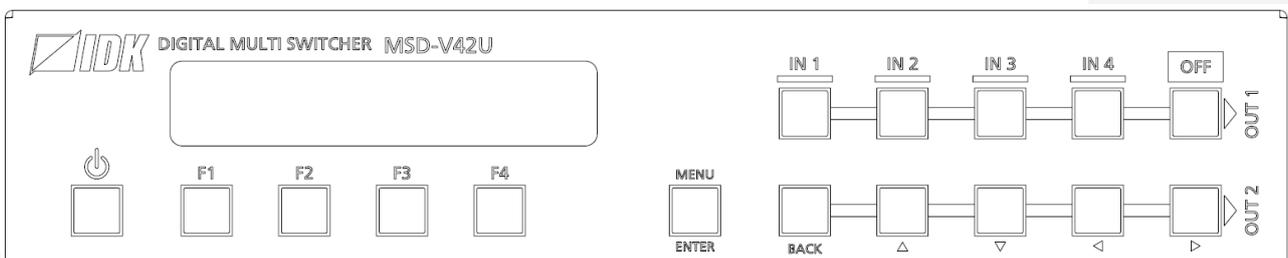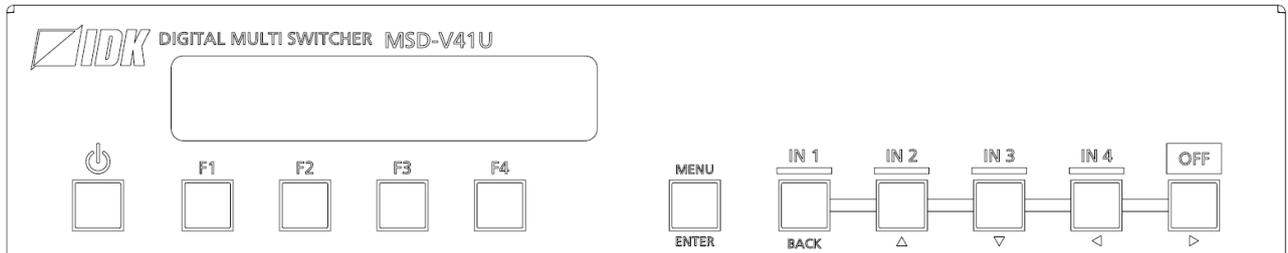**Digital Multi Switcher**

MSD-V4 Series

MSD-V41U/MSD-V42U
MSD-V41UC/MSD-V42UC
MSD-V41UT/MSD-V42UT

Command Guide
Ver.1.5.0

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

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.	

Trademarks

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: Digital Multi Switcher Model Name: MSD-V41U, MSD-V42U, MSD-V41UC, MSD-V42UC, MSD-V41UT, MSD-V42UT **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 MSD-V4 series switchers (hereafter referred to as MSD-V4) can be remotely configured and controlled via RS-232C communication or LAN communication.

This guide describes the operation of the MSD-V4 via commands based on the MSD-V42U/MSD-V42UC/MSD-V42UT.

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.
If RS-232C communication of HDBaseT/10GbE input or output, the maximum time depends on the system configuration.

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 MSD-V4.
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.
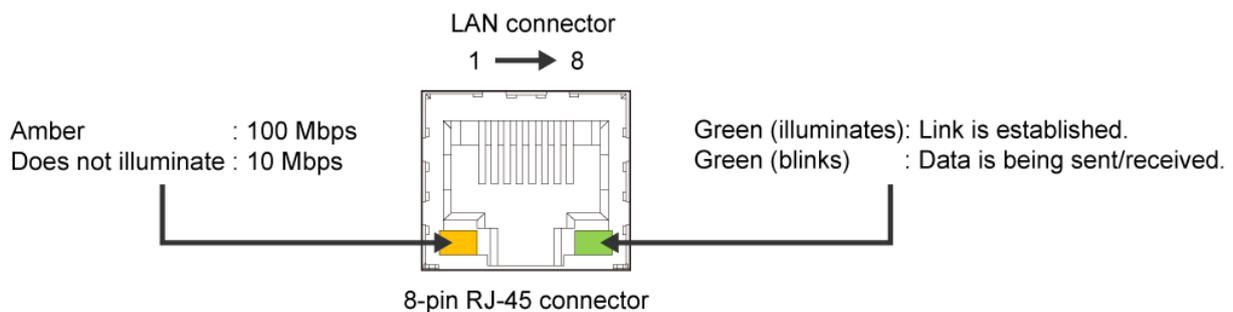
LAN communication

It takes about 12 seconds at maximum to be ready for normal operation after powering up.
If LAN communication of HDBaseT/10GbE input or output, the maximum time depends on the system configuration.

