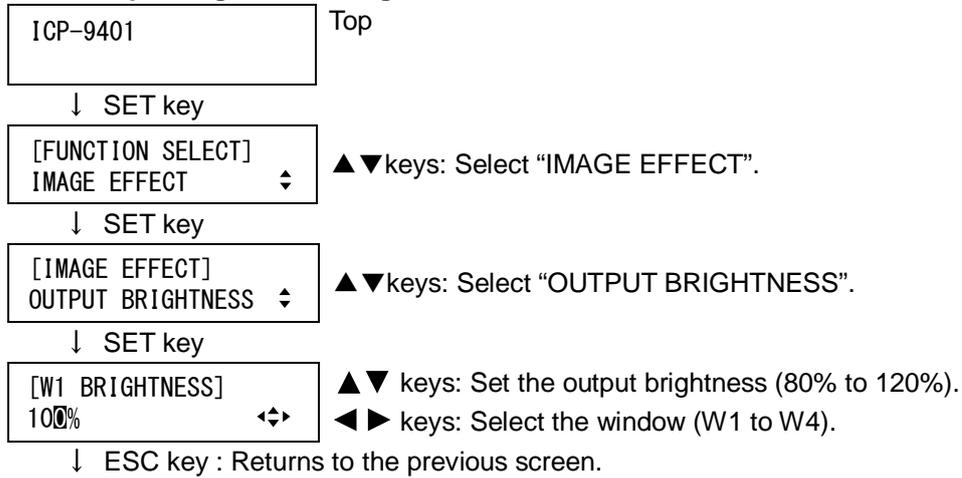
For each window

You can set the brightness of the output video.

- Brightness: 80% to 120% [Default]: 100%

If you increase the value, the whole level will be increased as well; if you reduce the value, the whole level will be reduced.

1. To set the output brightness using menu:



2. To set the output brightness using commands:

- @SOB: Set output brightness
- @GOB: Get output brightness

7.5.8 Output contrast [OUTPUT CONTRAST]

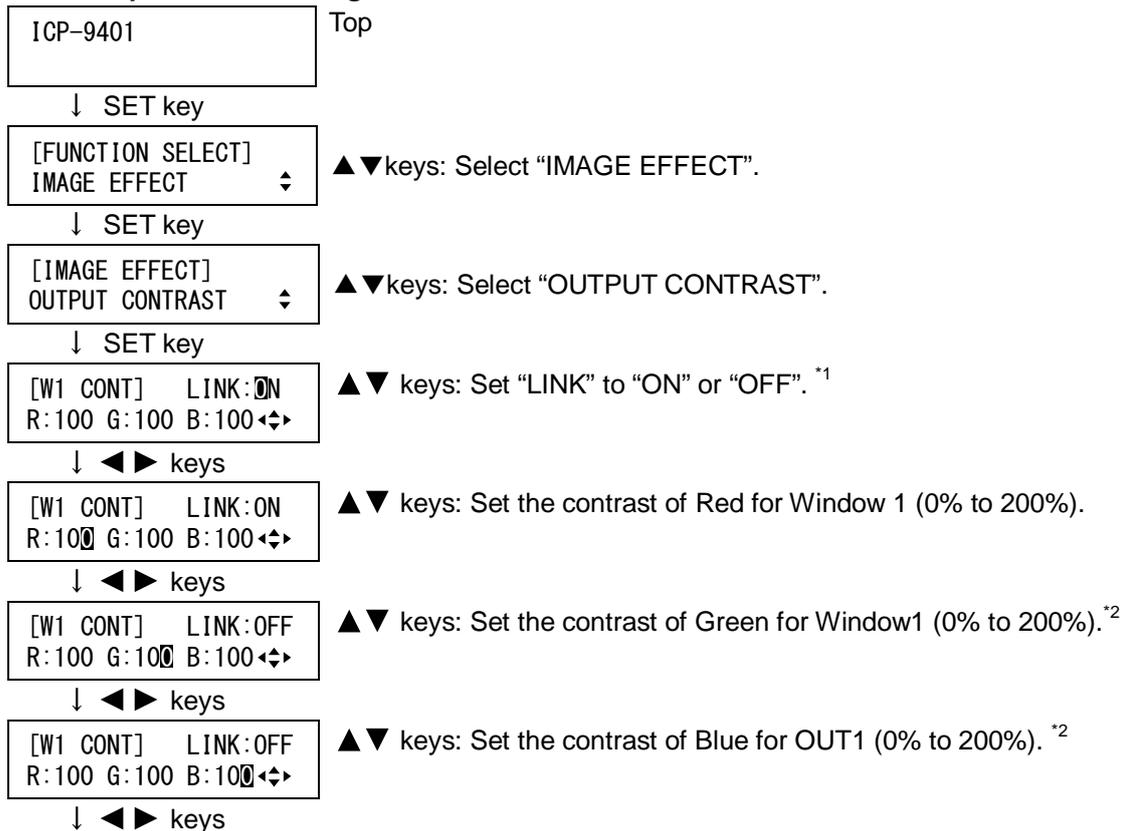
For each window

You can set contrasts of Red, Green, and Blue separately.

- Contrast (Red): 0% to 200% [Default]: 100%
- Contrast (Green): 0% to 200% [Default]: 100%
- Contrast (Blue): 0% to 200% [Default]: 100%

If you reduce the set value, the amplitude decreases and if you increase the value, the amplitude increases.

1. To set the output contrast using menu:



^{*1} If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) are also changed associated with the settings of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) are also increased (+2). If one of these three colors reaches the limiting value, it cannot be changed any further.

^{*2} Only if you set "LINK" to "OFF", you can set the contrasts of Green and Blue.

2. To set the output contrast using commands:

@SOC: Set output contrast

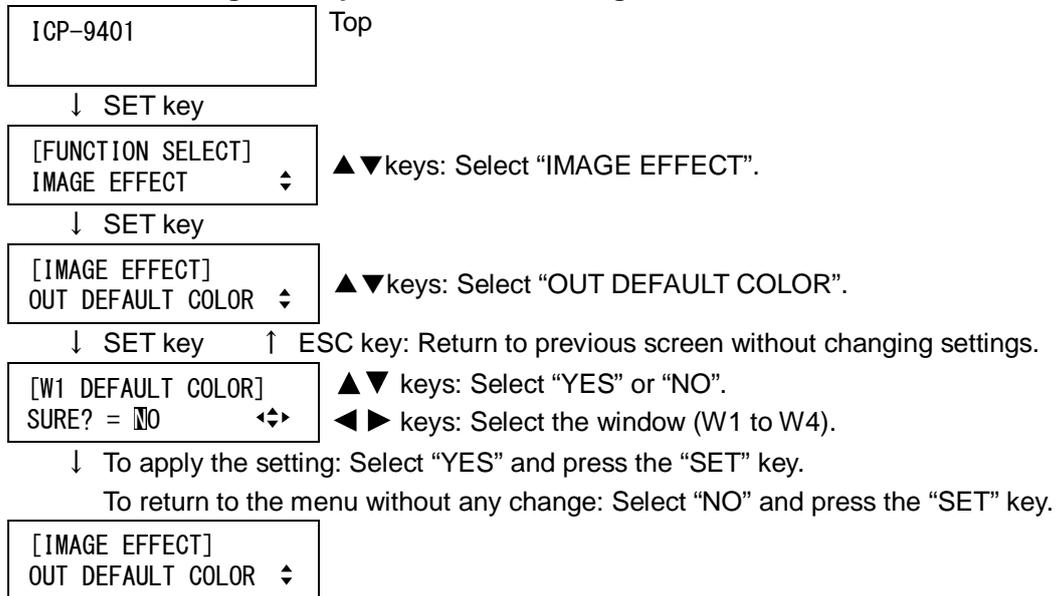
@GOC: Get output contrast

For each window

7.5.9 Output default color [OUT DEFAULT COLOR]

You can initialize the settings of “7.5.7 Output brightness [OUTPUT BRIGHTNESS]” and “7.5.8 Output contrast [OUTPUT CONTRAST]”.

1. To initialize the settings of output default color using menu:



2. To initialize the settings of output default color using commands:

@ODC: Output default color

7.6 Input Settings

For each input

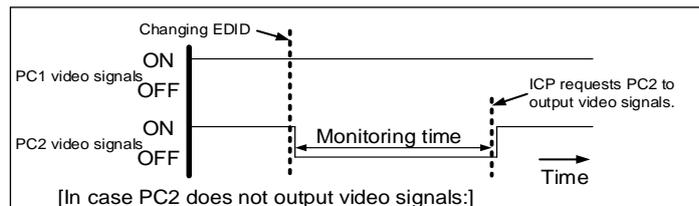
7.6.1 No-signal input monitoring [INPUT VIDEO DETECT]

If you change the settings of EDID or turn off/on the ICP while HDMI or DVI devices (hereafter referred to as “source devices”) that are connected to the ICP are turned on, only a few source devices stop outputting signals. In this case, the ICP repeatedly requests the source devices to output signal data.

Use this menu to set the monitoring time which is from when a source device stops outputting signals to when the ICP requests the source device to output video signals.

· Monitoring time: OFF, 2000ms (2 seconds) to 15000 ms. (15 seconds) by 100 ms.

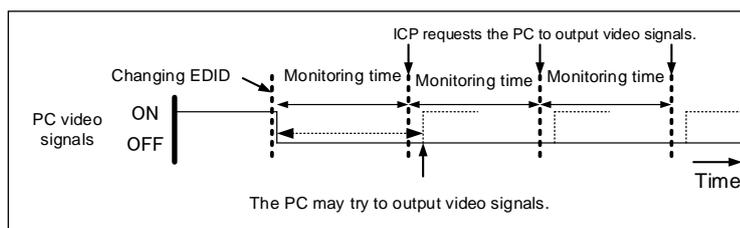
[Default]: 10000 ms. (10 seconds)



[Fig. 7.6.1a] Monitoring absence of input

Note 1:

If the ICP requests a PC to output video signals, the PC resets the output of video signals. If the set value is too short, the PC may not output video because it keeps resetting repeatedly.



[Fig. 7.6.1b] Repeating reset

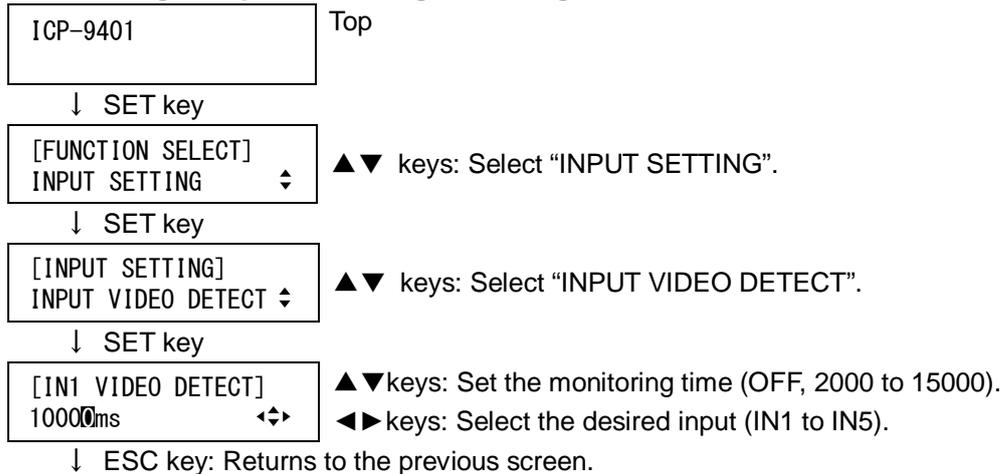
Note 2:

If you use this input monitoring function and the power-saving function of the PC's monitor simultaneously, the PC may output video again only after the time set in this menu passes following that the monitor power save function works. If you enable the monitor power save function, set this menu to “OFF”.

Note 3:

If this function works with the Dual monitor function simultaneously, the PC may determine there is no monitor connection and it may reset the Dual monitor function. In this case, set this menu to “OFF”.

1. To set the No-signal input monitoring time using menu:



2. To set the No-signal input monitoring time using commands:

- @SDT: Set no-signal-input monitoring
- @GDT: Get no-signal-input monitoring

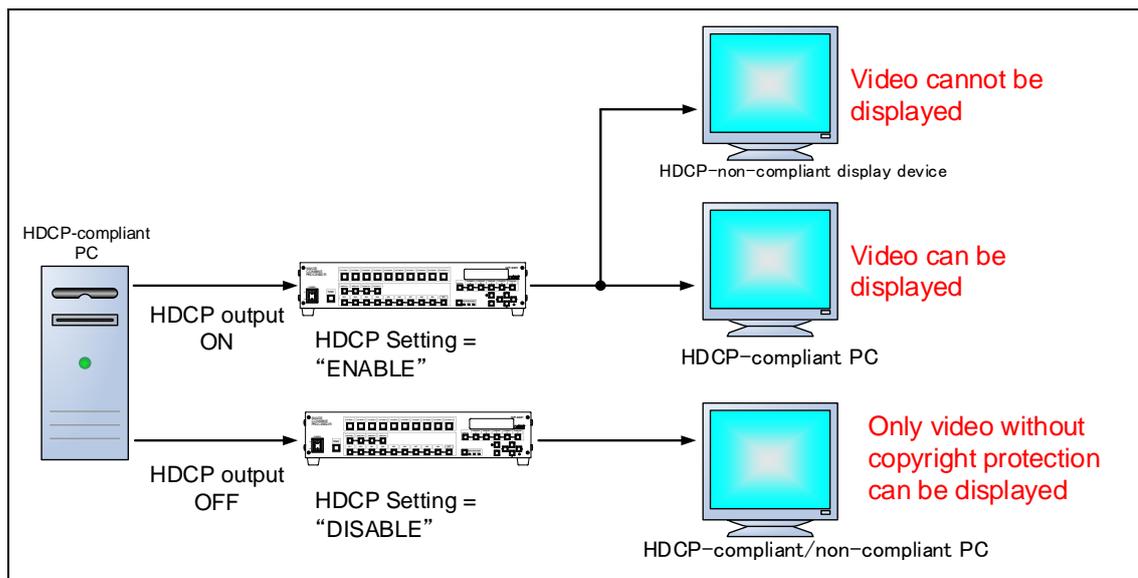
7.6.2 HDCP input enabled/disabled [HDCP INPUT ENABLE]

For each input

Some source devices check whether the connected device supports HDCP and then determine whether they encrypt HDCP signals or not. Since the ICP is HDCP compliant, if it is connected to a display device that is not HDCP compliant, the display device may not display video.

With this menu, you can set whether the ICP encrypts HDCP to the source device. "ENABLE" is set by default, but if you want to connect the ICP to a display device that is not HDCP compliant, select "DISABLE" to disable the encryption of HDCP output from the source device.

- To disable HDCP encryption: DISABLE
- To enable HDCP encryption: ENABLE [Default]



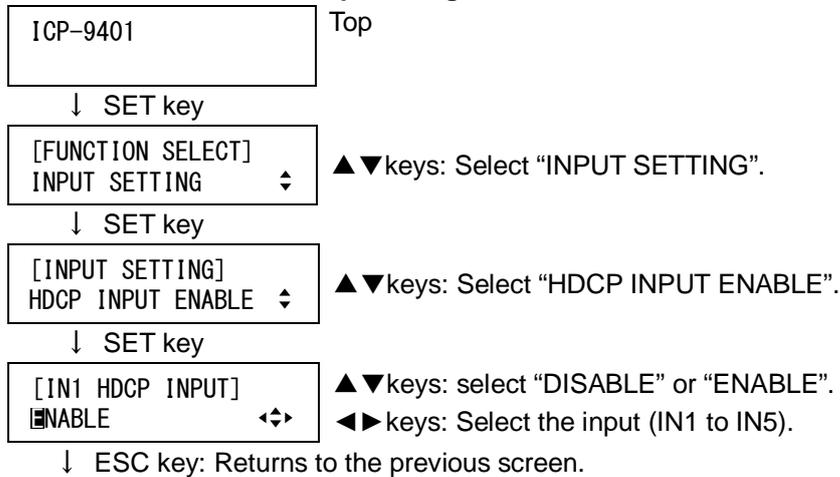
[Fig. 7.6.2a] Enabling/disabling HDCP input

Note:

If you select "DISABLE" and connect a Blu-ray disc player or the like to the ICP, all video signals may not be

output. This is because Blu-ray disc players do not allow connection with any device that is not HDCP compliant. In such a case, select "ENABLE" and connect an HDCP-compliant display device. Even if you select "DISABLE" and video can be output, protected contents (movie, music video, and the like) still cannot be played.

1. To enable/disable the HDCP input using menu:



2. To enable/disable the HDCP input using commands:

- @SHE: Set HDCP input enabled/disabled
- @GHE: Get HDCP input enabled/disabled

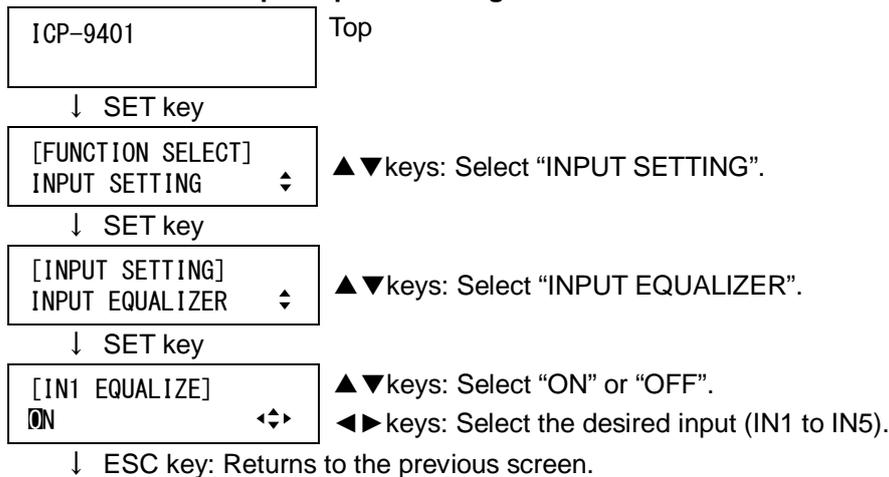
7.6.3 Input equalizer [INPUT EQUALIZER]

For each input

HDMI input connector has an equalizer circuit to correct attenuated signals caused when a long cable is connected. If you set this menu to "ON", signals are corrected automatically according to the amount of the attenuation. However, if you connect a cable booster or the like for input of the ICP, compensatory functions may sometimes conflict and signals cannot be corrected appropriately. In such a case, set this menu to "OFF".

- Enable input equalizer: ON [Default]
- Disable input equalizer: OFF

1. To enable/Disable the input equalizer using menu:



2. To enable/disable the input equalizer using commands:

- @SIQ: Set input equalizer
- @GIQ: Get input equalizer

7.6.4 Signal type of analog input [ANALOG INPUT TYPE]

For each input port/input signal

You can set the signal type that is input from an analog input connector:

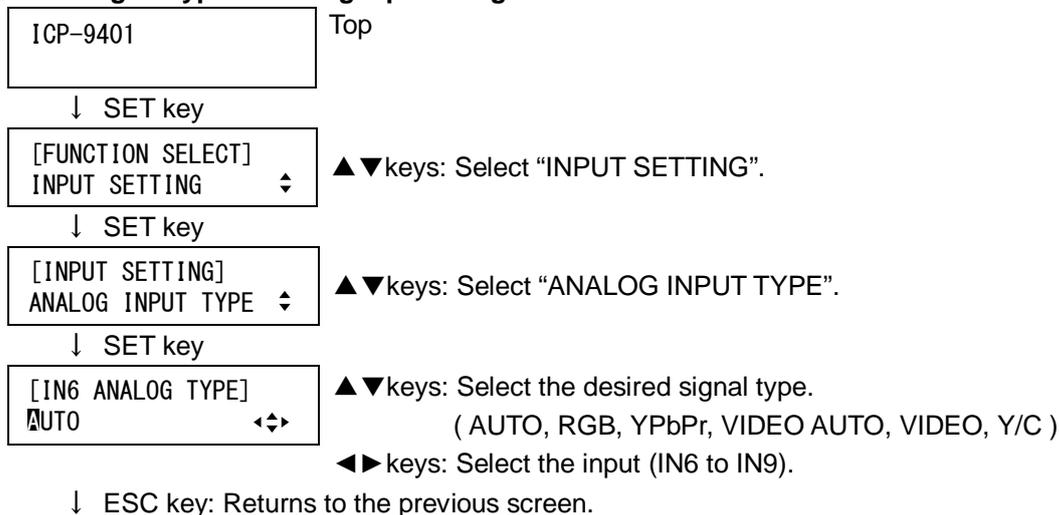
{	·AUTO [Default]	·VIDEO AUTO
	·RGB	·VIDEO (for composite video)
	·YPbPr	·Y/C (for S-video)

If you select "AUTO", the type of input signals is detected automatically. In cases where the detection fails and video is not output correctly, set the input type manually. With "AUTO", the automatic detection of S-Video may fail. If both composite video and S-Video are input at the same time, select "VIDEO AUTO"; if only S-Video is input, select "Y/C".

Note:

For video of a monochrome camera or VHS tape with a bad recording condition or the like, automatic detection may fail. In these cases, select "VIDEO AUTO", "VIDEO" or "Y/C".

1. To set the signal type of analog input using menu:



2. To set the signal type of analog input using commands:

- @SAI: Set analog input type
- @GAI: Get analog input type

7.6.5 Automatic detection of input video interruption [INPUT OFF CHECK]

For each input

The ICP can stop outputting video immediately after input video signals are disconnected for a moment. Use this function to reduce distorted output video occurred at the time of switching if an external switcher is connected for input of the ICP. The processing of this function is the same as that of switching input. (Settings of the following menus are applied automatically: “7.8.5 Window transition effect [VIDEO SWITCHING]”, “7.8.6 Effect duration [SWITCHING SPEED]”, and “7.8.7 Wipe color [WIPE COLOR]”).

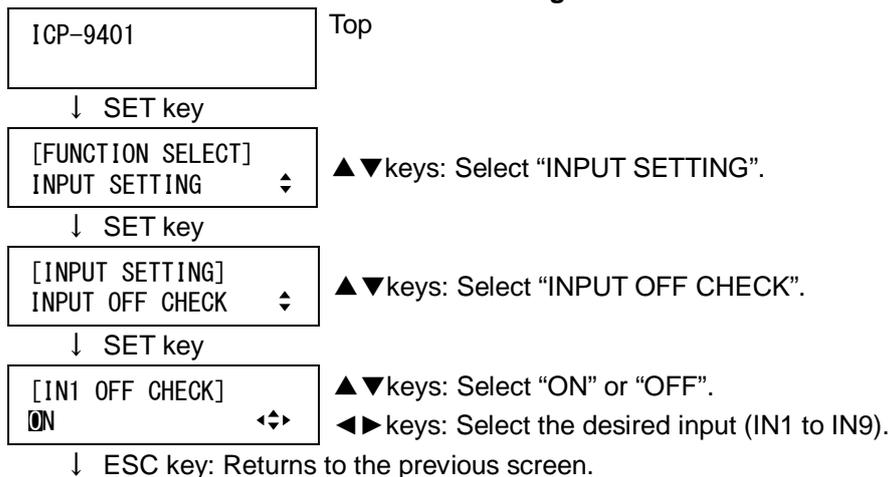
- Not detect automatically: OFF
- Detect automatically: ON [Default]

Note 1:

If you select “ON” and input video (VHS tapes or the like) that has a bad record condition, outputting video will be ON/OFF repeatedly due to distorted synchronous idles. In this case, set this menu to “OFF”.

Note 2:

Even if you set this item to “ON”, distorted video cannot be corrected completely when input video signals are lost. Especially if you set “7.8.5 Window transition effect [VIDEO SWITCHING]” to an option other than “CUT”, noises or black bars may be output at the time of fading out or wiping out.

1. To enable/disable the automatic detection using menu:**2. To enable/disable the automatic detection using commands:**

@SID: Set automatic detection of input video interruption

@GID: Get automatic detection of input video interruption

7.7 Input Timing Settings

The ICP continuously monitors input signals. When signals input from analog input (IN6 to IN9) changes, the ICP loads the optimal table from the built-in tables and converts the signals. However, if signals which are not registered in the ICP tables are input or if part of the output video is cut off by using the standard table registered in the ICP, set the input timing manually. You can check if the input signals are registered in the ICP in “**7.17.6 Input signal status [INPUT STATUS]**”. Normally, it is set automatically by the operations in “**7.7.6 Analog input automatic measurement [AUTO SETUP]**”, but if the automatic setup fails, you can set it manually.

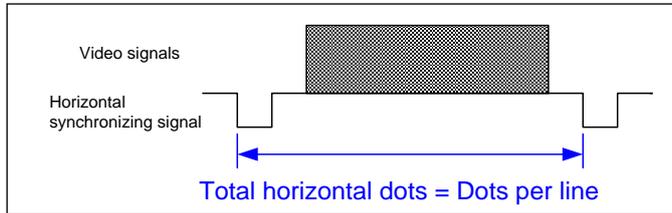
For digital inputs, IN1 to IN5, you do not need to set the input timing, but if part of the video is cut off, adjust the input timing finely.

7.7.1 The total number of horizontal dots [H TOTAL DOTS]

For each input port/input signal

You can set the total number of horizontal dots of analog RGB/analog YPbPr input video videos.

- The total number of horizontal dots: 400 to 4125 (Within sampling clock 13M Hz to 162M Hz)
 [Default]: Depends on input signals



[Fig. 7.7.1a] Total number of horizontal dots

1. To set the total number of horizontal dots using menu:

- ICP-9401 Top
- ↓ SET key
- [FUNCTION SELECT] INPUT TIMING ▲▼keys: Select "INPUT TIMING".
- ↓ SET key
- [INPUT TIMING] H TOTAL DOTS ▲▼keys: Select "H TOTAL DOTS".
- ↓ SET key
- [IN6 H TOTAL DOTS] 1344 DOT ◀▶keys: Set the total number of horizontal dots.
 ◀▶keys: Select the desired input (IN1 to IN9).
- ↓ ESC key: Returns to the previous screen.

Note:

You can set the total number of horizontal dots only if analog RGB or analog YPbPr signals are input. You can only display the set value for input analog video signals or digital input signals, and you cannot change the setting. If no signal is input, you cannot set the function and the message is displayed.

[IN6 H TOTAL DOTS]
NOT AVAILABLE NOW ◀▶

IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN9
A	A	A	A	A	B	B	B	B

- A: Settable only if analog RGB/analog YPbPr signals are input.
 If analog video signals are input, only the set value is displayed and you cannot set the total number of horizontal dots.
- B: Only the set value is displayed. You cannot set the total number of horizontal dots.

2. To set the total number of horizontal dots using commands:

- @SHT: Set the total number of horizontal dots
- @GHT: Get the total number of horizontal dots

7.7.2 Horizontal start position [H START]

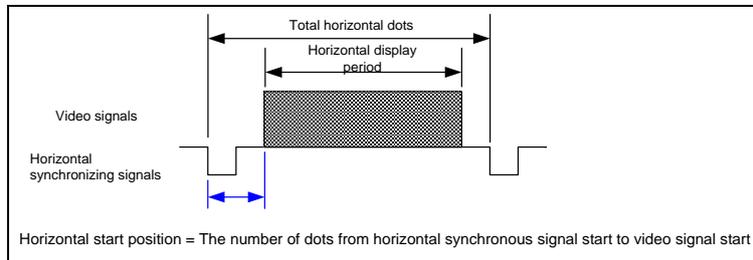
For each input port/input signal

You can set the horizontal start position

- Starting position of horizontal reading:

64 to 2900 (Must be equal or less than [The total number of horizontal dots - Horizontal display period])

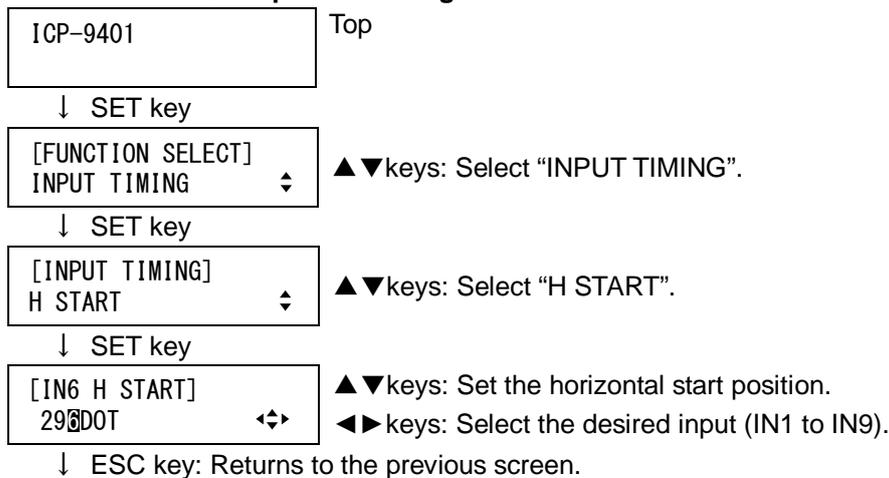
[Default]: Depends on input signals



[Figure 7.1] Horizontal start position

The settable range depends on settings of “7.7.1 The total number of horizontal dots [H TOTAL DOTS]” and “7.7.3 Horizontal display period [H DISPLAY]”. If the set value is [Total number of horizontal dots > Horizontal display period > Horizontal start position] and the set value of the horizontal start position exceeds the limit value by changing the total number of horizontal dots or horizontal display period, set the horizontal start position to the limit value automatically.

1. To set the horizontal start position using menu:



Note:

You can set the horizontal start position only if there is an input signal. If no signal is input, you cannot set the position, and the message shown right is displayed.

[IN6 H START]
NOT AVAILABLE NOW ◀▶

2. To set the horizontal start position using commands:

@SHS: Set horizontal start position

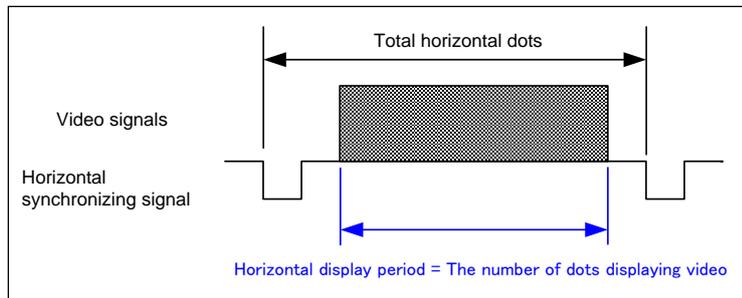
@GHS: Get horizontal start position

7.7.3 Horizontal display period [H DISPLAY]

For each input port/input signal

You can set the horizontal display period.

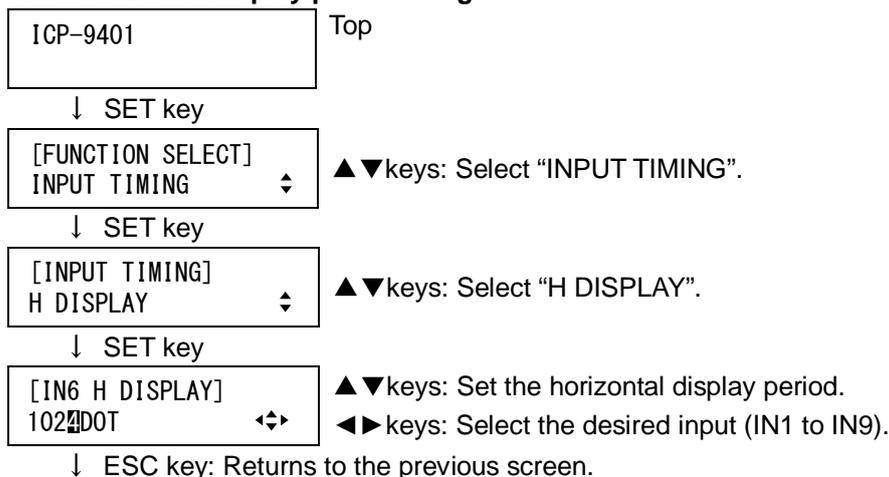
- Horizontal display period: 64 to 2900 (Equal or less than [The total number of horizontal dots - 64])
[Default]: Depends on input signals



[图 7.7.3a] Horizontal display period

The settable range depends on setting of “7.7.1 The total number of horizontal dots [H TOTAL DOTS]”. If the set value is [Total number of horizontal dots > Horizontal displaying period] and the setting of horizontal display period exceeds the limit value by changing the total number of horizontal dots, the horizontal display period is set to the limit value of the set range automatically.

1. To set the horizontal display period using menu:



Note:

You can set the horizontal display period only if there is an input signal. If no signal is input, you cannot set the period, and the message shown right is displayed.

[IN6 H DISPLAY]
NOT AVAILABLE NOW ◀▶

2. To set the horizontal display period using commands:

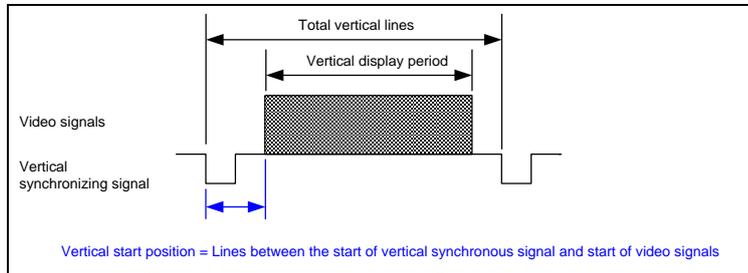
- @SHD: Set horizontal display period
- @GHD: Get horizontal display period

7.7.4 Vertical start position [V START]

For each input port/input signal

You can set the vertical start position.

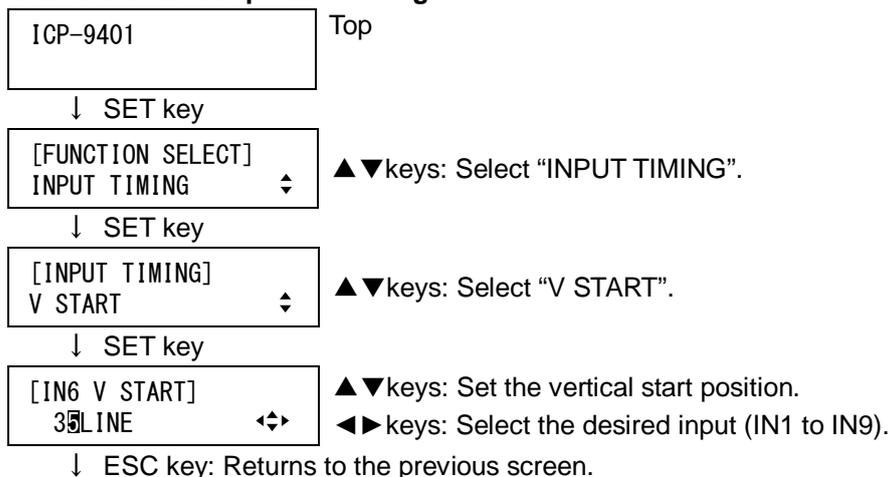
- Vertical start position: 10 to 2048 (Equal or less than [Total vertical lines-vertical display period])
[Default]: Depends on input signals



[Fig. 7.7.4a] Vertical start position

The settable range depends on the total number of lines of input signals (the ICP counts automatically) and “7.7.5 Vertical display period [V DISPLAY]”. If the set value is [Total number of vertical lines > Vertical displayed period > Vertical start position] and the set value of vertical start position exceeds the limit value by changing the vertical display period, the vertical start position is set to the limit value automatically.

1. To set the vertical start position using menu:



Note:

You can set the vertical start position only if there is an input signal. If no signal is input, you cannot set the position, and the message shown right is displayed.

[IN6 V START]
NOT AVAILABLE NOW ◀▶

2. To set the vertical start position using commands:

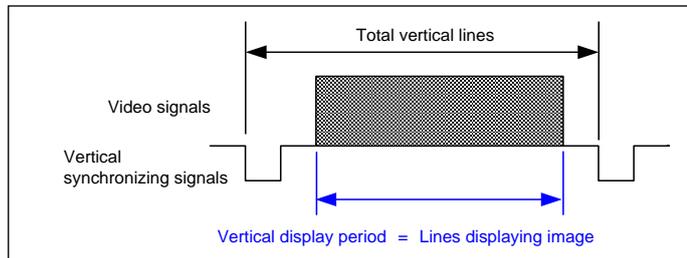
- @SVS: Set vertical start position
- @GVS: Get vertical start position

7.7.5 Vertical display period [V DISPLAY]

For each input port/input signal

You can set the vertical display period.

- Vertical display period: 10 to 2048 (Equal or less than [The total number of vertical lines – 10])
 [Default]: Depends on input signals



[Figure 7.2] Vertical display period

1. To set the vertical display period using menu:

```

ICP-9401 Top
↓ SET key
[FUNCTION SELECT]
INPUT TIMING ▲▼keys: Select "INPUT TIMING".
↓ SET key
[INPUT TIMING]
V DISPLAY ▲▼keys: Select "V DISPLAY".
↓ SET key
[IN6 V DISPLAY]
768LINE ◀▶keys: Set the vertical display period.
◀▶keys: Select the desired input (IN1 to IN9).
↓ ESC key: Returns to the previous screen.
    
```

Note:

You can set the vertical display period only if there is an input signal. If no signal is input, you cannot set the period, and the message shown right is displayed.

[IN6 V DISPLAY]
NOT AVAILABLE NOW ◀▶

2. To set the vertical display period using commands:

- @SVD: Set vertical display period
- @GVD: Get vertical display period

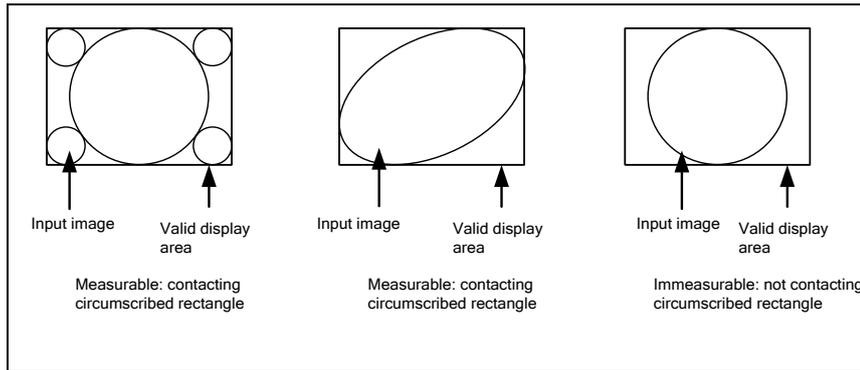
7.7.6 Analog input automatic measurement [AUTO SETUP]

For each input port/input signal

Analog RGB/ analog YPbPr video inputs are measured, and the following menus are set automatically: "7.7.1 The total number of horizontal dots [H TOTAL DOTS]", "7.7.2 Horizontal start position [H START]", "7.7.3 Horizontal display period [H DISPLAY]", "7.7.4 Vertical start position [V START]", "7.7.5 Vertical display period [V DISPLAY]", and "7.7.11 Tracking [TRACKING]".

Note:

In order to enable this menu, the input video must have 25% or more brightness and its edges (all sides) need to be in contact with the circumscribed rectangle in the effective display area.



[Fig. 7.7.6a] Example of input video

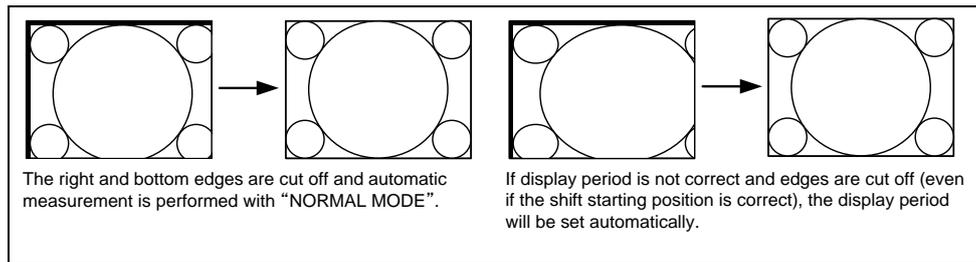
If you input very black or extremely dark video, the measurement fails and a message, "MEASUREMENT ERROR", is displayed.

MEASUREMENT ERROR

1. To set the automatic measurement using menu:

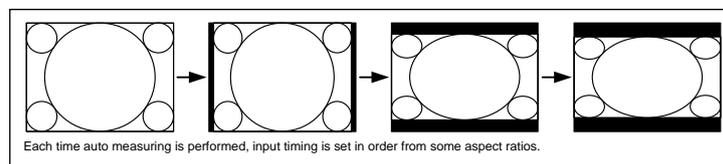
- ICP-9401 Top
- ↓ SET key
- [FUNCTION SELECT] INPUT TIMING ▲▼keys: Select "INPUT TIMING".
- ↓ SET key
- [INPUT TIMING] AUTO SETUP ▲▼keys: Select "AUTO SETUP".
- ↓ SET key ↑ ESC key: Cancels measurement and returns to the previous screen.
- [IN6 AUTO SETUP] ◀▶ PUSH SET: NORMAL MODE ▲▼keys: Select the desired measuring mode.*1
◀▶keys: Select the desired input (IN1 to IN9).
SET keys: Executes the measurement and sets the input timing.
- ↓ SET key: Executes measurement
- [IN6 AUTO SETUP] NORMAL END Displays the measurement result for 1 second and then returns to the previous screen automatically.
- ↓
- [IN6 AUTO SETUP] ◀▶ PUSH SET: NORMAL MODE
- ↓ ESC key: Returns to the previous screen.

¹ Normally, select "NORMAL MODE" (Automatic measurement of start position and display period). If edges of video are not displayed correctly, use this mode to set the start position and display period automatically.



[Fig. 7.7.6b] Automatic measurement with "NORMAL MODE"

If the total number of horizontal dots is not correct, the aspect ratio is not matched even though automatic measurement is set to perform with the "NORMAL MODE". In this case, select "NEXT ASPECT" (Auto measurement taking into account aspect ratio) for the measurement function. Each time you press the "SET" key, input timing is set based on several aspect ratios of the input signals. If the aspect ratio of the input signal is known, you can directly specify the aspect ratio to correctly perform the automatic measurement. If input signal is not registered in the ICP, use this function.



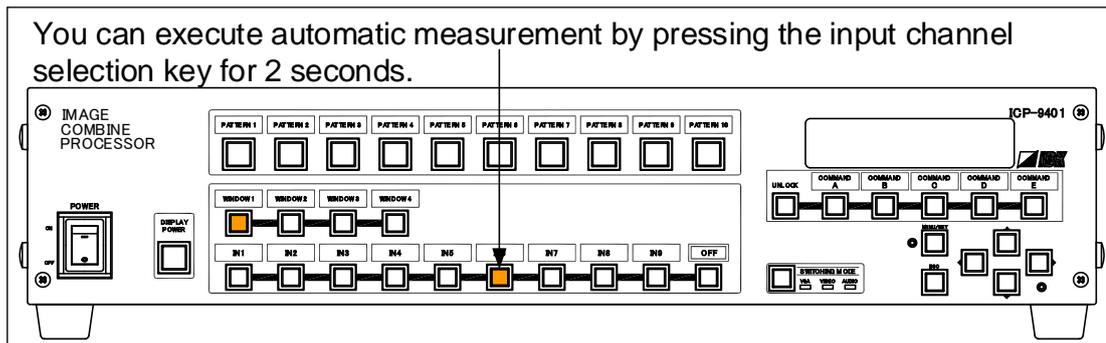
[Fig. 7.7.6c] Auto measurement with "NEXT ASPECT"

If you set only start position, the message, "NORMAL END" is displayed. If the display period is changed with "NORMAL MODE" or if you specify "NEXT ASPECT" or aspect ratio directly, the set resolution is displayed.

[IN6 AUTO SETUP] 1024x 768 60.00Hz

In case the aspect ratio does not match or video is displayed on the position far from the correct position, set the input timing in "7.7.1 The total number of horizontal dots [H TOTAL DOTS]", "7.7.2 Horizontal start position [H START]", "Horizontal display period [H DISPLAY]", "7.7.4 Vertical start position [V START]", and "Vertical display period [V DISPLAY]".

You can execute the automatic measurement not only from this menu but also by pressing an input selection key (one of IN6 to IN9 keys) for 2 seconds or longer. By pressing an input selection key for 2 seconds, the auto measurement mode with "NORMAL MODE" will be enabled. After that, pressing the same key for 3 seconds or longer, the auto measurement mode with "NEXT ASPECT" will be enabled. (This auto measurement mode can be enabled also by pressing the input key for 5 seconds or longer continuously.) Once you perform the function, from the next time, it can be performed simply by pressing the key without pressing it for several seconds. This mode can be canceled 5 seconds after the last auto measurement is executed. If you execute the automatic measurement with this mode, the input selection keys blink until the measurement finishes.



[Fig. 7.7.6d] Automatic measurement using input keys

Note:

The automatic measurement is available only if analog RGB or analog YPbPr signals are input. If analog video signals are input, no signal is input, or video input is set to a channel other than IN6 to IN9, you cannot execute the measurement and the message shown right is displayed.

[IN6 AUTO SETUP] ◀▶
NOT AVAILABLE NOW

IN 1	IN 2	IN 3	IN 4	IN 5	IN 6	IN 7	IN 8	IN 9
N/A	N/A	N/A	N/A	N/A	A	A	A	A

A: Settable only if analog RGB/analog YPbPr signals are input.

N/A: Cannot be executed.

Since the automatic measurement is executed in the output side, the target input has to be first selected for any of the output. If it is not selected for an output, the measurement cannot be executed.

2. To set the automatic measurement using commands:

- @AIS: Automatic input measurement
- @AIT: Automatic input measurement including aspect

7.7.7 Automatic measurement of start position [AUTO START POS]

For each input port/input signal

General PCs output video signals meeting the VESA standard, but some PCs output cut-off (a few dots from the VESA standard) signals. In such a case, if the video is output using the video format table in the ICP, the left edge may not be displayed or black line may be output. If you set this menu "ON", the ICP monitors continuously the upper left of the signals input from (IN6 to IN9) and it automatically matches the upper left of the input video and the upper left of the screen (Settings of "7.7.2 Horizontal start position [H START]", "7.7.4 Vertical start position [V START]", and "7.7.11 Tracking [TRACKING]" are set automatically).

- Not measuring all inputs from the input automatically: ALL OFF
- Not measuring the current input signals automatically: OFF
- Measuring the current input signals automatically: ON [Default]

Note 1:

For motion images, some content may not be displayed on the full screen, and the display position may be moved every time the setting of the automatic measurement is applied. In such a case, set this menu to "OFF". As "OFF" and "ON" are saved for each input resolution, it can be set according to the input video. If you do not want to perform this function for all resolution, select "ALL OFF".

Note 2:

Only the start position is set by automatic measurement of this menu. If “7.7.1 The total number of horizontal dots [H TOTAL DOTS]”, “7.7.3 Horizontal display period [H DISPLAY]”, and “7.7.5 Vertical display period [V DISPLAY]” do not match, the lower right may be cut off or blackout may be output. In this case, adjust the whole screen by following “7.7.6 Analog input automatic measurement [AUTO SETUP]”. As the set value must not exceed “7.7.2 Horizontal start position [H START]” and “7.7.4 Vertical start position [V START]”, some input videos are displayed with blackout at the left or top side.

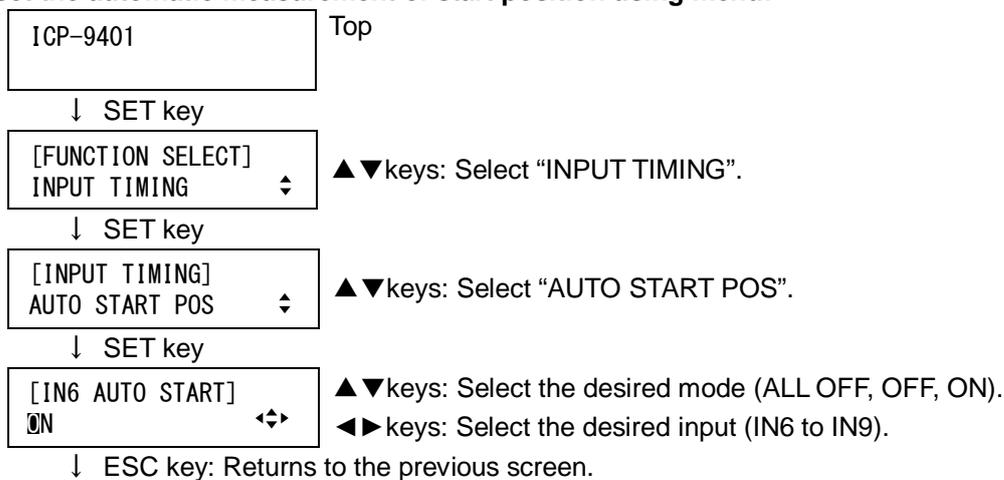
Note 3:

Automatic setting of start position is enabled only if the brightness is over 25% or more and video is displayed on the almost full screen. At least, the position is not set automatically if the video is extremely dark or displayed on the center in a small size.

Note 4:

Even if you set this menu to “ON”, the manual setting will be applied and the automatic measurement is not executed if you set any of the following menus: “7.7.1 The total number of horizontal dots [H TOTAL DOTS]”, “7.7.2 Horizontal start position [H START]”, “7.7.3 Horizontal display period [H DISPLAY]”, “7.7.4 Vertical start position [V START]”, “7.7.5 Vertical display period [V DISPLAY]”. Even if you set “7.7.11 Tracking [TRACKING]”, the manual setting is applied, and tracing is not set automatically when the automatic measurement is executed.

When you execute “7.7.6 Analog input automatic measurement [AUTO SETUP]”, settings of this menu will be valid again.

1. To set the automatic measurement of start position using menu:**2. To set the automatic measurement of start position using commands:**

- @SIS: Set automatic measurement of start position
- @GIS: Get automatic measurement of start position

7.7.8 Automatic setting of input timing [UNKNOWN TIMING]

The ICP continuously monitors input signals. When signals input from analog input (IN6 to IN9) changes, it loads the optimal table from the built-in tables and converts the signals. However, if unregistered signals are input, the input timing must be set. By setting this menu to "ON", "7.7.6 Analog input automatic measurement [AUTO SETUP]" is executed and the input timing is set automatically if signals that cannot be detected by the ICP are input for the first time.

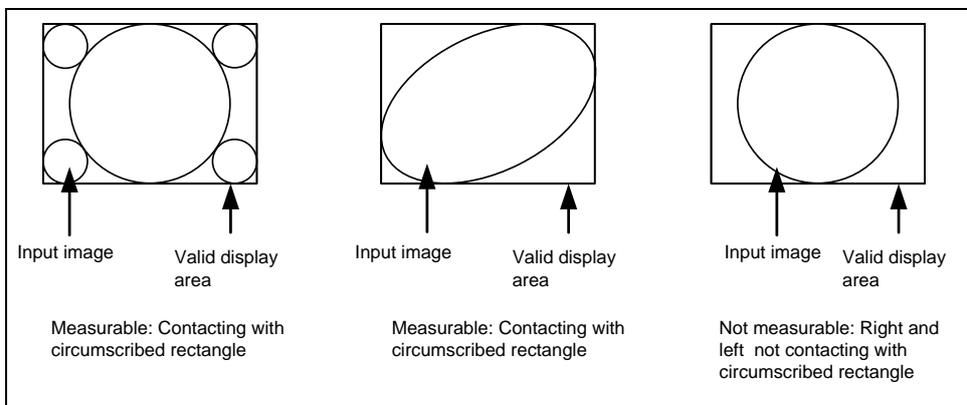
- The automatic measurement is not executed when unregistered signals are input:
AUTO SETUP OFF
- The automatic measurement is executed when unregistered signals are input:
AUTO SETUP ON [Default]

Note 1:

If automatic measurement finds inconsistency of aspect ratio, please perform "" manually or set the input timing in the following menus: "7.7.1 The total number of horizontal dots [H TOTAL DOTS]", "7.7.2 Horizontal start position [H START]", "7.7.3 Horizontal display period [H DISPLAY]", "7.7.4 Vertical start position [V START]", and "7.7.5 Vertical display period [V DISPLAY]".

