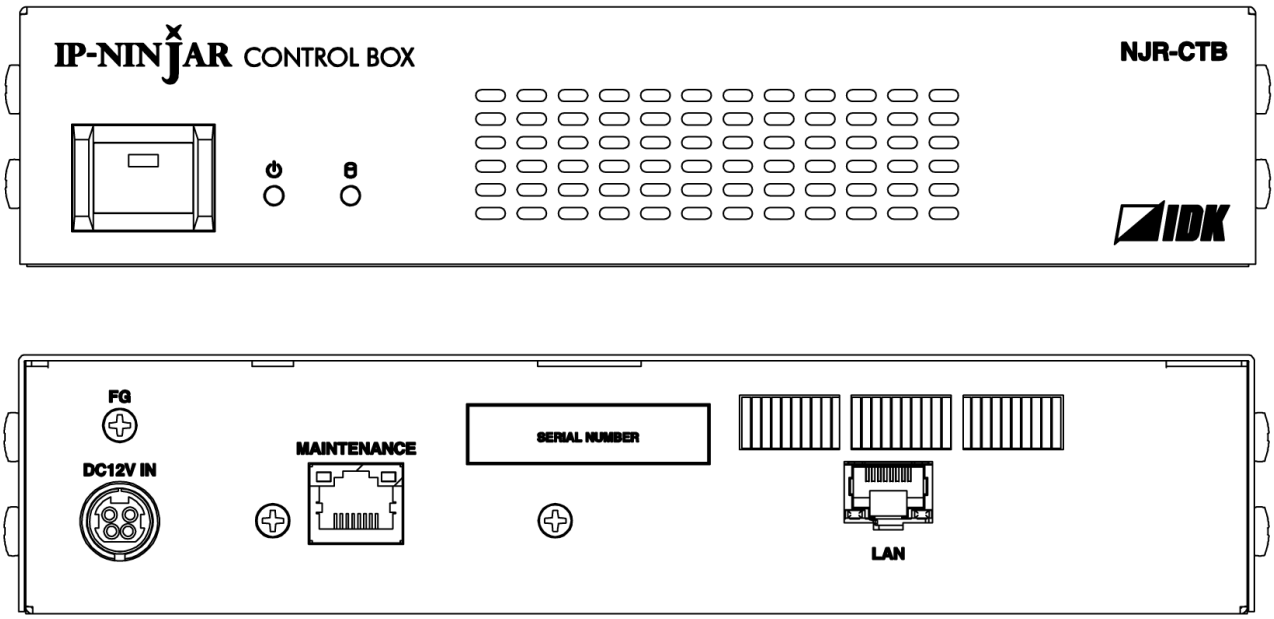
IP-NINJAR Management and Control Box

NJR-CTB

<Command Reference Guide>

Ver.1.1.1



- Thank you for choosing our product.
- To ensure the best performance of this product, please read this Command Guide and Users Guide fully and carefully before using your product.

IDK Corporation

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Before reading this manual

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- Some of the contents in this command guide such as product appearance in diagrams, menu operations, communication commands, and so on may differ from one NJR-CTB model to another.
- 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 for the NJR-CTB consists of the two following volumes:

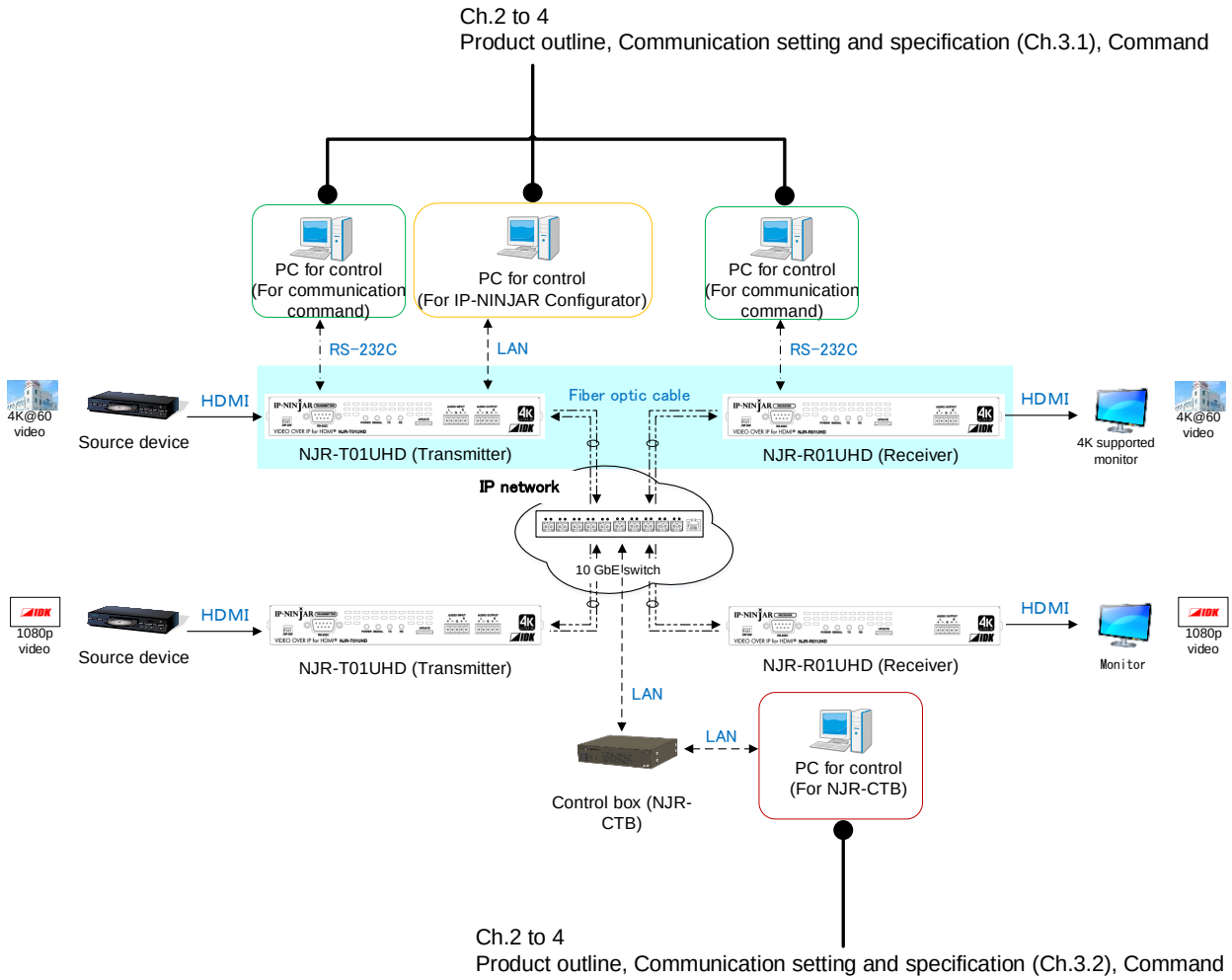
- Users guide: Please download from the website above.
- Command guide (this document): Please download from the website above.