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

LAN connector
1 → 8

Amber : 100 Mbps
Does not illuminate : 10 Mbps

Green (illuminates): Link is established.
Green (blinks) : Data is being sent/received.

8-pin RJ-45 connector

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

The number of TCP-IP connections

The MSD-V4 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 MSD-V4 incorporates a timeout window for each port. If any port is inactive for more than 30 seconds (by default), it will be closed automatically.
You can change the timeout setting using "**@GLD/@SLD Automatic disconnection time (Timeout) (P.30)**".

Command list

■ **Bitmap**

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■ **Configuring MSD-V4**

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■ **Status**

@GSS	Input signal/Output signal status	48
@GES	Viewing sink device EDID	51
@GHC	System check	52
@GIV	Device information	52

■ **Unsolicited status notification**

@GDA/@SDA	IP address/UDP port number of destination	54
@GPH/@SPH	Notification interval	55
@PSH	Unsolicited status notification	56
@AIN	Input signal status (For each connector)	57
@AOT	Output signal status (For each channel)	59
@GAA	Alarm status	61

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

@GSW/@SSW		Switching video and audio channel simultaneously
Getting	Command	@GSW<CR><LF>
	Response	@GSW,video_main_1,audio_main_1,video_pinp_1,video_main_2,audio_main_2, video_pinp_2<CR><LF>
Setting	Command	@SSW,input,window(,input,window···)<CR><LF>
video_main_1-2 : Video input channel of the OUT1/OUT2 main window audio_main_1-2 : OUT1/OUT2 audio input channel video_pinp_1-2 : Video input channel of the OUT1/OUT2 PinP window 　0 = INOFF　　1 to 4 = IN1 to IN4		
input: Video/audio input channel 　0 = INOFF　　1 to 4 = IN1 to IN4		
window: Video/audio window 　0　 = All windows 　1　 = OUT1 main window　　2　 = OUT2 main window 　201 = OUT1 PinP window　　202 = OUT2 PinP window		
Getting example		
@GSW<CR><LF> @GSW,2,2,1,1,3,4<CR><LF>		Getting the video/audio input channel ・ Video input channel of the OUT1 main window : IN2 ・ OUT1 audio input channel　　　　　　　　　　 : IN2 ・ Video input channel of the OUT1 PinP window : IN1 ・ Video input channel of the OUT2 main window : IN1 ・ OUT2 audio input channel　　　　　　　　　　 : IN3 ・ Video input channel of the OUT2 PinP window : IN4
Setting example		
@SSW,1,0<CR><LF>		Setting the input channel of all windows to IN1

@GSV/@SSV		Switching video channel
Getting	Command	@GSV<CR><LF>
	Response	@GSV,video_main_1,video_pinp_1,video_main_2,video_pinp_2<CR><LF>
Setting	Command	@SSV,input,window(,input,window···)<CR><LF>

video_main_1-2：Video input channel of the OUT1/OUT2 main window
video_pinp_1-2：Video input channel of the OUT1/OUT2 PinP window
　0 = INOFF　　1 to 4 = IN1 to IN4

input: Video input channel
　0 = INOFF　　1 to 4 = IN1 to IN4

window: Video window
　0　　= All windows
　1　　= OUT1 main window　　2　　= OUT2 main window
　201 = OUT1 PinP window　　202 = OUT2 PinP window

Getting example	
@GSV<CR><LF> @GSV,2,1,3,4<CR><LF>	Getting the video input channel ・ OUT1 main window：IN2 ・ OUT1 PinP window：IN1 ・ OUT2 main window：IN3 ・ OUT2 PinP window：IN4

Setting example	
@SSV,1,0<CR><LF>	Setting the video input channel of all windows to IN1

