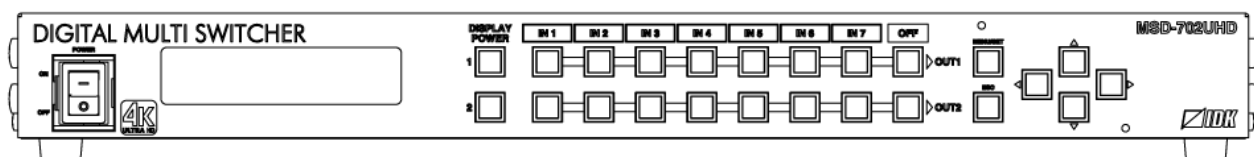
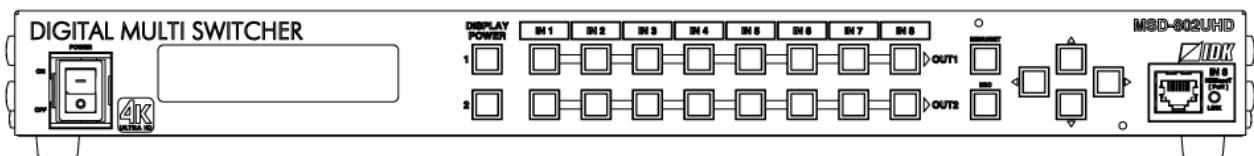


4K@60/HDCP 2.2 Digital Multi Switcher
MSD-701UHD/702UHD
MSD-801UHD/802UHD

<Command Reference Guide>

Ver.1.0.2



- Thank you for choosing our product.
- To ensure the best performance of this product, please read this user guide fully and carefully before using it and keep this manual together with the product for future reference as needed.

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Before reading this manual

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

The reference manual consists of the following two volumes:

- User guide: Please download the User guide from the website above.
Provides explanations and procedures for operations, installation, connections among devices, I/O adjustment and settings.
- Command guide (this document):
Provides explanations and procedures for external control using RS-232C and LAN communications.

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1 About this Guide

This guide contains the procedure for controlling the MSD-701UHD/702UHD/801UHD/802UHD using commands via RS-232C communication or LAN communication.

Since descriptions in this document are for MSD-802UHD, there may be slight differences between the model and other models.

The MSD series is divided into four models as shown in the table below.

[Table 1.1] Main differences among MSD-701UHD/702UHD/801UHD/802UHD

Model	Number of I/Os		Front panel HDBaseT input	Front panel OFF Keys
	Input	Output		
MSD-701UHD	7	1	No	Yes
MSD-702UHD		2		
MSD-801UHD	8	1	Yes	No
MSD-802UHD		2		

■ You can perform the following operations using communication commands.

- Switching channels.
- Setting I/O, audio, and EDID.
- Setting sending of external control command.
- Setting preset memory.
- Setting and displaying bitmaps
and others

2 Communication configuration and Specifications

2.1 RS-232C communication

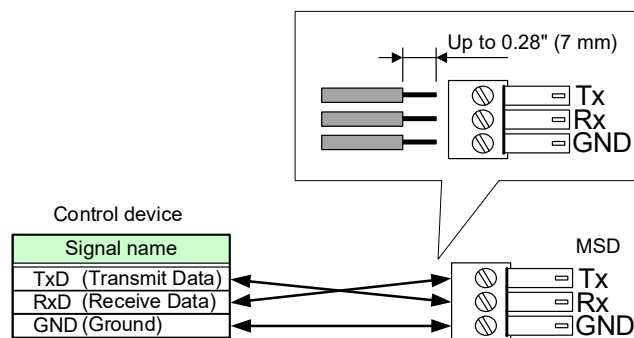
2.1.1 RS-232C connector specification

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.

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.



[Fig. 2.1] Connecting RS-232C cable to 3-pin captive screw connector

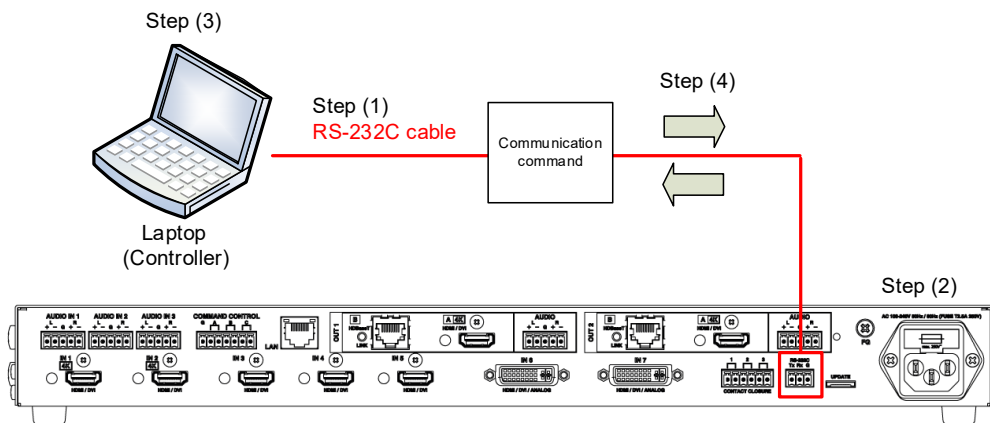
2.1.2 RS-232C communication specification

[Table 2.1] RS-232C specification

Standard	RS-232C
Baud rate [bps]	4800/9600/19200/38400 [bps]
Data bit length [bit]	7/8
Parity check	NONE, EVEN, ODD
Stop bit [bit]	1/2
X parameter	Invalid
Flow control	None
Delimiter	CR LF (Carriage return and line feed, 0D and 0A in hex)
Communication method	Full duplex

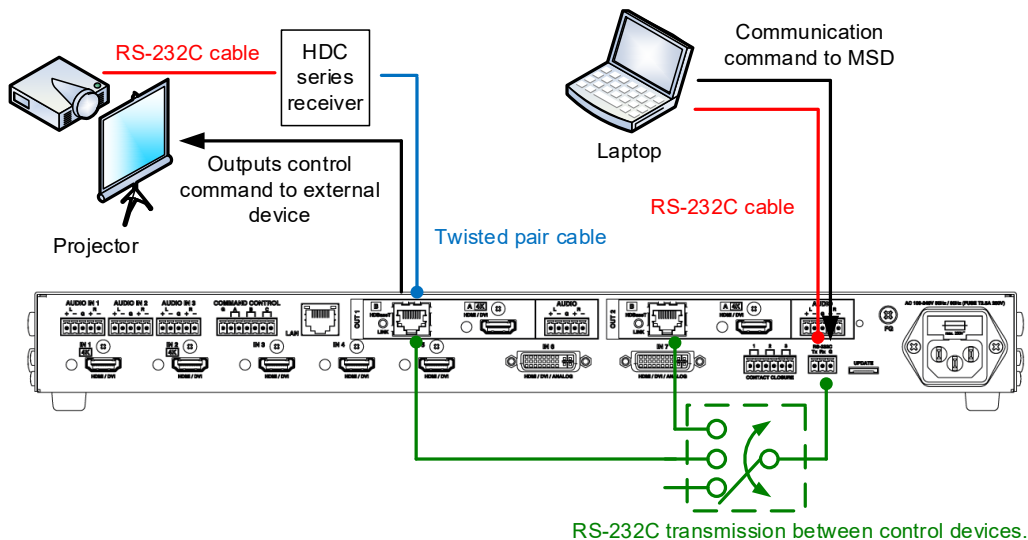
2.1.3 Setting up RS-232C communication

- (1) Connect the MSD and the control device via an RS-232C cable.
 - (2) Set the RS-232C communication as follows:
 - RS-232C communication: baud rate, data bit length, parity check, and stop bit
 - Operation mode of RS-232C communication: "RECEIVER"
- 【Reference: User Guide】
- (3) For the control device, set the same values in the same way as RS-232C communication (baud rate, data bit length, parity check, and stop bit) in step (2) above.
 - (4) Send a communication command from the control device to the MSD in order to check the control status of the MSD.



[Fig. 2.2] Setting RS-232C communication

■ Operation example of RS-232C communication



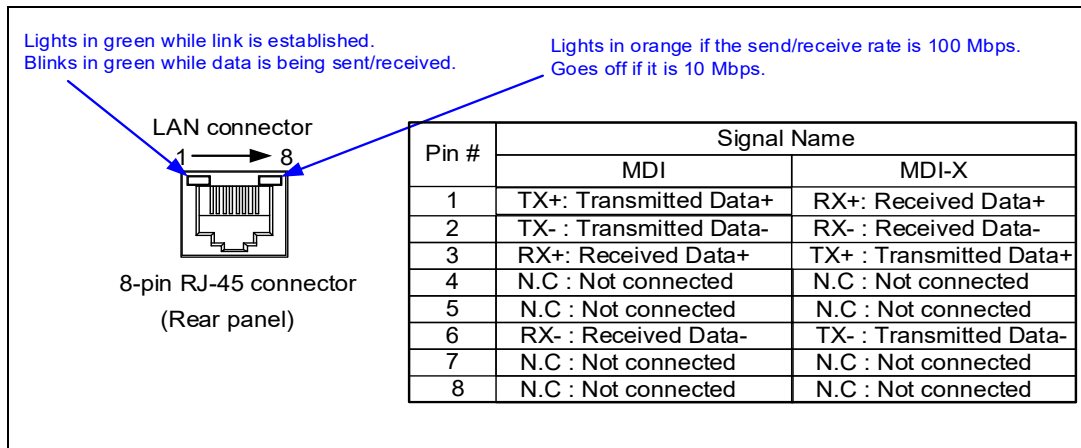
[Fig. 2.3] RS-232C communication

2.2 LAN communication

2.2.1 LAN connector specification

It supports Auto MDI/MDI-X, which distinguishes/switches straight and cross cables automatically.

Pin assignments of LAN connector:



[Fig. 2.4] LAN connector

2.2.2 LAN communication specification

[Table 2.2] Specification of LAN communication

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

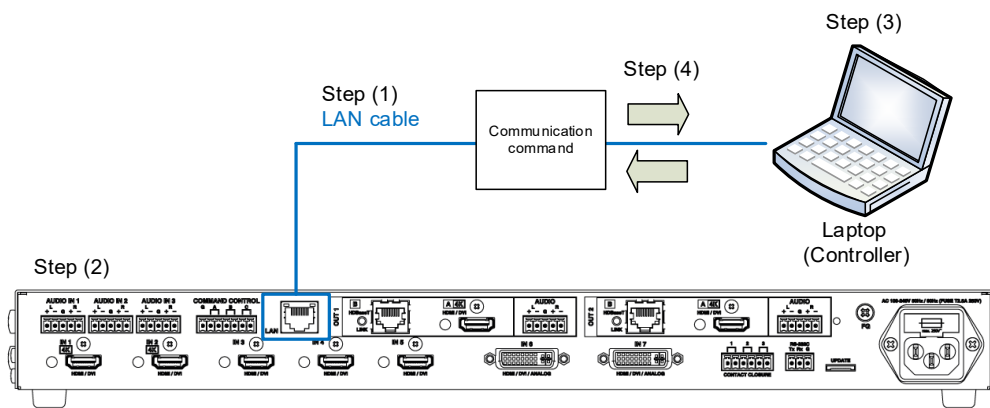
Note: Up to 8 connections can be used simultaneously.

2.2.3 Setting up LAN communication

- (1) Connect the MSD and the control device via a LAN cable.
- (2) Set up LAN communication as follows:
 - Set IP address and subnet mask
 - Operation mode of LAN communication: "RECEIVER"
 - TCP port number: 23, 1100, 6000 to 6999

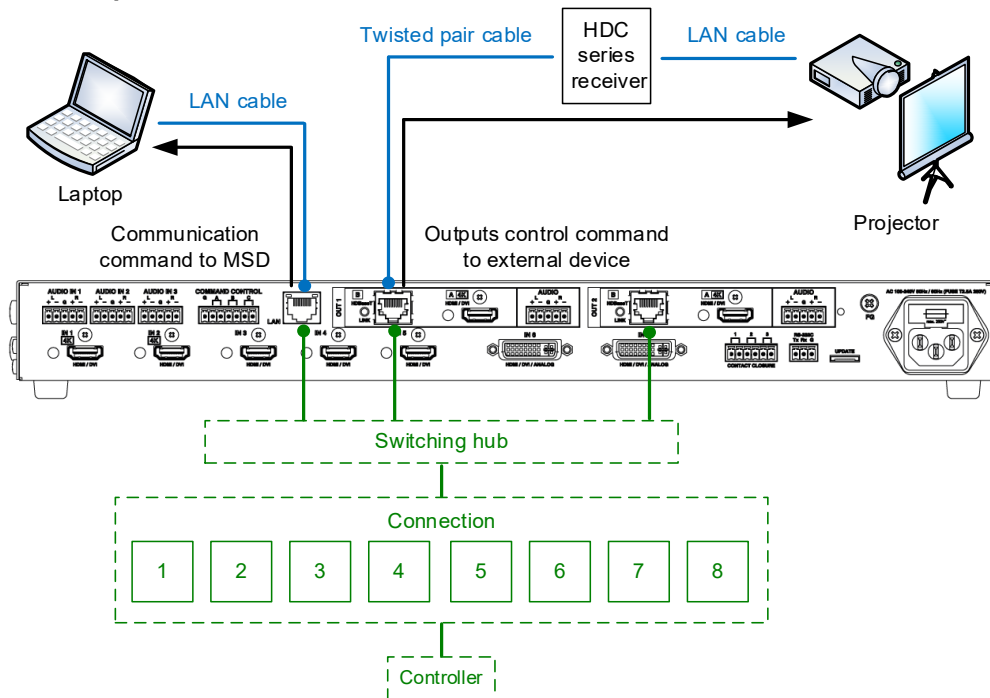
【Reference: User's Guide】

- (3) Establish the connection from the control device to the IP address and TCP port that are set to the MSD in step (2) above.
- (4) Send a communication command from the control device to the MSD in order to check the control status of the MSD.



[Fig. 2.5] Setting LAN communication

■ Operation example of LAN communication



[Fig. 2.6] LAN communication

2.2.4 The number of TCP-IP connections

The MSD series can connect up to eight connections (eight ports) simultaneously. If the MSD is controlled from nine or more PCs, they may not be connected to the MSD normally, since the number of connections that can be used is limited.

If you use nine connections or more, execute TCP-IP connection/close every time the communication command is sent or received from the software of users side. By doing so, MSD's ports are occupied or released so that nine or more connections can be connected logically.

[Table 2.3] Increasing connections

Your PC software		MSD
TCP-IP connection	→	(Occupied by 1 port)
Send command (@xxx)	→	
	←	Send back command (@xxx)
TCP-IP close	→	(Release 1 port)

Note: If any command is not sent from the PC side to the MSD for 30 seconds, the MSD disconnects the connection to avoid the limitation problem on the number of connections. As a result, connection needs to be established again from the PC side after the current connection of the PC is disconnected.

(Since the number of ports in the MDS is eight, ports are occupied permanently if the PC is turned off while connections are valid. To prevent this, the MSD disconnects connections if no communication command is sent from the PC side.)

3 Command

3.1 Command outline

A command consists of “@” (“40” in hexadecimal), 3 one-byte alphabetical characters (upper and lower cases), and parameters (one-byte numbers^{*}). For some commands, several parameters can be specified or no parameter is required. Processing is executed by sending a delimiter at the end of the command.

Example: @SPM,2 ↵

“,”(a comma, “2C” in hexadecimal) is indicated between a command and parameter and between two parameters.

↵: delimiter CR LF (return+line feed, “0D” and “0A” in hex)

■ If there is an error:

An error command is returned if an undefined command or wrong parameter is included.

Example: @SOT,1 ↵
 @ERR,1 ↵

■ Using as HELP

If only delimiter is sent, command list as the help command is returned.

Example: ↵

```

----- HELP (1/13) -----↵
(CHANNEL SELECT Command) ↵
@GSW / @SSW : Get/Set Input Channel↵
@GSV / @SSV : Get/Set Video Input Channel↵
@GSA / @SSA : Get/Set Audio Input Channel↵
↵
----- HELP (2/13) -----↵
(OUTPUT TIMING Command) ↵
@GOT / @GTD / @SOT : Get/Set Output Timing↵
@GUM / @SUM : Get/Set Monitor Aspect↵
@GAP / @SAP : Get/Set Aspect↵
@GAR / @SAR : Get/Set Aspect Restore Mode↵

```

3.2 Command list

■ Error status

Command	Function	Page
@ERR	Error status	17

■ Input channels

Command	Function	Page
@GSW / @SSW	Switching video and audio channel simultaneously	18
@GSV / @SSV	Switching video channel	19
@GSA / @SSA	Switching audio channel	19

■ Position, size, and masking

Command	Function	Page
@GOT / @SOT	Output resolution	20
@GTD	Actual output resolution	21
@GUM / @SUM	Aspect ratio of sink device	22
@GAP / @SAP	Aspect ratio	22
@GAR / @SAR	Aspect ratio restoration	23
@GOV / @SOV	Overscan	23
@GNP / @SNP	Input position	24
@GNS / @SNS	Input size	25
@GNM / @SNM	Input masking	26
@IAS	Input automatic sizing	26
@GOP / @SOP	Output position	27
@GOS / @SOS	Output size	27
@GOM / @SOM	Output masking	28
@OAS	Output automatic sizing	28
@GBC / @SBC	Background color	29
@GTP / @STP	Test pattern	30

■ Image quality

Command	Function	Page
@GFL / @SFL	Sharpness	31
@GBR / @SBR	Input brightness	31
@GCO / @SCO	Input contrast	32
@GHU / @SHU	Hue	32
@GST / @SST	Saturation	33
@GSU / @SSU	Black level	33
@IDC	Input default color	34
@GOB / @SOB	Output brightness	34
@GOC / @SOC	Output contrast	35
@GGM / @SGM	Output gamma	35
@ODC	Output default color	36

■ Input settings

Command	Function	Page
@GDT / @SDT	No-signal-input monitoring	36
@GHE / @SHE	HDCP input enabled/disabled	37
@GAI / @SAI	Analog input type	37
@GID / @SID	Automatic detection of input video interruption	38
@GIN / @SIN	Signal selection of DVI input connector	38
@GIA / @SIA	HDBaseT input long reach mode	39
@GFX / @SFX	Fixing settings for input signal	40

■ Input timing

Command	Function	Page
@AIS / @AIT	Automatic measurement	41
@GHT / @SHT	The total number of horizontal dots	42
@GHS / @SHS	Horizontal start position	43
@GHD / @SHD	Horizontal display period	44
@GVS / @SVS	Vertical start position	45
@GVD / @SVD	Vertical display period	46
@GIS / @SIS	Automatic measurement of start position	47
@GSM / @SSM	Automatic measurement when unregistered signal is input	47
@RTT	Loading device data	48
@STT	Registering device data	48
@GTK / @STK	Tracking	49

■ Output settings

Command	Function	Page
@GDM / @SDM	Output mode	50
@GUY / @SUY	Synchronous signal output when no video signal is input	50
@GBO / @SBO	Output video when no video signal is not input	51
@GFF / @SFF	Video switching effect	51
@GFT / @SFT	Video switching speed	52
@GWC / @SWC	Wipe color	52
@GVO / @SVO	Vidoe output connector	53
@GEN / @SEN	HDCP output	53
@GHR / @SHR	The number of HDCP retries	54
@GDC / @SDC	Deep Color	54
@GCE / @SCE	CEC connection	55
@HAU	HDCP re-encryption	55
@GAU / @SAU	Priority of input channel automatic switching (OFF to ON)	56
@GOF / @SOF	Priority of input channel automatic switching (ON to OFF)	57
@GMT / @SMT	Masking time after automatic switching of input channel	57
@GAD / @SAD	Channel switching mode for input channel automatic switching	58
@GOA / @SOA	HDBaseT output long reach mode	58

■ Audio

Command	Function	Page
@GSL / @SSL	Audio output level	59
@SOL	Relative value of audio output level	59
@GOL	Limit status of audio output level	60
@GAM / @SAM	Audio output mute	60
@GAS / @SAS	Selecting audio input	61
@GSO / @SSO	Aduio input level	61
@SIL	Relative value of audio input level	62
@GIL	Limit status of audio input level	62
@GLO / @SLO	Output lip sync	62
@GLY / @SLY	Input lip sync	63
@GSF / @SSF	Sampling frequency	63
@GFD	Actual sampling frequency	64
@GDO / @SDO	Audio output connector	64
@GAO / @SAO	Digital audio output connector	65
@GMD / @SMD	Multi channel audio output	65
@GCH / @SCH	Priority of multi channel audio output	66
@GAT / @SAT	Test tone	66

■ EDID

Command	Function	Page
@GED / @SED	EDID	67
@GVF / @SVF	Input resolution for PC	68
@GHF / @SHF	Input resolution for AV devices	69
@GDI / @SDI	Deep Color input	70
@GAF / @SAF	Audio format	71
@GSP / @SSP	The number of speakers (cont'd)	73
@RME	Copying EDID	73

■ RS-232C communication

Command	Function	Page
@GCT / @SCT	RS-232C communication	74
@GCF / @SCF	RS-232C communication mode	75
@GCD / @SCD	RS-232C transmission between control devices	76

■ LAN communication

Command	Function	Page
@GIP / @SIP	IP address	77
@GSB / @SSB	Subnet mask	77
@GGW / @SGW	Gateway address	78
@GLF / @SLF	LAN communication mode	79
@GLP / @SLP	TCP port number	80
@GMC	MAC address	80

■ Control commands

Command	Function	Page
@EXC	Executing control commands	81
@GDS / @SDS	Power button of sink device	81
@GEC / @SEC	Control command (Communication command)	82
@GEC / @SEC	Control command (Displaying received data)	84
@GEC / @SEC	Control command (contact closure)	86
@GEC / @SEC	Control command (CEC)	87
@GRC / @SRC	Response command	88
@GCC / @SCC	Control command link	89
@GTG / @STG	Toggle operation	91
@GUP / @SUP	Plane to be executed when powered ON	91
@GIT / @SIT	Ineffective time during control command execution	92
@DEC	Initializing registered command and link	92
@GTL / @STL	Lighting condition of execution button	93
@GTF / @STF	Blinking time of sink device power switch	94

■ Preset memory

Command	Function	Page
@RCM	Loading crosspoint memory	95
@SCM / @SEM	Saving channels to crosspoint memory	95
@GCM / @ECM	Editing crosspoint memory	96
@RCV	Loading crosspoint memory (setting video channel)	96
@SCV / @SEV	Saving crosspoint memory (Setting video channel)	97
@GCV / @ECV	Editing crosspoint memory (Setting video channel)	97
@RCA	Loading audio channel setting from crosspoint memory	98
@SCA / @SEA	Saving crosspoint memory (Setting audio channel)	98
@GCA / @ECA	Editing crosspoint memory (Setting audio channel)	99
@RPM	Loading all settings	99
@SPM	Saving all settings	100
@SCP	Copying output setting	100
@GMU / @SMU	Startup settings	101

■ Bitmap

Command	Function	Page
@GBM / @SBM	Outputting bitmap image	101
@GBB / @SBB	Background color	102
@GBT / @SBT	Aspect ratio	103
@GZP / @SZP	Display position	104
@GBA / @SBA	Assigning input channel	105
@GPB / @SPB	Startup bitmap	105
@GBD / @SBD	Dividing bitmap memory	106
@GBV	Bitmap memory status	106
@GFZ / @SFZ	Freeze	107
@CAP	Capturing input image	107




■ Other settings

Command	Function	Page
@GLS / @SLS	Operation lock	108
@GLM / @SLM	Setting operation to be locked	108
@GBZ / @SBZ	Buzzer	109
@GHP / @SHP	Power supply of HDBaseT input	109
@GSS	I/O status	110
@GES	Monitor's EDID	114
@GIV	Version	114

3.3 Detailed descriptions









Commands for MSD-802UHD are shown in this section. For other models, use appropriate commands according to the number of inputs and outputs.









