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 and keep this manual beside the product.

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Before reading this manual

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- Some of the contents in this command guide such as appearance diagrams, menu operations, communication commands, and so on may differ from your MSD depending on the version.
- This command guide is subject to change without notice. You can download the latest version from IDK’s website at: [http://www.idk.co.jp/en/index.html](http://www.idk.co.jp/en/index.html)

The reference manual for the MSD-501/502 consists of the following two volumes:

- **Users guide:**
  Provides explanations and procedures for operations, installation, connections among devices, I/O adjustment and settings.

- **Command guide (this document):** Please download this guide from the website above.
  Provides explanations and procedures for external control using RS-232C communication and LAN communications.
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1 About this guide

This guide contains information of communication commands that control the MSD via RS-232C or LAN communication.

- 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 such.
2 Setup and specification of communication

2.1 RS-232C communication

2.1.1 Setup 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”
   • RS-232C transmission between control devices: “OFF”
   
   【Reference: User’s 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. 2.1] Setting RS-232C communication

■ Operation example of RS-232C communication

![Fig. 2.2] Sample application of RS-232C communication
2.1.2 RS-232C connector

RS-232C pin assignments

![Fig. 2.3] RS-232C connector

2.1.3 Specification of RS-232C communication

![Table 2.1] RS-232C specification

<table>
<thead>
<tr>
<th>Compliant standard</th>
<th>RS-232C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud rate</td>
<td>4800, 9600, 19200, 38400 [bps]</td>
</tr>
<tr>
<td>Data bit</td>
<td>7, 8 [bit]</td>
</tr>
<tr>
<td>Parity check</td>
<td>None, even, odd</td>
</tr>
<tr>
<td>Stop bit</td>
<td>1, 2 [bit]</td>
</tr>
<tr>
<td>X parameter</td>
<td>Invalid</td>
</tr>
<tr>
<td>Flow control</td>
<td>None</td>
</tr>
<tr>
<td>Delimiter</td>
<td>CR LF (Carriage return and line feed, 0D and 0A in hex)</td>
</tr>
<tr>
<td>Communication method</td>
<td>Full duplex</td>
</tr>
</tbody>
</table>
2.2 LAN communication

2.2.1 Setup LAN communication

(1) Connect the MSD and the control device via a LAN cable.
(2) Set up RS-232C 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. 2.4] Control via LAN communication

Sample application of LAN communication

![Fig. 2.5] Sample application of LAN communication
2.2.2 LAN connector

LAN connector pin assignments:
It supports Auto MDI/MDI-X, which distinguishes/switches straight and cross cables automatically.

![LAN Connector Diagram]

Blinks in green while data is sent/received.
Blinks in orange when the send/receive rate is 100 Mbps.

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Signal Name</th>
<th>MDI</th>
<th>MDI-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TX+: Transmitted Data+</td>
<td>RX+: Received Data+</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>TX-: Transmitted Data-</td>
<td>RX-: Received Data-</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>RX+: Received Data+</td>
<td>TX+: Transmitted Data+</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>N.C: Not connected</td>
<td>N.C: Not connected</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>N.C: Not connected</td>
<td>N.C: Not connected</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>RX-: Received Data-</td>
<td>TX-: Transmitted Data-</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>N.C: Not connected</td>
<td>N.C: Not connected</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>N.C: Not connected</td>
<td>N.C: Not connected</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2.2** Specification of LAN communication

<table>
<thead>
<tr>
<th>Layer</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical layer</td>
<td>10BASE-T (IEEE802.3i)/100Base-TX (IEEE802.3u)</td>
</tr>
<tr>
<td>Network layer</td>
<td>ARP, IP, ICMP</td>
</tr>
<tr>
<td>Transport layer</td>
<td>TCP&lt;br&gt;Port used for command control: 23, 1100, 6000 to 6999&lt;br&gt;Port used for WEB browser control (HTTP): 80, 5000 to 5999</td>
</tr>
<tr>
<td>Application layer</td>
<td>HTTP, TELNET</td>
</tr>
</tbody>
</table>

**Note:** Up to 8 connections can be used simultaneously.
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 user’s 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

<table>
<thead>
<tr>
<th>Your PC software</th>
<th>MSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP-IP connection</td>
<td>(Occupied by 1 port)</td>
</tr>
<tr>
<td>Send command (@xxx)</td>
<td>← Send back command (@xxx)</td>
</tr>
<tr>
<td>TCP-IP close</td>
<td>(Release 1 port)</td>
</tr>
</tbody>
</table>

*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.