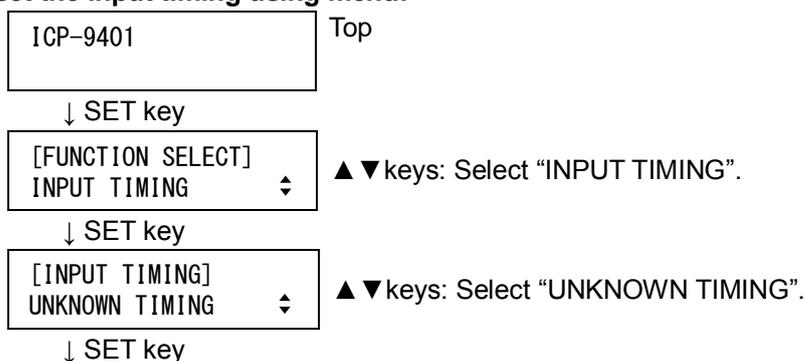
Note 2:

Only if a video having 25% or more brightness and whose edges (all sides) are in contact with the circumscribed rectangle in the effective display area is input, the automatic measurement is valid. If the input video does not meet these requirements, the measurement may fail or the video may be output on the correct position. In such a case, set this menu to "OFF".



[Fig. 7.7.8a] Examples of input videos

1. To set the input timing using menu:



[UNKNOWN TIMING] AUTO SETUP ON ▾
--

▲▼keys: Select the desired mode (AUTO SETUP OFF or AUTO SETUP ON).

↓ ESC key: Returns to the previous screen.

2. To set the input timing using commands:

@SSM: Set automatic setting of input timing

@GSM: Get automatic setting of input timing

7.7.9 Loading device data [LOAD]

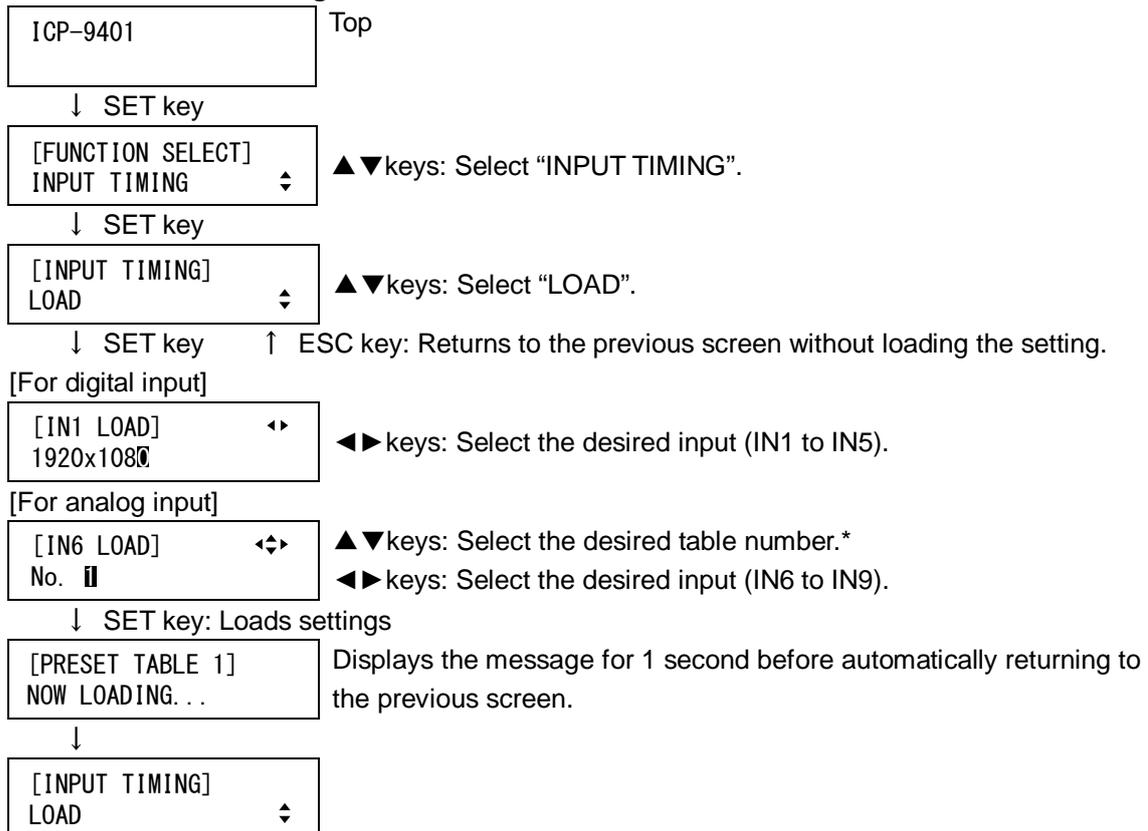
For each input port/input signal

For digital input (IN1 to IN 5): Settings of input timing will be initialized to settings that are detected automatically by ICP . Use this menu to restore the input timing settings that are set manually to the original timing.

For analog input (IN6 to IN9): Registered device data will be loaded. Use this menu in the following cases:

- Several device data with the same frequency of synchronous signal and different input timings is registered
- You want to set the input timing again.

1. To load the device data using menu:



* Only table numbers that can be loaded are displayed. If only numbers (1 to 99) are displayed, those numbers show the device data registered in "7.7.10 Registering device data [SAVE]", and the registered name is displayed on the right. "P+Number" shows pre-registered device data, and the resolution is displayed on the right.

Note:

This function is available only if there is an input signal. For analog input, the function can be executed only if device data corresponding to the input signal is registered.

[IN6 LOAD] ◀▶
NOT AVAILABLE NOW

IN 1	IN 2	IN 3	IN 4	IN 5	IN 6	IN 7	IN 8	IN 9
I	I	I	I	I	D	D	D	D

I: Can be executed only if there is an input signal

D: Can be executed only if device data corresponding to the input signal is registered.

2. To load the device data using commands:

@RTT: Load device data

For each input port/input signal

7. 7. 10 Registering device data [SAVE]

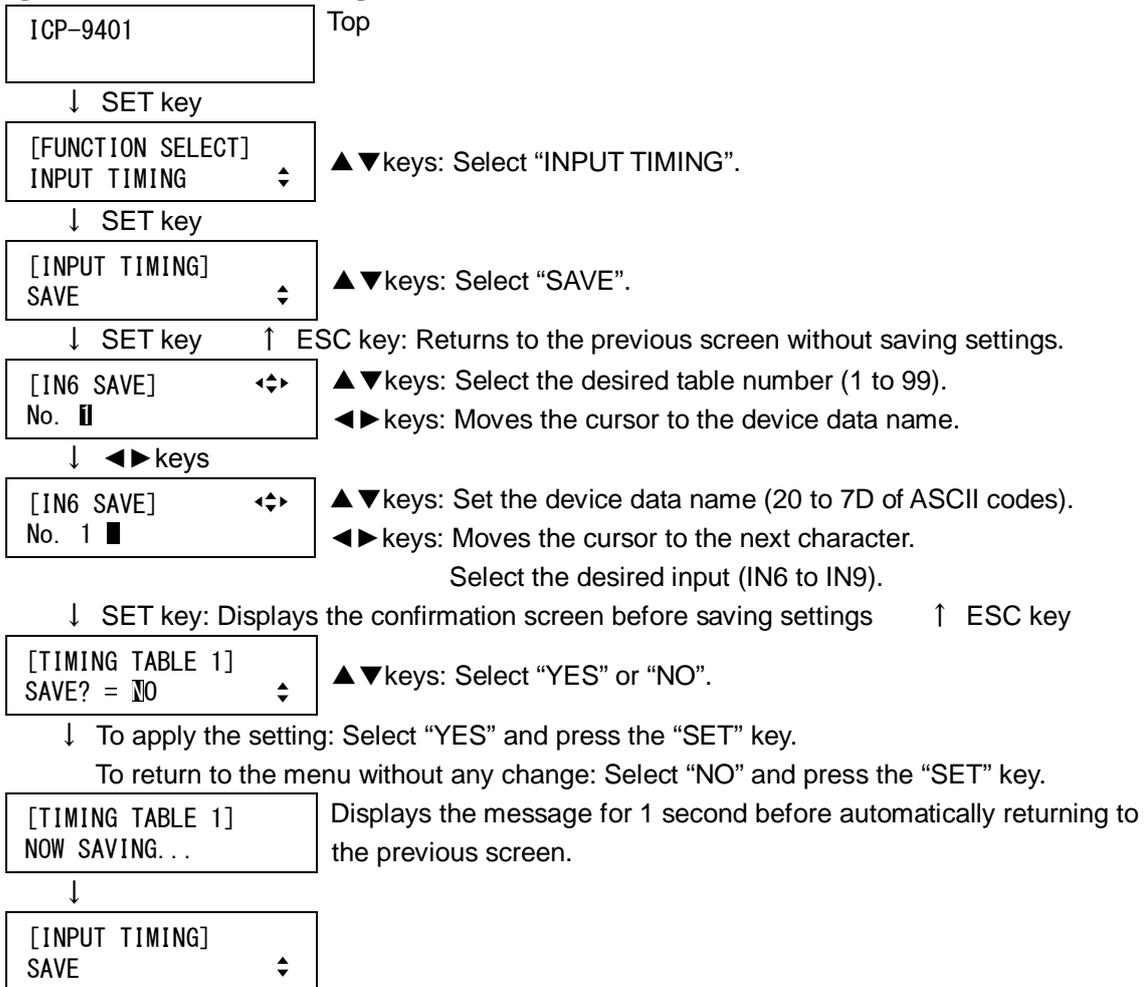
You can register the set input timings of analog input as the device data.

From the next time, the convert operation will be performed with the registered timings when the same signal is input from a different channel.

Note:

Do not turn off the ICP while “NOW SAVING...” is displayed in the ICP's VFD screen; otherwise, the set data may be lost.

1. To register the device data using menu:



Note:

Device data can be registered only if analog RGB or analog YPbPr signals are input. You cannot register data and the message shown right is displayed in the followings cases: analog video signals are input, no signal is input, or video input is set to a channel other than IN6 to IN9.

[IN6 SAVE]
NOT AVAILABLE NOW ◀▶

IN 1	IN 2	IN 3	IN 4	IN 5	IN 6	IN 7	IN 8	IN 9
N/A	N/A	N/A	N/A	N/A	A	A	A	A

A: Can be registered only if analog RGB/analog YPbPr signals are input.
 N/A: Cannot be registered.

2. To registering the device data using commands:

@STT: Register device data

For each input port/input signal

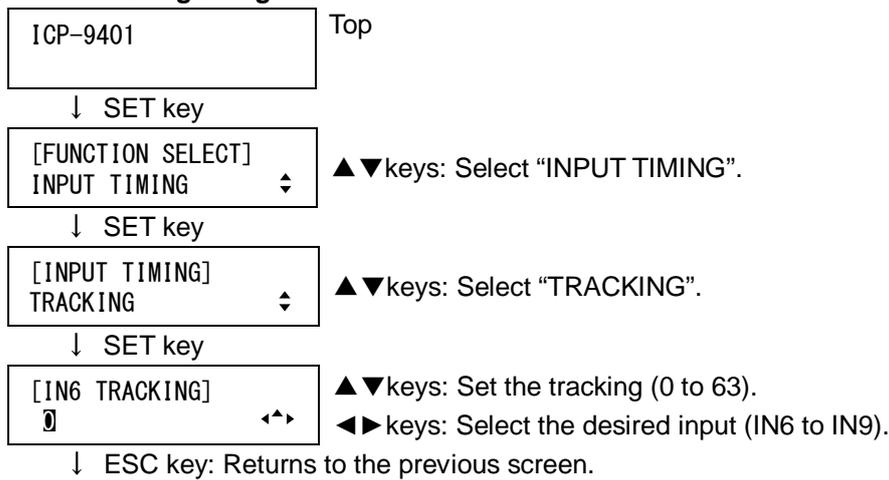
7.7.11 Tracking [TRACKING]

You can set the tracking for analog RGB/ analog YPbPr input video.

- Tracking: 0 to 63 [Default]: 0

This function can be performed only if the total number of input horizontal dots and the value set in "7.7.1 The total number of horizontal dots [H TOTAL DOTS]" are the same.

1. To set the tracking using menu:



Note:

Tracking works only if analog RGB or analog YPbPr signals are input. It is disabled and the message shown right is displayed in the followings cases: Analog video signals are input, no signal is input, or video input is set to a channel other than IN6 to IN9.

[IN6 TRACKING]
NOT AVAILABLE NOW ⚡

IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN9
N/A	N/A	N/A	N/A	N/A	A	A	A	A

A: Can be set only if analog RGB/analog YPbPr signal is input.

N/A: Cannot be set.

2. To set the tracking using commands:

- @STK Set tracking
- @GTK Get tracking

7.8 Output Settings

7.8.1 Output equalizer [OUTPUT EQUALIZER]

HDMI input connector has an equalizer circuit to correct attenuated signals caused when a long cable is connected. Set the output equalizer according to the cable length.

- No correction: OFF [Default]
- Modest correction: LOW
- Middle correction: MIDDLE
- Significant correction: HIGH

[Table 7.8.1a] Output equalizer

Cable length	Shorter than 32.8 ft./10 m	32.8 ft./10 m or longer
Setting	"OFF" to "MIDDLE"	"LOW" to "HIGH"

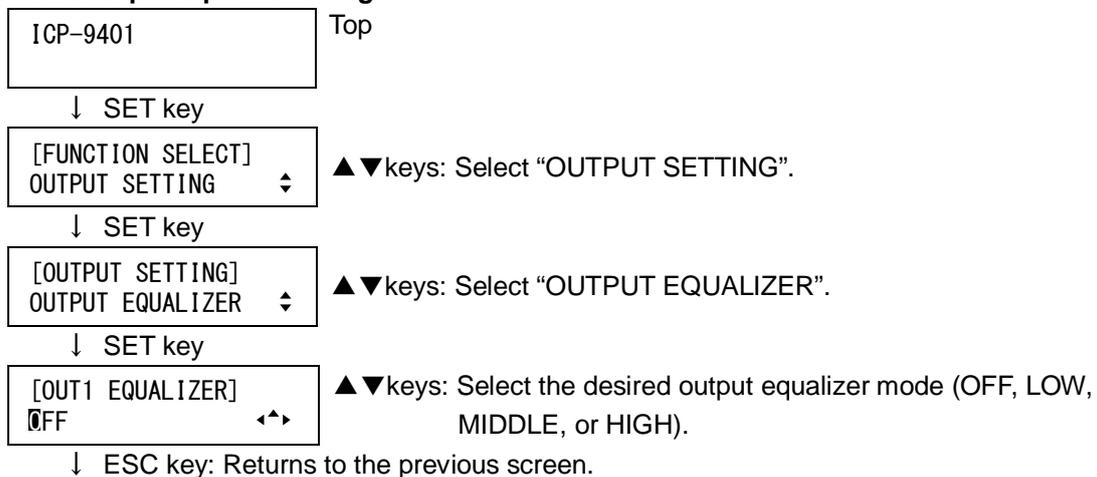
If you use other manufacturers' cable, use this table only as a reference.

If a display device that is in a significantly bad condition is connected, the video may be distorted.

[Table 7.8.1b] Amount of corrections

Setting of output equalizer	Amount of corrections
OFF	0.0 dB
LOW	1.5 dB
MIDDLE	3.5 dB
HIGH	6.0 dB

1. To set the output equalizer using menu:



2. To set the output equalizer using commands:

- @SEQ: Set output equalizer
- @GEQ: Get output equalizer

7.8.2 Output mode [OUTPUT MODE]

You can select the output mode of HDMI output connectors manually.

Set the mode to "HDMI YCbCr4:4:4 MODE" to output video with the optimal mode automatically even if a display device that does not support HDMI component signals or DVI signals is connected. If you want to output video with HDMI RGB signals or DVI signals forcibly, set the desired mode.

"HDMI YCbCr4:4:4 MODE" > "HDMI YCbCr4:2:2 MODE" > "HDMI RGB MODE" > "DVI MODE"

- DVI MODE
- HDMI YCbCr4:2:2 MODE
- HDMI RGB MODE
- HDMI YCbCr4:4:4 MODE [Default]

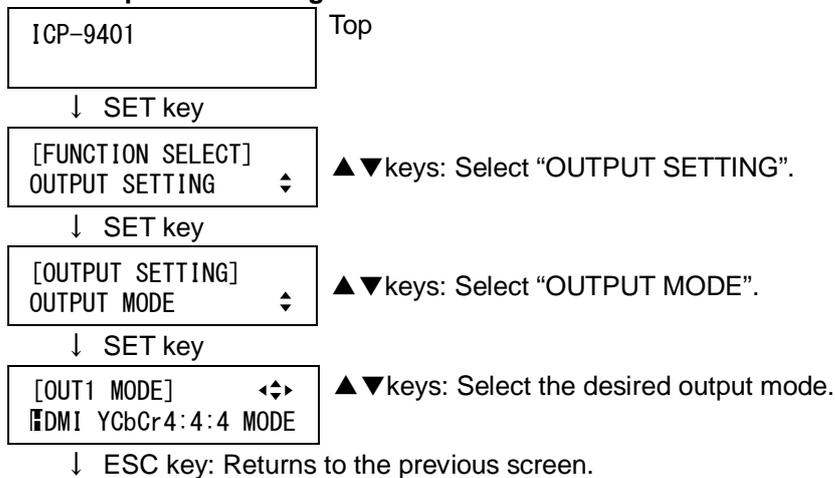
Notes:

- "DVI MODE": digital audio is not output.
- "YCbCr MODE": used only for TV output resolutions (480i, 576i, 720p, 1080i, 1080p)
- "HDMI RGB MODE" and "DVI MODE": used for PC resolutions.

[Table 7.8.2a] Output mode priority

Signals supported by display device \ Output mode	DVI	HDMI RGB	HDMI YCbCr4:2:2	HDMI YCbCr4:4:4
DVI MODE	1st	-	-	-
HDMI RGB MODE	2nd	1st	-	-
HDMI YCbCr4:2:2 MODE	3rd	2nd	1st	-
HDMI YCbCr4:4:4 MODE	4th	3th	2nd	1st

1. To set the output mode using menu:



2. To set the output mode using commands:

- @SDM: Set output mode
- @GDM: Get output mode

7.8.3 Synchronous signal output with no input video [SYNC OUTPUT]

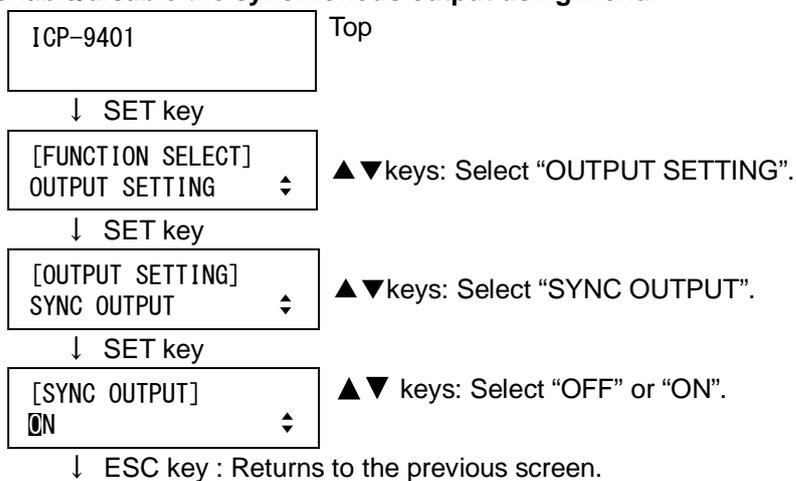
You can set whether synchronous signals are output when no video signal is input from the selected input, or when "OFF" is selected for the input:

Synchronous signals are always output except for the following cases:

- "7.8.15 Output operation mode [COMBINED MODE]" is set to "COMBINED MODE",
- Video signals are not input from input channels on all windows, or
- Input channels of all windows are set to "OFF".

- Not output: OFF
- Output: ON: You can prevent the display device from being switched to the standby mode.
[Default]

1. To enable/disable the synchronous output using menu:



2. To enable/disable the synchronous output using commands:

- @SUY: Set synchronous signal output with no input video
- @GUY: Get synchronous signal output with no input video

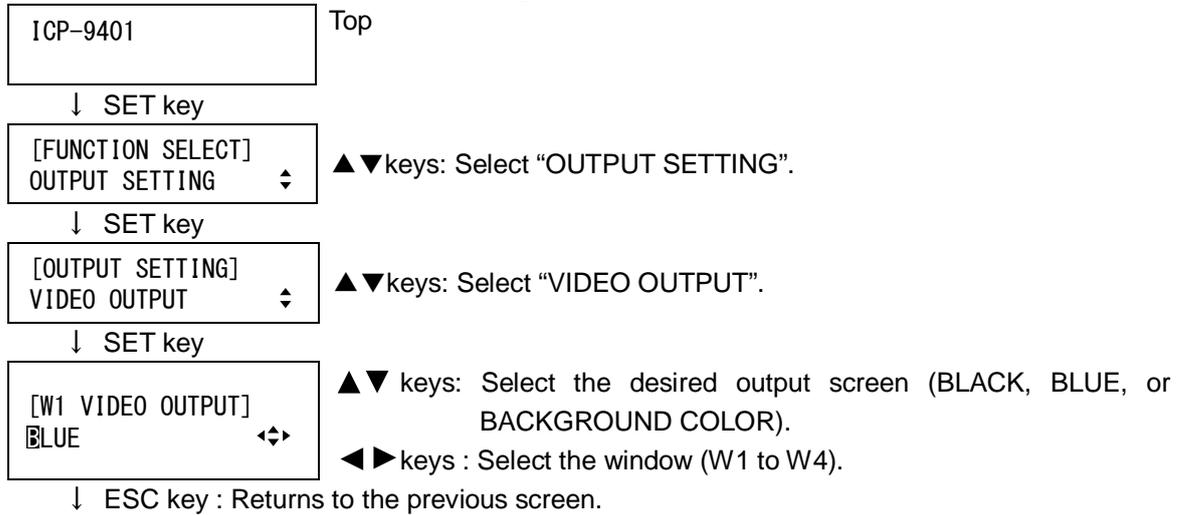
7.8.4 Output video with no input video [VIDEO OUTPUT]

For each window

You can set the color of the video to be output when no video signal is input from the selected input.*

- Black screen: BLACK
- Blue screen: BLUE [Default]
- Background color screen: BACKGROUND COLOR

1. To set the video when no video is input using menu:



2. To set the video when no video is input using commands:

@SBO: Set output video with no input video

@GBO: Get output video with no input video

7.8.5 Window transition effect [VIDEO SWITCHING]

For each window

You can select a window transition effect for when the video input is switched.

Switching speed of effect other than "CUT" can be set in "**7.8.6 Effect duration [SWITCHING SPEED]**".

Selectable effects vary depending on the setting of "**7.8.15 Output operation mode [COMBINED MODE]**".

["**7.8.15 Output operation mode [COMBINED MODE]**" is set to "COMBINED MODE"]

"CUT": A black frame is displayed and the video input is switched instantly (approximately five frames).

"FADE OUT-IN": The current video fades out slowly and then a black frame is displayed. After that, the next video is displayed slowly.

"FREEZE->FADE OUT-IN": The current video fades out slowly after a freeze.

However, if you switch the channel from a channel without input video signals or switch it to a channel without input video signals, "FADE OUT-IN" and WIPE OUT/IN cannot be performed regardless of the setting of this menu. You can set the switching speed of "FADE OUT-IN" and WIPE OUT/IN by following "**7.8.6 Effect duration [SWITCHING SPEED]**".

- CUT
- FADE OUT-IN
- FREEZE→FADE OUT-IN [Default]

["**7.8.15 Output operation mode [COMBINED MODE]**" is set to "SEAMLESS MODE"]

"CUT": The video input is switched instantly.

"DISSOLVE": The current video is cross-fades and switched to the next video.

"FREEZE->DISSOLVE": The current video is cross-faded after freeze.

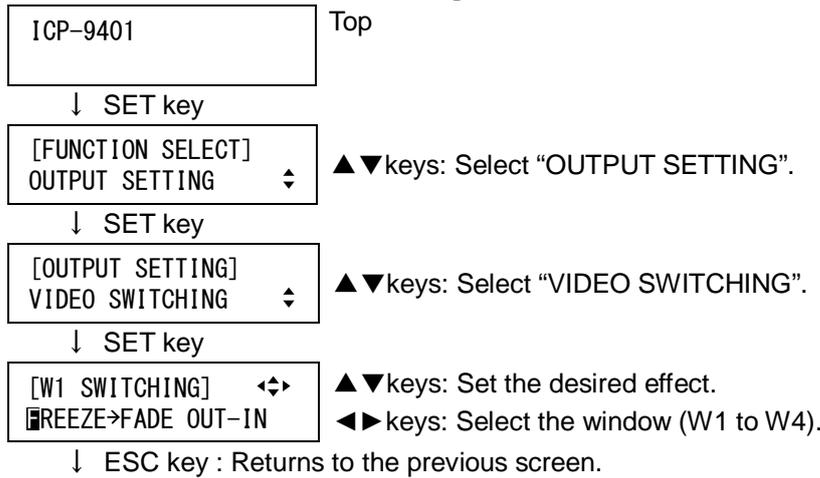
"WIPE": Video is wiped. You can select a wiping direction from four directions. If it is switched from or to a channel without input video signals, the color selected in "**7.8.7 Wipe color [WIPE COLOR]**" is wiped in and the current video disappears. After it is wiped out, the next video is displayed.

- CUT
- DISSOLVE
- FREEZE→DISSOLVE [Default]
- LEFT→RIGHT WIPE
- RIGHT→LEFT WIPE
- TOP→BOTTOM WIPE
- BOTTOM→TOP WIPE

Note:

The setting of this menu is valid not only when the input is switched, but also when "**7.6.5 Automatic detection of input video interruption [INPUT OFF CHECK]**" is set to "ON".

1. To set the window transition effect using menu:



2. To set the window transition effect using commands:

- @SFF: Set video switching effect
- @GFF: Get video switching effect

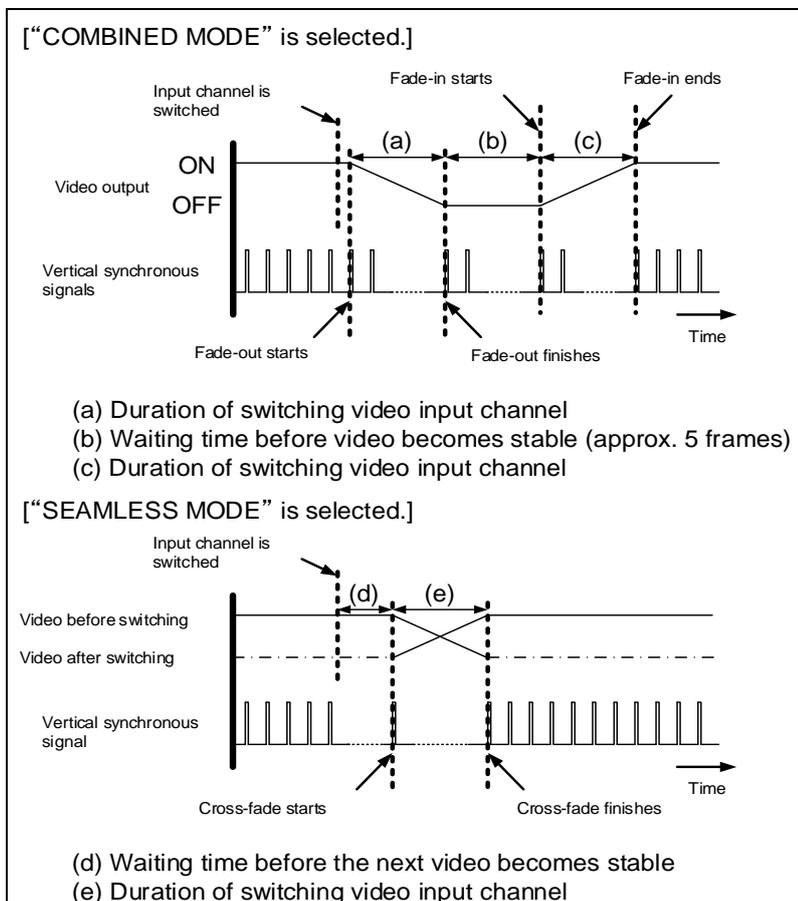
For each window

7.8.6 Effect duration [SWITCHING SPEED]

You can set the amount of time the ICP takes to complete a transition effect for "FADE OUT-IN", "DISSOLVE", or "WIPE OUT/IN" when input channel is switched.

These options are not available when "7.8.5 Window transition effect [VIDEO SWITCHING]" is set to "CUT".

· 100 ms. (0.1 seconds) to 2000 ms. (2.0 seconds) by 10 ms. [Default]: 350 ms. (0.35 seconds)

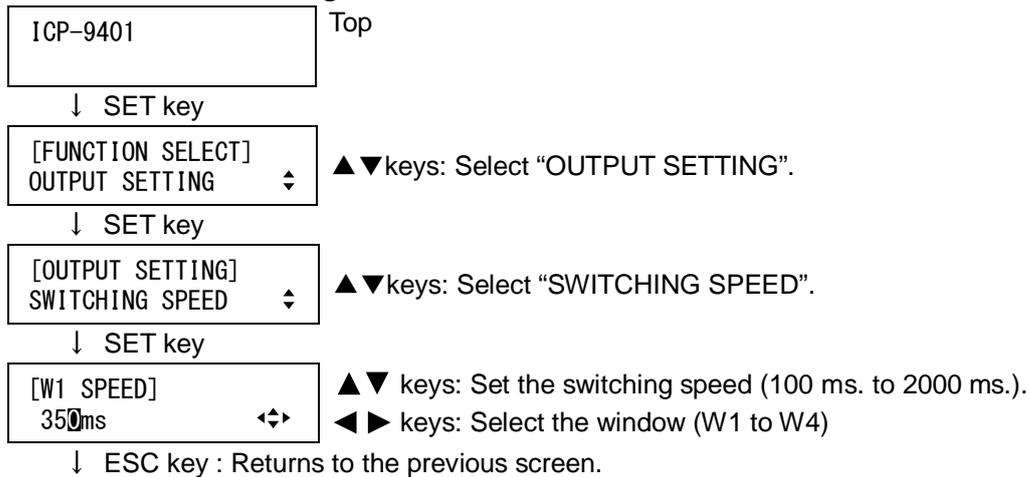


[Fig. 7.8.6a] FADE OUT/IN

Note:

Setting of this menu is applied not only when input is switched but also when “7.6.5 Automatic detection of input video interruption [INPUT OFF CHECK]” is set to “ON”.

Since “FADE OUT-IN”, “DISSOLVE”, and WIPE IN/OUT are performed after synchronization to vertical synchronous signals of the output, the actual speed may be a few milliseconds slower or faster than the set time. For example, if the output resolution is 1080p@60, the set switching speed of video inputs is 420 ms., and “FADE OUT-IN”, “DISSOLVE”, or WIPE IN/OUT is performed at $0.42 \text{ (second)} \times 60 \text{ (frame/second)} \doteq 25$ frames, the actual speed becomes $25 \text{ (frames)} \div 60 \text{ (frame/second)} \doteq 0.4166 \text{ seconds} \doteq$ approximately 416.6 ms.

1. To set the effect duration using menu:**2. To set the effect duration using commands:**

@SFT: Set video switching speed

@GFT: Get video switching speed

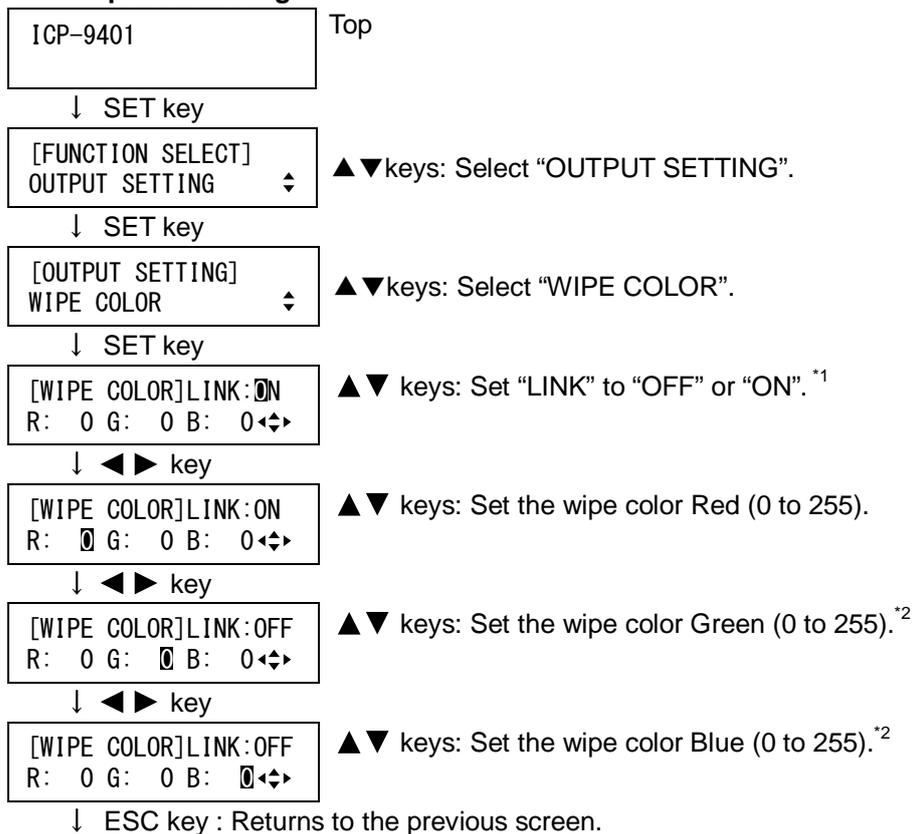
7.8.7 Wipe color [WIPE COLOR]

You can set the wipe color while switching video input.

Valid only if you set "7.8.5 Window transition effect [VIDEO SWITCHING]" to "WIPE".

- Wipe color Red: 0 to 255 [Default]: 0
- Wipe color Green: 0 to 255 [Default]: 0
- Wipe color Blue: 0 to 255 [Default]: 0

1. To set the wipe color using menu:



^{*1} If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) will also be changed according to the settings of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) will also be increased at that level (+2).

^{*2} If you set "LINK" to "OFF", you can set each of the wipe colors individually, Red, Green and Blue.

2. To set the wipe color using commands:

- @SWC: Set wipe color
- @GWC: Get wipe color

7.8.8 Pattern switching effect [PATTERN SWITCHING]

You can set the effect for when pattern is switched.

The duration of FADE OUT-IN can be set in "7.8.9 Pattern switching duration".

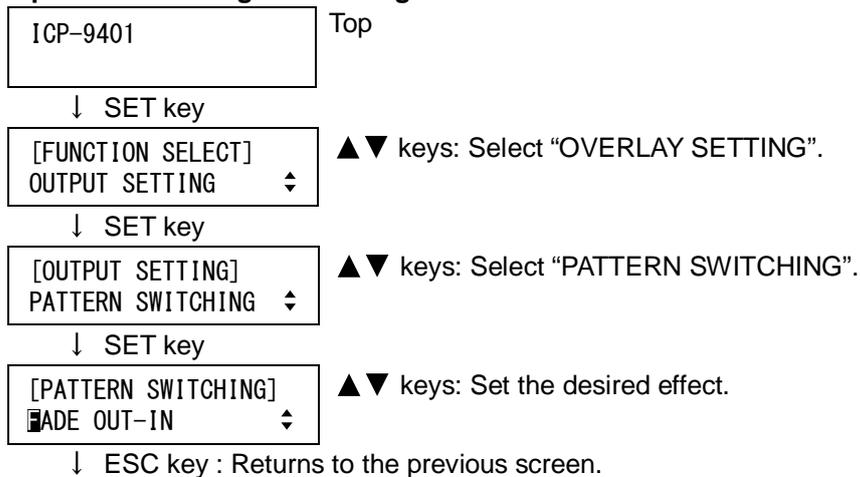
If you set this menu to "CUT", the video input channel will be switched with black frames (about five frames) immediately. The black frame duration will be longer with a pattern having frame and telop.

If you select a pattern which displays frame and telop, the black frame will be displayed longer.

The black frame duration will be longer with a pattern having frame and telop.

- FADE OUT-IN [Default]
- CUT

1. To set pattern switching effect using menu:



2. To set pattern switching effect using commands:

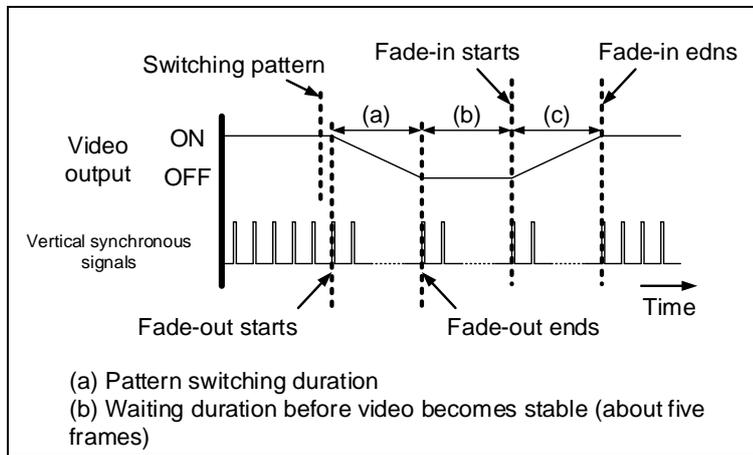
@SWS: Set pattern switching effect.

@GWS Get pattern switching effect.

7.8.9 Pattern switching duration

You can set the amount of time FADE-OUT-IN duration for when pattern is switched. This menu is available only "7.8.8 Pattern switching effect [PATTERN SWITCHING]" is set to "FADE OUT-IN".

- Pattern switching duration: 100ms (0.1 sec.) to 2000ms (2.0 sec.) by 10ms
Default: 350ms (0.35 sec.)



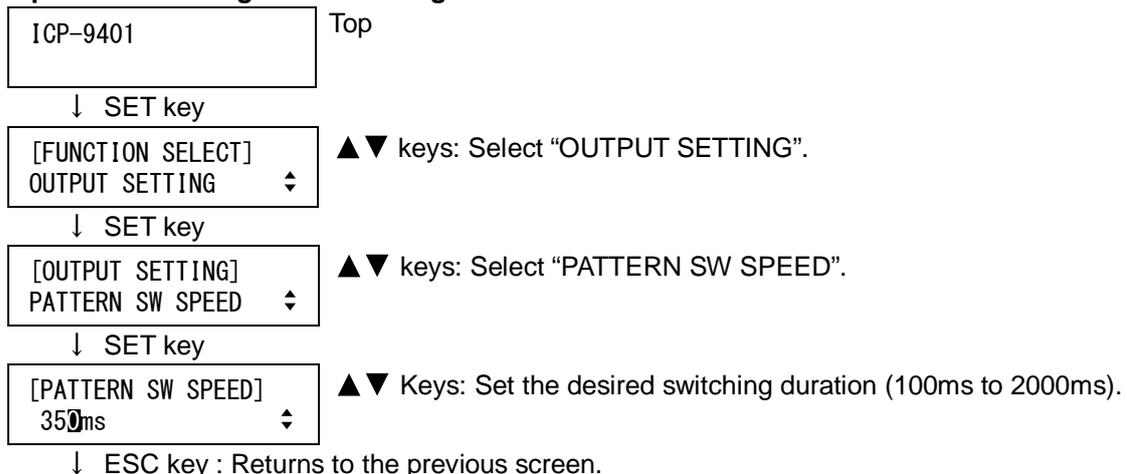
[Fig. 7.8.9a] Pattern switching duration

Note:

Since "FADE OUT-IN", "DISSOLVE", and WIPE IN/OUT are performed after synchronization to vertical synchronous signals of the output, the actual speed may be a few milliseconds slower or faster than the set time. For example, if the output resolution is 1080p@60, the set switching speed of video inputs is 420 ms., and "FADE OUT-IN", "DISSOLVE", or WIPE IN/OUT is performed at $0.42 \text{ (second)} \times 60 \text{ (frame/second)} \doteq 25 \text{ frames}$, the actual speed becomes $25 \text{ (frames)} \div 60 \text{ (frame/second)} \doteq 0.4166 \text{ seconds} \doteq \text{approximately } 416.6 \text{ ms}$.

The black frame duration will be longer with a pattern having frame and telop.

1. To set pattern switching duration using menu:



To set pattern switching duration using menu:

- @SWT: Set pattern switching duration
- @GWT: Get pattern switching duration

7.8.10 HDCP output mode [HDCP OUTPUT MODE]

You can set the HDCP output for when a display device that supports HDCP is connected.

“ALWAYS”: HDCP is output at all times regardless of status of input signals.

“HDCP INPUT ONLY”: HDCP is output only if the input signal has HDCP. However, some display devices may not output video and audio temporarily due to failure of the HDCP authentication when HDCP is switched from OFF to ON.

“DISABLE”: only video and audio without HDCP are output, because HDCP is not authorized.

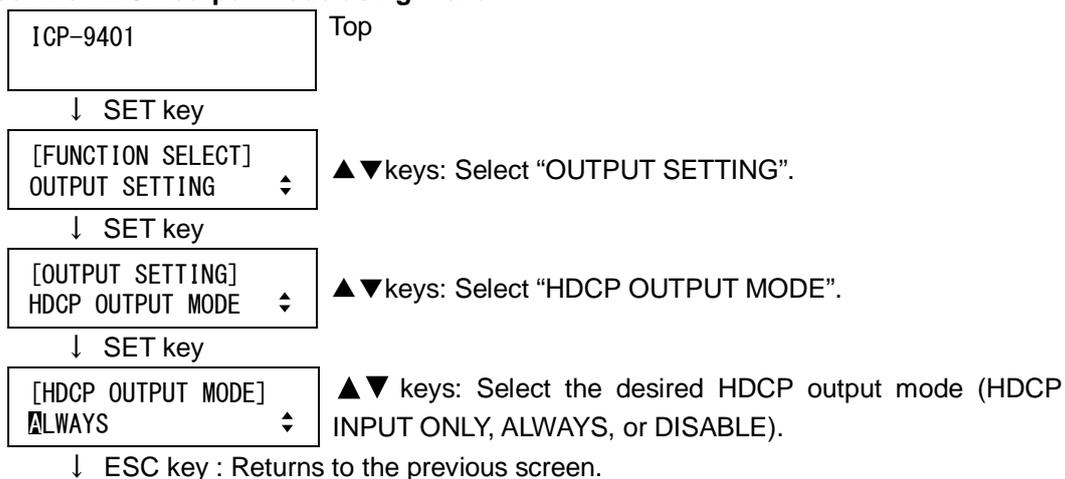
When a display device without HDCP is connected, only video and audio without HDCP are output regardless of the setting of this menu.

- HDCP is output only if input signals are with HDCP: HDCP INPUT ONLY
- HDCP is output at all times: ALWAYS [Default]
- HDCP is not authorized: DISABLE

Note:

Normally, select “ALWAYS”. If you connect a distribution amplifier supporting HDCP for output of the ICP and a display device without HDCP is connected from the output of the distribution amplifier, signals without HDCP are not output to the display device. In such a case, select “HDCP INPUT ONLY”.

1. To set the HDCP output mode using menu:



2. To set the HDCP output mode using commands:

@SEN: Set HDCP output mode

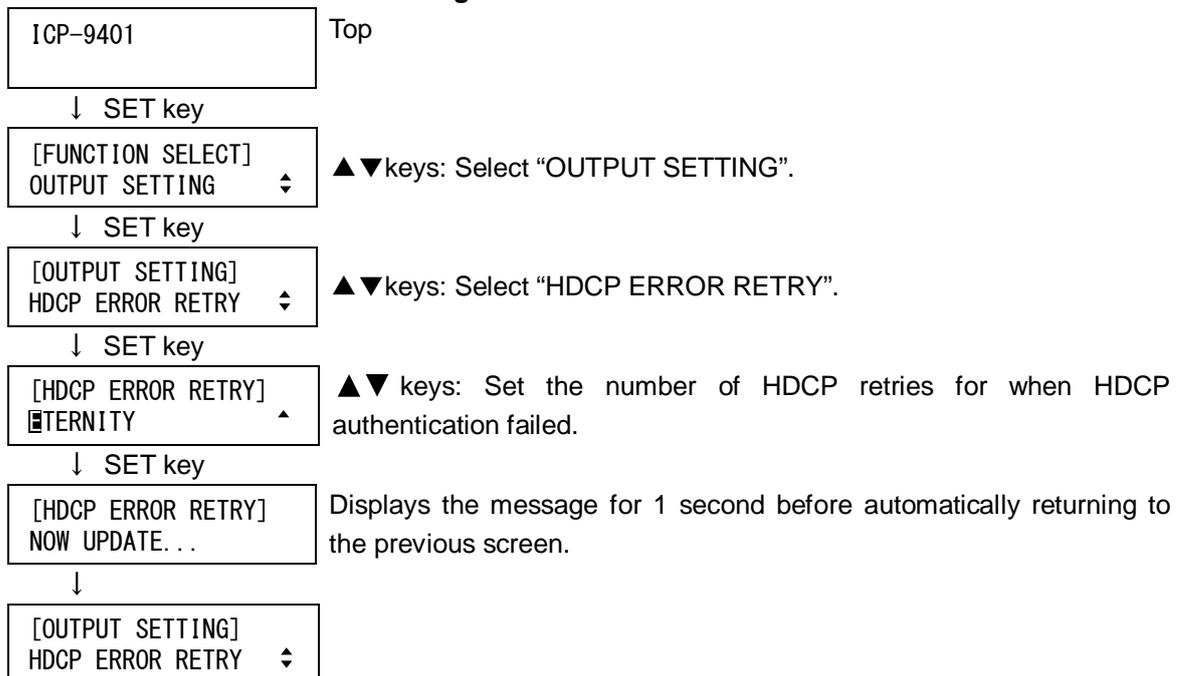
@GEN: Get HDCP output mode

7.8.11 The number of HDCP retries [HDCP ERROR RETRY]

If a display device with HDCP is connected and you set "7.8.10 HDCP output mode [HDCP OUTPUT MODE]" to "HDCP INPUT ONLY" or "ALWAYS", HDCP is authorized regardless of the status of input signals. Normally, set "HDCP ERROR RETRY" to "ETERNITY" to retry the authentication automatically after the first authentication fails. However, if you do not input signals protected by HDCP, you can set the number of retries arbitrarily. (If retry is not succeeded even after the ICP retries for the set number of retry times, video and audio with HDCP are not output.)

- Retry until succeeded: ETERNITY [Default]
- Not retry: 0
- Retry for the set number of retry times: 1 to 100

1. To set the number of HDCP retries using menu:



Note:

If you do not press the "SET" key, the number of retries is not changed. Make sure to press the "SET" key.

2. To set the number of HDCP retries using commands:

- @SHR: Set the number of HDCP retries
- @GHR: Get the number of HDCP retries

7.8.12 Deep Color [DEEP COLOR OUTPUT]

"30-BIT COLOR": signals are output with "30-BIT COLOR" only if a display device supporting Deep Color is connected. If a display device that does not support Deep Color is connected, signals are output with "24-BIT COLOR" automatically. However, since the transmission clock of "30-BIT COLOR" is faster than that of "24-BIT COLOR", noise may occur if a bad-quality cable or long cable is connected. In those cases, the noise may be removed by selecting "24-BIT COLOR".

{ · 24-BIT COLOR [Default]
 { · 30-BIT COLOR

1. To set the Deep Color of HDMI outputs using menu:



2. To set the Deep Color of HDMI outputs using commands:

@SDC: Set Deep Color
 @GDC: Get Deep Color

7. 8. 13 CEC (Consumer Electronics Control) [CEC CONNECYION]

You can select the channel for connecting CEC when a device with CEC is connected to HDMI input and output connectors.

- NOT CONNECTED [Default]
- SELECTED CHANNEL
- IN1
- IN2
- IN3
- IN4
- IN5

Notes:

- Using CEC may cause the following negative effects. If you do not use CEC, set this menu to "NOT CONNECTED."

If the status of the display devices connected to the HDMI output connector changes (such as being turned OFF→ON) or if the CEC connection changes, the EDID may also need to be changed (the ICP changes it automatically) in order to update the address of the connected device. When the EDID is changed, the source device stops outputting video temporarily. Note the following points to not make the EDID change at the time of operation.

The ICP refers to the address of display device at the time of CEC connection. However, if display device is turned off or if the display device has multiple HDMI input connectors and a connector to which the ICP is connected is not selected, the MDS sometimes cannot load the address. (Address may be loaded depending on display devices.) Since the ICP saves the address of the last-used display device, EDID is not normally changed even if the display device status changes. However, when a display device is connected for its first time, EDID may possibly be changed. Therefore, before operation, connect a display device under the same CEC connection status to make the ICP recognize the address of the display device.

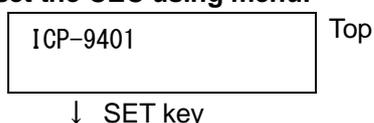
If you select "SELECTED CHANNEL", the CEC connection changes when you switch inputs. If you connect display devices to each output having an address that is different from the ICP settings, the EDID is changed when CEC connections are changed. If you select "SELECTED CHANNEL", make sure to connect display devices having the same addresses.

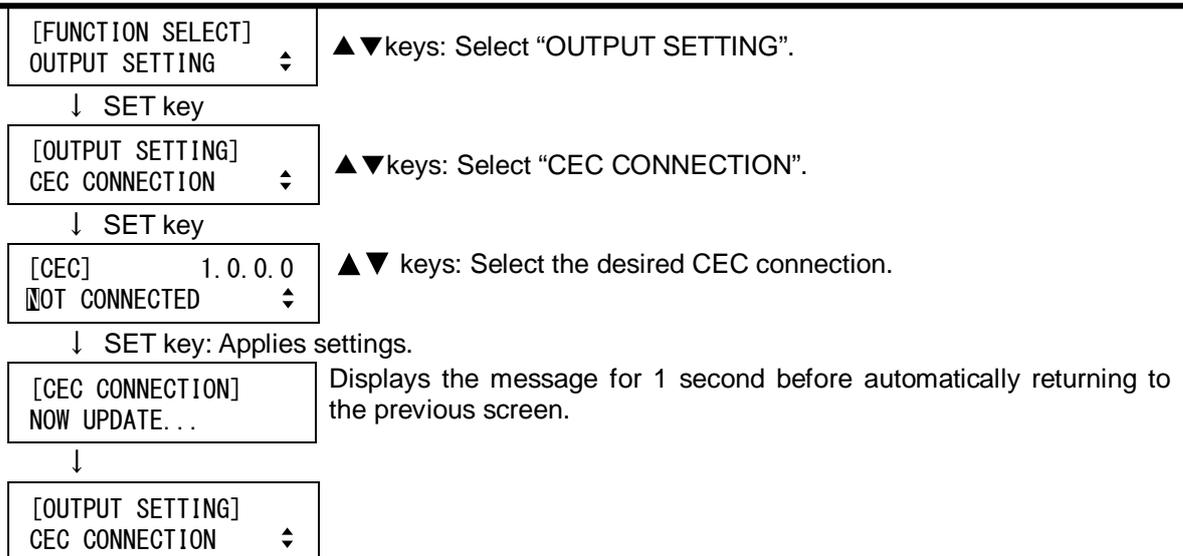
If a display device has multiple HDMI input connectors, each connector has the specific address that is different from each other. If connecting display devices of the same model to each ICP output, connect them to the same input connector of the display device. If you connect devices such as a repeater between the output of the ICP and a display device, the addresses may not be matched. In this case, set this menu to an option other than "SELECTED CHANNEL". The addresses of the display devices connected to each output connector are displayed on the upper right.

[OUT1 CEC]	1.0.0.0
SELECTED CHANNEL	◀▶

- To use CEC, enable HDMI link control of the connected device (such as digital TV, Blu-ray disc recorder, and so on). The ICP is counted as a CEC device, and several CEC devices including the ICP may be displayed on the CEC operation window. In this case, select the device you want to operate. (For settings and operation of your device, refer to the manual of the device.)