Table of Contents

1 How to read this Guide

This guide contains the procedure for using an NJR-CTB Control Box to command IP-NINJAR series products via LAN communication. The NJR-CTB is for 4K@60 and HDCP2.2 supported HDMI extenders (NJR-T01UHD, transmitter and NJR-R01UHD, receiver) when usedwith a 10G LAN switch or within an extended 10G LAN fabric environment*.

*An NJR-CTB is not required for point to point applications where and NJR-T01UHD is connected directly to an NJR-R01UHD.



[Figure 1.1] Document structure

[Table 1.1] Documents for IP-NINJAR products

Model number	User's guide	Command guide
NJR-T01UHD / NJR-R01UHD	NJR-T01UHD / NJR-R01UHD User's guide	NJR-T01UHD / NJR-R01UHD Command guide
NJR-T04HD / NJR-R04HD	NJR-T04HD / NJR-R04HD User's guide	NJR-T04HD / NJR-R04HD Command guide
NJR-CTB	NJR-CTB User's guide	NJR-CTB Command guide
IP-NINJAR Configurator (for free)	IP-NINJAR Configurator User's guide	

2 About this Guide

This guide explains how to control the NJR-CTB using commands through LAN communication.

■ **Communication commands enables the following main operations:**

- Setting input, output, and audio
- Displaying information
- Switching channels
- Loading and setting crosspoint preset
- Loading and setting video wall

3 Communication configuration and Specifications

3.1 LAN communication

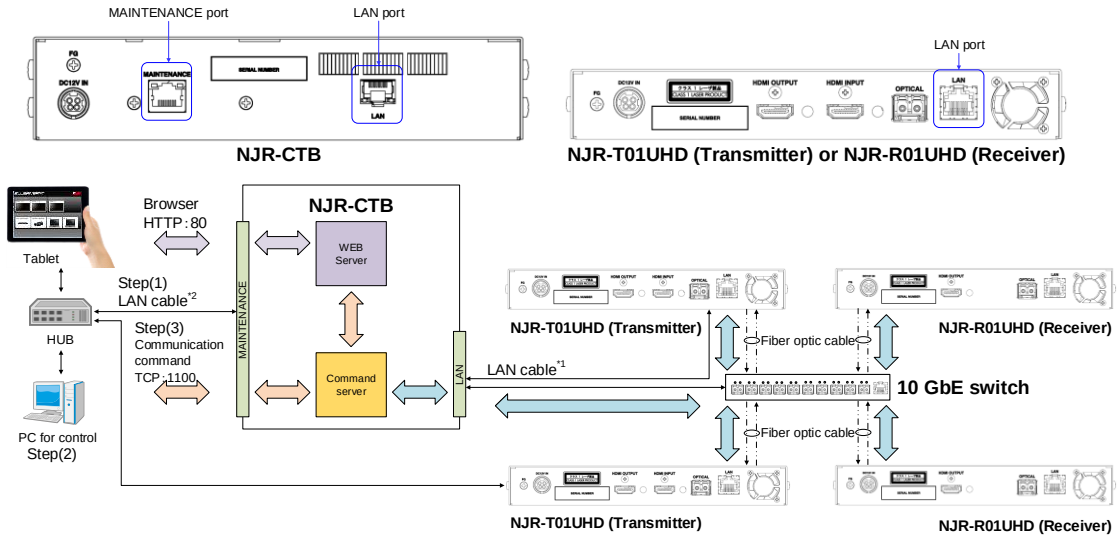
The NJR-CTB can be accessed and controlled through LAN communication.
Connecting a control device to the NJR-CTB's LAN port enables system control and status querries per the Command List.

Information:
The NJR-CTB can also be controlled from the WEB browser. Refer to "NJR-CTB User's Guide" for details.

3.1.1 Setup of LAN communication

Follow the procedure below.

(1) Connect the control device to the MAINTENANCE port of NJR-CTB or LAN port of NJR-T01UHD / NJR-R01UHD through a LAN cable.
(2) Factory default values of LAN communication are as follows.
IP address: 192.168.1.199
Subnet mask: 255.255.255.0
Default gateway: 192.168.1.200
Establish the connection from the control device to the TCP port number 1100.
(3) Send communication command from the control device to the NJR-CTB.
You can control the NJR-CTB or NJR-T01UHD / NJR-R01UHD and get the status information using communication command.

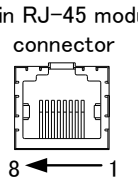


※1 The LAN port of NJR-CTB should be connected to the LAN port of NJR-T01UHD / NJR-R01UHD or the 10 GbE switch.
※2 PC for control should be connected to the MAINTENANCE port of NJR-CTB or the LAN port of NJR-T01UHD/NJR-R01UHD.