@GSA/@SSA		Switching audio channel
Getting	Command	@GSA<CR><LF>
	Response	@GSA,audio_main_1,audio_main_2<CR><LF>
Setting	Command	@SSA,input,output(,input,output)<CR><LF>

audio_main_1-2: OUT1/OUT2 audio input channel
　0 = INOFF　　1 to 4 = IN1 to IN4

input: Audio input channel
　0 = INOFF　　1 to 4 = IN1 to IN4

output: Audio output channel
　0 = All outputs　　1 = OUT1　　2 = OUT2

Getting example	
@GSA<CR><LF> @GSA,1,2<CR><LF>	Getting the audio input channel ・ OUT1: IN1 ・ OUT2: IN2

Setting example	
@SSA,1,1<CR><LF>	Setting the OUT1 audio input channel to IN1

Output resolution

@GOT/@SOT		Output resolution
Getting	Command	@GOT,output<CR><LF>
	Response	@GOT,output,auto,resolution(,auto,resolution)<CR><LF>
Setting	Command	@SOT,output,auto,resolution<CR><LF>
output: Output channel 0 = All outputs 1 = OUT1 2 = OUT2		
auto: Output resolution mode 0 = Resolution selected below (**resolution**) 1 = AUTO_A 2 = AUTO_B		

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(,aspect)<CR><LF>
Setting	Command	@SUM,output,aspect<CR><LF>
output: Output channel 0 = All outputs 1 = OUT1 2 = OUT2		
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,0<CR><LF> @GUM,0,5,2<CR><LF>		Getting the aspect ratio for sink device ・ OUT1 : 16:9 ・ OUT2 : 4:3
Setting example		
@SUM,1,5<CR><LF>		Setting the OUT1 aspect ratio for sink device to 16:9

@GSD/@SSD		Image position/Image size
Getting	Command	@GSD,output<CR><LF>
	Response	@GSD,output,h_position,v_position,h_size,v_size(,h_position,v_position, h_size···)<CR><LF>
Setting	Command	@SSD,output,h_position,v_position,h_size,v_size<CR><LF>

output: Output channel
   0   = All outputs
   1   = OUT1 main window   2   = OUT2 main window
   201 = OUT1 PinP window 202 = OUT2 PinP window		

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		
@GSD,1<CR><LF> @GSD,1,0,0,10000,10000<CR><LF>		Getting the image position/image size of the OUT1 main window ・ Horizontal/Vertical image position : 0.00% ・ Horizontal/Vertical image size : 100.00%
Setting example		
@SSD,1,0,0,10000,10000<CR><LF>		Setting the image position/image size of the OUT1 main window as follows: ・ Horizontal/Vertical image position : 0.00% ・ Horizontal/Vertical image size : 100.00%

@GTP/@STP		Test pattern
Getting	Command	@GTP,output<CR><LF>
	Response	@GTP,output,pattern,scroll(,pattern,scroll)<CR><LF>
Setting	Command	@STP,output,pattern,scroll<CR><LF>
output: Output channel 　0 = All outputs　　1 = OUT1　　2 = OUT2		
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　　　　13 = OUTPUT FRAME 　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

@GPI/@SPI		PinP output
Getting	Command	@GPI,output<CR><LF>
	Response	@GPI,output,pinp_display(,pinp_display)<CR><LF>
Setting	Command	@SPI,output,pinp_display<CR><LF>
output: Output channel 　0 = All outputs　　1 = OUT1　　2 = OUT2		
pinp_display: PinP output 　0 = OFF　　1 = ON		
Getting example		
@GPI,1<CR><LF> @GPI,1,1<CR><LF>		Getting the OUT1 PinP output ON
Setting example		
@SPI,1,0<CR><LF>		Setting the OUT1 PinP output to OFF

Output

@GVO/@SVO		Signal output
Getting	Command	@GVO,output<CR><LF>
	Response	@GVO,output,signal(,signal・・・)<CR><LF>
Setting	Command	@SVO,output,signal<CR><LF>
output: Output connector 0 = All outputs 1 = OUT1A 2 = OUT2A 201 = OUT1B 202 = OUT2B		
signal: Signal output 0 = OFF 1 = ON		
Getting example		
@GVO,201<CR><LF>		Getting the OUT1B signal output
@GVO,201,1<CR><LF>		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(,mute・・・)<CR><LF>
Setting	Command	@SDB,output,mute<CR><LF>
output: Output connector 0 = All outputs 1 = OUT1A 2 = OUT2A 201 = OUT1B 202 = OUT2B		
mute: Video mute 0 = OFF 1 = ON		
Getting example		
@GDB,201<CR><LF>		Getting the OUT1B video mute
@GDB,201,1<CR><LF>		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(,hdcp···)<CR><LF>
Setting	Command	@SEN,output,hdcp<CR><LF>
output: Output connector		
0 = All outputs 1 = OUT1A 2 = OUT2A 201 = OUT1B 202 = OUT2B Available only for HDMI/HDBaseT connector		
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,201<CR><LF> @GEN,201,3<CR><LF>		Getting the OUT1B HDCP authentication HDCP 2.2
Setting example		
@SEN,1,2<CR><LF>		Setting the OUT1A HDCP authentication to HDCP 1.4
Remarks: If 10GbE connector is specified for an output, [-2] (invalid) is returned for getting command.		