1. To set the CEC using menu:



**Note:**

If you do not press the "SET" key, the CEC is not changed. Make sure to press the "SET" key.

2. To set the CEC using commands:

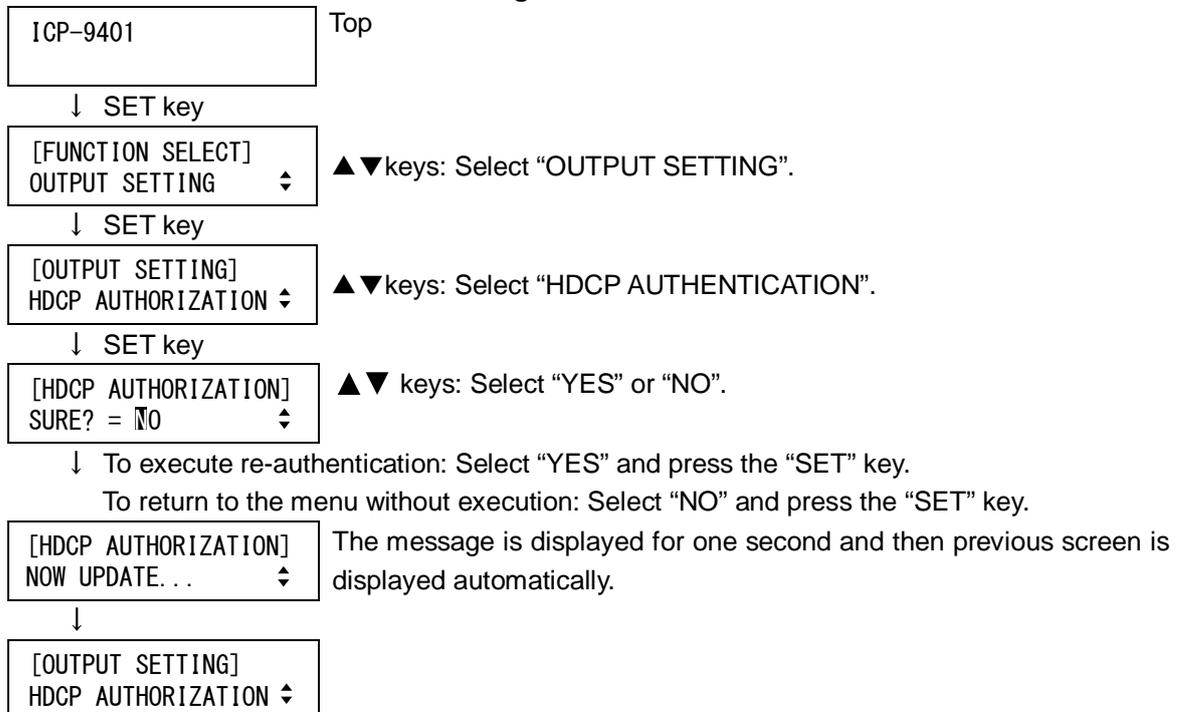
@SCE: Set CEC

@GCE: Get CEC

7.8.14 HDCP re-authentication [HDCP AUTHORIZATION]

If a display device supporting HDCP is connected, HDCP is authorized automatically. You can re-authorize HDCP manually using this menu. (Connection Reset is performed automatically, but it can be performed manually using this menu.)

1. To perform the HDCP re-authentication using menu:



2. To perform the HDCP re-authentication using commands:

@HAU: Re-authorize HDCP

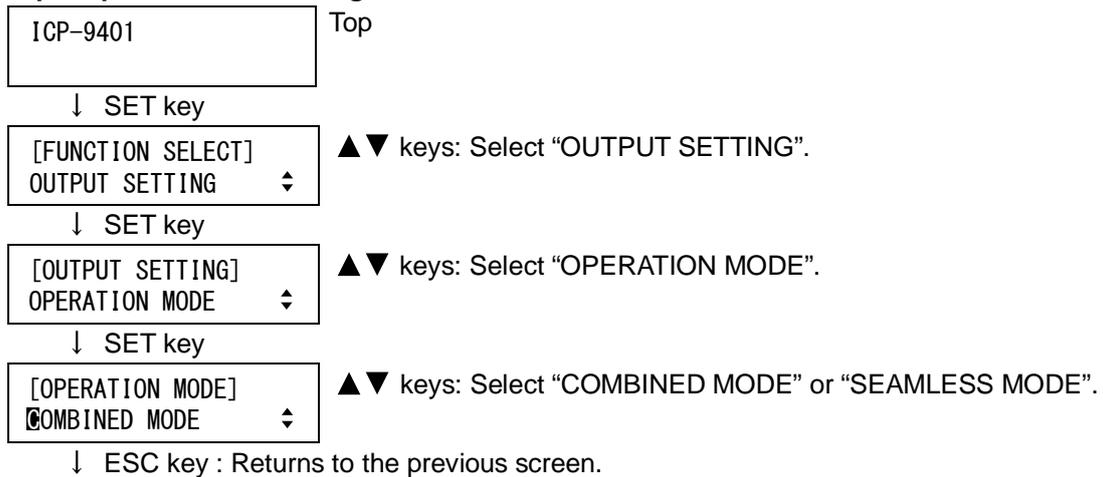
7. 8. 15 Output operation mode [COMBINED MODE]

You can set the output operation mode.

- COMBINED MODE: Four window combined: input video switching with a black frame [Default]
- SEAMLESS MODE: Truly seamless switcher mode: the combine function cannot be used.

If you use this menu to change the output mode, settings of “7.3.10 Output position [OUTPUT POSITION]”, “7.3.11 Output size [OUTPUT SIZE]”, and “7.3.12 Output masking [OUTPUT MASKING]” will be initialized.

1. To output operation mode using menu:



2. To output operation mode using commands:

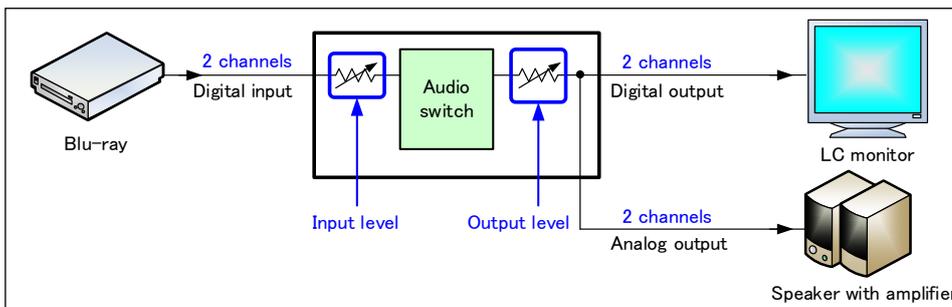
- @SSE: Set output operation mode
- @GSE: Get output operation mode

7.9 Audio Settings

HDMI digital audio supports the following formats. If a format that is not supported is input, the audio is not output.

[Table 7.9a] Supported formats of HDMI digital audio

Audio format	Description
2 channel linear PCM	32 to 192k Hz, 16/20/24bit



[Fig. 7.9a] I/O of audio signals

7.9.1 Audio output level [OUTPUT LEVEL]

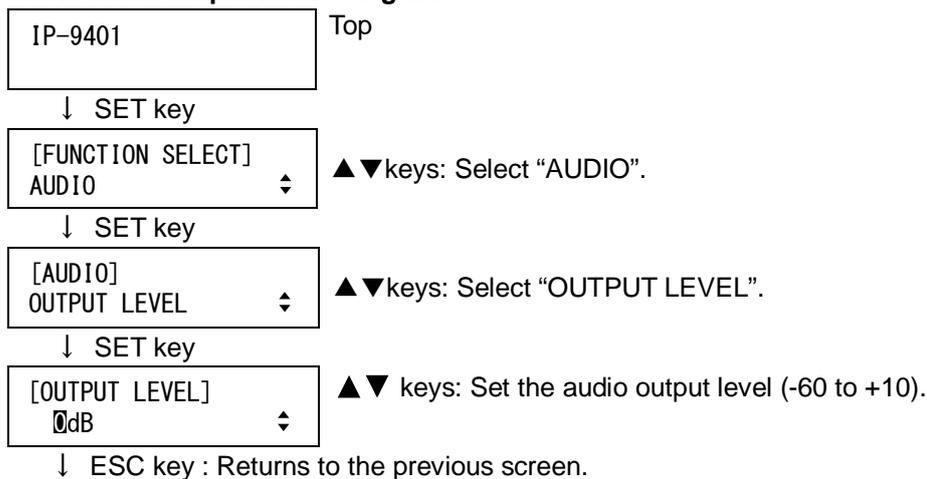
You can set the audio output level using audio output volume.

· Audio output level: -60 dB to +10 dB [Default]: ±0 dB

Note: If you change the output level while "7.9.2 Mute [OUTPUT MUTE]" is set to "ON", mute is canceled.

If you set "7.17.5 Top VFD screen [TOP DISPLAY]" to "AUDIO VOLUME", you can set the audio output level on the top screen.

1. To set the audio output level using menu:



2. To set the audio output level using commands:

- @SSL: Set audio output level
- @GSL: Get audio output level
- @SOL: Set relative value of audio output level
- @GOL: Get limit status of audio output level

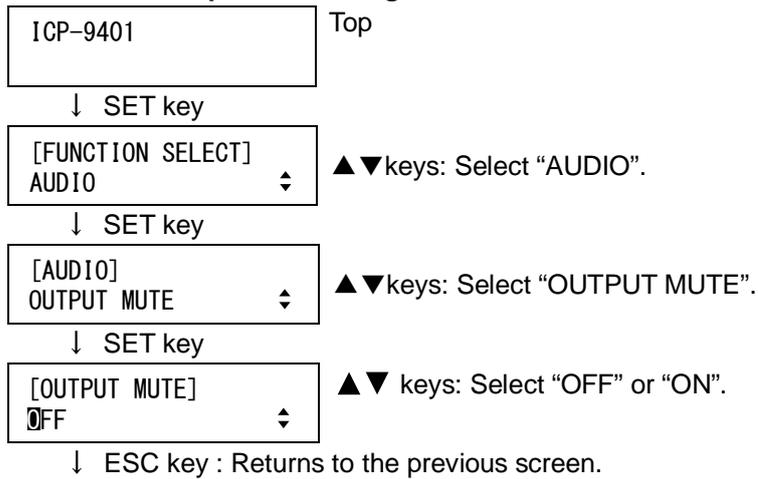
7.9.2 Mute [OUTPUT MUTE]

You can set the audio output mute.

- Mute off: OFF [Default]
- Mute on: ON

If you set "7.17.5 Top VFD screen [TOP DISPLAY]" to "AUDIO VOLUME," you can set this menu on the top screen.

1. To set the audio output mute using menu:



2. To set the audio output mute using commands:

- @SAM: Set output mute
- @GAM: Get output mute

7.9.3 Audio input selection [AUDIO INPUT SELECT]

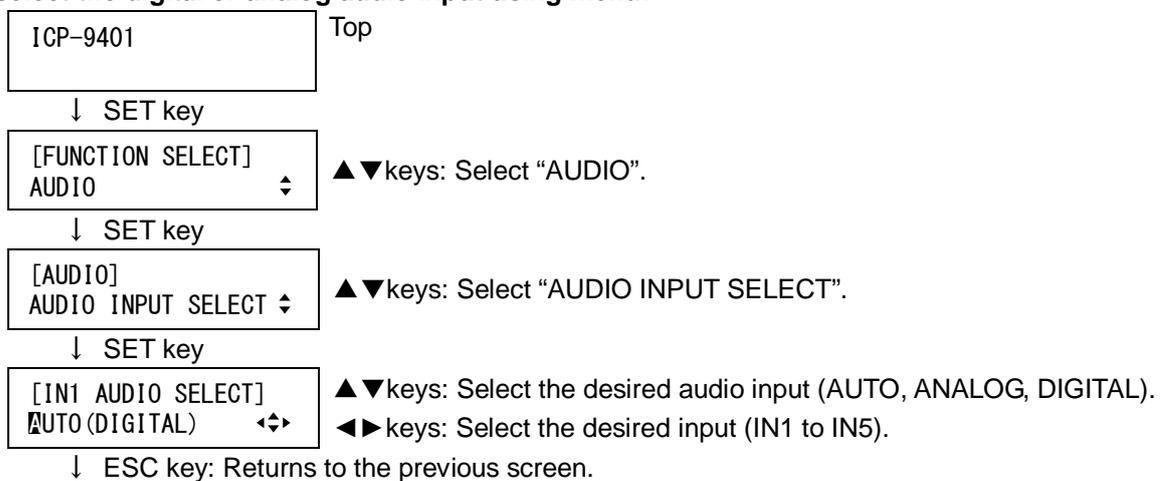
For each input

If you select "AUTO," digital audio is output automatically when HDMI signals with audio signals are input; analog audio is output in other cases.*

- AUTO [Default]
- ANALOG
- DIGITAL

* If you select "AUTO" while both digital and analog audio signals are input, the digital audio is output. While no HDMI signals are input (for example, during a standby period until the source device starts or output resolution of the output device is changed), the analog audio is output. If you do not want to output analog audio in these conditions, set the audio input manually.

1. To select the digital or analog audio input using menu:



2. To select the digital or analog audio input using commands:

- @SAS: Select audio input
- @GAS: Get audio input
- @GSD: Get actual audio input

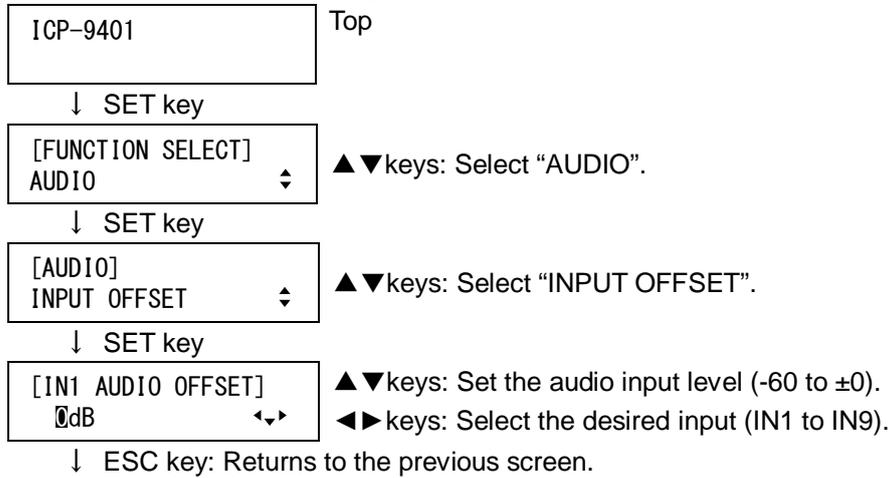
For each input port/input signal

7.9.4 Audio input level [INPUT OFFSET]

You can correct the gap in audio input levels of each input signal, because audio input level can be set for each input connector.

· Audio input level: -60 dB to ± 0 dB [Default]: ± 0 dB

1. To set the audio input level using menu:



2. To set the audio input level using commands:

- @SSO: Set audio input level
- @GSO: Get audio input level
- @SIL: Set relative value of audio input level
- @GIL: Get limit status of audio input level

7.9.5 Output lip sync [OUTPUT LIP SYNC]

Since video signals and audio signals are processed on different circuit, time lag between the lip movement and audio is developed. The time lag can be corrected by the lip sync correction function.

With this menu, you can set the lip sync value to delay the audio in order to match it with the video. The ICP can delay audio signals by one frame.

You can set this function for each output using this menu and for each input by following "7.9.6". Normally, set it for each output to delay audio depending on the video delay amount of the display device. In case the video source itself contains the gap between the video and audio, or video is delayed by connecting a frame synchronizer for input, set lip sync for each input.

·Lip sync: 0 to 8 frames [Default]: 0 frame

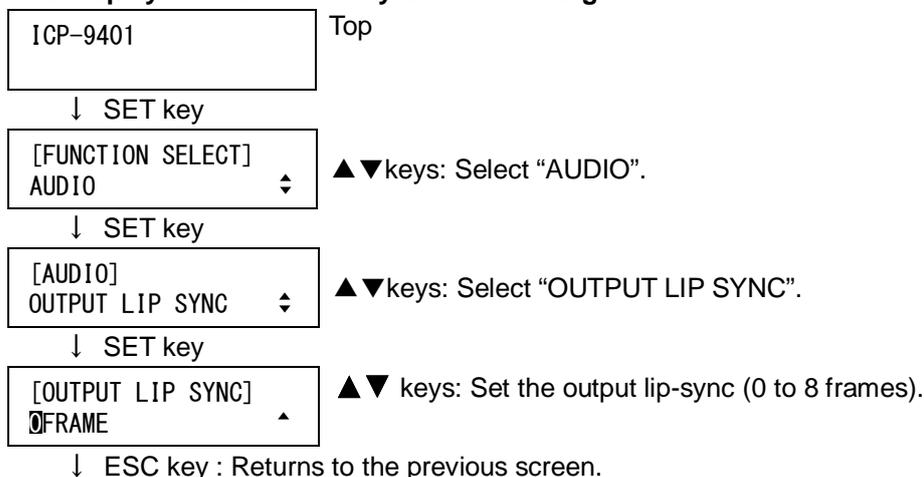
Note:

Up to eight frames using lip-sync can be set for each output and input, but if the total number of frames for output plus input exceeds eight frames, the maximum number of delayed frames is limited to eight frames. If sampling frequency of the audio signals (sampling frequency of input signals or digital input; the set value of "7.9.7 Sampling frequency of analog audio input [SAMPLING FREQUENCY]" for analog input) is 88.2 kHz or more, the amount of delay is also limited. For example, if sampling frequency is 192 kHz, only two frames are delayed even though lip-sync is set to three frames or more.

Sampling frequency	32 kHz	44.1 kHz	48 kHz	88.2 kHz	96 kHz	192 kHz
Max. delay	8 frames	8 frames	8 frames	5 frames*	5 frames*	2 frames

* If vertical synchronous frequency of "7.3.1 Output resolutions [RESOLUTION]" is 50 Hz (576i@50, 576p@50, 720p@50, 1080i@50, 1080p@50), the maximum delay is four frames.

1. To set the lip sync value to delay the audio using menu:



2. To set the lip sync value to delay the audio using commands:

@SLO: Set output lip sync

@GLO: Get output lip sync

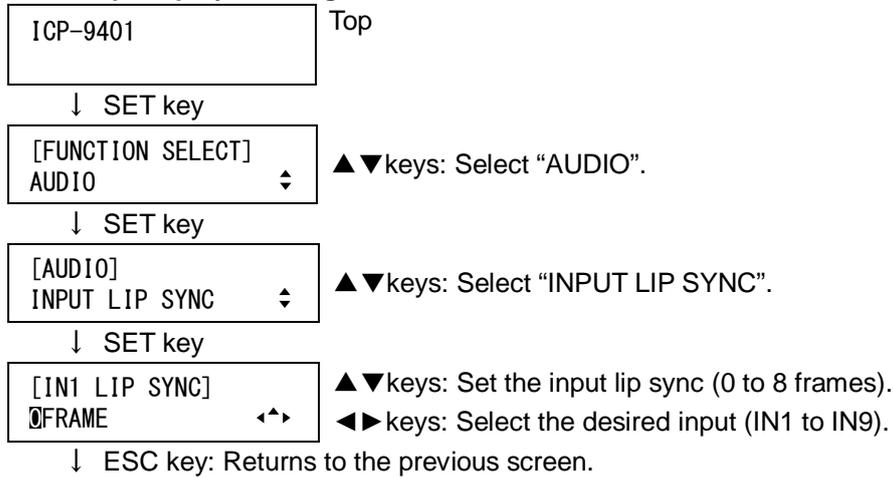
For each input port/input signal

7.9.6 Input lip sync [INPUT LIP SYNC]

Normally, audio is delayed depending on the video delay amount of the display device in "7.9.5 Output lip sync [OUTPUT LIP SYNC]". If the video source itself includes the gap between video and audio or if video is delayed by connecting a frame synchronizer for the input, set the lip-sync frames individually for each input.

·Lip sync: 0 to 8 frames [Default]: 0 frame

1. To set the input lip sync using menu:



2. To set the input lip sync using commands:

- @SLY: Set input lip sync
- @GLY: Get input lip sync

7.9.7 Sampling frequency of analog audio input [SAMPLING FREQUENCY]

You can set the sampling frequency for when analog audio input signals (audio input is IN1 to IN5 and you set "7.9.3 Audio input selection [AUDIO INPUT SELECT]" to "ANALOG", or audio input is IN6 to IN9) are output to digital audio. If you set it to "AUTO", the maximum sampling frequency supported by the connected display device is output.*

* If you select "AUTO", the ICP determines the sampling frequency based on the EDID (see "7.10 EDID" for details) of the display device and displays the output frequency in parentheses of the VFD screen.

If the ICP cannot load the EDID from the display device, it outputs signals with the last-used sampling frequency, and displays an "*" following the sampling frequency that is actually output.



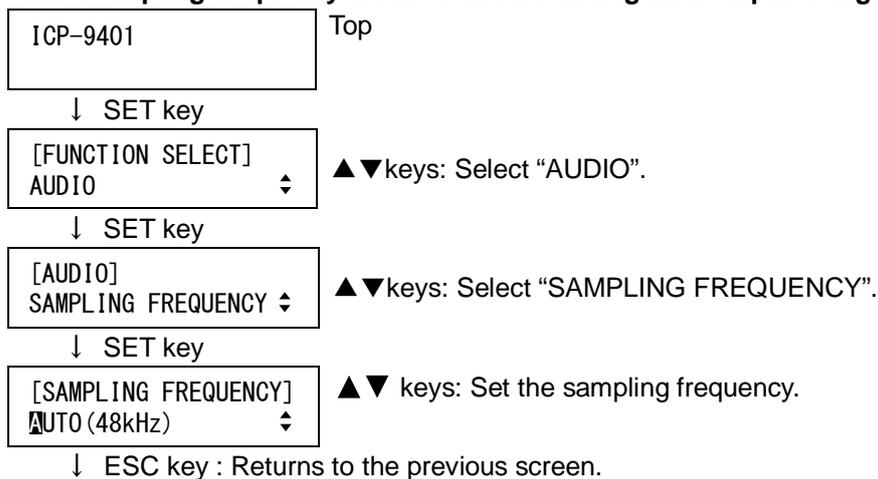
[EDID can be loaded]



[EDID cannot be loaded]

}	· AUTO [Default]	· 32 kHz	· 44.1 kHz
	· 48 kHz	· 96 kHz	· 192 kHz

1. To set the sampling frequency for the selected analog audio input using menu:



2. To set the sampling frequency for the selected analog audio input using commands:

- @SSF: Set sampling frequency of analog audio input
- @GSF: Get sampling frequency of analog audio input
- @GFD: Get actual sampling frequency of analog audio input

7.9.8 Output connector [OUTPUT CONNECTOR]

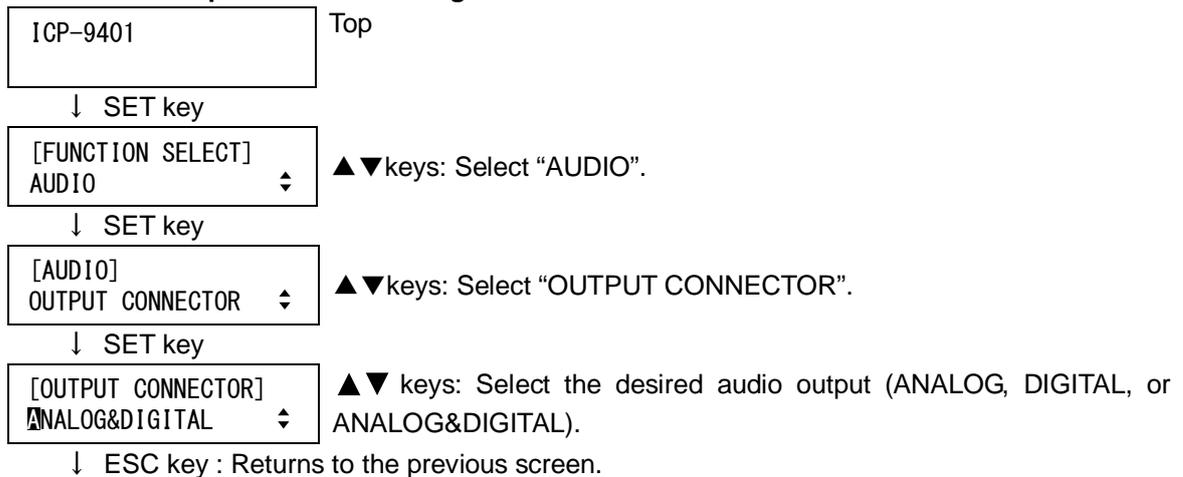
You can select audio output.

- Only analog audio output connector: ANALOG
- Only HDMI output connector: DIGITAL
- Both analog audio output and HDMI output connectors: ANALOG&DIGITAL [Default]

Note:

If you set "7.8.2 Output mode [OUTPUT MODE]" to "DVI MODE", no audio is output to any HDMI output connector regardless of the setting of this menu.

1. To set the audio output connector using menu:



2. To set the audio output connector using commands:

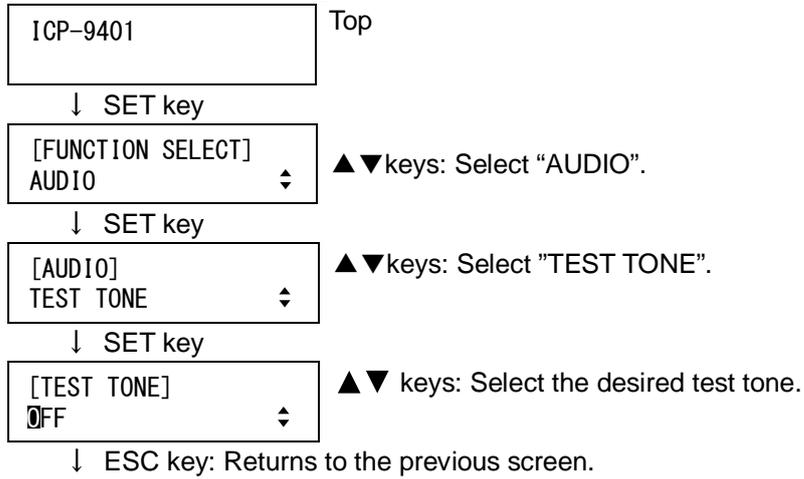
- @SDO: Set audio output connector
- @GDO: Get audio output connector

7.9.9 Test tone [TEST TONE]

You can set the test tone that is output instead of audio. The test tone will be output only to FRONT L/R.

- OFF [Default]
- 1kHz
- 400Hz

1. To set the test tone using menu:



2. To set the test tone using commands:

- @SAT: Set test tone
- @GAT: Get test tone

7.10 EDID (Extended Display Identification Data)

You can select the EDID from either the built-in data or the data loaded from the connected display device. The ICP can load EDID that conforms to VESA DDC2B/EDID standard ver. 1.0 to 1.3.

Data loaded from a display device connected can only be used for digital input (IN1 to IN5). Only built-in EDID can be used for analog inputs (IN6 to IN9).

Note:

For PCs, since EDID is acquired when the PC is turned on, turn on the PC while the ICP and display device are turned on. When turning off the system, first turn off the PC and then turn off the ICP and display device. If you change the settings of EDID during operation, the ICP may not be recognized correctly. Set EDID while source devices are turned off as much as possible.

7.10.1 EDID setting [EDID DATA]

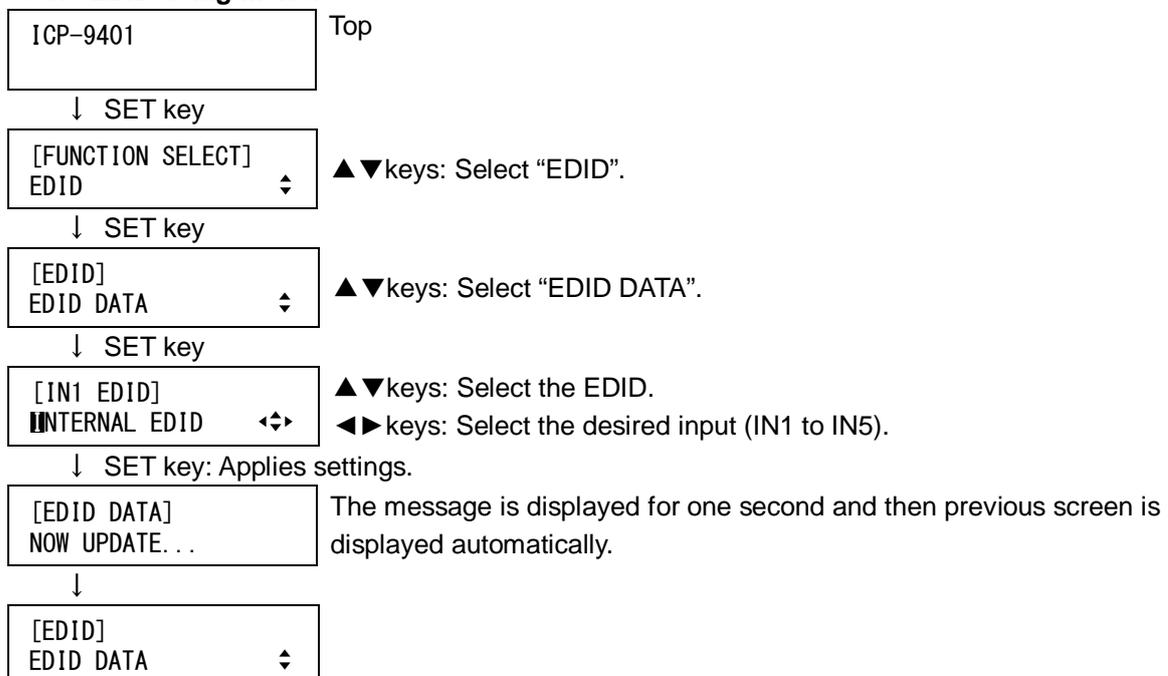
For each input

You can set the EDID to be sent to the connected source device. If you select "INTERNAL EDID", the EDID that is set in the following menu is sent: "7.10.2 PC resolution [PC RESOLUTION]", "7.10.3 Input resolution for AV devices [AV RESOLUTION]", and "7.10.4 Deep Color [DEEP COLOR INPUT]".

- Built-in data: INTERNAL EDID [Default]
- Data of display device connected to HDMI output connector: OUT MONITOR
- Data copied from display device: COPY DATA 1 to 8*

*EDID must be loaded from the display device set in "7.10.6 EDID Copy [NOMITOR EDID COPY]" beforehand.

1. To set the EDID using menu:



Note:

If you do not press the "SET" key, the EDID is not changed. Make sure to press the "SET" key.

The error message below is displayed for a second when the VFD screen moves from the sub menu to the setup menu in the following cases:

- "OUT MONITOR" is set for any input channel, and
- no display device is connected, or
- loading EDID fails.

OUTPUT MONITOR UNCONNECTED

OUTPUT MONITOR EDID READ ERROR

If EDID cannot be updated pressing the "SET" key, the same message is displayed for a second as well.

If the error message is displayed, check the connection of the display device. If EDID can be loaded, EDID will be updated automatically.

2. To set the EDID using commands:

@SED: Set EDID

@GED: Get EDID

7.10.2 PC resolution [PC RESOLUTION]

For each input

You can set the resolution to be output from source devices.

For digital inputs (IN1 to IN5), this menu is valid only if you select "INTERNAL EDID" for "7.10.1 EDID".

Normally, set the resolution when connecting DVI devices such as PCs or analog RGB devices. However, if you connect AV devices such as Blu-ray disc player using HDMI, the setting of this menu is valid in order to limit the output resolution.

- SVGA(800x600) • Quad-VGA(1280x960) • WXGA+(1440x900) • 1080p(1920x1080)
 - XGA(1024x768) • SXGA(1280x1024) • WXGA++(1600x900) • WUXGA(1920x1200)
 - 720p(1280x720) • WXGA(1360x768) • UXGA(1600x1200) • QWXGA(2048x1152)
 - WXGA(1280x768) • WXGA(1366x768) • WSXGA+(1680x1050)
 - WXGA(1280x800) • SXGA+(1400x1050) • 1080i(1920x1080)
- [Default]: For inputs 1(IN1) to 5 (IN5): 1080p (1920x1080)
 For inputs 6(IN6) to 9 (IN9): UXGA (1600x1200)

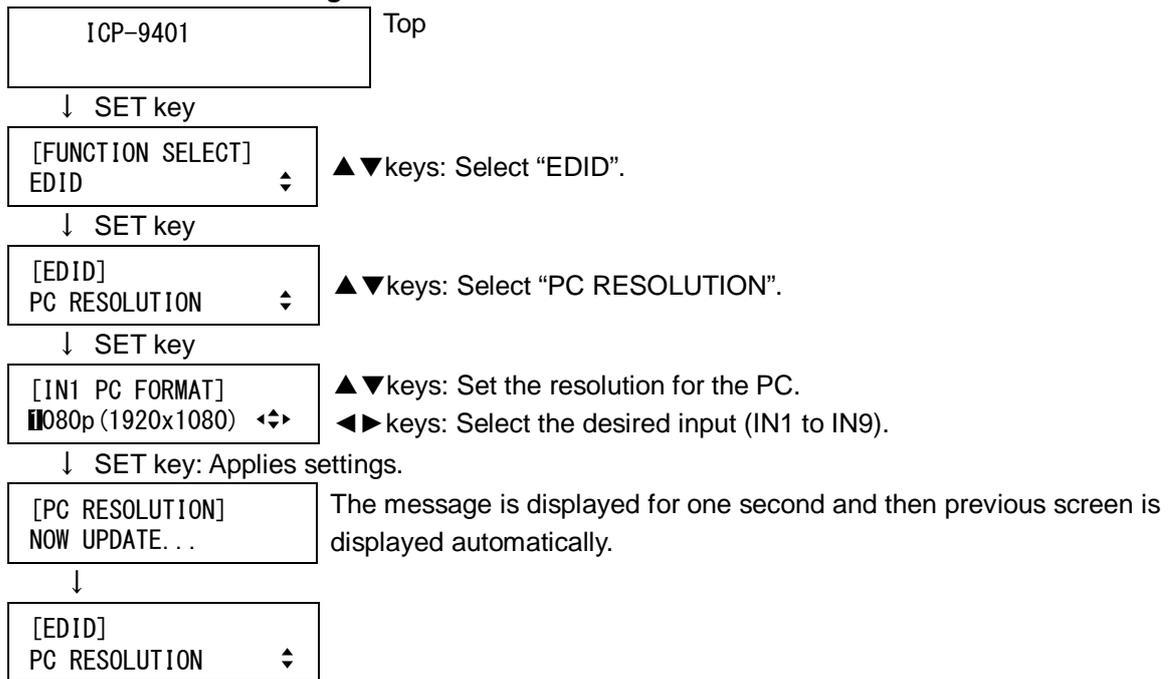
Timing of 720p, 1080i, and 1080p is the same as that of HD signals meeting the CEA-861D standard. For other resolutions, timings meet the VESA DMT or VESA CVT standards. 1920x1200 and 2048x1152 are Reduced Blanking.

Set the maximum available resolution for EDID, but the lower resolutions are also supported. Select the resolution responding to the resolution that is output from the connected PC.

[Table 7.10.2a] Supported resolution

○ : Supported × : Not supported

Supported resolution Input Resolution settings	640 480	800 600	1024 768	1280 720	1280 768	1280 800	1280 960	1280 1024	1360 768	1366 768	1400 1050	1440 900	1600 900	1600 1200	1680 1050	1920 1080i	1920 1080p	1920 1200	2048 1152
800x600	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
1024x768	○	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
1280x720 [D4]	○	○	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
1280x768	○	○	○	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
1280x800	○	○	○	○	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×
1280x960	○	○	○	○	○	○	○	×	×	×	×	×	×	×	×	×	×	×	×
1280x1024	○	○	○	○	○	○	○	○	×	×	×	×	×	×	×	×	×	×	×
1360x768	○	○	○	○	○	○	○	○	○	×	×	×	×	×	×	×	×	×	×
1366x768	○	○	○	○	○	○	○	○	×	○	×	×	×	×	×	×	×	×	×
1400x1050	○	○	○	○	×	○	○	○	×	○	○	×	×	×	×	×	×	×	×
1440x900	○	○	○	○	×	○	○	○	×	○	○	○	×	×	×	×	×	×	×
1600x900	○	○	○	○	×	○	○	○	×	○	○	○	○	×	×	×	×	×	×
1600x1200	○	○	○	○	×	○	○	○	×	○	○	○	○	○	×	×	×	×	×
1680x1050	○	○	○	○	×	○	○	○	×	○	○	○	○	○	○	×	×	×	×
1920x1080i [D3]	○	○	○	○	×	×	×	×	×	×	×	×	×	×	×	○	×	×	×
1920x1080p [D5]	○	○	○	○	×	×	○	○	×	○	○	○	○	○	○	×	○	×	×
1920x1200	○	○	○	×	×	○	○	○	×	×	○	○	○	○	○	×	○	○	×
2048x1152	○	○	○	×	×	×	○	○	×	×	○	○	○	○	○	×	○	○	○

1. To set the PC resolution using menu:**Note:**

If you do not press the "SET" key, the PC resolution is not changed. Make sure to press the "SET" key.

2. To set the PC resolution using commands:

@SVF: Set PC resolution (EDID)

@GVF: Get PC resolution (EDID)

7.10.3 Input resolution for AV devices [AV RESOLUTION]

For each input

This menu is valid only if you select "INTERNAL EDID" for "7.10.1 EDID" and an AV device such as Blu-ray disc player is connected. Normally, select "AUTO" and set the resolution using the setting of "7.10.2 PC resolution [PC RESOLUTION]".

}	·UNUSED	·720p	·1080p	
	·480p	·1080i	·AUTO	[Default]

"UNUSED" disables the EDID for AV devices. If you select "AUTO" and the resolution output from the PC is different from the resolution set in Properties, the problem may be solved by selecting "UNUSED". If you select "UNUSED", the setting of "7.10.4 Deep Color [DEEP COLOR INPUT]" will be disabled and audio is not output because the source device outputs signal through DVI mode.

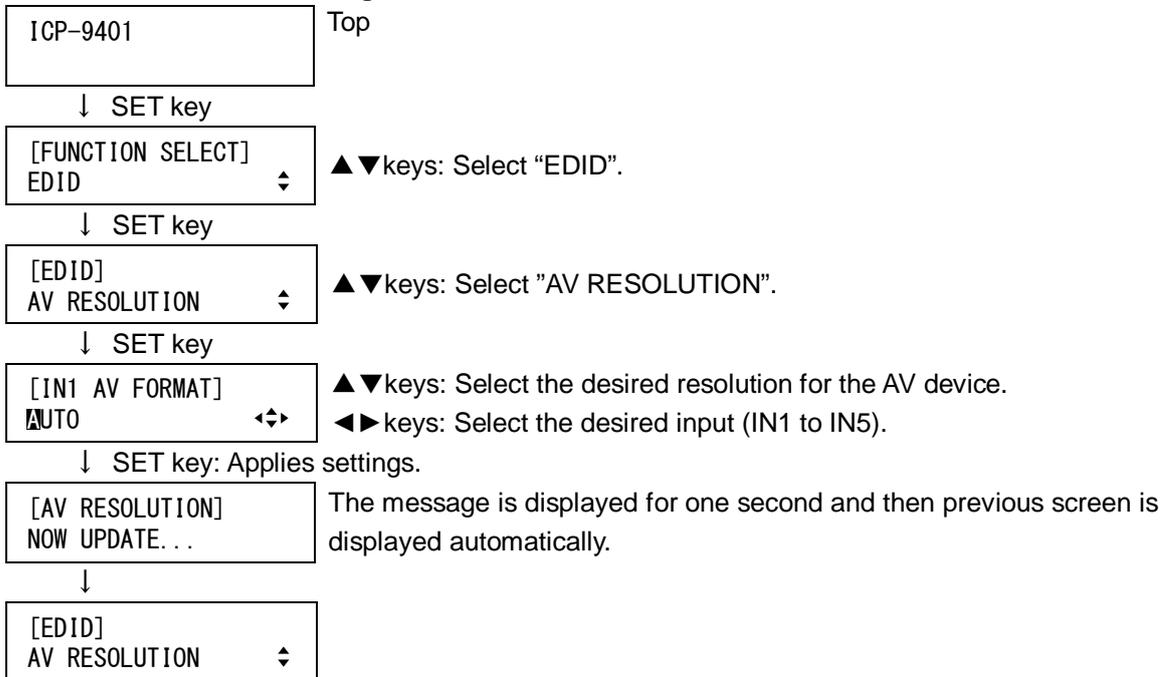
If there is a potential to connect both PCs and AV devices with different resolutions (for example, PC with WXGA (1366x768), Blu-ray disc player with 1080p), set the PC resolution in "7.10.2 PC resolution [PC RESOLUTION]" and select the AV resolution from 480p, 720p, 1080i, and 1080p in this menu. However, some PCs and AV devices may choose the higher resolution of the resolutions set in "7.10.2 PC resolution [PC RESOLUTION]" or set in this menu.

If you select "AUTO", resolutions for AV devices are set automatically according to the settings of "7.10.2 PC resolution [PC RESOLUTION]".

[Table 7.10.3a] Input resolutions with "AUTO"

PC resolution	800 600	1024 768	1280 720	1280 768	1280 800	1280 960	1280 1024	1360 768	1366 768	1400 1050	1440 900	1600 900	1600 1200	1680 1050	1920 1080i	1920 1080p	1920 1200	2048 1152
AV resolution	480p		720p										1080i	1080p				

1. To set the HDTV resolution using menu:



Note:

If you do not press the "SET" key, the AV resolution is not changed. Make sure to press the "SET" key.

2. To set the HDTV resolution using commands:

- @SHF: Set HDTV resolution (EDID)
- @GHF: Get HDTV resolution (EDID)

For each input

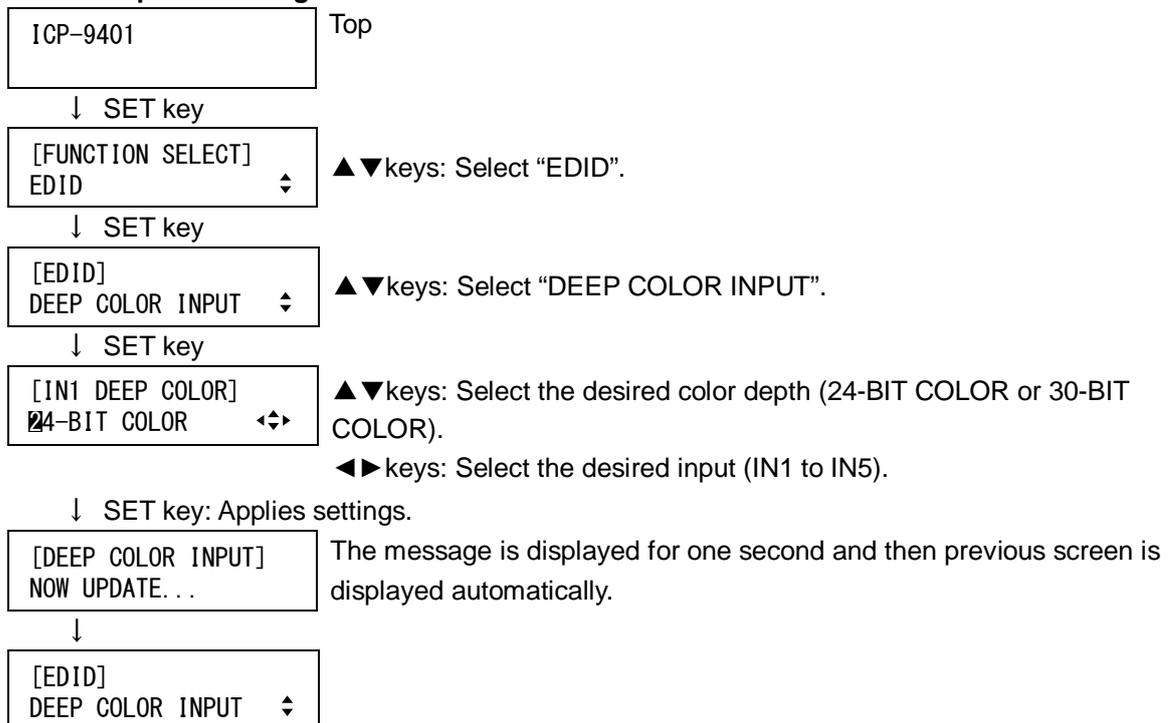
7.10.4 Deep Color [DEEP COLOR INPUT]

This menu is valid only all conditions below are met: if you select "INTERNAL EDID" for "7.10.1 EDID", you select a resolution other than "UNUSED" for "7.10.3 Input resolution for AV devices [AV RESOLUTION]", and you connect an HDMI device such as a Blu-ray recorder.

If you select "30-BIT COLOR" in this menu setting and a display device supporting Deep Color is connected, the Deep Color is used. However, compared to "24-BIT COLOR", "30-BIT COLOR" is transmitted using a higher clock frequency, which may cause noise if a cable with a bad quality or a long cable is connected. In such a case, the noise may be removed by setting the color to "24-BIT COLOR".

- 24-BIT COLOR [Default]
- 30-BIT COLOR

1. To set the Deep Color using menu:



Note:

If you do not press the "SET" key, Deep Color is not changed. Make sure to press the "SET" key.

2. To set the Deep Color using commands:

@SDI: Set Deep Color

@GDI: Get Deep Color

7.10.5 Audio format [AUDIO FORMAT]

For each input

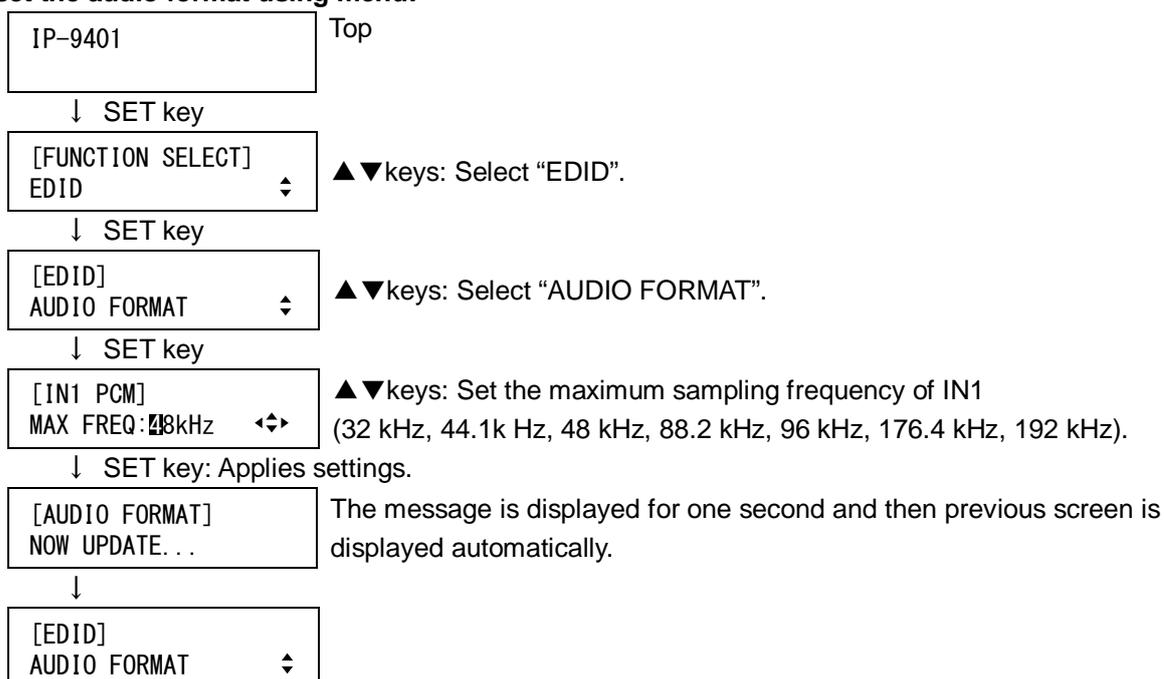
You can set the audio format and maximum sampling frequency to be output from a source device. This menu is valid only all conditions below are met: if you select "INTERNAL EDID" for "7.10.1 EDID", you select a resolution other than "UNUSED" for "7.10.3 Input resolution for AV devices [AV RESOLUTION]", and you connect an HDMI device such as a Blu-ray recorder.

[Table 7.10.5a] Audio format

Audio format	Sampling frequency (kHz)
Linear PCM	32/44.1/48/88.2/96/176.4/192(48)

Default: 48

1. To set the audio format using menu:



Note:

If you do not press the "SET" key, the audio format is not changed. Make sure to press the "SET" key.

2. To set the audio format using commands:

@SAF: Set audio format

@GAF: Get audio format

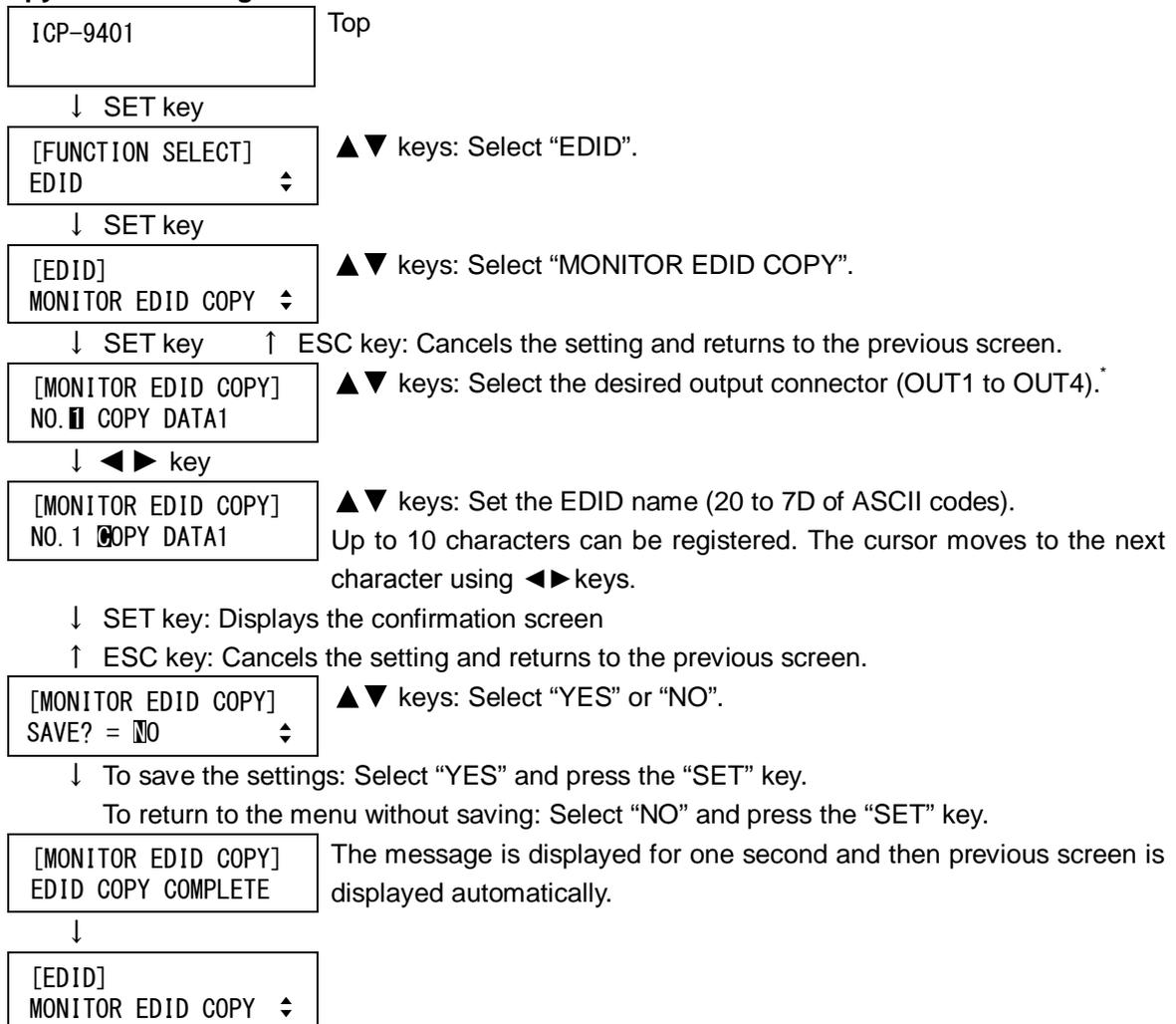
7.10.6 EDID Copy [MONITOR EDID COPY]

You can load the EDID of display devices and save it in the ICP.