[Figure 3.1] LAN communication setup

3.1.2 LAN port specification

LAN and MAINTENANCE port assignments are as follows.
Since Auto MDI / MDI-X that distinguishes and switches straight/cross cables automatically is supported, extra care is not necessary to connect the NJR-CTB to PC, HUB or the like.



Pin number	Signal name			
	MDI		MDI-X	
	1000BASE-T	100BASE-TX/10BASE-T	1000BASE-T	100BASE-TX/10BASE-T
1	TRX+ (Transmitted/Received data+)	TX+ (Transmitted data+)	TRX+ (Transmitted/Received data+)	RX+ (Received data+)
2	TRX- (Transmitted/Received data-)	TX- (Transmitted data-)	TRX- (Transmitted/Received data-)	RX- (Received data-)
3	TRX+ (Transmitted/Received data+)	RX+ (Received data+)	TRX+ (Transmitted/Received data+)	TX+ (Transmitted data+)
4	TRX+ (Transmitted/Received data+)	N.C. (No Connection)	TRX+ (Transmitted/Received data+)	N.C. (No Connection)
5	TRX- (Transmitted/Received data-)	N.C. (No Connection)	TRX- (Transmitted/Received data-)	N.C. (No Connection)
6	TRX- (Transmitted/Received data-)	RX- (Received data-)	TRX- (Transmitted/Received data-)	TX- (Transmitted data-)
7	TRX+ (Transmitted/Received data+)	N.C. (No Connection)	TRX+ (Transmitted/Received data+)	N.C. (No Connection)
8	TRX- (Transmitted/Received data-)	N.C. (No Connection)	TRX- (Transmitted/Received data-)	N.C. (No Connection)

[Figure 3.2] LAN / MAINTENANCE port

3.1.3 LAN communication specification

[Table 3.1] LAN communication

Physical layer	10Base-T (IEEE802.3i)/100Base-TX (IEEE802.3u)/1000Base-T (IEEE802.3ab)
Network layer	ARP, IP, ICMP
Transport layer	TCP Port used for command control: 1100 Port used for WEB browser control (HTTP): 80
Application layer	HTTP

Note: Up to 8 connections can be used simultaneously for command control.

3.1.4 Limit on the number of TCP-IP connections and port overload management

The NJR-CTB's maintenance port supports a maximum of eight simultaneous connections (eight logical ports). To maintain optimal system accessibility, it is advisable to issue "port-open" and "port-close" commands before and after command or query strings are issured. This approach enables eight or more control devices to be effectively interfaced simultaneously and without concern for communication errors. As a safeguard, the NJR-CTB incorporates a 30-second timeout window for each port. If any port is inactive for more than 30 seconds, it will be closed automatically.

[Table 3.2] Increasing connections

Your PC software		NJR-CTB
Connecting TCP-IP	→	(Occupying 1 port)
Sending command (@xxx)	→	
	←	Replying command (@xxx)
Closing TCP-IP	→	(Releasing 1port)

Note:

If no command is sent from the PC side to the NJR-CTB for 30 seconds, the NJR-CTB automatically disconnects from that device.

3.2 Connecting LAN cable

The NJR-T01UHD and NJR-R01UHD send broadcast packets through the 10G LAN ports periodically for the purposes of internal system management. If the 10G LAN port is connected to an existing network, it may cause a broadcast storm* and may severely interefere with normal network operation. Contact IDK before attempting to connect the 10G LAN ports of an IP-NINJAR syetem to any existing network infrastructure.
*A broadcast storm occurs when a network is overwhelmed by continuous broadcast traffic resulting in a network meltdown.

During installation, it is important to avoid the creation of network loops. Contact IDK if you require assistance with network implementation.

4 Command

4.1 Summary

A command consists of “@” (“40” in hexadecimal), 3 or 4 one-byte alphabetical characters (upper and lower cases) followed by parameters (one-byte numbers). For some commands, multiple parameter values can be specified. Processing is executed by sending a delimiter at the end of the command.
Example: @RCPP,0,0,1,1 ↵

“,”(a comma, “2C” in hex) is indicated between a command and parameter and between two parameters.
“↵” is indicated as a delimiter CR LF (return+line feed, “0D” and “0A” in hex).

■ **If an error occurs**:
An error response is returned if an undefined command or inappropriate parameter is included.
Example: @RCPP,0 ↵
@ERR,1 ↵