■ 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

--------------- HELP (1/13) ---------------

(CHANNEL SELECT Command)

@SSW / @GSW : Set/Get Input Channel

@SSV / @GSV : Set/Get Video Input Channel

@SSA / @GSA : Set/Get Audio Input Channel
### 3.2 Command list

#### Error status

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ERR</td>
<td>Error status</td>
</tr>
</tbody>
</table>

#### Power switch

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GDS/@SDS</td>
<td>Sink device power switch</td>
</tr>
</tbody>
</table>

#### Input channels

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GSW / @SSW</td>
<td>Switching video and audio channel simultaneously @GSV / @SSV</td>
</tr>
<tr>
<td>@GSV / @SSV</td>
<td>Switching video channel</td>
</tr>
<tr>
<td>@GSA / @SSA</td>
<td>Switching audio channel</td>
</tr>
</tbody>
</table>

#### Position, size, and masking

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GOT / @SOT</td>
<td>Output resolution</td>
</tr>
<tr>
<td>@GTD</td>
<td>Actual output resolution</td>
</tr>
<tr>
<td>@GUM / @SUM</td>
<td>Aspect ratio of sink device</td>
</tr>
<tr>
<td>@GAP / @SAP</td>
<td>Aspect ratio</td>
</tr>
<tr>
<td>@GAR / @SAR</td>
<td>Aspect ratio restoration</td>
</tr>
<tr>
<td>@GOV / @SOV</td>
<td>Overscan</td>
</tr>
<tr>
<td>@GNP / @SNP</td>
<td>Input position</td>
</tr>
<tr>
<td>@GNS / @SNS</td>
<td>Input size</td>
</tr>
<tr>
<td>@GNM / @SNM</td>
<td>Input masking</td>
</tr>
<tr>
<td>@IAS</td>
<td>Input automatic sizing</td>
</tr>
<tr>
<td>@GOP / @SOP</td>
<td>Output position</td>
</tr>
<tr>
<td>@GOS / @SOS</td>
<td>Output size</td>
</tr>
<tr>
<td>@GOM / @SOM</td>
<td>Output masking</td>
</tr>
<tr>
<td>@OAS</td>
<td>Output automatic sizing</td>
</tr>
<tr>
<td>@GBC / @SBC</td>
<td>Background color</td>
</tr>
<tr>
<td>@GTP / @STP</td>
<td>Test pattern</td>
</tr>
</tbody>
</table>
### Image quality

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GFL / @SFL</td>
<td>Sharpness</td>
</tr>
<tr>
<td>@GBR / @SBR</td>
<td>Input brightness</td>
</tr>
<tr>
<td>@GCO / @SCO</td>
<td>Input contrast</td>
</tr>
<tr>
<td>@GHU / @SHU</td>
<td>Hue</td>
</tr>
<tr>
<td>@GST / @SST</td>
<td>Saturation</td>
</tr>
<tr>
<td>@GSU / @SSU</td>
<td>Black level</td>
</tr>
<tr>
<td>@IDC</td>
<td>Input default color</td>
</tr>
<tr>
<td>@GOB / @SOB</td>
<td>Output brightness</td>
</tr>
<tr>
<td>@GOC / @SOC</td>
<td>Output contrast</td>
</tr>
<tr>
<td>@ODC</td>
<td>Output default color</td>
</tr>
</tbody>
</table>

### Input settings

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GDT / @SDT</td>
<td>No-signal-input monitoring</td>
</tr>
<tr>
<td>@GHE / @SHE</td>
<td>HDCP input enabled/disabled</td>
</tr>
<tr>
<td>@GIQ / @SIQ</td>
<td>Input equalizer</td>
</tr>
<tr>
<td>@GAI / @SAI</td>
<td>Analog input type</td>
</tr>
<tr>
<td>@GID / @SID</td>
<td>Automatic detection of input video interruption</td>
</tr>
<tr>
<td>@GIN / @SIN</td>
<td>Signal selection of DVI input connector</td>
</tr>
<tr>
<td>@GAU / @SAU</td>
<td>Priority of input channel automatic switching</td>
</tr>
<tr>
<td>@GMT / @SMT</td>
<td>Masking time after automatic switching</td>
</tr>
</tbody>
</table>

### Input timing

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@AIS / @AIT</td>
<td>Automatic measurement</td>
</tr>
<tr>
<td>@GHT / @SHT</td>
<td>The total number of horizontal dots</td>
</tr>
<tr>
<td>@GHS / @SHS</td>
<td>Horizontal start position</td>
</tr>
<tr>
<td>@GHD / @SHD</td>
<td>Horizontal display period</td>
</tr>
<tr>
<td>@GVS / @SVS</td>
<td>Vertical start position</td>
</tr>
<tr>
<td>@GVD / @SVD</td>
<td>Vertical display period</td>
</tr>
<tr>
<td>@GIS / @SIS</td>
<td>Automatic measurement of start position</td>
</tr>
<tr>
<td>@GSM / @SSM</td>
<td>Automatic measurement when unregistered signals are input</td>
</tr>
<tr>
<td>@RTT</td>
<td>Loading device data</td>
</tr>
<tr>
<td>@STT</td>
<td>Registering device data</td>
</tr>
<tr>
<td>@GTK / @STK</td>
<td>Tracking</td>
</tr>
</tbody>
</table>
### Output settings