To use the copied EDID, select "COPY DATA" for "7.10.1 EDID". After that, the copied data can be used as the same as that of the built-in data.

The copied EDID can only be used for digital input (IN1 to IN5), and not for analog inputs (IN6 to IN9).

1. To copy the EDID using menu:



If no display device is connected to the selected output, the message is displayed, and you cannot press the "SET" key.

[MONITOR EDID COPY]
UNCONNECTED

2. To copy the EDID using command:

@RME: Copy EDID

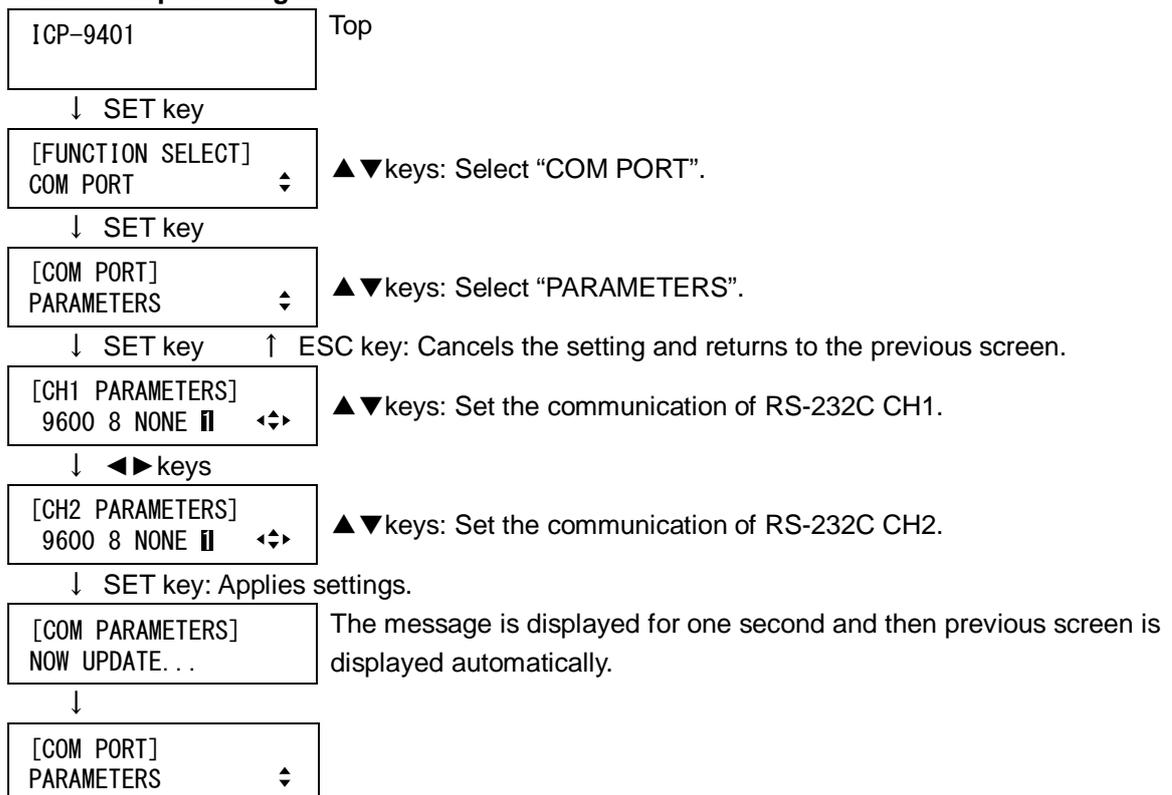
7.11 Serial Port Settings

7.11.1 Communication setting [PARAMETERS]

You can set up the serial communication settings for each connector:

- Baud rate: 4800, 9600, 19200, 38400 [bps] [Default]: 9600 [bps]
- Data length: 8, 7 [bit] [Default]: 8 [bit]
- Parity: NONE, EVEN, ODD [Default]: NONE
- Stop bits: 1, 2 [bit] [Default]: 1 [bit]

1. To set the COM port using menu:



Note:

If you do not press the "SET" key, the communication setting is not changed. Make sure to press the "SET" key.

2. To set the COM port using commands:

- @SCT: Set COM port communication
- @GCT: Get COM port communication

7.11.2 Operation mode [FUNCTION]

You can set the operation mode to “RECEIVER” mode in which the ICP is controlled externally or “TRANSMITTER” mode in which the ICP controls peripheral devices.

- RECEIVER [Default]
- TRANSMITTER

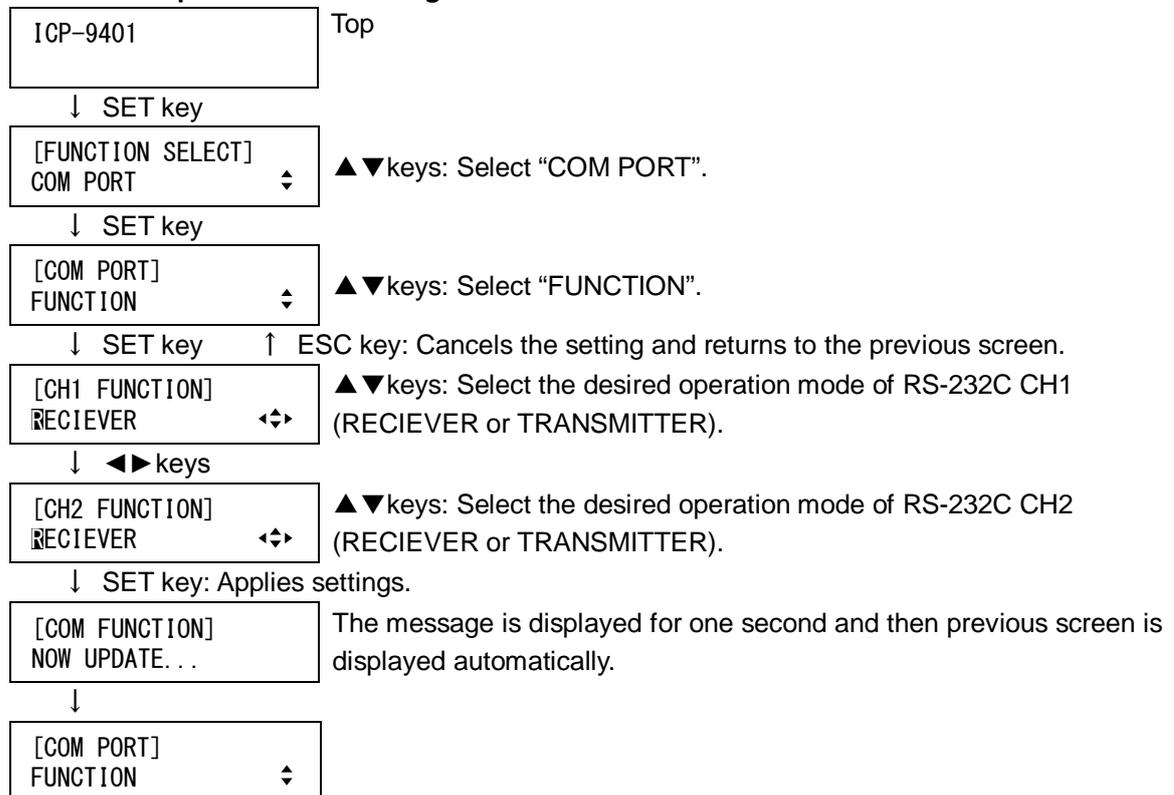
[Table 7.11.2a] RS-232C operation

Mode	External control	Controlling peripheral devices using “7.13 Control Command Settings”
RECEIVER	Can be used	Cannot be used ^{*1}
TRANSMITTER	Cannot be used ^{*2}	Can be used

^{*1} You cannot use the serial Com ports set to “RECEIVER” mode to control peripheral devices.

^{*2} You cannot use the serial Com ports set to “TRANSMITTER” mode to control the ICP externally.

1. To set the COM operation mode using menu:



Note:

If you do not press the “SET” key, the COM operation mode is not changed. Make sure to press the “SET” key.

2. To set the COM operation mode using commands:

- @SCF: Set COM port operation
- @GCF: Get COM port operation

7.12 LAN settings

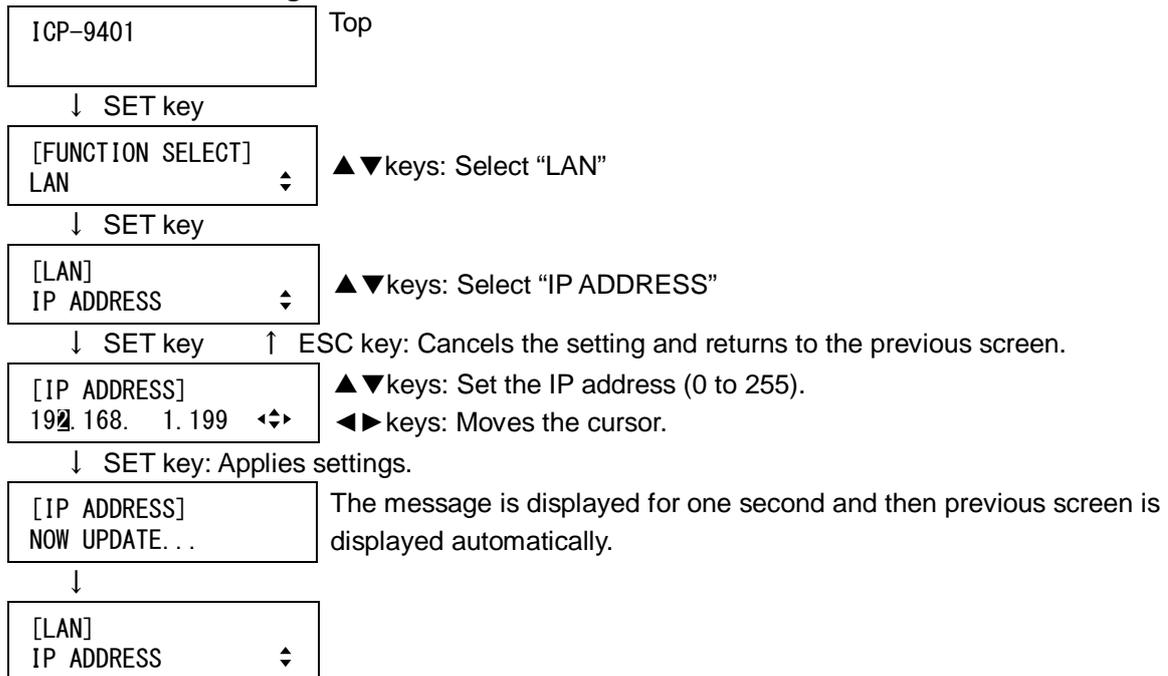
The ICP does not support automatic acquisition of IP address using DHCP (Dynamic Host Configuration Protocol). If you use the ICP in a network with DHCP, keep a fixed IP address. If controlling peripheral devices connected over LAN from the ICP, keep several fixed IP addresses.

7.12.1 IP address [IP ADDRESS]

You can set the IP address of the ICP.

[Default]: 192.168.001.199

1. To set the IP address using menu:



Note:

If you do not press the "SET" key, the IP address is not changed. Make sure to press the "SET" key.

2. To set the IP address using commands:

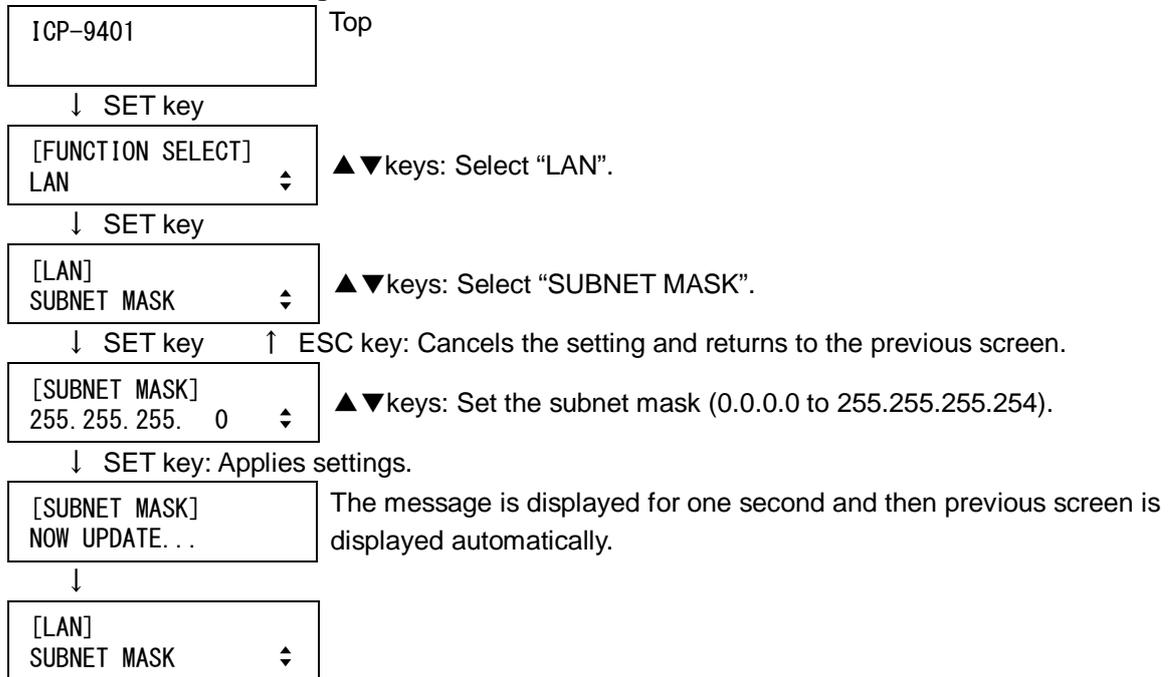
- @SIP: Set IP address
- @GIP: Get IP address

7.12.2 Subnet mask [SUBNET MASK]

You can set the subnet mask of the ICP.

[Default]: 255.255.255.000

1. To set the subnet mask using menu:



Note:

If you do not press the "SET" key, the subnet mask is not changed. Make sure to press the "SET" key.

2. To set the subnet mask using commands:

@SSB: Set subnet mask

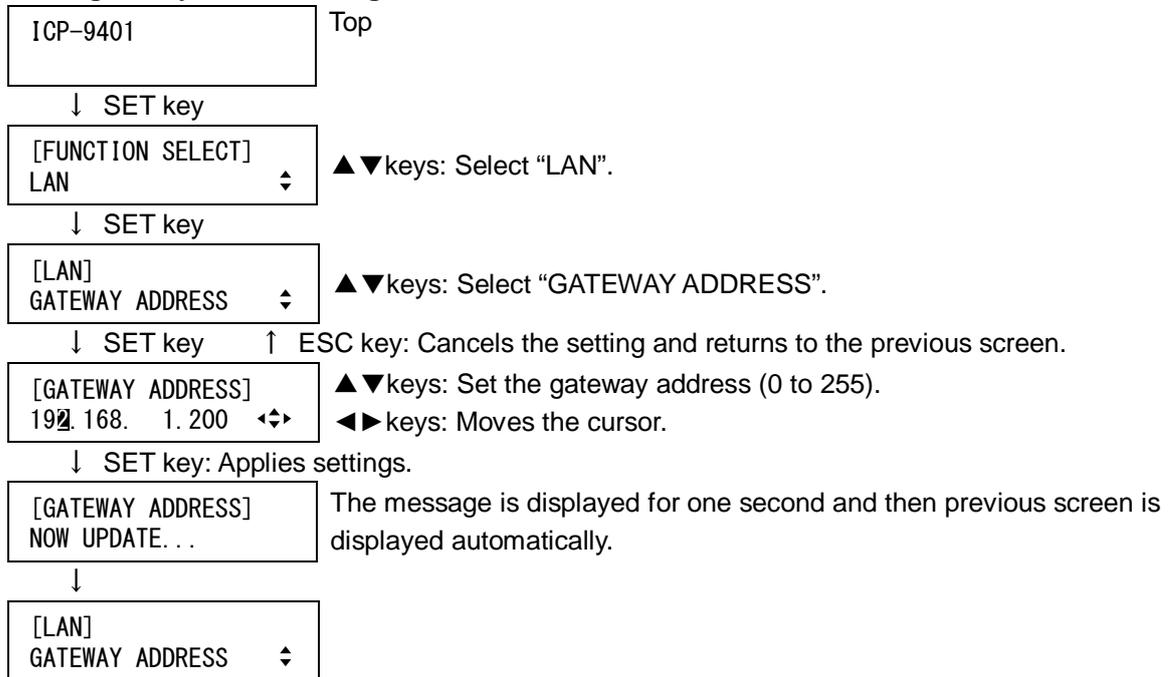
@GSB: Get subnet mask

7.12.3 Gateway address [GATEWAY ADDRESS]

You can set the gateway address of the ICP.

[Default]: 192.168.001.200

1. To set the gateway address using menu:



Note:

If you do not press the "SET" key, the gateway address is not changed. Make sure to press the "SET" key.

2. To set the gateway address using commands:

@SGW: Set gateway address

@GGW: Get gateway address

7.12.4 LAN operation mode [FUNCTION]

Set the LAN operation mode consisting of "RECEIVER" mode that controls the ICP externally and "TRANSMITTER" mode that controls peripheral devices from the ICP.

If you select "TRANSMITTER" mode, you need to set the IP address of the device and the port number to be connected. The ICP can establish up to eight connections and the operation mode can be set separately.

[Table 7.12.4a] Setting items of LAN operation mode

Item	Description	Range
FUNCTION *1	Controlling the ICP externally or controlling peripheral devices from ICP.	RECEIVER [Default] TRANSMITTER
IP *2	IP address of target device	4 bytes between 0 to 255 [Default] 192.168.001.198
PJLink *2	Whether you use PJLink (class1) for projector control or not.	OFF : PJLink is not used. [Default] ON : PJLink is used.
PORT *2 *3	Port number for "TRANSMITTER" mode. (Set the port number for "RECEIVER" mode in "7.12.5 TCP port number [PORT NUMBER].")	1 to 65535 [Default]: 1100 Make sure the port number is correct, because reserved port number that is only for specific purpose can also be selected technically.
PASSWORD *2 *4	Password for authentication at PJLink protocol connection (up to 32 characters). Not necessary if you do not perform the authentication with password.	ASCII codes: 30 to 39, 41 to 5A, and 61 to 7A (alphanumeric character) Final character: 20 (space) [Default]

*1 [Table 7.12.4b] LAN operation mode

Mode	External control	Controlling peripheral devices using " 7.13 Control Command Settings"
RECEIVER mode	Can be used	Cannot be used*5
TRANSMITTER mode	Cannot be used*6	Can be used

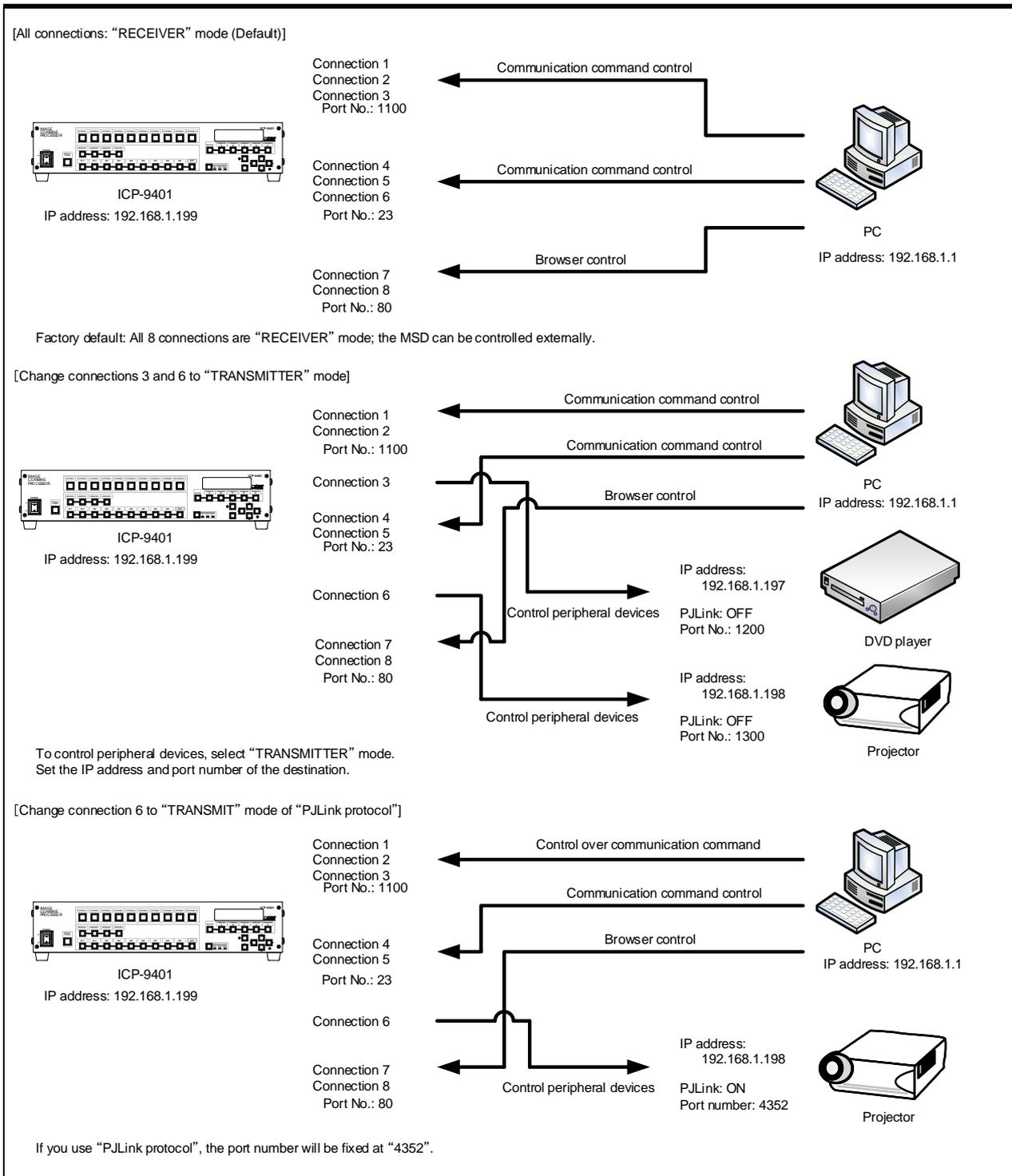
*2 If selecting "RECEIVER" for operation mode, you do not need to set the item.

*3 If selecting "ON" for PJLink protocol, the target port number is fixed at "4352".

*4 If selecting "OFF" for PJLink protocol, you do not need to set the item.

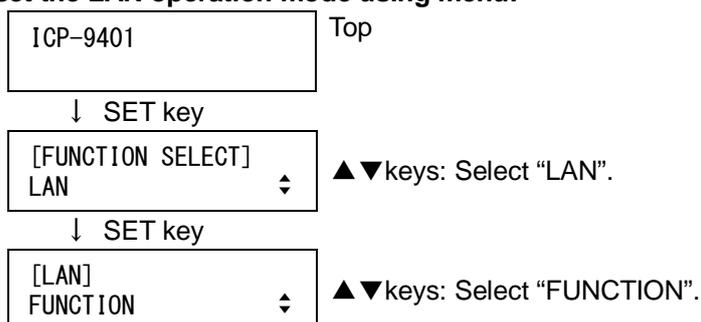
*5 Connections that are set to "RECEIVER" cannot be used for controlling peripheral devices.

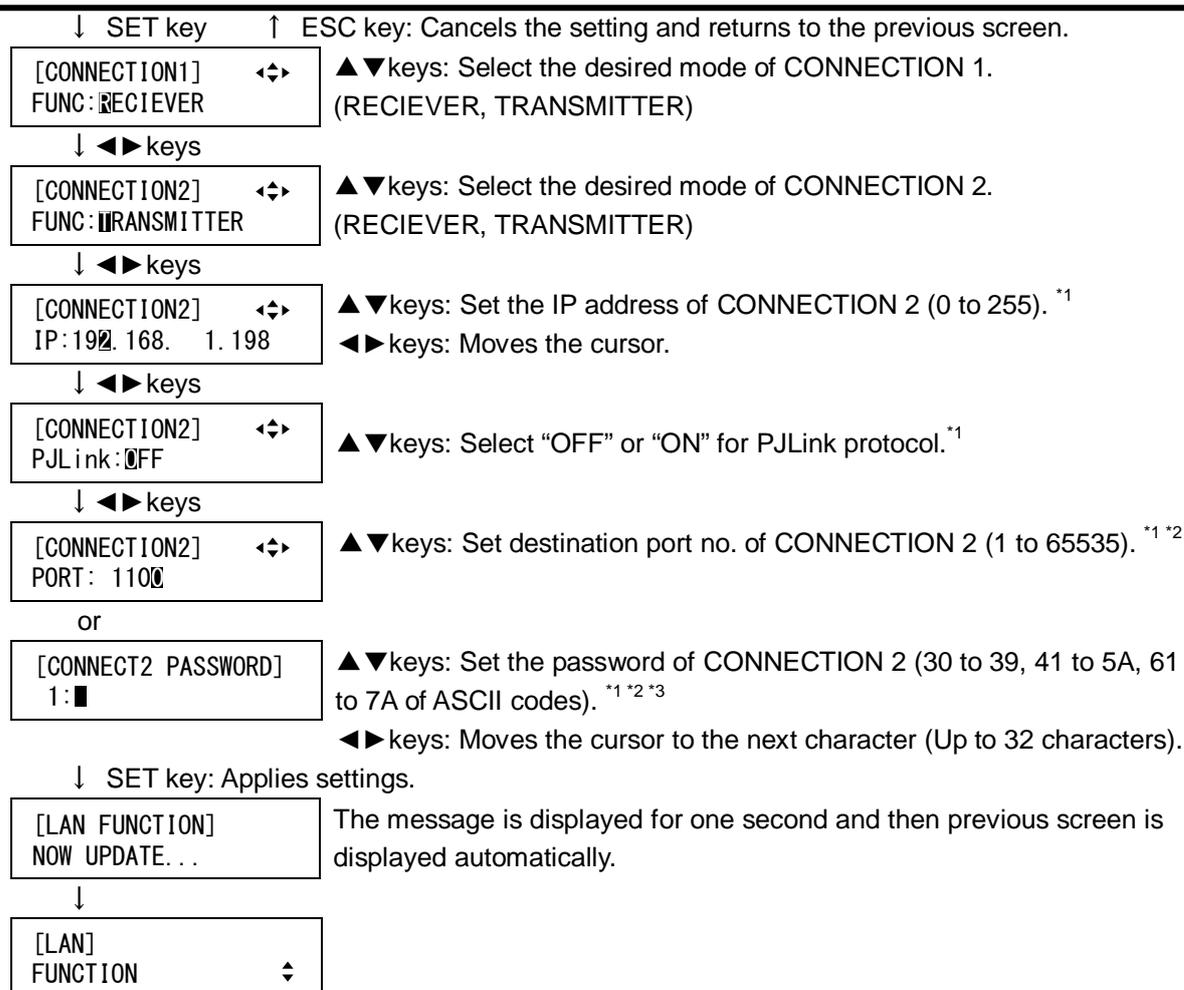
*6 Connections that are set to "TRANSMITTER" cannot be used for controlling the ICP externally.



[Table 7.12.4a] LAN operation mode

1. To set the LAN operation mode using menu:





^{*1} Settable only if you select "TRANSMITTER".

^{*2} If setting PJLink protocol to "OFF", set the port number of the destination. If turning it "ON", set the password.

^{*3} The number of characters at the cursor position is displayed at the lower left, and the maximum number of the characters is 16. Space would be the final character, and characters before the space will be registered as the password.

Note:

If you do not press the "SET" key, the LAN operation mode is not changed. Make sure to press the "SET" key.

2. To set the LAN operation mode using commands:

@SLF: Set LAN operation mode

@GLF Get LAN operation mode

7.12.5 TCP port number [PORT NUMBER]

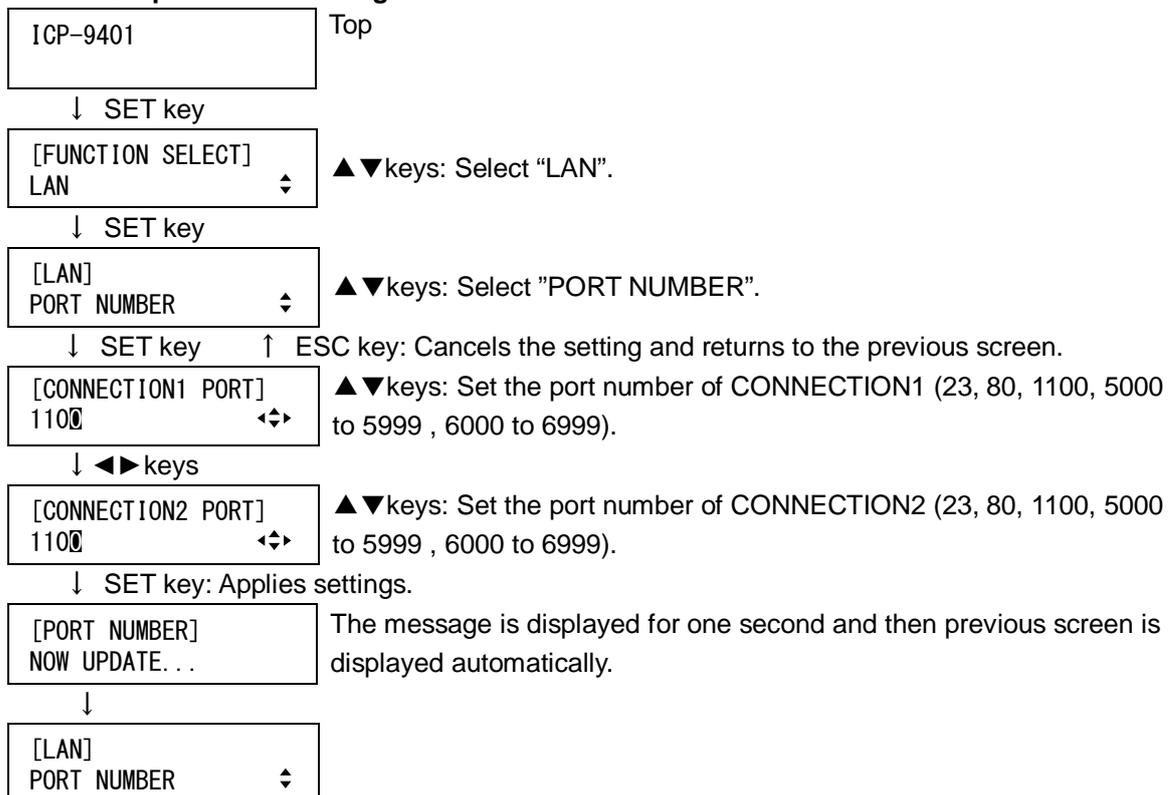
You can set the TCP port number to control the ICP externally.

The ICP supports up to eight connections at once. Connections are assigned either communication command control or browser control according to the set port numbers. By factory default, six connections are assigned for communication command control while two connections are for browser control. Settings of port numbers depend on the setting of "7.12.4 LAN operation mode [FUNCTION]" ("RECEIVER" or "TRANSMITTER"). For the "RECEIVER" mode, use this menu to set the port number; for "TRANSMITTER" mode, use "7.12.4 LAN operation mode [FUNCTION]".

- Port number: 23, 80, 1100, 5000 to 5999, 6000 to 6999
- [Default]: Connections 1 to 3 = 1100,
- Connections 4 to 6 = 23,
- Connections 7 to 8 = 80

Set connections for communication command control to any of 23, 1100, and 6000 to 6999. Set connections for browser control to any of 80 and 5000 to 5999.

1. To set the TCP port number using menu:



Note:

If you do not press the "SET" key, the TCP port number is not changed. Make sure to press the "SET" key.

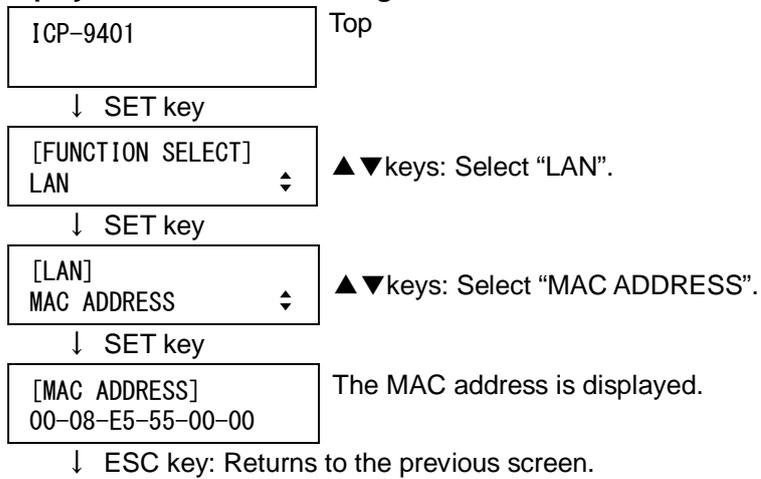
2. To set the TCP port number using commands:

- @SLP: Set TCP port number
- @GLP: Get TCP port number

7.12.6 Displaying MAC address [MAC ADDRESS]

You can display the MAC address.

1. To display the MAC address using menu:

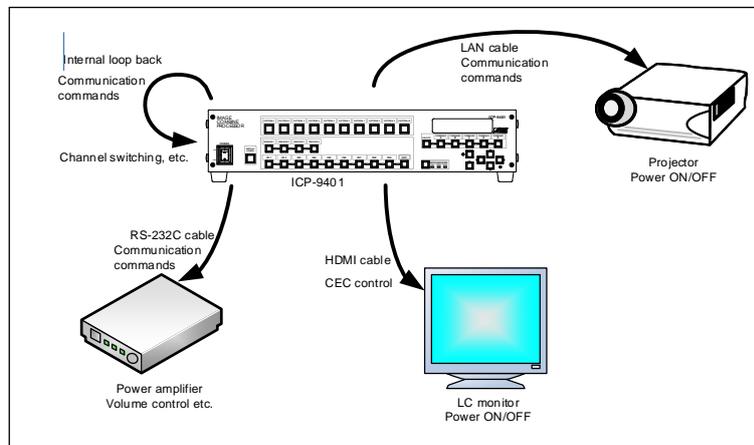


2. To display the MAC address using commands:

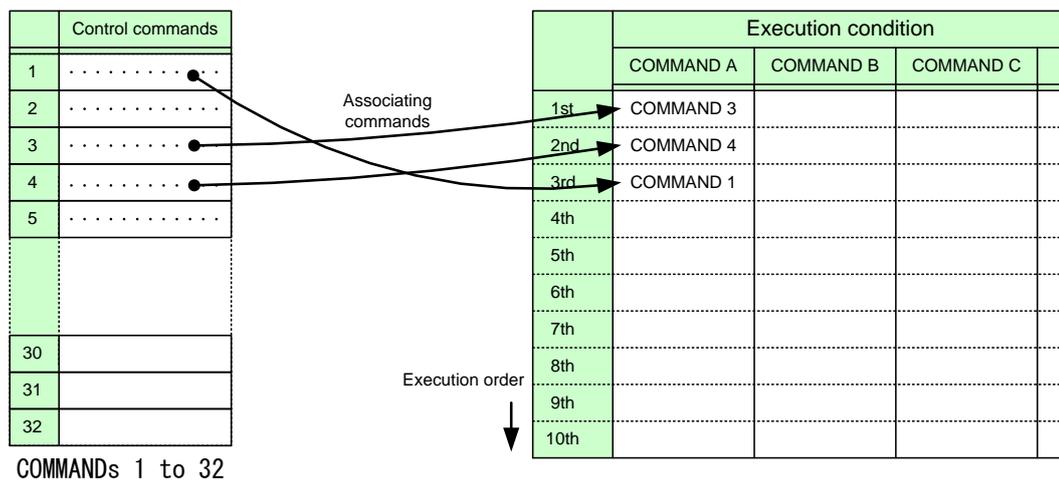
@GMC: Get MAC address

7.13 Control Command Settings

You can control peripheral devices (for example, turning ON/OFF projectors) using Serial, LAN or CEC. You can register up to 32 commands in the ICP. Associate registered commands with one of 91 operating conditions (for example, switching control command execution keys, COMMANDs A to I, and switching video/audio). When execution conditions are met, the associated commands are performed according to the set execution order. The loop back function allows you to control the commands of ICP itself.



[Fig. 7.13a] Sending control commands



[Fig. 7.13b] Associating control commands

In order to control peripheral devices using a communication, select the correct mode as follows:

Serial: set "7.11.2 Operation mode [FUNCTION]" to "TRANSMITTER"

LAN: set "7.12.4 LAN operation mode [FUNCTION]" to "TRANSMITTER"

When a control command is executed, the user setting for the text of "MEMO" is displayed (Example 1), and if the reply command is received, the "MEMO" text registered for the reply command is also displayed (Example 2) for one second (when the control command that is used for checking the reply command is executed).

The received data is displayed (Example 3) for two seconds (when the control command that is used for displaying the received data is executed).

However, if you configure several control commands, or if you display data received from several com ports, the display time may be shortened by one to two seconds while control commands are being successively executed. If the received data does not fit in the full screen, the displayed data is scrolled.

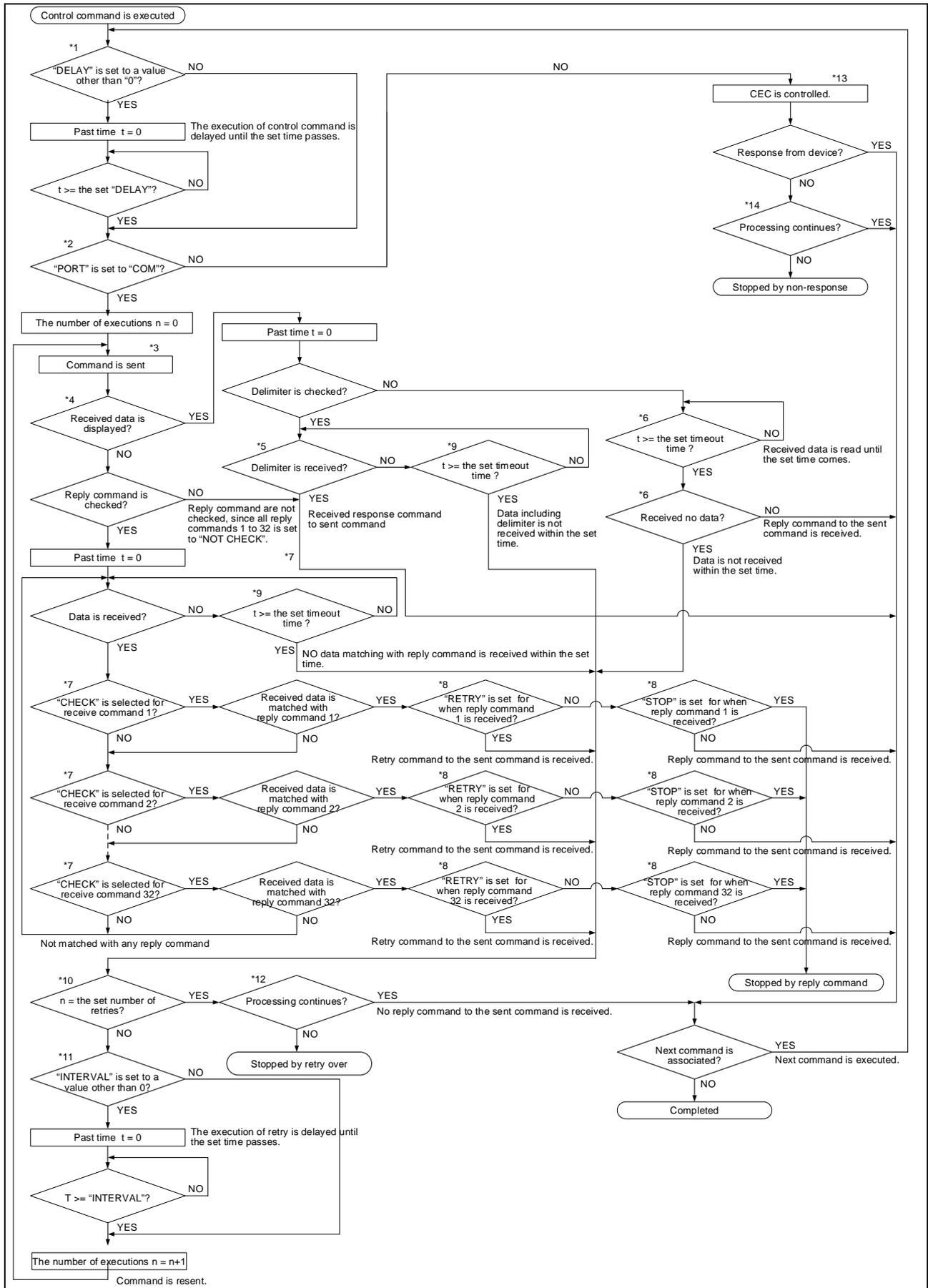
Example 1: "SCREEN UP" is registered as the "MEMO".

Example 2: "SCREEN OK" is registered as the "MEMO".

Example 3: "PROJECTOR LAMP" is registered as the "MEMO", and "%1LAMP=1000 1" is received.

Example 4: If the reply command to the sent command cannot be received, it causes retry over.

Number	VFD screen
Example 1	SEND:SCREEN UP
Example 2	SEND:SCREEN UP RECV:SCREEN OK
Example 3	SEND:PROJECTOR LAMP RECV:%1LAMP=1000 1↵
Example 4	SEND:SCREEN UP RETRY OVER ERROR



[Fig. 7.13c] Control command processing

- *¹ If you set "DELAY" to a value other than "0", command execution is delayed according to the set value. Control command number to be executed and remaining time before the command execution are displayed by 100 ms.

[COMMAND EXEC WAIT] No. 1 DELAY: 10.5sec

- *² This depends on setting of "PORT".
- *³ The send control command data set in "7.13.1 Control commands [COMMAND EDIT]" is sent for the number of bytes specified in "SIZE".
- *⁴ If you set "RECV DSPLAY" to "ASCII" or "HEX", the received data is displayed on VFD screen in "ASCII" or "HEX".
- *⁵ If you set "DELIMITER" to a value other than "NONE", the ICP waits until it receives the set delimiter.
- *⁶ If you set "DELIMITER" to "NONE", the ICP waits the receive data until the time set for "TIME OUT" passes. If no data is received, the ICP retries.
- *⁷ If you set "RCV" to "NOT CHECK" for all (32) commands, the next command will be performed without checking reply commands. If you set it to "CHECK" for only one command, the reply command is compared with the received data in order of "1→2---31→32".
- *⁸ If received data matches "DATA" of "RECV COMMAND" registered in "7.13.2 Reply commands [RECV COMMAND EDIT]", the next operation will be determined according to "PROCESS" of "7.13.2 Reply commands [RECV COMMAND EDIT]". If you set "PROCESS" to "RETRY", the retry operation will be performed. If you set it to "EXEC", the next command will be executed. If you set it to "STOP", the next command will not be executed even if the next command is associated.
- *⁹ If a delimiter or data matching reply command is not received even after the time set in "TIME OUT" passes, it causes timeout and retries the operation.
- *¹⁰ If any reply command is not received, the send command data is resent for the number of replies set in "RETRY". If you set "RETRY" to "0", the command is not resent.
- *¹¹ If you set "INTERVAL" to an interval other than "0", retry will be delayed according to the set time.
- *¹² If the reply command is not sent even after retry for the number of retry times set in "RETRY," the next operation will be determined according to "ERROR". If you set "ERROR" to "EXEC", the next command will be executed automatically. If you set it to "STOP", the next command will not be executed even if the command is associated. If you turn multiple communication ports "ON", it becomes "RETRY OVER ERROR" unless reply commands from all communication ports to which commands are sent are received.
- *¹³ The connector that is set to "POWER OFF" or "POWER ON" for "HDMI CEC control" will be controlled.
- *¹⁴ If no response from a device controlled with CEC, the next operation will be determined according to the setting of "7.13.1 Control commands [COMMAND EDIT]". If you set "ERROR" to "EXEC", the next command will be executed, but if you set it to "STOP", the next command is not executed even if the command is associated. If you set multiple outputs to be controlled in "HDMI CEC control" and any response from all devices controlled by CEC are not sent, it causes an error.

7.13.1 Control commands [COMMAND EDIT]

You can register up to 32 commands.

[Table 7.13.1a] Setting items of control commands

Item	Description	Range
PORT	Select "COM" or "CEC".	COM: Communication command [Default] CEC: HDMI CEC
DELAY	Set the waiting time of the control command. Use this item for devices such as projectors that requires time to cool down after powering off.	0 ms. to 999 seconds and 999 ms. [Default]: 0 ms.
Communication port *1	Set the following communication ports to "OFF" (not sending communication commands) or "ON" (sending communication commands). Those ports can be set separately, and communication commands can be sent to multiple communication ports at the same time. RS1: RS-232C CH1 *6 RS2: RS-232C CH2 *6 LOOP BACK: Internal loop back LAN1 to LAN8: LAN connections 1 to 8 *7	OFF [Default] ON
COM SIZE *1	Set the number of bytes to be sent starting with the first byte.	0 byte to 30 bytes [Default]: 0 byte
COMMAND INPUT MODE 0	Set the input mode of send command data. Select "ASCII" if "DATA" of "COMMAND" consists of only 0A, 0D, and 20 to 7D of ASCII code; select "HEX" if "DATA" of "COMMAND" includes other codes.	ASCII [Default] HEX
Send command data *1	Set the command from the first byte according to the number of bytes set in "COM SIEZE" (up to 30 bytes).	0A, 0D, 20 to 7D of ASCII code (If inputting with ASCII codes), or 00 to FF of hex (If inputting with hex) [Default]: 20 (Space) (All numbers above are hex)
RCV DISPLAY *1	Set whether received data is displayed or not.	OFF [Default] ASCII HEX
DELIMITER *1 *2	Set the delimiter to be sent at the end of the received data. "NONE": delimiter is not checked and all received data within the set timeout will be valid. Value other than "NONE": delimiter is checked and data received before delimiter will be valid.	NONE [Default] 00 to FF (Hex)
RCV CHECK *1 *3	Set whether reply command that may be returned is checked or not.	CHECK Default NOT CHECK
TIME OUT *1 *4 *5	Set the timeout time for reply command to a sent command.	0 ms. to 99 seconds and 999 ms. [Default]: 0 ms.
RETRY *1 *4 *5	Set the number of retries to resend the same command again if no valid response is replied.	0 to 99 [Default]: 0

INTERVAL *1 *4 *5	Set the retry interval to resend the command.	0 ms. to 99 seconds and 999 ms. [Default]: 0 ms.
ERROR *1 *4 *5	Set whether the next command is to be executed or not if no valid response is replied, even after completing retry for the set number of retries.	STOP: [Default] EXEC: Continue
HDMI CEC control *9	Set the CEC control for the display devices connected to HDMI connectors.	-: Not control [Default] POWER OFF POWER ON
Process for CEC error *9	Set whether the next command is executed or not if no response is replied from the display device that is controlled with CEC.	STOP [Default] EXEC: Continue
MEMO	Register a note up to 14 characters. The registered note is displayed when the control command is executed.	20 to 7D of ASCII codes except for 2C (,) [Default]: All spaces

*1 If "Port" is set to "CEC", you do not need to set this item.

*2 If "RECV DISPLAY" is set to "OFF", you do not need to set this item.

*3 If "RECV DISPLAY" is set to "ASCII" or "HEX", you do not need to set this item.

*4 If only "LOOP BACK" of communication ports is set to "ON", you do not need to set this item.

*5 If all "RCV CHECK" is set to "NOT CHECK", you do not need to set this item.

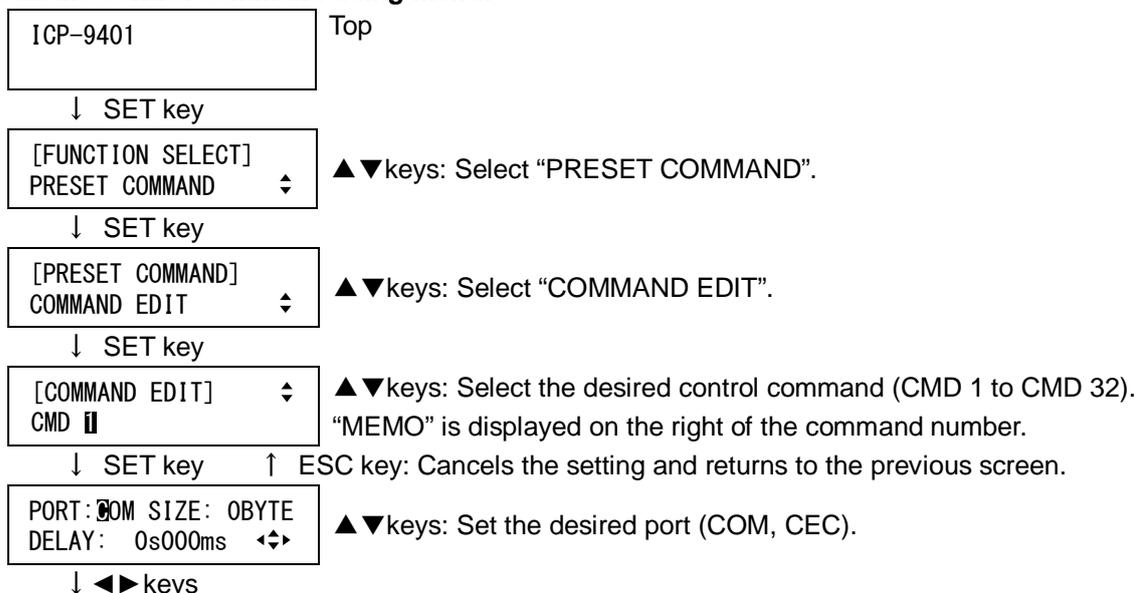
*6 If either "RS-1" or "RS-2" is set to "ON", set "7.11.2 Operation mode [FUNCTION]" to "TRANSMITTER".

*7 If any LAN connections for "LAN1" to "LAN8" are set to "ON", set "7.12.4 LAN operation mode [FUNCTION]" to "TRANSMITTER".

*8 If "PORT" is set to "COM" or "CEC", you do not need to set this item.

*9 If "PORT" is set to "COM", you do not need to set this item.