4.2 Command list

■ **Error status**

■ **Setting channel information**

■ **Setting video**

■ **Setting audio**

■ **Setting EDID**

■ **Video and audio**

■ **Setting**

■ RS-232C

■ **CTB LAN**

■ **Maintenance**

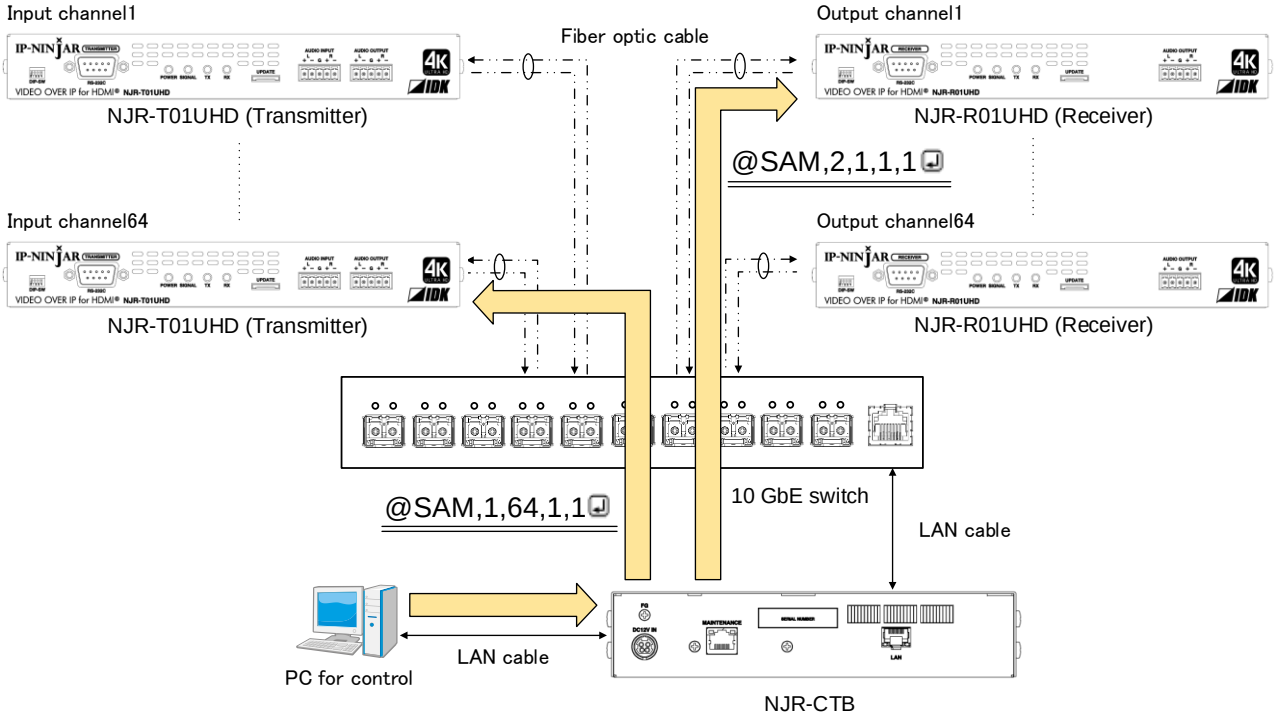
Command	Function	Page
@GIVC	Version	32
@CLRC	Initializing setting	32
@RBTC	Reboot	33

4.3 Parameter input format

Specify the target channel in order to control multiple NJR-T01UHDs and NJR-R01UHDs connected through a network switch.

Example: The command for setting mute of digital audio output

Format	@SAM, device, ch, port, mute ↵
Parameter	device: Model type 1 = NJR-T01UHD, 2 = NJR-R01UHD
	ch: Channel 1 to 512 = Channel1 to Channel512 If a command is input from the RS-232C port of NJR-T01UHD/NJR-R01UHD or from IP-NINJAR Configurator (Software for setting IP-NINJAR) through LAN, the value is “1” (static).
	port: Connector “1” (static)
	mute: Audio mute 0 = Mute OFF [Default], 1 = Mute ON



[Figure 4.1] Command input from NJR-CTB

4.4 Details of commands

4.4.1 Error status

@ERR	**Error status**	
Format	Return value only	
Return value	@ERR, error ↵	
Parameter	error: Error status 1 = Erroneous parameter format or value 2 = Undefined command or wrong format 3 = Currently cannot be used. 99 = Error other than errors above	
Example	@GCHI ↵ @ERR,1 ↵	Sending @GCHI command. Parameter error
Remarks	—	

4.4.2 Basic settings

4.4.2.1 Setting channel information

@GCHI / @SCHI	**Channel information**	
Function	Getting	Setting
Format	@GCHI, type_1, ch_1, reserved_1 (, type_2, ch_2, reserved_2･･･) ↵	@SCHI, type_1, ch_1, reserved_1, mac_1, hdmi_1 (, type_2, ch_2, reserved_2, mac_2, hdmi_2･･･) ↵
Return value	@GCHI, type_1, ch_1, reserved_1, mac_1, hdmi_1 (, type_2, ch_2, reserved_2, mac_2, hdmi_2･･･) ↵	@SCHI, type_1, ch_1, reserved_1, mac_1, hdmi_1 (, type_2, ch_2, reserved_2, mac_2, hidmi_2･･･) ↵
Parameter	type_1 to type_512: Type 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “1” fixed	
	mac_1 to mac_512: MAC address 00 to FF = 8 bit (in hex) × 6 combinations	
	hdmi_1 to hdmi_512:HDMI 0 = All connectors, 1 to 4 = Connector1 to 4	
Example	@GCHI,1,2,1 ↵ @GCHI,1,2,1,0008E5690000,0 ↵	Getting information of Input Channel2. All connectors whose MAC address is 00:08:E5:69:00:00 are assigned.
	@SCHI,1,2,1,0008E5690000,0 ↵ @SCHI,1,2,1,0008E5690000,0 ↵	Assigning all connectors whose MAC address is 00:08:E5:69:00:00 to Input Channel2. Completed normally.
Remarks	－	

