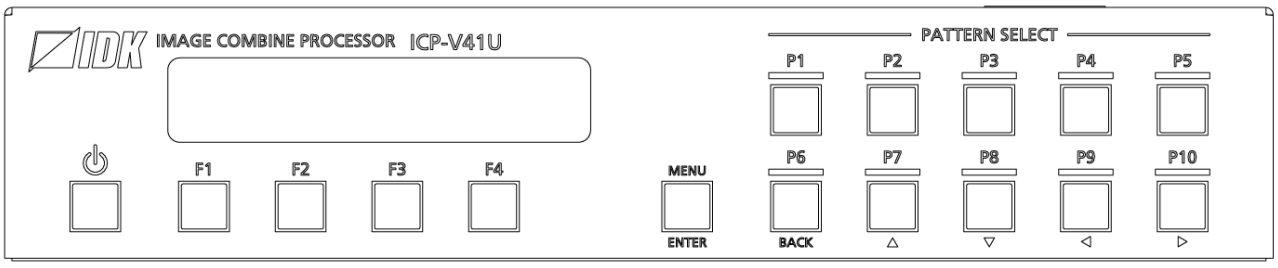
Multi-Window Video Processor

ICP-V41U

Command Guide
Ver.1.0.0



Thank you for choosing our product.
Please thoroughly familiarize yourself with this guide before installing this equipment. We recommend keeping this manual together with the equipment for future reference as needed.

IDK Corporation

- Some information contained in this guide such as exact product appearance, communication commands, and so on may differ depending on the product version.
- This guide is subject to change without notice. You can download the latest version from IDK's website at: www.idkav.com

About technical documentation

■ **Please read the following guides before connecting this equipment to a power source.**

1. Safety Instructions Contains important safety instructions for the product to help ensure your own personal safety and protect the product and working environment from potential damage.	Provided with the product.
2. Setup Guide Contains setup information and precautions for installing the product and connecting cables.	Download from www.idkav.com

■ **Please refer to the following guides as needed.**

3. Operation Guide Describes how to configure and use the equipment.	Download from www.idkav.com
4. User Guide Contains detailed explanation of functions, setting values, and restrictions.	
5. Command Guide Contains information on controlling the equipment using communication commands through RS-232C or LAN communication.	

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FCC STATEMENT

Note: 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, in which case the user will be required to correct the interference at his own expense.

(Class A)

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information

Unique Identifier

Type of Equipment: 4K@60 Multi-Window Video Processor
Model Name: ICP-V41U

Responsible Party – U.S. Contact Information

Company Name: IDK America Inc.
Address: 72 Grays Bridge Road Suite 1-C, Brookfield, CT 06804
Telephone number: +1-203-204-2445
URL: www.idkav.com

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(FCC SDoC)

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.

Contents

About this Guide

The ICP-V41U (hereafter referred to as ICP-V) can be remotely configured and controlled via RS-232C communication or LAN communication.

Command and Response

Setting command : For setting or changing commands
Getting command : For getting the current settings or statuses

Command format

A command consists of [@] (**40** in hex), 3 one-byte alphabetical characters (Not case sensitive), and parameters. [,] (a comma, **2C** in hex) is indicated between two characters.
The number of parameters varies depending on commands.

Processing is executed by sending line endings <CR><LF> (return+line feed, **0D** and **0A** in hex) at the end of the command. The line endings are added to each response.

@SPM,2<CR><LF> in hex:

	Header	3 one-byte alphabetical characters			Comma	Parameter	Line endings	
ASCII	@	S	P	M	,	2	CR	LF
Hex	40	53	50	4D	2C	32	0D	0A

Response examples

If the command is valid and performed,
Setting: the same command string is returned.
Command example → @SSW,1,1<CR><LF>
Response example ← @SSW,1,1<CR><LF>
Getting: the current settings are returned in ascending order following the sent command.
Command example → @GSW,1<CR><LF>
Response example ← @GSW,1,1,1<CR><LF>

Error response:
If the command is invalid, an error response ("**@ERR Error status (P.11)**") is returned.
Command example → @XXX<CR><LF>
Response example ← @ERR,2<CR><LF>

RS-232C communication

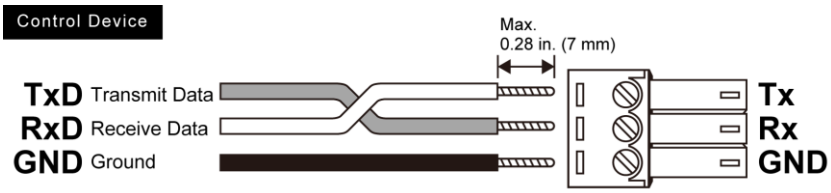
It takes about 12 seconds at maximum to be ready for normal operation after powering up.

RS-232C communication specification

Compliant standard	RS-232C
Baud rate	4800/9600/14400/19200/38400/57600/115200 (bps)
Data bit length	7/8 (bit)
Parity check	NONE, ODD, EVEN
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 method	Full duplex

Connecting RS-232C cable

Insert and secure the wires from the RS-232C cable into the supplied 3-pin captive screw connector, and then insert the captive screw connector into the mating connector on the ICP-V.
28 AWG to 16 AWG conductor gauge is recommended. The recommended wire strip length is 0.28 in. (7 mm). Short RTS/CTS and DTR/DSR as needed.



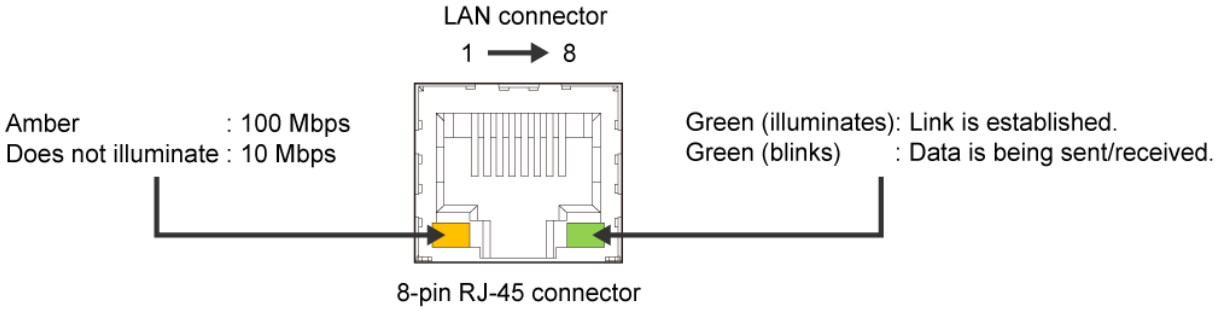
LAN communication

It takes about 12 seconds at maximum to be ready for normal operation after powering up.

LAN communication specification

Physical layer	10Base-T (IEEE802.3i)/100Base-TX (IEEE802.3u)
Network layer	ARP/IP/ICMP
Transport layer	TCP Port used for command control : 1100 Port used for WEB browser control(HTTP) : 80 UDP Port used for status notification: 1 to 65535
Maximum number of connections	8

LAN connector specification



Auto MDI/MDI-X that distinguishes and switches straight/cross cables automatically is supported.

The number of TCP-IP connections

The ICP-V supports up to eight simultaneous TCP-IP connections (Eight logical ports).
To maintain optimal system accessibility, it is advisable to issue **port-open** and **port-close** commands before and after command or query strings are issued. This approach enables eight or more control devices to be effectively interfaced simultaneously and without concern for communication errors.

As a safeguard, the ICP-V incorporates a 30-second timeout window for each port. If any port is inactive for more than 30 seconds, it will be closed automatically.
You can change the timeout setting using "**@GLD/@SLD Automatic disconnection time (Timeout) (P.33)**".

Command list

■ **Output audio**

■ **Input audio**

■ **EDID**

■ **RS-232C**

■ **LAN**

■ **Control commands**

■ **User preset**

■ **Bitmap**

■ **Configuring ICP-V**

■ **Status**

■ **Unsolicited status notification**

Details of commands

Default values are shaded.
Optional descriptions are indicated in parentheses.

Error status

@ERR	Error status
Response	@ERR,error<CR><LF>
error: Error status 1 = Erroneous format or value 2 = Undefined command or wrong format 3 = The command could not be executed. 4 = Loading EDID from the sink device failed. 10 = The command could not be executed, because it is in standby status. 30 = The command could not be executed, because the control command was not registered. 31 = The command could not be executed since another command was being executed. 32 = The control command was stopped according to the stop condition. 33 = The control command was stopped since the number of retries exceeded the set value of RETRY. 34 = The control command of PJLink was stopped since the password did not match.	
Getting example	
@SDS<CR><LF> @ERR,1<CR><LF>	Setting the start-up status Command format or parameter was invalid.

Start-up status

@GDS/@SDS		Start-up status
Getting	Command	@GDS<CR><LF>
	Response	@GDS,state<CR><LF>
Setting	Command	@SDS,state<CR><LF>
state: Start-up status 0 = OFF (Standby) 1 = ON (Powered on)		
Getting example		
@GDS<CR><LF> @GDS,1<CR><LF>		Getting the start-up status ON
Setting example		
@SDS,1<CR><LF>		Setting the start-up status to ON

Selecting I/O channels

<table>
<tr><th colspan="2">@GSW/@SSW</th><th>Switching video and audio channel simultaneously</th></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GSW<CR><LF></td></tr>
<tr><td>Response</td><td>@GSW,video_1,audio_1,video_2,reserve,video_3,reserve,video_4,reserve
<CR><LF></td></tr>
<tr><td>Setting</td><td>Command</td><td>@SSW,input,window(,input,window・・)<CR><LF></td></tr>
<tr><td colspan="3">video_1-4 : Video/audio input channel of OUT1 Window1 to OUT1 Window4
audio_1 : Audio input channel of OUT1 Window1
reserve : [0] is returned.
0 = OFF 1 to 4 = IN1 to IN4
video_1 = 1 video_2 = 2 video_3 = 3 video_4 = 4 audio_1 = 1</td></tr>
<tr><td colspan="3">input: Video/audio input channel
0 = OFF 1 to 4 = IN1 to IN4</td></tr>
<tr><td colspan="3">window: Video/audio window
0 = All windows 1 to 4 = OUT1 Window1 to OUT1 Window4</td></tr>
<tr><td colspan="3">Getting example</td></tr>
<tr><td colspan="2">@GSW<CR><LF>
@GSW,2,2,1,0,1,0,3,0<CR><LF></td><td>Getting the video/audio input channel
・ Video input channel of OUT1 Window1 : IN2
・ Audio input channel of OUT1 Window1 : IN2
・ Video input channel of OUT1 Window2 : IN1
・ Video input channel of OUT1 Window3 : IN1
・ Video input channel of OUT1 Window4 : IN3</td></tr>
<tr><td colspan="3">Setting example</td></tr>
<tr><td colspan="2">@SSW,1,1<CR><LF></td><td>Setting the video/audio input channel of OUT1 Window1 to IN1</td></tr>
</table>

@GSV/@SSV		**Switching video channel**
Getting	Command	@GSV<CR><LF>
	Response	@GSV,video_1,video_2,video_3,video_4<CR><LF>
Setting	Command	@SSV,input,window(,input,window･･･)<CR><LF>
video1-4: Video input channel of OUT1 Window1 to OUT1 Window4 0 = OFF 1 to 4 = IN1 to IN4 video_1 = 1 video_2 = 2 video_3 = 3 video_4 = 4		
input: Video input channel 0 = OFF 1 to 4 = IN1 to IN4		
window: Video window 0 = All windows 1 to 4 = OUT1 Window1 to OUT1 Window4		
Getting example		
@GSV<CR><LF> @GSV,2,1,3,4<CR><LF>		Getting the video input channel ・ OUT1 Window1 : IN2 ・ OUT1 Window2 : IN1 ・ OUT1 Window3 : IN3 ・ OUT1 Window4 : IN4
Setting example		
@SSV,1,1<CR><LF>		Setting the video input channel of OUT1 Window1 to IN1

@GSA/@SSA		**Switching audio channel**
Getting	Command	@GSA<CR><LF>
	Response	@GSA,audio_1<CR><LF>
Setting	Command	@SSA,input,output<CR><LF>
audio_1: Audio input channel of OUT1 Window1 0 = OFF 1 to 4 = IN1 to IN4 audio_1 = 1		
input: Audio input channel 0 = OFF 1 to 4 = IN1 to IN4		
output: Audio output channel 1 = OUT1 Window1		
Getting example		
@GSA<CR><LF> @GSA,1<CR><LF>		Getting the audio input channel OUT1 Window1: IN1
Setting example		
@SSA,1,1<CR><LF>		Setting the audio input channel of OUT1 Window1 to IN1