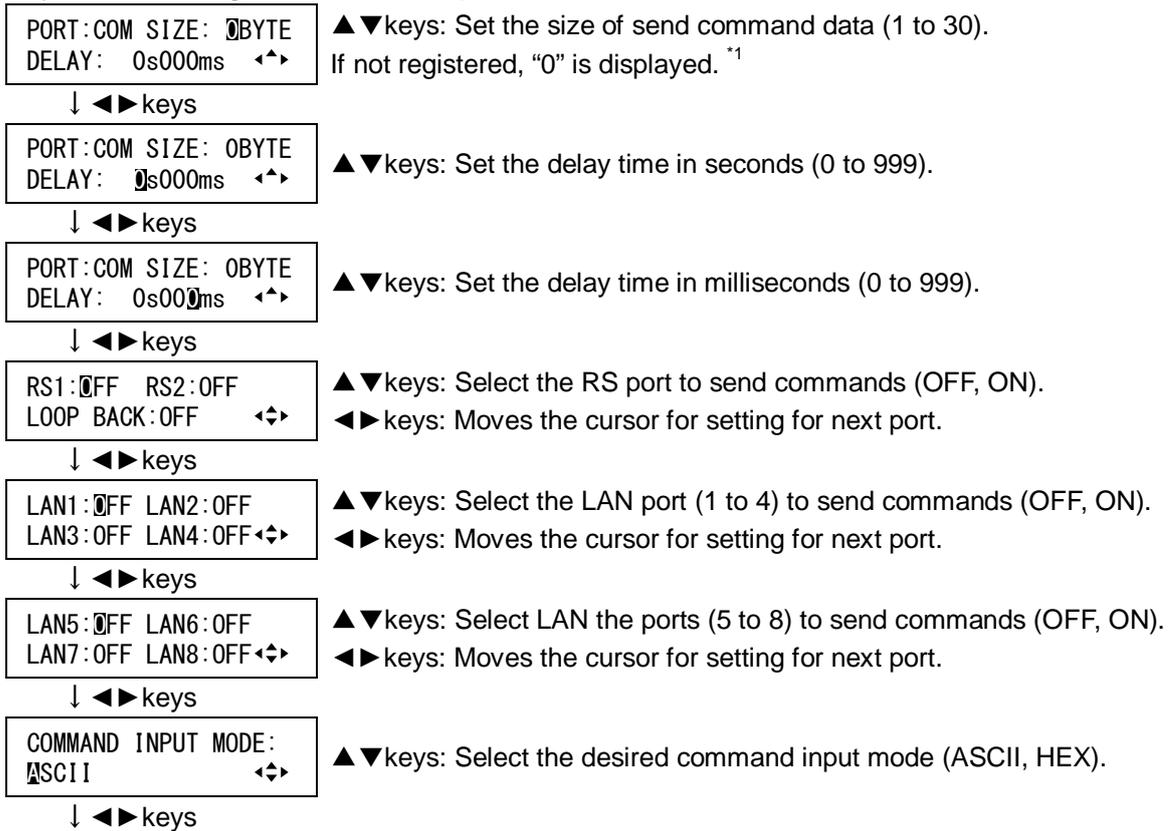
1. To edit the control command using menu:



After this step, procedures differ depending on the settings of "PORT".

Go to steps I, II, or III depending on the PORT setting being selected.

[Step I. When setting "PORT" to "COM"]



After this step, procedures to input send command data differ depending on settings of the "COMMAND INPUT MODE". Go to I-i or I-ii below to continue.

*1 The command size can be set also when inputting the command data.

If you press the "SET" key for 1 second or longer on the command data input screen, the number of data up to the current cursor position will be set as the size of the command data. For example, when pressing the "SET" key for one second or longer while the following display is displayed, up to the 5th byte is set as the data size.



[Step I-i. When setting "COMMAND INPUT MODE" to "ASCII"]

You can set 30 bytes in total on the front panel VFD screen. A (LF) and 0D (CR) are displayed as shown below, and for 20 to 7D, codes corresponding to ASCII codes are displayed. If a code other than 0A, 0D, 20 to 7D is detected, an "=" symbol is displayed.

0A (LF) = ↓
0D (CR) = ↵

```
DATA: █
  1:
```

▲▼keys: Set the command data; 1 to 15 bytes (upper row), 16 to 30 bytes (lower row) (0A, 0D, 20 to 7D of ASCII codes)^{*2}

◀▶ keys: Moves the cursor to the next data.

↓◀▶ keys

Go to step I-iii below.

[Step I-ii. When setting "COMMAND INPUT MODE" to "HEX"]

10 bytes are displayed on a VFD screen (30 bytes in three VFD screen in total) in 00 to FF (Hex).

```
DATA: 20 20 20 20 20
  1: 20 20 20 20 20
```

▲▼keys: Set the command data; 1st to 5th bytes (upper row), 6th to 10th bytes (lower row) (0 to F in Hex).^{*2}

◀▶ keys: Moves the cursor to the next number.

↓◀▶ keys

```
DATA: 20 20 20 20 20
 11: 20 20 20 20 20
```

▲▼keys: Set the command data; 11th to 15th bytes (upper row), 16th to 20th bytes (lower row) (0 to F in Hex).^{*2}

◀▶ keys: Moves the cursor to the next number.

↓◀▶ keys

```
DATA: 20 20 20 20 20
 21: 20 20 20 20 20
```

▲▼keys: Set the command data; 21st to 25th bytes (upper row), 26th to 30th bytes (lower row) (0 to F in Hex).^{*2}

◀▶ keys: Moves the cursor to the next number.

↓◀▶ keys

Go to step I-iii below

^{*2} The numbers at the lower left indicate the number of characters of the cursor position.

[Step I-iii. Whether to display received data or not]

```
RECV DISPLAY: OFF
                ◀▶
```

▲▼keys: Set whether to display the received data "RECV DISPLAY" (OFF, ASCII, HEX).

↓◀▶ keys

```
RECV DISPLAY: ASCII
DELIMITER: NONE
                ◀▶
```

▲▼keys: Set whether to check delimiter (NONE, 00 to FF in hex).^{*3}

↓◀▶ keys

If selecting "RECV DISPLAY" to "OFF", set whether to check the reply command or not (Go to step I-iv).

If selecting "ASCII" or "HEX", set "TIME OUT" (Go to step I-v)

^{*3} Displayed only if you select "ASCII" or "HEX".

If you set "DELIMITER" to a value other than "NONE", ASCII codes (text) will also be displayed in parentheses along with hexadecimal. ASCII codes (text) are displayed the same as in step I-i.

[Step I-iv. Reply command]

RCV 1:
NOT CHECK ◀▶

▲▼keys: Set whether to check reply command 1 (NOT CHECK, CHECK). Memo is displayed at the right of the command number.

↓ ◀▶ keys

RCV 2:
NOT CHECK ◀▶

▲▼keys: Set whether to check reply command 2. (NOT CHECK, CHECK). Memo is displayed at the right of the command number.

⋮
◀▶ keys

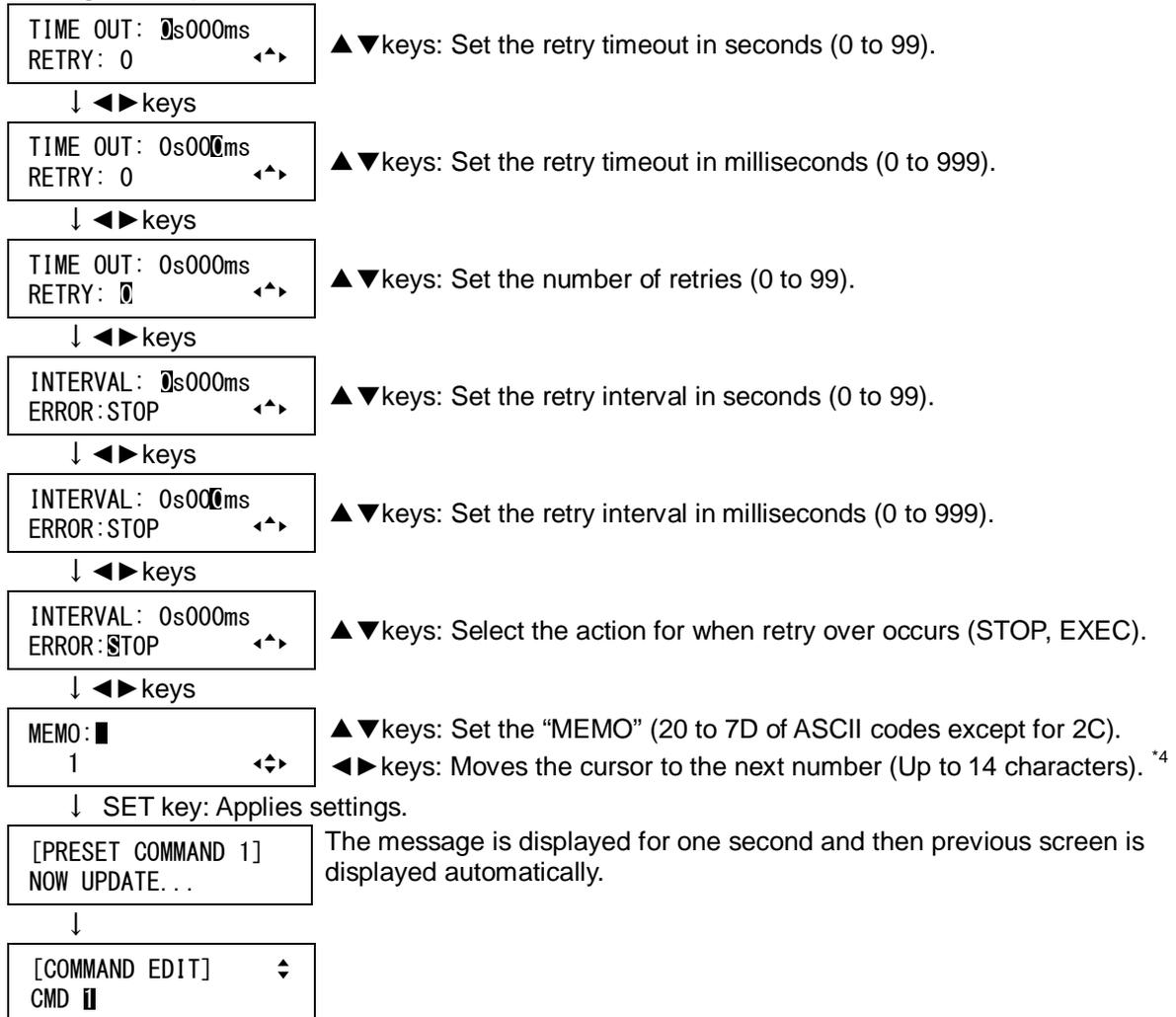
RCV32:NG
NOT CHECK ◀▶

▲▼keys: Set whether to check reply command 32 (NOT CHECK, CHECK). Memo is displayed at the right of the command number.

↓ ◀▶ keys

Go to step I-v below to continue.

[Step I-v. Setting timeout]



^{*4} The numbers at the lower left indicate the number of characters of the cursor position.

Note:

If you do not press the "SET" key, the control command is not changed. Make sure to press the "SET" key.

[Setting loop back]

If the ICP sends a communication command back to the ICP itself using the loop back function, the ICP replies "OK" if processed normally while replying "NG" if parameter or command is incorrect. (These commands differ from reply commands to communication commands received externally; not loop-back.) Since "OK" and "NG" are registered to reply commands 31 and 32 by factory default, respectively, set CHECK" for those commands in order to check reply commands using the loop back function. However, these commands can be changed in "7.13.2 Reply commands [RECV COMMAND EDIT]", so confirm that "OK" and "NG" have not been changed before using.

With this function, you can register several communication commands to one control command. (Up to 30 bytes) For example, if sending the channel switching command "@SSW,1,1CR LF" and the audio output setting command "@SSL,1,1 CR LF" successively, register "@SSW,1,1 CR LF @SSL,1,1 CR LF" (20 bytes). Even if you send several communication commands, the number of reply commands is 1, and "OK" is replied if processed successfully while "NG" is replied if there is an error even in just one command.

[Setting PJLink]

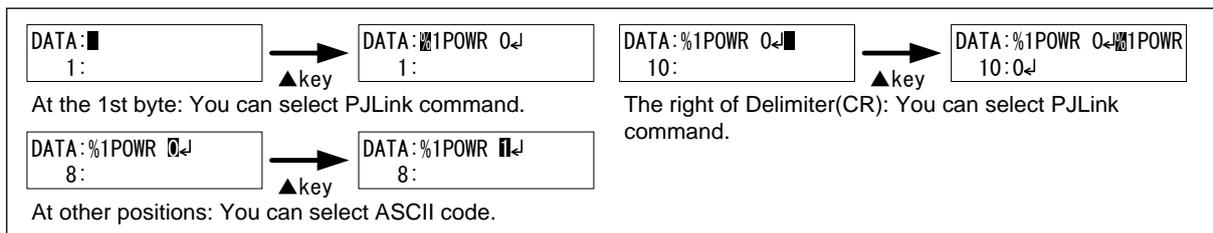
The ICP supports PJLink (class1), which is a standard protocol to control projectors. If you set a LAN port to be connected using the PJLink protocol for the communication port (can be set in “7.12.4 LAN operation mode [FUNCTION]”), you can select a PJLink command when inputting send command data.

[Table 7.13.1c] Structure of PJLink command (class1)

Header	Standard class	Command	Separator	Parameter	Delimiter
% (25)	1 (31)	4-character alphabet	Space (20)	ASCII codes (text) within 128 bytes	CR (0D)

Hexadecimal values are in parentheses.

You can select PJLink command by pressing ▲▼keys when the cursor is at the first byte of the data or right of the delimiter (CR). You can select ASCII codes (text) and change parameters by pressing these keys when the cursor is at another position.



[Fig. 7.13.1a] Selecting PJLink commands (class1)

The ICP supports the following PJLink commands.

[Table 7.13.1d] PJLink commands (class1) (ASCII codes)

No.	Command									Description
1	%	1	P	O	W	R	(SP)	0	CR	Power off (Standby)
2	%	1	P	O	W	R	(SP)	1	CR	Power on (Lamp on)
3	%	1	P	O	W	R	(SP)	?	CR	Get power status
4	%	1	I	N	P	T	(SP)	1	*1	CR Switch input to RGB
5	%	1	I	N	P	T	(SP)	2	*1	CR Switch input to VIDEO
6	%	1	I	N	P	T	(SP)	3	*1	CR Switch input to DIGITAL
7	%	1	I	N	P	T	(SP)	4	*1	CR Switch input to STORAGE
8	%	1	I	N	P	T	(SP)	5	*1	CR Switch input to NETWORK
9	%	1	I	N	P	T	(SP)	?	CR	Get input selection settings
10	%	1	A	V	M	T	(SP)	1	0	CR Switch off video mute
11	%	1	A	V	M	T	(SP)	1	1	CR Switch on video mute
12	%	1	A	V	M	T	(SP)	2	0	CR Switch off audio mute
13	%	1	A	V	M	T	(SP)	2	1	CR Switch on audio mute
14	%	1	A	V	M	T	(SP)	3	0	CR Video+audio mute off
15	%	1	A	V	M	T	(SP)	3	1	CR Video+audio mute on
16	%	1	A	V	M	T	(SP)	?	CR	Get mute settings
17	%	1	E	R	S	T	(SP)	?	CR	Get error status
18	%	1	L	A	M	P	(SP)	?	CR	Get time and status of lamp
19	%	1	I	N	S	T	(SP)	?	CR	Get list of switching input
20	%	1	N	A	M	E	(SP)	?	CR	Get projector name
21	%	1	I	N	F	1	(SP)	?	CR	Get manufacture name
22	%	1	I	N	F	2	(SP)	?	CR	Get product name
23	%	1	I	N	F	O	(SP)	?	CR	Get other information (optional of manufacturer)

(SP): Space

*1 You can specify the input number from 1 to 9, but types and the number of selectable input connectors differ depending on the connected projector. “1” is displayed by default.

Reply command structure for PJLink commands:

The first 6 bites: The sent command data without change

The 7th bite: “=”

After the 8th bite: Processing result

For example, if a command, “%1POWR 1CR”, is processed normally, the reply command, “%1POWR=OK CR” will be replied.

PJLink specifications regulate that projectors are required to reply the reply commands within 2 seconds after receiving the PJLink command. However, some projectors have different specifications. Check the manual of your projector and apply the response time indicated in the manual if there is one listed.

[Table 7.13.1e] Reply command to PJLink command (class1)

Header	Standard class	Command	Separator	Parameter	Delimiter
% (25)	1 (31)	4-character alphabet	=(3D)	Processing result	CR (0D)

Hex values are in parentheses.

There are five types of normal reply commands as shown [Table 7.13.1f]. In addition to these five commands, there are other reply commands listed in [Table 7.13.1g] are defined for setting acquisition commands.

[Table 7.13.1f] Reply commands to PJLink command (class1) (ASCII codes)

No.	Command												Description
1	%	1	x	x	x	x	=	O	K	CR			Terminated normally
2	%	1	x	x	x	x	=	E	R	R	1	CR	Mistake in command itself (Undefined command)
3	%	1	x	x	x	x	=	E	R	R	2	CR	Invalid parameter
4	%	1	x	x	x	x	=	E	R	R	3	CR	Currently not acceptable
5	%	1	x	x	x	x	=	E	R	R	4	CR	Malfuction of projector

xxxx: Command itself

[Table 7.13.1g] Individual reply command of status acquisition commands (text)

No.	Command												Description	
Reply command to power status commands														
1	%	1	P	O	W	R	=	0	CR				Stand by	
2	%	1	P	O	W	R	=	1	CR				Power ON	
3	%	1	P	O	W	R	=	2	CR				Cooling	
4	%	1	P	O	W	R	=	3	CR				Warming up	
Reply command to input status commands														
1	%	1	I	N	P	T	=	1	*2	CR			RGB selected	
2	%	1	I	N	P	T	=	2	*2	CR			VIDEO selected	
3	%	1	I	N	P	T	=	3	*2	CR			DIGITAL selected	
4	%	1	I	N	P	T	=	4	*2	CR			STORAGE selected	
5	%	1	I	N	P	T	=	5	*2	CR			NETWORK selected	
Get mute settings														
1	%	1	A	V	M	T	=	3	0	CR			Video+audio Mute OFF	
2	%	1	A	V	M	T	=	1	1	CR			Video Mute ON	
3	%	1	A	V	M	T	=	2	1	CR			Audio Mute ON	
4	%	1	A	V	M	T	=	3	1	CR			Video+audio mute ON	
Get error status														
1	%	1	E	R	S	T	=	*3	*4	*5	*6	*7	*8	CR

Get time and status of lamp													
1	%	1	L	A	M	P	=	* ⁹	(SP)	* ¹⁰	CR		
Get list of input switching													
1	%	1	I	N	S	T	=	* ¹¹	CR				
Get projector name													
1	%	1	N	A	M	E	=	* ¹²	CR				
Get manufacturer name													
1	%	1	I	N	F	1	=	* ¹³	CR				
Get product name													
1	%	1	I	N	F	2	=	* ¹³	CR				
Get other information (optional)													
1	%	1	I	N	F	O	=	* ¹³	CR				

(SP): Space

- *² Input number, which is any of "1" to "9", but types and the numbers of selectable input connectors differ depending on connected projectors.
- *³ Fan error, which is any of 0 to 2.
 - 0: Error not detected or no detect error function
 - 1: Warning
 - 2: Error
- *⁴ Lamp error. Numbers and meanings are the same as those of the fan error status above.
- *⁵ Temperature error. Numbers and meanings are the same as those of the fan error status above.
- *⁶ Cover open error. Numbers and meanings are the same as those of the fan error status above.
- *⁷ Filter error. Numbers and meanings are the same as those of the fan error status above.
- *⁸ Other errors. Numbers and meanings are the same as those of the fan error status above.
- *⁹ Accumulated time of lamp, which is any of 0 to 99999. (For projectors that do not count the accumulated time, the value is 0 at all times.).
- *¹⁰ Whether the lamp illuminates or not (0 or 1).
 - 0: Not illuminate
 - 1: Illuminates

For devices containing several lamps, accumulated time and lightning state for each device are replied in sequence. For example, if a device containing three lamps, the following command is replied:
 "%1LAMP=accumulated time 1(SP) lightning state 1(SP) accumulated time 2(SP) lightning state 2(SP) accumulated time 3(SP) lightning state 3 CR"
- *¹¹ Source number, which is input switchable. Any of 11 to 59 (Meaning is the same as that of "%INPT" command). For devices containing several inputs, several statuses separated with a (SP) are sent. For example, for a device having two inputs, "%1INST= source number1(SP)source number2CR" is sent.
- *¹² 20 to FF in hex; up to 64 characters.
- *¹³ 20 to 7F in hex; up to 32 characters.

To check reply commands of PJLink commands, register reply commands of tables above by following "7.13.2 Reply commands [RECV COMMAND EDIT]" ("xxxx" specifies the command itself of Table 7.13.1d.)

[Step II. When setting "PORT" to CEC]

```
PORT:CEC
DELAY: 0s000ms <▶
```

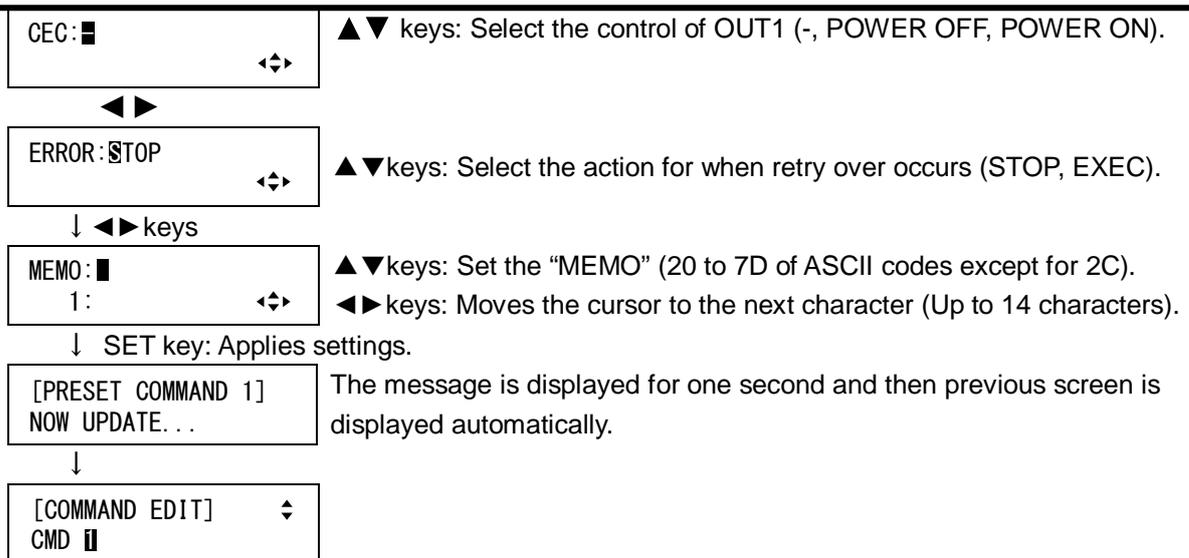
▲▼ keys: Set the delay time in seconds (0 to 999).

↓ ◀▶ key

```
PORT:CEC
DELAY: 0s000ms <▶
```

▲▼ keys: Set the delay time in seconds in milliseconds (0 to 999).

↓ ◀▶ key

**Note:**

If you do not press the "SET" key, the control command is not changed. Make sure to press the "SET" key.

CEC can only control the power of display devices connected to the HDMI output connectors. Devices connected to HDMI input connectors (IN1 to 5) cannot be controlled, and only power control is available. This function may not work correctly in old devices and some devices supporting CEC.

2. To edit the control command using commands:

- @SEC: Set control command (Control communication command)
- @GEC: Get control command (Control communication command)
- @SEC: Set control command (Display received data)
- @GEC: Get control command (Display received data)
- @SEC: Set control command (Control CEC)
- @GEC: Get control command (Control CEC)

7.13.2 Reply commands [RECV COMMAND EDIT]

You can register up to 32 commands.

[Table 7.13.2a] Setting items of reply commands

Item	Description	Range
SIZE	Set the number of bytes from the first byte to be compared.	0 to 30 bytes [Default]: 0 byte
PROCESS	Select "STOP" (to stop the next operation), "EXEC" (to execute it), or "RETRY" (to send the command again) for when received data and reply command data match.	STOP EXEC [Default] RETRY: Resend commands
PJLink	Select whether PJLink commands are set or not for when input reply command data is input.	OFF [Default] ON
COMMAND INPUT MODE	Select the input mode of reply command data. "ASCII": For data consisting of only 0A, 0D, 20 to 7D (text) "HEX": For data including other codes	ASCII [Default] HEX
DATA	Set the command to be compared with the received data from the first byte to the byte count set in "SIZE". If using alphabets (A to Z, a to z), make sure to distinguish capital and lower case letters. (Up to 30 bytes)	0A, 0D, and 20 to 7D of ASCII codes or 00 to FF (Hex) [Default]: 20 (Space) (Values described above all with hex)
MASK	Received data is compared with MASK DATA without "AND" of each bit and reply command data. (Use this item to determine the state using the received data bit.)	00 to FF (Hex) [Default]: All: "FF"
MEMO	Register a note up to 14 characters. When reply command is received, the registered note is displayed.	20 to 7D of ASCII codes except for 2C (,) [Default]: All: Spaces

Those default values do not apply to reply commands 31 and 32.

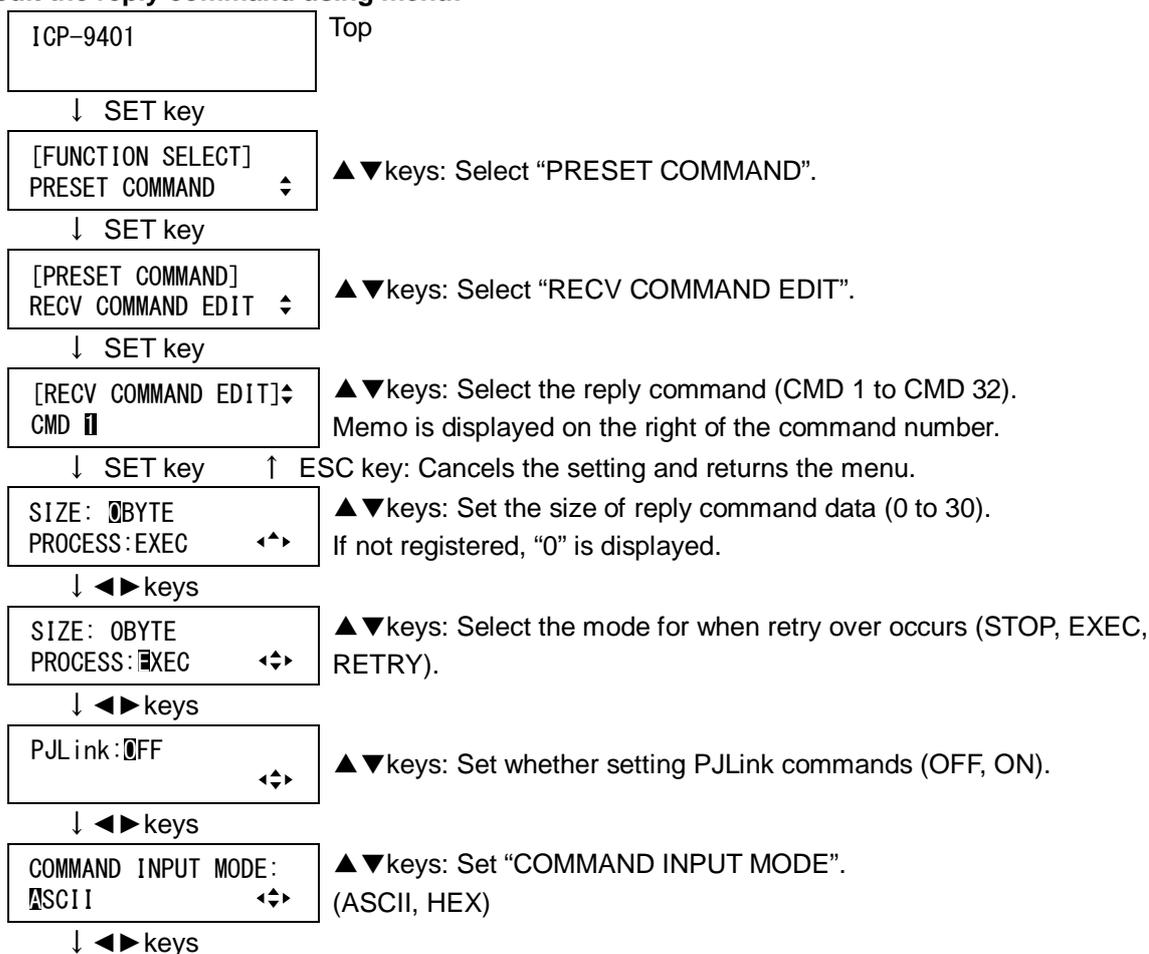
Note:

If the ICP sends a communication command back to the ICP itself using the loop back function, the ICP replies "OK" if processed normally while it replies "NG" if parameter or command is incorrect. (This differs from reply commands to communication commands received externally; not loop back.) Since "OK" and "NG" are registered to reply commands 31 and 32 by factory default, respectively, do not edit or delete those commands if you use the loop back function and check reply commands.

	SIZE	PROCESS	DATA	MASK	MEMO
1	0 byte	EXEC	All 00	All FF	All space
2	0 byte	EXEC	All 00	All FF	All space
3	0 byte	EXEC	All 00	All FF	All space
4	0 byte	EXEC	All 00	All FF	All space
5	0 byte	EXEC	All 00	All FF	All space
...					
30	0 byte	EXEC	All 00	All FF	All space
31	2 bytes	EXEC	OK	All FF	OK
32	2 bytes	STOP	NG	All FF	NG

[Fig. 7.13.2a] Defaults of reply commands

1. To edit the reply command using menu:



Procedures to input send command data differ depending on settings of "COMMAND INPUT MODE" (Go to steps I-I or I-ii below)

[Step I-i. When setting "COMMAND INPUT MODE" to "ASCII"]

You can set the command up to 30 bytes in total on an VFD screen. 0A (LF) and 0D (CR) are displayed as follows. For 20 to 7D, the corresponding codes in ASCII codes are displayed. If a code other than 0A, 0D, 20 to 7D is detected, "=" symbol is displayed.

0A (LF) = ↓
 0D (CR) = ↵

If using ASCII codes (text), the mask data will automatically be "FF". (Setting of mask data is not displayed.)

To set the mask data to a value other than "FF", use HEX codes.

DATA: █
 1:

▲▼ keys: Set the reply command data; 1 to 15 bytes (upper row), 16 to 30 bytes (lower row) (0A, 0D, 20 to 7D of ASCII codes).^{*1}

◀▶ keys: Moves the cursor to the next data.

↓ ▶◀ keys

Go to settings in step I-iii below.

[Step I-ii. When setting "COMMAND INPUT MODE" of reply command to "HEX"]

5-byte reply command and mask data are displayed in an VFD screen (30 bytes in total for 6 VFD screens) in "00" to "FF" (Hex).

DATA1: 00 00 00 00 00
 MASK1: FF FF FF FF FF

▲▼ keys: Set the reply command data for 1 to 5 bytes on the upper row; mask data for 1 to 5 on the lower row. (0 to F in hex).^{*2}

◀▶ keys: Moves the cursor to the next number.

↓ ▶◀ keys

DATA6: 00 00 00 00 00
 MASK6: FF FF FF FF FF

▲▼ keys: Set the reply command data for 6 to 10 bytes on the upper row; mask data for 6 to 10 on the lower row. (0 to F in hex).^{*2}

◀▶ keys: Move the cursor to the next number.

⋮

◀▶ keys: Move cursor to the next port

DAT26: 00 00 00 00 00
 MAS26: FF FF FF FF FF

▲▼ keys: Set the reply command data for 26 to 30 bytes on the upper row; mask data for 26 to 30 on the lower row. (0 to F in hex).^{*2}

◀▶ keys: Moves the cursor to the next number.

↓ ▶◀ keys

Go to step I-iii below to continue.

[Step I-iii. Setting]

MEMO: █
 1: ◀▶

▲▼ keys: "MEMO" (20 to 7D of ASCII codes except for 2C)

◀▶ keys: Moves the cursor to the next character (Up to 14 characters).^{*1}

↓ SET key: Applies settings

[RECV COMMAND 1]
 NOW UPDATE. . .

The message is displayed for one second and then previous screen is displayed automatically.

↓

[RECV COMMAND EDIT]◀▶
 CMD █

^{*1} The number on the lower left shows the number of characters at the cursor position.

^{*2} Numbers following "DATA" and "MASK" shows the number of characters at the cursor position.

Note:

If you do not press the "SET" key, the reply command is not changed. Make sure to press the "SET" key.

The received data without mask data and "AND" of each bit is compared with the reply command data. Set "MASK" to "FF". Since "FF" is set by factory default, you do not need to change the mask data normally. Only to determine the status using bits of the received data, change the setting.

[If ASCII codes (text) are replied from an external device]

Since the received data and "Reply command data" are compared without any changes, set "MASK" to "FF". (If you set "COMMAND INPUT MODE" of reply command to "ASCII", it is automatically set to "FF".)

For example, if "0" of ASCII codes ("30" in hex) is replied:

	Binary		Binary	Hexadecimal
(Received data)	00110000	& (MASK)	11111111	=30
(Reply command data)	00110000			=30 matched

```
DATA1: 30 00 00 00 00
MASK1: FF FF FF FF FF
```

[If status is determined using bits of the received data]

Set only bits that determine the Mask data to "1" and set other bits to "0".

For example, if determining status using the second bit from the left:

	Binary		Binary	Hexadecimal
(Received data)	11111111	& (MASK)	01000000	=40
(Reply command data)	01000000			=40 matched

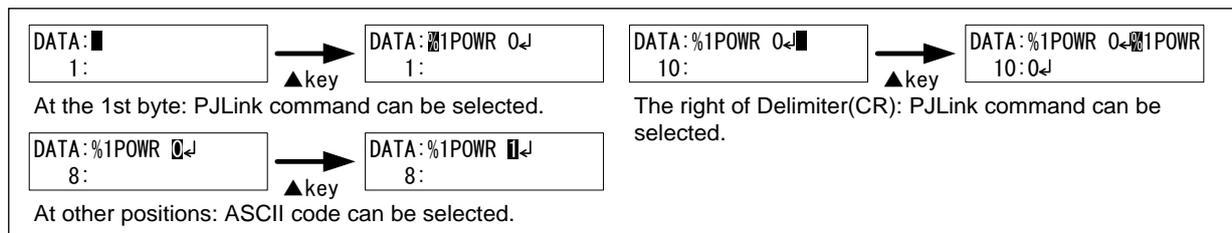
	Binary		Binary	Hexadecimal
(Received data)	10111111	& (MASK)	01000000	=00
(Reply command data)	01000000			=40 not matched

```
DATA1: 40 00 00 00 00
MASK1: 40 FF FF FF FF
```

[PJLink]

The ICP supports PJLink (class1), which is the standard protocol to control projectors. If you set "PJLink" to "ON", the PJLink command can be selected at the time of inputting the reply command data.

You can select PJLink command by pressing ▲▼keys when the cursor is at the first byte of the data or right of the delimiter (CR). You can select ASCII codes (text) and change parameters by pressing the keys when the cursor is at another position.



[Fig. 7.13.2b] Selecting PJLink commands (class1)

2. To edit the reply command using commands:

- @SRC: Set reply command
- @GRC: Get reply command

7.13.3 Control command link [COMMAND LINK]

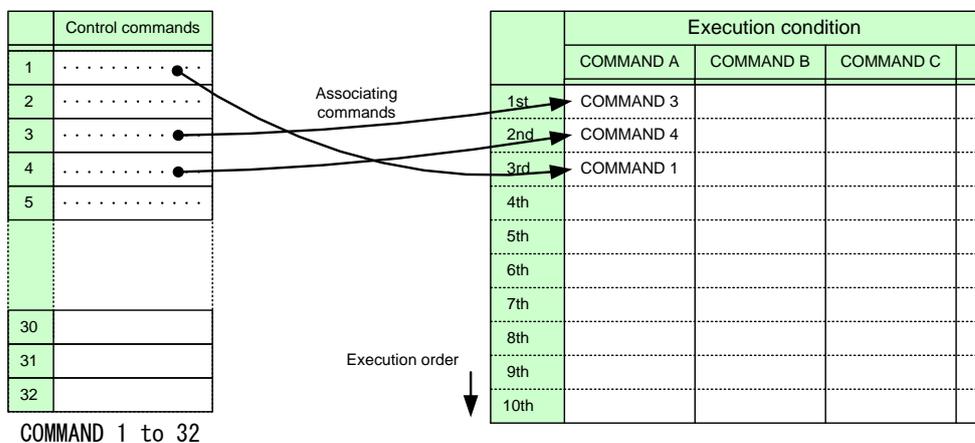
The ICP has 91 command execution conditions as shown below. If these execution conditions are met, control commands which are associated beforehand will be executed. One execution condition can be associated to up to 10 commands. If several commands are associated, commands are executed in order of registration. If the same command is associated several times, it is repeatedly executed.

[Table 7.13.3a] Execution condition of control commands

Execution condition	Function	Execution condition	Function
COMMAND A-PLANE A	Control command execution key	VIDEO:WINDOW2-IN1	Selecting video input channel of WINDOW2
COMMAND A-PLANE B		to	
COMMAND I-PLANE A		VIDEO:WINDOW2-IN9	
COMMAND I-PLANE B		VIDEO:WINDOW2-OFF	
POWER ON	Controlling power switch	VIDEO:WINDOW3-IN1	Selecting video input channel of WINDOW3
DISPLAY POWER ON	Controlling display device power	to	
DISPLAY POWER OFF		VIDEO:WINDOW3-IN9	
VIDEO:WINDOW1-IN1	Selecting video input channel of WINDOW1	VIDEO:WINDOW3-OFF	Selecting video input channel of WINDOW4
to		VIDEO:WINDOW4-IN1	
VIDEO:WINDOW1-IN9		VIDEO:WINDOW4-IN9	
VIDEO:WINDOW1-OFF	Selecting audio input channel of WINDOW1	VIDEO:WINDOW4-OFF	Selecting Window pattern
AUDIO:WINDOW1-IN1		WINDOW PATTERN1	
to		to	
AUDIO:WINDOW1-IN9		WINDOW PATTERN20	
AUDIO:WINDOW1-OFF			

Those functions can be controlled not only by pressing the front panel keys but also using communication commands.

For association, select control commands registered in "7.13.1 Control commands [COMMAND EDIT]" (COMMAND 1 to 32). If you do not want to execute any commands, select "OFF". All execution conditions are set to "OFF" by default.



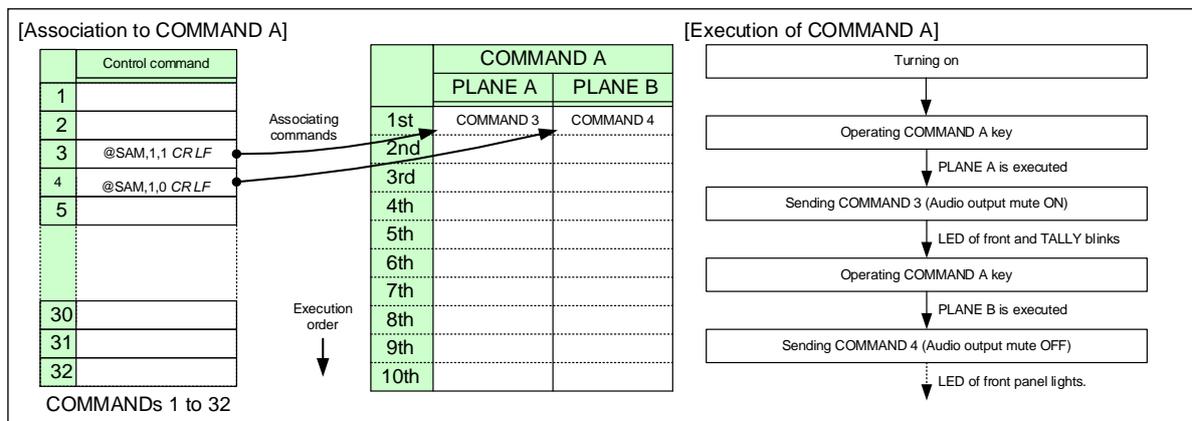
[Fig. 7.13.3a] Associating control command

For association of control command execution keys (COMMANDs A to I), each execution condition has two planes. Normally, use only "PLANE A", but if you want to operate different operations alternately at every time execution conditions are met, turn "TOGGLE" to "ON" and associate PLANE A and PLANE B separately. You can select which command will be executed at start-up of the ICP from "AUTO", "PLANE A", or "PLANE B". If you select "AUTO", the opposite plane of the plane executed immediately before turning off the ICP will be executed. "TOGGLE" of all execution conditions is set to "OFF" by default.

	Execution condition			
	COMMAND A		COMMAND B	
	PLANE A	PLANE B	PLANE A	PLANE B
1st	COMMAND 3	COMMAND 4		
2nd				
3rd				
4th				
5th				
6th				
7th				
8th				
9th				
10th				

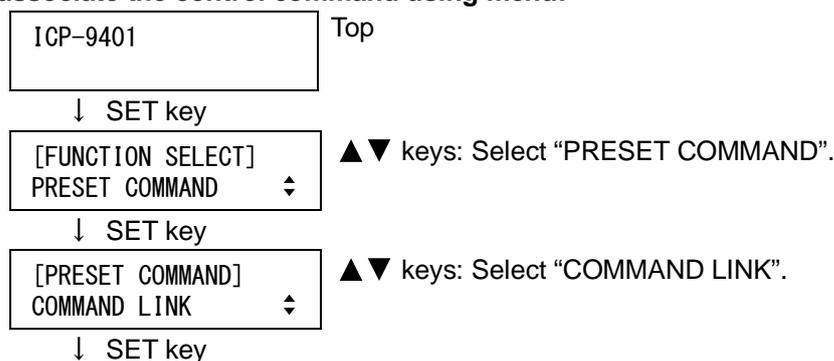
[Fig. 7.13.3b] Associating control command execution keys

When PLANE B is executed, LEDs for control command execution key on the front panel is illuminated (PLANE A will be executed at the next press); when PLANE A is executed, the LEDs blink (PLANE B will be executed at the next press).



[Fig. 7.13.3c] Example of toggle operation of control command execution key

1. To associate the control command using menu:



[COMMAND LINK] @COMMAND A	▲▼ keys: Select the execution condition (COMMAND A to WINDOW PATTERN20). ↓ SET key ↑ ESC key: Cancels the setting and returns to menu.
[COMMAND A] TOGGLE: OFF	▲▼ keys: Set the toggle operation (OFF, ON). Settable only if you select any of COMMAND A to I for the execution condition.
[COMMAND A] STARTUP: AUTO	▲▼ keys: Select the plane you want to execute at starting up (AUTO, A, B). Settable only if you set "TOGGLE" to "ON".
[COMMAND A] 1st: OFF	▲▼ keys: Set the 1 st command (OFF, COMMAND 1 to COMMAND 32). If you set "TOGGLE" to "OFF", this screen is for "PLANE A".
[COMMAND A] 2nd: OFF	▲▼ keys: Set the 2 nd command (OFF, COMMAND 1 to COMMAND 32). If you set "TOGGLE" to "OFF", this screen is for "PLANE A".
[COMMAND A] 10th: OFF	▲▼ keys: Set the 10 th command (OFF, COMMAND 1 ~ COMMAND 32). If you set "TOGGLE" to "OFF", this screen is for "PLANE A".
[COMMAND A] B- 1st: OFF	▲▼ keys: Set the PLANE B-1st command. Settable only if you set "TOGGLE" to "ON".
⋮	
[COMMAND A] B-10th: OFF	▲▼ keys: PLANE B-10 th command Settable only if you set "TOGGLE" to "ON".
[COMMAND A] NOW UPDATE...	↓ SET key: Applies settings. The message is displayed for one second and then the previous screen is displayed automatically.
[COMMAND LINK] @COMMAND A	

Note:

If you do not press the "SET" key, the command link is not changed. Make sure to press the "SET" key.

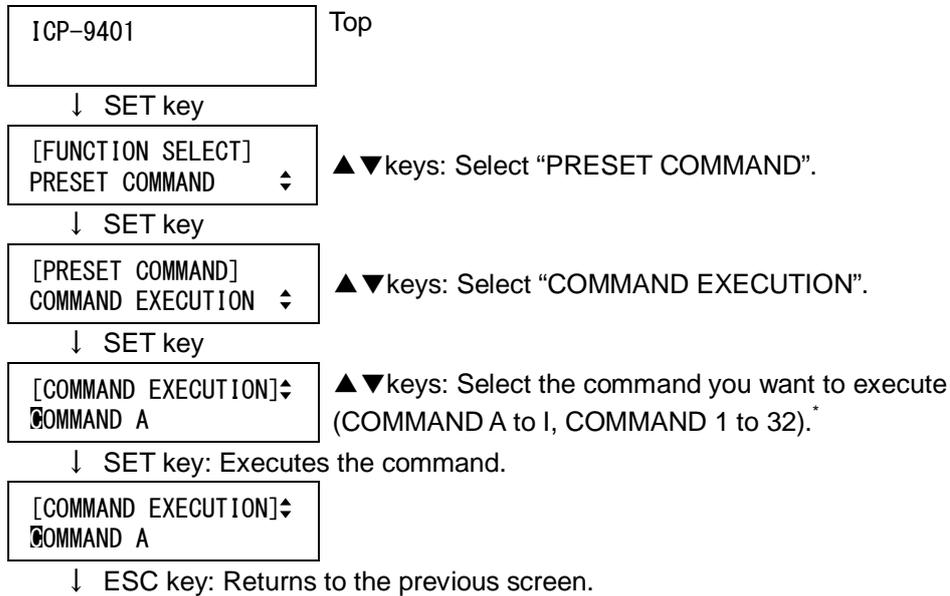
2. To associate the control command using commands:

- @SCC: Set command link
- @GCC: Get command link
- @STG: Set toggle operation
- @GTG: Get toggle operation
- @SUP: Set execution plane at starting up
- @GUP: Get execution plane at starting up

7.13.4 Command execution [COMMAND EXECUTION]

Although you can execute only COMMANDs A to E using the control command execution keys on the front panel, you can execute all COMMANDs A to I using this menu. You can specify command numbers and execute them without an association.

1. To execute control commands:



* Only executable commands are displayed.

2. To execute control commands using command:

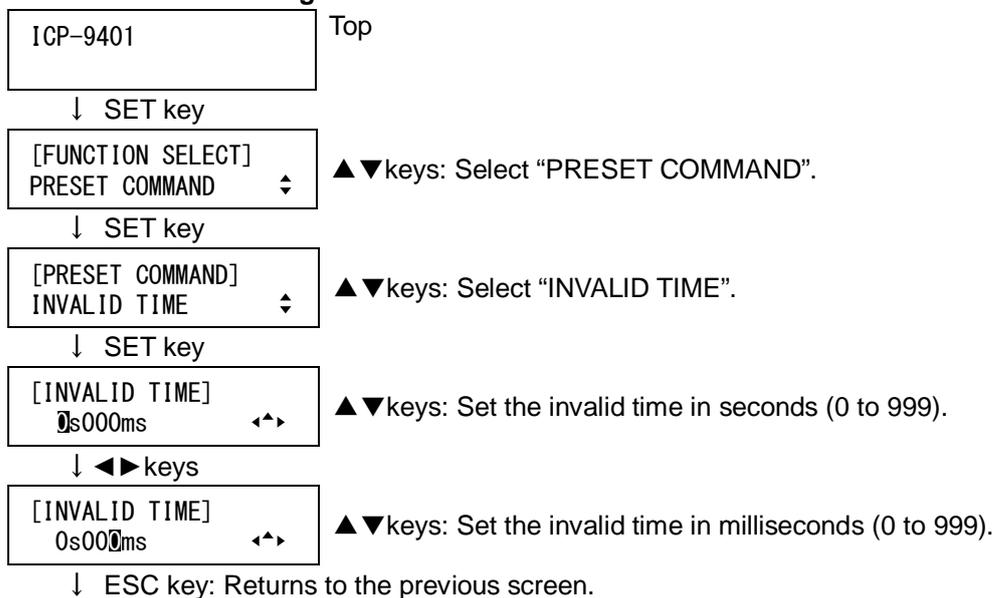
@EXC: Execute control commands

7.13.5 Invalid time [INVALID TIME]

During control command execution, other operations from a port (any of front panel, RS-232C CH1, RS-232C CH2, LAN communication command, and LAN browser) that executes control commands will be invalid. Since the execution time of some control commands is short, you can set the waiting time from starting control command execution to receiving the next command. The longer time either of control command execution time or the time set in this menu will be applied as the invalid operation time. Use this menu to prevent repeated execution caused by pressing the control command execution key twice. Only operations from ports that execute control commands will be invalid; operations from other ports can be performed. For example, if you execute a control command from the front panel, you cannot perform all operations from the front panel until the control command execution time or time set in this menu passes, but you can perform operations from RS-232C input.

· Invalid time: 0 ms. to 999999 ms. [Default]: 0 ms.

1. To set the invalid time using menu:



2. To set the invalid time using commands:

- @SIT: Set ineffective time during control command
- @GIT: Get ineffective time during control command

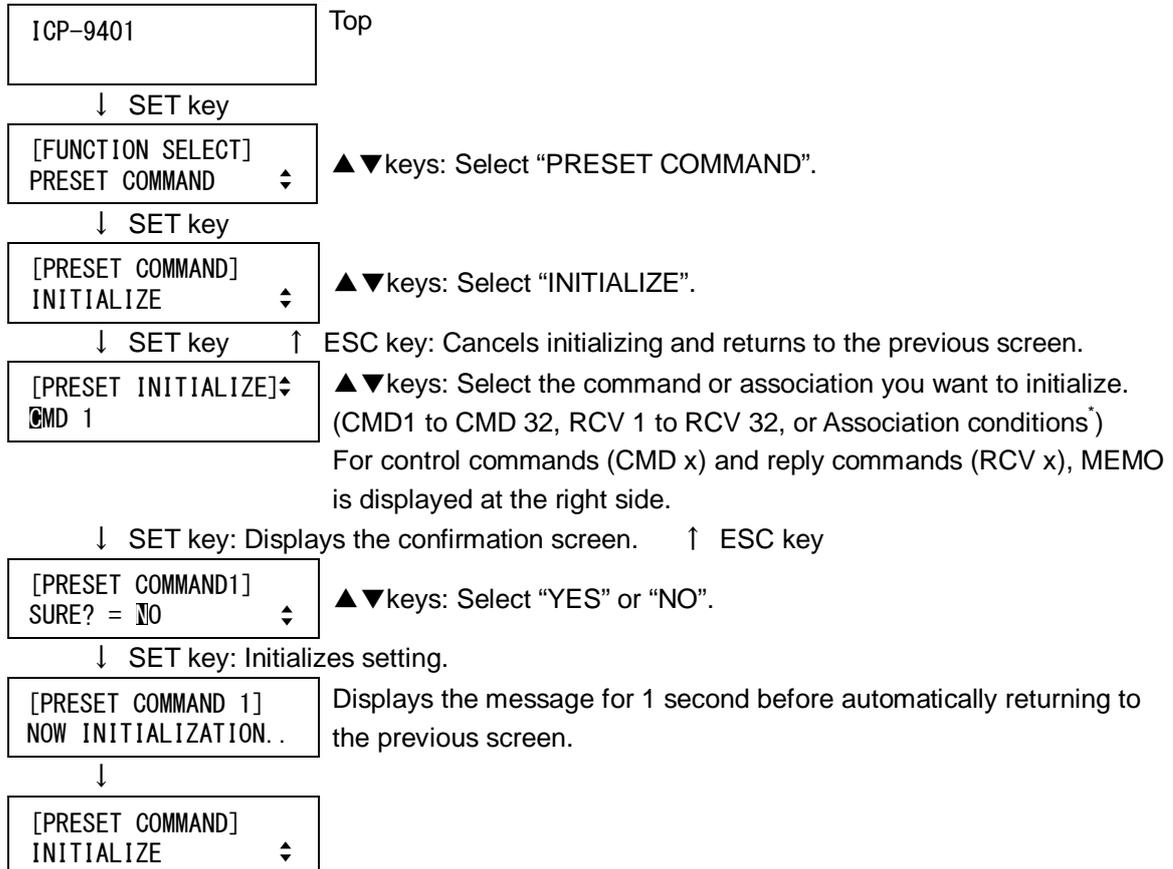
7.13.6 Initializing registered commands and associations [INITIALIZE]

You can initialize the following commands and associations:

- Control commands registered in “7.13.1 Control commands [COMMAND EDIT]”
- Reply commands registered in “7.13.2 Reply commands [RCV COMMAND EDIT]”
- Associations of control commands registered in “7.13.3 Control command link [COMMAND LINK]”

Use this menu to delete or set them from the first step again.

1. To initialize commands using menu:



* Association conditions are as follows.