3.3.1 Error status

@ERR		Error status
Description		Response in case the command is not executed.
Response		@ERR, error 
Parameter		error: Error status 1 = Erroneous parameter format or value 2 = Undefined command or wrong format 3 = Currently cannot be used. 4 = Not used. 5 = The command could not be executed, because the control command was not registered. 6 = The command could not be processed since another command was being executed. 7 = Automatic measurement of input timing failed. 8 = Loading EDID from the sink device failed. 9 = Not used. 10 = The control command was stopped according to the stop condition. 11 = The control command was stopped since the number of retries exceeded the set value of "RETRY". 12 = The control command of PJLink was stopped since the password did not match. 13 = The image could not be captured since the image size to be captured exceeded the reserved memory size. 14 = Capturing input image failed.
Getting example	Command	@IOS 
	Response	@ERR,2 
	Description	@IOS is sent. Command format error.
Remarks		—

3.3.2 Input channels

@GSW / @SSW		Switching video and audio channel simultaneously
Getting	Command	@GSW ↵
	Response	@GSW, video_1, audio_1, video_2, audio_2, ↵
Setting	Command	@SSW, input_1, output_1 (, input_2, output_2) ↵
	Response	@SSW, input_1, output_1 (, input_2, output_2) ↵
Parameter		video_1-2: Video input channel audio_1-2: Audio input channel input_1-2 : Video and audio input channel 0 = OFF [Default], 1 = IN1 to 8 = IN8
		output_1-4: Video and audio output channel 0 = All outputs, 1 = OUT1, 2= OUT2
Getting example	Command	@GSW ↵
	Response	@GSW,2,2,0,0, ↵
	Description	Getting the video and audio input channels that are assigned to output channels OUT1: IN2, OUT2: OFF
Setting example	Command	@SSW,1,1 ↵
	Response	@SSW,1,1 ↵
	Description	Setting IN1 video and audio to be output to OUT1
Remarks		—

@GSV / @SSV		Switching video channel
Getting	Command	@GSV 
	Response	@GSV, input_1, input_2 
Setting	Command	@SSV, input_1, output_1 (, input_2, output_2) 
	Response	@SSV, input_1, output_1 (, input_2, output_2) 
Parameter		input_1-2: Video input channel 0 = OFF [Default], 1 = IN1 to 8 = IN8
		output_1-2: Video output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GSV 
	Response	@GSV,1,1 
	Description	Getting the video I/O channel statuses OUT1 and OUT2: IN1
Setting example	Command	@SSV,1,1 
	Response	@SSV,1,1 
	Description	Setting IN1 video to be output to OUT1
Remarks		—

@GSA / @SSA		Switching audio channel
Getting	Command	@GSA 
	Response	@GSA, input_1, input_2 
Setting	Command	@SSA, input_1, output_1 (, input_2, output_2) 
	Response	@SSA, input_1, output_1 (, input_2, output_2) 
Parameter		input_1-4: Audio input channel 0 = OFF [Default], 1 = IN1 to 8 = IN8
		output_1-4: Audio output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GSA 
	Response	@GSA,1,1 
	Description	Getting the audio I/O channel status OUT1 and OUT2: IN1
Setting example	Command	@SSA,1,1 
	Response	@SSA,1,1 
	Description	Setting IN1 audio to be output to OUT1
Remarks		—

3.3.3 Position, size, and masking

@GOT / @SOT		Output resolution
Getting	Command	@GOT
	Response	@GOT, resolution_1, resolution_2
Setting	Command	@SOT, ch_1, resolution_1 (, ch_2, resolution_2)
	Response	@SOT, ch_1, resolution_1 (, ch_2, resolution_2)
Parameter		resolution_1-2: Setting value of output resolution 0 = AUTO-A [Default], 1 = AUTO-B 2 = VGA@60 (640x480), 3 = SVGA@60 (800x600), 4 = XGA@60 (1024x768), 5 = WXGA@60 (1280x768), 6 = WXGA@60 (1280x800), 7 = Quad-VGA@60 (1280x960), 8 = SXGA@60 (1280x1024), 9 = WXGA@60 (1360x768), 10 = WXGA@60 (1366x768), 11 = SXGA+@60 (1400x1050), 12 = WXGA+@60 (1440x900), 13 = WXGA++@60 (1600x900), 14 = UXGA@60 (1600x1200), 15 = WSXGA+@60 (1680x1050), 16 = VESAHD@60 (1920x1080), 17 = WUXGA@60 (1920x1200), 18 = QWXGA@60 (2048x1152), 19 = WQHD@60 (2560x1440), 20 = WQXGA@60 (2560x1600), 21 = 480i@59.94 (720x480), 22 = 480p@59.94 (720x480), 23 = 576i@50 (720x576), 24 = 576p@50 (720x576), 25 = 720p@50 (1280x720), 26 = 720p@59.94 (1280x720), 27 = 720p@60 (1280x720), 28 = 1080i@50 (1920x1080), 29 = 1080i@59.94 (1920x1080), 30 = 1080i@60 (1920x1080), 31 = 1080p@50 (1920x1080), 32 = 1080p@59.94 (1920x1080), 33 = 1080p@60 (1920x1080), 40 = 2160p@24 (3840x2160), 41 = 2160p@25 (3840x2160), 42 = 2160p@30 (3840x2160), 43 = 2160p@50 (3840x2160), 44 = 2160p@60 (3840x2160), 45 = 2160p@24 (4096x2160), 46 = 2160p@25 (4096x2160), 47 = 2160p@30 (4096x2160), 48 = 2160p@50 (4096x2160), 49 = 2160p@60 (4096x2160)
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2= OUT2
Getting example	Command	@GOT
	Response	@GOT,8,32
	Description	Getting the set output resolution OUT1: SXGA, OUT2: 1080p 59.94 Hz
Setting example	Command	@SOT,1,11
	Response	@SOT,1,11
	Description	Setting output resolution of OUT1 to SXGA+ 60 Hz
Remarks		—

@GTD		Actual output resolution
Getting	Command	@GTD ↵
	Response	@GTD, resolution_1, resolution_2 ↵
Parameter		resolution_1-2: Actual output resolution 2 = VGA@60 (640x480), 3 = SVGA@60 (800x600), 4 = XGA@60 (1024x768), 5 = WXGA@60 (1280x768), 6 = WXGA@60 (1280x800), 7 = Quad-VGA@60 (1280x960), 8 = SXGA@60 (1280x1024), 9 = WXGA@60 (1360x768), 10 = WXGA@60 (1366x768), 11 = SXGA+@60 (1400x1050), 12 = WXGA+@60 (1440x900), 13 = WXGA++@60 (1600x900), 14 = UXGA@60 (1600x1200), 15 = WSXGA+@60 (1680x1050), 16 = VESAHD@60 (1920x1080), 17 = WUXGA@60 (1920x1200), 18 = QWXGA@60 (2048x1152), 19 = WQHD@60 (2560x1440), 20 = WQXGA@60 (2560x1600), 21 = 480i@59.94 (720x480), 22 = 480p@59.94 (720x480), 23 = 576i@50 (720x576), 24 = 576p@50 (720x576), 25 = 720p@50 (1280x720), 26 = 720p@59.94 (1280x720), 27 = 720p@60 (1280x720), 28 = 1080i@50 (1920x1080), 29 = 1080i@59.94 (1920x1080), 30 = 1080i@60 (1920x1080), 31 = 1080p@50 (1920x1080), 32 = 1080p@59.94 (1920x1080), 33 = 1080p@60 (1920x1080), 40 = 2160p@24 (3840x2160), 41 = 2160p@25 (3840x2160), 42 = 2160p@30 (3840x2160), 43 = 2160p@50 (3840x2160), 44 = 2160p@60 (3840x2160), 45 = 2160p@24 (4096x2160), 46 = 2160p@25 (4096x2160), 47 = 2160p@30 (4096x2160), 48 = 2160p@50 (4096x2160), 49 = 2160p@60 (4096x2160)
Getting example	Command	@GTD ↵
	Response	@GTD,32,27 ↵
	Description	Getting the actual output resolution OUT1: 1080p 59.94 Hz, OUT2: 720p 60 Hz
Remarks		If “@GOT / @SOT Output resolution” is set to “AUTO-A” or “AUTO-B”, the actual output resolution is returned. If “@GOT / @SOT Output resolution” is set to a value other than “AUTO-A” or “AUTO-B”, the set output resolution value is returned.

@GUM / @SUM		Aspect ratio of sink device
Getting	Command	@GUM ↵
	Response	@GUM, aspect_1, aspect_2 ↵
Setting	Command	@SUM, ch_1, aspect_1 (, ch_2, aspect_2) ↵
	Response	@SUM, ch_1, aspect_1 (, ch_2, aspect_2) ↵
Parameter		aspect_1-2: Aspect ratio of sink device 0 = RESOLUTION [Default], 1 = 4:3, 2 = 5:4, 3 = 5:3, 4 = 16:9, 5 = 16:10, 6 = 256:135 ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GUM ↵
	Response	@GUM,4,5 ↵
	Description	Getting the set aspect ratio of the sink device OUT1: 16:9, OUT2: 16:10
Setting example	Command	@SUM,1,4 ↵
	Response	@SUM,1,4 ↵
	Description	Setting OUT1 to 16:9
Remarks		—

@GAP / @SAP		Aspect ratio
Getting	Command	@GAP ↵
	Response	@GAP, aspect_1, aspect_2, aspect_3, aspect_4, aspect_5, aspect_6, aspect_7, aspect_8 ↵
Setting	Command	@SAP, ch_1, aspect_1 (, ch_2, aspect_2) ↵
	Response	@SAP, ch_1, aspect_1 (, ch_2, aspect_2) ↵
Parameter		aspect_1-8: Aspect ratio of input signal 0 = AUTO-1 [Default], 1 = AUTO-2, 2 = 4:3, 3 = 16:9, 4 = 14:9, 5 = 16:9 LETTER BOX, 6 = 14:9 LETTER BOX, 7 = 4:3 SIDE PANEL, 8 = 14:9 SIDE PANEL, 9 = FULL, 10 = THROUGH ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8= IN8
Getting example	Command	@GAP ↵
	Response	@GAP,0,0,2,0,0,0,0,0 ↵
	Description	Getting the set aspect ratio IN3: 4:3, Other inputs: AUTO-1
Setting example	Command	@SAP,7,2 ↵
	Response	@SAP,7,2 ↵
	Description	Setting IN7 to 4:3
Remarks		—

@GAR / @SAR		Aspect ratio restoration
Getting	Command	@GAR
	Response	@GAR, mode_1, mode_2, mode_3, mode_4, mode_5, mode_6, mode_7, mode_8
Setting	Command	@SAR, ch_1, mode_1 (, ch_2, mode_2···)
	Response	@SAR, ch_1, mode_1 (, ch_2, mode_2···)
Parameter		mode_1-8: Aspect ratio restoration 0 = Letter box/Side panel [Default], 1 = Side cut/Top bottom cut
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GAR
	Response	@GAR,0,0,1,0,0,0,0,0
	Description	Getting the set aspect ratio restoration processing IN3: Side cut/Top bottom cut, Other inputs: Letter box/Side panel
Setting example	Command	@SAR,5,1
	Response	@SAR,5,1
	Description	Setting IN5 to Side cut/Top bottom cut
Remarks		—

@GOV / @SOV		Overscan
Getting	Command	@GOV
	Response	@GOV, overscan_1, overscan_2, overscan_3, overscan_4, overscan_5, overscan_6, overscan_7, overscan_8
Setting	Command	@SOV, ch_1, overscan_1 (, ch_2, overscan_2···)
	Response	@SOV, ch_1, overscan_1 (, ch_2, overscan_2···)
Parameter		overscan_1-8: Overscan 100 to 115 [Default] NTSC/PAL/SDTV: 105, HDTV or PC: 100
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GOV
	Response	@GOV,100,100,105,100,100,100,100,100
	Description	Getting the set overscan IN3: 105%, Other input channels: 100%
Setting example	Command	@SOV,7,105
	Response	@SOV,7,105
	Description	Setting IN7 to 105%
Remarks		—

@GNP / @SNP		Input position
Getting	Command	@GNP ↵
	Response	@GNP, h_position_1, v_position_1, h_position_2, v_position_2···, h_position_8, v_position_8 ↵
Setting	Command	@SNP, ch_1, h_position_1, v_position_1 (, ch_2, h_position_2, v_position_2···) ↵
	Response	@SNP, ch_1, h_position_1, v_position_1 (, ch_2, h_position_2, v_position_2···) ↵
Parameter		h_position_1-8: Horizontal input position -Horizontal input size to +Horizontal output resolution [Default] 0
		v_position_1-8: Vertical input position -Vertical input size to +Vertical output resolution [Default] 0
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GNP ↵
	Response	@GNP,-50,20,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 ↵
	Description	Getting the set input position N1: horizontal input display is -50, vertical input display is +20. Other inputs: horizontal and vertical input positions are 0.
Setting example	Command	@SNP,1,-50,20 ↵
	Response	@SNP,1,-50,20 ↵
	Description	Setting IN1 horizontal and vertical input positions are to -50 and +20, respectively
Remarks		If resolutions differ depending on output, the OUT1 output resolution will be the standard.

@GNS / @SNS		Input size
Getting	Command	@GNS
	Response	@GNS, h_size_1, v_size_1, h_size_2, v_size_2... , h_size_8, v_size_8
Setting	Command	@SNS, ch_1, h_size_1, v_size_1 (, ch_2, h_size_2, v_size_2...)
	Response	@SNS, ch_1, h_size_1, v_size_1 (, ch_2, h_size_2, v_size_2...)
Parameter		h_size_1-8: Horizontal input size Horizontal output resolution÷4 to Horizontal output resolution×4 [Default] Horizontal output resolution
		v_size_1-8: Vertical input size Vertical output resolution÷4 to Vertical output resolution×4 [Default] Vertical output resolution
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GNS
	Response	@GNS,1925,1084,1920,1080,1920,1080,1920,1080,1920,1080,1920,1080,1920,1080
	Description	Getting the set input size Horizontal and vertical display sizes of IN1 are 1925 and 1084, respectively. Other inputs: 1920 and 1080, respectively.
Setting example	Command	@SNS,1,1925,1084
	Response	@SNS,1,1925,1084
	Description	Setting IN1 horizontal and vertical input size are 1925 and 1084, respectively
Remarks		If resolutions differ depending on outputs, the resolution of OUT1 will be the standard.

@GNM / @SNM		Input masking
Getting	Command	@GNM, ch ↵
	Response	@GNM, ch, left, right, top, bottom ↵
Setting	Command	@SNM, ch, left, right, top, bottom ↵
	Response	@SNM, ch, left, right, top, bottom ↵
Parameter		<p>ch: Input channel 1 = IN1 to 8 = IN8</p> <p>left: Left side masking Horizontal input position to right side masking [Default] 0</p> <p>right: Right side masking Left side masking to horizontal input position +horizontal input size [Default] Horizontal input size</p> <p>top: Top side masking Vertical input position to bottom side masking [Default] 0</p> <p>bottom: Bottom side masking Top side masking to vertical input position +vertical input size [Default] Vertical input size</p>
Getting example	Command	@GNM,1 ↵
	Response	@GNM,1,0,1920,0,1080 ↵
	Description	Getting the set IN1 input masking Left: 0, right: 1920, top: 0, bottom: 1080
Setting example	Command	@SNM,1,0,1920,0,1080 ↵
	Response	@SNM,1,0,1920,0,1080 ↵
	Description	Setting IN1 input masking to 0 for left, 1920 for right, 0 for top, 1080 for bottom. Completed normally
Remarks		—

@IAS		Input automatic sizing
Setting	Command	@IAS, ch_1 (, ch_2···) ↵
	Response	@IAS, ch_1 (, ch_2···) ↵
Parameter		<p>ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8</p>
Setting example	Command	@IAS,1 ↵
	Response	@IAS,1 ↵
	Description	<p>Initializing the following settings in order to display images input from IN1 on the full screen:</p> <p>@GAP / @SAP Aspect ratio @GOV / @SOV Overscan @GNP / @SNP Input position @GNS / @SNS Input size @GNM / @SNM Input masking</p>
Remarks		—









@GOP / @SOP		Output position
Getting	Command	@GOP
	Response	@GOP, h_position_1, v_position_1, h_position_2, v_position_2,
Setting	Command	@SOP, ch_1, h_position_1, v_position_1 (, ch_2, h_position_2, v_position_2)
	Response	@SOP, ch_1, h_position_1, v_position_1 (, ch_2, h_position_2, v_position_2)
Parameter		<p>h_position_1-2: Horizontal output position -Horizontal output size to +Horizontal output resolution [Default] 0</p> <p>v_position_1-2: Vertical output position -Vertical output size to +Vertical output resolution [Default] 0</p> <p>ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2</p>
Getting example	Command	@GOP
	Response	@GOP,5,20, 0,0
	Description	Getting the set output position OUT1 horizontal position is +5, vertical position is +20. OUT2 horizontal and vertical positions: 0
Setting example	Command	@SOP,1,5,20
	Response	@SOP,1,5,20
	Description	Setting OUT1 horizontal and vertical positions to +5 and +20, respectively
Remarks		—

@GOS / @SOS		Output size
Getting	Command	@GOS
	Response	@GOS, h_size_1, v_size_1, h_size_2, v_size_2
Setting	Command	@SOS, ch_1, h_size_1, v_size_1 (, ch_2, h_size_2, v_size_2)
	Response	@SOS, ch_1, h_size_1, v_size_1 (, ch_2, h_size_2, v_size_2)
Parameter		<p>h_size_1-2: Horizontal output size Horizontal output resolution÷4 to Horizontal output resolution×4 [Default] Horizontal output resolution</p> <p>v_size_1-2: Vertical output size Vertical output resolution÷4 to Vertical output resolution×4 [Default] Vertical output resolution</p> <p>ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2</p>
Getting example	Command	@GOS
	Response	@GOS,1920,1035,1920,1080
	Description	Getting the set output size OUT1 horizontal output size is 1920, vertical output size is 1035, respectively. OUT2 horizontal output size is 1920, vertical output size is 1080, respectively.
Setting example	Command	@SOS,1,1920,1080
	Response	@SOS,1,1920,1080
	Description	Setting OUT1 horizontal and vertical output sizes to 1920 and 1080, respectively
Remarks		—

@GOM / @SOM		Output masking
Getting	Command	@GOM, ch <input type="checkbox"/>
	Response	@GOM, ch, left, right, top, bottom <input type="checkbox"/>
Setting	Command	@SOM, ch, left, right, top, bottom <input type="checkbox"/>
	Response	@SOM, ch, left, right, top, bottom <input type="checkbox"/>
Parameter		ch: Output channel 1 = OUT1, 2 = OUT2 left: Left side masking Horizontal output position (0 or larger) to right side masking [Default] 0 right: Right side masking Left side masking to Horizontal output position + horizontal output size (horizontal output resolution or smaller) [Default] Horizontal output resolution top: Top side masking Vertical output position (0 or larger) to bottom side masking [Default] 0 bottom: Bottom side masking Top side masking to vertical output position + vertical output size (vertical output resolution or smaller) [Default] Vertical output resolution
Getting example	Command	@GOM,1 <input type="checkbox"/>
	Response	@GOM,1,0,1920,0,1080 <input type="checkbox"/>
	Description	Getting the set OUT1 output masking Left: 0, right: 1920, top: 0, bottom: 1080
Setting example	Command	@SOM,1,0,1920,0,1080 <input type="checkbox"/>
	Response	@SOM,1,0,1920,0,1080 <input type="checkbox"/>
	Description	Setting OUT1 output masking to 0 for left, 1920 for right, 0 for top, and 1080 for bottom
Remarks		—

@OAS		Output automatic sizing
Setting	Command	@OAS, ch_1 (, ch_2) <input type="checkbox"/>
	Response	@OAS, ch_1 (, ch_2) <input type="checkbox"/>
Parameter		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Setting example	Command	@OAS,1 <input type="checkbox"/>
	Response	@OAS,1 <input type="checkbox"/>
	Description	Initializing the following settings in order to display OUT1 output images on the full screen: @GOP / @SOP Output position @GOS / @SOS Output size @GOM / @SOM Output masking
Remarks		—

@GBC / @SBC		Background color
Getting	Command	@GBC, ch <input type="checkbox"/>
	Response	@GBC, ch, red, green, blue <input type="checkbox"/>
Setting	Command	@SBC, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2) <input type="checkbox"/>
	Response	@SBC, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2) <input type="checkbox"/>
Parameter		<p>ch: Output channel 1 = OUT1, 2 = OUT2</p> <p>ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2</p> <p>red / red_1-2 : Background color (Red) green / green_1-2 : Background color (Green) blue / blue_1-2 : Background color (Blue) 0 to 255 [Default] 0 (Black)</p>
Getting example	Command	@GBC,1 <input type="checkbox"/>
	Response	@GBC,1,128,128,128 <input type="checkbox"/>
	Description	Getting the set OUT1 background color RGB: 128 (Gray).
Setting example	Command	@SBC,1,128,128,128 <input type="checkbox"/>
	Response	@SBC,1,128,128,128 <input type="checkbox"/>
	Description	Setting OUT1 background color to 128 (Gray) for all RGB
Remarks		—