Output resolution

@GOT/@SOT		Output resolution
Getting	Command	@GOT,output<CR><LF>
	Response	@GOT,output,auto,resolution<CR><LF>
Setting	Command	@SOT,output,auto,resolution<CR><LF>

output: Output channel
1 = OUT1

auto: Output resolution mode
0 = Resolution selected below (**resolution**) 1 = AUTO_A

resolution: Output resolution

3 = 1024x768 (XGA)	4 = 1280x768 (WXGA)
5 = 1280x800 (WXGA)	6 = 1280x960 (QuadVGA)
7 = 1280x1024 (SXGA)	8 = 1360x768 (WXGA)
9 = 1366x768 (WXGA)	10 = 1400x1050 (SXGA+)
11 = 1440x900 (WXGA+)	12 = 1600x900 (WXGA++)
13 = 1600x1200 (UXGA)	14 = 1680x1050 (WSXGA+)
15 = 1920x1080 (VESAHD)	16 = 1920x1200 (WUXGA)
17 = 2048x1152 (QWXGA)	20 = 2560x1440 (WQHD)
21 = 2560x1600 (WQXGA)	
31 = 480p 59.94Hz	33 = 576p 50Hz
34 = 720p 50Hz	35 = 720p 59.94Hz
36 = 720p 60Hz	37 = 1080i 50Hz
38 = 1080i 59.94Hz	39 = 1080i 60Hz
40 = 1080p 50Hz	41 = 1080p 59.94Hz
42 = 1080p 60Hz	
50 = 3840x2160 23.98Hz	51 = 3840x2160 24Hz
52 = 3840x2160 25Hz	53 = 3840x2160 29.97Hz
54 = 3840x2160 30Hz	55 = 3840x2160 50Hz
56 = 3840x2160 59.94Hz	57 = 3840x2160 60Hz
60 = 4096x2160 23.98Hz	61 = 4096x2160 24Hz
62 = 4096x2160 25Hz	63 = 4096x2160 29.97Hz
64 = 4096x2160 30Hz	65 = 4096x2160 50Hz
66 = 4096x2160 59.94Hz	67 = 4096x2160 60Hz

If **output resolution mode** is set to [AUTO-A] or [AUTO-B], select [0] for this parameter. For getting command, the current output resolution is returned.

Getting example

@GOT,1<CR><LF> @GOT,1,1,7<CR><LF>	Getting the OUT1 output resolution ・ Output resolution mode : AUTO_A ・ Output resolution : 1280x1024

Setting example

@SOT,1,0,11<CR><LF>	Setting the OUT1 output resolution to 1440x900

@GUM/@SUM		**Aspect ratio for sink device**
Getting	Command	@GUM,output<CR><LF>
	Response	@GUM,output,aspect<CR><LF>
Setting	Command	@SUM,output,aspect<CR><LF>
output: Output channel 1 = OUT1		
aspect: Aspect ratio for sink device 0 = RESOLUTION 1 = FULL 2 = 4:3 3 = 5:3 4 = 5:4 5 = 16:9 6 = 16:10 7 = 256:135		
Getting example		
@GUM,1<CR><LF> @GUM,1,5<CR><LF>		Getting the OUT1 aspect ratio for sink device 16:9
Setting example		
@SUM,1,5<CR><LF>		Setting the OUT1 aspect ratio for sink device to 16:9

@GOP/@SOP		**Window image position/image size**
Getting	Command	@GOP,output,window<CR><LF>
	Response	@GOP,output,window,h_position,v_position,h_size,v_size(,h_position, v_position,h_size,・・・)<CR><LF>
Setting	Command	@SOP,output,window,h_position,v_position,h_size,v_size<CR><LF>
output: Output channel 1 = OUT1		
window 0 = All windows 1 to 4 = Window1 to Window4		
h_position: Horizontal image position -40000 to 10000 = -400.00% to 100.00% 0 (0.00%)		
v_position: Vertical image position -40000 to 10000 = -400.00% to 100.00% 0 (0.00%)		
h_size: Horizontal image size 2000 to 40000 = 20.00% to 400.00% 10000 (100.00%)		
v_size: Vertical image size 2000 to 40000 = 20.00% to 400.00% 10000 (100.00%)		
Getting example		
@GOP,1,1<CR><LF> @GOP,1,1,0,0,5000,5000<CR><LF>		Getting the image position/image size of OUT1 Window1 ・ Horizontal/Vertical image position : 0.00% ・ Horizontal/Vertical image size : 50.00%
Setting example		
@SOP,1,1,0,0,5000,5000<CR><LF>		Setting the image position/image size of OUT1 Window1 as follows: ・ Horizontal/Vertical image position : 0.00% ・ Horizontal/Vertical image size : 50.00%

@GQP/@SQP		**Image position and size in the window**
Getting	Command	@GQP,output,window<CR><LF>
	Response	@GQP,output,window,h_position,v_position,h_size,v_size(,h_position, v_position,h_size,・・・)<CR><LF>
Setting	Command	@SQP,output,window,h_position,v_position,h_size,v_size<CR><LF>
output: Output channel 1 = OUT1		
window 0 = All windows 1 to 4 = Window1 to Window4		
h_position: Horizontal image position -40000 to 10000 = -400.00% to 100.00% 0 (0.00%)		
v_position: Vertical image position -40000 to 10000 = -400.00% to 100.00% 0 (0.00%)		
h_size: Horizontal image size 2000 to 40000 = 20.00% to 400.00% 10000 (100.00%)		
v_size: Vertical image size 2000 to 40000 = 20.00% to 400.00% 10000 (100.00%)		
Getting example		
@GQP,1,1<CR><LF> @GQP,1,1,0,0,5000,5000<CR><LF>		Getting the image position and size of OUT1 Window1 ・ Horizontal/Vertical image position : 0.00% ・ Horizontal/Vertical image size : 50.00%
Setting example		
@SQP,1,1,0,0,5000,5000<CR><LF>		Setting the image position and size of OUT1 Window1 as follows: ・ Horizontal/Vertical image position : 0.00% ・ Horizontal/Vertical image size : 50.00%

@GWP/@SWP		**Window priority**
Getting	Command	@GWP,output<CR><LF>
	Response	@GWP,output,priority_1,priority_2,priority_3,priority_4<CR><LF>
Setting	Command	@SWP,output,priority_1,priority_2,priority_3,priority_4<CR><LF>
output: Output channel 1 = OUT1		
priority1-4: Window priority 1 to Window priority 4 1 to 4 = Window1 to Window4 priority_1 = 1 priority_2 = 2 priority_3 = 3 priority_4 = 4		
Getting example		
@GWP,1<CR><LF> @GWP,1,1,2,3,4<CR><LF>		Getting the OUT1 window priority Window1>WIndow2>Window3>Window4
Setting example		
@SWP,1,3,4,1,2<CR><LF>		Setting the OUT1 window priority as follows: Window3>Window4>Window1>Window2
Remarks: A priority can be set to a window. The same window cannot be assigned to two or more priorities.		

@GWV/@SWV		**Window displayed/hide**
Getting	Command	@GWV,output,window<CR><LF>
	Response	@GWV,output,window,display(,display･･･)<CR><LF>
Setting	Command	@SWV,output,window,display<CR><LF>
output: Output channel 1 = OUT1		
window 0 = All windows 1 to 4 = Window1 to Window4		
display: Window displayed/hide 0 = Not displayed 1 = Displayed		
Getting example		
@GWV,1,1<CR><LF> @GWV,1,1,1<CR><LF>		Getting the window displayed/hide of OUT1 Window1 Displayed
Setting example		
@SWV,1,1,1<CR><LF>		Setting the window displayed/hide of OUT1 Window1 to displayed

@GTO/@STO		**Overlay text position**
Getting	Command	@GTO,output,window<CR><LF>
	Response	@GTO,output,window,position(,position･･･)<CR><LF>
Setting	Command	@STO,output,window,position<CR><LF>
output: Output channel 1 = OUT1		
window 0 = All windows 1 to 4 = Window1 to Window4		
position 0 = OFF 1 = TOP-LEFT 2 = TOP-CENTER 3 = TOP-RIGHT 4 = BOTTOM-LEFT 5 = BOTTOM-CENTER 6 = BOTTOM-RIGHT		
Getting example		
@GTO,1,1<CR><LF> @GTO,1,1,1<CR><LF>		Getting the overlay text position of OUT1 Window1 TOP-LEFT
Setting example		
@STO,1,1,0<CR><LF>		Setting the overlay text position of OUT1 Window1 to OFF

@GFW/@SFW		**Window border size**
Getting	Command	@GFW,output,window<CR><LF>
	Response	@GFW,output,window,width(,width･･･)<CR><LF>
Setting	Command	@SFW,output,window,width<CR><LF>
output: Output channel 1 = OUT1		
window 0 = All windows 1 to 4 = Window1 to Window4		
width: Window border size (Pixel) 0 to 15		
Getting example		
@GFW,1,1<CR><LF> @GFW,1,1,1<CR><LF>		Getting the window border size of OUT1 Window1 1 pixel
Setting example		
@SFW,1,1,0<CR><LF>		Setting the window border size of OUT1 Window1 to 0 pixel

@GFC/@SFC		**Window border color**
Getting	Command	@GFC,output,window<CR><LF>
	Response	@GFC,output,window,red,green,blue(,red,green,blue･･･)<CR><LF>
Setting	Command	@SFC,output,window,red,green,blue<CR><LF>
output: Output channel 1 = OUT1		
window 0 = All windows 1 to 4 = Window1 to Window4		
red : Window border color (Red) green : Window border color (Green) blue : Window border color (Blue) 0 to 255		
Getting example		
@GFC,1,1<CR><LF> @GFC,1,1,255,255,255<CR><LF>		Getting the window border color of OUT1 Window1 All window border colors: 255
Setting example		
@SFC,1,1,255,0,0<CR><LF>		Setting the window border color of OUT1 Window1 to red

@GTP/@STP		**Test pattern**
Getting	Command	@GTP,output<CR><LF>
	Response	@GTP,output,pattern,scroll<CR><LF>
Setting	Command	@STP,output,pattern,scroll<CR><LF>

output: Output channel
1 = OUT1

pattern
0 = OFF
1 = V-COLOR BAR*
2 = H-COLOR BAR*
3 = V-GRAY SCALE*
4 = H-GRAY SCALE*
5 = VERTICAL RAMP*
6 = HORIZONTAL RAMP*
7 = 100% WHITE RASTER
8 = 50% WHITE RASTER
9 = RED RASTER
10 = GREEN RASTER
11 = BLUE RASTER
12 = CROSS HATCH
14 = VERTICAL STRIPE
15 = HORIZONTAL STRIPE
16 = VERTICAL ZEBRA*
17 = HORIZONTAL ZEBRA*
*Can be scrolled

scroll: Scrolling
0 = OFF 1 = SLOW 2 = FAST

Getting example

@GTP,1<CR><LF> @GTP,1,3,1<CR><LF>	Getting the OUT1 test pattern ・ Pattern : V-GRAY SCALE ・ Scrolling : SLOW

Setting example

@STP,1,1,0<CR><LF>	Setting the OUT1 test pattern and scrolling to V-COLOR BAR and OFF, respectively

Output

@GVO/@SVO		Signal output
Getting	Command	@GVO,output<CR><LF>
	Response	@GVO,output,signal<CR><LF>
Setting	Command	@SVO,output,signal<CR><LF>
output: Output connector 1 = OUT1A		
signal: Signal output 0 = OFF 1 = ON		
Getting example		
@GVO,1<CR><LF> @GVO,1,1<CR><LF>		Getting the OUT1A signal output ON
Setting example		
@SVO,1,1<CR><LF>		Setting the OUT1A signal output to ON
Remarks: If [0] (OFF) is selected, a sink device may be in standby status depending on the device type.		