[Table 7.13.6a] Association conditions of control commands

Execution condition	Function	Execution condition	Function
COMMAND A-PLANE A	Control command execution key	VIDEO:WINDOW2-IN1	Selecting video input channel of WINDOW2
COMMAND A-PLANE B		to	
COMMAND I-PLANE A		VIDEO:WINDOW2-IN9	
COMMAND I-PLANE B		VIDEO:WINDOW2-OFF	
POWER ON	Controlling power switch	VIDEO:WINDOW3-IN1	Selecting video input channel of WINDOW3
DISPLAY POWER ON	Controlling display device power	to	
DISPLAY POWER OFF		VIDEO:WINDOW3-IN9	
VIDEO:WINDOW1-IN1	Selecting video input channel of WINDOW1	VIDEO:WINDOW3-OFF	Selecting video input channel of WINDOW4
to		VIDEO:WINDOW4-IN1	
VIDEO:WINDOW1-IN9		VIDEO:WINDOW4-IN9	
VIDEO:WINDOW1-OFF	Selecting audio input channel of WINDOW1	VIDEO:WINDOW4-OFF	Selecting window pattern
AUDIO:WINDOW1-IN1		WINDOW PATTERN1	
to		to	
AUDIO:WINDOW1-IN9		WINDOW PATTERN20	
AUDIO:WINDOW1-OFF			

2. To initialize commands using commands:

@DEC: Initialize registered command and association

7.13.7 Command execution key: Lighting condition [COMMAND TALLY]

You can set the lighting condition of COMMANDs A to E individually.

- Lights if a control command is registered: REGISTERED [Default]^{*1}
- Lights while a control command is executed^{*1 *2}: EXECUTION

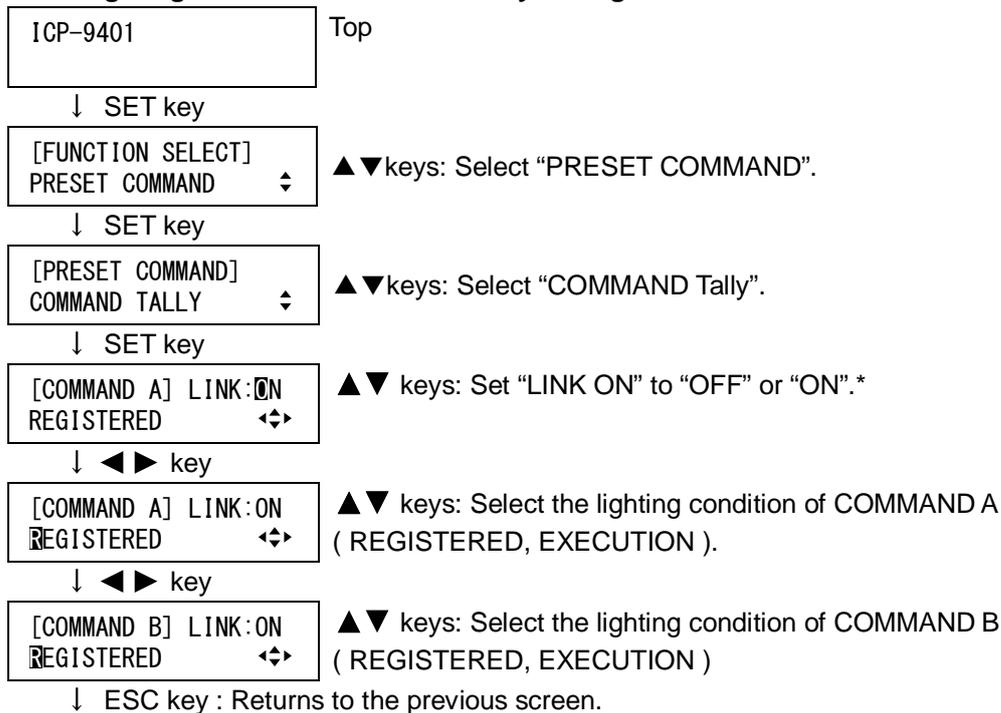
^{*1} There are two planes (PLANE A and B) for each execution condition of COMMANDs A to I. If you register control commands for both planes, the control commands are executed alternatively every time you press the command key as follows.

[Table 7.1] Lighting conditions of control command execution keys

Lighting condition	If you register a command only for one plane	If you register commands for both two planes
REGISTERED	Lights if a control command is registered	Lights if PLANE A will be executed at the next press; blinks if PLANE B will be executed at the next press.
EXECUTION	Lights while a control command is executed	Lights if PLANE A will be executed at the next press; turned off if PLANE B will be executed at the next press.

^{*2} If execution time is 500 ms. or shorter, it lights for only 500 ms. It can be set to blinking in “7.13.8 Flash time (Command keys and DISPLAY POWER keys) [FLASH TIME]” that follows.

1. To set the lighting condition of command keys using menu:



* If you set “LINK” to “ON”, you can change all registered conditions at the same time.

2. To set the lighting condition of command keys using commands:

- @STL: Set command ley lighting
- @GTL: Get command ley lighting

7.13.8 Flash time (Command keys and DISPLAY POWER keys) [FLASH TIME]

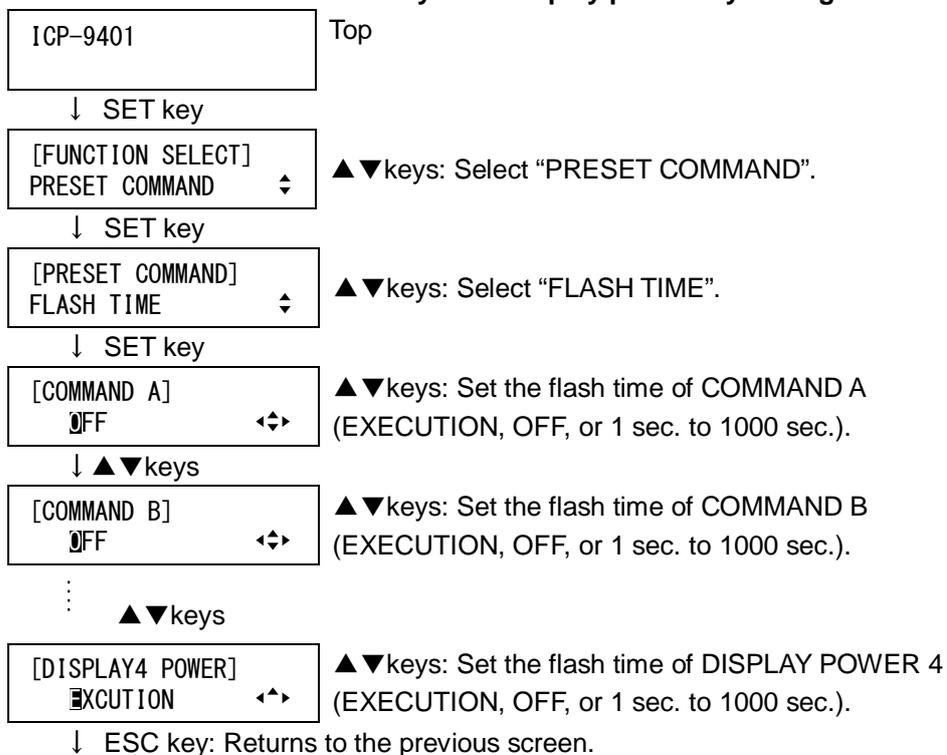
You can set the flash time (blink duration) of command execution keys and power switch of display devices during command execution:

You can set the time for COMMANDs A to E and DISPLAY POWER separately.

- Blinks while a control command is being executed: EXECUTION
 - Not blink: OFF
 - Blinks for the specified time*: 1 to 1000 sec.
- [Defaults]: For COMMANDs A to E: OFF
For DISPLAY POWER: EXECUTION

* If the command execution has not been completed even after the set time passes, it continues to blink until the execution is completed.

1. To set the flash time of command keys and display power keys using menu:



2. To set the flash time of command keys and display power keys using menu:

@STF: Set flash time (Command keys and DISPLAY POWER keys)

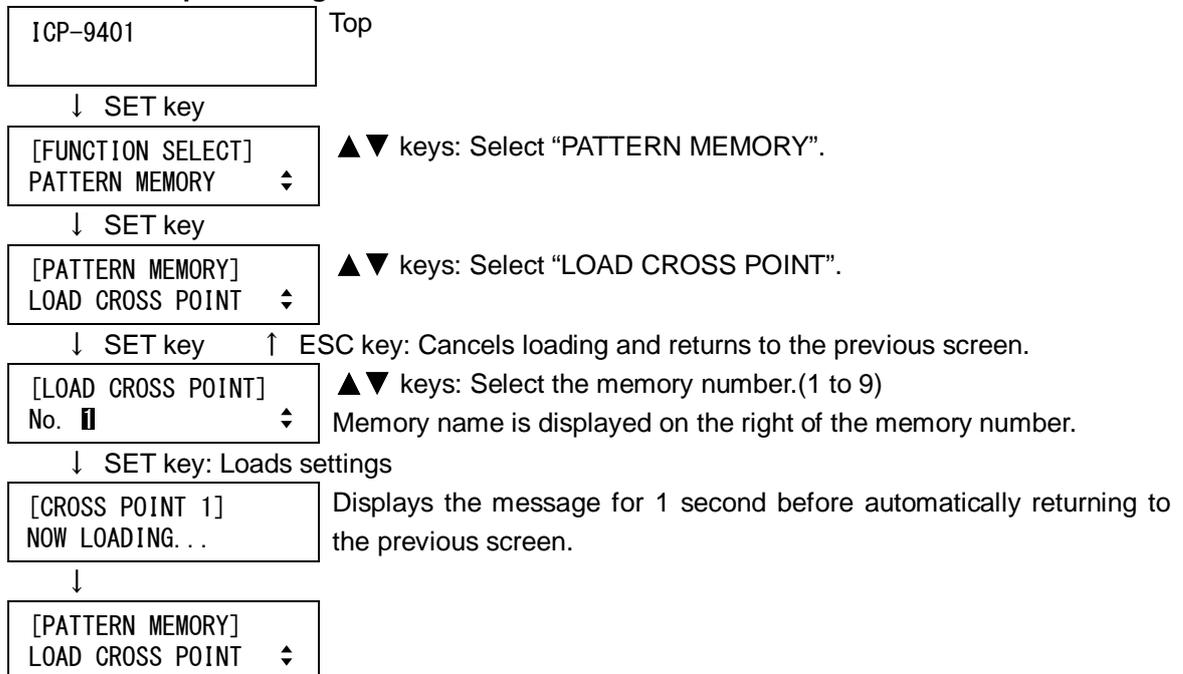
@GTF: Get flash time (Command keys and DISPLAY POWER keys)

7.14 Pattern Memory

7.14.1 Loading cross point [LOAD CROSS POINT]

You can load the video and audio channel settings that have been saved in the cross point memory.

1. To load the cross point using menu:



2. To load the cross point using commands:

- @RCM: Load video and audio channel setting from cross point memory
- @RCV: Load video channel setting from cross point memory
- @RCA: Load audio channel setting from cross point memory

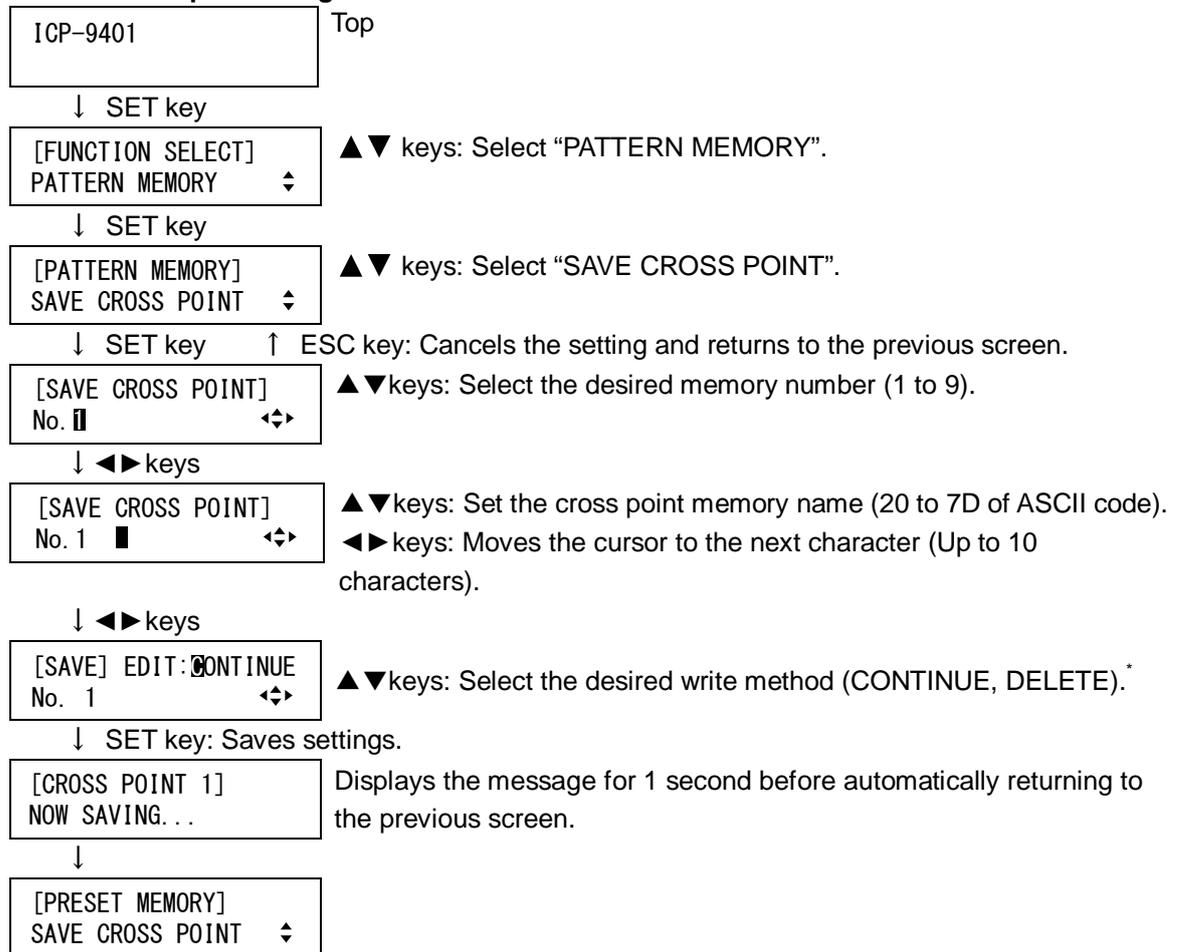
7.14.2 Saving cross point [SAVE CROSS POINT]

You can save the current settings of video and audio channels into the cross point memory.

Note:

Do not turn off the ICP while "NOW SAVING..." is displayed. Otherwise, setting data may be lost.

1. To save the cross point using menu:

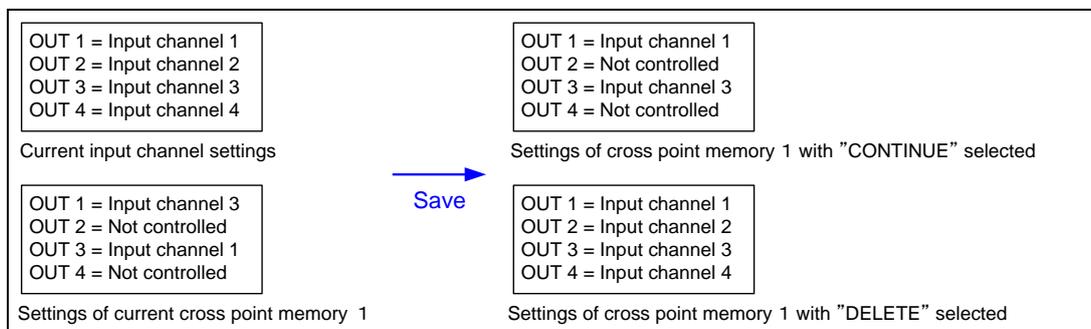


* If you select a memory number that is set to not control channels, you can select the write method.

"CONTINUE": The settings will be kept.

"DELETE": The settings will be overwritten.

(For settings to not control channels, see "7.14.3 Editing cross point [EDIT CROSS POINT]")



[Table 7.14.2a] Saving cross point

2. To save the cross point using commands:

@SCM: Overwrite video and audio channel setting in cross point memory

@SCV: Overwrite video channel setting in cross point memory

@SCA: Overwrite audio channel setting in cross point memory

@SEM: Save video and audio channel setting in cross point memory

@SEV: Save video channel setting in cross point memory

@SEA: Save audio channel setting in cross point memory

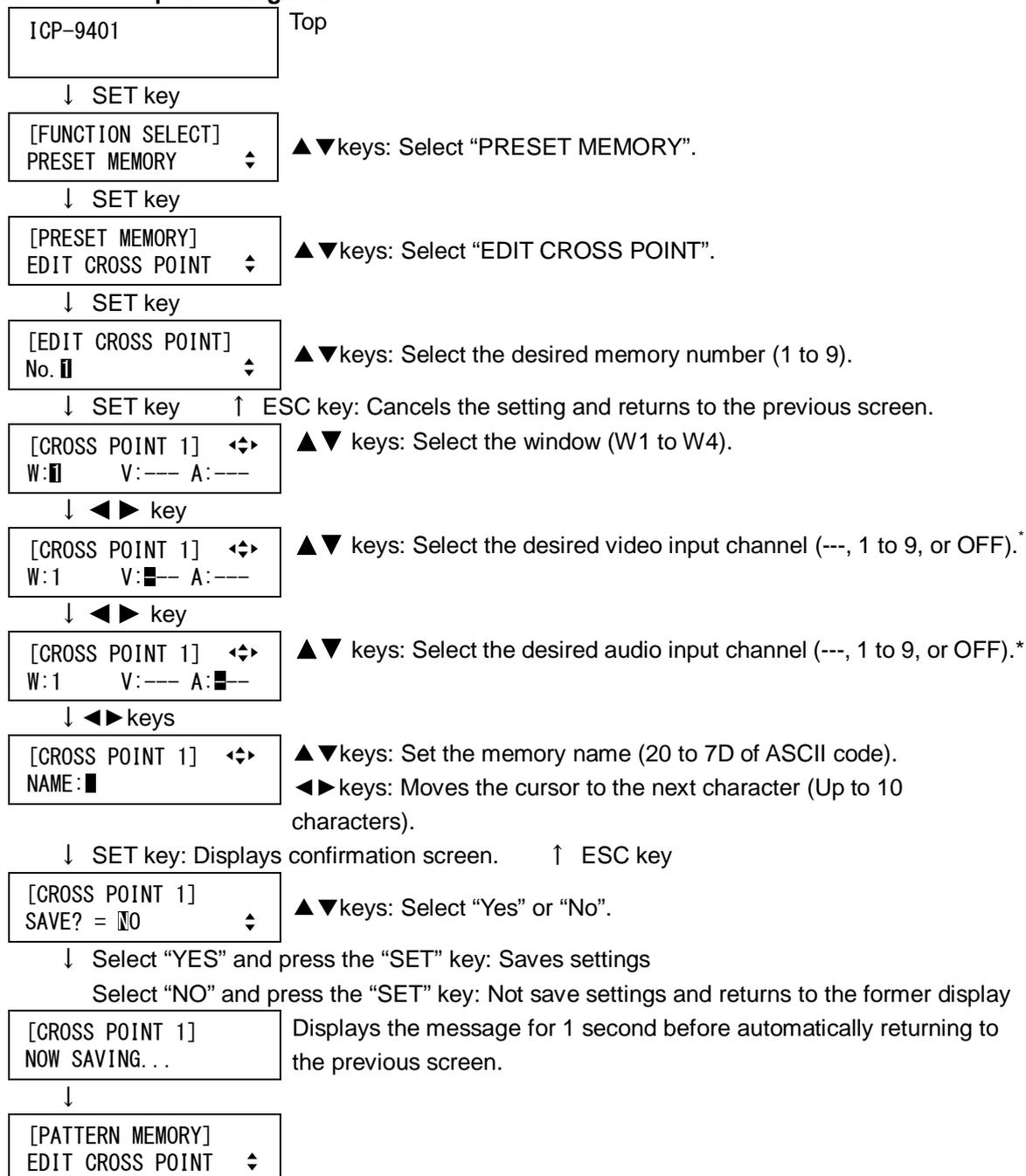
7.14.3 Editing cross point [EDIT CROSS POINT]

You can edit the setting of cross point memory.

Note:

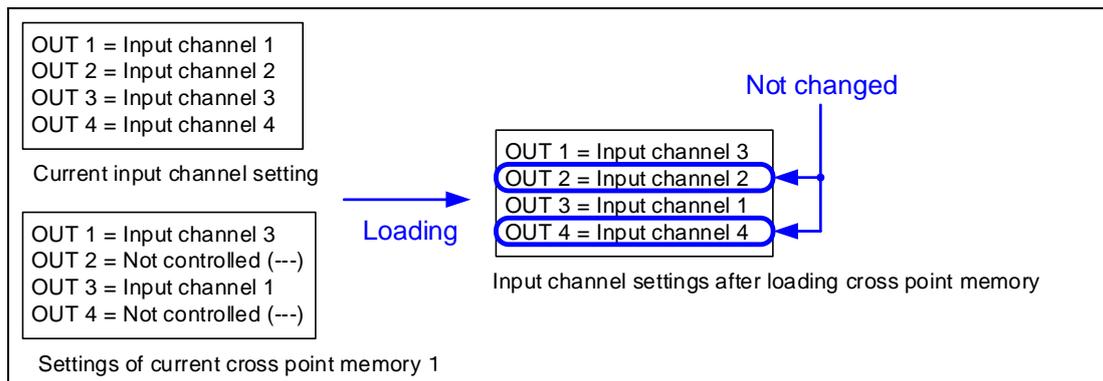
Do not turn off the ICP while "NOW SAVING..." is displayed. Otherwise, setting data may be lost.

1. To edit the cross point using menu:



* “---” is displayed for settings that do not control channels. Outputs that do not control channels when cross point memory is loaded do not switch channels.

All cross point memories are set to not to control channel by factory default.



[Fig. 7.14.3a] Loading edited cross point memory

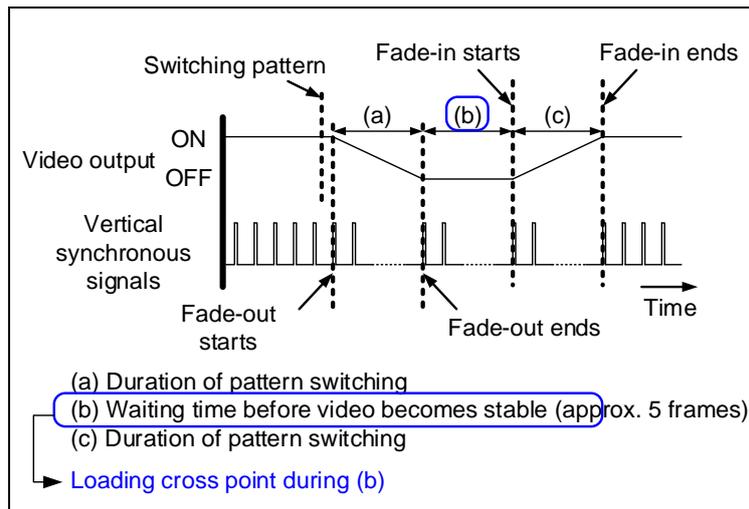
2. To edit the cross point using commands:

- @ECM: Edit video and audio channel setting in cross point memory
- @ECV: Edit video channel setting in cross point memory
- @ECA: Edit audio channel setting in cross point memory
- @GCM: Get video and audio channel setting in cross point memory
- @GCV: Get video channel setting in cross point memory
- @GCA: Get audio channel setting in cross point memory

7.14.4 Cross point link [CROSSPOINT LINK]

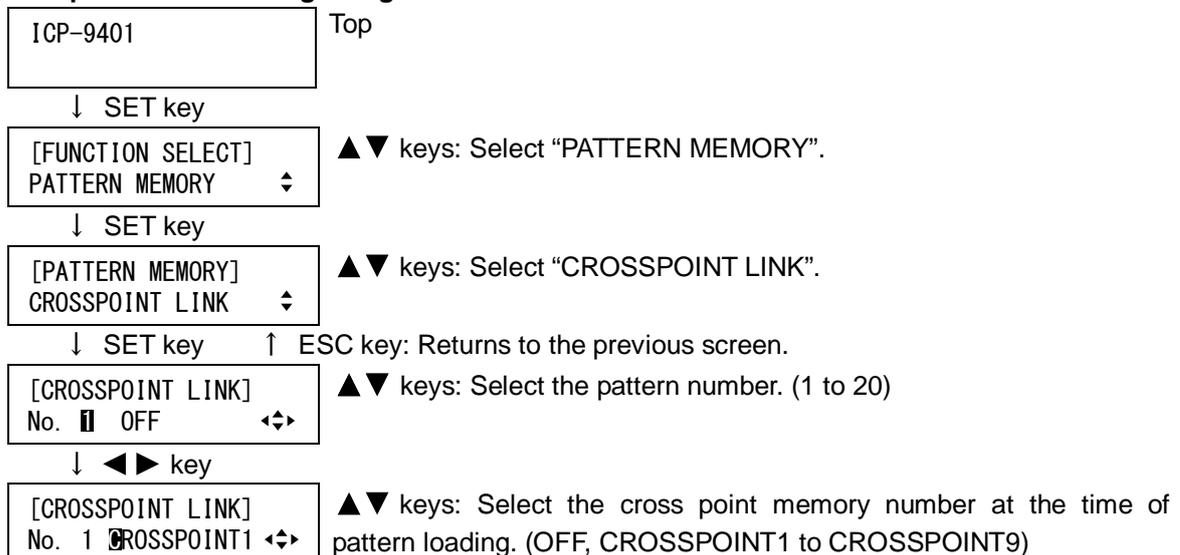
You can load video/audio channel setting saved in the cross point memory at the time of "7.14.5" execution. They can be set for each window pattern.

- OFF [Default]: Loads input channel saved in "7.14.6" when "7.14.5" is executed.
- CROSSPOINT1 to CROSSPOINT9: Loads input channel saved in the selected cross point when "7.14.5 Loading pattern memory [LOAD WINDOWPATTERN]" is executed. If channels are not controlled at the time of window pattern loading, the cross point memory set in "7.14.3Editing cross point" can be allocated to the window pattern.



[Fig. 7.14.4a] Pattern switching and cross point loading

1. To load input channel setting using menu:



2. To load input channel setting using commands:

- @SCH: Set cross point link
- @GCH: Get cross point link

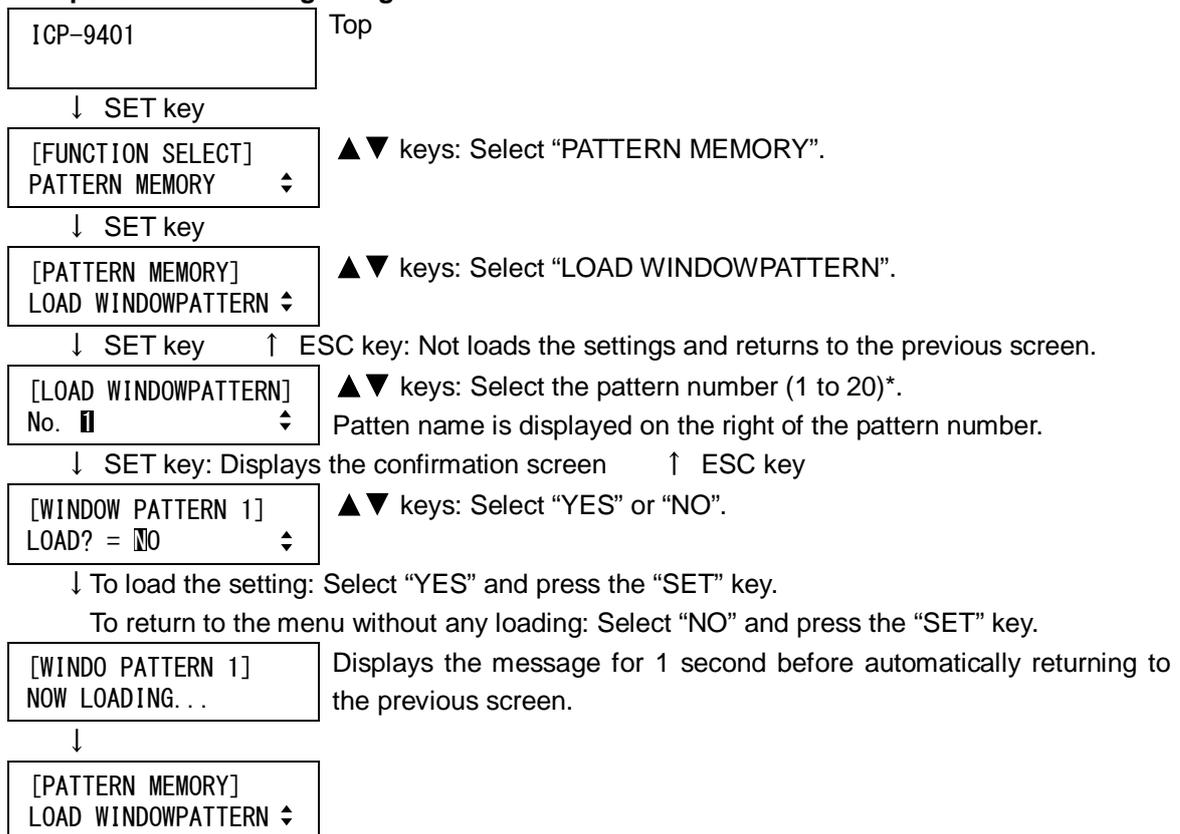
7.14.5 Loading pattern memory [LOAD WINDOWPATTERN]

You can load the setting saved in pattern memory. This operation can be performed from Window pattern selection keys of the front panel.

Note:

Once you do this operation, settings of video/audio input/output will be updated excepting some environment setting. See "7.13.6 Initializing registered commands and associations [INITIALIZE]"

1. To load input channel setting using menu:



* You cannot select a pattern memory number in which settings are not saved.

1. To load the settings saved in the preset memory using commands:

@RPM: Load all settings from window patterns

@GMN: Get all settings from window patterns

7.14.6 Saving window patens [SAVE WINDOWPATTEN]

You can save current settings in the pattern memory.

You can save up to 20 settings of the following settings:

6.2 Selecting Input Channels

7.3 Setting Position, Size, and Masking

7.3.2 Aspect ratio control of output video [MONITOR ASPECT]

7.3.3 Aspect ratio control of input video [INPUT ASPECT]

7.3.4 Aspect ratio control [ASPECT PROCESS]

7.3.6 Input position [INPUT POSITION]

7.3.7 Input size [INPUT SIZE]

7.3.8 Input masking [INPUT MASKING]

7.3.10 Output position [OUTPUT POSITION]

7.3.11 Output size [OUTPUT SIZE]

7.3.12 Output masking [OUTPUT MASKING]

7.3.14 Background color [BACKGROUND COLOR]

7.3.15 Test pattern [TEST PATTERN]

7.4 Window configuration

7.4.1 Window border [FRAME OUTPUT]

7.4.2 Window border color [FRAME COLOR]

7.4.3 Border size [FRAME SIEZE]

7.4.4 Telop [TELOP OUTPUT]

7.4.5 Telop background color [TELOP BACKCOLOR]

7.4.6 Telop font color [TELOP FONTCOLOR]

7.4.8 Telop display position [TELOP POSITION]

7.4.9 Items to be displayed [TELOP CONTENTS]

7.4.10 Telop display time [TELOP VIEWTIME]

7.4.11 Display position on window [IMAGE POSITION]

7.4.12 Display size on window [IMAGE ZOOMRATE]

7.4.13 Mirror reverse [IMAGE INVERT]

7.4.14 Window priority [OVERLAY PRIORITY]

7.4.15 Window hiding [WINDOW INVISIBLE]

7.4.16 Window background color [ENTIRE BACKCOLOR]

7.5 Video Correction

7.5.1 Input brightness [INPUT BRIGHTNESS]

7.5.2 Input contrast [INPUT CONTRAST]

7.5.3 Hue [INPUT HUE]

7.5.4 SATURATION [INPUT SATURATION]

7.5.5 Black level [INPUT SETUP LEVEL]

7.5.7 Output brightness [OUTPUT BRIGHTNESS]

7.5.8 Output contrast [OUTPUT CONTRAST]

7.7 Input Timing Settings

7.7.1 The total number of horizontal dots [H TOTAL DOTS]

7.7.2 Horizontal start position [H START]

7.7.3 Horizontal display period [H DISPLAY]

7.7.4 Vertical start position [V START]

7.7.5 Vertical display period [V DISPLAY]

7.7.11 Tracking [TRACKING]

7.8 Output Settings

7.8.5 Window transition effect [VIDEO SWITCHING]

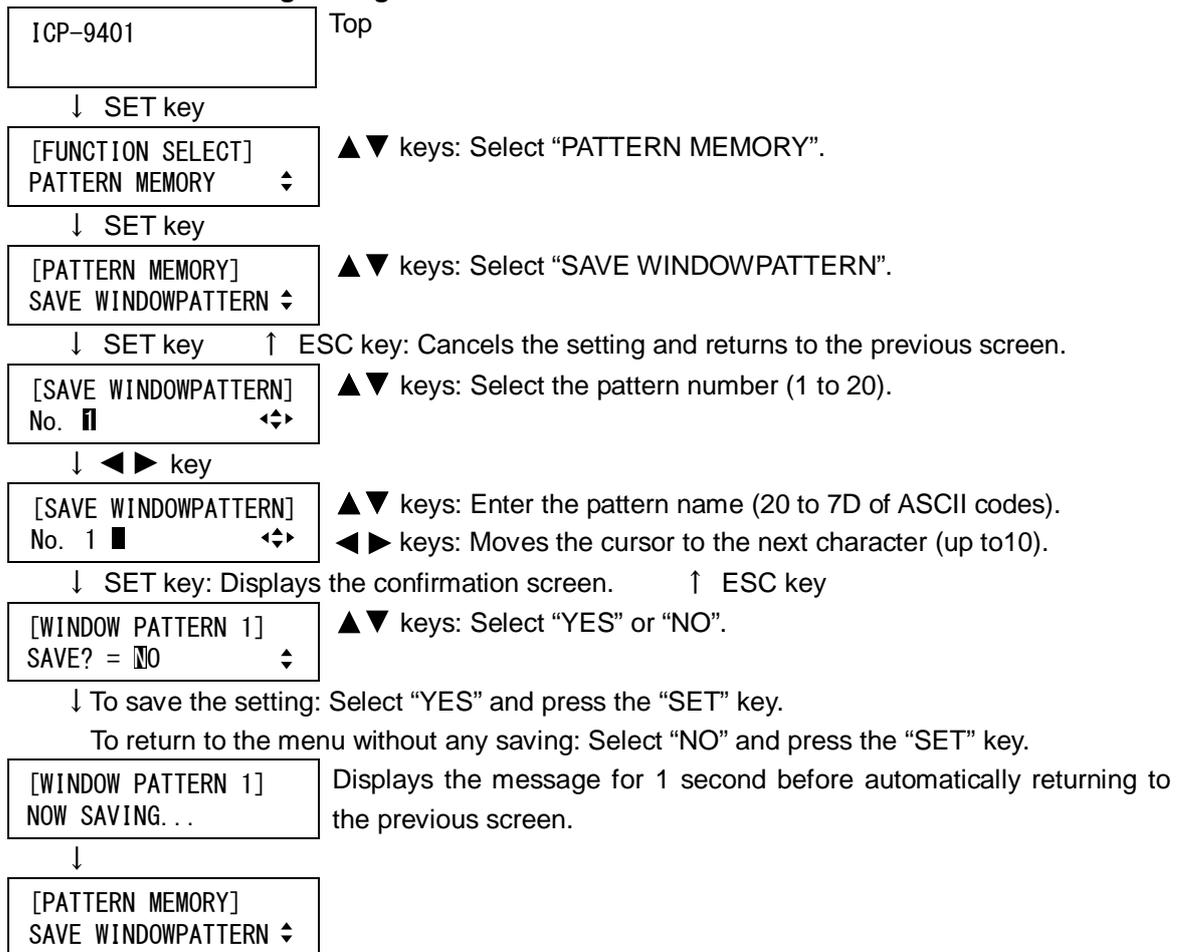
7.8.6 Effect duration [SWITCHING SPEED]

7.8.8 Pattern switching effect [PATTERN SWITCHING]

7.8.15 Output operation mode [COMBINED MODE]

Note:

Do not turn off the ICP while "NOW SAVING..." is displayed. Otherwise, setting data may be lost.

1. To save the current settings using menu:**2. To save the current settings using commands:**

@SPM: Save all settings in window pattern

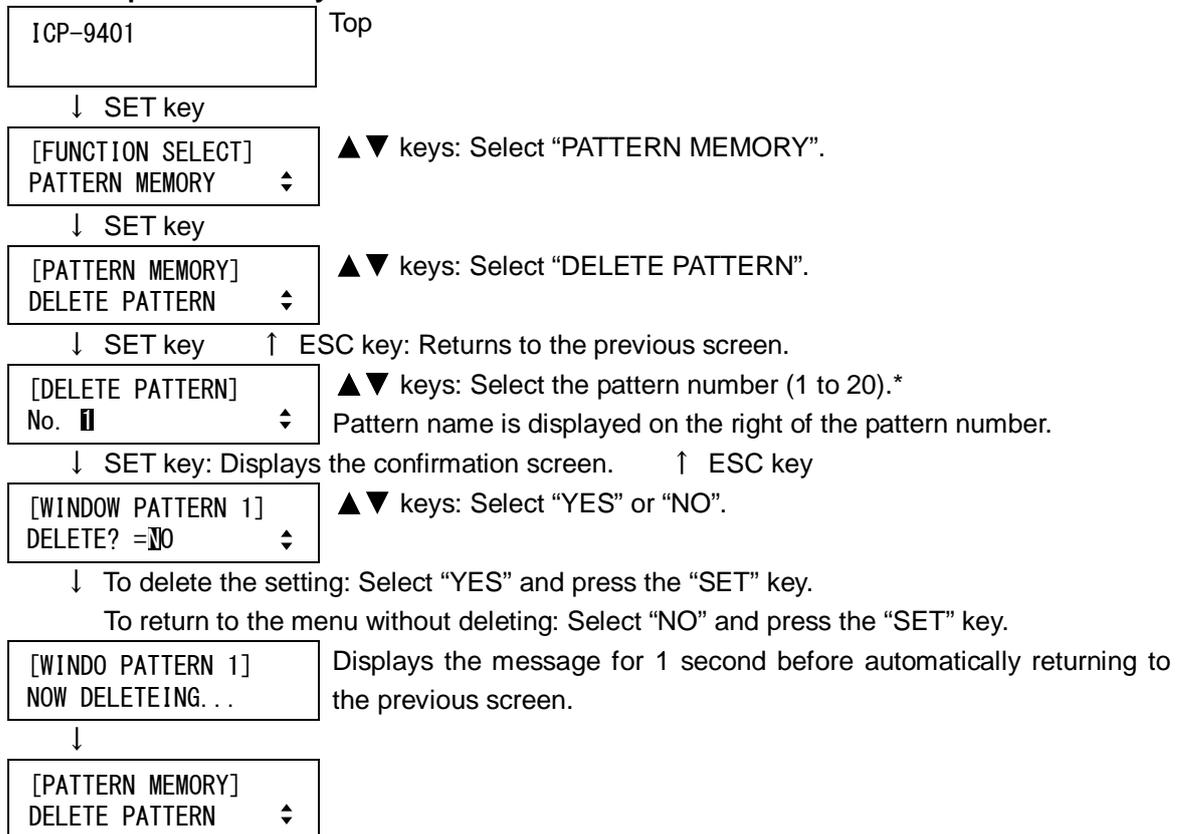
7.14.7 Deleting pattern memory [DELETE PATTERN]

You can delete settings saved in the pattern memory.

Note:

Once you delete settings, you cannot put them back.

1. To delete the pattern memory



* You cannot select a preset memory number in which settings are not saved.

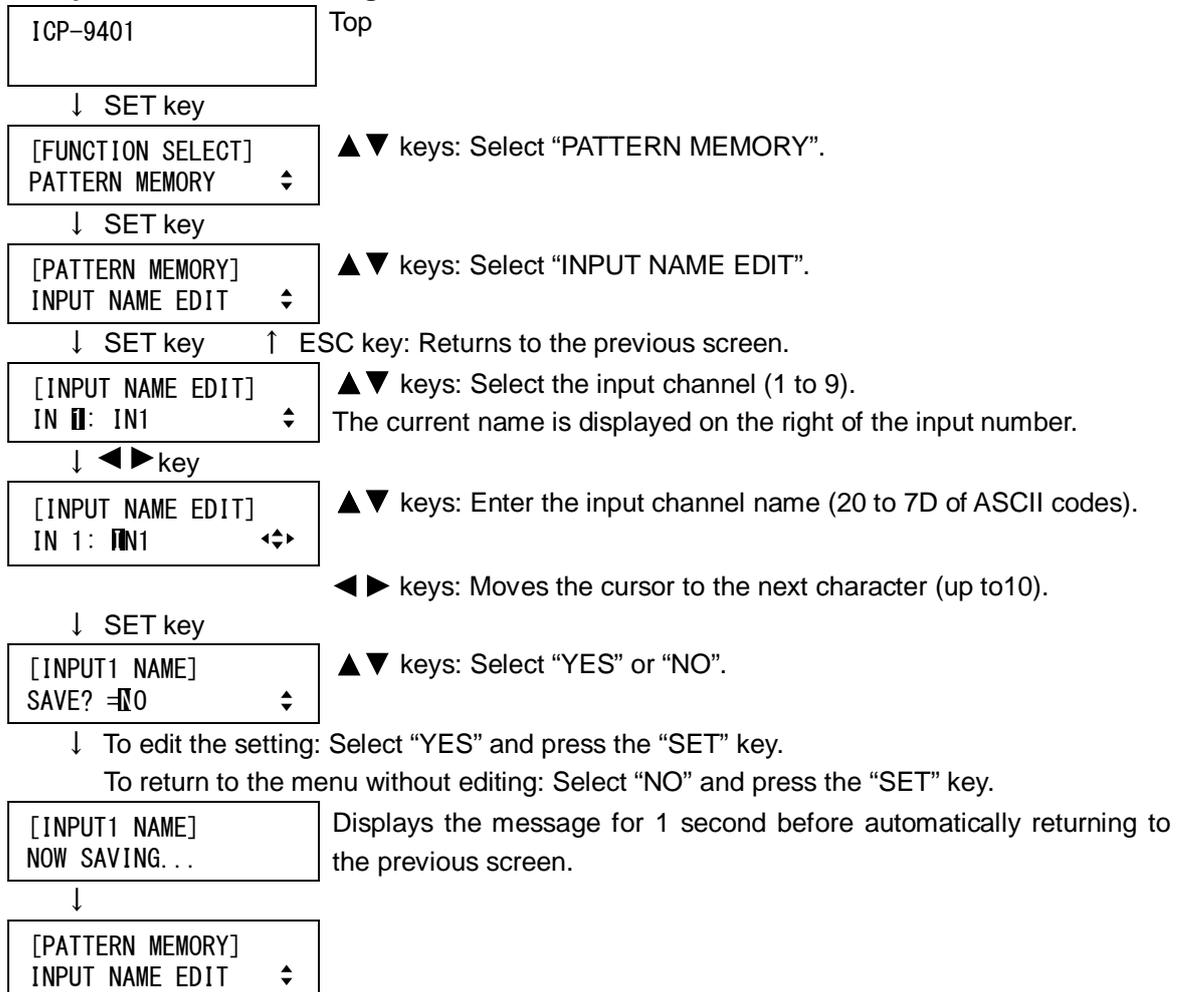
2. To load the settings saved in the preset memory using commands:

@ DPM: Deleting window pattern

7.14.8 Naming input channel [INPUT NAME EDIT]

You can set name of each input channel. The set name will be applied to input channel names displayed for "6.8 Control by Web browser" and "7.4.9 Items to be displayed [TELOP CONTENTS]".

1. To edit input channel name using menu:



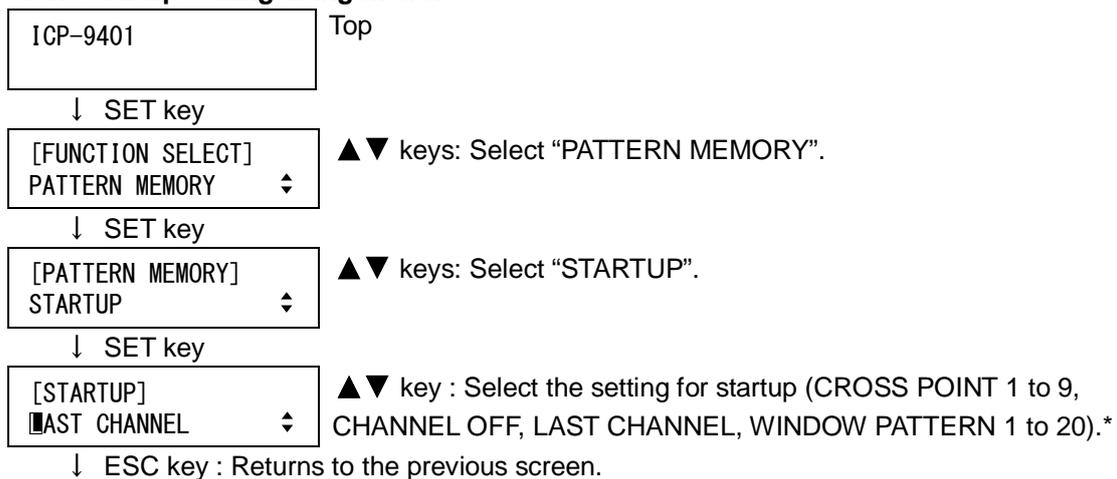
2. To edit input channel name using commands:

- @ SIN: Set input channel name
- @ GIN Get input channel name

7.14.9 Startup settings [STARTUP]

- Cross point memories: CROSS POINT1 to 9
Starts up with the channel settings saved in the selected cross point memory. For settings other than channel settings, starts up with the settings of the last ICP power off.
- CHANNEL OFF
Channel setting will be OFF. For settings other than channel setting, starts up with the settings of the last ICP power off.
- LAST CHANNEL [Default]
Starts up with the settings of the last ICP power off.
- Preset memory: WINDOW PATTERN 1 to WINDOW PATTERN 20
Starts up with the settings saved in the window pattern. For settings that are not saved in the window pattern, it starts up with the settings of the last ICP power off. (For settings that can be saved in the preset memory, see [Table 7.13.6a] in 7.13.6)

1. To set the startup setting using menu:



* You cannot select a pattern number whose settings are not saved. Nothing is saved in all preset memories by factory default.

2. To set the startup setting using commands:

- @SMU: Set startup status
- @GMU: Get startup status

7.15 Bitmap

The ICP outputs an bitmap for approximately 5 seconds after it is turned on by setting "7.15.2 Bitmap output [BITMAP OUTPUT]" to "ON" or by setting "7.15.6 Bitmap output at startup [POWER ON BITMAP]" to "ON". IDK's logo is displayed by factory default, but you can change it to the bitmap you want to display. You can register up to four images, and you can capture input videos to register it as bitmap images.



[Fig. 7.15a] Default bitmap image

7.15.1 Bitmap transfer

To send bitmap files to the ICP, you can use browser, serial communication, and LAN communication. The ICP supports DIB (Device Independent Bitmap) with a header generally used for Windows, and those files have to meet the following requirements:

- File header:
 - Having "BITMAPFILEHEADER"
- Information header:
 - Having "BITMAPCOREHEADER" (for OS/2) or "BITMAPINFOHEADER" (for Windows) ("BITMAPV4HEADER" or "BITMAPV5HEADER" are not supported.)
- The number of colors:
 - One of the following: 2 colors (monochrome, 1 bit), 16 colors (4 bits), 256 colors (8 bits), 16.77 million colors (TRUE COLOR, 24 bits)
- Resolution:
 - The maximum resolution: [Horizontal resolution x Vertical resolution x The number of bytes per pixel] = 8,388,608 bytes or less. If you register several bitmaps, the total bytes of all bitmaps should be 8,388,608 bytes or less. (Aspect ratio does not matter as long as it is within the maximum resolution).
 - Bytes per pixel: 1 byte per pixel for 2 colors (monochrome, 1 bit), 16 colors (4 bits), and 256 colors (8bits); 3 bytes per pixel for 16.77 million colors (TRUE COLOR, 24 bits).
 - Bitmaps can be enlarged but cannot be reduced. The larger the resolution is, the longer the output time will be, and it may take a maximum of approximately six seconds to output a bitmap. Register a bitmap having smaller resolution than that of the display device.
- Compression format:
 - One of the following: No compression (BI_RGB), 8 bit-run-length compression (BI_RLE8), 4 bit-run-length compression (BI_RLE4)

[Transferring bitmap file via browser]

*IDK evaluated the operation on Microsoft Internet Explorer 6.0, 7.0 and 8.0 for Windows. It may not operate correctly on other versions or on other browsers.

Open the WEB browser on a PC using the same LAN and enter the IP address of the ICP followed by "/bitmap.html" to open the window that is for sending bitmap files.

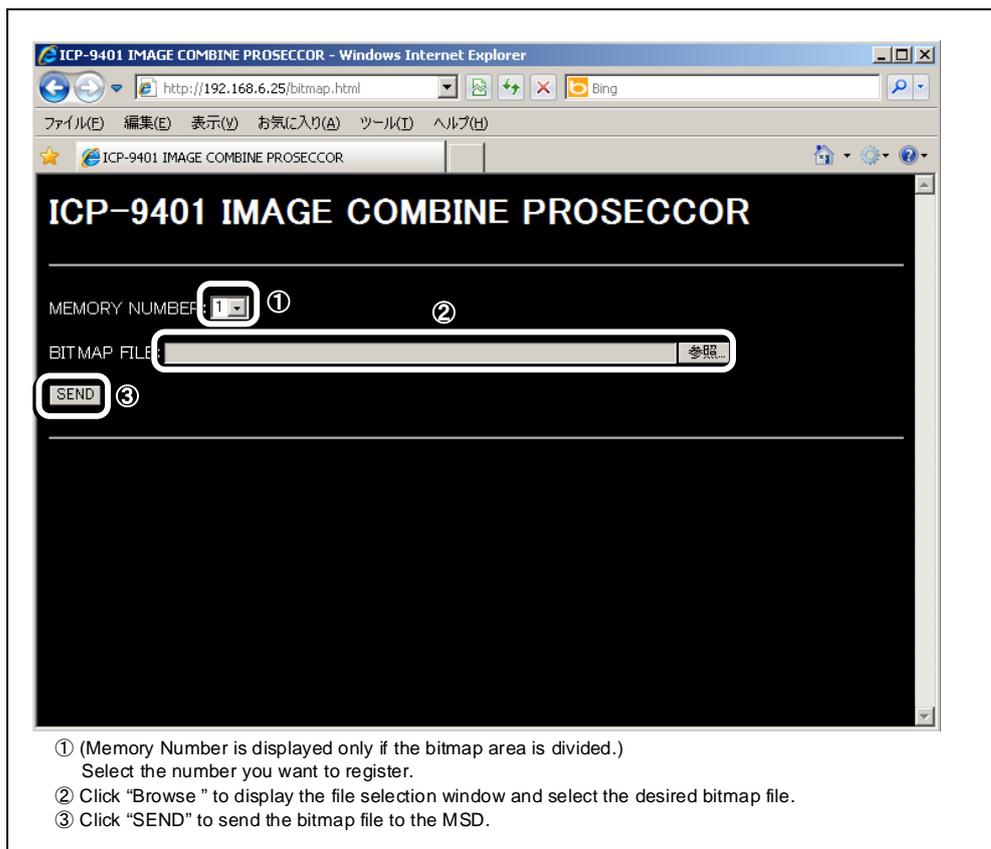
·When "80" is set for port number of browser control port:

http://192.168.1.199/bitmap.html

·When a number other than "80" (5000 to 5999) is set for port number of browser control port:

(For example, the port number is 5000)

http://192.168.1.199:5000/bitmap.html



[Fig. 7.15.1a] Sending a bitmap file from browser

When bitmap file is sent correctly, the message below is displayed on the VFD screen and the bitmap file is being saved. Do not turn off the ICP while the message is displayed.