@GTP / @STP		Test pattern																		
Getting	Command	@GTP 																		
	Response	@GTP, pattern_1, scroll_1, pattern_2, scroll_2 																		
Setting	Command	@STP, ch_1, pattern_1, scroll_1 (, ch_2, pattern_2, scroll_2) 																		
	Response	@STP, ch_1, pattern_1, scroll_1 (, ch_2, pattern_2, scroll_2) 																		
Parameter	<p>pattern_1-2: Test pattern</p> <table border="0"> <tr> <td>0 = OFF [Default],</td> <td>1 = VERTICAL COLOR BAR,</td> </tr> <tr> <td>2 = HORIZONTAL COLOR BAR,</td> <td>3 = VERTICAL GRAY SCALE,</td> </tr> <tr> <td>4 = HORIZONTAL GRAY SCALE,</td> <td>5 = VERTICAL RAMP,</td> </tr> <tr> <td>6 = HORIZONTAL RAMP,</td> <td>7 = 100% WHITE RASTER,</td> </tr> <tr> <td>8 = 50% WHITE RASTER,</td> <td>9 = 100% RED RASTER,</td> </tr> <tr> <td>10 = 100% GREEN RASTER,</td> <td>11 = 100% BLUE RASTER,</td> </tr> <tr> <td>12 = CROSS HATCH,</td> <td>13 = OUTPUT FRAME,</td> </tr> <tr> <td>14 = VERTICAL STRIPE,</td> <td>15 = HORIZONTAL STRIPE,</td> </tr> <tr> <td>16 = VERTICAL ZEBRA,</td> <td>17 = HORIZONTAL ZEBRA</td> </tr> </table> <p>Test pattern numbers 1 to 6, 16 and 17 can be scrolled.</p>		0 = OFF [Default],	1 = VERTICAL COLOR BAR,	2 = HORIZONTAL COLOR BAR,	3 = VERTICAL GRAY SCALE,	4 = HORIZONTAL GRAY SCALE,	5 = VERTICAL RAMP,	6 = HORIZONTAL RAMP,	7 = 100% WHITE RASTER,	8 = 50% WHITE RASTER,	9 = 100% RED RASTER,	10 = 100% GREEN RASTER,	11 = 100% BLUE RASTER,	12 = CROSS HATCH,	13 = OUTPUT FRAME,	14 = VERTICAL STRIPE,	15 = HORIZONTAL STRIPE,	16 = VERTICAL ZEBRA,	17 = HORIZONTAL ZEBRA
	0 = OFF [Default],	1 = VERTICAL COLOR BAR,																		
	2 = HORIZONTAL COLOR BAR,	3 = VERTICAL GRAY SCALE,																		
4 = HORIZONTAL GRAY SCALE,	5 = VERTICAL RAMP,																			
6 = HORIZONTAL RAMP,	7 = 100% WHITE RASTER,																			
8 = 50% WHITE RASTER,	9 = 100% RED RASTER,																			
10 = 100% GREEN RASTER,	11 = 100% BLUE RASTER,																			
12 = CROSS HATCH,	13 = OUTPUT FRAME,																			
14 = VERTICAL STRIPE,	15 = HORIZONTAL STRIPE,																			
16 = VERTICAL ZEBRA,	17 = HORIZONTAL ZEBRA																			
<p>scroll_1-2: Scrolling</p> <p>0 = OFF [Default],</p> <p>1 = 3 pixels/1 frame to 10 = 30 pixels/1 frame</p> <p>The number of pixels to be scrolled per frame = the set value×3</p>																				
<p>ch_1-2: Output channel</p> <p>0 = All outputs, 1 = OUT1, 2 = OUT2</p>																				
Getting example	Command	@GTP 																		
	Response	@GTP,3,1,0,0 																		
	Description	Getting the set test pattern OUT1: VERTICAL GRAY SCALE at 3 pixels/frame scrolling OUT2: test pattern is not output.																		
Setting example	Command	@STP,1,1,0 																		
	Response	@STP,1,1,0 																		
	Description	Setting OUT1 to VERTICAL COLOR BAR without scrolling																		
Remarks	—																			

3.3.4 Image quality

@GFL / @SFL		Sharpness
Getting	Command	@GFL ↵
	Response	@GFL, sharp_1, sharp_2, sharp_3, sharp_4, sharp_5, sharp_6, sharp_7, sharp_8 ↵
Setting	Command	@SFL, ch_1, sharp_1 (, ch_2, sharp_2) ↵
	Response	@SFL, ch_1, sharp_1 (, ch_2, sharp_2) ↵
Parameter		sharp_1-8: Input sharpness -5 to +15 [Default] 0
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GFL ↵
	Response	@GFL,5,0,0,0,0,0,0,0 ↵
	Description	Getting sharpness setting IN1: +5, other input channels: 0
Setting example	Command	@SFL,1,5 ↵
	Response	@SFL,1,5 ↵
	Description	Setting the IN1 sharpness to +5
Remarks		—

@GBR / @SBR		Input brightness
Getting	Command	@GBR ↵
	Response	@GBR, bright_1, bright_2, bright_3, bright_4, bright_5, bright_6, bright_7, bright_8 ↵
Setting	Command	@SBR, ch_1, bright_1 (, ch_2, bright_2···) ↵
	Response	@SBR, ch_1, bright_1 (, ch_2, bright_2···) ↵
Parameter		bright_1-8: Input brightness 80 to 120 [Default] 100
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GBR ↵
	Response	@GBR,110,100,100,100,100,100,100,100 ↵
	Description	Getting brightness setting IN1: 110%, other input channels: 100%
Setting example	Command	@SBR,3,110 ↵
	Response	@SBR,3,110 ↵
	Description	Setting the IN3 brightness to 110%
Remarks		—

@GCO / @SCO		Input contrast
Getting	Command	@GCO, ch ↵
	Response	@GCO, ch, red, green, blue ↵
Setting	Command	@SCO, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2) ↵
	Response	@SCO, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2) ↵
Parameter		<p>ch: Input channel 1 = IN1 to 8 = IN8</p> <p>ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8</p> <p>red / red_1-8 : Input contrast (Red) green / green_1-8 : Input contrast (Green) blue / blue_1-8 : Input contrast (Blue) 0 to 200 [Default] 100</p>
Getting example	Command	@GCO,3 ↵
	Response	@GCO,3,105,100,95 ↵
	Description	Getting IN3 contrast setting Red: 105%, green: 100%, Blue: 95%
Setting example	Command	@SCO,3,105,100,95 ↵
	Response	@SCO,3,105,100,95 ↵
	Description	Setting IN3 contrast to 105% for red, 100% for green, 95% for blue
Remarks		—

@GHU / @SHU		Hue
Getting	Command	@GHU ↵
	Response	@GHU, hue_1, hue_2, hue_3, hue_4, hue_5, hue_6, hue_7, hue_8 ↵
Setting	Command	@SHU, ch_1, hue_1 (, ch_2, hue_2) ↵
	Response	@SHU, ch_1, hue_1 (, ch_2, hue_2) ↵
Parameter		<p>hue_1-8: Input hue 0 to 359 [Default] 0</p> <p>ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8</p>
Getting example	Command	@GHU ↵
	Response	@GHU,60,0,0,0,0,0,0,0 ↵
	Description	Getting the set HUES IN1: 60°, other inputs: 0°
Setting example	Command	@SHU,1,60 ↵
	Response	@SHU,1,60 ↵
	Description	Setting IN1 HUE to 60°
Remarks		—

@GST / @SST		Saturation
Getting	Command	@GST ↵
	Response	@GST, saturation_1, saturation_2, saturation_3, saturation_4, saturation_5, saturation_6, saturation_7, saturation_8 ↵
Setting	Command	@SST, ch_1, saturation_1 (, ch_2, saturation_2) ↵
	Response	@SST, ch_1, saturation_1 (, ch_2, saturation_2) ↵
Parameter		saturation_1-8: Input saturation 0 to 200 [Default] 100
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GST ↵
	Response	@GST,100,100,100,100,105,100,100,100 ↵
	Description	Getting the set saturations IN5: 105%, other inputs: 100%
Setting example	Command	@SST,5,105 ↵
	Response	@SST,5,105 ↵
	Description	Setting IN5 saturation to 105%
Remarks		—

@GSU / @SSU		Black level
Getting	Command	@GSU ↵
	Response	@GSU, setup_1, setup_2, setup_3, setup_4, setup_5, setup_6, setup_7, setup_8 ↵
Setting	Command	@SSU, ch_1, setup_1 (, ch_2, setup_2) ↵
	Response	@SSU, ch_1, setup_1 (, ch_2, setup_2) ↵
Parameter		setup_1-8: Input black level -20 = -20×0.5 (-10.0%) to +20 = $+20 \times 0.5$ (+10.0%) [Default] $\pm 0 = \pm 0.0\%$
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GSU ↵
	Response	@GSU,0,0,0,0,15,0,0,0 ↵
	Description	Getting the input black level IN5: +7.5%, other inputs: 0%
Setting example	Command	@SSU,5,15 ↵
	Response	@SSU,5,15 ↵
	Description	Setting the IN5 black level to +7.5%
Remarks		—

@IDC		Input default color
Setting	Command	@IDC, ch_1 (, ch_2···) ↵
	Response	@IDC, ch_1 (, ch_2···) ↵
Parameter		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8= IN8
Setting example	Command	@IDC,1 ↵
	Response	@IDC,1 ↵
	Description	Initialize the following settings of IN1: @GFL / @SFL Sharpness @GBR / @SBR Input brightness @GCO / @SCO Input contrast @GHU / @SHU Hue @GST / @SST Saturation @GSU / @SSU Black level
Remarks		—

@GOB / @SOB		Output brightness
Getting	Command	@GOB ↵
	Response	@GOB, bright_1, bright_2 ↵
Setting	Command	@SOB, ch_1, bright_1 (, ch_2, bright_2) ↵
	Response	@SOB, ch_1, bright_1 (, ch_2, bright_2) ↵
Parameter		bright_1-2: Output brightness 80 to 120 [Default] 100 ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GOB ↵
	Response	@GOB,110,100 ↵
	Description	Getting the output brightness OUT1: 110%, OUT2: 100%
Setting example	Command	@SOB,1,110 ↵
	Response	@SOB,1,110 ↵
	Description	Setting the OUT1 brightness to 110%
Remarks		—

@GOC / @SOC		Output contrast
Getting	Command	@GOC, ch ↵
	Response	@GOC, ch, red, green, blue ↵
Setting	Command	@SOC, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2) ↵
	Response	@SOC, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2) ↵
Parameter		ch: Output channel 1 = OUT1, 2 = OUT2 ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2 red / red_1-2 : Output contrast (Red) green / green_1-2: Output contrast (Green) blue / blue_1-2 : Output contrast (Blue) 0 to 200 [Default] 100
Getting example	Command	@GOC,1 ↵
	Response	@GOC,1,105,100,95 ↵
	Description	Getting the OUT1 contrast setting Red: 105%, green: 100%, blue: 95%
Setting example	Command	@SOC,1,105,100,95 ↵
	Response	@SOC,1,105,100,95 ↵
	Description	Setting the OUT1 contrast to 105% for red, 100% for green, 95% for blue
Remarks		—

@GGM / @SGM		Output gamma
Getting	Command	@GGM ↵
	Response	@GGM, out_1, out_2 ↵
Setting	Command	@SGM, ch_1, gamma_1 (, ch_2, gamma_2) ↵
	Response	@SGM, ch_1, gamma_1 (, ch_2, gamma_2) ↵
Parameter		out_1-2 / gamma_1-2: Output gamma 1 = 0.1 to 30 = 3.0 [Default] 10 = 1.0 ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GGM ↵
	Response	@GGM,22,10 ↵
	Description	Getting the set output gamma OUT1: 2.2, OUT2: 1.0
Setting example	Command	@SGM,1,22 ↵
	Response	@SGM,1,22 ↵
	Description	Setting the OUT1 output gamma to 2.2
Remarks		—

@ODC		Output default color
Setting	Command	@ODC, ch_1 (, ch_2) ↵
	Response	@ODC, ch_1 (, ch_2) ↵
Parameter		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Setting example	Command	@ODC,1 ↵
	Response	@ODC,1 ↵
	Description	Initializing OUT1 image quality settings @GOB / @SOB Output brightness @GOC / @SOC Output contrast
Remarks		—

3.3.5 Input settings

@GDT / @SDT		No-signal-input monitoring
Getting	Command	@GDT ↵
	Response	@GDT, time_1, time_2, time_3, time_4, time_5, time_6, time_7,time_8 ↵
Setting	Command	@SDT, ch_1, time_1 (, ch_2, time_2) ↵
	Response	@SDT, ch_1, time_1 (, ch_2, time_2) ↵
Parameter		time_1-8: No-signal-input monitoring 0 = OFF, 2000 = 2 sec to 15000 = 15 sec [Default] 10000 = 10 sec Set the value by 100 ms. If you set a value other than 0 for the lower 2 digits, these values will be rounded down. (For example, if you set it to 2955, the monitoring time is set to 2900 ms.) ch_1-8: Input channel 0 = All digital inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GDT ↵
	Response	@GDT,6000,10000,10000,4000,4000,4000,4000,4000 ↵
	Description	Getting the set monitoring time of input video signal IN1: 6000 ms. (6 sec.), IN2 and IN3: 10000 ms. (10 sec.), IN4 and IN8: 4000 ms. (4 sec.)
Setting example	Command	@SDT,3,6000 ↵
	Response	@SDT,3,6000 ↵
	Description	Setting the monitoring time of IN3 to 6000 ms. (6 sec.)
Remarks		These commands are only for digital input. IN6 and IN7 are available only if "1" (Digital signal) is selected for " @GIN / @SIN Signal selection of DVI input connector ". If "0" (Analog signal) is selected, "-1" is returned.

@GHE / @SHE		HDCP input enabled/disabled
Getting	Command	@GHE ↵
	Response	@GHE, hdcp_1, hdcp_2, hdcp_3, hdcp_4, hdcp_5, hdcp_6, hdcp_7, hdcp_8 ↵
Setting	Command	@SHE, ch_1, hdcp_1 (, ch_2, hdcp_2) ↵
	Response	@SHE, ch_1, hdcp_1 (, ch_2, hdcp_2) ↵
Parameter		hdcp_1-8: HDCP input enabled/disabled 0 = DISABLE, 1 = HDCP 1.4, 2 = HDCP 2.2 [Default] HDCP 2.2 [IN1,IN2,IN8], HDCP 1.4 [IN3 to IN7]
		ch_1-8: Input channel 0 = All digital inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GHE ↵
	Response	@GHE,1,1,0,1,1,1,1,1 ↵
	Description	Getting HDCP input enabled/disabled IN3: disables HDCP input, other input channels: enables HDCP 1.4 input
Setting example	Command	@SHE,1,0 ↵
	Response	@SHE,1,0 ↵
	Description	Setting IN1 HDCP input to be disabled
Remarks		These commands are only for digital input. IN6 and IN7 are available only if "1" (Digital signal) is selected for " @GIN / @SIN Signal selection of DVI input connector ". If "0" (Analog signal) is selected, "-1" is returned.

@GAI / @SAI		Analog input type
Getting	Command	@GAI ↵
	Response	@GAI, type_1, type_2 ↵
Setting	Command	@SAI, ch_1, type_1 (, ch_2, type_2) ↵
	Response	@SAI, ch_1, type_1 (, ch_2, type_2) ↵
Parameter		type_1-2: Signal type 0 = AUTO [Default], 1 = RGB, 2 = YPbPr, 3 = VIDEO AUTO, 4 = VIDEO, 5 = Y/C
		ch_1-2: Input channel 0 = All analog inputs, 6 = IN6, 7 = IN7
Getting example	Command	@GAI ↵
	Response	@GAI,0,2 ↵
	Description	Getting signal type of analog input IN6: AUTO, IN7: YPbPr
Setting example	Command	@SAI,0,2 ↵
	Response	@SAI,0,2 ↵
	Description	Setting the signal type of IN6 and IN7 to YPbPr
Remarks		These commands are only for analog input. IN6 and IN7 are available only if "0" (Analog signal) is selected for " @GIN / @SIN Signal selection of DVI input connector ". If "1" (Digital signal) is selected, "-1" is returned.

@GID / @SID		Automatic detection of input video interruption
Getting	Command	@GID ↵
	Response	@GID, detect_1, detect_2, detect_3, detect_4, detect_5, detect_6, detect_7, detect_8 ↵
Setting	Command	@SID, ch_1, detect_1 (, ch_2, detect_2) ↵
	Response	@SID, ch_1, detect_1 (, ch_2, detect_2) ↵
Parameter		detect_1-8: Automatic detection 0 = OFF, 1 = ON [Default]
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GID ↵
	Response	@GID,1,1,1,1,1,0,1,1 ↵
	Description	Getting the setting of automatic detection of input video interruption IN6: If input video signal is interrupted, the video output is not turned off instantly. Other inputs: OFF
Setting example	Command	@SID,2,0 ↵
	Response	@SID,2,0 ↵
	Description	Setting IN2 automatic detection to OFF ("0") If input video signal is interrupted, not to turn off the video output instantly.
Remarks		—

@GIN / @SIN		Signal selection of DVI input connector
Getting	Command	@GIN ↵
	Response	@GIN, signal_1, signal_2 ↵
Setting	Command	@SIN, ch_1, signal_1 (, ch_2, signal_2) ↵
	Response	@SIN, ch_1, signal_1 (, ch_2, signal_2) ↵
Parameter		signal_1-2: Signal selection of DVI input connectors (IN6, IN7) 0 = Analog signal, 1 = Digital signal [Default]
		ch_1-2: Input channel 0 = All analog inputs, 6 = IN6, 7 = IN7
Getting example	Command	@GIN ↵
	Response	@GIN,0,0 ↵
	Description	Getting the set DVI input signal IN6 and IN7: Analog input signal
Setting example	Command	@SIN,6,1 ↵
	Response	@SIN,6,1 ↵
	Description	Setting IN6 to digital input signal
Remarks		—

@GIA / @SIA		HDBaseT input long reach mode
Getting	Command	@GIA, ch <input type="checkbox"/>
	Response	@GIA, ch, mode <input type="checkbox"/>
Setting	Command	@SIA, ch, mode <input type="checkbox"/>
	Response	@SIA, ch, mode <input type="checkbox"/>
Parameter		ch: Input channel 8 = IN8 Make sure to set this menu to "8".
		mode: Setting mode 0 = OFF [Default], 1 = ON
Getting example	Command	@GIA,8 <input type="checkbox"/>
	Response	@GIA,8,0 <input type="checkbox"/>
	Description	Getting long reach mode setting of IN8 Setting long reach mode of IN8 to OFF
Setting example	Command	@SIA,8,1 <input type="checkbox"/>
	Response	@SIA,8,1 <input type="checkbox"/>
	Description	Setting long reach mode of IN8 to ON
Remarks		If this menu is set to "ON", resolutions up to 1080p are supported. If it exceeds 1080p, video signal cannot be received.

@GFX / @SFX		Fixing settings for input signal
Getting	Command	@GFX ch
	Response	@GFX, ch, mode (, aspect, analog, audio)
Setting	Command	@SFX, ch, mode (, aspect, analog, audio)
	Response	@SFX, ch, mode (, aspect, analog, audio)
Parameter		<p>ch: Input channel 1 = IN1 to 8 = IN8</p> <p>mode: Setting mode 0 = SELECTED, 1 = ALL FIXED</p> <p>Available only if the "mode" is selected to "0" (SELECTED) aspect: Aspect ratio 0 = OFF [Default], 1 = ON(FIXED)</p> <p>analog: Signal type of analog input (For digital input, select "0") 0 = OFF, 1 = ON(FIXED) [Default]</p> <p>audio: Audio input level (For analog input, select "0") 0 = OFF, 1 = ON(FIXED) [Default]</p>
Getting example	Command	@GFX, 1
	Response	@GFX, 1, 0, 1, 0, 0
	Description	<p>Getting setting fixation of each input signal (For analog inputs)</p> <p>IN1 aspect ratio: current setting, signal type of analog input: setting of each input signal</p> <p>Audio input level is disabled.</p>
Setting example	Command	@SFX,2,1
	Response	@SFX,2,1
	Description	IN2: Fixing settings for each input to the current settings
Remarks		<p>When digital input channel is acquired, "0" is returned for the Parameter of analog signal type. ("0" is an invalid value.)</p> <p>When analog input channel is acquired, "0" is returned for the Parameter of audio input level. ("0" is an invalid value.)</p> <p>Input channels IN6 and IN7: digital input/analog input selectable. 【See: @GIN / @SIN Signal selection of DVI input connector】</p>

3.3.6 Input timing

@AIS / @AIT		Automatic measurement
Setting	Description	Starting automatic measurement of the start position and display period.
	Command	@AIS, ch ↵
	Response	@AIS, ch ↵
Setting	Description	Starting automatic measurement with a desired aspect ratio.
	Command	@AIT, ch (, mode) ↵
	Response	@AIT, ch (, mode) ↵
Parameter		ch: Input channel 6 = IN6, 7 = IN7 mode: Measurement mode -1 = NEXT ASPECT, 0 = 4:3, 1 = 5:4, 2 = 5:3, 3 = 16:9, 4 = 16:10 If you select "NEXT ASPECT", the next aspect ratio will be selected in order every time the automatic measurement is executed. If you do not set any mode parameter, "NEXT ASPECT" mode will be applied.
Setting example	Command	@AIS,7 ↵
	Response	@AIS,7 ↵
	Description	Starting the automatic measurement of IN7 the start position and display period
Setting example	Command	@AIT,7,0 ↵
	Response	@AIT,7,0 ↵
	Description	Starting the automatic measurement of IN7 input timing setting at the aspect ratio of "4:3"
Setting example	Command	@AIS,7 ↵
	Response	@ERR,7 ↵
	Description	If the automatic measurement fails, an error is returned.
Remarks		These commands are valid only if analog RGB/analog YPbPr signal is input.

@GHT / @SHT		The total number of horizontal dots
Getting	Command	@GHT ↵
	Response	@GHT, h_total_1, h_total_2, h_total_3, h_total_4, h_total_5, h_total_6, h_total_7, h_total_8 ↵
Setting	Command	@SHT, ch, h_total ↵
	Response	@SHT, ch, h_total ↵
Parameter		h_total_1-8/ h_total: The total number of horizontal dots 400 to 4125 (sampling block should be 13 MHz to 162 MHz) [Default] depends on input signal
		ch: Input channel 0 =All analog inputs, 6 = IN6, 7 = IN7
Getting example	Command	@GHT ↵
	Response	@GHT,2200,2200,0,2640,1344,1792,0,0 ↵
	Description	Getting the total number of horizontal dots IN1 and IN2: 2200 dots, IN4: 2640 dots, IN5: 1344 dots, IN6: 1792 dots. "0" is returned to channels without input signal.
Setting example	Command	@SHT,7,1344 ↵
	Response	@SHT,7,1344 ↵
	Description	Setting the total number of IN7 horizontal dots to "1344"
Setting example	Command	@SHT,7,1344 ↵
	Response	@ERR,3 ↵
	Description	If analog RGB signal or analog YPbPr signal is not input, an error is returned.
Remarks		Getting command acquires all channels' statuses. Setting commands are valid only if analog RGB/analog YPbPr signal is input.

@GHS / @SHS		Horizontal start position
Getting	Command	@GHS ↵
	Response	@GHS, h_start_1, h_start_2, h_start_3, h_start_4, h_start_5, h_start_6, h_start_7, h_start_8 ↵
Setting	Command	@SHS, ch, h_start ↵
	Response	@SHS, ch, h_start ↵
Parameter		h_start_1-8/ h_start: Horizontal start position 64 to 2900 (should be [the total number of horizontal dots – horizontal display period] or less) [Default] depends on input signal
		ch: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GHS ↵
	Response	@GHS,192,192,496,0,296,0,378,0 ↵
	Description	Getting the horizontal start position IN1 and IN2: 192 dots, IN3: 496 dots, IN5: 296 dots, IN7: 378 dots "0" is returned to channels without input signal.
Setting example	Command	@SHS,5,296 ↵
	Response	@SHS,5,296 ↵
	Description	Setting IN5 horizontal start position to 296 dots
Setting example	Command	@SHS,6,296 ↵
	Response	@ERR,3 ↵
	Description	If no signal is input, an error is returned.
Remarks		Setting command is valid only for video signal except for 4K video signal. If 4K video signal is input, only Getting commands are available.

@GHD / @SHD		Horizontal display period
Getting	Command	@GHD ↵
	Response	@GHD, h_disp_1, h_disp_2, h_disp_3, h_disp_4, h_disp_5, h_disp_6, h_disp_7, h_disp_8 ↵
Setting	Command	@SHD, ch, h_disp ↵
	Response	@SHD, ch, h_disp ↵
Parameter		h_disp_1-8 / h_disp: Horizontal display period 64 to 2900 (should be [the total number of horizontal dots - 64] or less) [Default] depends on input signal
		ch: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GHD ↵
	Response	@GHD,1920,1920,0,1920,1024,1360,0,0 ↵
	Description	Getting horizontal display period IN1, IN2, and IN4: 1920 dots, IN5: 1024 dots, IN6: 1360 dots "0" is returned to channels without input signal.
Setting example	Command	@SHD,5,1024 ↵
	Response	@SHD,5,1024 ↵
	Description	Setting IN5 horizontal display period to 1024 dots
Setting example	Command	@SHD,6,1024 ↵
	Response	@ERR,3 ↵
	Description	If no signal is input, an error is returned.
Remarks		Setting commands: valid only for video signal except for 4K video signal. If 4K video signal is input, only getting commands are valid.