@GDB/@SDB		Video mute
Getting	Command	@GDB,output<CR><LF>
	Response	@GDB,output,mute<CR><LF>
Setting	Command	@SDB,output,mute<CR><LF>
output: Output connector 1 = OUT1A		
mute: Video mute 0 = OFF 1 = ON		
Getting example		
@GDB,1<CR><LF> @GDB,1,1<CR><LF>		Getting the OUT1A video mute ON
Setting example		
@SDB,1,1<CR><LF>		Setting the OUT1A video mute to ON

@GEN/@SEN		**HDCP authentication**
Getting	Command	@GEN,output<CR><LF>
	Response	@GEN,output,hdcp<CR><LF>
Setting	Command	@SEN,output,hdcp<CR><LF>
output: Output connector 1 = OUT1A		
hdcp: HDCP authentication 0 = No HDCP authentication 1 = HDCP output only if HDCP-encrypted signal is input. 2 = HDCP 1.4 3 = HDCP 2.2		
Getting example		
@GEN,1<CR><LF> @GEN,1,3<CR><LF>		Getting the OUT1A HDCP authentication HDCP 2.2
Setting example		
@SEN,1,2<CR><LF>		Setting the OUT1A HDCP authentication to HDCP 1.4

@HAU		**HDCP re-encryption**
Setting	Command	@HAU,output<CR><LF>
output: Output connector 1 = OUT1A		
Setting example		
@HAU,1<CR><LF>		Executing re-encrypt HDCP of OUT1A

@GCE/@SCE		**CEC connection**
Getting	Command	@GCE,output<CR><LF>
	Response	@GCE,output,cec<CR><LF>
Setting	Command	@SCE,output,cec<CR><LF>
output: Output connector 1 = OUT1A		
cec: CEC connection 0 = Not connected 1 = Input channel selected for Window1 2 = IN1 3 = IN2 4 = IN3 5 = IN4 10 = Input channel selected for the highest window priority		
Getting example		
@GCE,1<CR><LF> @GCE,1,0<CR><LF>		Getting the OUT1A CEC connection Not connected
Setting example		
@SCE,1,4<CR><LF>		Setting the OUT1A CEC connection to IN3

Input resolution

@GAP/@SAP		Aspect ratio
Getting	Command	@GAP,input<CR><LF>
	Response	@GAP,input,aspect(,aspect･･･)<CR><LF>
Setting	Command	@SAP,input,aspect<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4		
aspect: Aspect ratio 0 = AUTO-1 1 = AUTO-2 2 = 4:3 3 = 14:9 4 = 16:9 5 = 14:9 LETTER BOX 6 = 16:9 LETTER BOX 7 = 4:3 SIDE PANEL 8 = 14:9 SIDE PANEL 9 = THROUGH 10 = FULL		
Getting example		
@GAP,3<CR><LF> @GAP,3,2<CR><LF>		Getting the IN3 aspect ratio 4:3
Setting example		
@SAP,4,2<CR><LF>		Setting the IN4 aspect ratio to 4:3

@GAR/@SAR		Aspect ratio control
Getting	Command	@GAR,input<CR><LF>
	Response	@GAR,input,mode(,mode･･･)<CR><LF>
Setting	Command	@SAR,input,mode<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4		
mode: Aspect ratio control 0 = Letter box/Side panel 1 = Side cut/Top bottom cut		
Getting example		
@GAR,3<CR><LF> @GAR,3,1<CR><LF>		Getting the IN3 aspect ratio control Side cut/Top bottom cut
Setting example		
@SAR,4,1<CR><LF>		Setting the IN4 aspect ratio to Side cut/Top bottom cut

@GNW/@SNW		Image position/Image size
Getting	Command	@GNW,input<CR><LF>
	Response	@GNW,input,h_position,v_position,h_size,v_size,(,h_position,v_position, h_size,・・・)<CR><LF>
Setting	Command	@SNW,input,h_position,v_position,h_size,v_size<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4		
h_position: Horizontal image position -40000 to 10000 = -400.00% to 100.00% 0 (0.00%)		
v_position: Vertical image position -40000 to 10000 = -400.00% to 100.00% 0 (0.00%)		
h_size: Horizontal image size 2000 to 40000 = 20.00% to 400.00% 10000 (100.00%)		
v_size: Vertical image size 2000 to 40000 = 20.00% to 400.00% 10000 (100.00%)		
Getting example		
@GNW,1<CR><LF> @GNW,1,-5000,-5000,20000,20000<CR><LF>		Getting the IN1 image position/image size ・ Horizontal/Vertical image position : -50.00% ・ Horizontal/Vertical image size : 200.00%
Setting example		
@SNW,1,-5000,-5000,20000,20000<CR><LF>		Setting the IN1 image position/image size as follows: ・ Horizontal/Vertical image position : -50.00% ・ Horizontal/Vertical image size : 200.00%

Input

@GHE/@SHE		HDCP input
Getting	Command	@GHE,input<CR><LF>
	Response	@GHE,input,hdcp(,hdcp・・・)<CR><LF>
Setting	Command	@SHE,input,hdcp<CR><LF>
input: Input channel 0 = All digital inputs 1 to 4 = IN1 to IN4		
hdcp: HDCP input 0 = NOT SUPPORT 1 = HDCP 1.4 SUPPORT 2 = HDCP 2.2 SUPPORT		
Getting example		
@GHE,1<CR><LF> @GHE,1,2<CR><LF>		Getting the IN1 HDCP input HDCP 2.2
Setting example		
@SHE,1,0<CR><LF>		Setting the IN1 HDCP input to NOT SUPPORT

Input channel automatic switching

<table>
<tr><th colspan="2">@GAU/@SAU</th><th>Signal ON priority</th></tr>
<tr><td rowspan="2">Getting</td><td>Command</td><td>@GAU,output,window<CR><LF></td></tr>
<tr><td>Response</td><td>@GAU,output,window,priority_in1,priority_in2,priority_in3,priority_in4<CR><LF></td></tr>
<tr><td>Setting</td><td>Command</td><td>@SAU,output,window,priority_in1,priority_in2,priority_in3,priority_in4<CR><LF></td></tr>
<tr><td colspan="3">output: Output channel
1 = OUT1</td></tr>
<tr><td colspan="3">window
0 = All windows* 1 to 4 = Window1 to Window4
*Only for setting</td></tr>
<tr><td colspan="3">priority_in1-4: Signal ON priority (IN1 to IN4)
0 = OFF 1 to 4 = Priority (Highest to Lowest)</td></tr>
<tr><td colspan="3">Getting example</td></tr>
<tr><td colspan="2">@GAU,1,1<CR><LF>
@GAU,1,1,1,2,3,4<CR><LF></td><td>Getting the signal ON priority of OUT1 Window1
・ IN1: 1
・ IN2: 2
・ IN3: 3
・ IN4: 4</td></tr>
<tr><td colspan="3">Setting example</td></tr>
<tr><td colspan="2">@SAU,1,1,4,3,2,1<CR><LF></td><td>Setting the signal ON priority of OUT1 Window1 as follows:
・ IN1: 4
・ IN2: 3
・ IN3: 2
・ IN4: 1</td></tr>
</table>

@GOF/@SOF		**Signal OFF priority**
Getting	Command	@GOF,output,window<CR><LF>
	Response	@GOF,output,window,priority_in1,priority_in2,priority_in3,priority_in4, priority_inoff<CR><LF>
Setting	Command	@SOF,output,window,priority_in1,priority_in2,priority_in3,priority_in4, priority_inoff<CR><LF>
output: Output channel 1 = OUT1		
window 0 = All windows* 1 to 4 = Window1 to Window4 *Only for setting		
priority_in1-inoff: Signal OFF priority IN1 to INOFF 0 = OFF 1 to 5 = Priority (Highest to Lowest)		
Getting example		
@GOF,1,1<CR><LF> @GOF,1,1,1,2,3,4,5<CR><LF>		Getting the signal OFF priority of OUT1 Window1 ・ IN1 : 1 ・ IN2 : 2 ・ IN3 : 3 ・ IN4 : 4 ・ INOFF : 5
Setting example		
@SOF,1,1,4,3,2,1,5<CR><LF>		Setting the signal OFF priority of OUT1 Window1 as follows: ・ IN1 : 4 ・ IN2 : 3 ・ IN3 : 2 ・ IN4 : 1 ・ INOFF : 5

@GAD/@SAD		**Switching mode of automatic switching**
Getting	Command	@GAD,output,window<CR><LF>
	Response	@GAD,output,window,mode<CR><LF>
Setting	Command	@SAD,output,window,mode<CR><LF>
output: Output channel 1 = OUT1		
window 1 (Fixed)		
mode: Switching mode 0 = Video and Audio 1 = Video 2 = Audio		
Getting example		
@GAD,1,1<CR><LF> @GAD,1,1,2<CR><LF>		Getting the OUT1 Window1 switching mode of automatic switching Audio
Setting example		
@SAD,1,1,1<CR><LF>		Setting the OUT1 Window1 switching mode of automatic switching to video

Output audio

@GUC/@SUC		Audio output
Getting	Command	@GUC,output<CR><LF>
	Response	@GUC,output,audio<CR><LF>
Setting	Command	@SUC,output,audio<CR><LF>
output: Output connector 1 = OUT1A		
audio: Audio output 0 = OFF 1 = ON		
Getting example		
@GUC,1<CR><LF> @GUC,1,1<CR><LF>		Getting the OUT1A audio output ON
Setting example		
@SUC,1,1<CR><LF>		Setting the OUT1A audio output to ON

@GAV/@SAV		Audio level
Getting	Command	@GAV,output<CR><LF>
	Response	@GAV,output,level(,level)<CR><LF>
Setting	Command	@SAV,output,level<CR><LF>
output: Output channel 0 = All outputs 1 = OUT1 401 = ANALOG OUT1		
level: Output audio level (dB) -100 to 10 0		
Getting example		
@GAV,1<CR><LF> @GAV,1,-4<CR><LF>		Getting the OUT1 output audio level -4 dB
Setting example		
@SAV,1,-4<CR><LF>		Setting the OUT1 output audio level to -4 dB
Remarks: Unmuted if changing output audio level.		

@SOL		Adjusting output audio level
Setting	Command	@SOL,output,updown<CR><LF>
output: Output channel 0 = All outputs 1 = OUT1 401 = ANALOG OUT1		
updown: Relative value [dB] The specified value is added to the current output audio level. -110 to 110 Output audio level range: -100 dB to +10 dB		
Setting example		
@SOL,1,-1<CR><LF>		Decreasing the OUT1 output audio level by 1 dB
Remarks: ・ Unmuted if changing output audio level. ・ Limited to the maximum/minimum if exceeding the range.		

@GOL		Output audio limit status
Getting	Command	@GOL,output<CR><LF>
	Response	@GOL,output,limit(,limit)<CR><LF>
output: Output channel 0 = All outputs 1 = OUT1 401 = ANALOG OUT1		
limit: Limit status -1 = Minimum value (-100 dB) 0 = Not reach limit value 1 = Maximum value (+10 dB)		
Getting example		
@GOL,1<CR><LF> @GOL,1,1<CR><LF>		Getting the limit status of the OUT1 output audio level Maximum value

@GAM/@SAM		Mute
Getting	Command	@GAM,output<CR><LF>
	Response	@GAM,output,mute(,mute)<CR><LF>
Setting	Command	@SAM,output,mute<CR><LF>
output: Output channel 0 = All outputs 1 = OUT1 401 = ANALOG OUT1		
mute: Audio mute 0 = OFF 1 = ON		
Getting example		
@GAM,1<CR><LF> @GAM,1,1<CR><LF>		Getting the OUT1 audio mute ON
Setting example		
@SAM,1,1<CR><LF>		Setting the OUT1 audio mute to ON

Input audio

@GAS/@SAS		Input audio
Getting	Command	@GAS,input<CR><LF>
	Response	@GAS,input,select(,select･･･)<CR><LF>
Setting	Command	@SAS,input,select<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4		
select: Input audio 0 = DIGITAL 1 = ANALOG IN1		
Getting example		
@GAS,1<CR><LF> @GAS,1,1<CR><LF>		Getting the IN1 input audio ANALOG IN1
Setting example		
@SAS,3,1<CR><LF>		Setting the IN3 input audio to ANALOG IN1

@GSO/@SSO		**Audio level**
Getting	Command	@GSO,input<CR><LF>
	Response	@GSO,input,level(,level･･･)<CR><LF>
Setting	Command	@SSO,input,level<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4 201 = ANALOG IN1		
level: Input audio level (dB) -100 to 10 0		
Getting example		
@GSO,4<CR><LF> @GSO,4,-4<CR><LF>		Getting the IN4 input audio level -4 dB
Setting example		
@SSO,4,-8<CR><LF>		Setting the IN4 input audio level to -8 dB