@HAU		HDCP re-encryption
Setting	Command	@HAU,output<CR><LF>
output: Output connector		
1 = OUT1A 2 = OUT2A 201 = OUT1B 202 = OUT2B Available only for HDMI/HDBaseT connector		
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(,cec···)<CR><LF>
Setting	Command	@SCE,output,cec<CR><LF>
output: Output connector		
0 = All outputs 1 = OUT1A 2 = OUT2A 201 = OUT1B 202 = OUT2B Available only for HDMI/HDBaseT connector		
cec: CEC connection		
0 = Not connected 1 = Input channel selected for main window 2 = IN1 3 = IN2 4 = IN3 5 = IN4		
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
Remarks: If 10GbE connector is specified for an output, [-2] (invalid) is returned for getting command.		

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,-5000,2000,10000,10000<CR><LF>		Getting the IN1 image position/image size ・　Horizontal image position　　: -50.00% ・　Vertical image position　　: 20.00% ・　Horizontal/Vertical image size : 100.00%
Setting example		
@SNW,1,-5000,2000,10000,10000<CR><LF>		Setting the IN1 image position/image size as follows: ・　Horizontal image position　　: -50.00% ・　Vertical image position　　: 20.00% ・　Horizontal/Vertical image size : 100.00%

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 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

@GAU/@SAU		Signal ON priority
Getting	Command	@GAU,output<CR><LF>
	Response	@GAU,output,priority_in1,priority_in2,priority_in3,priority_in4<CR><LF>
Setting	Command	@SAU,output,priority_in1,priority_in2,priority_in3,priority_in4<CR><LF>

output: Output channel
  0   = All outputs*
  1   = OUT1 main window   2   = OUT2 main window
  201 = OUT1 PinP window   202 = OUT2 PinP window
  *Only for setting		

priority_in1-4: Signal ON priority (IN1 to IN4) 0 = OFF 1 to 4 = Priority (Highest to Lowest)		
Getting example		
@GAU,1<CR><LF> @GAU,1,1,2,3,4<CR><LF>		Getting the signal ON priority of the OUT1 main window ・ IN1: 1 ・ IN2: 2 ・ IN3: 3 ・ IN4: 4
Setting example		
@SAU,1,4,3,2,1<CR><LF>		Setting the signal ON priority of the OUT1 main window as follows: ・ IN1: 4 ・ IN2: 3 ・ IN3: 2 ・ IN4: 1

@GOF/@SOF		Signal OFF priority
Getting	Command	@GOF,output<CR><LF>
	Response	@GOF,output,priority_in1,priority_in2,priority_in3,priority_in4,priority_inoff<CR><LF>
Setting	Command	@SOF,output,priority_in1,priority_in2,priority_in3,priority_in4,priority_inoff<CR><LF>

output: Output channel
   0   = All outputs*
   1   = OUT1 main window   2   = OUT2 main window
  201 = OUT1 PinP window   202 = OUT2 PinP window
  *Only for setting

priority_in-off: Signal OFF priority IN1 to IN4, INOFF
  0 = OFF   1 to 5 = Priority (Highest to Lowest)

Getting example

@GOF,1<CR><LF> @GOF,1,1,2,3,4,5<CR><LF>	Getting the signal OFF priority of the OUT1 main window ・ IN1 : 1 ・ IN2 : 2 ・ IN3 : 3 ・ IN4 : 4 ・ INOFF : 5

Setting example

@SOF,1,5,4,3,2,1<CR><LF>	Setting the signal OFF priority of the OUT1 main window as follows: ・ IN1 : 5 ・ IN2 : 4 ・ IN3 : 3 ・ IN4 : 2 ・ INOFF : 1