@GVS / @SVS		Vertical start position
Getting	Command	@GVS ↵
	Response	@GVS, v_start_1, v_start_2, v_start_3, v_start_4, v_start_5, v_start_6, v_start_7, v_start_8 ↵
Setting	Command	@SVS, ch, v_start ↵
	Response	@SVS, ch, v_start ↵
Parameter		v_start_1-8/ v_start: Vertical start position 10 to 2048 (should be [the total number of vertical lines - vertical display period] or less) [Default] depends on input signal
		ch: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GVS ↵
	Response	@GVS,40,0,40,40,35,0,24,0 ↵
	Description	Getting the vertical start position IN1, IN3, and IN4: 40 lines, IN5: 35 lines, IN7: 24 lines "0" is returned to channels without input signal.
Setting example	Command	@SVS,5,35 ↵
	Response	@SVS,5,35 ↵
	Description	Setting IN5 vertical start position to 35 lines
Setting example	Command	@SVS,6,35 ↵
	Response	@ERR,3 ↵
	Description	If no signal is input, an error is returned.
Remarks		Setting commands: valid only for video signal except for 4K video signal. If 4K video signal is input, only getting commands are valid.

@GVD / @SVD		Vertical display period
Getting	Command	@GVD ↵
	Response	@GVD, v_disp_1, v_disp_2, v_disp_3, v_disp_4, v_disp_5, v_disp_6, v_disp_7, v_disp_8 ↵
Setting	Command	@SVD, ch, v_disp ↵
	Response	@SVD, ch, v_disp ↵
Parameter		v_disp_1-8/ v_disp: Vertical display period 10 to 2048 (should be [the total number of vertical lines - 10] or less) [Default] depends on input signal
		ch: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GVD ↵
	Response	@GVD,0,1080,1080,900,768,0,900,0 ↵
	Description	Getting vertical display period IN2 and IN3: 1080 lines, IN4: 900 lines, IN5: 768 lines, IN7: 900 lines "0" is returned to channels without input signal.
Setting example	Command	@SVD,5,768 ↵
	Response	@SVD,5,768 ↵
	Description	Setting IN5 vertical display period to 768 lines
Setting example	Command	@SVD,5,768 ↵
	Response	@ERR,3 ↵
	Description	If signal is not input, an error is returned.
Remarks		Setting commands: valid only for video signal except for 4K video signal. If 4K video signal is input, only getting commands are valid.

@GIS / @SIS		Automatic measurement of start position
Getting	Command	@GIS ↵
	Response	@GIS, mode_1, mode_2 ↵
Setting	Command	@SIS, ch, mode ↵
	Response	@SIS, ch, mode ↵
Parameter		<p>mode_1-2 / mode: Automatic measurement 0 = All inputs from this input channel are not measured automatically. 1 = Current input signal is not measured automatically. 2 = Current input signal is measured automatically. [Default]</p> <p>ch: Input channel 0 =All analog inputs, 6 = IN6, 7 = IN7</p>
Getting example	Command	@GIS ↵
	Response	@GIS,0,2 ↵
	Description	Getting the setting of Automatic measurement of the start position IN6: not measured automatically, IN7: measured automatically.
Setting example	Command	@SIS,6,1 ↵
	Response	@SIS,6,1 ↵
	Description	Setting signal that is currently input from IN6 to "1" (Current input signal is not measured automatically)
Remarks		<p>These commands are only for analog input.</p> <p>IN6 and IN7 are available only if "0" (Analog signal) is selected for "@GIN / @SIN Signal selection of DVI input connector". If "1" (Digital signal) is selected, "-1" is returned.</p>

@GSM / @SSM		Automatic measurement when unregistered signal is input
Getting	Command	@GSM ↵
	Response	@GSM, mode ↵
Setting	Command	@SSM, mode ↵
	Response	@SSM, mode ↵
Parameter		<p>mode: Automatic measurement 0 = Not execute, 1 = Execute [Default]</p>
Getting example	Command	@GSM ↵
	Response	@GSM,1 ↵
	Description	Getting the set automatic measurement mode when unregistered signal is input Automatic measurement is set to "1" (Execute).
Setting example	Command	@SSM,1 ↵
	Response	@SSM,1 ↵
	Description	Setting the automatic measurement to be executed when unregistered signal is input
Remarks		—

@RTT		Loading device data
Setting	Command	@RTT, ch (, table) ↵
	Response	@RTT, ch (, table) ↵
Parameter		<p>ch: Input channel 1 = IN1 to 8 = IN8</p> <p>table: Device table 1 to 99 (Registered device data), 100 to 100+n (Preset device data. "n" varies depending on input signal, but 0 for most cases.) Only for analog input, specify the device table.</p>
Setting example	Command	@RTT,1 ↵
	Response	@RTT,1 ↵
	Description	Reconfiguring IN1 input timing setting to the value detected automatically
Setting example	Command	@RTT,6,2 ↵
	Response	@RTT,6,2 ↵
	Description	Setting IN6 input timings to the values saved in the device table 2
Remarks		<p>This command is valid only if signal is input.</p> <p>For analog input, this command is valid only if the device data of input signal is registered.</p>

@STT		Registering device data
Setting	Command	@STT, ch, table (, name) ↵
	Response	@STT, ch, table (, name) ↵
Parameter		<p>ch: Input channel 6 = IN6, 7 = IN7</p> <p>table: Device table 1 to 99</p> <p>name: Device table name Up to 14 characters from 20 to 7D of ASCII code. You can skip "Device table name". If you skip it, only input timing setting is saved. However, if no device table name is currently saved, the resolution is saved automatically as the device table name.</p>
Setting example	Command	@STT,7,2 ↵
	Response	@STT,7,2 ↵
	Description	Saving IN7 input timing setting in device table 2 without editing the device table name
Setting example	Command	@STT,7,2,XGA 60Hz ↵
	Response	@STT,7,2,XGA 60Hz ↵
	Description	Saving the current IN7 input timing setting in device table 2 with the name of "XGA 60Hz"
Remarks		This command is valid only if analog RGB/YPbPr signal is input.

@GTK / @STK		Tracking
Getting	Command	@GTK ↵
	Response	@GTK, track_1, track_2 ↵
Setting	Command	@STK, ch_1, track_1 (, ch_2 , track_2) ↵
	Response	@STK, ch_1, track_1 (, ch_2 , track_2) ↵
Parameter		track_1-2: Tracking 0 to 63 [Default] 0
		ch_1-2: Input channel 0 = All analog inputs, 6= IN6, 7 = IN7
Getting example	Command	@GTK ↵
	Response	@GTK,4,0 ↵
	Description	Getting the set tracking If no analog RGB/YPbPr signal is input, "0" is returned.
Setting example	Command	@STK,7,4 ↵
	Response	@STK,7,4 ↵
	Description	Setting IN7 tracking to "4"
Remarks		This command is valid only if analog RGB/YPbPr signal is input. If "1" (Digital signal) is selected, "-1" is returned.

3.3.7 Output settings

@GDM / @SDM		Output mode
Getting	Command	@GDM ↵
	Response	@GDM, mode_1, mode_2, mode_3, mode_4 ↵
Setting	Command	@SDM, ch_1, mode_1 (, ch_2, mode_2···) ↵
	Response	@SDM, ch_1, mode_1 (, ch_2, mode_2···) ↵
Parameter		mode_1-4: Output mode 0 = DVI MODE, 1 = HDMI RGB MODE, 2 = HDMI YCbCr4:2:2 MODE, 3 = HDMI YCbCr4:4:4 MODE [Default] 4 = HDMI YCbYr4:2:0 MODE * only OUTA
		ch_1-4: Output channel 0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
Getting example	Command	@GDM ↵
	Response	@GDM,3,0,0,0 ↵
	Description	Getting the set output mode OUT1A: HDMI YCbCr4:4:4 MODE, other output channels: DVI MODE
Setting example	Command	@SDM,1,3 ↵
	Response	@SDM,1,3 ↵
	Description	Setting the OUT1 output mode to "HDMI YCbCr4:4:4 MODE"
Remarks		Since OUTB (HDBaseT output connector) does not support YCbCr 4:2:0, "HDMI YCbCr 4:2:0 MODE" cannot be set to the connector.

@GUY / @SUY		Synchronous signal output when no video signal is input
Getting	Command	@GUY ↵
	Response	@GUY, sync_1, sync_2 ↵
Setting	Command	@SUY, ch_1, sync_1 (, ch_2, sync_2) ↵
	Response	@SUY, ch_1, sync_1 (, ch_2, sync_2) ↵
Parameter		sync_1-2: Synchronous signal output 0 = Not output, 1 = Output [Default]
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GUY ↵
	Response	@GUY,1,0 ↵
	Description	Getting synchronous signal output when no video signal is input OUT1: synchronous signal is output. OUT2: synchronous signal is not output.
Setting example	Command	@SUY,1,1 ↵
	Response	@SUY,1,1 ↵
	Description	Setting OUT1 to "1" (synchronous signal is output even if video signal is not input)
Remarks		—

@GBO / @SBO		Output video when no video signal is not input
Getting	Command	@GBO
	Response	@GBO, video_1, video_2
Setting	Command	@SBO, ch_1, video_1 (, ch_2, video_2)
	Response	@SBO, ch_1, video_1 (, ch_2, video_2)
Parameter		video_1-2: Output video when no video signal is not input 0 = Black, 1 = Blue [efault], 2 = Background color
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GBO
	Response	@GBO,1,0
		Description
		Getting the output video when no video signal is input OUT1: blue screen, OUT2: black screen
Setting example	Command	@SBO,1,1
	Response	@SBO,1,1
		Description
		Setting OUT1 to output blue when no video signal is input
Remarks		—

@GFF / @SFF		Video switching effect
Getting	Command	@GFF
	Response	@GFF, switching_1, switching_2
Setting	Command	@SFF, ch_1, switching_1 (, ch_2, switching_2)
	Response	@SFF, ch_1, switching_1 (, ch_2, switching_2)
Parameter		switching_1-2: Video switching effect 0 = CUT, 1 = FADE OUT/IN, 2 = FREEZE + FADE OUT/IN [Default], 3 = EFT→RIGHT WIPE, 4 = RIGHT→LEFT WIPE, 5 = TOP→BOTTOM WIPE, 6 = BOTTOM→TOP WIPE
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GFF
	Response	@GFF,0,1
		Description
		Getting input channel switching effect OUT1: CUT, OUT2: FADE OUT/IN
Setting example	Command	@SFF,1,1
	Response	@SFF,1,1
		Description
		Setting OUT1 switching effect to FADE OUT/IN
Remarks		—

@GFT / @SFT		Video switching speed
Getting	Command	@GFT ↵
	Response	@GFT, time_1, time_2 ↵
Setting	Command	@SFT, ch_1, time_1 (, ch_2, time_2) ↵
	Response	@SFT, ch_1, time_1 (, ch_2, time_2) ↵
Parameter		time_1-2: Switching speed 100 = 0.1 sec. to 2000 = 2 sec. [Default] 350 = 0.35 sec. Set the value by 10 ms. If you set a value other than 0 for the lower 1 digits, these values will be rounded down. (For example, if you set it to 395, the speed is set to 390 ms.)
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GFT ↵
	Response	@GFT,400,400,350,350 ↵
	Description	Getting the set switching speed of video input channel OUT1: 400 ms, OUT2: 350 ms
Setting example	Command	@SFT,1,400 ↵
	Response	@SFT,1,400 ↵
	Description	Setting OUT1 switching time to 400 ms.
Remarks		—

@GWC / @SWC		Wipe color
Getting	Command	@GWC, ch ↵
	Response	@GWC, ch, red, green, blue ↵
Setting	Command	@SWC, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2) ↵
	Response	@SWC, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2) ↵
Parameter		ch: Output channel 1 = OUT1, 2 = OUT2
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
		red / red_1-2 : Wipe color (Red) green / green_1-2 : Wipe color (Green) blue / blue_1-2 : Wipe color (Blue) 0 to 255 [Default] 0 (black)
Getting example	Command	@GWC,1 ↵
	Response	@GWC,1,255,255,255 ↵
	Description	Getting the set wipe color of OUT1 RGB: 255 (white)
Setting example	Command	@SWC,1,255,255,255 ↵
	Response	@SWC,1,255,255,255 ↵
	Description	Setting the wipe colors (RGB) of OUT1 to "255" (white)
Remarks		—

@GVO / @SVO		Vidoe output connector
Getting	Command	@GVO
	Response	@GVO, out_1A, out_1B, out_2A, out_2B
Setting	Command	@SVO, ch_1, out_1 (, ch_2, out_2···)
	Response	@SVO, ch_1, out_1 (, ch_2, out_2···)
Parameter		out_1A / out_2A: OUTA video output out_1B / out_2B: OUTB video output out_1-4 : Video output 0 = Not output, 1 = Output [Default]
		ch_1-4: Output connector 0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
Getting example	Command	@GVO
	Response	@GVO,0,1,1,1
		Description
		Getting video output connector OUT1A: not output video, other outputs: output video
Setting example	Command	@SVO,1,1
	Response	@SVO,1,1
		Description
		Setting OUT1A to "1" (video is output)
Remarks		—

@GEN / @SEN		HDCEP output
Getting	Command	@GEN
	Response	@GEN, hdcp_1, hdcp_2, hdcp_3, hdcp_4
Setting	Command	@SEN, ch_1, hdcp_1 (, ch_2, hdcp_2, ch_3, hdcp_3, ch_4, hdcp_4)
	Response	@SEN, ch_1, hdcp_1 (, ch_2, hdcp_2, ch_3, hdcp_3, ch_4, hdcp_4)
Parameter		hdcp_1-4: HDCEP output 0 = HDCEP is encrypted only if input signal is with HDCEP. 1 = HDCEP 2.2 is preferentially encrypted. [Default] 2 = HDCEP 1.4 is encrypted. 3 = HDCEP is not encrypted.
		ch_1-4: Output channel 0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
Getting example	Command	@GEN
	Response	@GEN,1,0,0,0
		Description
		Getting the set HDCEP output OUT1A: HDCEP 2.2 is preferentially encrypted. Other output channels: HDCEP is encrypted only if input signal is with HDCEP.
Setting example	Command	@SEN,1,1
	Response	@SEN,1,1
		Description
		Setting OUT1A to HDCEP 2.2
Remarks		—

@GHR / @SHR		The number of HDCP retries
Getting	Command	@GHR
	Response	@GHR, retry_1, retry_2, retry_3, retry_4
Setting	Command	@SHR, ch_1, retry_1 (, ch_2, retry_2, ch_3, retry_3, ch_4, retry_4)
	Response	@SHR, ch_1, retry_1 (, ch_2, retry_2, ch_3, retry_3, ch_4, retry_4)
Parameter		retry_1-4: The number of retries -1 = Retry until succeed [Default], 0 = Not retry, 1 to 100 = Retry for the desired number of retries
		ch_1-4: Output channel 0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
Getting example	Command	@GHR
	Response	@GHR,-1,10,10,10
	Description	Getting the set number of HDCP retries OUT1: continue to retry until succeed. Other output channels: Retry for up to 10 times.
Setting example	Command	@SHR,1,10
	Response	@SHR,1,10
	Description	Setting OUT1A to retry for up to 10 times
Remarks		—

@GDC / @SDC		Deep Color
Getting	Command	@GDC
	Response	@GDC, color_1, color_2
Setting	Command	@SDC, ch_1, color_1 (, ch_2, color_2, ch_3, color_3, ch_4, color_4)
	Response	@SDC, ch_1, color_1 (, ch_2, color_2, ch_3, color_3, ch_4, color_4)
Parameter		color_1-4: Color depth 0 = 24-BIT COLOR [Default], 1 = 30-BIT COLOR
		ch_1-4: Output channel 0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
Getting example	Command	@GDC
	Response	@GDC,1,0,0,0
	Description	Getting the set color depth OUT1A: 30-BIT COLOR, Other output channels: 24-BIT COLOR
Setting example	Command	@SDC,1,0
	Response	@SDC,1,0
	Description	Setting OUT1A deep color to 24-BIT COLOR
Remarks		—

@GCE / @SCE		CEC connection
Getting	Command	@GCE ↵
	Response	@GCE, connect_1, connect_2, connect_3, connect_4 ↵
Setting	Command	@SCE, ch_1, connect_1 (, ch_2, connect_2, ch_3, connect_3, ch_4, connect_4) ↵
	Response	@SCE, ch_1, connect_1 (, ch_2, connect_2, ch_3, connect_3, ch_4, connect_4) ↵
Parameter		connect_1-4: CEC connection 0 = Not connected [Default], 1 = Selected video input channel, 2 = Input channel1, 3 = Input channel2, 4 = Input channel3, 5 = Input channel4, 6 = Input channel5, 7 = Input channel8
		ch_1-4: Output channel 0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
Getting example	Command	@GCE ↵
	Response	@GCE,4,0,0,0 ↵
	Description	Getting the set CEC connection OUT1A: connecting to input channel3, Other outputs: not connected.
Setting example	Command	@SCE,1,4 ↵
	Response	@SCE,1,4 ↵
	Description	Setting OUT1A CEC connection to Input channel3
Remarks		—

@HAU		HDCP re-encryption
Setting	Command	@HAU, ch_1 (, ch_2, ch_3, ch_4) ↵
	Response	@HAU, ch_1 (, ch_2, ch_3, ch_4) ↵
Parameter		ch_1-2: Output channel 0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
Setting example	Command	@HAU,1 ↵
	Response	@HAU,1 ↵
	Description	Setting OUT1A to re-encrypt HDCP
Remarks		—

@GAU / @SAU		Priority of input channel automatic switching (OFF to ON)
Getting	Command	@GAU, out ↵
	Response	@GAU, out, in1_priority, in2_priority, in3_priority, in4_priority, in5_priority, in6_priority, in7_priority, in8_priority ↵
Setting	Command	@SAU, out_1, in1_priority, in2_priority···, in8_priority (, out_2, in1_priority···) ↵
	Response	@SAU, out_1, in1_priority, in2_priority···, in8_priority (, out_2, in1_priority···) ↵
Parameter		out / out_1-2: Output channel 1 = OUT1, 2= OUT2
		in1_priority – in8_priority: Priority 0 = OFF, 1 = priority (high) to 8 = priority (low)
Getting example	Command	@GAU,1 ↵
	Response	@GAU,1,1,2,3,4,5,6,7,8 ↵
	Description	Getting the set priority of OUT1's automatic switching IN1>IN2>···>IN8
Setting example	Command	@SAU,1,8,7,6,5,4,3,2,1 ↵
	Response	@SAU,1,8,7,6,5,4,3,2,1 ↵
	Description	Setting the priority of OUT1's automatic switching to IN8>IN7>···>IN1
Remarks		—

@GOF / @SOF		Priority of input channel automatic switching (ON to OFF)
Getting	Command	@GOF, out <input type="button" value="↵"/>
	Response	@GOF, out, in1_priority, in2_priority, in3_priority, in4_priority, in5_priority, in6_priority, in7_priority, in8_priority <input type="button" value="↵"/>
Setting	Command	@SOF, out_1, in1_priority, in2_priority···, in8_priority (, out_2, in1_priority···) <input type="button" value="↵"/>
	Response	@SOF, out_1, in1_priority, in2_priority···, in8_priority (, out_2, in1_priority···) <input type="button" value="↵"/>
Parameter		out, out_1-2: Output channel 1 = OUT1, 2 = OUT2
		in1_priority – in8_priority: Priority 0 = OFF, 1 = priority (high) to 8 = priority (low)
Getting example	Command	@GOF,1 <input type="button" value="↵"/>
	Response	@GOF,1,1,2,3,4,5,6,7,8 <input type="button" value="↵"/>
	Description	Getting the set priority of OUT1's automatic switching IN1>IN2>···>IN8
Setting example	Command	@SOF,1,8,7,6,5,4,3,2,1 <input type="button" value="↵"/>
	Response	@SOF,1,8,7,6,5,4,3,2,1 <input type="button" value="↵"/>
	Description	Setting the priority of OUT1's automatic switching to IN8>IN7>···>IN1
Remarks		—

@GMT / @SMT		Masking time after automatic switching of input channel
Getting	Command	@GMT <input type="button" value="↵"/>
	Response	@GMT, time_1, time_2 <input type="button" value="↵"/>
Setting	Command	@SMT, ch_1, time_1 (, ch_2, time_2) <input type="button" value="↵"/>
	Response	@SMT, ch_1, time_1 (, ch_2, time_2) <input type="button" value="↵"/>
Parameter		time_1-2: Masking time 0 = 0 sec. to 999999 = 999.999 sec. [Default] 0 sec.
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GMT <input type="button" value="↵"/>
	Response	@GMT,2000,10000 <input type="button" value="↵"/>
	Description	Getting the set masking time after automatic switching of input channel Automatic switching is not performed until the following time passes: OUT1: 2000 ms. (2 sec.), OUT2: 10000 ms. (10 sec.)
Setting example	Command	@SMT,1,2000,2,2000 <input type="button" value="↵"/>
	Response	@SMT,1,2000,2,2000 <input type="button" value="↵"/>
	Description	Setting the masking time to 2000 ms. (2 sec.) for OUT1, 10000 ms. (10 sec.) for OUT2
Remarks		—

@GAD / @SAD		Channel switching mode for input channel automatic switching
Getting	Command	@GAD
	Response	@GAD, mode_1, mode_2
Setting	Command	@SAD, ch_1, mode_1 (, ch_2, mode_2)
	Response	@SAD, ch_1, mode_1 (, ch_2, mode_2)
Parameter		mode_1-2: Channel switching mode 0 = VIDEO, 1 = AUDIO, 2 = V&A [Default]
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GAD
	Response	@GAD,2,1
	Description	Getting the set channel switching mode to: OUT1: V&A, OUT2: AUDIO
Setting example	Command	@SAD,1,2,2,0
	Response	@SAD,1,2,2,0
	Description	Setting the channel switching mode to: OUT1: V&A, OUT2: VIDEO
Remarks		—

@GOA / @SOA		HDBaseT output long reach mode
Getting	Command	@GOA, ch
	Response	@GOA, ch, mode
Setting	Command	@SOA, ch_1, mode_1 (, ch_2, mode_2)
	Response	@SOA, ch_1, mode_1 (, ch_2, mode_2)
Parameter		ch: Output channel 1 = OUT1B, 2 = OUT2B
		mode_1-2: Setting mode 0 = OFF [Default], 1 = ON
		ch_1-2: Output channel 0 = All outputs (OUT1B, OUT2B), 1 = OUT1B, 2 = OUT2B
Getting example	Command	@GOA,1
	Response	@GOR,1,0
	Description	Getting long reach mode setting of OUT1B OUT1B: Long reach mode is set to OFF
Setting example	Command	@SOA,1,1
	Response	@SOA,1,1
	Description	Setting long reach mode of OUT1B to ON
Remarks		If this menu is set to "ON", resolutions up to 1080p are supported. If it exceeds 1080p, signals cannot be received.

3.3.8 Audio

@GSL / @SSL		Audio output level
Getting	Command	@GSL
	Response	@GSL, level_1, level_2
Setting	Command	@SSL, ch_1, level_1 (, ch_2, level_2)
	Response	@SSL, ch_1, level_1 (, ch_2, level_2)
Parameter		level_1-2: Audio output level -60 to 10 [Default] 0
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GSL
	Response	@GSL,-4, 0
	Description	Getting the set audio output level OUT1: -4 dB, OUT2: ±0 dB
Setting example	Command	@SSL,1,-4
	Response	@SSL,1,-4
	Description	Setting OUT1 audio output level to -4 dB
Remarks		If you change the output level while muted, it will be unmuted.