4.4.2.2 Setting video

@GVOS / @SVOS	**Output video**	
Function	Getting	Setting
Format	@GVOS, type_1, ch_1, reserved_1 (, type_2, ch_2, reserved_2･･･) ↵	@SVOS, type_1, ch_1, reserved_1, mode_1, submode_1, resolution_1 (, type_2, ch_2, reserved_2, mode_2, submode_2, resolution_2･･･) ↵
Return value	@GVOS, type_1, ch_1, reserved_1, mode_1, submode_1, resolution_1 (, type_2, ch_2, reserved_2, mode_2, submode_2, resolution_2･･･) ↵	@SVOS, type_1, ch_1, reserved_1, mode_1, submode_1, resolution_1 (, type_2, ch_2, reserved_2, mode_2, submode_2, resolution_2･･･) ↵
Parameter	type_1 to type_512: Type “2” fixed.	
	ch_1 to ch_512: Channel 0 = All channels, 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “1” fixed.	
	mode_1 to mode_512: Switching mode 0 = Standard [Default], 1 = Fast & Scaling	
	submode_1 to submode_512: Sub mode “0” fixed.	
	resolution_1 to resolution_512: Resolution -1 = Not changing previous setting 1 = VGA@60 (640x480), 2 = SVGA@60 (800x600), 3 = XGA@60 (1024x768), 4 = WXGA@60 (1280x768), 5 = WXGA@60 (1280x800), 6 = QuadVGA@60 (1280x960), 7 = SXGA@60 (1280x1024), 8 = WXGA@60 (1360x768), 9 = WXGA@60 (1366x768), 10 = SXGA+@60 (1400x1050), 11 = WXGA+@60 (1440x900), 12 = WXGA++@60 (1600x900), 13 = UXGA@60 (1600x1200), 14 = WSXGA+@60 (1680x1050), 15 = VESAHD@60 (1920x1080), 16 = WUXGA@60 (1920x1200), 17 = QWXGA@60 (2048x1152), 18 = WQHD@60 (2560x1440), 19 = WQXGA@60 (2560x1600), 21 = 480p@59.94 (720x480), 23 = 576p@50 (720x576), 24 = 720p@50 (1280x720), 25 = 720p@59.94 (1280x720), 26 = 720p@60 (1280x720), 30 = 1080p@50 (1920x1080), 31 = 1080p@59.94 (1920x1080), 32 = 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)	

@GVOS / @SVOS	**Output video (Cont'd)**	
Example	@GVOS,2,1,1 ↵ @GVOS,2,1,1,1,0,32 ↵	Getting video setting of Ouput Channel1. Fast & Scaling mode, 1080p@60
	@SVOS,2,1,1,1,1,0,32 ↵ @SVOS,2,1,1,1,1,0,32 ↵	Setting video setting of Ouput Channel1 to Fast & Scaling mode 1080p@60. Completed normally.
Remarks	—	

4.4.2.3 Setting audio

@GAOS / @SAOS	**Output audio**	
Function	Getting	Setting
Format	@GAOS, type_1, ch_1, reserved_1 (, type_2, ch_2, reserved_2･･･) ↵	@SAOS, type_1, ch_1, reserved_1, analog_1, hdmi_1 (, type_2, ch_2, reserved_2, analog_2, hdmi_2･･･) ↵
Return value	@GAOS, type_1, ch_1, reserved_1, analog_1, hdmi_1 (, type_2, ch_2, reserved_2, analog_2, hdmi_2･･･) ↵	@SAOS, type_1, ch_1, reserved_1, analog_1, hdmi_1 (, type_2, ch_2, reserved_2, analog_2, hdmi_2･･･) ↵
Parameter	type_1 to type_512: Type “2” fixed	
	ch_1 to ch_512: Channel 0 = All channels, 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “1” fixed	
	hdmi_1 to hdmi_512: HDMI audio ouput 2 = HDMI audio [Default], 3= Analog input audio	
	analog_1 to analog_512: Audio output connector 2 = HDMI audio, 3= Analog input audio [Default]	
Example	@GAOS,2,1,1 ↵ @GAOS,2,1,1,2,3 ↵	Getting audio setting of Output Channel1. HDMI audio output: HDMI audio; Audio output connector: Analog input audio
	@SAOS,2,1,1,2,3 ↵ @SAOS,2,1,1,2,3 ↵	Setting HDMI audio ouput of Output Channel1 to output analog input audio from HDMI audio output and audio outout connector. Completed normally.
Remarks	―	

4.4.2.4 Setting EDID

@RMEC	**Copying EDID**	
Function	Getting	
Format	@RMEC, type, ch, reserved, input_1, output_1 (, input _2, output_2･･･) ↵	
Return value	@RMEC, type, ch, reserved, input_1, output_1 (, input _2, output_2･･･) ↵	
Parameter	type: Type “0” fixed.	
	ch: Channel “0” fixed.	
	reserved: Reservation “1” fixed.	
	input_1 to input_512: Input Channel 0 = All inputs, 1 to 512 = Input Channnel1 to Input Channel512	
	output_1 to output_512: Output Channel 1 to 512 = Output Channel1 to Ouput Channel512	
Example	@RMEC,0,0,1,1,2 ↵ @RMEC,0,0,1,1,2 ↵	Copying Output Channel2’s EDID to Input Channel1. Completed normally.
Remarks	－	

4.4.3 Setting transmission

4.4.3.1 Video and audio

@GWDS / @SWDS	**Video and audio transmission**	
Function	Getting	Setting
Format	@GWDS, type_1, ch_1, reserved_1 (, type_2, ch_2, reserved_2･･･) ↵	@SWDS, type_1, ch_1, reserved_1, mode_1, free_1 (, type_2, ch_2, reserved_2, mode_2, free_2･･･) ↵
Return value	@GWDS, type_1, ch_1, reserved_1, mode_1 (, type_2, ch_2, reserved_2, index_2, mode_2･･･) ↵	@SWDS, type_1, ch_1, reserved_1, mode_1, free_1 (, type_2, ch_2, reserved_2, mode_2, free_2･･･) ↵
Parameter	type_1 to type_512: Type 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 0 = All channels (only for setting), 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “0” fixed.	
	mode_1 to mode_512: Mode 0 = Stop [Default], 1 = Transmit or Receive For setting output channel, only “0” can be set.	
	free_1 to free_512: Initialization of transmission address 0 = Disabled [Default], 1 = Enabled	
Example	@GWDS,1,1,0 ↵ @GWDS,1,1,0,1 ↵	Getting video / audio transmission status of Input Channel1. Being transmitted.
	@SWDS,1,1,0,0,1 ↵ @SWDS,1,1,0,0,1 ↵	Stopping video / audio transmission of Input Channel1 and initializing the transmission address. Completed normally.
Remarks	For getting, the Ouput Channel is the same for video and audio.	