@GAD/@SAD		Switching mode of automatic switching
Getting	Command	@GAD,output<CR><LF>
	Response	@GAD,output,mode(,mode)<CR><LF>
Setting	Command	@SAD,output,mode<CR><LF>

output: Output channel
  0 = All outputs   1 = OUT1 main window   2 = OUT2 main window

mode: Switching mode
  0 = Video and Audio   1 = Video   2 = Audio

Getting example

@GAD,1<CR><LF> @GAD,1,2<CR><LF>	Getting the OUT1 main window switching mode of automatic switching Audio

Setting example

@SAD,1,1<CR><LF>	Setting the OUT1 main window switching mode of automatic switching to video

Output audio

@GUC/@SUC		Audio output
Getting	Command	@GUC,output<CR><LF>
	Response	@GUC,output,audio(,audio···)<CR><LF>
Setting	Command	@SUC,output,audio<CR><LF>
output: Output connector 0 = All outputs 1 = OUT1A 2 = OUT2A 201 = OUT1B 202 = OUT2B		
audio: Audio output 0 = OFF 1 = ON		
Getting example		
@GUC,1<CR><LF>		Getting the OUT1A audio output
@GUC,1,1<CR><LF>		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 2 = OUT2 401 = ANALOG OUT1		
level: Output audio level (dB) -100 to 10 0		
Getting example		
@GAV,1<CR><LF>		Getting the OUT1 output audio level
@GAV,1,-4<CR><LF>		-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 2 = OUT2 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 2 = OUT2 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>		Getting the limit status of the OUT1 output audio level
@GOL,1,1<CR><LF>		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 2 = OUT2 401 = ANALOG OUT1		
mute: Audio mute		
0 = OFF 1 = ON		
Getting example		
@GAM,1<CR><LF>		Getting the OUT1 audio mute
@GAM,1,1<CR><LF>		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>		Getting the IN1 input audio
@GAS,1,1<CR><LF>		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>		Getting the IN4 input audio level
@GSO,4,-4<CR><LF>		-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>		Getting the limit status of the IN1 input audio level
@GDZ,1,1<CR><LF>		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>		Getting the IN1 stable wait (Audio signal)
@GAW,1,1<CR><LF>		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 2 = EXTERNAL EDID OUT2A		
201 = EXTERNAL EDID OUT1B 202 = EXTERNAL EDID OUT2B[1]		
401 to 408 = COPY DATA 1 to COPY DATA 8[*]		
[*] Available only if valid data is stored.		
Getting example		
@GED,1<CR><LF>		Getting the IN1 EDID selection
@GED,1,0<CR><LF>		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.26)**".

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　　101 = OUT1B　　102 = OUT2B		
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(,mode・・・)<CR><LF>
Setting	Command	@SCF,port,mode<CR><LF>
port: Connector 　0 = All connectors　　1 = RS-232C　　101 = OUT1B　　102 = OUT2B		
mode: Operation mode 　0 = RECEIVER mode　　1 = TRANSMITTER mode 　RS-232C = RECEIVER mode　　OUT1B = TRANSMITTER mode　　OUT2B = 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 MSD-V4 from control devices, set this menu to RECEIVER mode. 　　　　　To control external devices from the MSD-V4, 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,E5,00,00,00<CR><LF>		Getting the MAC address 00-08-E5-00-00-00	

@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 16773171

bit	7	6	5	4	3	2	1	0
port	reserve	reserve	RS-232C OUT2B	RS-232C OUT1B	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.37)**".

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 16773171

bit	7	6	5	4	3	2	1	0
port	reserve	reserve	RS-232C OUT2B	RS-232C OUT1B	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(,output,cec···)<CR><LF>
Setting	Command	@SEC,cmd,delay,port,memo,error,output,cec(,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   2 = OUT2A   201 = OUT1B   202 = OUT2B
Available only for HDMI/HDBaseT connector
・ For getting: Only output connectors to be used for controlling.
・ For setting: Specify only output connectors that are used for controlling.