@SOL		Relative value of audio output level
Setting	Command	@SOL, ch_1, updown_1 (, ch_2, updown_2)
	Response	@SOL, ch_1, updown_1 (, ch_2, updown_2)
Parameter		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
		updown_1-2: Relative value setting -70 to 70 The specified value is added to the current audio output level. If the total value exceeds the limit value (-60 to +10), the limit value will be applied.
Setting example	Command	@SOL,1,-1
	Response	@SOL,1,-1
	Description	Lower 1 dB of audio output level of OUT1.
Remarks		If you change the output level while muted, it will be unmuted.

@GOL		Limit status of audio output level
Getting	Command	@GOL ↵
	Response	@GOL, out_1, out_2 ↵
Parameter		out_1-2: Limit status of audio output level -1 = minimum settable value (-60 dB), 0 = not limit status, 1 = maximum settable value (+10 dB)
Getting example	Command	@GOL ↵
	Response	@GOL,1,0 ↵
	Description	Getting limit status of audio output level OUT1: maximum settable value OUT2: not reach the limit value
Remarks		—

@GAM / @SAM		Audio output mute	
Getting	Command	@GAM ↵	
	Response	@GAM, mute_1, mute_2 ↵	
Setting	Command	@SAM, ch_1, mute_1 (, ch_2, mute_2) ↵	
	Response	@SAM, ch_1, mute_1 (, ch_2, mute_2) ↵	
Parameter		mute_1-2: Audio output mute 0 = Mute OFF [Default], 1 = Mute ON ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2	
Getting example	Command	@GAM ↵	
	Response	@GAM,1,0 ↵	
		Description	Getting the set value of audio output mute OUT1: Mute ON, OUT2: Mute OFF
Setting example	Command	@SAM,1,1 ↵	
	Response	@SAM,1,1 ↵	
	Description	Muting OUT1 audio output	
Remarks		—	

@GAS / @SAS		Selecting audio input
Getting	Command	@GAS ↵
	Response	@GAS, select_1, select_2, select_3, select_4, select_5, select_6, select_7, select_8 ↵
Setting	Command	@SAS, ch_1, select_1 (, ch_2, select_2···) ↵
	Response	@SAS, ch_1, select_1 (, ch_2, select_2···) ↵
Parameter		select_1-8: Audio input selection 0 = Digital audio [Default], 1 = analog audio IN1 to 3 = analog audio IN3
		ch_1-8: Input channel 0 = All digital inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GAS ↵
	Response	@GAS,1,0,0,0,0,0,0,0 ↵
	Description	Getting the set audio input selection IN1: analog audio IN1 Other input channels: digital audio
Setting example	Command	@SAS,3,1 ↵
	Response	@SAS,3,1 ↵
	Description	Setting IN3 audio input to analog audio IN1
Remarks		—

@GSO / @SSO		Aduio input level
Getting	Command	@GSO ↵
	Response	@GSO, level_1, level_2, level_3, level_4, level_5, level_6, level_7, level_8 ↵
Setting	Command	@SSO, ch_1, level_1 (, ch_2, level_2···) ↵
	Response	@SSO, ch_1, level_1 (, ch_2, level_2···) ↵
Parameter		level_1-8: Audio input level -60 to 0 [Default] 0
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GSO ↵
	Response	@GSO,0,0,0,0,-4,0,0,0 ↵
	Description	Getting audio input level IN5: -4 dB, other input channels: ±0 dB
Setting example	Command	@SSO,5,-8 ↵
	Response	@SSO,5,-8 ↵
	Description	Setting IN5 audio input level to -8 dB
Remarks		—

@SIL		Relative value of audio input level
Setting	Command	@SIL, ch_1, updown_1 (, ch_2, updown_2····)
	Response	@SIL, ch_1, updown_1 (, ch_2, updown_2····)
Parameter		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
		updown_1-8: Setting relative value -60 to 60 The specified value is added to the current audio input level. If the total value exceeds the limit value (-60 to +0), the limit value will be applied.
Setting example	Command	@SIL,1,-1
	Response	@SIL,1,-1
	Description	Lowering IN1 audio input level (1 dB)
Remarks		—

@GIL		Limit status of audio input level
Getting	Command	@GIL
	Response	@GIL, in_1, in_2, in_3, in_4, in_5, in_6, in_7, in_8
Parameter		in_1-8: Limit status -1 = minimum settable value (-60 dB), 0 = not limit status, 1 = maximum settable value (± 0 dB)
Getting example	Command	@GIL
	Response	@GIL,1,0,0,0,0,0,0,0
	Description	Getting the set limit status of audio input level IN1: maximum settable value Other input channels: not limit value
Remarks		—

@GLO / @SLO		Output lip sync
Getting	Command	@GLO
	Response	@GLO, frame_1, frame_2
Setting	Command	@SLO, ch_1, frame_1 (, ch_2, frame_2)
	Response	@SLO, ch_1, frame_1 (, ch_2, frame_2)
Parameter		frame_1-2: Output lip sync 0 to 8 [Default] 0
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GLO
	Response	@GLO,0,2
	Description	Getting the set lip sync of the output side OUT1: 0 frame, OUT2: 2 frames
Setting example	Command	@SLO,1,2
	Response	@SLO,1,2
	Description	Setting the OUT1 lip sync to 2 frames
Remarks		—

@GLY / @SLY		Input lip sync
Getting	Command	@GLY
	Response	@GLY, frame_1, frame_2, frame_3, frame_4, frame_5, frame_6, frame_7, frame_8
Setting	Command	@SLY, ch_1, frame_1 (, ch_2, frame_2···)
	Response	@SLY, ch_1, frame_1 (, ch_2, frame_2···)
Parameter		frame_1-8: Input lip sync 0 to 8 [Default] 0
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GLY
	Response	@GLY,0,0,0,2,0,0,0,0
	Description	Getting the set lip sync of input side IN4: 2 frames, other input channels: 0 frame
Setting example	Command	@SLY,4,2
	Response	@SLY,4,2
	Description	Setting the IN4 lip sync to 2 frames
Remarks		—

@GSF / @SSF		Sampling frequency
Getting	Command	@GSF
	Response	@GSF, frequency_1, frequency_2
Setting	Command	@SSF, ch_1, frequency_1 (, ch_2, frequency_2)
	Response	@SSF, ch_1, frequency_1 (, ch_2, frequency_2)
Parameter		frequency_1-2: Sampling frequency 0 = AUTO-A [Default], 1 = AUTO-B, 2 = 32 kHz, 3 = 44.1 kHz, 4 = 48 kHz, 5 = 88.2 kHz, 6 = 96 kHz, 7 = 192 kHz
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1 to 2 = OUT2
Getting example	Command	@GSF
	Response	@GSF,0,2
	Description	Getting sampling frequency settings OUT1: AUTO-A, OUT2: 32 kHz
Setting example	Command	@SSF,1,3
	Response	@SSF,1,3
	Description	Setting OUT1 sampling frequency to 48 kHz
Remarks		—

@GFD		Actual sampling frequency
Getting	Command	@GFD ↵
	Response	@GFD, frequency_1, frequency_2 ↵
Parameter		frequency_1-2: Sampling frequency 2 = 32 kHz, 3 = 44.1 kHz, 4 = 48 kHz, 5 = 88.2 kHz, 6 = 96 kHz, 7 = 192 kHz
Getting example	Command	@GFD ↵
	Response	@GFD,6,4 ↵
	Description	Getting the actual sampling frequency OUT1: 96 kHz, OUT2: 48 kHz
Remarks		"@GSF / @SSF Sampling frequency" is set to "AUTO", the sampling frequency that is output actually is returned. If it is set to value other than "AUTO", the set sampling frequency is returned.

@GDO / @SDO		Audio output connector
Getting	Command	@GDO ↵
	Response	@GDO, out_1, out_2 ↵
Setting	Command	@SDO, ch_1, out_1, (, ch_2, out_2) ↵
	Response	@SDO, ch_1, out_1, (, ch_2, out_2) ↵
Parameter		out_1-2: Audio output connector 0 = Only to analog audio output connectors, 1 = To HDMI output connectors and HDBaseT output connectors, 2 = To analog audio connectors, HDMI output connectors, and HDBaseToutput connectors [Default]
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GDO ↵
	Response	@GDO,0,1 ↵
	Description	Getting the audio output connectors' settings OUT1: only to analog audio output connectors OUT2: to HDMI output connectors and HDBaseT output connectors
Setting example	Command	@SDO,1,0 ↵
	Response	@SDO,1,0 ↵
	Description	Setting OUT1 to output to only analog audio output connectors
Remarks		—

@GAO / @SAO		Digital audio output connector
Getting	Command	@GAO
	Response	@GAO, out_1A, out_1B, out_2A, out_2B
Setting	Command	@SAO, ch_1, out_1 (, ch_2, out_2···)
	Response	@SAO, ch_1, out_1 (, ch_2, out_2···)
Parameter		out_1A / out_2A: OUTA digital audio output out_1B / out_2B: OUTB digital audio output out_1-4: Digital audio output 0 = Not output, 1 = Output [Default]
		ch_1-4: Output channel 0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
Getting example	Command	@GAO
	Response	@GAO,1,1,1,0
	Description	Getting the connector that outputs digital audio OUT2B: Not output digital audio. Other output channels: Output digital audio.
Setting example	Command	@SAO,1,0
	Response	@SAO,1,0
	Description	OUT1A: Not output digital audio.
Remarks		—

@GMD / @SMD		Multi channel audio output
Getting	Command	@GMD
	Response	@GMD, out_1, out_2
Setting	Command	@SMD, ch_1, out_1 (, ch_2, out_2)
	Response	@SMD, ch_1, out_1 (, ch_2, out_2)
Parameter		out_1-2: Multi channel audio output 0 = CH1/CH2 STEREO, 1 = CH3/CH4 STEREO, 2 = CH5/CH6 STEREO, 3 = CH7/CH8 STEREO, 4 = CH1/CH2 MONO, 5 = CH3/CH4 MONO, 6 = CH5/CH6 MONO, 7 = CH7/CH8 MONO, 8 = DOWN MIX [Default]
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GMD
	Response	@GMD,4,8
	Description	Getting the multi channel audio output's setting OUT1: Outputs monaural audio of CH1/CH2. OUT2: Outputs downmixed audio.
Setting example	Command	@SMD,1,8
	Response	@SMD,1,8
	Description	Setting OUT1 to output downmixed audio
Remarks		—

@GCH / @SCH		Priority of multi channel audio output
Getting	Command	@GCH
	Response	@GCH, out_1, out_2
Setting	Command	@SCH, ch_1, out_1 (, ch_2, out_2)
	Response	@SCH, ch_1, out_1 (, ch_2, out_2)
Parameter		out_1-2: Priority of multi channel audio output 0 = DOWN MIX, 1 = MULTI [Default]
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GCH
	Response	@GCH,0,1
	Description	Getting the priority of multi channel audio output OUT1: DOWN MIX, OUT2: Multi channel audio output
Setting example	Command	@SCH,1,1
	Response	@SCH,1,1
	Description	Giving a priority of OUT1 to the priority of multi channel audio output
Remarks		—

@GAT / @SAT		Test tone
Getting	Command	@GAT
	Response	@GAT, tone_1, speaker_1, tone_2, speaker_2
Setting	Command	@SAT, ch_1, tone_1, speaker_1 (, ch_2, tone_2, speaker_2)
	Response	@SAT, ch_1, tone_1, speaker_1 (, ch_2, tone_2, speaker_2)
Parameter		tone_1-2: Test tone 0 = OFF [Default], 1 = 1 kHz, 2 = 400 Hz
		speaker_1-2: Speaker 0 = ALL [Default], 1 = FRONT L/R, 2 = REAR L/R, 3 = REAR L/R CENTER, 4 = FRONT LEFT, 5 = FRONT RIGHT, 6 = LOW FREQUENCY EFFECT, 7 = FRONT CENTER, 8 = REAR LEFT, 9 = REAR RIGHT, 10 = REAR LEFT CENTER, 11 = REAR RIGHT CENTER
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1 to 2 = OUT2
Getting example	Command	@GAT
	Response	@GAT,2,1,2,1
	Description	Getting the set test tone output OUT1 and OUT2: Outputs test tone (400 Hz) to FRONT L/R.
Setting example	Command	@SAT,1,1,0
	Response	@SAT,1,1,0
	Description	Setting OUT1 to output test tone (1k Hz) to all speakers
Remarks		—

3.3.9 EDID

@GED / @SED		EDID
Getting	Command	@GED ↵
	Response	@GED, edid_1, edid_2, edid_3, edid_4, edid_5, edid_6, edid_7, edid_8 ↵
Setting	Command	@SED, ch_1, edid_1 (, ch_2, edid_2···) ↵
	Response	@SED, ch_1, edid_1 (, ch_2, edid_2···) ↵
Parameter		edid_1-8: EDID 0 = Built-in EDID [Default], 1 = OUT1A MONITOR, 2 = OUT1B MONITOR, 3 = OUT2A MONITOR, 4 = OUT2B MONITOR, 101 to 108 = COPY DATA 1 to COPY DATA 8
		ch_1-8: Input channel 0 = All digital inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GED ↵
	Response	@GED,0,0,0,3,0,0,0,0 ↵
	Description	Getting the set EDID IN4: EDID of the sink device that is connected to OUT3, other inputs: built-in EDID
Setting example	Command	@SED,2,3 ↵
	Response	@SED,2,3 ↵
	Description	Setting IN2: EDID that is read from the sink device connected to OUT3
Remarks		These commands are only for digital input. IN6 and IN7: If "0" (Analog signal) is selected for " @GIN / @SIN Signal selection of DVI input connector ", "-1" is acquired and the setting cannot be valid. In order to use a copied data, read EDID data from the sink device in " @RME Copying EDID " in advance.

@GVF / @SVF		Input resolution for PC
Getting	Command	@GVF
	Response	@GVF, resolution_1, resolution_2, resolution_3, resolution_4, resolution_5, resolution_6, resolution_7, resolution_8
Setting	Command	@SVF, ch_1, resolution_1 (, ch_2, resolution_2···)
	Response	@SVF, ch_1, resolution_1 (, ch_2, resolution_2···)
Parameter		resolution_1-8: Input resolution for PC 0 = SVGA(800x600), 1 = XGA(1024x768), 2 = 720p(1280x720), 3 = WXGA(1280x768), 4 = WXGA(1280x800), 5 = QuadVGA(1280x960), 6 = SXGA(1280x1024), 7 = WXGA(1360x768), 8 = WXGA(1366x768), 9 = SXGA+(1400x1050), 10 = WXGA+(1440x900), 11 = WXGA++(1600x900), 12 = UXGA(1600x1200), 13 = WSXGA+(1680x1050), 14 = 1080i(1920x1080), 15 = 1080p(1920x1080), 16 = WUXGA(1920x1200), 17 = QWXGA(2048x1152) 18 = WQHD(2048x1152), 19 = WQXGA(2560x1600), 40 = 2160p@30(3840x2160), 41 = 2160@60(3840x2160) [Default] IN1, IN2 : 2160p@60(3840x2160) IN3 to IN7 : 1080p(1920x1080) IN8 : 2160p@30(3840x2160)
		ch_1-8: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GVF
	Response	@GVF,6,6,9,6,6,6,6,6
	Description	Getting the set input resolution for PC IN3: SXGA+(1400x1050), other input channels: SXGA(1280x1024)
Setting example	Command	@SVF,0,12
	Response	@SVF,0,12
	Description	Setting EDID of all input channels to UXGA (1600x1200)
Remarks		—

@GHF / @SHF		Input resolution for AV devices
Getting	Command	@GHF ↵
	Response	@GHF, resolution_1, resolution_2, resolution_3, resolution_4, resolution_5, resolution_6, resolution_7, resolution_8 ↵
Setting	Command	@SHF, ch_1, resolution_1 (, ch_2, resolution_2···) ↵
	Response	@SHF, ch_1, resolution_1 (, ch_2, resolution_2···) ↵
Parameter		resolution_1-8: Input resolution for AV devices 0 = UNUSED, 1 = 480p, 2 = 720p, 3 = 1080i, 4 = 1080p, 5 = AUTO [Default], 6 = 2160@30, 7 = 2160@60 4:2:0, 8 = 2160p@60 4:4:4, 9 = 4096x2160@30, 10 = 4096x2160@60 4:2:0, 11 = 4096x2160@60 4:4:4
		ch_1-8: Input channel 0 = All digital inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GHF ↵
	Response	@GHF,5,5,5,4,5,5,5,5 ↵
	Description	Getting the set input resolution for AV devices IN4: 1080p, other inputs: AUTO
Setting example	Command	@SHF,0,4 ↵
	Response	@SHF,0,4 ↵
	Description	Setting EDIDs of all input channels to 1080p
Remarks		These commands are only for digital input. IN8 and IN9 are available only when "1" (Digital signal) is selected for " @GIN / @SIN Signal selection of DVI input connector ". If "0" (Analog signal) is selected, "-1" is returned.

@GDI / @SDI		Deep Color input
Getting	Command	@GDI [↵]
	Response	@GDI, color_1, color_2, color_3, color_4, color_5, color_6, color_7, color_8 [↵]
Setting	Command	@SDI, ch_1, color_1 (, ch_2, color_2···) [↵]
	Response	@SDI, ch_1, color_1 (, ch_2, color_2···) [↵]
Parameter		color_1-8: Color depth 0 = 24-BIT COLOR [Default], 1 = 30-BIT COLOR
		ch_1-8: Input channel 0 = All digital inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GDI [↵]
	Response	@GDI,1,1,1,0,1,1,1,1 [↵]
	Description	Getting the set color depth IN4: 24-BIT COLOR Other input channels: 30-BIT COLOR
Setting example	Command	@SDI,4,0 [↵]
	Response	@SDI,4,0 [↵]
	Description	Setting the set IN4 color depth to 24-BIT COLOR
Remarks		These commands are only for digital input. IN6 and IN7 are available only when "1" (Digital signal) is selected for " @GIN / @SIN Signal selection of DVI input connector ". If "0" (Analog signal) is selected, "-1" is returned.

@GAF / @SAF		Audio format																
Getting	Command	@GAF, ch																
	Response	@GAF, ch, format_1, frequency_1 (, format_2, frequency_2···)																
Setting	Command	@SAF, ch, format_1, frequency_1 (, format_2, frequency_2···)																
	Response	@SAF, ch, format_1, frequency_1 (, format_2, frequency_2···)																
Parameter		<p>ch: Input channel 0 = All digital inputs (for setting only), 1 = IN1 to 8 = IN8</p> <p>format_1-8: Audio format 0 = PCM, 1 = Dolby Digital, 2 = AAC, 3 = Dolby Digital+, 4 = DTS, 5 = DTS-HD, 6 = Dolby TrueHD [Default] only PCM can be output</p> <p>frequency_1-8: Maximum sampling frequency 0 = Not output, 1 = 32 kHz, 2 = 44.1 kHz, 3 = 48 kHz, 4 = 88.2 kHz, 5 = 96 kHz, 6 = 176.4 kHz, 7 = 192 kHz [Default] DTS-HD: 192 kHz, Dolby TrueHD: 96 kHz, other formats:48 kHz</p> <p>Maximum settable sampling frequency depends on the audio format.</p> <table border="1"> <thead> <tr> <th>Audio format</th> <th>Maximum sampling frequency (kHz)</th> </tr> </thead> <tbody> <tr> <td>PCM</td> <td>32/44.1/48/88.2/96/176.4/192</td> </tr> <tr> <td>Dolby Digital</td> <td>Output disabled/32/44.1/48</td> </tr> <tr> <td>AAC</td> <td>Output disabled/32/44.1/48/88.2/96</td> </tr> <tr> <td>Dolby Digital+</td> <td>Output disabled/32/44.1/48</td> </tr> <tr> <td>DTS</td> <td>Output disabled/32/44.1/48/96</td> </tr> <tr> <td>DTS-HD</td> <td>Output disabled/44.1/48/88.2/96/176.4/192</td> </tr> <tr> <td>Dolby TrueHD</td> <td>Output disabled/44.1/48/88.2/96/176.4/192</td> </tr> </tbody> </table> <p>Getting commands: the set audio formats and maximum sampling frequency is returned. Setting commands: send the desired audio formats and the maximum sampling frequencies. Other audio formats is set to "0" (Output disabled) for the maximum sampling frequency. You do not need to specify "0" parameter normally. PCM is always enabled, you can skip this menu unless you need to change the sampling frequency.</p>	Audio format	Maximum sampling frequency (kHz)	PCM	32/44.1/48/88.2/96/176.4/192	Dolby Digital	Output disabled/32/44.1/48	AAC	Output disabled/32/44.1/48/88.2/96	Dolby Digital+	Output disabled/32/44.1/48	DTS	Output disabled/32/44.1/48/96	DTS-HD	Output disabled/44.1/48/88.2/96/176.4/192	Dolby TrueHD	Output disabled/44.1/48/88.2/96/176.4/192
Audio format	Maximum sampling frequency (kHz)																	
PCM	32/44.1/48/88.2/96/176.4/192																	
Dolby Digital	Output disabled/32/44.1/48																	
AAC	Output disabled/32/44.1/48/88.2/96																	
Dolby Digital+	Output disabled/32/44.1/48																	
DTS	Output disabled/32/44.1/48/96																	
DTS-HD	Output disabled/44.1/48/88.2/96/176.4/192																	
Dolby TrueHD	Output disabled/44.1/48/88.2/96/176.4/192																	
Getting example	Command	@GAF,1																
	Response	@GAF,1,0,7																
	Description	Getting the set audio formats for IN1 Up to 192 kHz of PCM.																
Setting example	Command	@SAF,2,4,3																
	Response	@SAF,2,4,3																
	Description	Enabling IN2 to output PCM and DTS up to 48 kHz (PCM's sampling frequency is not changed)																
Remarks		<p>These commands are only for digital input.</p> <p>IN6 and IN7 are available only when "1" (Digital signal) is selected for "@GIN / @SIN Signal selection of DVI input connector". If "0" (Analog signal) is selected, "-1" is returned.</p>																

@GSP / @SSP		The number of speakers																																																																																																																							
Getting	Command	@GSP, ch [↵]																																																																																																																							
	Response	@GSP, ch, number, speaker_1 (, speaker_2····) [↵]																																																																																																																							
Setting	Command	@SSP, ch, number (, speaker_1, speaker_2····) [↵]																																																																																																																							
	Response	@SSP, ch, number (, speaker_1, speaker_2····) [↵]																																																																																																																							
Parameter		ch: Input channel 0 = All digital inputs (for setting only), 1 = IN1 to 8 = IN8																																																																																																																							
		number: The number of speakers 1 to 8 [Default] 2																																																																																																																							
		speaker_1-8: Speaker configuration 0 = Front Left/Right [Default], 1 = Low Frequency Effect, 2 = Front Center, 3 = Rear Left/Right, 4 = Rear Center, 5 = Front Left/Right Center, 6 = Rear Left/Right Center, 7 = Front Left/Right Wide, 8 = Front Left/Right High, 9 = Top Center, 10 = Front Center High																																																																																																																							
		Getting commands: the number of speakers and which speakers will be used is returned. Setting commands: if you do not specify the speaker configuration, the following configuration will be applied depending on the set number of speakers.																																																																																																																							
		<table border="1"> <thead> <tr> <th rowspan="2">number</th> <th colspan="11">speaker</th> </tr> <tr> <th>0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>2</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>3</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>4</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>5</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>6</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>7</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>8</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> </tbody> </table>	number	speaker											0	1	2	3	4	5	6	7	8	9	10	1	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	2	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	4	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	5	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	6	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	7	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	8	ON	ON	ON	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
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2	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF																																																																																																														
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF																																																																																																														
4	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF																																																																																																														
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7	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF																																																																																																														
8	ON	ON	ON	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF																																																																																																														
		For speaker configurations: the <i>number</i> and total number of speakers (<i>speaker_1-8</i>) do not match, the <i>number</i> is set automatically based on the setting of <i>speaker_1-8</i> . In case the <i>number</i> exceeds the settable range, an error is returned.																																																																																																																							

@GSP / @SSP		The number of speakers (cont'd)
Getting example	Command	@GSP,1 ↵
	Response	@GSP,1,6,0,1,2,3 ↵
	Description	Getting the IN1 speaker configuration Six speakers (Front Left/Right, Low Frequency Effect, Front Center, Rear Left/Right) are used.
Setting example	Command	@SSP,2,8 ↵
	Response	@SSP,2,8 ↵
	Description	Setting IN2 speaker configuration to Front Left/Right, Low Frequency Effect, Front Center, Rear Left/Right, Rear Left/Right Center (eight speakers). Completed normally
Setting example	Command	@SSP,3,8,0,3,5,6,7 ↵
	Response	@ERR,1 ↵
	Description	Setting IN3 speaker configuration to Front Left/Right, Rear Left/Right, Front Left/Right Center, Rear Left/Right Center, Front Left/Right Wide The number of speakers is 10 which exceeds the settable value, and it causes the error.
Remarks		These commands are only for digital input. IN6 and IN7 are available only when "1" (Digital signal) is selected for " @GIN / @SIN Signal selection of DVI input connector ". If "0" (Analog signal) is selected, "-1" is returned.