@SDZ		**Adjusting input audio level**
Setting	Command	@SDZ,input,updown<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4 201 = ANALOG IN1		
updown: Relative value (dB) The specified value is added/subtracted to/from the current input audio level offset. -110 to 110 Input audio level range: -100 dB to +10 dB		
Setting example		
@SDZ,1,-1<CR><LF>		Decreasing the IN1 input audio level by 1 dB

@GDZ		**Input audio limit status**
Getting	Command	@GDZ,input<CR><LF>
	Response	@GDZ,input,limit(limit･･･)<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4 201 = ANALOG IN1		
limit: Limit status of input audio level -1 = Minimum value (-100 dB) 0 = Not reach limit value 1 = Maximum value (+10 dB)		
Getting example		
@GDZ,1<CR><LF> @GDZ,1,1<CR><LF>		Getting the limit status of the IN1 input audio level Maximum value

@GAW/@SAW		Stable wait (Audio signal)
Getting	Command	@GAW,input<CR><LF>
	Response	@GAW,input,wait(,wait･･･)<CR><LF>
Setting	Command	@SAW,input,wait<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4		
wait: Stable wait (Audio signal) 0 = OFF 1 = ON		
Getting example		
@GAW,1<CR><LF> @GAW,1,1<CR><LF>		Getting the IN1 stable wait (Audio signal) ON
Setting example		
@SAW,1,0<CR><LF>		Disabling the IN1 stable wait (Audio signal)

EDID

@GED/@SED		EDID selection
Getting	Command	@GED,input<CR><LF>
	Response	@GED,input,edid(,edid･･･)<CR><LF>
Setting	Command	@SED,input,edid<CR><LF>
input: Input channel 0 = All inputs 1 to 4 = IN1 to IN4		
edid: EDID 0 = BUILT-IN EDID 1 = EXTERNAL EDID OUT1A 401 to 408 = COPY DATA 1 to COPY DATA 8* *Available only if valid data is stored.		
Getting example		
@GED,1<CR><LF> @GED,1,0<CR><LF>		Getting the IN1 EDID selection BUILT-IN EDID
Setting example		
@SED,2,401<CR><LF>		Setting the IN2 EDID selection to COPY DATA 1

@GVF/@SVF		**Resolution**
Getting	Command	@GVF,input<CR><LF>
	Response	@GVF,input,resolution(,resolution・・・)<CR><LF>
Setting	Command	@SVF,input,resolution<CR><LF>

input: Input channel
0 = All inputs 1 to 4 = IN1 to IN4

resolution

0 = 800x600 (SVGA)	1 = 1024x768 (XGA)
2 = 1280x720 (VESA720)	3 = 720p
4 = 1280x768 (WXGA)	5 = 1280x800 (WXGA)
6 = 1280x960 (QuadVGA)	7 = 1280x1024 (SXGA)
8 = 1360x768 (WXGA)	9 = 1366x768 (WXGA)
10 = 1400x1050 (SXGA+)	11 = 1440x900 (WXGA+)
12 = 1600x900 (WXGA++)	13 = 1600x1200 (UXGA)
14 = 1680x1050 (WSXGA+)	15 = 1080i
16 = 1920x1080 (VESA1080)	17 = 1080p
18 = 1920x1200 (WUXGA)	19 = 2048x1152 (QWXGA)
20 = 2560x1440 (WQHD)	21 = 2560x1600 (WQXGA)
40 = 3840x2160 30Hz	41 = 3840x2160 60Hz 4:2:0
42 = 3840x2160 60Hz 4:4:4	43 = 4096x2160 30Hz
44 = 4096x2160 60Hz 4:2:0	45 = 4096x2160 60Hz 4:4:4

Getting example

@GVF,3<CR><LF>	Getting the IN3 resolution
@GVF,3,9<CR><LF>	1366x768

Setting example

@SVF,1,12<CR><LF>	Setting the IN1 resolution to 1600x900

Remarks: Available only if [0] (BUILT-IN EDID) is selected for "**@GED/@SED EDID selection (P.29)**".

RS-232C

@GCT/@SCT		Communication setting
Getting	Command	@GCT,port<CR><LF>
	Response	@GCT,port,baudrate,length,parity,stop<CR><LF>
Setting	Command	@SCT,port,baudrate,length,parity,stop<CR><LF>
port: Connector 1 = RS-232C		
baudrate: Baud rate 0 = 4800 bps 1 = 9600 bps 2 = 14400 bps 3 = 19200 bps 4 = 38400 bps 5 = 57600 bps 6 = 115200 bps		
length: Data bit length 0 = 7 bit 1 = 8 bit		
parity: Parity check 0 = NONE 1 = ODD 2 = EVEN		
stop: Stop bit 0 = 1 bit 1 = 2 bit		
Getting example		
@GCT,1<CR><LF> @GCT,1,3,1,0,0<CR><LF>		Getting the RS-232C communication settings ・ Baud rate : 19200 bps ・ Data bit length : 8 bit ・ Parity check : NONE ・ Stop bit : 1 bit
Setting example		
@SCT,1,3,1,0,0<CR><LF>		Setting the RS-232C communication as follows: ・ Baud rate : 19200 bps ・ Data bit length : 8 bit ・ Parity check : NONE ・ Stop bit : 1 bit

@GCF/@SCF		Operation mode
Getting	Command	@GCF,port<CR><LF>
	Response	@GCF,port,mode<CR><LF>
Setting	Command	@SCF,port,mode<CR><LF>
port: Connector 1 = RS-232C		
mode: Operation mode 0 = RECEIVER mode 1 = TRANSMITTER mode		
Getting example		
@GCF,1<CR><LF> @GCF,1,1<CR><LF>		Getting the RS-232C operation mode TRANSMITTER mode
Setting example		
@SCF,1,1<CR><LF>		Setting the RS-232C operation mode to TRANSMITTER mode
Remarks: To control the ICP-V from control devices, set this menu to RECEIVER mode. To control external devices from the ICP-V, set this menu to TRANSMITTER mode.		

LAN

@GIP/@SIP		**IP address**
Getting	Command	@GIP<CR><LF>
	Response	@GIP,unit_1,unit_2,unit_3,unit_4<CR><LF>
Setting	Command	@SIP,unit_1,unit_2,unit_3,unit_4<CR><LF>
unit_1 to unit_4 = Upper bit of the IP address to Lower bit of the IP address 0 to 255 192.168.1.199		
Getting example		
@GIP<CR><LF> @GIP,192,168,3,2<CR><LF>		Getting the IP address 192.168.3.2
Setting example		
@SIP,192,168,3,2<CR><LF>		Setting the IP address to 192.168.3.2

@GSB/@SSB		**Subnet mask**
Getting	Command	@GSB<CR><LF>
	Response	@GSB,unit_1,unit_2,unit_3,unit_4<CR><LF>
Setting	Command	@SSB,unit_1,unit_2,unit_3,unit_4<CR><LF>
unit_1 to unit_4 = Upper bit of the subnet mask to Lower bit of the subnet mask 0 to 255 255.255.255.0		
Getting example		
@GSB<CR><LF> @GSB,255,255,192,0<CR><LF>		Getting the subnet mask 255.255.192.0
Setting example		
@SSB,255,255,192,0<CR><LF>		Setting the subnet mask to 255.255.192.0

@GGW/@SGW		**Gateway address**
Getting	Command	@GGW<CR><LF>
	Response	@GGW,unit_1,unit_2,unit_3,unit_4<CR><LF>
Setting	Command	@SGW,unit_1,unit_2,unit_3,unit_4<CR><LF>
unit_1 to unit_4 = Upper bit of the gateway address to Lower bit of the gateway address 0 to 255 192.168.1.200		
Getting example		
@GGW<CR><LF> @GGW,192,168,1,254<CR><LF>		Getting the gateway address 192.168.1.254
Setting example		
@SGW,192,168,1,254<CR><LF>		Setting the gateway address to 192.168.1.254

@GMC		**MAC address**
Getting	Command	@GMC<CR><LF>
	Response	@GMC,unit_1,unit_2,unit_3,unit_4,unit_5,unit_6<CR><LF>
unit_1 to unit_6 = Upper bit of the MAC address to Lower bit of the MAC address **00** to **FF** in hex		
Getting example		
@GMC<CR><LF> @GMC,00,08,E5,72,00,00<CR><LF>		Getting the MAC address 00-08-E5-72-00-00

@GLG/@SLG		**Control command destination**
Getting	Command	@GLG,destination<CR><LF>
	Response	@GLG,destination,ip_1,ip_2,ip_3,ip_4,pjlink,(tcp,password)<CR><LF>
Setting	Command	@SLG,destination,ip_1,ip_2,ip_3,ip_4,pjlink,(tcp,password)<CR><LF>

destination: Destination number
1 to 12

ip_1 to ip_4 = Upper bit of the destination IP address to Lower bit of the destination IP address
0 to 255 192.168.1.198

pjlink: PJLink protocol connection
0 = PJLink note used 1 = PJLink used

tcp: Destination port number
1 to 65535 1100
Available only if [0] (PJLink not used) is set to **pjlink**.

password: Password of PJLink protocol
ASCII 20, 30 to 39, 41 to 5A, 61 to 7A (Up to 32 characters) All 20 (Space) = No password
- Available only in TRANSMITTER mode and **pjlink** is set to [1] (PJLink used).
- For getting: Returned only if the password is set.
- For setting: You can skip this password setting if you do not use password authentication for PJLink protocol connection.

Getting example	
@GLG,3<CR><LF> @GLG,3,192,168,1,2,1, PROJECTOR1<CR><LF>	Getting Destination 3 ・ The destination IP address : 192.168.1.2 ・ PJLink : To be used ・ Password : PROJECTOR1
Setting example	
@SLG,3,192,168,1,2,1<CR><LF>	Setting Destination 3 as follows: ・ The destination IP address : 192.168.1.2 ・ PJLink : To be used ・ Password : Disabling password authentication

@GLD/@SLD		**Automatic disconnection time (Timeout)**
Getting	Command	@GLD,service<CR><LF>
	Response	@GLD,service,time<CR><LF>
Setting	Command	@SLD,service,time<CR><LF>

service: Network service
1 = SERVER (Receiving commands) 2 = CLIENT (Sending commands)

time: Automatic disconnection time
0 = NOT DISCONNECT 1 to 180 = 1 sec. to 180 sec.
SERVER = 30 sec. CLIENT = 3 sec.

Getting example	
@GLD,1<CR><LF> @GLD,1,120<CR><LF>	Getting the automatic disconnection time of SERVER 120 sec.
Setting example	
@SLD,1,100<CR><LF>	Setting the automatic disconnection time of SERVER to 100 sec.

Control commands

@GEC/@SEC		Registering/Editing control command (Communication command)
Getting	Command	@GEC,cmd<CR><LF>
	Response	@GEC,cmd,delay,port,memo,length,command,timeout,retry,interval,retryover, display(,recv_1,recv_2・・・)<CR><LF>
Setting	Command	@SEC,cmd,delay,port,memo,length,command,timeout,retry,interval,retryover, display(,recv_1,recv_2・・・)<CR><LF>

cmd: Control command number
1 to 64

delay: Delay time
0 to 999999 = 0 sec. to 999.999 sec. 0 (0 sec.)

port: Output port
1 to 16773123

bit	7	6	5	4	3	2	1	0
port	reserve	reserve	reserve	reserve	reserve	reserve	RS-232C	LOOP BACK

bit	15	14	13	12	11	10	9	8
port	LAN 4	LAN 3	LAN 2	LAN 1	reserve	reserve	reserve	reserve

bit	23	22	21	20	19	18	17	16
port	LAN 12	LAN 11	LAN 10	LAN 9	LAN 8	LAN 7	LAN 6	LAN 5

Set [1] for the bit of the output port to send a command. The setting value is converted from binary to decimal. (Since 12 bit to 15 bit are not used, they are always [0]).
Example,
if you want to send a command from RS-232C: [2] (000000000000000000000010 in binary)
if sending a command from LAN1: [4096] (000000000001000000000000 in binary)

memo: Memo
Up to 14 characters from 20 to 7D of ASCII code except for 2C (,) Default: All 20 (Space)

length: Data size of send command (The number of bytes)
0 to 30

command: Send command data (ASCII code)
Specify **length** ×2 digits with 0 to 9, A to F, a to f: (4 bit per digit in hex)

timeout: Time-out duration
0 to 99999 = 0 sec. to 99.999 sec. 0 (0 sec.)

retry: The number of retries
0 to 99 0

interval: Retry interval
0 to 99999 = 0 sec. to 99.999 sec. 0 (0 sec.)

retryover: Processing at retry over
0 = Stop processing 1 = Executing the next control command

display: Displaying received data
0 = Not displayed

@GEC/@SEC	**Registering/Editing control command (Communication command) (Cont'd)**

recv_1-32: Presence or absence of reply command check

1 to 32

- For getting: Reply command numbers are separated from each other by a comma.
- For setting: The reply command number to be checked can be specified.
  Up to 32 commands can be specified by separating them by a comma.
  Register reply commands in "**@GRC/@SRC Registering/Editing reply command (P.40)**".