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 ・ Other output connectors: Not control

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 ・ Other output connectors: Not control

@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, FFFFFFFFFFFFFFFFFF,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> @GCC,30,5,2,1<CR><LF>		Getting control commands that will be executed when the MSD-V4 is powered on 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 MSD-V4 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.31) 　　　　　・ @GEC/@SEC Registering/Editing control command (Displaying received data) (P.33) 　　　　　・ @GEC/@SEC Registering/Editing control command (Contact closure) (P.35) 　　　　　・ @GEC/@SEC Registering/Editing control command (CEC) (P.36)		

Control command execution condition

event	Execution condition	event	Execution condition
1	COMMAND F1-PLANE A	40	VIDEO:MAIN1-OFF
2	COMMAND F1-PLANE B	41	VIDEO:MAIN1-IN1
3	COMMAND F2-PLANE A	42	VIDEO:MAIN1-IN2
4	COMMAND F2-PLANE B	43	VIDEO:MAIN1-IN3
5	COMMAND F3-PLANE A	44	VIDEO:MAIN1-IN4
6	COMMAND F3-PLANE B	45	
7	COMMAND F4-PLANE A	46	
8	COMMAND F4-PLANE B	47	
9	COMMAND F5-PLANE A	48	
10	COMMAND F5-PLANE B	49	
11	COMMAND F6-PLANE A	50	AUDIO:MAIN1-OFF
12	COMMAND F6-PLANE B	51	AUDIO:MAIN1-IN1
13	COMMAND F7-PLANE A	52	AUDIO:MAIN1-IN2
14	COMMAND F7-PLANE B	53	AUDIO:MAIN1-IN3
15	COMMAND F8-PLANE A	54	AUDIO:MAIN1-IN4
16	COMMAND F8-PLANE B	55	
17	COMMAND F9-PLANE A	56	
18	COMMAND F9-PLANE B	57	
19		58	
20		59	
21		60	VIDEO:MAIN2-OFF
22		61	VIDEO:MAIN2-IN1
23		62	VIDEO:MAIN2-IN2
24		63	VIDEO:MAIN2-IN3
25		64	VIDEO:MAIN2-IN4
26		65	
27		66	
28		67	
29		68	
30	POWER ON	69	
31	STANDBY	70	AUDIO:MAIN2-OFF
32		71	AUDIO:MAIN2-IN1
33		72	AUDIO:MAIN2-IN2
34		73	AUDIO:MAIN2-IN3
35		74	AUDIO:MAIN2-IN4
36		75	
37		76	
38		77	
39		78	

@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.46)**")		

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 274 = Control command association 1 to 74
    【@GCC/@SCC Command link (P.38)】		

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 9		

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 9			
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 9			
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_main_1,audio_main_1,video_pinp_1,video_main_2, audio_main_2,video_pinp_2,name<CR><LF>
Setting	Command	@ECM,xpoint,video_main_1,audio_main_1,video_pinp_1,video_main_2, audio_main_2,video_pinp_2<CR><LF>
xpoint: Crosspoint memory number 1 to 9		
video_main_1-2: Video input channel of the OUT1/OUT2 main window audio_main_1-2: OUT1/OUT2 audio input channel video_pinp_1-2 : Video input channel of the OUT1/OUT2 PinP window -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)
   You can skip this parameter (**name**).		

Getting example		
@GCM,2<CR><LF> @GCM,2,3,3,0,4,4,0,PATTERN2 <CR><LF>		Getting the video/audio input channel of Crosspoint memory 2 ・ Video input channel of the OUT1 main window : IN3 ・ OUT1 audio input channel : IN3 ・ Video input channel of the OUT1 PinP window : OFF ・ Video input channel of the OUT2 main window : IN4 ・ OUT2 audio input channel : IN4 ・ Video input channel of the OUT2 PinP window : OFF ・ Crosspoint memory name : PATTERN2
Setting example		
@ECM,2,-1,-1,-1,-1,-1,-1<CR><LF>		Setting Crosspoint memory 2 OUT1/OUT2 main window/PinP window 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_main_1,video_pinp_1,video_main_2,video_pinp_2,name<CR><LF>
Setting	Command	@ECV,xpoint,video_main_1,video_pinp_1,video_main_2,video_pinp_2<CR><LF>
xpoint: Crosspoint memory number 　1 to 9		
video_main_1-2: Video input channel of the OUT1/OUT2 main window video_pinp_1-2 : Video input channel of the OUT1/OUT2 PinP window 　-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) 　You can skip this parameter (**name**).		
Getting example		
@GCV,2<CR><LF> @GCV,2,3,4,-1,1,PATTERN2 <CR><LF>		Getting the video input channel of Crosspoint memory 2 ・ Video input channel of the OUT1 main window　: IN3 ・ Video input channel of the OUT1 PinP window　: IN4 ・ Video input channel of the OUT2 main window　: Not control ・ Video input channel of the OUT2 PinP window　: IN1 ・ Crosspoint memory name　　　　　　　　　: PATTERN2
Setting example		
@ECV,2,-1,-1,-1,-1<CR><LF>		Setting Crosspoint memory 2 OUT1/OUT2 main window/PinP window 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_main_1,audio_main_2,name<CR><LF>
Setting	Command	@ECA,xpoint,audio_main_1,audio_main_2<CR><LF>
xpoint: Crosspoint memory number 　1 to 9		
audio_main_1-2: OUT1/OUT2 audio input channel 　-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) 　You can skip this parameter (**name**).		
Getting example		
@GCA,2<CR><LF> @GCA,2,3,4,PATTERN2<CR><LF>		Getting the audio input channel of Crosspoint memory 2 ・ OUT1 audio input channel　: IN3 ・ OUT2 audio input channel　: IN4 ・ Crosspoint memory name　: PATTERN2
Setting example		
@ECA,2,1,1<CR><LF>		Setting the OUT1/OUT2 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 9		
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 9		
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 9		
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 9 = Recalls input channel selection that is stored in one of crosspoint memories 1 to 9.
   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 5		
output: Output channel 1 = OUT1 2 = OUT2		