@RME		Copying EDID
Setting	Command	@RME, out, number, name ↵
	Response	@RME, out, number, name ↵
Parameter		out: Connector to be loaded 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B
		number: Destination COPY DATA number 1 to 8
		name: COPY DATA name Up to 10 characters using 20 to 7D from ASCII codes. You can skip this setting. In this case, only EDID settings are saved without changing currently saved name.
Setting example	Command	@RME,1,1 ↵
	Response	@RME,1,1 ↵
	Description	Loading EDID data of the sink device connected to OUT1A and saving it in COPY DATA 1
Setting example	Command	@RME,3,4,800x600 ↵
	Response	@RME,3,4,800x600 ↵
	Description	Loading EDID data of the sink device connected to OUT3A, naming it "800x600" and saving it in COPY DATA 4
Remarks		@GED / @SED EDID









3.3.10 RS-232C communication

@GCT / @SCT		RS-232C communication
Getting	Command	@GCT ↵
	Response	@GCT, rs_232c, out_1b, out_2B, in8 ↵
Setting	Command	@SCT, port, setting ↵
	Response	@SCT, port, setting ↵
Parameter		<p>rs_232cq : Communication setting of RS-232C connector out_1B : Communication setting of OUT1B connector out_2B : Communication setting of OUT2B connector in8 : Communication setting of IN8 connector setting : Communication setting</p> <ul style="list-style-type: none"> ▪ Baud rate (4800, 9600, 19200, 38400 [bps] [Default] 9600) ▪ Data length (8, 7 [bit] [Default] 8) ▪ Parity check (NONE, EVEN, ODD [Default] NONE) ▪ Stop bit (1, 2 [bit] [Default] 1) <p>For setting values, see the [Table 3.1].</p> <p>port: RS-232C channel 0 = All channels, 1 = RS-232C connector, 2 = OUT1B connector, 3 = OUT2B connector, 4 = IN8 connector</p>
Getting example	Command	@GCT ↵
	Response	@GCT,24,24,24,24 ↵
	Description	Getting communication settings of RS-232Cs All baud rates = 19200 [bps], data bit length = 8 [bit], parity check = NONE, stop bit =1 [bit]
Setting example	Command	@SCT,1,24 ↵
	Response	@SCT,1,24 ↵
	Description	Setting RS-232C as follows: baud rate = 19200 [bps], data bit length = 8 [bit], parity check = NONE, stop bit = 1 [bit]
Remarks		<p>For 1-output models (MSD-701UHD and MSD-801UHD), out_2B cannot be set. For 7-input models (MSD-701UHD and MSD-702UHD), "in8" cannot be set. "-1" will be sent when these commands are gotten.</p> <p>If IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings based on the MSD settings.</p>

[Table 3.1] Parameter of RS-232C communication settings

Value	Communication				Value	Communication				Value	Communication				Value	Communication			
0	4800	8	NONE	1	12	9600	8	NONE	1	24	19200	8	NONE	1	36	38400	8	NONE	1
1	4800	8	NONE	2	13	9600	8	NONE	2	25	19200	8	NONE	2	37	38400	8	NONE	2
2	4800	8	ODD	1	14	9600	8	ODD	1	26	19200	8	ODD	1	38	38400	8	ODD	1
3	4800	8	ODD	2	15	9600	8	ODD	2	27	19200	8	ODD	2	39	38400	8	ODD	2
4	4800	8	EVEN	1	16	9600	8	EVEN	1	28	19200	8	EVEN	1	40	38400	8	EVEN	1
5	4800	8	EVEN	2	17	9600	8	EVEN	2	29	19200	8	EVEN	2	41	38400	8	EVEN	2
6	4800	7	NONE	1	18	9600	7	NONE	1	30	19200	7	NONE	1	42	38400	7	NONE	1
7	4800	7	NONE	2	19	9600	7	NONE	2	31	19200	7	NONE	2	43	38400	7	NONE	2
8	4800	7	ODD	1	20	9600	7	ODD	1	32	19200	7	ODD	1	44	38400	7	ODD	1
9	4800	7	ODD	2	21	9600	7	ODD	2	33	19200	7	ODD	2	45	38400	7	ODD	2
10	4800	7	EVEN	1	22	9600	7	EVEN	1	34	19200	7	EVEN	1	46	38400	7	EVEN	1
11	4800	7	EVEN	2	23	9600	7	EVEN	2	35	19200	7	EVEN	2	47	38400	7	EVEN	2

@GCF / @SCF		RS-232C communication mode	
Getting	Command	@GCF 	
	Response	@GCF, mode 	
Setting	Command	@SCF, port, mode 	
	Response	@SCF, port, mode 	
Parameter		mode: Operation mode 0 = RECEIVER mode [Default], 1 = TRANSMITTER mode	
		port: RS-232C channel 1 = RS-232C connector, 2 = OUT1B connector, 3 = OUT2B connector, 4 = IN8 connector	
Getting example	Command	@GCF 	
	Response	@GCF,1 	
	Description	Getting the set operation modes TRANSMITTER mode	
Setting example	Command	@SCF,1,1 	
	Response	@SCF,1,1 	
	Description	Setting RS-232C connector to TRANSMITTER mode	
Remarks		These commands are only for RS-232C. If IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings based on the MSD settings.	

@GCD / @SCD		RS-232C transmission between control devices
Getting	Command	@GCD 
	Response	@GCD, mode 
Setting	Command	@SCD, mode 
	Response	@SCD, mode 
Parameter		<p>mode: RS-232C transmission</p> <p>0 = OFF [Default], RS-232C connector operates in the mode set in "@GCF / @SCF RS-232C communication mode".</p> <p>1 = OUT1B connector, 2 = OUT2B connector 3 = IN8 connector</p> <p>Enabling communication between the RS-232C connector of the MSD and the RS-232C connector of an HDC series receiver that is connected to OUT1B or OUT2B connector. The RS-232C connector cannot be used for communication command control from a PC to the MSD and control command output from the MSD to an external device.</p>
Getting example	Command	@GCD 
	Response	@GCD,1 
	Description	Getting the RS-232C transmission Enabling communication between the RS-232C connector of the MSD and the RS-232C connector of an HDC series receiver that is connected to OUT1B connector
Setting example	Command	@SCD,0 
	Response	@SCD,0 
	Description	RS-232C connector operates in the mode set in " @GCF / @SCF RS-232C communication mode ".
Remarks		<p>For RS-232C transmission, set the same values for communication settings of the external device's (such as PCs) transmitter and receiver sides.</p> <p>If "mode" is set to "0", the responds for setting command will be sent. If "mode" is set to a value other than "0", the RS-232C connector accepts only @SCD command.</p>

3.3.11 LAN communication

@GIP / @SIP		IP address
Getting	Command	@GIP ↵
	Response	@GIP, unit_1, unit_2, unit_3, unit_4 ↵
Setting	Command	@SIP, unit_1, unit_2, unit_3, unit_4 ↵
	Response	@SIP, unit_1, unit_2, unit_3, unit_4 ↵
Parameter		unit_1: Upper bit of the IP address to unit_4: lower bit of the IP address 0 to 255 = 8 bit (Decimal notation) [Default] 192.168.1.199
Getting example	Command	@GIP ↵
	Response	@GIP,192,168,3,2 ↵
	Description	Getting the IP address of the MSD IP address: 192.168.3.2.
Setting example	Command	@SIP,192,168,3,2 ↵
	Response	@SIP,192,168,3,2 ↵
	Description	Setting IP address to 192.168.3.2
Remarks		If IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings based on the MSD settings.

@GSB / @SSB		Subnet mask
Getting	Command	@GSB ↵
	Response	@GSB, unit_1, unit_2, unit_3, unit_4 ↵
Setting	Command	@SSB, unit_1, unit_2, unit_3, unit_4 ↵
	Response	@SSB, unit_1, unit_2, unit_3, unit_4 ↵
Parameter		unit_1: Upper bit of the subnet mask to unit_4: lower bit of the subnet mask 0 to 255 = 8 bit (Decimal notation) [Default] 255.255.255.0
Getting example	Command	@GSB ↵
	Response	@GSB,255,255,192,0 ↵
	Description	Getting the set subnet mask of the MSD Subnet mask: 255.255.192.0 (= 18 bit)
Setting example	Command	@SSB,255,255,192,0 ↵
	Response	@SSB,255,255,192,0 ↵
	Description	Setting subnet mask to 255.255.192.0 (= 18 bit)
Remarks		If IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings based on the MSD settings.

@GGW / @SGW		Gateway address
Getting	Command	@GGW ↵
	Response	@GGW, unit_1, unit_2, unit_3, unit_4 ↵
Setting	Command	@SGW, unit_1, unit_2, unit_3, unit_4 ↵
	Response	@SGW, unit_1, unit_2, unit_3, unit_4 ↵
Parameter		unit_1: Upper bit of the gateway address to unit_4: lower bit of the gateway address 0 to 255 = 8 bit (Decimal notation) [Default] 192.168.1.200
Getting example	Command	@GGW ↵
	Response	@GGW,192,168,1,254 ↵
	Description	Getting the set gateway address Gateway address: 192.168.1.254
Setting example	Command	@SGW,192,168,1,254 ↵
	Response	@SGW,192,168,1,254 ↵
	Description	Setting gateway address to 192.168.1.254
Remarks		If IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings based on the MSD settings.

@GLF / @SLF		LAN communication mode
Getting	Command	@GLF, connection
	Response	@GLF, connection, mode (, ip_1, ip_2, ip_3, ip_4, pjlink, tcp, password)
Setting	Command	@SLF, connection, mode (, ip_1, ip_2, ip_3, ip_4, pjlink, tcp, password)
	Response	@SLF, connection, mode (, ip_1, ip_2, ip_3, ip_4, pjlink, tcp, password)
Parameter		<p>connection: Connection number 1 = connection 1 to 8 = connection8</p> <p>mode: Operation mode 0 = RECEIVER mode [Default], 1 = TRANSMITTER mode</p> <p>ip_1: Upper bit of the destination IP address to ip_4: lower bit of the destination IP address 0 to 255 = 8 bit (Decimal notation) [Default] 192.168.1.198 Available only if the <i>mode</i> is TRANSMITTER.</p> <p>pjlink: PJLink protocol connection 0 = PJLink not used [Default], 1 = PJLink used Available only if the <i>mode</i> is TRANSMITTER.</p> <p>tcp: Destination port number 1 to 65535 [Default] 1100 Available only if the <i>mode</i> is TRANSMITTER and "pjlink" is set to "0" (PJLink not used). If "pjlink" is set to "1" (PJLink used), "tcp" is "4352" fixed.</p> <p>password: Password of PJLink protocol Up to 32 characters of the following ASCII codes: 20, 30 to 39, 41 to 5A, 61 to 7A (alphanumeric characters). [Default] All: 20 (space) Replied/Set only if the <i>mode</i> is "1" (TRANSMITTER) and <i>pjlink</i> is "0" (PJLink not used). Getting commands: replied only if the password is set. Setting commands: you can skip this password setting if you disable password authentication for PJLink protocol connection. Available only if the <i>mode</i> is TRANSMITTER and "pjlink" is set to "0" (PJLink not used). Getting commands: returned only if the password is set. Setting commands: you can skip this password setting if you do not use password authentication for PJLink protocol connection.</p>
Getting example	Command	@GLF,3
	Response	@GLF,3,1,192,168,1,2,1,PROJECTOR1
Setting example	Description	Getting mode settings of connection 3 Mode = TRANSMITTER mode, destination IP address = 192.168.1.2, PJLink = to be used, password = "PROJECTOR1"
	Command	@SLF,3,1,192,168,1,2,1
Setting example	Response	@SLF,3,1,192,168,1,2,1
	Description	Setting connection 3 as follows: Mode = TRANSMITTER mode, destination IP address = 192.168.1.2, PJLink = to be used, password = disabling password authentication.
Remarks		If IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings based on the MSD settings.

@GLP / @SLP		TCP port number
Getting	Command	@GLP
	Response	@GLP, port_1, port_2, port_3, port_4, port_5, port_6, port_7, port_8
Setting	Command	@SLP, connection_1, port_1 (, connection_2, port_2···)
	Response	@SLP, connection_1, port_1 (, connection_2, port_2···)
Parameter		connection_1-8: Connection number 0 = All connections, 1 = Connection 1 to 8 = Connection 8 port_1-8: TCP port number 23, 80, 1100, 5000 to 5999, 6000 to 6999 [Default] Connection 1 to 3 = 1100, Connection 4 to 6 = 23, Connection 7 to 8 = 80
Getting example	Command	@GLP
	Response	@GLP,1100,1100,1100,23,23,23,80,80
	Description	Getting the set TCP port number Connection 1 to 3: 1100, Connection 4 to 6: 23, Connection 7 and 8: 80
Setting example	Command	@SLP,8,6000
	Response	@SLP,8,6000
	Description	Setting port number of connection 8 to "6000"
Remarks		If IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings based on the MSD settings.

@GMC		MAC address
Getting	Command	@GMC
	Response	@GMC, unit_1, unit_2, unit_3, unit_4, unit_5, unit_6
Parameter		unit_1: Upper bit of the MAC address to unit_6: lower bit of the MAC address 00 to FF = 8 bit (in hexadecimal)
Getting example	Command	@GMC
	Response	@GMC,00,08,E5,5F,00,00
	Description	Getting the set MAC address MAC address: 00-08-E5-5F-00-00
Remarks		—

3.3.12 Control commands

@EXC		Executing control commands
Setting	Command	@EXC, command_1 (, command_2···) ↵
	Response	@EXC, command_1 (, command_2···) ↵
Parameter		command_1-5: Control command 1 = COMMAND 1 to 32 = COMMAND 32
Setting example	Command	@EXC,1,2,3 ↵
	Response	@EXC,1,2,3 ↵
	Description	Executing COMMAND 1→2→3 in order
Setting example	Command	@EXC,6 ↵
	Response	@EXC,6,RECV:POWER OFF ↵
	Description	Executing COMMAND 6 If a command to display received data is executed, the received result is returned. In this example, "POWER OFF" is received from the target device.
Remarks		Since the result is returned after control command execution is complete, it sometimes may take a time for response.

@GDS / @SDS		Power button of sink device
Getting	Command	@GDS ↵
	Response	@GDS, onoff_1, onoff_2 ↵
Setting	Command	@SDS, ch_1, onoff_1 (, ch_2, onoff_2) ↵
	Response	@SDS, ch_1, onoff_1 (, ch_2, onoff_2) ↵
Parameter		onoff_1-2: Power button of sink device 0 = OFF, 1 = ON ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GDS ↵
	Response	@GDS,1,1 ↵
	Description	Getting the power button status of sink device OUT1 and OUT2: powered ON
Setting example	Command	@SDS,1,1 ↵
	Response	@SDS,1,1 ↵
	Description	Setting the power button of the sink device that is connected OUT1 to ON
Remarks		Since the result is returned after control command execution is complete, it sometimes may take a time for response.

@GEC / @SEC		Control command (Communication command)																		
Getting	Command	@GEC, no <input type="checkbox"/>																		
	Response	@GEC, no, delay, port, memo, length, command, timeout, retry, interval, retryover, display (, rcv_1, rcv_2...) <input type="checkbox"/>																		
Setting	Command	@SEC, no, delay, port, memo, length, command, timeout, retry, interval, retryover, display (, rcv_1, rcv_2...) <input type="checkbox"/>																		
	Response	@SEC, no, delay, port, memo, length, command, timeout, retry, interval, retryover, display (, rcv_1, rcv_2...) <input type="checkbox"/>																		
Parameter		no: Control command number 1 to 32																		
		delay: Delay time 0 = 0 sec. to 999999 = 999.999 sec.																		
		port: Output port 1 to 8191																		
		<table border="1"> <tr> <td>bit</td> <td>7</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> <tr> <td>port</td> <td>LAN 4</td> <td>LAN 3</td> <td>LAN 2</td> <td>LAN 1</td> <td>RS-232C IN8</td> <td>RS-232C OUT2B</td> <td>RS-232C OUT1B</td> <td>RS-232C CH1</td> </tr> </table>	bit	7	6	5	4	3	2	1	0	port	LAN 4	LAN 3	LAN 2	LAN 1	RS-232C IN8	RS-232C OUT2B	RS-232C OUT1B	RS-232C CH1
		bit	7	6	5	4	3	2	1	0										
		port	LAN 4	LAN 3	LAN 2	LAN 1	RS-232C IN8	RS-232C OUT2B	RS-232C OUT1B	RS-232C CH1										
		<table border="1"> <tr> <td>bit</td> <td>15</td> <td>14</td> <td>13</td> <td>12</td> <td>11</td> <td>10</td> <td>9</td> <td>8</td> </tr> <tr> <td>port</td> <td>—</td> <td>—</td> <td>—</td> <td>LOOP BACK</td> <td>LAN 8</td> <td>LAN 7</td> <td>LAN 6</td> <td>LAN 5</td> </tr> </table>	bit	15	14	13	12	11	10	9	8	port	—	—	—	LOOP BACK	LAN 8	LAN 7	LAN 6	LAN 5
		bit	15	14	13	12	11	10	9	8										
		port	—	—	—	LOOP BACK	LAN 8	LAN 7	LAN 6	LAN 5										
		“1” is for the bit of the output port to send a command (Since bit 13-15 are not used, they are always “0”). For example, if you want to send a command from RS-232C CH1, specify “1”. If sending a command from LAN 2, specify “32”.																		
		memo: Up to 14 characters of 20 to 7D except 2C (,).																		
		length: Data size of send command (the number of bytes) 0 to 30																		
		command: Send command data Specify <i>length</i> × 2 digits with 0 to 9, A to F, a to f: (4 bit per digit in hexadecimal).																		
		timeout: Time-out duration 0 = 0 sec. to 99999 = 99.999 sec.																		
retry: The number of retries 0 to 99																				
interval: Retry interval 0 = 0 sec. to 99999 = 99.999 sec.																				
retryover: Processing at retry over 0 = Stop processing, 1 = Continue processing																				
display: Displaying received data 0 = communication command control																				
rcv_1-32: Presence or absence of response command check 1 to 32 For get commands, reply command numbers are separated from each other by a comma. For set commands, the reply command number to be checked can be specified. Up to 32 commands can be specified by separating them by a comma. If you send only parameters of reply command number you want to check, the reply commands without sent parameter are automatically set to “not check”. Register reply commands in “@GRC / @SRC Response command”.																				