Getting example

@GEC,1<CR><LF> @GEC,1,10,2,POWER,7,5057204F4E0D0A,1000, 2,500,0,0,1,2<CR><LF>	Getting the settings registered in Control command number 1 ・ Delay time : 10 ms. ・ Output port : RS-232C ・ Memo : POWER ・ Data size : 7 bytes ・ Command data : PW ON<CR><LF> ・ Time-out duration : 1000 ms. ・ The number of retries : 2 times ・ Retry interval : 500 ms. ・ Retry over : Stop ・ Received data : Not displayed ・ Reply command : Check 1 and 2

Setting example

@SEC,2,0,1,IN1 SELECT,10, 405353572C312C310D0A,0,0,0,1,0<CR><LF>	Setting Control command number 2 as follows: ・ Delay time : 0 ms. ・ Output port : LOOP BACK ・ Memo : IN1 SELECT ・ Data size : 10 bytes ・ Command data : @SSW,1,1<CR><LF> ・ Time-out duration : 0 ms. ・ The number of retries : 0 time ・ Retry interval : 0 ms. ・ Retry over : Execute ・ Received data : Not displayed ・ Reply command : Not check

@GEC/@SEC		**Registering/Editing control command (Displaying received data)**
Getting	Command	@GEC,cmd<CR><LF>
	Response	@GEC,cmd,delay,port,memo,length,command,timeout,retry,interval,retryover, display,delimiter<CR><LF>
Setting	Command	@SEC,cmd,delay,port,memo,length,command,timeout,retry,interval,retryover, display,delimiter<CR><LF>

cmd: Control command number
1 to 64

delay: Delay time
0 to 999999 = 0 sec. to 999.999 sec. 0 (0 sec.)

port: Output port
1 to 16773123

bit	7	6	5	4	3	2	1	0
port	reserve	reserve	reserve	reserve	reserve	reserve	RS-232C	LOOP BACK

bit	15	14	13	12	11	10	9	8
port	LAN 4	LAN 3	LAN 2	LAN 1	reserve	reserve	reserve	reserve

bit	23	22	21	20	19	18	17	16
port	LAN 12	LAN 11	LAN 10	LAN 9	LAN 8	LAN 7	LAN 6	LAN 5

Set [1] for the bit of the output port to send a command. The setting value is converted from binary to decimal. (Since 12 bit to 15 bit are not used, they are always [0]).
Example,
if you want to send a command from RS-232C: [2] (000000000000000000000010 in binary)
if sending a command from LAN1: [4096] (000000000001000000000000 in binary)

memo: Memo
Up to 14 characters from 20 to 7D of ASCII code except for 2C (,) Default: All 20 (Space)

length: Data size of send command (The number of bytes)
0 to 30

command: Send command data (ASCII code)
Specify **length** ×2 digits with 0 to 9, A to F, a to f: (4 bit per digit in hex)

timeout: Time-out duration
0 to 99999 = 0 sec. to 99.999 sec. 0 (0 sec.)

retry: The number of retries
0 to 99 0

interval: Retry interval
0 to 99999 = 0 sec. to 99.999 sec. 0 (0 sec.)

retryover: Processing at retry over
0 = Stop processing 1 = Executing the next control command

display: Displaying received data
1 = In ASCII 2 = In hex

delimiter: Delimiter
2 digits of 0 to 9, A to F, a to f = 4 bit per digit in hex for monitoring delimiter
100 = Not monitor

@GEC/@SEC	**Registering/Editing control command (Displaying received data) (Cont'd)**
Getting example	
@GEC,3<CR><LF> @GEC,3,0,4096,POWER STATUS,9, 47455420504F570D0A,2000,2,200,0,1,0D <CR><LF>	Getting the settings registered in Control command number 3 ・ Delay time : 0 ms. ・ Output port : LAN1 ・ Memo : POWER STATUS ・ Data size : 9 bytes ・ Command data : GET POW<CR><LF> ・ Time-out duration : 2000 ms. ・ The number of retries : 2 times ・ Retry interval : 200 ms. ・ Retry over : Stop ・ Received data : In ASCII ・ Delimiter : **0D** in hex
Setting example	
@SEC,3,0,4096,POWER STATUS,9, 47455420504F570D0A,2000,2,200,0,1,0D <CR><LF>	Setting Control command number 3 as follows: ・ Delay time : 0 ms. ・ Output port : LAN1 ・ Memo : POWER STATUS ・ Data size : 9 bytes ・ Command data : GET POW<CR><LF> ・ Time-out duration : 2000 ms. ・ The number of retries : 2 times ・ Retry interval : 200 ms. ・ Retry over : Stop ・ Received data : In ASCII ・ Delimiter : **0D** in hex

@GEC/@SEC		**Registering/Editing control command (Contact closure)**
Getting	Command	@GEC,cmd<CR><LF>
	Response	@GEC,cmd,delay,port,memo,ccno,cc,pulse(,ccno,cc,pulse・・・)<CR><LF>
Setting	Command	@SEC,cmd,delay,port,memo,ccno,cc,pulse(,ccno,cc,pulse・・・)<CR><LF>

cmd: Control command number
1 to 64

delay: Delay time
0 to 999999 = 0 sec. to 999.999 sec. 0 (0 sec.)

port: Contact closure number
16777216 for contact closure control

memo: Memo
Up to 14 characters from 20 to 7D of ASCII code except for 2C (,) Default: All 20 (Space)

ccno: Contact closure channel

ccno	1	2	3	4	5	6	7	8	9
	CONTACT CLOSURE 1			―	―	―	―	―	―
	CH1	CH2	CH3	―			―	―	―

・ For getting: Only contact closure channels to be used for controlling is returned.
・ For setting: Specify only contact closure channels that are used for controlling.

cc: Contact closure control
0 = OFF 1 = ON 2 = Toggle 3 = Not control

pulse: Pulse width
0 = Hold 100 to 9990 = 100 ms. to 9990 ms. (By 10 ms.)
Pulse width after the completion of contact closure.

Getting example

@GEC,7<CR><LF> @GEC,7,20,16777216,SCREEN UP,1,1,100 <CR><LF>	Getting the settings registered in Control command number 7 ・ Delay time : 20 ms. ・ Memo : SCREEN UP ・ CH1 Contact closure 1: ON for 100 ms. ・ Other contact closures: Not control

Setting example

@SEC,6,50,16777216,PROJECTOR ON,1,0,200, 2,1,0<CR><LF>	Setting Control command number 6 as follows: ・ Delay time : 50 ms. ・ Memo : PROJECTOR ON ・ CH1 Contact closure 1: OFF for 200 ms. ・ CH2 Contact closure 1: ON ・ Other contact closures: Not control

@GEC/@SEC		**Registering/Editing control command (CEC)**
Getting	Command	@GEC,cmd<CR><LF>
	Response	@GEC,cmd,delay,port,memo,error,output,cec<CR><LF>
Setting	Command	@SEC,cmd,delay,port,memo,error,output,cec<CR><LF>
cmd: Control command number 1 to 64		
delay: Delay time 0 to 999999 = 0 sec. to 999.999 sec. 0 (0 sec.)		
port: CEC control 33554432 for CEC control		
memo: Memo Up to 14 characters from 20 to 7D of ASCII code except for 2C (,) Default: All 20 (Space)		
error: Processing if no response from sink device. 0 = Stop processing 1 = Executing the next control command		
output: Output connector 1 = OUT1A		
cec: Control command 0 = Not control 1 = POWER OFF 2 = POWER ON		
Getting example		
@GEC,7<CR><LF> @GEC,7,0,33554432,DISPLAY1 ON,0,1,2 <CR><LF>		Getting the settings registered in Control command number 7 ・ Delay time : 0 ms ・ Memo : DISPLAY1 ON ・ Error : Stop ・ OUT1A sink device : Turning ON
Setting example		
@SEC,7,0,33554432,DISPLAY1 ON,0,1,2 <CR><LF>		Setting Control command number 7 as follows: ・ Delay time : 0 ms ・ Memo : DISPLAY1 ON ・ Error : Stop ・ OUT1A sink device : Turning ON

@GRC/@SRC		**Registering/Editing reply command**
Getting	Command	@GRC,reply<CR><LF>
	Response	@GRC,reply,process,length,command,mask,memo<CR><LF>
Setting	Command	@SRC,reply,process,length,command,mask,memo<CR><LF>
reply: Reply command number 1 to 32		
process: Process 0 = Stop processing 1 = Continue processing 2 = Resending commands		
length: Reply command data size (Bytes) 0 to 30 0		
command: Reply command data Specify **length** ×2 digits with 0 to 9, A to F, a to f: (4 bit per digit in hexadecimal) Default: All 20 (Space)		
mask: Mask data Specify **length** ×2 digits with 0 to 9, A to F, a to f: (4 bit per digit in hexadecimal) FF		
memo: Memo Up to 14 characters from 20 to 7D of ASCII code except for 2C (,) Default: All 20 (Space)		
Getting example		
@GRC,2<CR><LF> @GRC,2,0,1,40,40,NG<CR><LF>	Getting the settings registered in Reply command number 2 ・ Processing : Stop ・ Data size : 1 byte ・ Command data : **40** in hex ・ Mask data : 40 (Checking the second bit from the top) ・ Memo : NG	
Setting example		
@SRC,1,1,9,52454356204F4B0D0A, FFFFFFFFFFFFFFFFF,OK<CR><LF>	Setting Reply command number 1 as follows: ・ Processing : Continue ・ Data size : 9 bytes ・ Command data : RECV OK<CR><LF> ・ Mask data : ALL: FF (Checking all bits) ・ Memo : OK	

@GCC/@SCC		Command link
Getting	Command	@GCC,event<CR><LF>
	Response	@GCC,event,c_1(,c_2,c_3･･･)<CR><LF>
Setting	Command	@SCC,event,c_1(,c_2,c_3･･･)<CR><LF>

event: Control command execution condition
For settable values, see the "**Control command execution condition**" below.

c_1-10: Send command
0 = Not link 1 to 64 = Control command 1 to 64

Getting example

@GCC,30<CR><LF>	Getting control commands that will be executed when the ICP-V is powered on
@GCC,30,5,2,1<CR><LF>	Executing in order of Control command 5, 2, and 1

Setting example

@SCC,30,5,2,1<CR><LF>	Executing in order of Control command 5, 2, and 1 when the ICP-V is powered on

Remarks: Control commands that are registered in one of the following commands can be linked.

- @GEC/@SEC Registering/Editing control command (Communication command) (P.34)
- @GEC/@SEC Registering/Editing control command (Displaying received data) (P.36)
- @GEC/@SEC Registering/Editing control command (Contact closure) (P.38)
- @GEC/@SEC Registering/Editing control command (CEC) (P.39)

Control command execution condition

event	Execution condition
1	COMMAND F1-PLANE A
2	COMMAND F1-PLANE B
3	COMMAND F2-PLANE A
4	COMMAND F2-PLANE B
5	COMMAND F3-PLANE A
6	COMMAND F3-PLANE B
7	COMMAND F4-PLANE A
8	COMMAND F4-PLANE B
9	COMMAND F5-PLANE A
10	COMMAND F5-PLANE B
11	COMMAND F6-PLANE A
12	COMMAND F6-PLANE B
13	COMMAND F7-PLANE A
14	COMMAND F7-PLANE B
15	COMMAND F8-PLANE A
16	COMMAND F8-PLANE B

event	Execution condition
17	COMMAND F9-PLANE A
18	COMMAND F9-PLANE B
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	POWER ON
31	STANDBY
32	

@EXC		**Command execution**
Setting	Command	@EXC,command_1(,command_2･･･command_5)<CR><LF>
command_1-5: Control command 1 to 64 = Control command 1 to 64 A to I = F1 button to F9 button (Can be set only if [0] (COMMAND) or [1] (DISPLAY POWER) is selected for "**@GFA/@SFA Function (P.49)**")		
Setting example1		
@EXC,1,2,3<CR><LF>		Executing control command in order of 1→2→3
Setting example2		
@EXC,6<CR><LF> @EXC,6,REPLY:POWER OFF<CR><LF>		Executing Control command 6 If a command for displaying received data is executed, the received result will be displayed.
Remarks: It may take some time to return a reply command.		