@GVDS / @SVDS	**Video transmission**	
Function	Getting	Setting
Format	@GVDS, type_1, ch_1, reserved_1 (, type_2, ch_2, reserved_2･･･) ↵	@SVDS, type_1, ch_1, reserved_1, mode_1, free_1 (, type_2, ch_2, reserved_2, mode_2, free_2･･･) ↵
Return value	@GVDS, type_1, ch_1, reserved_1, mode_1 (, type_2, ch_2, reserved_2, index_2, mode_2･･･) ↵	@SVDS, type_1, ch_1, reserved_1, mode_1, free_1 (, type_2, ch_2, reserved_2, mode_2, free_2･･･) ↵
Parameter	type_1 to type_512: Type 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 0 = All channels (only for setting), 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “0” fixed.	
	index_1 to index_512: Reservation “0” fixed.	
	mode_1 to mode_512: Mode 0 = Stop [Default], 1 = Start Only “0” can be selected for setting output channel	
	free_1 to free_512: Initializing transmission address 0 = Disabled [Default], 1 = Enabled	
Example	@GVDS,1,1,0 ↵ @GVDS,1,1,0,1 ↵	Getting video transmission status of Input Channel1. Being distributed
	@SVDS,1,1,0,0,1 ↵ @SVDS,1,1,0,0,1 ↵	Stopping video transmission of Input channel1 and initializing transmission address. Completed normally.
Remarks	―	

@GADS / @SADS	**Audio transmission**	
Function	Getting	Setting
Format	@GADS, type_1, ch_1, reserved_1 (, type_2, ch_2, reserved_2･･･) ↵	@SADS, type_1, ch_1, reserved_1, mode_1, free_1 (, type_2, ch_2, reserved_2, mode_2, free_2･･･) ↵
Return value	@GADS, type_1, ch_1, reserved_1, mode_1 (, type_2, ch_2, reserved_2, index_2, mode_2･･･) ↵	@SADS, type_1, ch_1, reserved_1, mode_1, free_1 (, type_2, ch_2, reserved_2, mode_2, free_2･･･) ↵
Parameter	type_1 to type_512: Type 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 0 = All channels (only for setting), 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “0” fixed.	
	mode_1 to mode_512: Mode 0 = Stop [Default], 1 = Transmit or Receive For setting output channel, only “0” can be set.	
	free_1 to free_512: Initialization of transmission address 0 = Disabled [Default], 1 = Enabled	
Example	@GADS,1,1,0 ↵ @GADS,1,1,0,1 ↵	Getting audio transmission status of Input Channel1. Being transmitted.
	@SADS,1,1,0,0,1 ↵ @SADS,1,1,0,0,1 ↵	Stopping audio transmission of Input Channel1 and initializing the transmission address. Completed normally.
Remarks	－	

@GNDS / @SNDS	**Analog audio transmission**	
Function	Getting	Setting
Format	@GNDS, type_1, ch_1, reserved_1 (, type_2, ch_2, reserved_2･･･) ↵	@SNDS, type_1, ch_1, reserved_1, mode_1, free_1 (, type_2, ch_2, reserved_2, mode_2, free_2･･･) ↵
Return value	@GNDS, type_1, ch_1, reserved_1, mode_1 (, type_2, ch_2, reserved_2, index_2, mode_2･･･) ↵	@SNDS, type_1, ch_1, reserved_1, mode_1, free_1 (, type_2, ch_2, reserved_2, mode_2, free_2･･･) ↵
Parameter	type_1 to type_512: Type 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 0 = All channels (only for setting), 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “0” fixed.	
	mode_1 to mode_512: Mode 0 = Stop [Default], 1 = Transmit or Receive For setting output channel, only “0” can be set.	
	free_1 to free_512: Initialization of transmission address 0 = Disabled [Default], 1 = Enabled	
Example	@GNDS,1,1,0 ↵ @GNDS,1,1,0,1 ↵	Getting audio transmission status of Input Channel1. Being transmitted.
	@SNDS,1,1,0,0,1 ↵ @SNDS,1,1,0,0,1 ↵	Stopping audio transmission of Input Channel1 and initializing the transmission address. Completed normally.
Remarks	―	

4.4.4 Switching channel

4.4.4.1 Video and Audio

@GSW / @SSW	**Switching video and audio channel simultaneously**	
Function	Getting	Setting
Format	@GSW, type, ch, reserved, input ↵	@SSW, type, ch, reserved, input_1, output_1 (, input_2, output_2･･･) ↵
Return value	@GSW, type, ch, reserved, input, output_1 (, output_2･･･) ↵	@SSW, type, ch, reserved, input_1, output_1 (, input_2, output_2･･･) ↵
Parameter	type: Type “0” fixed	
	ch: Channel “0” fixed	
	reserved: Reservation “1” fixed	
	input: Video and audio input channel 0 = OFF [Default], 1 to 512 = Input channel1 to Input channel512	
	output_1 to output_512:Video and audio output channel 0 = All outputs, 1 to 512 = Output channel1 to Output channel512	
Example	@GSW,0,0,1,1 ↵ @GSW,0,0,1,1,2 ↵	Getting the Output channel to which video and audio of Input channel1 are output. Output channel2.
	@SSW,0,0,1,1,2 ↵ @SSW,0,0,1,1,2 ↵	Outputting video and audio of Input channel1 to Output channel2. Completed normally.
Remarks	―	