@GEC / @SEC		Control command (Communication command) (cont'd)
Getting example	Command	@GEC,1 ↵
	Response	@GEC,1,10,1,POWER,7,5057204F4E0D0A,1000,2,500,0,0,1,2 ↵
	Description	Getting settings registered in control command 1 <ul style="list-style-type: none"> ▪ Delay: 10 ms ▪ Output port: RS-232C CH1 ▪ Memo: POWER ▪ Data size: 7 bytes ▪ Command data: PW ON CR LF (ASCII codes) ▪ Timeout: 1000 ms ▪ Retry: 2 times ▪ Retry interval: 500 ms ▪ Retry over: Stop ▪ Received data: Not displayed ▪ Response command: Check 1 and 2
Setting example	Command	@SEC,2,0,4096,IN1 SELECT,10,405353572C312C310D0A,0,0,0,1,0 ↵
	Response	@SEC,2,0,4096,IN1 SELECT,10,405353572C312C310D0A,0,0,0,1,0 ↵
	Description	Setting control command 2 as follows: <ul style="list-style-type: none"> ▪ Delay: 0 ms ▪ Output port: LOOP BACK ▪ Memo: IN1 SELECT ▪ Data size: 10 bytes ▪ Command data: @SSW,1,1 CR LF (ASCII codes) ▪ Timeout: 0 ms ▪ Retry: 0 time ▪ Interval: 0 ms ▪ Retry over: Execute ▪ Received data: Not displayed ▪ Response command: Not checked
Remarks		—









@GEC / @SEC		Control command (Displaying received data)																		
Getting	Command	@GEC, no ↵																		
	Response	@GEC, no, delay, port, memo, length, command, timeout, retry, interval, retryover, display, delimiter ↵																		
Setting	Command	@SEC, no, delay, port, memo, length, command, timeout, retry, interval, retryover, display, delimiter ↵																		
	Response	@SEC, no, delay, port, memo, length, command, timeout, retry, interval, retryover, display, delimiter ↵																		
Parameter		no: Control command number 1 to 32																		
		delay: Delay time 0 = 0 sec. to 999999 = 999.999 sec.																		
		port: Output port 1 to 8191																		
		<table border="1"> <tr> <td>bit</td> <td>7</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> <tr> <td>port</td> <td>LAN 4</td> <td>LAN 3</td> <td>LAN 2</td> <td>LAN 1</td> <td>RS-232C IN8</td> <td>RS-232C OUT2B</td> <td>RS-232C OUT1B</td> <td>RS-232C CH1</td> </tr> </table>	bit	7	6	5	4	3	2	1	0	port	LAN 4	LAN 3	LAN 2	LAN 1	RS-232C IN8	RS-232C OUT2B	RS-232C OUT1B	RS-232C CH1
		bit	7	6	5	4	3	2	1	0										
		port	LAN 4	LAN 3	LAN 2	LAN 1	RS-232C IN8	RS-232C OUT2B	RS-232C OUT1B	RS-232C CH1										
		<table border="1"> <tr> <td>bit</td> <td>15</td> <td>14</td> <td>13</td> <td>12</td> <td>11</td> <td>10</td> <td>9</td> <td>8</td> </tr> <tr> <td>port</td> <td>—</td> <td>—</td> <td>—</td> <td>LOOP BACK</td> <td>LAN 8</td> <td>LAN 7</td> <td>LAN 6</td> <td>LAN 5</td> </tr> </table>	bit	15	14	13	12	11	10	9	8	port	—	—	—	LOOP BACK	LAN 8	LAN 7	LAN 6	LAN 5
		bit	15	14	13	12	11	10	9	8										
		port	—	—	—	LOOP BACK	LAN 8	LAN 7	LAN 6	LAN 5										
		“1” is for the output port to send a command (Since bit 11-15 are not used, they are always “0”). For example, if you want to send a command to RS-232C, specify “1”. If sending a command to LAN 2, specify “32”.																		
		memo: Up to 14 characters of 20 to 7D except 2C (,) from ASCII codes.																		
		length: Command data size (the number of bites) 0 to 30																		
		command: Command data Specify length × 2 digits with 0 to 9, A to F, a to f = 4 bit per digit (in hexadecimal).																		
		timeout: Time-out duration 0 = 0 sec. to 99999 = 99.999 sec.																		
		retry: The number of retries 0 to 99																		
interval: Retry interval 0 = 0 sec. to 99999 = 99.999 sec.																				
retryover: Processing at retry over 0 = Stop processing, 1 = Continue processing																				
display : Displaying received data 1 = in ASCII codes, 2 = in hexadecimals																				
delimiter: 2 digits of 0 to 9, A to F, a to f = 4 bit per digit (in hexadecimal) for monitoring delimiter 100 = Not monitor																				

@GEC / @SEC		Control command (Displaying received data) (cont'd)
Getting example	Command Response	@GEC,3 ↵ @GEC,3,0,32,POWER STATUS,9,47455420504F570D0A,2000,2,200,0,1,0D ↵
	Description	Getting settings of control command 3 <ul style="list-style-type: none"> ▪ Delay time: 0 ms ▪ Output port: LAN2 ▪ Memo: POWER STATUS ▪ Data size: 9 bytes ▪ Command data: GET POW CR LF (ASCII codes) ▪ Timeout: 2000 ms ▪ Retry: 2 times ▪ Retry interval: 200 ms ▪ Retryover: Stop ▪ Received data: Displayed in ASCII codes ▪ Delimiter: 0D in hex (CR =ASCII codes)
Setting example	Command Response	@SEC,3,0,32,POWER STATUS,9,47455420504F570D0A,2000,2,200,0,1,0D ↵ @SEC,3,0,32,POWER STATUS,9,47455420504F570D0A,2000,2,200,0,1,0D ↵
	Description	Setting control command 3 as follows: <ul style="list-style-type: none"> ▪ Delay time: 0 ms ▪ Output port: LAN2 ▪ Memo: POWER STATUS ▪ Data size: 9 bytes ▪ Command data: GET POW CR LF (ASCII codes) ▪ Timeout: 2000 ms ▪ Retry: 2 times ▪ Retry interval: 200 ms ▪ Retryover: Stop ▪ Received data: Displayed in ASCII codes ▪ Delimiter: 0D in hex (CR =ASCII codes)
Remarks		—

@GEC / @SEC		Control command (contact closure)								
Getting	Command	@GEC, no								
	Response	@GEC, no, delay, port, memo, ccno_1, cc_1, pulse_1 (, ccno_2, cc_2, pulse_2···)								
Setting	Command	@SEC, no, delay, port, memo, ccno_1, cc_1, pulse_1 (, ccno_2, cc_2, pulse_2···)								
	Response	@SEC, no, delay, port, memo, ccno_1, cc_1, pulse_1 (, ccno_2, cc_2, pulse_2···)								
Parameter		<p>no : Control command number 1 to 32</p> <p>delay : Delay time 0 = 0 sec. to 999999 = 999.999 sec.</p> <p>port : Contact closure control 8192= For contact closure control</p> <p>memo: Up to 14 characters of 20 to 7D except 2C (,) from ASCII codes.</p> <p>ccno_1-3: Contact closure number</p> <table border="1" style="margin-left: 20px;"> <tr> <td>ccno</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>Contact closure</td> <td>CONTACT CLOSURE CH1</td> <td>CONTACT CLOSURE CH2</td> <td>CONTACT CLOSURE CH3</td> </tr> </table> <p>cc_1-3: Contact closure control 0 = OFF, 1 = ON, 2 = Toggle, 3 = Not control</p> <p>pulse_1-3: pulse width 0 = Hold, 100 = 100 ms to 9990 = 9990 ms (by 10 ms) Pulse width after the completion of contact closure.</p> <p>Getting commands: only contact closure numbers to be controlled are replied. Setting commands: specify only contact closure numbers to be controlled. For contact closure numbers that do not specify parameter, "Not check" is set.</p>	ccno	1	2	3	Contact closure	CONTACT CLOSURE CH1	CONTACT CLOSURE CH2	CONTACT CLOSURE CH3
ccno	1	2	3							
Contact closure	CONTACT CLOSURE CH1	CONTACT CLOSURE CH2	CONTACT CLOSURE CH3							
Getting example	Command	@GEC,7								
	Response	@GEC,7,20,8192,SCREEN UP,1,1,100								
	Description	<p>Getting settings of control command 7</p> <ul style="list-style-type: none"> • Delay time: 20ms • Memo: SCREEN UP • Contact closure1's CH1: ON for 100 ms • Other outputs: not controlled. 								
Setting example	Command	@SEC,6,50,8192,PROJECTOR ON,1,0,200,2,1,0								
	Response	@SEC,6,50,8192,PROJECTOR ON,1,0,200,2,1,0								
	Description	<p>Setting Control command number 6 as follows:</p> <ul style="list-style-type: none"> • Delay time: 50 ms • Memo: PROJECTOR ON • CH1 of contact closure : ON for 200 ms • CH2 of contact closure : ON • CH3 of contact closure : not controlled 								
Remarks		—								









@GEC / @SEC		Control command (CEC)
Getting	Command	@GEC, no ↵
	Response	@GEC, no, delay, port, memo, error, ch_1, cec_1 (, ch_2, cec_2····) ↵
Setting	Command	@SEC, no, delay, port, memo, error, ch_1, cec_1 (, ch_2, cec_2····) ↵
	Response	@SEC, no, delay, port, memo, error, ch_1, cec_1 (, ch_2, cec_2····) ↵
Parameter		<p>no: Control command number 1 to 32</p> <p>delay: Delay time 0 = 0 sec. to 999999 = 999.999 sec.</p> <p>port: CEC 16384 = For CEC control</p> <p>memo: Up to 14 characters of 20 to 7D except 2C (,) from ASCII codes.</p> <p>error: Processing if no response from sink device. 0 = Stop processing, 1 = Continue processing</p> <p>ch_1-4: Output channel 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B</p> <p>cec_1-4: Control command 0 = Not controlled, 1 = POWER OFF, 2 = POWER ON</p> <p>Getting commands: the control output connector and control command are separated from each other by a comma. Setting commands: specify output connector to be controlled and control commands. For outputs that do not specify parameter, "Not check" is set.</p>
Getting example	Command	@GEC,7 ↵
	Response	@GEC,7,0,16384,DISPLAY1 ON,0,1,2 ↵
	Description	<p>Getting settings of control command 7</p> <ul style="list-style-type: none"> • Delay time: 0 ms • Memo: DISPLAY1 ON • Error: Stop • OUT1A sink device: Turning on. • Other outputs: not controlled.
Setting example	Command	@SEC,7,0,16384,DISPLAY1 ON,0,1,2 ↵
	Response	@SEC,7,0,16384,DISPLAY1 ON,0,1,2 ↵
	Description	<p>Setting control command 7 as follows:</p> <ul style="list-style-type: none"> • Delay time:0 ms • Memo: DISPLAY1 ON • Error: Stop • OUT1A sink device: Power ON. • Other outputs: not controlled.
Remarks		—









@GRC / @SRC		Response command
Getting	Command	@GRC, no ↵
	Response	@GRC, no, process, length, command, mask, memo ↵
Setting	Command	@SRC, no, process, length, command, mask, memo ↵
	Response	@SRC, no, process, length, command, mask, memo ↵
Parameter		no: Response command number 1 to 32
		process: 0 = Stop, 1 = Continue, 2 = Resending commands
		length: Reply command data size (bytes) 0 to 30
		command: Reply command data length × 2 digits with 0 to 9, A to F, a to f = 4 bit per digit (in hexadecimal)
		mask: Mask data length × 2 digits with 0 to 9, A to F, a to f = 4 bit per digit (in hexadecimal)
		memo: Up to 14 characters of 20 to 7D except 2C (,) from ASCII codes.
Getting example	Command	@GRC,2 ↵
	Response	@GRC,2,0,1,40,40,NG ↵
	Description	Getting settings of reply command 2 <ul style="list-style-type: none"> ▪ Processing: Stop ▪ Data size: 1 byte ▪ Command data: 40 (in hex) ▪ Mask data: 40 (checking the second bit from the top) ▪ Memo: NG (no good)
Setting example	Command	@SRC,1,1,9,52454356204F4B0D0A,FFFFFFFFFFFFFFFFFFFF,OK ↵
	Response	@SRC,1,1,9,52454356204F4B0D0A,FFFFFFFFFFFFFFFFFFFF,OK ↵
	Description	Setting reply command 1 as follows: <ul style="list-style-type: none"> ▪ Processing: Continue ▪ Data size: 9 bytes ▪ Command data: RECV OK CR LF (ASCII) ▪ Mask data: ALL: FF (checking all bits) ▪ Memo: OK
Remarks		—

@GCC / @SCC		Control command link
Getting	Command	@GCC, event 
	Response	@GCC, event, c_1 (, c_2, c_3···) 
Setting	Command	@SCC, event, c_1 (, c_2, c_3···) 
	Response	@SCC, event, c_1 (, c_2, c_3···) 
Parameter		<p>event: Control command execution condition For settable values, see the [Table 3.2].</p> <p>c_1-10 : Send command 0 = Not link [Default], 1 to 32 = Control command 1 to 32 Control commands that are registered in one of the following commands can be linked.</p> <p>@GEC / @SEC Control command (Communication command), @GEC / @SEC Control command (Displaying received data), @GEC / @SEC Control command (contact closure), @GEC / @SEC Control command (CEC),</p>
Getting example	Command	@GCC,19 
	Response	@GCC,19,5,2,1 
	Description	Getting control commands that will be executed when the MSD is powered on Executing in order of control command 5, 2, and 1
Setting example	Command	@SCC,19,5,2,1 
	Response	@SCC,19,5,2,1 
	Description	Executing in order of control command 5, 2, and 1 when the MSD is powered on
Remarks		—

[Table 3.2] Parameter of control command execution condition









event	Execution condition	event	Execution condition
1	COMMAND A-PLANE A	24	VIDEO:OUT1-IN1
2	COMMAND A-PLANE B	25	VIDEO:OUT1-IN2
3	COMMAND B-PLANE A	26	VIDEO:OUT1-IN3
4	COMMAND B-PLANE B	27	VIDEO:OUT1-IN4
5	COMMAND C-PLANE A	28	VIDEO:OUT1-IN5
6	COMMAND C-PLANE B	29	VIDEO:OUT1-IN6
7	COMMAND D-PLANE A	30	VIDEO:OUT1-IN7
8	COMMAND D-PLANE B	31	VIDEO:OUT1-IN8
9	COMMAND E-PLANE A	32	VIDEO:OUT1-OFF
10	COMMAND E-PLANE B	33	AUDIO:OUT1-IN1
11	COMMAND F-PLANE A	34	AUDIO:OUT1-IN2
12	COMMAND F-PLANE B	35	AUDIO:OUT1-IN3
13	COMMAND G-PLANE A	36	AUDIO:OUT1-IN4
14	COMMAND G-PLANE B	37	AUDIO:OUT1-IN5
15	COMMAND H-PLANE A	38	AUDIO:OUT1-IN6
16	COMMAND H-PLANE B	39	AUDIO:OUT1-IN7
17	COMMAND I-PLANE A	40	AUDIO:OUT1-IN8
18	COMMAND I-PLANE B	41	AUDIO:OUT1-OFF
19	POWER ON	42	VIDEO:OUT2-IN1
20	DISPLAY1 POWER ON	43	VIDEO:OUT2-IN2
21	DISPLAY1 POWER OFF	44	VIDEO:OUT2-IN3
22	DISPLAY2 POWER ON	45	VIDEO:OUT2-IN4
23	DISPLAY2 POWER OFF	46	VIDEO:OUT2-IN5
		47	VIDEO:OUT2-IN6
		48	VIDEO:OUT2-IN7
		49	VIDEO:OUT2-IN8
		50	VIDEO:OUT2-OFF
		51	AUDIO:OUT2-IN1
		52	AUDIO:OUT2-IN2
		53	AUDIO:OUT2-IN3
		54	AUDIO:OUT2-IN4
		55	AUDIO:OUT2-IN5
		56	AUDIO:OUT2-IN6
		57	AUDIO:OUT2-IN7
		58	AUDIO:OUT2-IN8
		59	AUDIO:OUT2-OFF

@GTG / @STG		Toggle operation
Getting	Command	@GTG, event_1 (, event_2····) 
	Response	@GTG, event_1, toggle_1 (, event_2, toggle_2····) 
Setting	Command	@STG, event_1, toggle_1 (, event_2, toggle_2····) 
	Response	@STG, event_1, toggle_1 (, event_2, toggle_2····) 
Parameter		event_1-9 : Command execution condition 0 = All control commands, 1 = COMMAND A to 9 = COMMAND I
		toggle_1-9 : Toggle operation 0 = Disabled [Default], 1 = Enabled
Getting example	Command	@GTG,1 
	Response	@GTG,1,1 
	Description	Getting the toggle operation of COMMAND A COMMAND A: Toggle operation enabled.
Setting example	Command	@STG,1,1 
	Response	@STG,1,1 
	Description	Enabling COMMAND A's toggle operation COMMAND A
Remarks		—

@GUP / @SUP		Plane to be executed when powered ON
Getting	Command	@GUP, event_1 (, event_2····) 
	Response	@GUP, event_1, plane_1 (, event_2, plane_2····) 
Setting	Command	@SUP, event_1, plane_1 (, event_2, plane_2····) 
	Response	@SUP, event_1, plane_1 (, event_2, plane_2····) 
Parameter		event_1-9: Command execution condition 0 = All control commands, 1 = COMMAND A to 9 = COMMAND I
		plane_1-9 : Plane to be executed when powered ON 0 = AUTO [Default], 1 = PLANE A, 2 = PLANE B
Getting example	Command	@GUP,1 
	Response	@GUP,1,1 
	Description	Getting the plane to be executed for COMMAND A COMMAND A executes PLANE A.
Setting example	Command	@SUP,1,1 
	Response	@SUP,1,1 
	Description	Setting COMMAND A to execute PLANE A
Remarks		—

@GIT / @SIT		Ineffective time during control command execution
Getting	Command	@GIT ↵
	Response	@GIT, time ↵
Setting	Command	@SIT, time ↵
	Response	@SIT, time ↵
Parameter		time : Invalid time 0 = 0 sec. to 999999 = 999.999 sec. [Default] 0 sec.
Getting example	Command	@GIT ↵
	Response	@GIT,2000 ↵
	Description	Getting ineffective time of control command execution Disabling operation during control command execution or 2000 ms. (2 seconds) after control command starts
Setting example	Command	@SIT,2000 ↵
	Response	@SIT,2000 ↵
	Description	Setting ineffective time during control command execution to 2000 ms. (2 seconds)
Remarks		—

@DEC		Initializing registered command and link
Setting	Command	@DEC, no_1 (, no_2, no_3···) ↵
	Response	@DEC, no_1 (, no_2, no_3···) ↵
Parameter		no_1-32: Commands or links you want to initialize 1 to 32: Control commands 1 to 32 101 to 132: Response commands1 to 32 ("1xx": xx is the response command number) 【See: @GRC / @SRC Response command】 201 to 259: Control command links1 to 59 ("2xx": xx is the control command execution condition) 【See: @GCC / @SCC Control command link】
Setting example	Command	@DEC,201 ↵
	Response	@DEC,201 ↵
	Description	Deleting the link between COMMAND A and PLANE A
Remarks		—

@GTL / @STL		Lighting condition of execution button
Getting	Command	@GTL, control_1 (, control_2···) 
	Response	@GTL, control_1, led_1 (, control_2, led_2···) 
Setting	Command	@STL, control_1, led_1 (, control_2, led_2···) 
	Response	@STL, control_1, led_1 (, control_2, led_2···) 
Parameter		<p>control_1-9: Command execution button 0 = All command execution buttons 1 = COMMAND A to 9 = COMMAND I</p> <p>led_1-9 : Lighting condition If a control command(s) having only one PLANE, PLANE A or PLANE B is linked to a control command execution button: 0 = Lights when a control command is registered. [Default] 1 = Lights while a control command is being executed.</p> <p>If a control command(s) having two PLANEs, PLANE A and PLANE B is linked to a control command execution button: 0 = A control command(s) that is linked to a button is executed by pressing the desired button when the control command execution button lights/blinks. Lights: Control command registered to PLANE A. Blinks: Control command registered to PLANE B. 1 = The control command that is linked to a button is executed by pressing a desired button when the control command execution button lights/goes out. Lights: Control command registered to PLANE A Goes out: Control command registered to PLANE B</p>
Getting example	Command	@GTL,3 
	Response	@GTL,3,0 
	Description	Getting the lighting condition of the COMMAND C The COMMAND C lights if a control command is registered. (If one PLANE is linked)
Setting example	Command	@STL,3,1 
	Response	@STL,3,1 
	Description	Setting the COMMAND C to light while a command is being executed (If one PLANE is linked)
Remarks		COMMANDD to COMMAND I: Applied only for WEB browser

@GTF / @STF		Blinking time of sink device power switch
Getting	Command	@GTF, control _1 (,control _2····) ↵
	Response	@GTF, control _1, flash_1 (,control _2, flash_2····) ↵
Setting	Command	@STF, control _1, flash_1 (,control _2, flash_2····) ↵
	Response	@STF, control _1, flash_1 (,control _2, flash_2····) ↵
Parameter		<p>control _1-3: Command keys that are connected to command control connectors 0 = All command keys that are connected to command control connectors, 1 = COMMAND A to 3 = COMMAND C 10 = DISPLAY1 POWER, 11 = DISPLAY2 POWER</p> <p>flash_1-13 : Blinking time -1 = Links during control command execution, 0 = Not blink, 1 to 1000 = Blinks for 1 sec. to 1000 sec. [Default] COMMAND A to COMMAND 3 = 0, DISPLAY1 POWER, DISPLAY2 POWER = -1</p>
Getting example	Command	@GTF,1 ↵
	Response	@GTF,1,-1 ↵
	Description	Getting blinking time of COMMAND A The switch will be blinked while control command is being executed.
Setting example	Command	@STF,1,5 ↵
	Response	@STF,1,5 ↵
	Description	Setting COMMAND A to blink 5 seconds after control command execution starts
Remarks		—

3.3.13 Preset memory

@RCM		Loading crosspoint memory
Setting	Command	@RCM, memory ↵
	Response	@RCM, memory ↵
Parameter		memory : Crosspoint memory 1 to 9
Setting example	Command	@RCM,1 ↵
	Response	@RCM,1 ↵
	Description	Loading video and audio channels of crosspoint memory 1
Remarks		—

@SCM / @SEM		Saving channels to crosspoint memory
Setting	Description	Overwriting all
	Command	@SCM, memory (, name) ↵
	Response	@SCM, memory (, name) ↵
Setting	Description	Overwriting partly
	Command	@SEM, memory (, name) ↵
	Response	@SEM, memory (, name) ↵
Parameter		memory : Crosspoint memory 1 to 9
		name: Memory name Up to 10 characters using 20 to 7D from ASCII codes. If you do not specify memory name, only crosspoint settings are saved without changing the current memory name.
Setting example	Command	@SCM,2 ↵
	Response	@SCM,2 ↵
	Description	Saving the current video and audio channels to crosspoint memory 2 without changing the memory name
Setting example	Command	@SEM,2,PATTERN2 ↵
	Response	@SEM,2,PATTERN2 ↵
	Description	Saving the current video and audio channels to crosspoint memory 2 with the name of "PATTERN2" Output settings that are set to Not Controlled are not saved.
Remarks		—

@GCM / @ECM		Editing crosspoint memory
Getting	Command	@GCM, memory ↵
	Response	@GCM, memory, v_1, a_1, v_2, a_2, name ↵
Setting	Command	@ECM, memory, v_1, a_1, v_2, a_2 ↵
	Response	@ECM, memory, v_1, a_1, v_2, a_2 ↵
Parameter		memory : Crosspoint memory 1 to 9
		v_1-2: Video channel a_1-2: Audio channel -1 = Not controlled [Default], 0 = OFF, 1 = IN1 to 8 = IN8
		name: Memory name Up to 10 characters using 20 to 7D from ASCII codes. [Default] 20 (space)
Getting example	Command	@GCM,2 ↵
	Response	@GCM,2,3,3,1,1,PATTERN2 ↵
	Description	Getting the video and audio channels of crosspoint memory 2 OUT1: IN3, OUT2: IN1 are saved with the name of "PATTERN2".
Setting example	Command	@ECM,2,1,1,-1,-1 ↵
	Response	@ECM,2,1,1,-1,-1 ↵
	Description	Setting the crosspoint memory 2 to: OUT1: IN1, OUT2: Not controlled
Remarks		Nothing is saved in the memory by factory default, the state is "-1" (Not controlled). If you save only video (@SCV) or audio (@SCA) at the first saving of crosspoint settings, "-1" (Not controlled) is returned to unsaved audio and video.

@RCV		Loading crosspoint memory (setting video channel)
Setting	Command	@RCV, memory ↵
	Response	@RCV, memory ↵
Parameter		memory : Crosspoint memory 1 to 9
Getting example	Command	@RCV,1 ↵
	Response	@RCV,1 ↵
	Description	Loading video channel of crosspoint memory 1
Remarks		—

@SCV / @SEV		Saving crosspoint memory (Setting video channel)
Setting	Description	Overwriting all
	Command	@SCV, memory (, name)
	Response	@SCV, memory (, name)
Setting	Description	Overwriting partly
	Command	@SEV, memory (, name)
	Response	@SEV, memory (, name)
Parameter		memory: Crosspoint memory 1 to 9
		name: Memory name Up to 10 characters using 20 to 7D from ASCII codes. If you do not specify memory name, only settings of crosspoint are saved without changing the memory name.
Setting example	Command	@SCV,2
	Response	@SCV,2
	Description	Saving the current video channel in crosspoint memory 2 without changing memory name
Setting example	Command	@SEV,2,PATTERN2
	Response	@SEV,2,PATTERN2
	Description	Saving the current video channel in crosspoint memory 2 with the name of "PATTERN2" Output settings that are set to Not Controlled are not saved.
Remarks		—

@GCV / @ECV		Editing crosspoint memory (Setting video channel)
Getting	Command	@GCV, memory
	Response	@GCV, memory, v_1, v_2, name
Setting	Command	@ECV, memory, v_1, v_2
	Response	@ECV, memory, v_1, v_2
Parameter		memory: Crosspoint memory 1 to 9
		v_1-2: Video channel -1 = Not controlled [Default], 0 = OFF, 1 = IN1 to 8 = IN8
		name: Memory name Up to 10 characters using 20 to 7D from ASCII codes. [Default] 20 (space)
Getting example	Command	@GCV,2
	Response	@GCV,2,3,1,PATTERN2
	Description	Getting video channel of crosspoint memory 2 OUT1: IN3, OUT2: IN1 are saved with the name of "PATTERN2".
Setting example	Command	@ECV,2,1,1
	Response	@ECV,2,1,1
	Description	When crosspoint memory 2 is loaded, OUT1 and OUT2 are set to IN1.
Remarks		Nothing is saved in the memory by factory default, the state is "-1" (Not controlled). If you save only audio (@SCA) at the first saving of crosspoint settings, "-1" (Not controlled) is returned to unsaved audio and video.