@DEC		**Initializing registered command data/function or link**
Setting	Command	@DEC,no<CR><LF>
no: Commands or links you want to initialize 1 to 64 = Control command 1 to 64 101 to 132 = Reply command 1 to 32 201 to 231 = Control command association 1 to 31 【@GCC/@SCC Command link (P.41)】		
Setting example		
@DEC,230<CR><LF>		Deleting the POWER ON link

User preset

@SCM		**Storing crosspoint memory**
Setting	Command	@SCM,xpoint(,name)<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
name: Crosspoint memory name Up to 10 characters from 20 to 7D from ASCII code Default: All 20 (Space) You can skip this parameter (**name**).		
Setting example		
@SCM,2<CR><LF>		Storing the current video/audio input channels in Crosspoint memory 2 without changing memory name

@SCV		**Storing crosspoint memory (Setting video input channel)**
Setting	Command	@SCV,xpoint(,name)<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
name: Crosspoint memory name Up to 10 characters from 20 to 7D from ASCII code Default: All 20 (Space) You can skip this parameter (**name**).		
Setting example		
@SCV,2<CR><LF>		Storing the current video input channel in Crosspoint memory 2 without changing memory name

@SCA		**Storing crosspoint memory (Setting audio input channel)**
Setting	Command	@SCA,xpoint(,name)<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
name: Crosspoint memory name Up to 10 characters from 20 to 7D from ASCII code Default: All 20 (Space) You can skip this parameter (**name**).		
Setting example		
@SCA,2<CR><LF>		Storing the current audio input channel in Crosspoint memory 2 without changing memory name

@GCM/@ECM		**Editing crosspoint memory**
Getting	Command	@GCM,xpoint<CR><LF>
	Response	@GCM,xpoint,video_1,audio_1,video_2,reserve,video_3,reserve,video_4, reserve,name<CR><LF>
Setting	Command	@ECM,xpoint,video_1,audio_1,video_2,reserve,video_3,reserve,video_4, reserve<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
video_1-4 : Video input channel of OUT1 Window1 to OUT1 Window4 audio_1 : Audio input channel of OUT1 Window1 reserve : -1 (Fixed) -1 = Not control 0 = OFF 1 to 4 = IN1 to IN4		
name: Crosspoint memory name Up to 10 characters from 20 to 7D from ASCII code Default: All 20 (Space)		
Getting example		
@GCM,2<CR><LF> @GCM,2,1,1,2,-1,3,-1,4,-1,PATTERN2 <CR><LF>		Getting the video/audio input channel of Crosspoint memory 2 ・ Video input channel of OUT1 Window1 : IN1 ・ Audio input channel of OUT1 Window1 : IN1 ・ Video input channel of OUT1 Window2 : IN2 ・ Video input channel of OUT1 Window3 : IN3 ・ Video input channel of OUT1 Window4 : IN4 ・ Crosspoint memory name : PATTERN2
Setting example		
@ECM,2,-1,-1,-1,-1,-1,-1,-1,-1<CR><LF>		Setting Crosspoint memory 2 OUT1 Window1 to OUT1 Window4 of input channel to not control

@GCV/@ECV		Editing crosspoint memory (Setting video input channel)
Getting	Command	@GCV,xpoint<CR><LF>
	Response	@GCV,xpoint,video_1,video_2,video_3,video_4,name<CR><LF>
Setting	Command	@ECV,xpoint,video_1,video_2,video_3,video_4<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
video_1-4: Video input channel of OUT1 Window1 to OUT1 Window4 -1 = Not control 0 = OFF 1 to 4 = IN1 to IN4		
name: Crosspoint memory name Up to 10 characters from 20 to 7D from ASCII code Default: All 20 (Space)		
Getting example		
@GCV,2<CR><LF> @GCV,2,1,2,3,4,PATTERN2<CR><LF>		Getting the video input channel of Crosspoint memory 2 ・ OUT1 Window1 : IN1 ・ OUT1 Window2 : IN2 ・ OUT1 Window3 : IN3 ・ OUT1 Window4 : IN4 ・ Crosspoint memory name : PATTERN2
Setting example		
@ECV,2,-1,-1,-1,-1<CR><LF>		Setting Crosspoint memory 2 OUT1 Window1 to OUT1 Window4 of video input channel to not control

@GCA/@ECA		Editing crosspoint memory (Setting audio input channel)
Getting	Command	@GCA,xpoint<CR><LF>
	Response	@GCA,xpoint,audio_1,name<CR><LF>
Setting	Command	@ECA,xpoint,audio_1<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
audio_1: Audio input channel of OUT1 Window1 -1 = Not control 0 = OFF 1 to 4 = IN1 to IN4		
name: Crosspoint memory name Up to 10 characters from 20 to 7D from ASCII code Default: All 20 (Space)		
Getting example		
@GCA,2<CR><LF> @GCA,2,3,PATTERN2<CR><LF>		Getting the audio input channel of Crosspoint memory 2 ・ Audio input channel of OUT1 Window1 : IN3 ・ Crosspoint memory name : PATTERN2
Setting example		
@ECA,2,1<CR><LF>		Setting the OUT1 Window1 audio input channel of Crosspoint memory 2 to IN1

@RCM		**Recalling crosspoint memory**
Setting	Command	@RCM,xpoint<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
Setting example		
@RCM,1<CR><LF>		Recalling the video/audio input channel of Crosspoint memory 1

@RCV		**Recalling crosspoint memory (Setting video input channel)**
Setting	Command	@RCV,xpoint<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
Setting example		
@RCV,1<CR><LF>		Recalling the video input channel of Crosspoint memory 1

@RCA		**Recalling crosspoint memory (Setting audio input channel)**
Setting	Command	@RCA,xpoint<CR><LF>
xpoint: Crosspoint memory number 1 to 16		
Setting example		
@RCA,1<CR><LF>		Recalling the audio input channel of Crosspoint memory 1

@SPM		**Storing preset memory**
Setting	Command	@SPM,preset(,name)<CR><LF>
preset: Preset memory number 1 to 9		
name: Preset memory name Up to 10 characters from 20 to 7D from ASCII code Default: All 20 (Space) You can skip this parameter (**name**).		
Setting example1		
@SPM,2<CR><LF>		Storing the current settings in Preset memory 2 without changing the memory name
Setting example2		
@SPM,2,MEMORY2<CR><LF>		Storing the current settings in Preset memory 2 with the name of MEMORY2

@RPM		**Recalling preset memory**
Setting	Command	@RPM,preset(,xpoint)<CR><LF>
preset: Preset memory number 1 to 9		
xpoint: Input channel selection -1 = Does not recall input channel selection and keeps the current input channel selection 0 = Recalls input channel selection that is stored temporarily in preset memory 1 to 16 = Recalls input channel selection that is stored in one of crosspoint memories 1 to 16. If you skip this parameter, recalls input channel selection that is stored in preset memory.		
Setting example		
@RPM,3<CR><LF>		Recalling Preset memory 3 including input channel selection

@SWM		**Storing pattern memory**
Setting	Command	@SWM,pattern,output(,name)<CR><LF>
pattern: Pattern memory number 1 to 32		
output: Output channel 1 = OUT1		
name: Pattern memory name Up to 10 characters from 20 to 7D from ASCII code Default: All 20 (Space) You can skip this parameter (**name**).		
Setting example1		
@SWM,2,1<CR><LF>		Storing the OUT1 settings in Pattern memory 2 without changing the memory name
Setting example2		
@SWM,2,1,MEMORY2<CR><LF>		Storing the OUT1 settings in Pattern memory 2 with the name of MEMORY2

@RWM		**Recalling pattern memory**
Setting	Command	@RWM,pattern,output(,xpoint)<CR><LF>
pattern: Pattern memory number 1 to 32		
output: Output channel 1 = OUT1		
xpoint: Input channel selection -1 = Does not recall input channel selection and keeps the current input channel selection 1 to 16 = Recalls input channel selection that is stored in one of pattern memories 1 to 16. If you skip this parameter, does not recall input channel selection and keeps the current input channel selection		
Setting example		
@RWM,2,1<CR><LF>		Recalling the Pattern memory 2 to OUT1

@GMN		Last recalled pattern memory
Getting	Command	@GMN,output<CR><LF>
	Response	@GMN,output,pattern<CR><LF>
output: Output channel 1 = OUT1		
pattern: Last pattern memory 1 to 32		
Getting example		
@GMN,1<CR><LF> @GMN,1,2<CR><LF>		Getting the OUT1 last pattern memory Pattern memory 2

Bitmap

@GBM/@SBM		Bitmap output
Getting	Command	@GBM,output,window<CR><LF>
	Response	@GBM,output,window,bitmap(,bitmap・・)<CR><LF>
Setting	Command	@SBM,output,window,bitmap<CR><LF>
output: Output channel 1 = OUT1		
window 0 = All windows 1 to 4 = Window1 to Window4		
bitmap: Bitmap output 0 = OFF 1 = Bitmap 1 2 = Bitmap 2 3 = Bitmap 3 4 = Bitmap 4 Only saved numbers can be specified.		
Getting example		
@GBM,1,1<CR><LF> @GBM,1,1,1<CR><LF>		Getting the bitmap output of OUT1 Window1 Bitmap 1
Setting example		
@SBM,1,1,2<CR><LF>		Outputting Bitmap 2 to OUT1 Window1

Configuring ICP-V

@GFA/@SFA		**Function button assignment**
Getting	Command	@GFA,button<CR><LF>
	Response	@GFA,button,function(,function･･･)<CR><LF>
Setting	Command	@SFA,button,function<CR><LF>
button: Function buttons 0 = All buttons 1 to 9 = F1 to F9 button		
function: Assigning function 0 = COMMAND 1 = DISPLAY POWER 61 to 76 = CROSSPOINT No.1 to CROSSPOINT No.16 81 to 89 = PRESETMEMORY No.1 to PRESETMEMORY No.9		
Getting example		
@GFA,1<CR><LF> @GFA,1,0<CR><LF>		Getting the function that is assigned to F1 button COMMAND
Setting example		
@SFA,1,1<CR><LF>		Setting the F1 button to DISPLAY POWER

@RBT		**Reboot**
Setting	Command	@RBT<CR><LF>
Setting example		
@RBT<CR><LF>		Rebooting the ICP-V

@CLR		**Initialization**
Setting	Command	@CLR,mode<CR><LF>
mode 0 = ALL INITIALIZE (All settings) 1 = NORMAL INITIALIZE (Settings other than communication settings)		
Setting example		
@CLR,0<CR><LF>		Initializing all settings
Remarks: The ICP-V reboots after initialization.		

Status

@GSS		Input signal/Output signal status
Getting	Command	@GSS,connector,mode<CR><LF>
	Response	@GSS,connector,mode,status_1(,status_2,status_3・・)<CR><LF>

connector: I/O connectors
1 to 4 = IN1 to IN4　101 = OUT1A

mode: Target status
If a digital channel ([1] to [4] above) is selected,
connector = 1 to 4(Input connector)
0 = All of 1 to 4　1 = Input signal type[*1]
2 = Video input signal resolution[*2]　3 = Input audio signal format[*3]
4 = Presence of HDCP[*4]
connector = 101 (Output connector)
0 = All of 1 to 3　1 = HDCP output[*5]
2 = Output signal type[*6]　3 = Error code[*7]

status_1-4: I/O signal status

[*1] Input signal type

Hxx	HDMI signal is input. xx stands for color depth (24, 30, or 36).
D	DVI signal is input.
N	No signal is input.