@GSV / @SSV	**Switching video channel**	
Function	Getting	Setting
Format	@GSV, type, ch, reserved, input ↵	@SSV, type, ch, reserved, input_1, output_1 (, input_2, output_2･･･) ↵
Return value	@GSV, type, ch, reserved, input, output_1 (, output_2･･･) ↵	@SSV, type, ch, reserved, input_1, output_1 (, input_2, output_2･･･) ↵
Parameter	type: Type “0” fixed	
	ch: Channel “0” fixed	
	reserved: Reservation “1” fixed	
	input: Video input channel 0 = OFF [Default], 1 to 512 = Input channel1 to Input channel512	
	output_1 to output_512: Video output channel 0 = All outputs, 1 to 512 = Output channel1 to Output channel512	
Example	@GSV,0,0,1,1 ↵ @GSV,0,0,1,1,2 ↵	Getting the Output channel to which video of Input channel1 is output. Output channel2
	@SSV,0,0,1,1,2 ↵ @SSV,0,0,1,1,2 ↵	Outputting video of Input channel1 to Output channel2. Completed normally.
Remarks	―	

@GSA / @SSA	**Switching audio channel**	
Function	Getting	Setting
Format	@GSA, type, ch, reserved, input ↵	@SSA, type, ch, reserved, input_1, output_1 (, input_2, output_2･･･) ↵
Return value	@GSA, type, ch, reserved, input, output_1 (, output_2･･･) ↵	@SSA, type, ch, reserved, input_1, output_1 (, input_2, output_2･･･) ↵
Parameter	type: Type “0” fixed	
	ch: Channel “0” fixed	
	reserved: Reservation “1” fixed	
	input: Audio input channel 0 = OFF [Default], 1 to 512 = Input channel1 to Input channel512	
	output_1 to output_512: Audio output channel 0 = All outputs, 1 to 512 = Output channel1 to Output channel512	
Example	@GSA,0,0,1,1 ↵ @GSA,0,0,1,1,2 ↵	Getting the Output channel to which audio of Input channel1 is output. Output channel2
	@SSA,0,0,1,1,2 ↵ @SSA,0,0,1,1,2 ↵	Outputting audio of Input channel1 to Output channel2. Completed normally.
Remarks	―	

@GSAA / @SSAA	**Switching analog audio channel**	
Function	Getting	Setting
Format	@GSAA, type, ch, reserved, input ↵	@SSAA, type, ch, reserved, input_1, output_1 (, input_2, output_2･･･) ↵
Return value	@GSAA, type, ch, reserved, input, output_1 (, output_2･･･) ↵	@SSAA, type, ch, reserved, input_1, output_1 (, input_2, output_2･･･) ↵
Parameter	type: Type "0" fixed	
	ch: Channel "0" fixed	
	reserved: Reservation "1" fixed	
	input: Audio input channel 0 = OFF [Default], 1 to 512 = Input channel1 to Input channel512	
	output_1 to output_512: Audio output channel 0 = All outputs, 1 to 512 = Output channel1 to Output channel512	
Example	@GSAA,0,0,1,1 ↵ @GSAA,0,0,1,1,2 ↵	Getting the Output channel to which audio of Input channel1 is output. Output channel2
	@SSAA,0,0,1,1,2 ↵ @SSAA,0,0,1,1,2 ↵	Outputting audio of Input channel1 to Output channel2. Completed normally.
Remarks	―	

4.4.4.2 RS-232C

@GSWR / @SSWR	**Switching RS-232Cchannel**	
Function	Getting	Setting
Format	@GSWR, src_type, src_ch, src_port ↵	@SSWR, src_type, src_ch, src_port, dst_type, dst_ch, dst_port ↵
Return value	@GSWR, src_type, src_ch, src_port, dst_type, dst_ch, dst_port ↵	@SSWR, src_type, src_ch, src_port, dst_type, dst_ch, dst_port ↵
Parameter	src_type: Source type 1 = Input, 2 = Output	
	src_ch: Source channel 1 to 512 = Channel1 to Channel512	
	src_port: Source connector “1” fixed	
	dst_type: Destination type 1 = Input, 2 = Output	
	dst_ch: Destination channel 1 to 512 = Channel1 to Channel512	
	dst_port: Destination connector “1” fixed	
Example	@GSWR,1,1,1 ↵ @GSWR,1,1,1,2,2,1 ↵	Getting the channel connected to RS-232C of Input channel1. Output channel2
	@SSWR,1,1,1,2,2,1 ↵ @SSWR,1,1,1,2,2,1 ↵	Connecting Input channel1 and RS-232C of channel2. Completed normally.
Remarks	—	

4.4.5 Setting communication interface values

4.4.5.1 Setting RS-232C

@GRSS / @SRSS	**RS-232C communication setting**	
Function	Getting	Setting
Format	@GRSS, type, ch, reserved ↵	@SRSS, type, ch, reserved, baudrate,databit, stopbit, parity ↵
Return value	@GRSS, type, ch, reserved, baudrate,databit, stopbit, parity ↵	@SRSS, type, ch, reserved, baudrate,databit, stopbit, parity ↵
Parameter	type: Type 1 = Input, 2 = Output	
	ch: Channel ch_1 to ch_512: Channel 0 = All channels (only for setting), 1 to 512 = Channel1 to Channel512	
	reserved: Reservation “1” fixed.	
	baudrate: Baud rate 0 = 4800 bps, 1 = 9600 bps [Default], 2 = 19200 bps, 3 = 38400 bps, 4 = 57600 bps, 5 = 115200 bps	
	databit: Data bit length 7 = 7 bit, 8 = 8 bit [Default]	
	stopbit: Stop bit 1 = 1 bit [Default], 2 = 2 bit	
	parity: Parity check 0 = NONE [Default], 1 = ODD, 2 = EVEN	
Example	@GRSS,1,1,1 ↵ @GRSS,1,1,1,4,8,1,0 ↵	Getting RS-232C communication setting of Input Channel1. ・Baud rate: 57600 bps ・Data bit length: 8 bit ・Stop bit: 1 bit ・Parity check: NONE
	@SRSS,1,1,1,4,8,1,0 ↵ @SRSS,1,1,1,4,8,1,0 ↵	Setting RS-232C communication setting of Input Channel1 as follows: ・Baud rate: 57600 bps ・Data bit length: 8 bit ・Stop bit: 1 bit ・Parity check: NONE Completed normally.
Remarks	—	