@RCA		Loading audio channel setting from crosspoint memory
Setting	Command	@RCA, memory ↵
	Response	@RCA, memory ↵
Parameter		memory: Crosspoint memory 1 to 9
Setting example	Command	@RCA,1 ↵
	Response	@RCA,1 ↵
	Description	Loading audio channel of crosspoint memory 1
Remarks		—

@SCA / @SEA		Saving crosspoint memory (Setting audio channel)
Setting	Description	Overwriting all
	Command	@SCA, memory, name ↵
	Response	@SCA, memory, name ↵
Setting	Description	Overwriting partly
	Command	@SEA, memory (, name) ↵
	Response	@SEA, memory (, name) ↵
Parameter		memory: Crosspoint memory 1 to 9 name: Memory name Up to 10 characters using 20 to 7D from ASCII codes. If you do not specify memory name, only crosspoint settings are saved without changing the memory name.
Setting example	Command	@SCA,2 ↵
	Response	@SCA,2 ↵
	Description	Saving the current audio channel in crosspoint memory 2 without changing memory name
Setting example	Command	@SEA,2,PATTERN2 ↵
	Response	@SEA,2,PATTERN2 ↵
	Description	Saving the current video channel in crosspoint memory 2 with the name of "PATTERN2" Output settings that are set to Not Controlled are not saved.
Remarks		—

@GCA / @ECA		Editing crosspoint memory (Setting audio channel)
Getting	Command	@GCA, memory ↵
	Response	@GCA, memory, a_1, a_2, name ↵
Setting	Command	@ECA, memory, a_1, a_2 ↵
	Response	@ECA, memory, a_1, a_2 ↵
Parameter		memory: Crosspoint memory 1 to 9
		a_1-2: Audio channel -1 = Not controlled [Default], 0 = OFF, 1 = IN1 to 8 = IN8
		name: Memory name Up to 10 characters using 20 to 7D from ASCII codes. [Default] 20 (space)
Getting example	Command	@GCA,2 ↵
	Response	@GCA,2,3,1,PATTERN2 ↵
	Description	Getting audio channel of crosspoint memory 2 OUT1: IN3, OUT2: IN1 are saved with the name of "PATTERN2"
Setting example	Command	@ECA,2,1,2 ↵
	Response	@ECA,2,1,2 ↵
	Description	When crosspoint memory 2 is loaded, outputs are set as follows: OUT1: IN1, OUT2: IN2
Remarks		Nothing is saved in the memory by factory default, the state is "-1" (Not controlled). If you save only video (@SCV) at the first saving of crosspoint settings, "-1" (Not controlled) is returned to unsaved audio and video.

@RPM		Loading all settings
Setting	Command	@RPM, preset ↵
	Response	@RPM, preset ↵
Parameter		preset: Preset memory 1 to 8
Setting example	Command	@RPM,3 ↵
	Response	@RPM,3 ↵
	Description	Loading preset memory 3
Remarks		Once preset memory is loaded, all settings of video and audio I/O except for some environmental settings will be updated.

@SPM		Saving all settings
Setting	Command	@SPM, preset (, name) ↵
	Response	@SPM, preset (, name) ↵
Parameter		preset: Preset memory 1 to 8
		name: Memory name Up to 10 characters using 20 to 7D from ASCII codes. If you do not specify memory name, only crosspoint settings are saved without changing the memory name.
Setting example	Command	@SPM,2 ↵
	Response	@SPM,2 ↵
	Description	Saving the current settings in preset memory 2 without changing the memory name
Setting example	Command	@SPM,2,MEMORY2 ↵
	Response	@SPM,2,MEMORY2 ↵
	Description	Saving the current settings in preset memory 2 with the name of "MEMORY2"
Remarks		—

@SCP		Copying output setting
Setting	Command	@SCP, out_ori, out_des ↵
	Response	@SCP, out_ori, out_des ↵
Parameter		out_ori: Source output channel 1 = OUT1 to 2 = OUT2
		out_des: Destination output channel 1 = OUT1 to 2 = OUT2
Setting example	Command	@SCP,2,1 ↵
	Response	@SCP,2,1 ↵
	Description	Copying OUT2's setting to OUT1
Remarks		Once output setting is copied, all settings related to output are copied.

@GMU / @SMU		Startup settings
Getting	Command	@GMU ↵
	Response	@GMU, state ↵
Setting	Command	@SMU, state ↵
	Response	@SMU, state ↵
Parameter		state: Startup settings 1 to 9 = Crosspoint memory 1 to 9, 10 = Channel OFF, 11 = Last channel [Default], 12 to 19 = Preset memory 1 to 8
Getting example	Command	@GMU ↵
	Response	@GMU,3 ↵
	Description	Getting settings for startup. Channel settings of crosspoint memory 3
Setting example	Command	@SMU,3 ↵
	Response	@SMU,3 ↵
	Description	Setting startup channel settings to crosspoint memory 3
Remarks		—

3.3.14 Bitmap

@GBM / @SBM		Outputting bitmap image
Getting	Command	@GBM ↵
	Response	@GBM, out_1, out_2 ↵
Setting	Command	@SBM, ch_1, out_1 (, ch_2, out_2) ↵
	Response	@SBM, ch_1, out_1 (, ch_2, out_2) ↵
Parameter		out_1-2: Outputting bitmap image 0 = OFF [Default], 1 = Bitmap 1 ON, 2 = Bitmap 2 ON, 3 = Bitmap 3 ON, 4 = Bitmap 4 ON Only registered numbers can be specified. ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GBM ↵
	Response	@GBM,1,0 ↵
	Description	Getting the output image OUT1: bitmap 1, OUT2: not output a bitmap image
Setting example	Command	@SBM,1,1 ↵
	Response	@SBM,1,1 ↵
	Description	Outputting bitmap 1 image to OUT 1
Remarks		—

@GBB / @SBB		Background color
Getting	Command	@GBB, ch
	Response	@GBB, ch, red_1, green_1, blue_1 (, red_2, green_2, blue_2, red_3, green_3, blue_3, red_4, green_4, blue_4)
Setting	Command	@SBB, ch_1, bitmap_1, red_1, green_1, blue_1 (, ch_2, bitmap_2, red_2, green_2, blue_2···)
	Response	@SBB, ch_1, bitmap_1, red_1, green_1, blue_1 (, ch_2, bitmap_2, red_2, green_2, blue_2···)
Parameter		ch: Output channel 1 = OUT1, 2= OUT2
		ch_1-8: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
		red_1-8 : Background color (Red) green_1-8 : Background color (Green) blue_1-8 : Background color (Blue) 0 to 255 [Default] 255 (White) Getting commands: registered bitmap settings is returned in order.
		bitmap_1-8: Bitmap number 0 = All bitmaps, 1 = bitmap 1, 2 = bitmap 2, 3 = bitmap 3, 4 = bitmap 4 Only registered numbers can be specified.
Getting example	Command	@GBB,2
	Response	@GBB,2,255,0,0,255,0,0,255,0,0,255,0,0
	Description	Getting background color of OUT2 R: 255, G and B: 0 (Red)
Setting example	Command	@SBB,1,1,255,255,255
	Response	@SBB,1,1,255,255,255
	Description	Setting background color for when Bitmap 1 is output to OUT1 to 255 for RGB (white)
Remarks		—

@GBT / @SBT		Aspect ratio
Getting	Command	@GBT, ch
	Response	@GBT, ch, aspect_1 (, aspect_2, aspect_3, aspect_4)
Setting	Command	@SBT, ch_1, bitmap_1, aspect_1 (, ch_2, bitmap_2, aspect_2···)
	Response	@SBT, ch_1, bitmap_1, aspect_1 (, ch_2, bitmap_2, aspect_2···)
Parameter		<p>ch: Output channel 1 = OUT1, 2 = OUT2</p> <p>ch_1-8: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2</p> <p>aspect_1-8: Aspect ratio 0 = AUTO [Default], 1 = FULL, 2 = THROUGH Getting commands: registered bitmap settings is returned in order.</p> <p>bitmap_1-8: Bitmap number 0 = All bitmaps, 1 = bitmap 1, 2 = bitmap 2, 3 = bitmap 3, 4 = bitmap 4 Only registered numbers can be specified.</p>
Getting example	Command	@GBT,1
	Response	@GBT,1,1,1,1,1
	Description	Getting aspect ratio of OUT1 Displayed on FULL screen.
Setting example	Command	@SBT,1,1,1
	Response	@SBT,1,1,1
	Description	Setting the aspect ratio of bitmap 1 that is output to OUT1 to FLL
Remarks		—

@GZP / @SZP		Display position
Getting	Command	@GZP, ch
	Response	@GZP, ch, position_1 (, position_2, position_3, position_4)
Setting	Command	@SZP, ch_1, bitmap_1, position_1 (, ch_2, bitmap_2, position_2···)
	Response	@SZP, ch_1, bitmap_1, position_1 (, ch_2, bitmap_2, position_2···)
Parameter		<p>ch: Output channel 1 = OUT1, 2 = OUT2</p> <p>ch_1-8: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2</p> <p>position_1-8: Display position 0 = CENTER [Default], 1 = TOP-LEFT, 2 = BOTTOM-LEFT, 3 = TOP-RIGHT, 4 = BOTTOM-RIGHT Getting commands: registered bitmap settings is returned in order.</p> <p>bitmap_1-8: Bitmap number 0 = All bitmaps, 1 = Bitmap 1, 2 = Bitmap 2, 3 = Bitmap 3, 4 = Bitmap 4 Only registered numbers can be specified.</p>
Getting example	Command	@GZP,1
	Response	@GZP,1,1,1,1,1
	Description	Getting the display position of OUT1 Displaying at TOP-LEFT.
Setting example	Command	@SZP,1,1,1
	Response	@SZP,1,1,1
	Description	Setting bitmap 1 that is output from OUT1 to be displayed at TOP-LEFT
Remarks		—

@GBA / @SBA		Assigning input channel
Getting	Command	@GBA, ch [↵]
	Response	@GBA, ch, bitmap_1 (, bitmap_2, bitmap_3, bitmap_4, bitmap_5, bitmap_6, bitmap_7, bitmap_8) [↵]
Setting	Command	@SBA, ch_1, input_1, bitmap_1 (, ch_2, input_2, bitmap_2···) [↵]
	Response	@SBA, ch_1, input_1, bitmap_1 (, ch_2, input_2, bitmap_2···) [↵]
Parameter		ch: Output channel 1 = OUT1, 2 = OUT2
		ch_1-16: Output channel 0 = All outputs, 1 = OUT1, 2= OUT2
		bitmap_1-16: Bitmap assignment 0 = NONE [Default], 1 = Bitmap 1, 2 = Bitmap 2, 3 = Bitmap 3, 4 = Bitmap 4 Only registered numbers can be specified.
		input_1-16: Input channel 0 = All inputs, 1 = IN1 to 8 = IN8
Getting example	Command	@GBA,1 [↵]
	Response	@GBA,1,0,0,0,0,0,0,1,0 [↵]
	Description	Getting the OUT1 bitmap assignment OUT1: bitmap 1 to IN7, other input channels: no bitmap is assigned.
Setting example	Command	@SBA,1,7,1 [↵]
	Response	@SBA,1,7,1 [↵]
	Description	Setting OUT1: Assigning bitmap 1 to IN7 (If IN7 is selected, bitmap 1 is output.)
Remarks		—

@GPB / @SPB		Startup bitmap
Getting	Command	@GPB [↵]
	Response	@GPB, out_1, out_2 [↵]
Setting	Command	@SPB, ch_1, out_1 (, ch_2, out_2) [↵]
	Response	@SPB, ch_1, out_1 (, ch_2, out_2) [↵]
Parameter		out_1-2: Outputting bitmap image 0 = OFF [Default], 1 = Bitmap 1 ON, 2 = Bitmap 2 ON, 3 = Bitmap 3 ON, 4 = Bitmap 4 ON Only registered numbers can be specified.
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GPB [↵]
	Response	@GPB,0,1 [↵]
	Description	Getting the bitmap that is output at startup Bitmap 1 is output to OUT2.
Setting example	Command	@SPB,1,0 [↵]
	Response	@SPB,1,0 [↵]
	Description	OUT1: not output a bitmap at startup
Remarks		—

@GBD / @SBD		Dividing bitmap memory
Getting	Command	@GBD
	Response	@GBD, num, block_1 (, block_2···)
Setting	Command	@SBD, num, mode (, block_1, block_2···)
	Response	@SBD, num, mode, block_1 (, block_2···)
Parameter		<p>num: The number of divides 1 to 4 [Default] 1</p> <p>block_1-4: Block size of each memory 0 to 128 [Default] 128 Specify and return the divided block size. 1 block: 65,536 bytes, the total size of all bitmaps: 128 blocks (8,388,608 bytes or smaller) Specify only if "3" is selected for the "mode" below. If you set the divide mode to "3", specify this value.</p> <p>mode: Divide mode 0 = AUTO, 1 = RESIZE, 2 = FORCE, 3 = Specify size If you select "3", set <i>size_1-4</i> below.</p>
Getting example	Command	@GBD
	Response	@GBD,2,64,64
	Description	Getting the divide setting for bitmap memory Bitmap 1 and bitmap 2: 64 blocks (4,194,304 bytes) are allocated for each.
Setting example	Command	@SBD,2,1
	Response	@SBD,2,1,64,64
	Description	Dividing bitmap memory into two in RESIZE mode Bitmap 1 and bitmap 2: 64 blocks (4,194,304 bytes) are allocated for each.
Remarks		—

@GBV		Bitmap memory status
Getting	Command	@GBV
	Response	@GBV, num, block_1 (, block_2···)
Parameter		<p>num: The number of divides 1 to 4 [Default] 1</p> <p>block_1-4: Block size of each memory actually used. 0 to 128 [Default] 128</p>
Getting example	Command	@GBV
	Response	@GBV,2,32,0
	Description	Getting the actual status of bitmap memory Bitmap 1: 32 blocks (2,097,152 bytes) are used, bitmap 2: not registered.
Remarks		—

@GFZ / @SFZ		Freeze
Getting	Command	@GFZ ↵
	Response	@GFZ, freeze_1, freeze_2 ↵
Setting	Command	@SFZ, ch_1, freeze_1 (, ch_2, freeze_2) ↵
	Response	@SFZ, ch_1, freeze_1 (, ch_2, freeze_2) ↵
Parameter		freeze_1-2: Setting freeze 0 = OFF [Default], 1 = ON
		ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2
Getting example	Command	@GFZ ↵
	Response	@GFZ,1,0 ↵
	Description	Getting the freeze status OUT1: input image is frozen and output.
Setting example	Command	@SFZ,1,1 ↵
	Response	@SFZ,1,1 ↵
	Description	Freezing the OUT1 image
Remarks		Images freeze temporarily. When input channel is switched or input signal is changed, the freeze is released automatically and input image is output normally.

@CAP		Capturing input image
Setting	Command	@CAP, ch, bitmap ↵
	Response	@CAP, ch, bitmap ↵
Parameter		ch: Output channel 1 = OUT1, 2 = OUT2
		bitmap: Bitmap number 1 = Bitmap 1, 2 = Bitmap 2, 3 = Bitmap 3, 4 = Bitmap 4 Only the number of divides or less value can be specified.
Setting example	Command	@CAP,1,2 ↵
	Response	@CAP,1,2 ↵
	Description	Registering OUT1 input video in bitmap 2
Remarks		—

3.3.15 Other settings

@GLS / @SLS		Operation lock
Getting	Command	@GLS ↵
	Response	@GLS, lock ↵
Setting	Command	@SLS, lock ↵
	Response	@SLS, lock ↵
Parameter		lock: Operation lock 0 = Releasing lock [Default], 1 = Locking, 2 = Changing the current setting
Getting example	Command	@GLS ↵
	Response	@GLS,1 ↵
	Description	Getting the operation lock status Front panel keys are locked.
Setting example	Command	@SLS,1 ↵
	Response	@SLS,1 ↵
	Description	Enabling operation lock
Remarks		—

@GLM / @SLM		Setting operation to be locked
Getting	Command	@GLM ↵
	Response	@GLM, channel, channel_mode, menu, command, display_power ↵
Setting	Command	@SLM, channel, channel_mode, menu, command, display_power ↵
	Response	@SLM, channel, channel_mode, menu, command, display_power ↵
Parameter		channel : Input channel selection key channel_mode : Channel switching mode key menu : Menu operation key command : Command keys that are connected to command control connectors display_power : Sink device power key 0 = Not locked, 1 = Locked [Default]
Getting example	Command	@GLM ↵
	Response	@GLM,1,0,0,0,0 ↵
	Description	Getting the target keys/operations to be locked Input channel selection keys are locked.
Setting example	Command	@SLM,1,0,0,0,0 ↵
	Response	@SLM,1,0,0,0,0 ↵
	Description	Setting input channel selection keys to be locked
Remarks		—



@GBZ / @SBZ		Buzzer
Getting	Command	@GBZ ↵
	Response	@GBZ, bz ↵
Setting	Command	@SBZ, bz ↵
	Response	@SBZ, bz ↵
Parameter		bz: Buzzer sound 0 = OFF, 1 = ON [Default]
Getting example	Command	@GBZ ↵
	Response	@GBZ,1 ↵
	Description	Getting the buzzer status ON
Setting example	Command	@SBZ,1 ↵
	Response	@SBZ,1 ↵
	Description	Enabling buzzer
Remarks		—

@GHP / @SHP		Power supply of HDBaseT input
Getting	Command	@GHP ↵
	Response	@GHP, mode ↵
Setting	Command	@SHP, mode ↵
	Response	@SHP, mode ↵
Parameter		mode: Power supply 0 = OFF [Default], 1 = ON
Getting example	Command	@GHP ↵
	Response	@GHP,0 ↵
	Description	Getting the power supply setting of HDBaseT input Power supply of HDBaseT input is set to OFF.
Setting example	Command	@SHP,1 ↵
	Response	@SHP,1 ↵
	Description	Power supply of HDBaseT input is set to ON.
Remarks		—

@GSS		I/O status																
Getting	Command	@GSS, channel, mode [↵]																
	Response	@GSS, channel, mode, status_1 (, status_2···) [↵]																
Parameter		<p>channel: I/O channel 1 = IN1 to 8 = IN8 11 = OUT1A, 12 = OUT1B, 13 = OUT2A, 14 = OUT2B</p> <p>mode / status_1-4: Target status</p> <p>channel = 1 to 8 (Digital input channel): 0 = All of 1 to 4, 1 = Input signal type^{*1}, 2 = Video input signal format^{*2}, 3 = Audio input signal format^{*3}, 4 = HDCP input^{*4}</p> <p>channel = 6 to 7 (Analog input channel): 0 = 1 and 2, 1 = Input signal type^{*1}, 2 = Video input signal format^{*2}</p> <p>channel = 11 to 14 (Output channel): 0 = All of 1 to 3, 1 = HDCP authentication status^{*5}, 2 = Output signal type^{*6}, 3 = Error code^{*7}</p> <p>^{*1} One of the following values is returned.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Input signal type</th> </tr> </thead> <tbody> <tr> <td>Hxx</td> <td>HDMI signal is input. xx stands for color depth which is 24 or 30.</td> </tr> <tr> <td>D</td> <td>DVI signal is input</td> </tr> <tr> <td>R</td> <td>Analog RGB signal is input</td> </tr> <tr> <td>Y</td> <td>Analog YPbPr signal is input</td> </tr> <tr> <td>V</td> <td>Analog composite video signal is input</td> </tr> <tr> <td>S</td> <td>Analog S-video signal is input</td> </tr> <tr> <td>N</td> <td>No signal is input</td> </tr> </tbody> </table>	Value	Input signal type	Hxx	HDMI signal is input. xx stands for color depth which is 24 or 30.	D	DVI signal is input	R	Analog RGB signal is input	Y	Analog YPbPr signal is input	V	Analog composite video signal is input	S	Analog S-video signal is input	N	No signal is input
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8	-	"@GDO / @SDO Audio output connector" is set to "OFF".																											
9	-	"@GDM / @SDM Output mode" is set to "DVI MODE" or a sink device that does not support audio is connected.* ⁹																											
A	Input channel is set to "OFF". (@GSW / @SSW Switching video and audio channel simultaneously, @GSV / @SSV Switching video channel, @GSA / @SSA Switching audio channel,)																												
B	-	"@GAO / @SAO Digital audio output connector" is set to "OFF".																											
C	No sink device is connected.																												
D	HDCP is being authorized.																												
E	HDCP authentication failed.																												
Getting example	Command Response	@GSS,1,0  @GSS,1,0,H30,1080P 60Hz,LINEAR PCM 48kHz,HDCP 1.4 																											
	Description	Getting IN1 all statuses <ul style="list-style-type: none"> • Input signal type: 30-BIT COLOR HDMI signal • Video input signal: 1080P 60Hz • Audio input signal: LINEAR PCM 48kHz • HDCP: 1.4 																											
Remarks		—																											

@GES		Monitor's EDID
Getting	Command	@GES, channel, mode
	Response	@GES, channel, mode, status_1 (, status_2, status_3, status_4)
Parameter		<p>channel: Output connector 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B</p> <p>mode / status_1-4: Statuses to be gotten 0 = All of 1 to 4, 1 = Monitor's name, 2 = Resolution and dot clock, 3 = HDMI support status, sampling structure, and color depth ^{*1}, 4 = Audio support status and sampling frequency, bit length, the number of channels, and support status of compressed audio ^{*2}</p> <p>^{*1} For sink device that does not support HDMI, "DVI" is returned. For sink device that supports HDMI, "HDMI" is returned, and then supported sampling structures (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 replied in that order.</p> <p>^{*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 compressed audio is supported) are replied in that order.</p>
Getting example	Command Response	@GES,1,0 @GES,1,0,MSD-802UHD,1920x1080 148.50MHz,DVI,AUDIO NOT SUPPORT
	Description	Getting the EDID of the sink device connected to OUT1 <ul style="list-style-type: none"> • Monitor name: MSD-802UHD • Resolution: 1920x1080 • Dot clock: 148.50 MHz • HDMI: Not supported • Audio: Not supported
Remarks		—

@GIV		Version
Getting	Command	@GIV
	Response	@GIV, id, ver
Parameter		<p>id : Model number ver : Firmware version</p>
Getting example	Command Response	@GIV @GIV,MSD-802UHD,1.00
	Description	Getting the product information Model number and firmware version are replied.
Remarks		—

User Guide (Command Guide) of
MSD-701UHD/702UHD/801UHD/802UHD
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Headquarters

IDK Corporation
7-9-1 Chuo, Yamato-shi, Kanagawa-pref.
242-0021 JAPAN
TEL: +81-46-200-0764 FAX: +81-46-200-0765

Email: idx_eng@idx.co.jp URL: <http://www.idxkav.com>

USA

IDK America Inc.
72 Grays Bridge Road Suite 1-C, Brookfield, CT 06804
TEL: +1-203-204-2445

Email: sales@idxkav.com URL: <http://www.idxkav.com>

Europe

IDK Europe GmbH
Lise-Meitner-Str. 6, D-40878 Ratingen
TEL: +49-2102-578-301-0

Email: info@idxkav.eu URL: <http://www.idxkav.com>



**Product information
Support**

Arvanics Corporation
7-9-1 Chuo, Yamato-shi, Kanagawa-pref.
242-0021 JAPAN
TEL: +81-46-259-6920 FAX: +81-46-259-6930

Email: info@arvanics.com URL: <http://www.arvanics.com>

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