[*2] Video input signal type

1920x1080p 60.00Hz	Signal is input, and Horizontal resolution x Vertical resolution are returned.
NO SIGNAL	No video signal is input.

[*3] Input audio signal type

LINEAR PCM 48kHz	LPCM signal is input, which returns the sampling frequency.
LINEAR PCM 48kHz (MULTI CHANNEL)	Multi-channel LPCM signal is input, which returns the sampling frequency.
COMPRESSED AUDIO	Bitstream audio (such as Dolby Digital and DTS) is input.
NO SIGNAL	No audio signal is input.

[*4] HDCP input type

HDCP1.4	HDCP 1.4 input
HDCP2.2 Type0	HDCP 2.2 Type 0 input
HDCP2.2 Type1	HDCP 2.2 Type 1 input
HDCP NOT ENCRYPTED	No HDCP is input
NO SIGNAL	No video signal is input.

@GSS	Input signal/Output signal status (Cont'd)

*5 HDCP output type

HDCP1.4	HDCP 1.4 output
HDCP2.2	HDCP 2.2 output
HDCP2.2 Type0	HDCP 2.2 Type 0 output
HDCP2.2 Type1	HDCP 2.2 Type 1 output
HDCP NOT ENCRYPTED	No HDCP is output
HDCP ERROR	HDCP authentication failed
DURING AUTHENTICATION	Being HDCP encrypted
SIGNAL STOPPED	Video output stops
UNCONNECTED	Sink device is not connected.

*6 Output signal type

Hxx	HDMI signal is output. xx stands for color depth (24, 30, or 36).
D	DVI signal is output
C	Being HDCP encrypted and no video is output.
X	Video output stops
N	Sink device is not connected.

@GSS	Input signal/Output signal status (Cont'd)

*7 Error codes below are returned in the following order: Video output and digital audio from output connector, audio output from analog audio output connector
If "**Window displayed/hide (P.17)**" is set to [1] (Displayed) and an error occurs in several windows, errors are displayed in ascending order of window.

Error code	Video output status	Audio output status
0	No error	
1	"**@GDB/@SDB Video mute (P.20)**" is set to [1] (ON).	"**@GAM/@SAM Mute (P.27)**" is set to [1] (ON).
2	Source device is not connected. (No DDC 5 V signal is input.)	
3	No video signal is input.	No audio signal is input.*8
4	Video or audio output of the source device is muted.	
5	Signal with HDCP is input but sink device is HDCP incompliant (This error code may also be returned during HDCP authentication)	―
6	Source device does not output the returned information (Packets) for output of video or audio.	
7	Signal that is not supported by ICP-V (Dot clock is out of range) is input.	Since Bitstream audio (such as Dolby Digital and DTS) is input, audio cannot be output (Bitstream audio can be output only to sink devices supporting these audio).
8	―	"**@GUC/@SUC Audio output (P.26)**" is set to [0] (OFF).
9	―	[OUTPUT SETTINGS]→[SIGNAL FORMAT] is set to DVI MODE or a sink device that does not support audio is connected.*8
A	Input channel selection is set to OFF.	

*8 Analog audio input status cannot be detected. Even if [0] is returned, audio may not be output with analog input selected.

Getting example1

@GSS,1,0<CR><LF> @GSS,1,0,H30,1920x1080p 60.00Hz, LINEAR PCM 48kHz,HDCP1.4<CR><LF>	Getting IN1 all statuses ・ Input signal type : 30-BIT COLOR HDMI signal ・ Video input signal : 1920x1080p 60.00Hz ・ Audio input signal : LINEAR PCM 48kHz ・ HDCP : HDCP 1.4

Getting example2

@GSS,101,0<CR><LF> @GSS,101,0,HDCP2.2,H24,000<CR><LF>	Getting OUT1A all statuses ・ HDCP : HDCP 2.2 ・ Output signal type : 24-BIT COLOR HDMI signal ・ Error code : Output correctly

@GES		Viewing sink device EDID
Getting	Command	@GES,connector,mode<CR><LF>
	Response	@GES,connector,mode,status_1(,status_2,status_3,status_4)<CR><LF>

connector: Output connector
1 = OUT1A

mode: Target status
0 = All of 1 to 4
1 = Sink device name
2 = Recommended resolution and dot clock
3 = HDMI, video signal format, and color depth support status[*1]
4 = Audio sampling frequency, bit length, the number of channels, and support status of audio signal format[*2]

status_1-4: EDID status
SIGNAL STOPPED : Video output stops
UNCONNECTED : Sink device is not connected.
EDID READ ERROR : Reading EDID fails.

[*1] For sink device that does not support HDMI : [DVI] is returned.
For sink device that supports HDMI : [HDMI] is returned, and then supported video signal format (RGB, YCbCr 4:2:2, YCbCr 4:4:4, and YCbCr 4:2:0 separated with */*) and supported color depths (24, 30, and 36, separated with */*) are returned in that order.

[*2] For sink device that does not support audio : [AUDIO NOT SUPPORT] is returned.
For sink device that supports audio : [LINEAR PCM] is returned, and then supported sampling frequencies (32, 44.1, 48, 88.2, 96, 176.4, and 192, separated with */*), bit length (16, 20, and 24, separated with */*), the number of channels (One of 1 to 8), and [COMPRESSED AUDIO SUPPORT] (If Bitstream audio is supported) are returned in that order.

Getting example

@GES,1,0<CR><LF> @GES,1,0,ICP-V41U,1920x1080 148.50MHz, DVI,AUDIO NOT SUPPORT<CR><LF>	Getting the EDID of the sink device connected to OUT1A ・ Sink device name : ICP-V41U ・ Recommended resolution : 1920x1080 ・ Dot clock : 148.50 MHz ・ HDMI : Not supported ・ Audio : Not supported

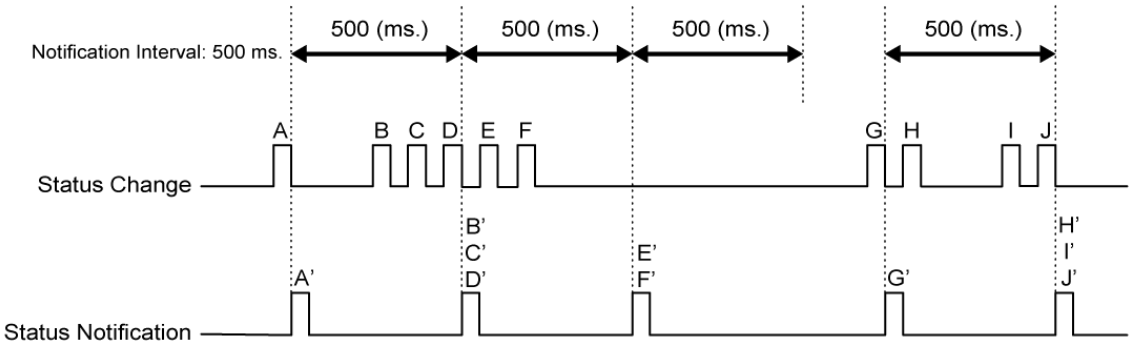
@GHC		**System check**
Getting	Command	@GHC<CR><LF>
	Response	@GHC,voltage,temp<CR><LF>
voltage: Internal voltage status 0 = Normal 1 = Abnormal		
temp: Internal temperature status 0 = Normal 1 = Abnormal		
Getting example		
@GHC<CR><LF> @GHC,1,0<CR><LF>		Getting the system check result ・ Internal voltage status : Abnormal ・ Internal temperature status : Normal

@GIV		**Device information**
Getting	Command	@GIV<CR><LF>
	Response	@GIV,id,ver<CR><LF>
id: Model number		
ver: Firmware version		
Getting example		
@GIV<CR><LF> @GIV,ICP-V41U,01.00.00<CR><LF>		Getting the product information ・ Model number : ICP-V41U ・ Firmware version : 01.00.00

Unsolicited status notification

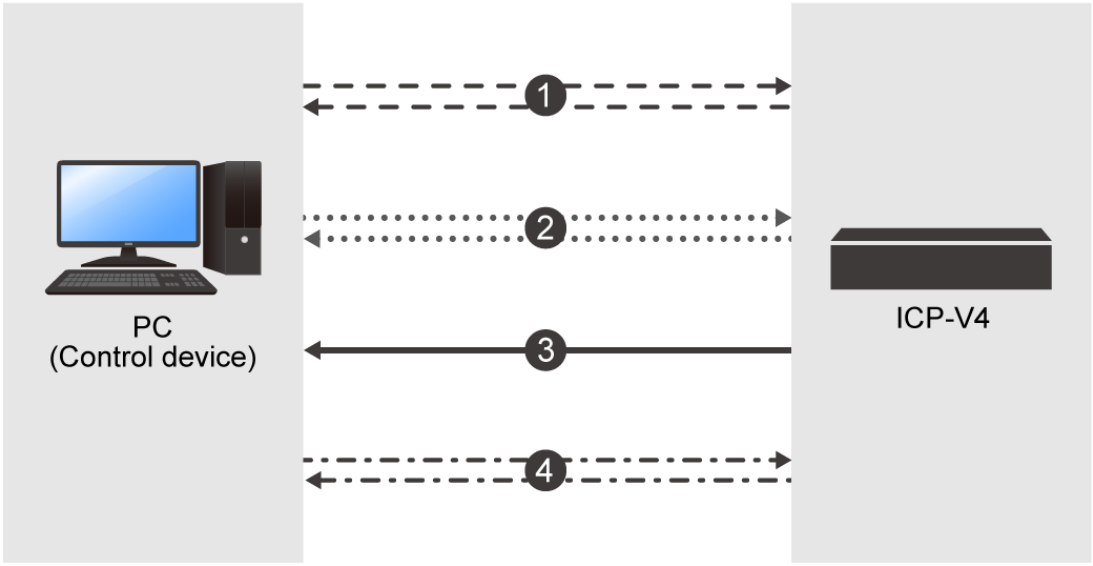
Changes in I/O and internal statuses are notified to external devices over LAN communication (UDP).
To enable the unsolicited notification, set the notification interval ("**@SPH Notification interval (P.57)**") to a value other than [0] (OFF).

If no change is detected during the interval, status is sent immediately after detecting a change.



■ **Example:**

1. Set the destination using "**@GDA/@SDA IP address/UDP port number (P.56)**".
2. Set the notification interval using "**@SPH Notification interval (P.57)**".
3. If any status changes, "**@PSH Unsolicited status notification (P.58)**" is sent to the set the IP address destination over UDP protocol.
4. Get the changes in input signal, output signal, alarm status, and system status using "**@AIN Input signal status (For each connector) (P.59)**", "**@AOT Output signal status (For each channel) (P.61)**", "**@GAA Alarm status (P.63)**", and "**@GSY System status (P.63)**".



@GDA/@SDA		**IP address/UDP port number of destination**
Getting	Command	@GDA,reserve<CR><LF>
	Response	@GDA,reserve,unit_1,unit_2,unit_3,unit_4,port<CR><LF>
Setting	Command	@SDA,reserve,unit_1,unit_2,unit_3,unit_4,port<CR><LF>
reserve: 1 (Fixed)		
unit_1 to unit_4 = Upper bit of the IP address to Lower bit of the IP address 0 to 255 192.168.1.200		
port: UDP port number 1 to 65535 1147		
Getting example		
@GDA,1<CR><LF> @GDA,1,192,168,1,200,1147<CR><LF>		Getting the IP address/UDP port number of destination ・ IP address : 192.168.1.200 ・ UDP port number : 1147
Setting example		
@SDA,1,192,168,1,201,1148<CR><LF>		Set the IP address/UDP port number of destination to 192.168.1.201 and 1148, respectively.
Remarks: If status notification function is enabled (“**@GPH/@SPH Notification interval (P.57)**” is set to a value other than [0] (OFF)), this command cannot be set.		