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<CR><LF>
pattern: Pattern memory number 1 to 5		
output: Output channel 1 = OUT1 2 = OUT2		
Setting example		
@RWM,2,1<CR><LF>		Recalling the Pattern memory 2 to OUT1

Bitmap

@GBM/@SBM		Bitmap output
Getting	Command	@GBM,output<CR><LF>
	Response	@GBM,output,bitmap(,bitmap・・・)<CR><LF>
Setting	Command	@SBM,output,bitmap<CR><LF>
output: Output channel 　0　= All outputs 　1　= OUT1 main window　　2　= OUT2 main window 　201 = OUT1 PinP window　　202 = OUT2 PinP window		
bitmap: Bitmap output 　0 = OFF　　1 = Bitmap 1　　2 = Bitmap 2　　3 = Bitmap 3　　4 = Bitmap 4 　Only registered numbers can be specified.		
Getting example		
@GBM,0<CR><LF> @GBM,0,1,2,0,0<CR><LF>		Getting the bitmap output of all outputs ・ OUT1 main window ：Bitmap 1 ・ OUT2 main window ：Bitmap 2 ・ Other windows 　　：OFF
Setting example		
@SBM,1,1<CR><LF>		Outputting Bitmap 1 to the OUT1 main window

Configuring MSD-V4

@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 　21 to 22 = OUT1 PATTERN to OUT2 PATTERN 　41　　　= WINDOW SELECT 　61 to 69 = CROSSPOINT No.1 to CROSSPOINT No.9 　81 to 89 = PRESETMEMORY No.1 to PRESETMEMORY No.9		
Getting example		
@GFA,1<CR><LF> @GFA,1,21<CR><LF>		Getting the function that is assigned to F1 button OUT1 PATTERN
Setting example		
@SFA,1,41<CR><LF>		Setting the F1 button to WINDOW SELECT

@RBT		Reboot
Setting	Command	@RBT<CR><LF>
Setting example		
@RBT<CR><LF>		Rebooting the MSD-V4

@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 MSD-V4 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　　102 = OUT2A　　201 = OUT1B　　202 = OUT2B		
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 to 202 (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

For video output error code, if [1] (ON) is set for "**@GPI/@SPI PinP output (P.16)**" and no error for main window, PinP window's error code is returned.

Error code	Video output status	Audio output status
0	No error	
1	"**@GDB/@SDB Video mute (P.17)**" is set to [1] (ON).	"**@GAM/@SAM Mute (P.24)**" 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 MSD-V4 (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.23)**" 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.
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 60Hz, LINEAR PCM 48kHz,HDCP1.4<CR><LF>	Getting IN1 all statuses ・ Input signal type　: 30-BIT COLOR HDMI signal ・ Video input signal　: 1920x1080p 60Hz ・ 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   2 = OUT2A   201 = OUT1B   202 = OUT2B

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,MSD-V42U,1920x1080 148.50MHz,
DVI,AUDIO NOT SUPPORT<CR><LF> | Getting the EDID of the sink device connected to OUT1A
・ Sink device name   : MSD-V42U
・ 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,MSD-V42U,01.00.00<CR><LF>		Getting the product information ・ Model number : MSD-V42U ・ 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 this function, set "**@SPH Notification interval (P.55)**" to a value other than [0] (OFF).