BITMAP SAVE NOW
PLEASE WAIT

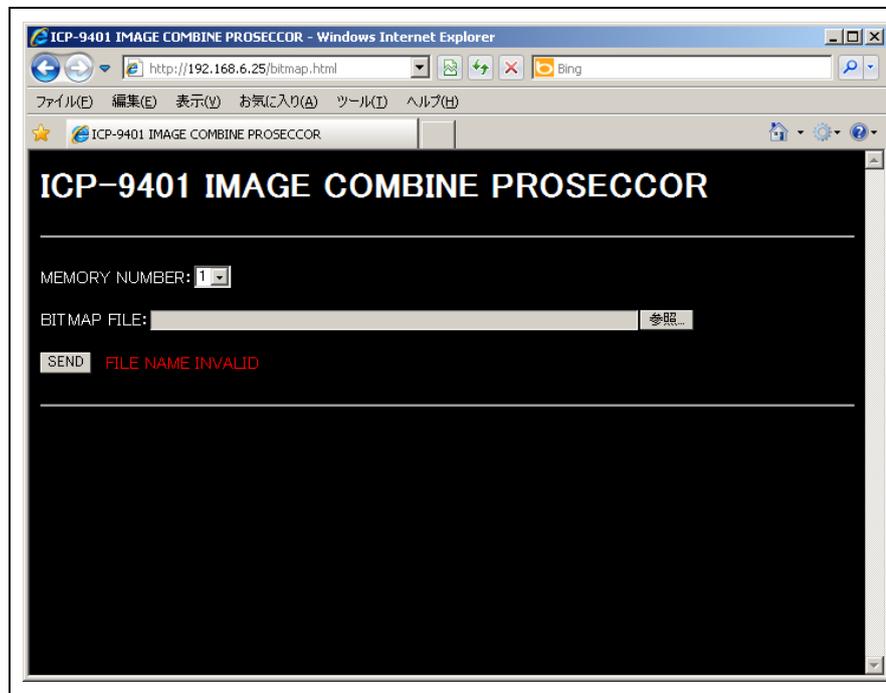
If a bitmap file is not valid, one of the following error messages will be displayed.

FILE NAME INVALID: The file name is not valid.

FILE DATA INVALID: The ICP does not support the file.

FILE DATA SIZE OVER: Exceeds the maximum resolution.

MEMORY ALLOCATE ERROR: Enough memory to save the bitmap file temporarily could not be allocated.
You may solve this error by rebooting the ICP and sending the bitmap file again.



[Fig. 7.15.1b] Bitmap send error

Note:

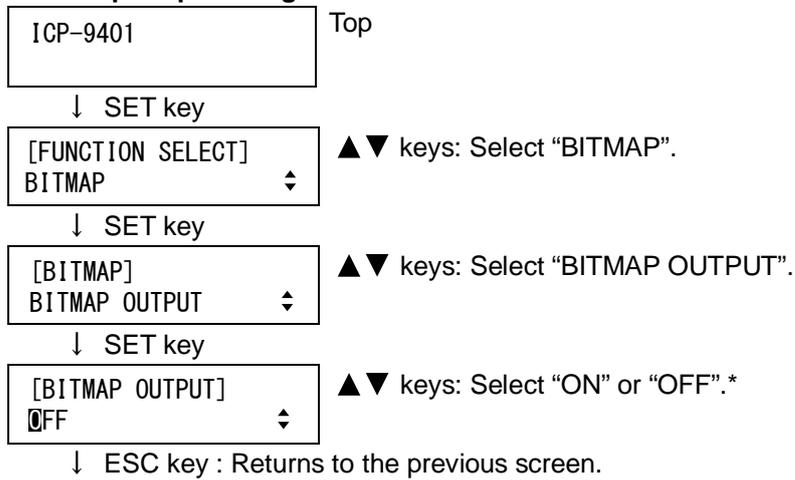
The ICP has an approximately 900,000-byte memory to save data temporarily after all bitmap data is received. However, if bitmap data whose size is larger than 900,000 is sent, receiving and writing data are performed simultaneously, and the browser sends a time-out status. As a result, the writing operation may fail. In this case, use IDK's free remote control application (see "6.9 Remote Control Program") to send the bitmap file to the ICP.

7.15.2 Bitmap output [BITMAP OUTPUT]

You can enable/disable bitmap image output.

- To output the normal image: OFF [Default]
- To output a bitmap image: ON

1. To set bitmap output using menu:



* If several bitmaps are registered, select the bitmap number you want to output.

2. To set bitmap output using commands:

- @SBM: Set bitmap output
- @GBM: Get bitmap output

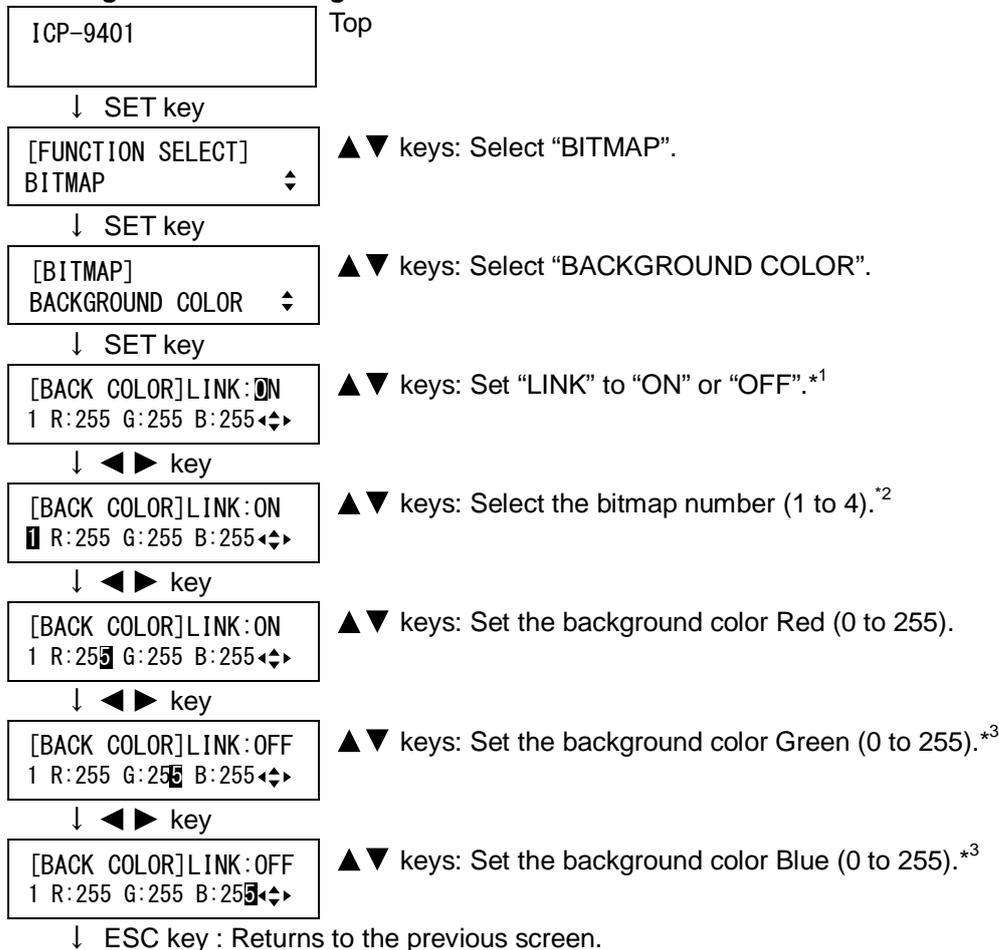
For each bitmap

7.15.3 Background color [BACKGROUND COLOR]

You can select the background color from approx. 16.7 million color combinations of red, green, and blue.

- BACKGROUND COLOR (R): 0 to 255 [Default]: 255
- BACKGROUND COLOR (G): 0 to 255 [Default]: 255
- BACKGROUND COLOR (B): 0 to 255 [Default]: 255

1. To set background color using menu:



*¹ If you set "LINK" to "ON", you can set only Red (R). Settings of Green (G) and Blue (B) are also changed according to the setting of the Red (R). For example, if you increase Red (R) +2, Green (G) and Blue (B) are also increased (+2). If one of these three colors reaches the limiting value, it cannot be changed any further.

*² This is displayed only if you register several bitmaps. Select the bitmap number you want to set.

*³ Only if you set "LINK" to "OFF", you can set the background color for Green and Blue individually.

2. To set background color using commands:

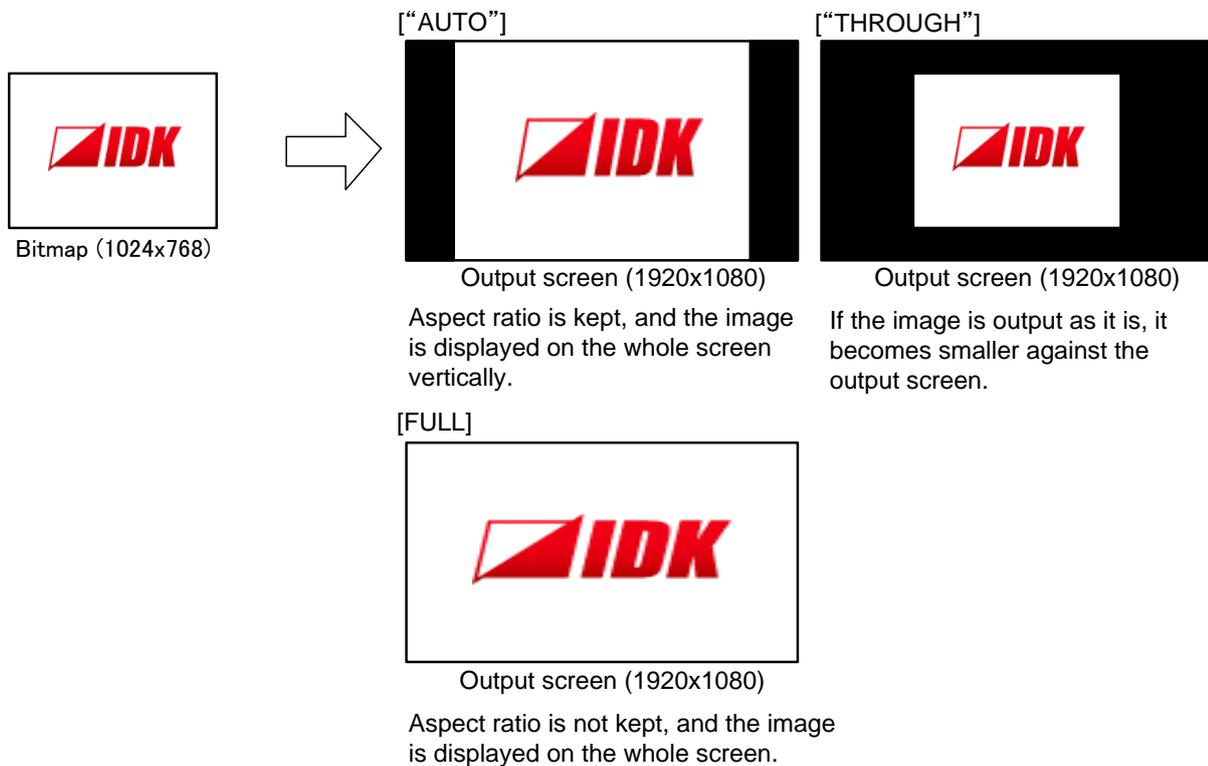
- @SBB: Set background color
- @GBB: Get background color

7.15.4 Aspect ratio [ASPECT]

For each bitmap

You can set the aspect ratio of the bitmap.

- AUTO [Default]
- FULL
- THROUGH

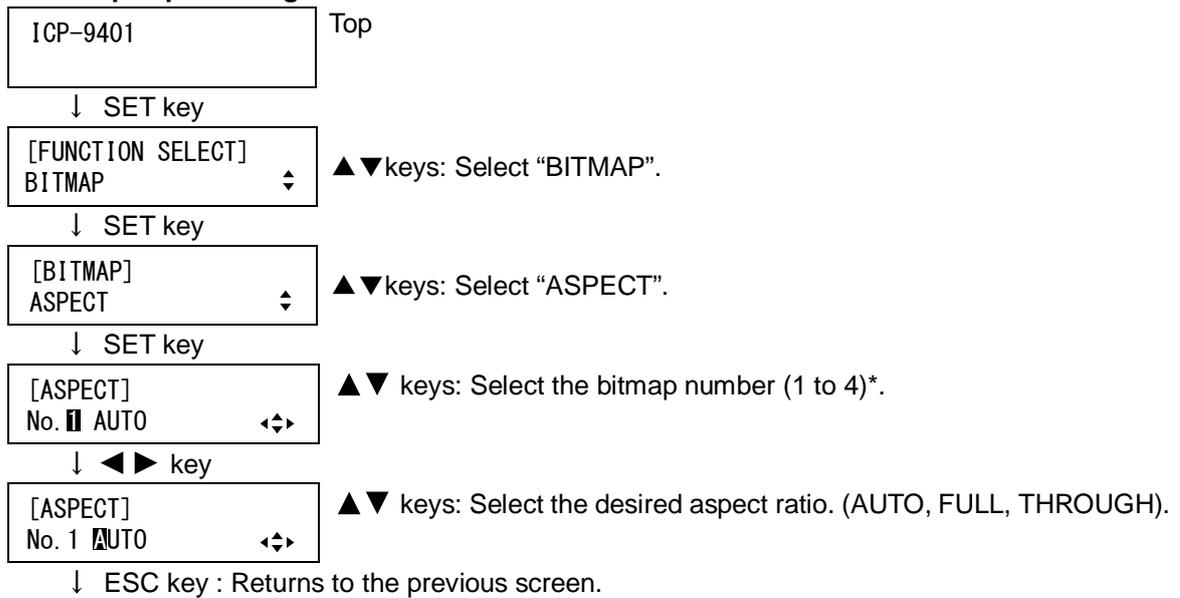


[Fig. 7.15.4a] Setting aspect ratio

Note:

Bitmaps can be enlarged but cannot be reduced. If you select "AUTO", the aspect ratio is kept. However, if either of horizontal or vertical is enlarged and the other is reduced, the aspect ratio cannot be kept. In such a case, the image is displayed using "THROUGH" automatically to keep the aspect ratio.

1. To set bitmap aspect using menu:



*If several bitmaps are registered, select the bitmap number you want to set.

2. To set bitmap aspect using commands:

- @SBT: Set bitmap aspect ratio
- @GBT Get bitmap aspect ratio

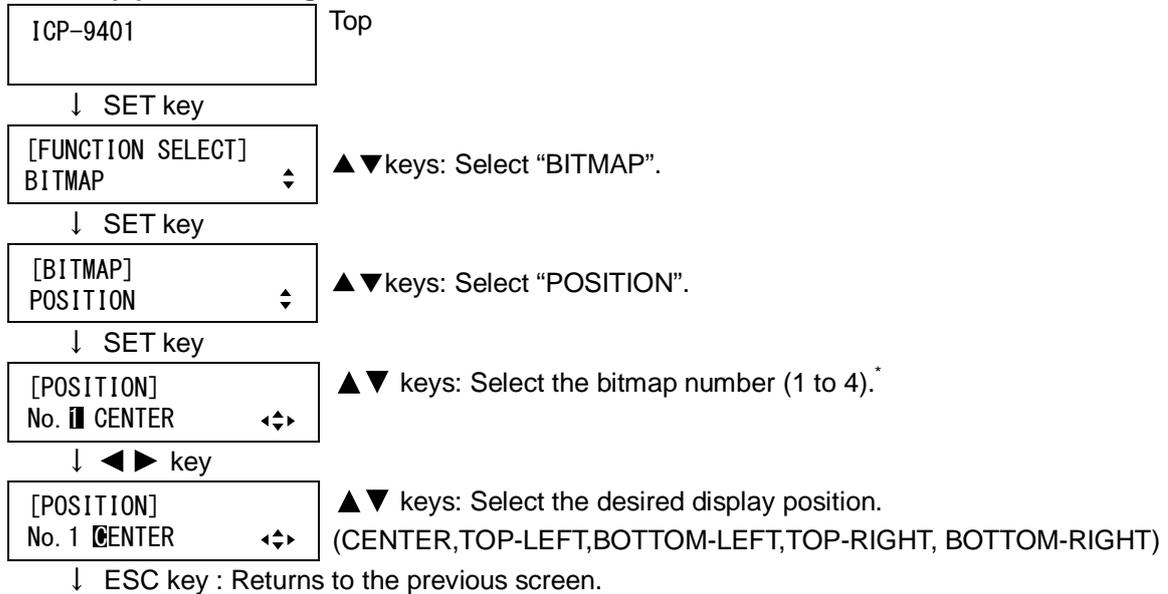
For each bitmap

7. 15. 5 Display position [POSITION]

You can set the display position of the bitmap on the output window.

- CENTER [Default]
- TOP-LEFT
- BOTTOM-LEFT
- TOP-RIGHT
- BOTTOM-RIGHT

1. To set bitmap position using menu:



*If several bitmaps are registered, select the bitmap number you want to set.

2. To set bitmap position using commands:

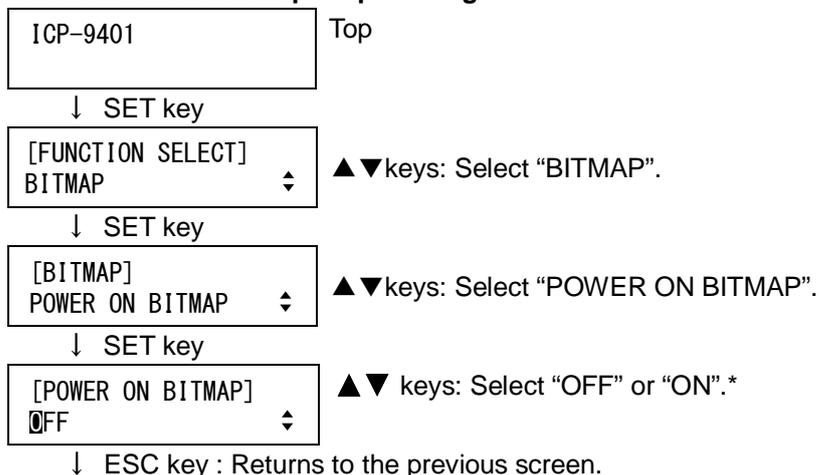
- @SZP: Set bitmap display position
- @GZP: Get bitmap display position

7. 15. 6 Bitmap output at startup [POWER ON BITMAP]

You can enable or disable bitmap output at the time of startup.

- OFF: Bitmap is not output. [Default]
- ON: Bitmap is output.

1. To enable or disable bitmap output using menu:



*If several bitmaps are registered, select the bitmap number you want to output.

2. To enable or disable bitmap output using commands:

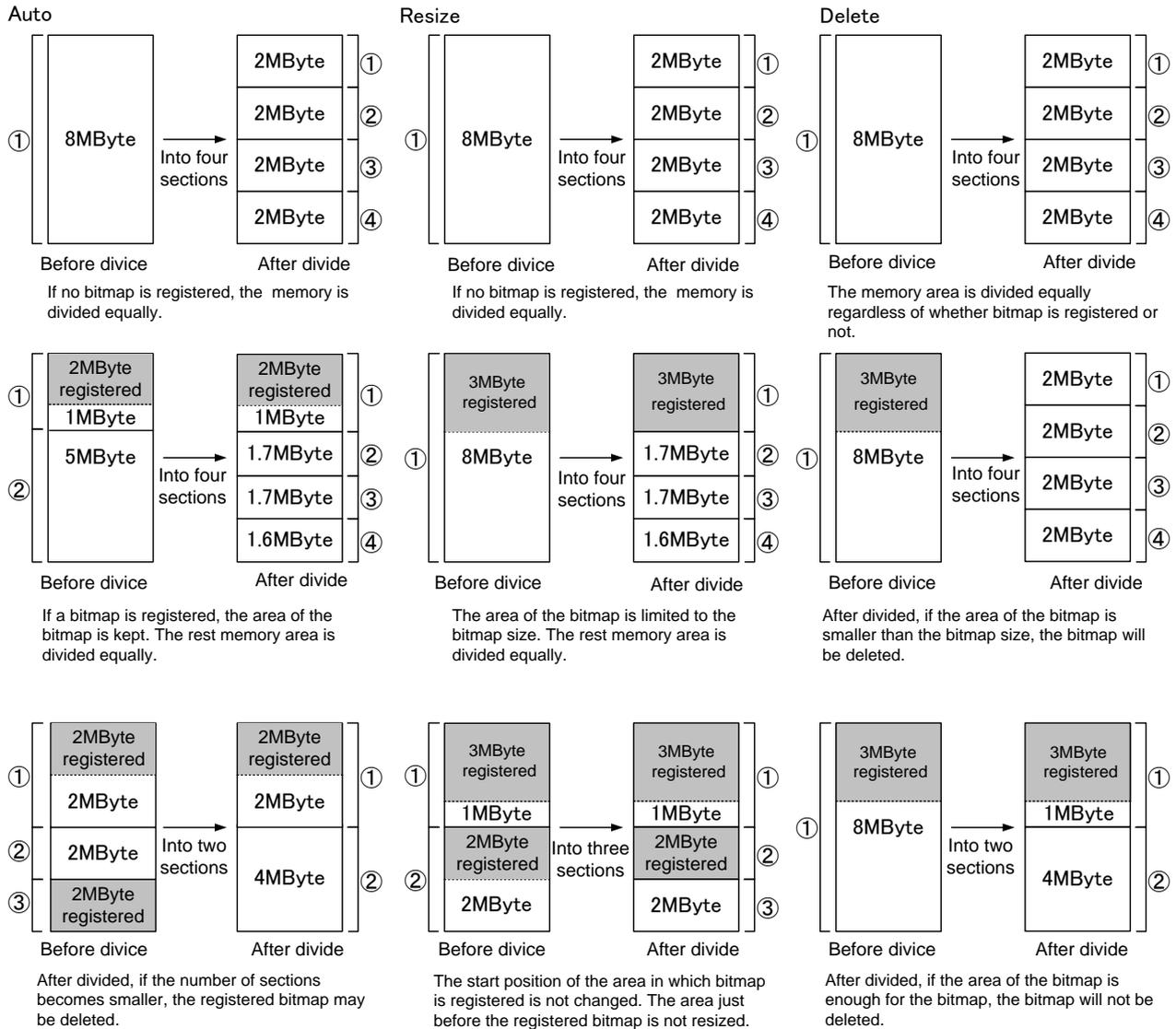
@SPB: Set startup bitmap

@GPB: Get startup bitmap

7.15.7 Dividing memory area [DIVIDE MEMORY]

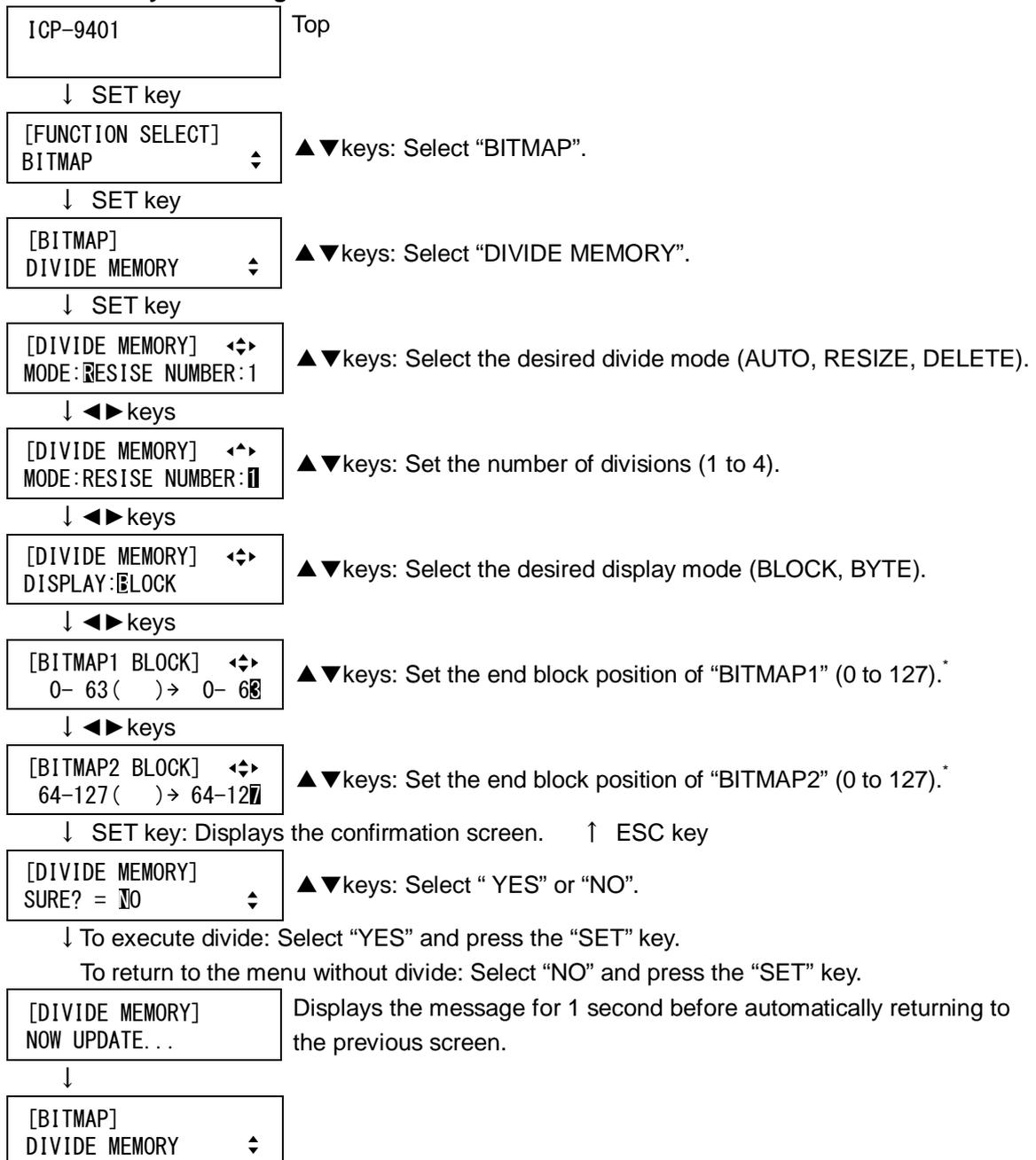
You can register up to four bitmaps within the available memory area by dividing the memory. You can select one of three dividing modes or specify the size you want to divide manually.

Memory areas are controlled by blocks. 1 block = 65,536 bytes; 128 blocks = 8,388,608 bytes in total.



[Fig. 7.15.7a] Dividing mode

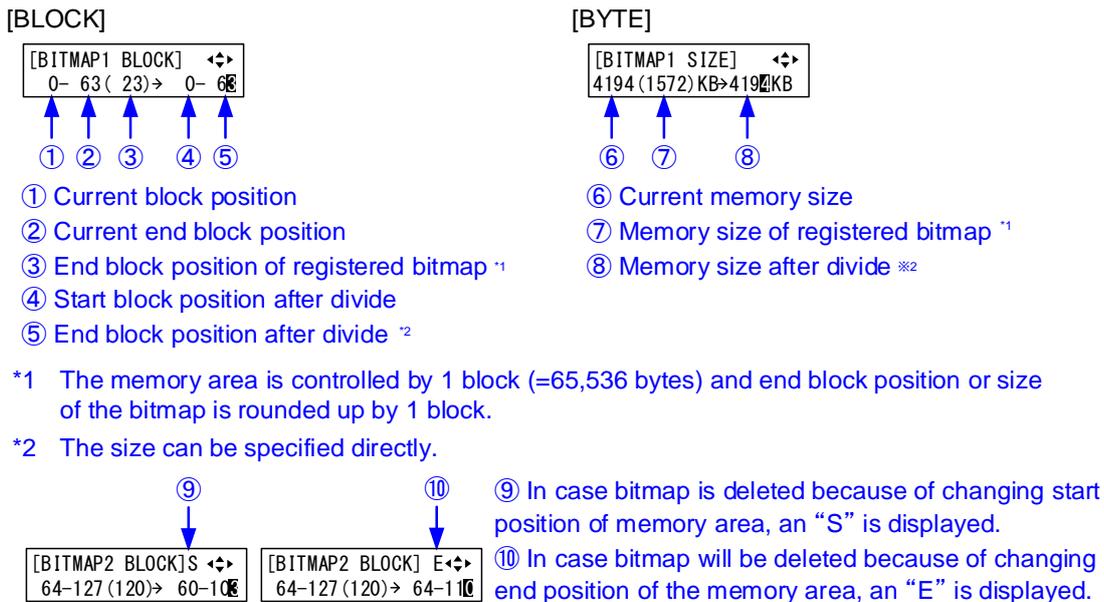
1. To divide memory area using menu:



* If you select "BLOCK" for "DISPLAY", the current start and end block positions are displayed on the left of the VFD screen. If a bitmap is registered, the final block position is displayed in parentheses. The start and end block positions after divide are displayed on the right. If you want to specify the after-divide size directly, change the end block position.

If you select "BYTE", the currently reserved memory size is displayed on the left. If a bitmap is registered, the number of bytes is displayed in parentheses. The memory size after divide is displayed on the right so that you can specify directly the after-division memory size.

In case the registered bitmap will be deleted as a result of specifying the size directly, an "S" or "E" is displayed in the upper right.



[Fig. 7.15.7b] "BLOCK" and "BYTE"

In case the total number of blocks exceeds 128 as a result of setting the size manually, a message shown right is displayed when you press the "SET" key and the setting cannot be applied.

MEMORY SIZE OVER

2. To divide memory area using commands:

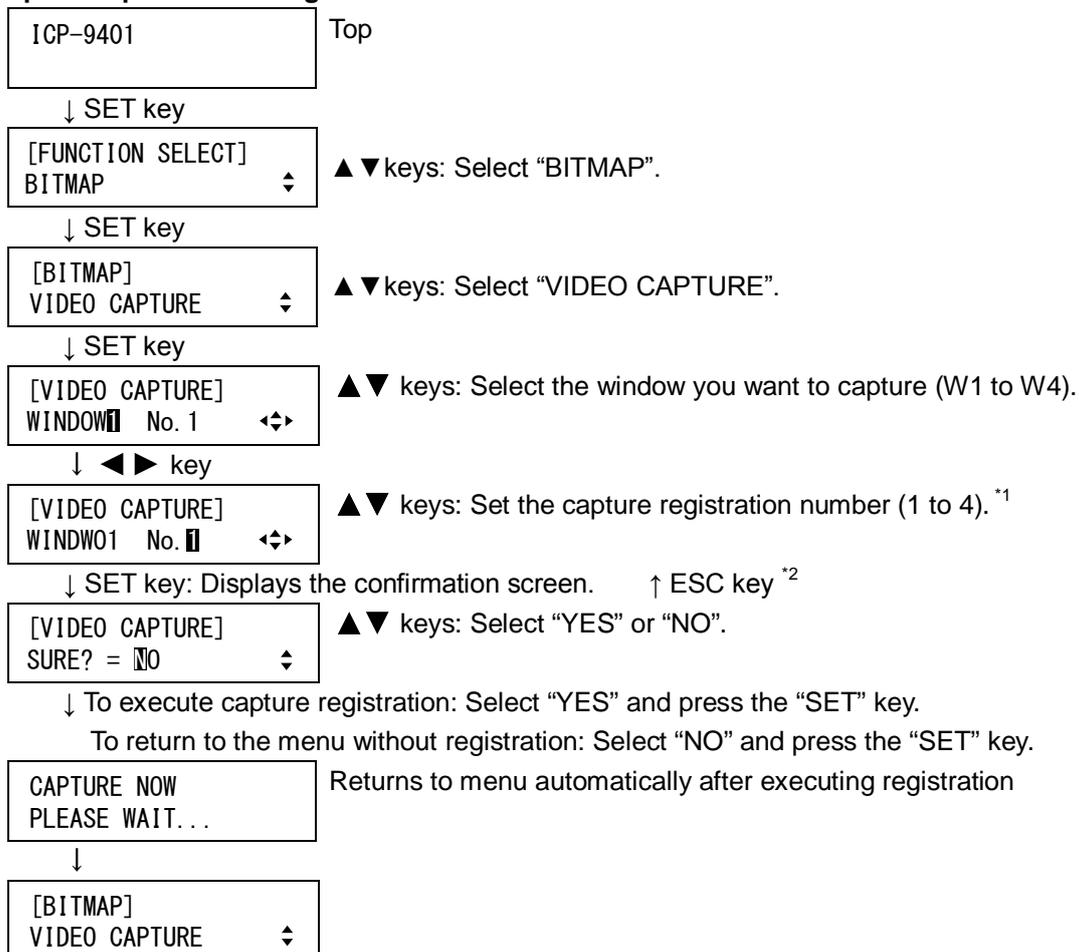
- @SBD: Set bitmap memory divide
- @GBD: Get bitmap memory divide
- @GBV Get bitmap memory usage

7. 15. 8 Input image capture [VIDEO CAPTURE]

An input video can be treated as a bitmap by capturing the input video. The maximum resolution has to be [Horizontal resolution x Vertical resolution x 3 (the number of bytes per pixel; "3" is fixed)] = 8,388,608 bytes or less. If you register several bitmaps and captured video, the total resolution of all bitmaps and captured videos has to be 8,388,608 bytes or less (aspect ratio does not matter).

Captured images can be displayed in the same size or enlarged size but not in the reduced size. Larger resolutions require a longer writing time ; it may take approximately six seconds at a maximum to write a bitmap. Register images with lower resolution than that of the display device. (If an input image is larger than the output image, capture it with reduced image size. If an input image is the same size or smaller, capture the image without changing its size. You can register images with lower resolution by setting "7.3.1 Output resolutions [RESOLUTION]" to smaller value and capture the images.)

1. To capture input video using menu:



^{*1} Displayed only if memory area is divided into several sections.

^{*2} To freeze the input video temporarily, press the "SET" key. To register the frozen video, select "YES" and then press the "SET" key again. To release freeze, press the "ESC" key. It can be released automatically when an input is switched or input signal changes.

If resolution of input video is too large against the reserved memory area and it causes a memory shortage, a message shown on the right is displayed after you press the "SET" key. In such a case, registration will not be executed.

MEMORY SIZE OVER

2. To capture input video using commands:

- @SFZ: Set freeze
- @GFZ: Get freeze
- @CAP: Capture input image

3. Capturing input video using browser

IDK evaluated the operation on Microsoft Internet Explorer 6.0, 7.0 and 8.0 of Windows. It may not be performed correctly on other versions and browsers.

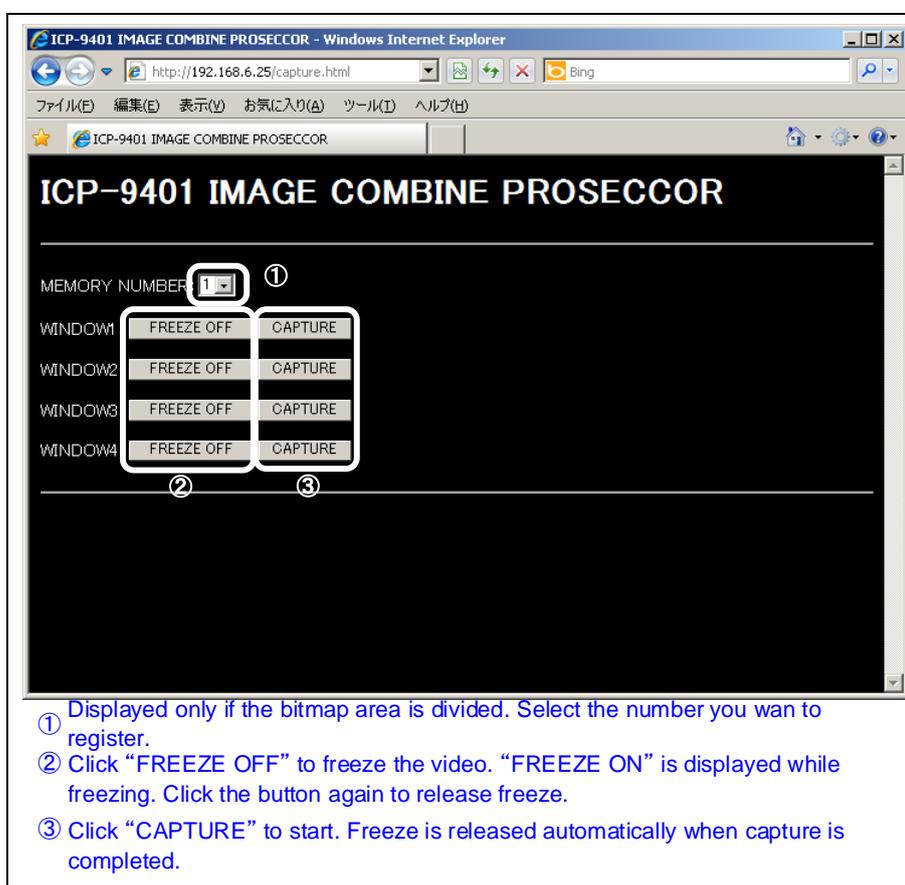
Open the WEB browser on a PC using the same LAN and enter the IP address of the ICP followed by "/capture.html" to open the window for capturing images.

- "80" is set for port number of browser control port: 80 (normal case)

http://192.168.1.199/capture.html

- To set a number (5000 to 5999) other than "80" for port number of browser control port:
(For example, the port number is 5000)

http://192.168.1.199:5000/capture.html



[Fig. 7.15.8b] Capturing input video using browser

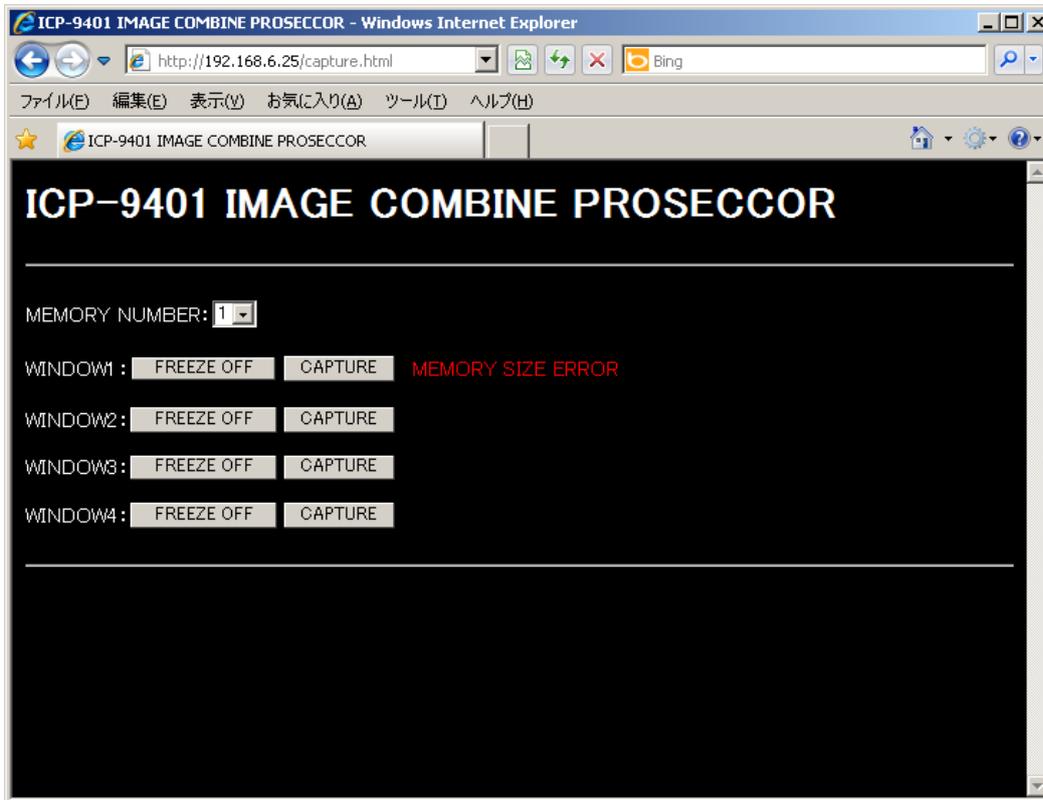
When the capture starts, the message below is displayed. Do not turn off the ICP while it is being displayed.

CAPTURE NOW
PLEASE WAIT

If the capture fails, one of the following error messages is displayed.

NOT AVAILABLE NOW: Cannot be captured, because the input video is not displayed.

MEMORY SIZE ERROR: Cannot be saved, because the input video is larger than the reserved memory area.



[Fig. 7.15.8c] Capture error of input video using browser

7.16 Startup Settings

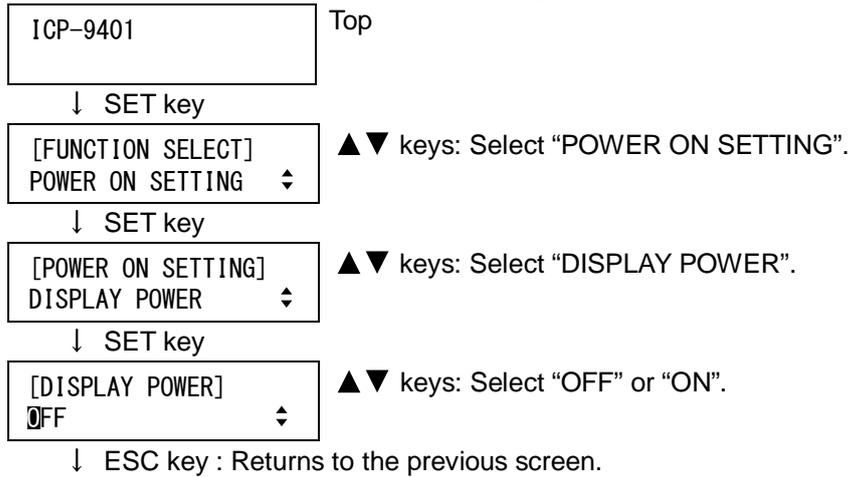
You can set settings for when the ICP is powered ON.

7.16.1 DISPLAY POWER keys [DISPLAY POWER]

You can set whether display devices will be turned on or not when the ICP is powered on.

- OFF [Default]
- ON: POWER ON commands will be sent to linked display devices

1. To set whether to turn on display device using menu:



2. To set whether to turn on display device using commands: None

7.16.2 Control command UNLOCK key [COMMAND UNLOCK KEY]

You can set the UNLOCK key of control command keys to "AUTO", "UNLOCK", or "LOCK" for when the ICP is powered on.

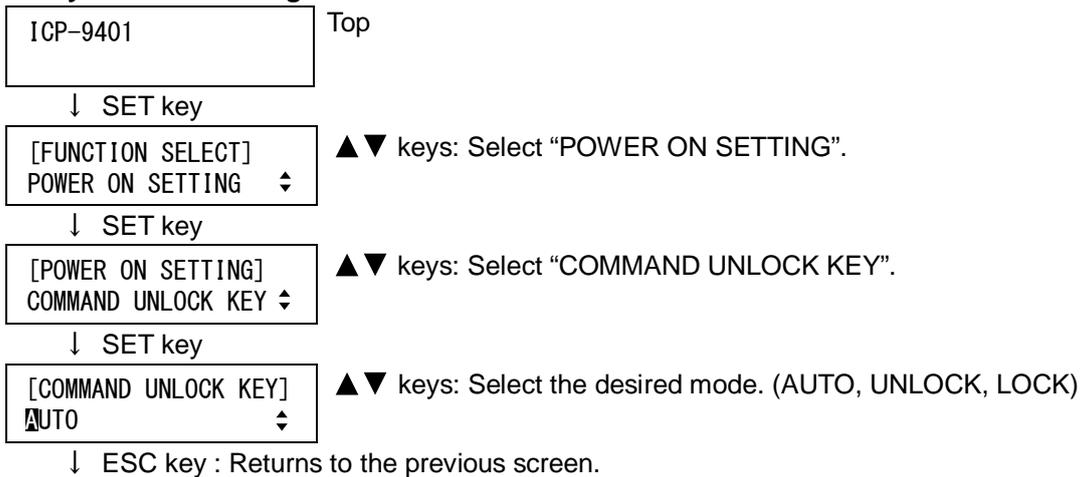
- AUTO [Default]
- UNLOCK
- LOCK

If you select "AUTO" and turn on the ICP, the previous mode (when you turned off the ICP last time) of the UNLOCK key will be applied. To fix the UNLOCK key state, select "UNLOCK" or "LOCK".

[Table 7.16.2a] UNLOCK key mode when ICP is turned on

Setting	Previous key lock mode	UNLOCK key mode that will be applied when turning ON
AUTO (Default)	UNLOCK	UNLOCK
	LOCK	LOCK
UNLOCK		UNLOCK
LOCK		LOCK

1. To set key lock mode using menu:



2. To set key lock mode using commands: None

7.16.3 Key lock [KEY LOCK]

You can enable or disable key lock for when ICP is turned on.

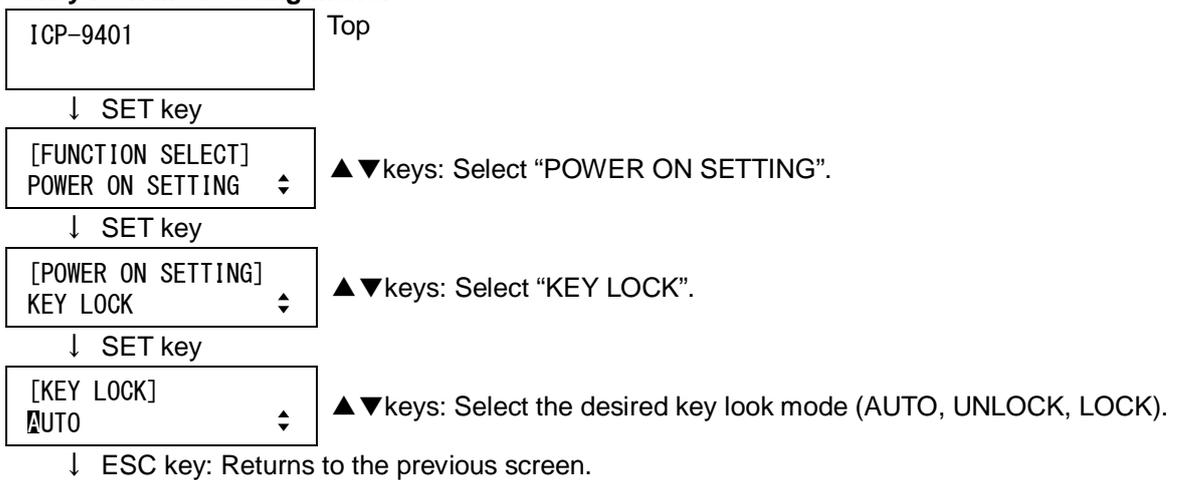
- AUTO [Default]
- UNLOCK
- LOCK

If you select "AUTO" and turn on the ICP, the previous mode (when you turned off the ICP last time) will be applied. To fix the key lock state, select "UNLOCK" or "LOCK".

[Table 7.16.3a] Key lock mode when ICP is turned on

Setting	Previous key lock mode	Key lock mode that will be applied when turning ON
AUTO (Default)	UNLOCK	UNLOCK
	LOCK	LOCK
UNLOCK		UNLOCK
LOCK		LOCK

1. **To set key lock mode using menu:**



2. **To set key lock mode using commands:** None

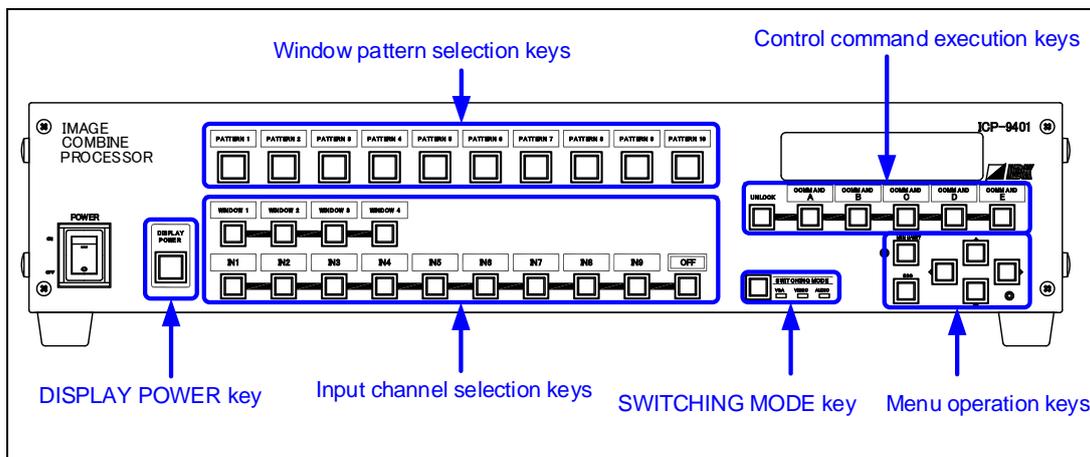
7.17 Others

7.17.1 Setting key lock mode [KEY LOCK MODE]

You can set the key lock mode for each key group on the front panel.

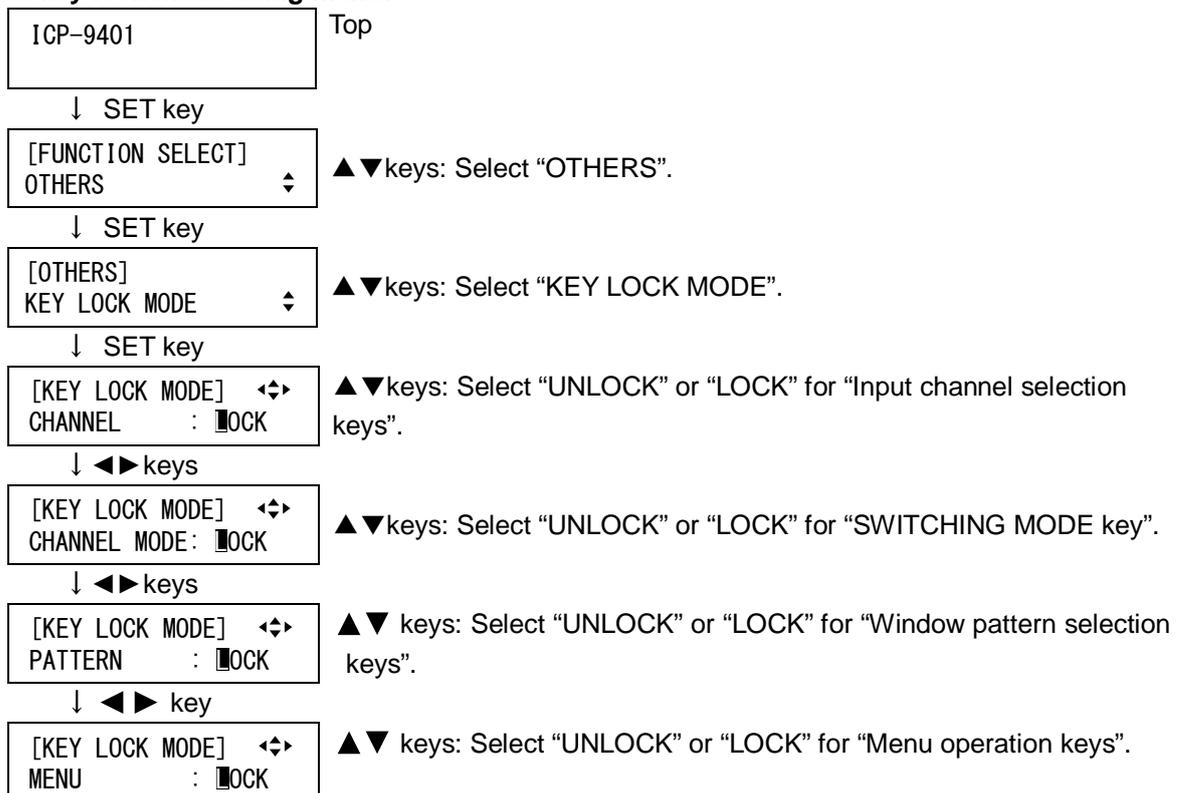
The front panel consists of six groups of keys as shown below. If you set "6.7 Locking/Unlocking Front keys" to "ON", keys set to "LOCK" in this menu will be locked and cannot be operated. If you set "7.16.3 Key lock [KEY LOCK]" to "ON", keys set to "LOCK" in this menu will be locked and cannot be operated when you turn on the ICP.