@GPH/@SPH		**Notification interval**
Getting	Command	@GPH<CR><LF>
	Response	@GPH,time,save<CR><LF>
Setting	Command	@SPH,time(,save)<CR><LF>

time: Notification time

0 = OFF 1 to 50 = 100 ms. to 5000 ms.

time	ON/OFF	Time
0	OFF	―
1	ON	100 ms.
2	ON	200 ms.
3	ON	300 ms.
4	ON	400 ms.
5	ON	500 ms.
6	ON	600 ms.
7	ON	700 ms.
8	ON	800 ms.
9	ON	900 ms.
10	ON	1000 ms.

to

time	ON/OFF	Time
40	ON	4000 ms.
41	ON	4100 ms.
42	ON	4200 ms.
43	ON	4300 ms.
44	ON	4400 ms.
45	ON	4500 ms.
46	ON	4600 ms.
47	ON	4700 ms.
48	ON	4800 ms.
49	ON	4900 ms.
50	ON	5000 ms.

save: Saving setting

0 = Not saving (the notification time will be set to [0] automatically at the next start-up.)

1 = Saving the setting

If this parameter is not specified, the setting is not saved.

Getting example

@GPH<CR><LF> @GPH,5,1<CR><LF>	Getting notification time ・ Notification time : 500 ms. ・ Saving the setting : Saving the interval setting

Setting example

@SPH,50<CR><LF>	Setting the interval to 5000 ms. and saving the setting

@PSH		**Unsolicited status notification**
Getting		@PSH,in,out,alarm,system<CR><LF>

in: Input status

0 = Not change 1 to FF= Changes

bit	7	6	5	4	3	2	1	0
in					IN4	IN3	IN2	IN1

[1] appears for detected channel, the value is displayed in hex.

1 : Changes in IN1

A: Changes in IN4 and IN2

out: Output status

0 = Not change 1 to FF = Changes

bit	7	6	5	4	3	2	1	0
out					OUT2B	OUT2A	OUT1B	OUT1A

[1] appears for detected channel, the value is displayed in hex.

1: Changes in OUT1A

alarm: Alarm status

0 = Not change 1 = Changes

system: System status

0 = Not change 1 = Changes

Getting example

@PSH,1,0,0,0<CR><LF>	Getting the status change ・ Input status : IN1 ・ Output status : No changes ・ Alarm status : No changes ・ System status : No changes

Remarks: Only if status notification function is enabled ("**@GPH/@SPH Notification interval (P.57)**" is set to a value other than [0] (OFF)), the command can be sent.

@AIN		Input signal status (For each connector)
Getting	Command	@AIN,in<CR><LF>
	Response	@AIN,status_1,status_2,status_3,status_4,status_5,status_6,status_7,status_8, status_9,status_10,status_11,status_12,status_13,status_14,status_15, status_16,status_17,status_18,status_19<CR><LF>
in: Input connector 1 to 4 = IN1 to IN4		
status_1: Input connector 1 to 4 = IN1 to IN4		
status_2: Model number		
status_3: Firmware version		
status_4: The number of valid data = 15 (Fixed)		
status_5: 1 (Fixed)		
status_6: Horizontal resolution of input video 0 = No signal is input. 1920 = 1920 pixels		
status_7: Vertical resolution of input video 0 = No signal is input. 1080 = 1080 lines		
status_8: Vertical sync frequency of input video 0 = No signal is input. 59.94 = 59.94 Hz		
status_9: Progressive or interlace scan 0 = No signal is input. 1 = Progressive 2 = Interlace		
status_10: HDMI/DVI mode of input video 0 = No signal is input. 1 = DVI 2 = HDMI		
status_11: Video signal format of input video 0 = No signal is input. 1 = RGB 2 = YCbCr 4:2:2 3 = YCbCr 4:4:4 4 = YCbCr 4:2:0 255 = Unknown		
status_12: Color range of input video 0 = No signal is input. 1 = Limited range 2 = Full range		
status_13: Color depth of input video 0 = No signal is input. 1 = 24bit/pixel (8bit/component) 2 = 30bit/pixel (10bit/component) 3 = 36bit/pixel (12bit/component)		
status_14: DDC 5 V input status 0 = No signal is input 1 = Signal is input		
status_15: Presence of HDCP 0 = No signal is input. 1 = Without HDCP 2 = HDCP 1.4 3 = HDCP 2.2 Type 0 4 = HDCP 2.2 Type 1		
status_16: Format of input audio 0 = No signal is input. 1 = LPCM 2 = Bitstream audio		
status_17: Sampling frequency of input audio 0 = No signal is input. 1 = 22.05 kHz 2 = 24 kHz 3 = 32 kHz 4 = 44.1 kHz 5 = 48 kHz 6 = 88.2 kHz 7 = 96 kHz 8 = 176.4 kHz 9 = 192 kHz 10 = 768 kHz 11 = 64 kHz 12 = 128 kHz 255 = Unknown		
status_18: Bit length of input audio 0 = No signal is input. 1 = 16 bit 2 = 17 bit 3 = 18 bit 4 = 19 bit 5 = 20 bit 6 = 21 bit 7 = 22 bit 8 = 23 bit 9 = 24 bit 255 = Unknown		
status_19: HBR mode of input audio 0 = No signal is input. 1 = More other than HBR (LPCM, other Bitstream audio) 2 = HBR mode		

@AIN	**Input signal status (For each channel) (Cont'd)**
Getting example	
@AIN,1<CR><LF> @AIN,1,ICP-V41U,01.00.00, 15,1,1920,1080,59.94,1,2,1,2, 1,1,2,1,5,9,1<CR><LF>	Getting IN input signal status ・ Input connector : IN1 ・ Model number : ICP-V41U ・ Firmware version : 01.00.00 ・ The number of valid data : 15 ・ 1 (Fixed) ・ Horizontal resolution of input video : 1920 pixels ・ Vertical resolution of input video : 1080 lines ・ Vertical sync frequency of input video : 59.94 Hz ・ Progressive or interlace scan : Progressive ・ HDMI/DVI mode of input video : HDMI ・ Video signal format of input video : RGB ・ Color range of input video : Full range ・ Color depth of input video : 24bit/pixel (8bit/component) ・ DDC 5 V input status : Signal is input ・ Presence of HDCP : HDCP 1.4 ・ Format of input audio : LPCM ・ Sampling frequency of input audio : 48 kHz ・ Bit length of input audio : 24 bit ・ HBR mode of input audio : More other than HBR

@AOT		Output signal status (For each channel)
Getting	Command	@AOT,out<CR><LF>
	Response	@AOT,status_1,status_2,status_3,status_4,status_5,status_6,status_7,status_8, status_9,status_10,status_11,status_12,status_13,status_14,status_15, status_16,status_17,status_18,status_19,status_20,status_21,status_22, status_23,status_24,status_25<CR><LF>
out: Output connector 1 = OUT1A		
status_1: Output connector 1 = OUT1A		
status_2: Model number		
status_3: Firmware version		
status_4: The number of valid data = 21 (Fixed)		
status_5: 1 (Fixed)		
status_6: Select input (Window1) 0 = OFF 1 to 4 = IN1 to IN4		
status_7: Horizontal resolution of output video 0 = No signal is output. 1920 = 1920 pixels		
status_8: Vertical resolution of output video 0 = No signal is output. 1080 = 1080 lines		
status_9: Vertical sync frequency of output video 0 = No signal is output. 59.94 = 59.94 Hz		
status_10: Progressive or interlace scan 0 = No signal is output. 1 = Progressive 2 = Interlace		
status_11: HDMI/DVI mode of output video 0 = No signal is output. 1 = DVI 2 = HDMI		
status_12: Video signal format of output video 0 = No signal is output. 1 = RGB 2 = YCbCr 4:2:2 3 = YCbCr 4:4:4 4 = YCbCr 4:2:0		
status_13: Color range of output video 0 = No signal is output. 1 = Limited range 2 = Full range		
status_14: Color depth of output video 0 = No signal is output. 1 = 24bit/pixel (8bit/component) 2 = 30bit/pixel (10bit/component) 3 = 36bit/pixel (12bit/component)		
status_15: Hot plug detection 0 = Hot plug is detected. 1 = No hot plug is detected.		
status_16: HDCP encryption 0 = No HDCP encryption 1 = HDCP is being encrypted. 2 = HDCP is being encrypted. 3 = HDCP is being encrypted. 4 = HDCP encryption ends normally. 5 = HDCP encryption ends abnormally.		
status_17: HDCP output 0 = No HDCP output 1 = HDCP 1.4 2 = HDCP 2.2 Type 0 3 = HDCP 2.2 Type 1		
status_18: Format of output audio 0 = No signal is output. 1 = LPCM 2 = Bitstream audio		
status_19: Reading EDID 0 = Sink device is not connected. 1 = Failed 2 = Completed 255 = N/A		
status_20: HDMI/DVI mode (Sink) 0 = Sink device is not connected. 1 = DVI 2 = HDMI (LPCM supported) 3 = HDMI (Bitstream audio supported) 255 = N/A		

@AOT | **Output signal status (For each channel) (Cont'd)**

status_21: Video signal format (Sink)

bit	7	6	5	4	3	2	1	0
Color	N/A	-	-	-	YCbCr 4:2:0	YCbCr 4:4:4	YCbCr 4:2:2	RGB

- "1" appears for supported video signal format, the value is displayed in decimal.
- [0] : Sink device is not connected.
- [128] : N/A

status_22: Color depth (Sink)

0 = Sink device is not connected. 1 = 24bit/pixel (8bit/component)
2 = 30bit/pixel (10bit/component) 3 = 36bit/pixel (12bit/component) 255 = N/A

status_23: HDCP (Sink)

0 = Sink device is not connected. 1 = HDCP is not supported. 2 = HDCP 1.4 supported
3 = HDCP 2.2 supported 255 = N/A

status_24: SCDC (Sink)

0 = Sink device is not connected. 1 = SCDC is not supported. 2 = SCDC supported 255 = N/A

status_25: HDR (Sink)

0 = Sink device is not connected. 1 = HDR is not supported. 2 = HDR supported 255 = N/A

Getting example

@AOT,1<CR><LF>
@AOT,1,ICP-V41U,
01.00.00,21,1,1,1920,
1080,59.94,1,2,1,2,1,1,4,
1,1,2,2,7,1,2,2,2
<CR><LF>

Getting the OUT1A output signal statuses

- Output connector : OUT1A
- Model number : ICP-V41U
- Firmware version : 01.00.00
- The number of valid data : 21
- 1 (Fixed)
- Select input (Window1) : IN1
- Horizontal resolution of output video : 1920 pixels
- Vertical resolution of output video : 1080 lines
- Vertical sync frequency of output video : 59.94 Hz
- Progressive or interlace scan : Progressive
- HDMI/DVI mode of output video : HDMI
- Video signal format of output video : RGB
- Color range of output video : Full range
- Color depth of output video : 24bit/pixel (8bit/component)
- Hot plug detection : Hot plug is detected.
- HDCP encryption : HDCP encryption ends normally.
- HDCP output : HDCP 1.4
- Format of output audio : LPCM
- Reading EDID : Completed
- HDMI/DVI mode (Sink) : HDMI (LPCM supported)
- Video signal format (Sink) : RGB, YCbCr 4:4:4, and YCbCr 4:2:2 supported
- Color depth (Sink) : 24bit/pixel (8bit/component)
- HDCP (Sink) : HDCP 1.4 supported
- SCDC (Sink) : SCDC supported
- HDR (Sink) : HDR supported

@GAA		**Alarm status**
Getting	Command	@GAA<CR><LF>
	Response	@GAA,status_1,status_2,status_3,status_4,status_5<CR><LF>
status_1: Model number		
status_2: Firmware version		
status_3: The number of valid data = 2 (Fixed)		
status_4: Power voltage status 0 = Normal 1 = Abnormal		
status_5: Temperature status 0 = Normal 1 = Abnormal		
Getting example		
@GAA<CR><LF> @GAA,ICP-V41U,01.00.00,2,0,0<CR><LF>		Getting alarm status ・ Model number : ICP-V41U ・ Firmware version : 01.00.00 ・ The number of valid data : 2 ・ Power voltage status : Normal ・ Temperature status : Normal

@GSY		**System status**
Getting	Command	@GSY<CR><LF>
	Response	@GSY,status_1,status_2,status_3,status_4<CR><LF>
status_1: Model number		
status_2: Firmware version		
status_3: The number of valid data = 1 (Fixed)		
status_4: Last pattern memory 1 to 32		
Getting example		
@GSY<CR><LF> @GSY,ICP-V41U,01.00.00,1,1<CR><LF>		Getting system status ・ Model number : ICP-V41U ・ Firmware version : 01.00.00 ・ The number of valid data : 1 ・ Last pattern memory : 1

Multi-Window Video Processor

ICP-V41U

Command Guide

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