If no change is detected during the interval, status is sent immediately after detecting a change.
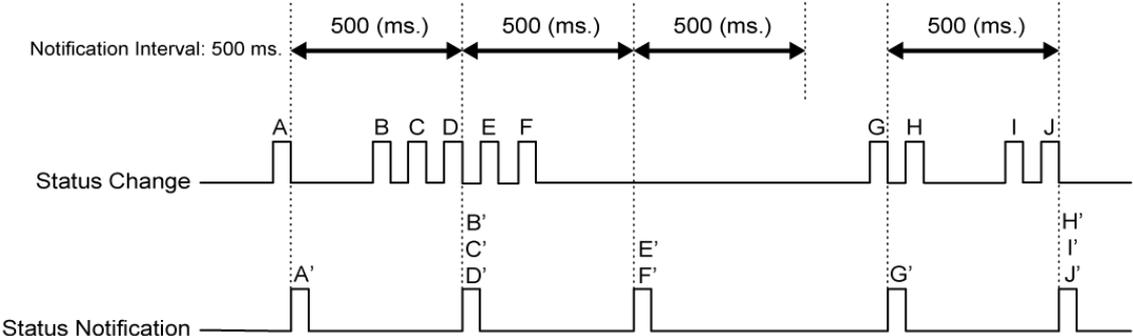
■ **Example:**
1. Set the destination using "**@GDA/@SDA IP address/UDP port number (P.54)**".
2. Set the notification interval using "**@SPH Notification interval (P.55)**".
3. If any status changes, "**@PSH Unsolicited status notification (P.56)**" is sent to the set the IP address destination over UDP protocol.
4. Get the changes in input signal, output signal, and alarm status using "**@AIN Input signal status (For each connector) (P.57)**", "**@AOT Output signal status (For each channel) (P.59)**", and "**@GAA Alarm status (P.61)**".

@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.55)**" 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		time	ON/OFF	Time
0	OFF	—		40	ON	4000 ms.
1	ON	100 ms.		41	ON	4100 ms.
2	ON	200 ms.		42	ON	4200 ms.
3	ON	300 ms.		43	ON	4300 ms.
4	ON	400 ms.		44	ON	4400 ms.
5	ON	500 ms.	to	45	ON	4500 ms.
6	ON	600 ms.		46	ON	4600 ms.
7	ON	700 ms.		47	ON	4700 ms.
8	ON	800 ms.		48	ON	4800 ms.
9	ON	900 ms.		49	ON	4900 ms.
10	ON	1000 ms.		50	ON	5000 ms.

save: Saves settings

  0 = Does not save (The interval is set to [0](OFF) at the next startup.)   1 = Saves

  If skipped, [0] is applied.

Getting example	
@GPH<CR><LF> @GPH,5,1<CR><LF>	Getting notification time ・ Time : 500 ms ・ Setting : To be saved

Setting example	
@SPH,50,1<CR><LF>	Setting notification time to 5000 ms.

Remarks: When the MSD-V4 is powered on, the unsolicited status notification is set to [0] (OFF).

@PSH		Unsolicited status notification							
Getting		@PSH,in,out,alarm<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

C : Changes in OUT2A and OUT2B

alarm: Alarm status

0 = Not change   1 = Changes

Getting example

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

Remarks: Only if status notification function is enabled ("**@GPH/@SPH Notification interval (P.55)**" 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,MSD-V42U,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　　　　　　　　　　: MSD-V42U ・ 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   2 = OUT1B   3 = OUT2A   4 = OUT2B

status_1: Output connector
1 = OUT1A   2 = OUT1B   3 = OUT2A   4 = OUT2B

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 (Main window)
0 = INOFF   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,MSD-V42U, 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   : MSD-V42U

・ Firmware version   : 01.00.00

・ The number of valid data   : 21

・ 1 (Fixed)

・ Select input (Main window)   : 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,MSD-V42U,01.00.00,2,0,0<CR><LF>	Getting alarm status ・ Model number : MSD-V42U ・ Firmware version : 01.00.00 ・ The number of valid data : 2 ・ Power voltage status : Normal ・ Temperature status : Normal	

Digital Multi Switcher

MSD-V4 Series

Command Guide