4.4.5.2 CTB LAN settings

@GIPS / @SIPS	Setting LAN	
Function	Getting	Setting
Format	@GIPS, type_1, ch_1, port_1 (,type_2, ch_2, port_2･･･) ↵	@SIPS, type_1, ch_1, port_1, mode_1, ip_1, mask_1, gateway_1 (,type_2, ch_2, port_2, mode_2, ip_2, mask_2, gateway_2･･･) ↵
Return value	@GIPS, type_1, ch_1, port_1, mode_1, ip_1, mask_1, gateway_1 (,type_2, ch_2, port_2, mode_2, ip_2, mask_2, gateway_2･･･) ↵	@SIPS, type_1, ch_1, port_1, mode_1, ip_1, mask_1, gateway_1 (,type_2, ch_2, port_2, mode_2, ip_2, mask_2, gateway_2･･･) ↵
Parameter	type_1 to type_512: Type 0 = CTB, 1 = Input, 2 = Output	
	ch_1 to ch_512:channel 1 to 512 = Channel1 to Channel512	
	port_1 to port_512: Connector 1 to 2 = Connector1 to 2 For other than CTB, ”1” fixed	
	mode_1 to mode_512: Mode 0 = Automatic (DHCP) [Default], 1 = Fixed “0” is selected, the following three parameters will be invalid.	
	ip_1 to ip_512:IP address 0 to 255 = 8 bit (in decimal) × 4 combinations [Default] Getting automatically	
	mask_1 to mask_512: Subnet mask 0 to 255 = 8 bit (in decimal) × 4 combinations [Default] Getting automatically	
	gateway_1 to gateway_512: Default gateway 0 to 255 = 8 bit (in decimal) × 4 combinations [Default] Getting automatically	
Example	@GIPS,1,1,1 ↵ @GIPS,1,1,1,1,192.168.3.2,255.255.255.0,192.168.3.254 ↵	Getting LAN setting of Input channel1. ・Mode: Fixed ・IP address:192.168.3.2 ・Subnet mask: 255.255.255.0 ・Default gateway: 192.168.3.254
	@SIPS,1,1,1,1,192.168.3.2,255.255.255.0,192.168.3.254 ↵ @SIPS,1,1,1,1,192.168.3.2,255.255.255.0,192.168.3.254 ↵	Setting LAN of Input channel1 as follows: ・Mode: Fixed ・IP address: 192.168.3.2 ・Subnet mask: 255.255.255.0 ・Default gateway: 192.168.3.254 Completed normally.
Remarks	―	

@GMCC	**MAC address**	
Function	Getting	
Format	@GMCC, type_1, ch_1, port_1 (, type_2, ch_2, port_2･･･) ↵	
Return value	@GMCC, type_1, ch_1, port_1, mac_1 (, type_2, ch_2, port_2, mac_2･･･) ↵	
Parameter	type_1 to type_512: Type 0 = CTB, 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 1 to 512 = Channel1 to Channel512	
	port_1 to port_512: Connector 1 to 2 = Connector1 to 512 For other than CTB, ”1” fixed	
	mac_1 to mac_512: MAC address 00 to FF = 8 bit (in hex) × 6 combination	
Example	@GMCC,1,1,1 ↵ @GMCC,1,1,1, 0008E5690000 ↵	Getting the MAC address of Input channel1. 00:08:E5:69:00:00
Remarks	―	

4.4.6 Maintenance

4.4.6.1 CTB version querry

@GIVC	**Version**	
Function	Getting	
Format	@GIVC, type_1, ch_1, reserved_1 (, type_2, ch_2, reserved_2･･･) ↵	
Return value	@GIVC, type_1, ch_1, reserved_1, model_1, version_1 (, type_2, ch_2, reserved_2, model_2, version_2･･･) ↵	
Parameter	type_1 to type_512: Type 0 = CTB, 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “1” fixed	
	model_1 to model_512: Product model	
	version_1 to version_512: Firmware version	
Example	@GIVC,0,0,1 ↵ @GIVC,0,0,1,NJR-CTB,1.0.0 ↵	Getting the information of the CTB. ・Product model: NJR-CTB ・Firmware version: 1.0.0
Remarks	－	

4.4.6.2 Initialization and Reboot

@CLRC	**Initializing setting**	
Function	Setting	
Format	@CLRC, type _1, ch_1, reserved_1, comm_setting_1, (,type _2, ch_2, reserved_2, comm_setting_2･･･) ↵	
Return value	@CLRC, type _1, ch_1, reserved_1, comm_setting_1 (,type _2, ch_2, reserved_2, comm_setting_2･･･) ↵	
Parameter	type_1 to type_512: Type 0 = CTB, 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 0 = All channels, 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “1” fixed	
	comm _setting_1 to comm_setting_512: Communication setting (initializing LAN and RS-232C) 0 = Disabled [Default], 1 = Enabled	
Example	@CLRC,1,2,1,0 ↵ @CLRC,1,2,1,0 ↵	Initializing settings of input channel2, except for communication setting. Completed normally.
Remarks	－	

@RBTC	**Reboot**	
Function	Setting	
Format	@RBTC, type_1, ch_1, reserved_1 (,type_2, ch_2, reserved_2･･･) ↵	
Return value	@RBTC, type_1, ch_1, reserved_1 (,type_2, ch_2, reserved_2･･･) ↵	
Parameter	type_1 to type_512: Type 0 = CTB, 1 = Input, 2 = Output	
	ch_1 to ch_512: Channel 0 = All outputs, 1 to 512 = Channel1 to Channel512	
	reserved_1 to reserved_512: Reservation “1” fixed	
Example	@RBTC,1,2,1 ↵ @RBTC,1,2,1 ↵	Rebooting input channel2. Completed normally.
Remarks	－	

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