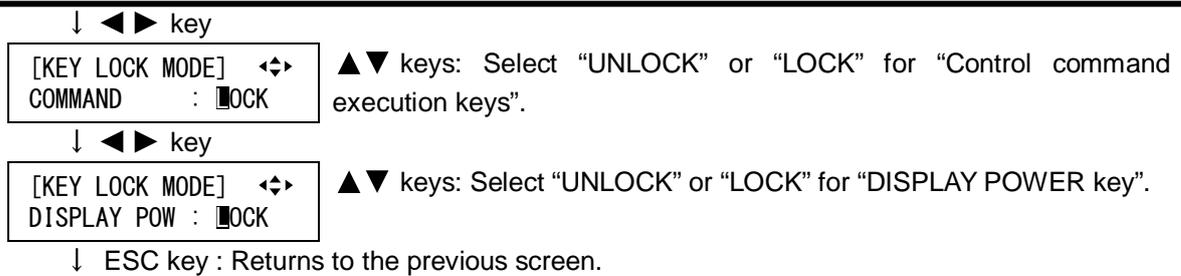
- UNLOCK
- LOCK [Default]



[Fig. 7.17.1a] Front key group

1. To set key lock mode using menu:





2. To set key lock mode using commands:

@SLM: Set key lock target for front panel

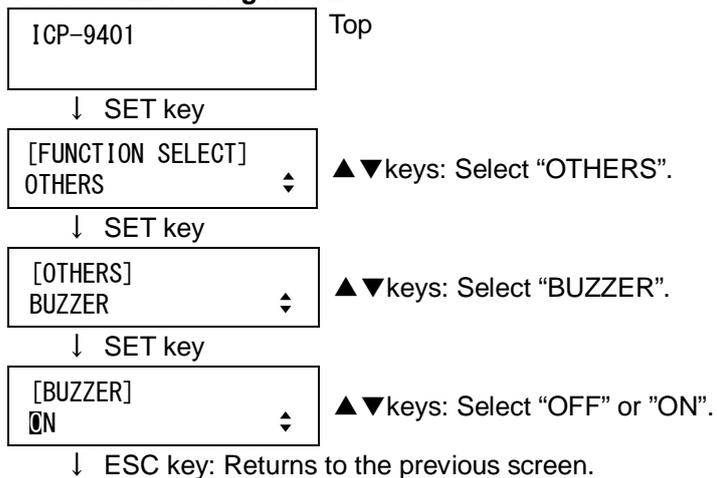
@GLM: Get key lock target for front panel

7.17.2 Key buzzer [BUZZER]

You can turn ON/OFF the buzzer function (sounding every time you press a front panel key).

- OFF
- ON [Default]

1. To set buzzer using menu:



2. To set buzzer using commands:

@SBZ: Set buzzer

@GBZ: Get buzzer

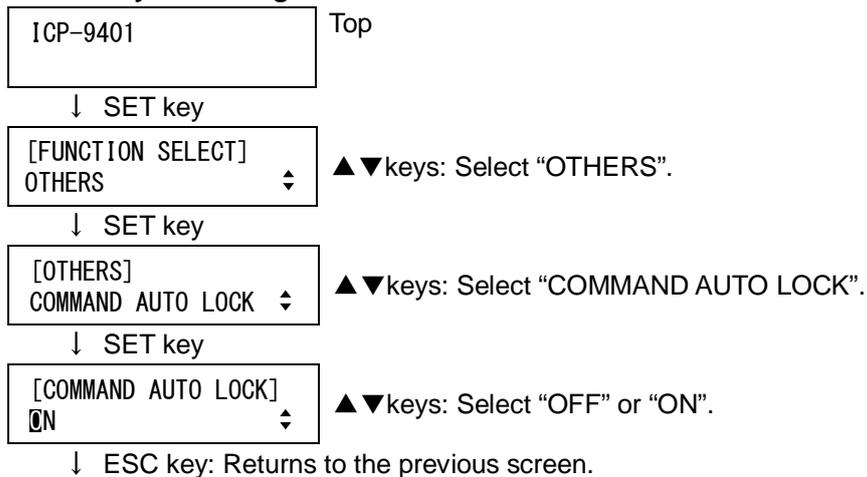
7.17.3 Automatic key lock for control command keys [COMMAND AUTO LOCK]

You can enable or disable the key lock function to automatically control the command execution keys if no operation is performed for 30 seconds during the unlocked mode.

If you select "ON" and no operation of menu control keys is performed for 30 seconds, the display brightness will be reduced to approximately 25%. When you operate any key operation, the luminance will return to 100%.

{ ·OFF
 ·ON [Default]

1. To set auto key lock using menu:



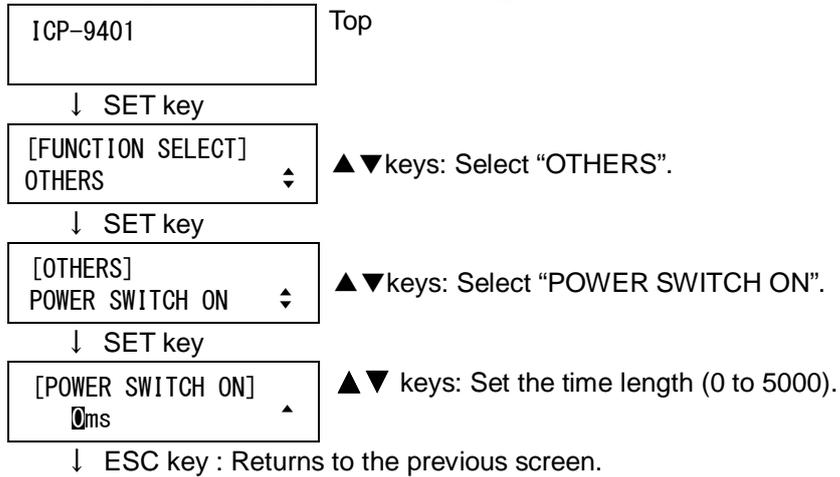
2. To set command auto lock commands: None

7. 17. 4 DISPLAY POWER key pressing time length [POWER SWITCH ON]

You can set the pressing response time of the DISPLAY POWER keys to prevent the device from being turned off when the switch is pressed accidentally:

0 ms. (starts the operation immediately after you press the power switch) to 5000 ms. (5 seconds);
by 10 ms. [Default]: 0 ms.

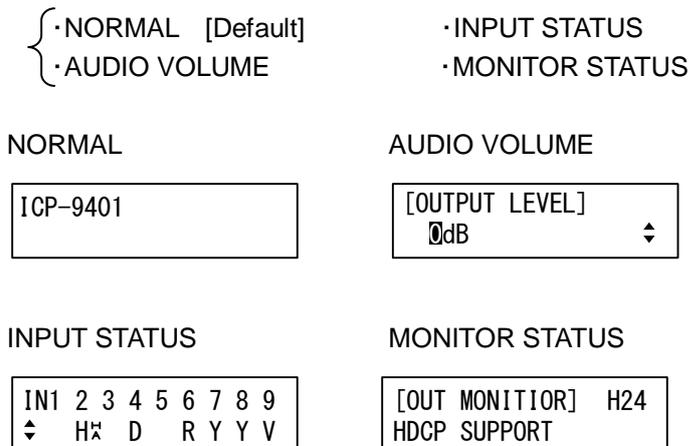
1. To set time for pressing power switch using menu:



2. To set time for pressing power switch using commands: None

7.17.5 Top VFD screen [TOP DISPLAY]

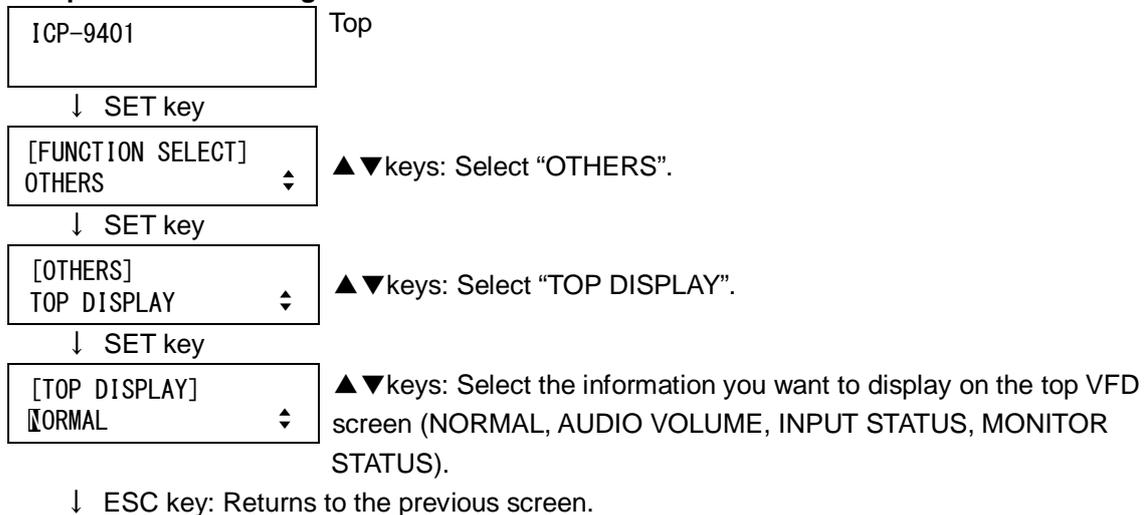
You can set the top screen.



In "7.17.6 Input signal status [INPUT STATUS]", you can check input signal status that is from video input connectors. If you select "INPUT STATUS" in this menu, the input status is displayed on the top VFD screen at all times. For "INPUT STATUS", see "7.17.6 Input signal status [INPUT STATUS]".

In "7.17.7 Display device status [MONITOR STATUS]", you can check display device status connected to video output connector. If you select "MONITOR STATUS" in this menu, the display device status is displayed on the top VFD screen at all times. For "MONITOR STATUS", see "7.17.7 Display device status [MONITOR STATUS]".

1. To set top VFD screen using menu:

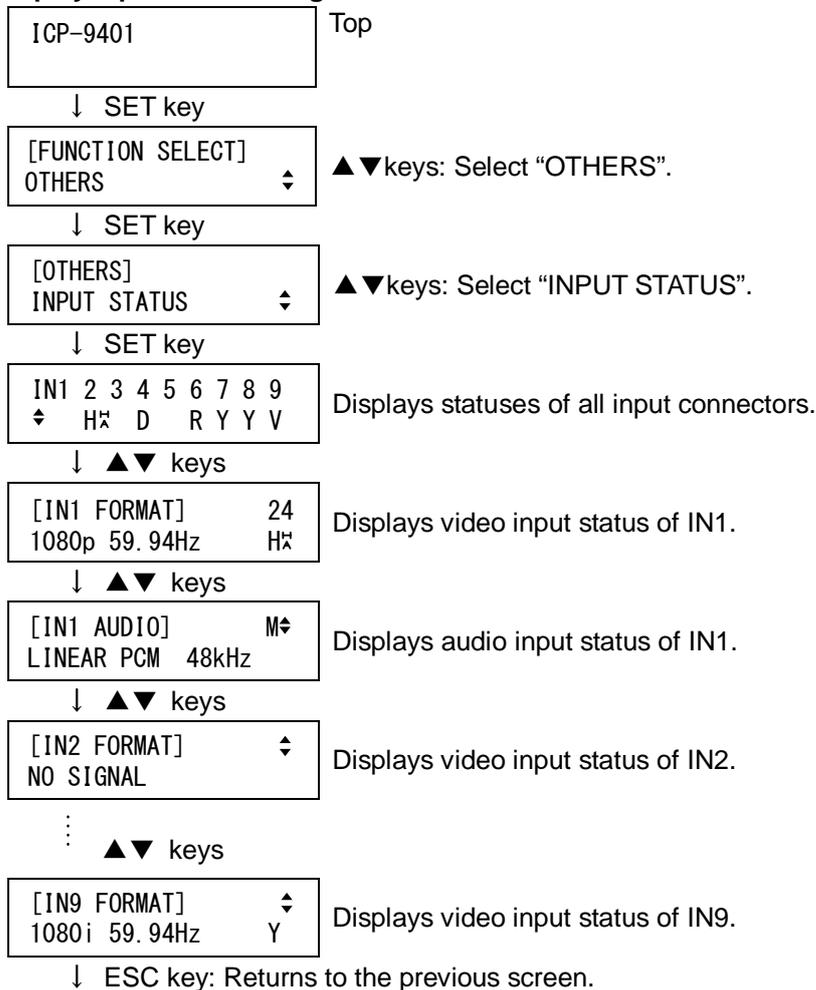


2. To set top VFD screen using commands: None

7.17.6 Input signal status [INPUT STATUS]

You can display the input signal status that is from video input connectors.

1. To display input status using menu:



For the status of all input connectors, channel numbers are displayed on the upper row and input signal status is displayed on the lower row.

[Input signal type]

These alphabets are displayed under the input numbers:

- H: HDMI signals are input
- D: DVI signals are input
- R: Analog RGB signals are input
- Y: Analog YPbPr signals are input
- V: Analog composite video signals are input
- S: Analog S-Video signals are input
- No alphabet: No signal is input

"H" (upper, if it is with HDCP) or "A" (lower, if digital audio is embedded) is displayed at the right of an alphabet above appear only for IN1 to IN5.

[Formats of video input signals]

Resolution	Description
1080i 59.94 Hz	SDTV/HDTV signals are input. Format type and vertical synchronous frequency are displayed.
800 x 600 60.00 Hz	RGB signals are input. Value of [Horizontal resolution x Vertical resolution] and vertical synchronous frequency are displayed.
NTSC	Analog composite video signals or analog S-Video signals are input, and the format type is displayed.
56.83 kHz 60.02 Hz	Signals that cannot be recognized are input. Horizontal and vertical synchronous frequencies are displayed. These signals can be recognized by adjusting input timings in " 7.7 Input Timing Settings " and registering the data in section " 7.7.10 Registering device data [SAVE] ".
NO SIGNAL	No signal is input.

[Video input signal types and other information]

For the alphabets displayed at the lower right, see the descriptions of inputs.

Only if HDMI signals are input, the color depth is displayed at the upper right:

24: HDMI signals of 24-BIT COLOR are input.

30: HDMI signals of 30-BIT COLOR are input.

[If non-supported video signals are input]

If sampling clock exceeds 165 MHz is input, an "E" is displayed at the left of input signal type alphabet in the lower row, and video is not output.

[IN1 FORMAT] ↕
1920x1440 60.00HzED

[Types of audio input signals displayed only for IN1 to IN5]

Audio signal type	Description
LINEAR PCM 48 kHz:	Linear PCM signals are input. Sampling frequency is displayed on the right.
COMPRESSED AUDIO:	Compressed audio signals (such as Dolby Digital and DTS) are input. All compressed audio signals are displayed in the same way, because The ICP does not recognize detailed formats.
NO SIGNAL:	No audio signal is input

[Other information]

If multi-channel audio signals are input, an "M" is displayed on the upper right.

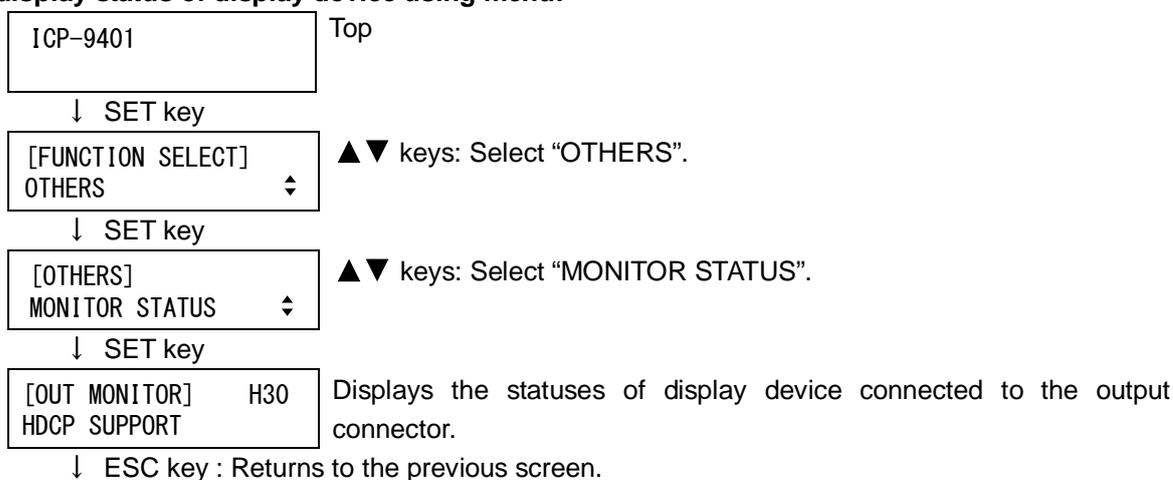
2. To display input signal status using commands:

@GSS: Get I/O status

7.17.7 Display device status [MONITOR STATUS]

You can display the status of display device connected to video output connectors.

1. To display status of display device using menu:



Message	Description
HDCP SUPPORT	HDCP-compliant display device is connected.
HDCP NOT SUPPORT	Non-HDCP-compliant display device is connected.
HDCP ERROR	HDCP-compliant display device is connected, but the authentication failed.
HDCP CHECK NOW	Status of display device is being checked. (such as when connection status of monitor is changed.)
MONITOR DISCONNECT	Monitor is disconnected (displayed only for 1 second)
UNCONNECTED	No display device is connected.

If it is displayed for each output connector and if a display device is connected, output signal type is displayed on the upper right, and color depth is displayed only if HDMI is output.

H24: HDMI signals of 24-BIT COLOR are output.

H30: HDMI signals of 30-BIT COLOR are output.

D : DVI signals are output.

[Error codes]

Displaying for each output connector: the output statuses of video and audio are displayed on the lower right. The status characters are shown from the left to the right, the statuses of video output to HDMI output connector, audio output to HDMI output connector, and audio output are displayed. The status of HDMI output connector is displayed only if a display device is connected. If video or audio cannot be output, an error code number or alphabet character is displayed.

[OUT MONITOR]	H30
HDCP SUPPORT	333

[Table 7.17.7a] Output status

Status	Video output	Audio output
	If any number or "A" is not displayed, video or audio is output correctly.	
1	—	"7.9.2 Mute [OUTPUT MUTE]" is set to "ON".
2	Displayed only for IN1 to IN5. DDC power supply is not input. (If no input device is connected, this status is displayed.)	
3	No video signal is input.	No audio signal is input ^{*1}
4	Displayed only for IN1 to IN5. Video or audio output of source device is in a Mute status.	
5	Displayed only for IN1 to IN5. Signals with HDCP are input, but the display device does not support HDCP. (This may also be displayed while authenticating HDCP.)	
6	Displayed only for IN1 to IN5. The source device does not output required information (packets) for outputting video or audio.	
7	Signals that are not supported by the ICP are input. (Sampling clock is out of the range.)	Audio cannot be output, because compressed audio is input. Compressed audio is not supported.
8	—	"7.9.8 Output connector [OUTPUT CONNECTOR]" is set to "OFF".
9	—	"7.8.2 Output mode [OUTPUT MODE]" is set to "DVI MODE" or a display device that does not support audio is connected. ^{*2}
A	Input is set to "OFF".	

^{*1} Input status of analog audio signals cannot be detected. Even if this status is not displayed, audio may sometimes not be output when analog input is selected.

^{*2} This status is only for HDMI output connectors.

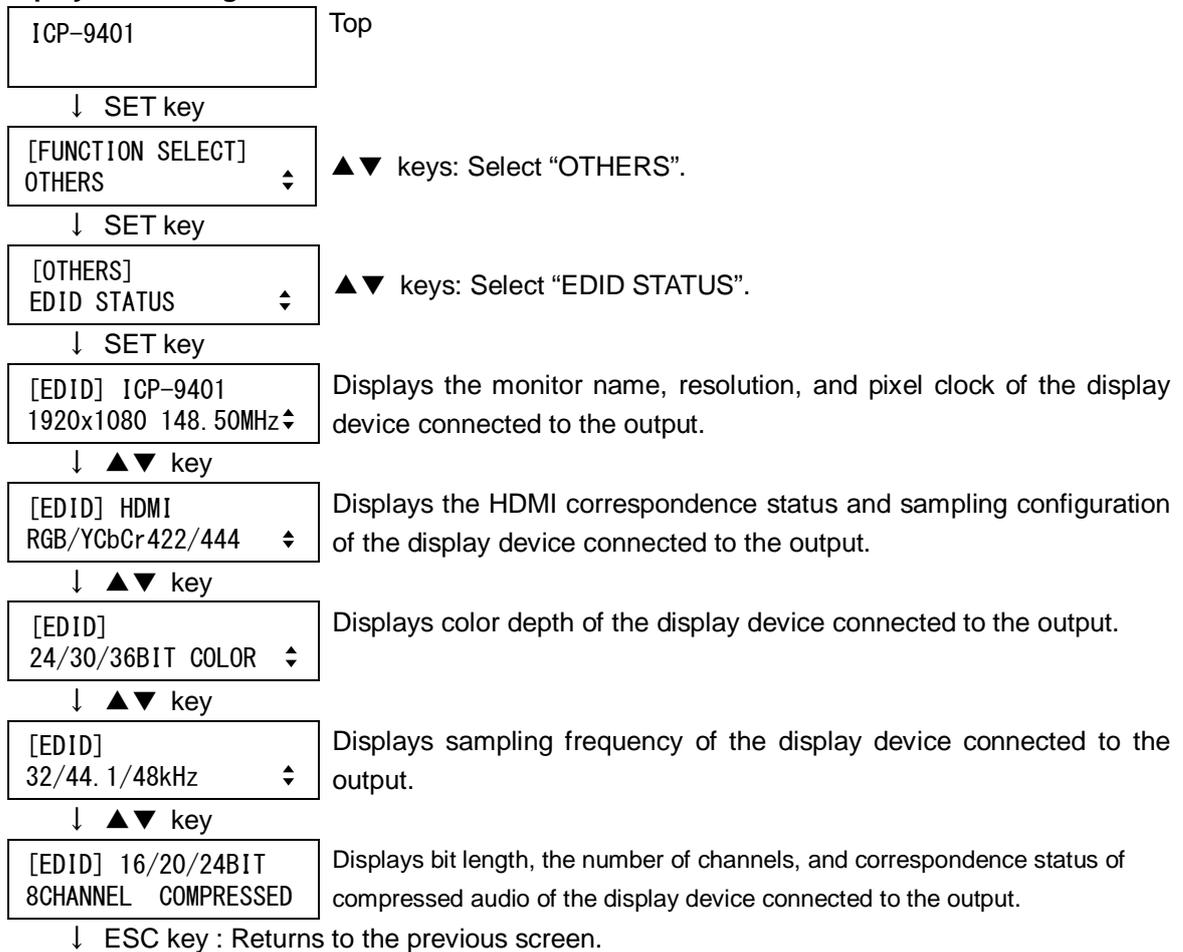
2. To display status of display device using commands:

@GSS: Get I/O status

7. 17. 8 EDID of display device [EDID STATUS]

You can display the EDID loaded from the display device that is connected to the video output connector.

1. To display EDID using menu:



EDID information is displayed into five screen pages at a maximum.

1st screen page:

Monitor name is displayed on the upper row. Resolution is displayed on the lower left and pixel clock is displayed on the lower right.

```
[EDID] ICP-9401
1920x1080 148.50MHz
```

If no display device is connected, "UNCONNECTED" is displayed. If EDID cannot be loaded, "EDID READ ERROR" is displayed. In these cases, only the first screen page is displayed.

2nd screen page

If the display device does not support HDMI, "DVI" is displayed on the lower row, and only the 1st and 2nd screen pages are displayed.

```
[EDID]
DVI
```

If the display device supports HDMI, "HDMI" is displayed on the upper row and the supported sampling configuration is displayed on the lower row. If only RGB signals are supported, "RGB" is displayed; and if color-difference signals are also supported, "YCbCr444" or "YCbCr422/444" follows "RGB".

```
[EDID] HDMI
RGB/YCbCr422/444
```

3rd screen page:

The supported color depth is displayed. If Deep Color is not supported, "24BIT COLOR" is displayed; if Deep Color is supported, the supported color depth is displayed such as "24/30BIT COLOR" or "24/30/36BIT COLOR".

```
[EDID]
24/30BIT COLOR
```

4th screen page:

The supported audio sampling frequency is displayed.

```
[EDID]
32/44.1/48kHz
```

5th screen page:

The supported audio bit length such as "16BIT" and "16/20/24BIT" is displayed on the upper row, and the number of the supported audio channels, such as "2CHANNEL" and "8CHANNEL", is displayed on the lower left. If the compressed audio is supported, "COMPRESSED" is displayed on the lower right.

```
[EDID] 16/20/24BIT
8CHANNEL COMPRESSED
```

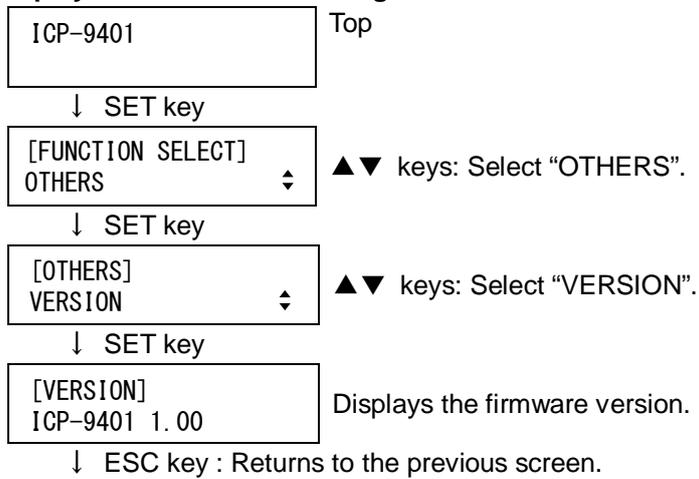
2. To display EDID using commands:

@GES: Get monitor's EDID information

7.17.9 Version information [VERSION]

You can display the firmware version of the ICP.

1. To display firmware version using menu:



2. To display firmware version using commands:

@GIV: Get version information

8 ASCII codes

[Table 8a] ASCII codes (1/2)

Abbrev.	Hex	Abbrev.	Hex	Abbrev.	Hex	Abbrev.	Hex
NUL	00	SP	20	@	40	`	60
SOH	01	!	21	A	41	a	61
STX	02	"	22	B	42	b	62
ETX	03	#	23	C	43	c	63
EOT	04	\$	24	D	44	d	64
ENQ	05	%	25	E	45	e	65
ACK	06	&	26	F	46	f	66
BEL	07	'	27	G	47	g	67
BS	08	(	28	H	48	h	68
HT	09	)	29	I	49	i	69
LF	0A	*	2A	J	4A	j	6A
VT	0B	+	2B	K	4B	k	6B
FF	0C	,	2C	L	4C	l	6C
CR	0D	-	2D	M	4D	m	6D
SO	0E	.	2E	N	4E	n	6E
SI	0F	/	2F	O	4F	o	6F
DLE	10	0	30	P	50	p	70
DC1	11	1	31	Q	51	q	71
DC2	12	2	32	R	52	r	72
DC3	13	3	33	S	53	s	73
DC4	14	4	34	T	54	t	74
NAK	15	5	35	U	55	u	75
SYN	16	6	36	V	56	v	76
ETB	17	7	37	W	57	w	77
CAN	18	8	38	X	58	x	78
EM	19	9	39	Y	59	y	79
SUB	1A	:	3A	Z	5A	z	7A
ESC	1B	;	3B	[	5B	{	7B
FS	1C	<	3C	¥	5C	|	7C
GS	1D	=	3D	]	5D	}	7D
RS	1E	>	3E	^	5E	to	7E
US	1F	?	3F	_	5F	DEL	7F

[Table 8b] ASCII codes (2/2)

Abbrev.	Hex	Description
<i>NUL</i>	00	NULI
<i>SOH</i>	01	Start Of Heading
<i>STX</i>	02	Start of TeXt
<i>ETX</i>	03	End of TeXt
<i>EOT</i>	04	End Of Transmission
<i>ENQ</i>	05	ENQuiry
<i>ACK</i>	06	ACKnowledge
<i>BEL</i>	07	BELI
<i>BS</i>	08	Back Space
<i>HT</i>	09	Horizontal Tabulation
<i>LF</i>	0A	Line Feed
<i>VT</i>	0B	Vertical Tabulation
<i>FF</i>	0C	Form Feed
<i>CR</i>	0D	Carriage Return
<i>SO</i>	0E	Shift Out
<i>SI</i>	0F	Shift In
<i>DLE</i>	10	Data Link Escape
<i>DC1</i>	11	Device Control 1
<i>DC2</i>	12	Device Control 2
<i>DC3</i>	13	Device Control 3
<i>DC4</i>	14	Device Control 4
<i>NAK</i>	15	Negative Acknowledge
<i>SYN</i>	16	SYNchronous idle
<i>ETB</i>	17	End of Transmission Block
<i>CAN</i>	18	CANcel
<i>EM</i>	19	End of Medium
<i>SUB</i>	1A	SUBstitute
<i>ESC</i>	1B	ESCape
<i>FS</i>	1C	File Separator
<i>GS</i>	1D	Group Separator
<i>RS</i>	1E	Record Separator
<i>US</i>	1F	Unit Separator
<i>SP</i>	20	SPace
<i>DEL</i>	7F	DELete

9 Specification

Specifications and appearance are subject to change without notice.

Item		Description	Format	
Input signal	Video	HDMI/DVI	5 inputs TMDS Single Link, HDCP, TMDS Clock: 25 MHz to 225 MHz HDMI Deep Color (*1)/DVI 1.0 Cable equalization, EDID emulation Connector: Female HDMI TypeA (19 pin)	VESA SDTV / HDTV
		Analog	4 inputs Composite video/Y/C/Analog RGB/Analog YPbPr are automatically recognized. Composite video: 1.0 V[p-p]/75 Ω Y/C: 1.0 V[p-p] (Y)/0.286 V[p-p] (C)/75 Ω Analog RGB: 0.7 V[p-p](1.0 V[p-p] for Sync on Green)/75 Ω HS/VS TTL level, CS TTL level, Sync on Green Analog YPbPr: 1.0 V[p-p](Y)/0.7 V[p-p] (Pb · Pr)/75 Ω EDID emulation Connector: Female high-density D-sub15 pin	NTSC / PAL VESA SDTV / HDTV
		Supported formats	NTSC/PAL VESA: Dot clock 25 MHz to 165 MHz (VGA to QWXGA) WUXGA/QWXGA: only Reduced Blanking SDTV/HDTV: 480i/480p/576i/576p/720p/1080i/1080p	
	Audio	Digital audio	5 inputs 2 channel linear PCM Sampling frequency: 32 kHz to 192 kHz, sample size: 16 bit to 24 bit Reference level: -20 dBFS, maximum input level: 0 dBFS Connector: Female HDMI TypeA (19 pin) Note: Can be switched to L/R of analog audio.	
		Analog audio	9 inputs Stereo L/R unbalanced Input impedance: 24 kΩ, Reference level: -10 dBu, maximum input level: +10 dBu Connector: RCA pin jack Note: IN1 to IN5: used for switching to digital audio.	
	Output signal	Video	HDMI/DVI	1 output TMDS single link, HDCP HDMI Deep Color (*1)/DVI 1.0 Cable equalization Connector: Female HDMI TypeA (19 pin)
Supported format			VESA: VGA / SVGA / XGA / WXGA(1280x768) / WXGA(1280x800) / Quad-VGA / SXGA / WXGA(1360x768) / WXGA(1366x768) / SXGA+ / WXGA+ / WXGA++ / UXGA / WSXGA+ / VESA1080 / WUXGA VESA1080 / WUXGA: Reduced Blanking SDTV/HDTV: 480i / 480p / 576i / 576p / 720p / 1080i / 1080p	
Audio		Digital audio	1 output 2 channel linear PCM Sampling frequency: 32 kHz to 192 kHz, sample size: 16 bit to 24 bit Reference level: -20 dBFS, maximum output level: 0 dBFS Connector: Female HDMI TypeA (19 pin)	
		Analog audio	1 output Stereo L/R unbalance Output impedance: 75 Ω, reference level: -10 dBu, maximum output level: +10 dBu Connector: RCA pin jack	
		Lip Sync	Up to 8 frames Only 5 frames @ 88.2 kHz/96 kHz (4 frames @ 576i/576p/720p@50/1080i@50/1080p@50), and 2 frames @ 192 kHz	
Maximum extension distance Digital input / Digital output		Up to 10 to 30 m/ 98 ft. (*3) for input / Up to 10 meters to 50 m/ 164 ft.(*3) for output		
Functions	Analog video processing unit	3D Y/C separation		
	Scan converter	Aspect ratio control, Picture adjustment (brightness, contrast, display position, display size, and so on), Truly seamless switching (注 3)		
	Others	Window configuration, registering window patterns (20 patterns), volume adjustment (settable for input/output separately), video/audio (non-interlock) switching, last memory, Anti-Snow (*4), Connection reset (*5), external control commands (32 commands), key lock of front panel		

Item		Description
External control	RS-232C	2 ports, Male D-sub 9 pin connector
	LAN	1 port, RJ-45 connector, 10Base-T/100Base-TX (Auto Negotiation), Auto MDI/MDI-X
	External control	Command output from RS-232C or LAN to peripheral devices PjLink (class1) for projector control established by JBMA Power control of display devices using CEC (*6)
Others	Power supply voltage	AC ~ 100 V - 240 V ± 10 %、50 Hz / 60 Hz ± 3 Hz
	Power consumption	About 46 W
	Enclosure dimensions	16.93(W) x 3.46(H) x 13.78(D)"/430(W) x 88(H) x 350(D) mm (EIA rack 2U, not including projections)
	Weight	12.13 lbs./5.5 kg
	Temperature	Operating temperature: 32°F to 104 °F /0°C to + 40°C Storage temperature: -4°F to 176°F/-20°C to + 80°C
	Humidity	Operating/Storage humidity: 20% to 90% (Non condensing)
	Accessories	One power cable (1.8 m/ 5.9 feet), one RS-232C cable (1.8 m/ 5.9 feet), one set of brackets for mounting rack, six Cable clamps The power supply cable is only for the ICP. Please do not use it for other products.

- *1 30 bit/ pixel (10 bit/ component) Deep Color is supported.
xvYCC, Lip Sync, 3D, ARC, and HEC are not supported. (Lip Sync: manually adjustable)
- *2 Extended distance depends on the connected device. The data above is the maximum distance obtained when IDK's cable (AWG24) was used and signals, 1080p 60Hz 24 bit/ pixel (8 bit/ component), were input and output. If you use other cables or for other combinations of I/O devices, video signals may be unstable or may not be output even if it is within the distance range indicated above.
- *3 Seamless with a black frame or background color
- *4 This function automatically recovers from a snow noise problem occurring when video signals having HDCP are displayed. It is mainly for the time of start-up and does not work if the problem has already occurred in signals input to the ICP or due to a low-grade transmission line.
- *5 Connection reset function: Fixing problems automatically when a cable is repeatedly plugged in and out. This function may not be enabled if another device is connected between the ICP and display device.
- *6 Display device needs to support CEC. Some display device cannot be controlled by CEC from the ICP.
JBMA: Japan Business Machine and Information System Industries Association.

10 Trouble shooting

This chapter recommends what to do if you have problems operating the ICP.

In case the ICP does not work correctly, please check the following items first.

- Are the ICP and all devices plugged in and powered on normally?
- Are cables connected correctly?
- Are there no loose connections?
- Are correct cables supported by devices being used?
- Are signal specifications of connected devices matched to each other?
- Are settings of the display device correct?
- Are there any close objects that may cause noise?

If the problem still cannot be solved, perform the following actions. Refer to manuals of connected devices as well, since they may possibly be the cause of the problem.

Problem	Cause/Check item/Solution	Page
Video output		
Video is not output.	<p>Check the error code in "7.17.7 Display device status [MONITOR STATUS]". (The ICP has multiple output connectors. Check the error code of the output connector that does not output video.)</p> <ul style="list-style-type: none"> · Error code 2: Check if the source device is connected and turned on. · Error code 3: Signals are not input. Check [1] to [6] on the next page. · Error code 4: A problem may occur in the source device or HDCP authentication. Check [2], [5], and [6]. · Error code 5: With using a sink device that is not HDCP compliant, only video without content protection (such as analog input and test pattern) can be output, and go black if signal with content protection is input. Some source devices check whether the sink device is HDCP compliant or not and output HDCP at all times. Since the ICP supports HDCP, output video cannot be output if the display device is not HDCP compliant. In that case, you can disable HDCP input from the source device in "7.6.2 HDCP input enabled/disabled [HDCP INPUT ENABLE]" in order to display the video. · Error code 6 and 7: There are problems in the input device. · If no error code is displayed: Set "7.13.5 Invalid time [INVALID TIME]" to a pattern other than "OFF". If any test pattern is not output, check [5] to [7]. If a test pattern is output, the source device may not be outputting video. 	—

Problem	Cause/Check item/Solution	Page
Digital input video is not output.	[1] The set time for monitoring a no-signal input may be too short.	94
	[2] Change the setting of input equalizer.	97
Analog input video is not output.	[3] Change the input signal type.	98
Video is not output	[4] If the source device has multiple output connectors, check the video output settings of the device.	—
Video is disappeared, interrupted, or has noise.	[5] If using a long cable for input or output, replace it with a 5 m/16.4 ft. or shorter cable. Since the ICP has the equalizing function, long cables can be connected, but the ICP may not provide its full performance depending on the cable quality and the connected device. If the problem is solved by replacing the cable, signals might have been degraded due to the long haul transmission. We have high-quality cables, equalizers, and extenders. Please contact us as needed.	—
	[6] When high-speed signals (high resolution: such as UXGA, WUXGA, 1080p; DEEP COLOR signals) are input or output, video may not be displayed or noise may appear depending on the cable quality and the connected device. If the problem occurs only when a specific input is selected, the problem was caused by the input side. If it occurs for all inputs or only when a test pattern is displayed, the problem was caused by the output side. Change the resolution to a lower level and/or disable Deep color. You can check the resolution and color depth of the input signals in "7.17.6 Input signal status [INPUT STATUS]" and limit resolution and color depth of input signal according to the EDID setting. You can also specify output resolution and check the color depth of the output signals in "7.17.7 Display device status [MONITOR STATUS]" and limit the output signal color depth.	144, 50, 128
Input video and test pattern are not output.	[7] If you set the output resolution other than "AUTO", check if the selected resolution is supported by the sink device. If you select 480i, 576i, or 1080i, video may not be output to sink devices that do not support interlaced signals. For TV output resolutions (480i to 1080p), check the vertical synchronous frequency. PC output resolutions (VGA to WUXGA) may not be output to LCD TVs.	50
Video is interrupted.	If you set "7.6.5 Automatic detection of input video interruption [INPUT OFF CHECK]" to "ON", false detection may occur. Change the setting to "OFF".	99
Video is interrupted or has noise.	If the problem occurs only with specific digital input, change settings of the input equalizer.	97
	If the problem occurs with all input channels or when a test pattern is displayed and if a long cable is connected for output, change the output equalizer setting.	116

Problem	Cause/Check item/Solution	Page
Video from analog input is displayed in black-and-white or green.	Change the input signal type.	98
VHS reproduction or fast-forward is choppy when analog composite video or analog S-Video is input.	Automatic detection of input signals failed. Set the input signal type manually to "VIDEO AUTO", "VIDEO", or "Y/C".	98
The left, right, top and bottom sides are cut off.	If the problem occurs only when "CROSS HATCH" (a test pattern) is output, the sink device enlarges and displays the video. Adjust the sink device. If the device does not have the adjusting function, set the video size and position of the output. If the problem occurs even if "CROSS HATCH" is output to all outputs, check [8] to [13].	68
Part of video is cut off or black is displayed at edge(s).	[8] Check the overscan setting.	58
	[9] Settings of the display position or size are not changed? Note: Display position and size can be set for each input or output.	59 to 66
	[10] If aspect ratios of the input signals and output resolution do not match, video may be cut off or a black bar(s) may be displayed at edge(s) automatically depending on settings. If the video is displayed on the full screen by setting the aspect ratio to "FULL", there is no problem. If the aspect ratio does not match, you can select a) or b) below: a) video will be cut off b) a black bar(s) will be displayed at edge(s)	53 57
	[11] If vertical and horizontal frequencies are displayed in " 7.17.6 Input signal status [INPUT STATUS] ", signals that are not registered in the built-in table of the ICP will be input. If " 7.7.8 Automatic setting of input timing [UNKNOWN TIMING] " is set to "AUTO SETUP ON", input timing is measured when new signals are input. However, if correct video is not input, the measurement may fail. In this case, measure the input timing manually and register the device data.	106 114
	[12] For analog input, adjust the scanning start position and fit the left and top edges. If the problem is still not resolved, set the total number of horizontal dots and the display period. For digital input, you do not normally need to set the starting point and active area, but set them only if the edge of approximately 1 to 2 dots is cut off. (You cannot set the total number of horizontal dots.)	100 to 105

Problem	Cause/Check item/Solution	Page
Black appears at top, bottom, right and left on PC video or only part of the PC video is displayed, and the rest is displayed by scrolling with the mouse.	[13] Does the resolution setting for the PC (You can check it in "Properties" of the PC) and the resolution output from the PC (You can check it in "7.17.6 Input signal status [INPUT STATUS]") match? If not, set the EDID and PC resolution manually.	142
Video is reduced vertically or horizontally.	Do the selected aspect ratio of the output resolution and that of the connected sink device match? If not, set the aspect ratio of the sink device.	52
	Check the set aspect ratio of the input signals.	53
	Check the monitor setting of the source device (such as 4:3, 16:9, letter box and the like).	—
Video flickers.	If a still image of interlace signals is input, the video may blink.	—
	If interlace signals are input to a sink device that does not support interlace signals, the video may blink. Check the output resolution of the sink device.	50
PC's dual monitor cannot be set or the setting is canceled.	If the monitoring function for no-signal input works, the dual monitor function may not operate correctly. In this case, turn the monitoring function "OFF".	94
It takes a long time to output video after video input is switched.	If you set the HDCP output to "HDCP INPUT ONLY", some display devices may fail HDCP authentication. In this case, it may temporarily not output video and audio when a channel signal without HDCP support is input and then is switched to a channel signal with HDCP support is input. In this case, set the HDCP output setting to "ALWAYS".	126
Video from a PC of analog input is displayed with bright-and- dark vertical stripes	Set the total number of horizontal dots.	101
	If you change the total number of horizontal dots, you may sometimes have to set the start position of scanning and the display period.	102
		103
Light shadows appear on fine lines of video from an analog input PC.	Adjust the tracking.	115
Fluctuation appears on the analog input video.	Adjust the tracking.	115
Automatic measurement of input timing fails.	In order to enable this menu, the input video must have 25% or more brightness and its edges (all sides) needs to be in contact with the circumscribed rectangle in the active area.	106

Problem	Cause/Check item/Solution	Page
Display position of analog input video changes on its own.	If the function that automatically adjusts the display position (upper left of the display) works by automatic measurement, the video may move on its own. In this case, disable the adjusting position function.	108
Part of the bitmap is cut off, or bitmap is not displayed on the full screen.	If the bitmap resolution and output resolution are not matched, the bitmap may be partially cut off or may not be displayed on the full screen depending on settings of aspect ratio and display position. In this case, set the aspect ratio and display position as necessary.	204 206
Audio output		
Audio is not output.	<p>If audio is not output, first check the error code in "7.17.7 Display device status [MONITOR STATUS]". (The ICP has multiple output connectors. Find the error code of the output connector that does not output audio.)</p> <ul style="list-style-type: none"> ▪ Error code 1: Turn "7.9.2 Mute [OUTPUT MUTE]" to "OFF". ▪ Error code 2: Ensure that the source device is connected and turned on. ▪ Error code 3: Signals are not input. Check [14],[15],[17], and [18]. ▪ Error code 4: There may be problems in the source device side or HDCP authentication. Check [14]. ▪ Error code 5: If the display device or AV amplifier does not support HDCP, only audio without content protection (such as analog input) is output; audio is not output when signals with content protection are input. Some HDMI/DVI devices will check if the connected device supports HDCP and determines whether to output HDCP signals or not. As the ICP supports HDCP, audio may not be output if the ICP is connected to a sink device or AV amplifier that does not support HDCP. In this case, disable HDCP input from the input device in "7.6.2 HDCP input enabled/disabled [HDCP INPUT ENABLE]". ▪ Error code 6: There are problems in the input device. ▪ Error code 7: Compressed audio is not supported. If playing contents with compressed audio (such as Blu-ray disc), check the audio output setting. ▪ Error code 8: Turn "7.9.8 Output connector [OUTPUT CONNECTOR]" to "ON". ▪ Error code 9: Set "7.8.2 Output mode [OUTPUT MODE]" to a mode other than "DVI MODE". ▪ Error code is not displayed: Check [14] to [18]. The input device may not be outputting audio. 	148

Problem	Cause/Check item/Solution	Page
Audio is not output from digital input.	[14] Is video being output correctly? If not, check [1], [2], [5], and [6].	—
	[15] Are DVI signals output from the source device? You can check the input signal type in “ 7.17.6 Input signal status [INPUT STATUS] ”. DVI signals may be output depending on EDID settings.	145
	[16] Is audio format being used supported by the connected sink device or AV amplifier input? LCD monitors, especially, may not output 88.2 kHz or more sampling frequency of linear PCM and compressed audio.	222
Audio from IN 1 to IN 5 is not output.	[17] Is “ 7.9.3 Audio input selection [AUDIO INPUT SELECT] ” set to “AUTO”? If not, change the setting to “AUTO” in order to switch the audio automatically.	135
Audio is not output.	[18] If the input device has multiple output connectors, check audio output settings of the selected input device.	-
Audio is output from analog output connectors but not from digital output connectors.	Can the connected display device or AV amplifier output audio with the selected resolution? With output resolutions for PCs (VGA to QWXGA), some display devices and AV amplifiers cannot output audio.	50
	Is the sampling frequency supported by the connected display device or AV amplifier? Plasma and LCD monitors may not output audio with a high sampling frequency (88.2 kHz or higher). If digital input audio is output, check the “SAMPLING FREQUENCY” of the input audio in “ 7.17.6 Input signal status [INPUT STATUS] ”. “SAMPLING FREQUENCY” output from the input device can be controlled by setting EDID. If analog input audio is output, set the “SAMPLING FREQUENCY”	148 139

Problem	Cause/Check item/Solution	Page	
Key operation			
Keys do not operate.	Make sure that keys are not locked.	30	
	Since no control command is registered by factory default, "DISPLAY POWER" and "COMMAND A to I" keys do not work. Register and associate control commands in order to enable these keys.	164 178	
	When a control command is executed using a key on the front panel, all keys are disabled until the command is executed or "INVALID TIME" passes.	182	
	Immediately after start-up, all keys are disabled until the connection of the display device is completed.	—	
Settings are not saved or reflected to the actual operation.	Settings of some menus will not be saved if the "MENU/SET" key is not pressed after setting.	—	
Communication command control			
Communication command control from the PC to the ICP cannot be performed.	Are the following items set correctly? For serial: communication speed and data length For LAN: IP address or subnet mask	150 152 153 158	
	Is COM PORT's FUNCTION set to "RECIEVER" mode? If it is set to "TRANSMITTER" mode, the communication command of the ICP cannot be controlled externally.	151 155	
	"@ERR,6" is returned.	If control command is executed by communication commands, communication command controls are disabled until execution of control commands finishes or "INVALID TIME" passes.	182
		Immediately after start-up, communication command controls are disabled until connection of the sink device is confirmed.	—
Sending control commands			
Control command is not sent.	Make sure that the registered control command and the number of bytes are correct. Devices requiring delimiters may not execute commands if the delimiters are not sent. If the set number of bytes is incorrect, the control command is not sent completely or unnecessary data is sent after the control command.	164	
	Is the registered control command linked to the desired control command execution condition?	178	
	Is COM PORT's FUNCTION set to "TRANSMITTER" mode? If it is set to "TRANSMITTER" mode, the communication command of ICP cannot be controlled externally. Set the communication port for sending control commands to "TRANSMITTER" mode. If using LAN, set the IP address and other settings of connected device.	151 155	
"RETRY OVER ERROR" is displayed and control command is not sent completely.	Is the registered reply command correct?	174	
	Make sure that the setting of "TIME OUT" for checking control commands is not too short.	164	

Problem	Cause/Check item/Solution	Page
Control through CEC cannot be performed.	Do you use cables supporting CEC? For CEC control, an HDMI cable supporting CEC is required.	-
	Does the display device support CEC? Is the HDMI association function of the display device set correctly? Enable the HDMI link control and Power on association function (for turning on the display device by external devices) of the display device.	
Others		
Input signals temporarily disappear when IN1 to IN 5 are switched.	When the CEC connection changes, EDID may change. In this case, input signals are interrupted. Check the connection settings.	129
Devices cannot be controlled through CEC.	Are HDMI cables supporting CEC being used?	129
	To use CEC, enable HDMI link control of the connected devices (such as LCD TVs, Blu-ray recorder, and so on).	

If additional assistance is required, please perform the following tests and then contact us.

1. Does the same problem occur for all channels?
-Yes- -No-
2. Does the problem occur even if you directly connect the source and display devices using the genuine cable without using the ICP in-between?
-Yes- -No-

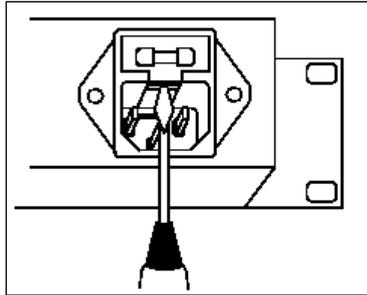
The problem still cannot be solved? Please contact us for assistance.

11 Fuse

The ICP is equipped with a glass tube-type fuse (5x20 mm/ 0.2"x0.79"), which prevents overcurrent from flowing into the ICP when a circuit or circuit part is broken.

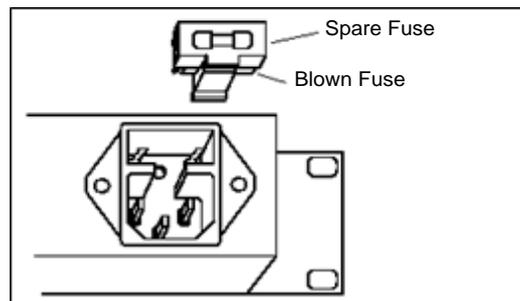
If the ICP cannot be turned on, first check if the fuse placed in the AC inlet is blown or not. If it is blown, replace the blown fuse with the spare one by following the procedure below.

1. Turn off the ICP and unplug the power supply plug.
2. Remove the power connector from the AC inlet.
3. Remove the fuse holder by pulling out the depressed portion of the connection area for power supply connector using a screw driver or the like.



[Figure 11.1] Fuse holder

4. Replace the current fuse with the spare fuse.



[Figure 11.2] Replacing fuses

5. Put the fuse holder back into the original position.

Note:

In case the fuse blows again even after the blown fuse is replaced, the ICP may have problems. Please Contact your dealer.

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Headquarters IDK Corporation
7-9-1 Chuo, Yamato-shi, Kanagawa-pref.
242-0021 JAPAN
TEL: +81-46-200-0764 FAX: +81-46-200-0765
Email: idx_eng@idx.co.jp URL: <http://www.idx.co.jp/en/index.html>

USA IDK America Inc.
72 Grays Bridge Road Suite 1-C, Brookfield, CT 06804
TEL: +1-203-204-2445
Email: info@idxav.com URL: <http://www.idxav.com>

Europe IDK Europe GmbH
Lise-Meitner-Str. 6, D-40878 Ratingen
Email: info@idxav.eu URL: <http://www.idxav.eu>



Product information Arvanics Corporation
Support 3-8-3-3F Yamato Higashi, Yamato-shi, Kanagawa-pref.
242-0017 JAPAN
TEL: +81-46-259-6920 FAX: +81-46-259-6930
Email: info@arvanics.com URL: <http://www.arvanics.com>

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