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GEQ / @SEQ</td>
<td>Output equalizer</td>
</tr>
<tr>
<td>@GDM / @SDM</td>
<td>Output mode</td>
</tr>
<tr>
<td>@GUY / @SUY</td>
<td>Synchronous signal output when no video signals are input</td>
</tr>
<tr>
<td>@GBO / @SBO</td>
<td>Output video when no video signals are input</td>
</tr>
<tr>
<td>@GFF / @SFF</td>
<td>Video switching effect</td>
</tr>
<tr>
<td>@GFT / @SFT</td>
<td>Video switching time</td>
</tr>
<tr>
<td>@GWC / @SWC</td>
<td>Wipe color</td>
</tr>
<tr>
<td>@GVO / @SVO</td>
<td>Video output connector</td>
</tr>
<tr>
<td>@GEN / @SEN</td>
<td>HDCP output</td>
</tr>
<tr>
<td>@GHR / @SHR</td>
<td>The number of HDCP retries</td>
</tr>
<tr>
<td>@GDC / @SDC</td>
<td>Deep Color</td>
</tr>
<tr>
<td>@GCE / @SCE</td>
<td>CEC connection</td>
</tr>
<tr>
<td>@HAU</td>
<td>HDCP re-authorization</td>
</tr>
</tbody>
</table>

### Audio

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GSL / @SSL</td>
<td>Audio output level</td>
</tr>
<tr>
<td>@SOL</td>
<td>Relative value of audio output level</td>
</tr>
<tr>
<td>@GOL</td>
<td>Limit status of audio output level</td>
</tr>
<tr>
<td>@GAM / @SAM</td>
<td>Audio output mute</td>
</tr>
<tr>
<td>@GAS / @SAS</td>
<td>Selecting audio input</td>
</tr>
<tr>
<td>@GSD</td>
<td>Selecting actual audio input</td>
</tr>
<tr>
<td>@GSO / @SSO</td>
<td>Audio input level</td>
</tr>
<tr>
<td>@SIL</td>
<td>Relative value of audio input level</td>
</tr>
<tr>
<td>@GIL</td>
<td>Limit status of audio input level</td>
</tr>
<tr>
<td>@GLO / @SLO</td>
<td>Output lip sync</td>
</tr>
<tr>
<td>@GLY / @SLY</td>
<td>Input lip sync</td>
</tr>
<tr>
<td>@GSF / @SSF</td>
<td>Sampling frequency</td>
</tr>
<tr>
<td>@GFD</td>
<td>Actual sampling frequency</td>
</tr>
<tr>
<td>@GDO / @SDO</td>
<td>Audio output connector</td>
</tr>
<tr>
<td>@GAO / @SAO</td>
<td>Digital audio output connector</td>
</tr>
<tr>
<td>@GMD / @SMD</td>
<td>Multi channel audio output</td>
</tr>
<tr>
<td>@GAT / @SAT</td>
<td>Test tone</td>
</tr>
</tbody>
</table>
### EDID

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GED / @SED</td>
<td>EDID data</td>
</tr>
<tr>
<td>@GVF / @SVF</td>
<td>Input resolution for PC</td>
</tr>
<tr>
<td>@GHF / @SHF</td>
<td>Input resolution for AV devices</td>
</tr>
<tr>
<td>@GDI / @SDI</td>
<td>Deep Color input</td>
</tr>
<tr>
<td>@GAF / @SAF</td>
<td>Audio format</td>
</tr>
<tr>
<td>@GSP / @SSP</td>
<td>The number of speakers</td>
</tr>
<tr>
<td>@RME</td>
<td>Copying EDID</td>
</tr>
</tbody>
</table>

### RS-232C communication

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GCT / @SCT</td>
<td>RS-232C communication</td>
</tr>
<tr>
<td>@GCF / @SCF</td>
<td>RS-232C communication mode</td>
</tr>
<tr>
<td>@GCD / @SCD</td>
<td>RS-232C transmission between control devices</td>
</tr>
</tbody>
</table>

### LAN communication

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GIP / @SIP</td>
<td>IP address</td>
</tr>
<tr>
<td>@GSB / @SSB</td>
<td>Subnet mask</td>
</tr>
<tr>
<td>@GGW / @SGW</td>
<td>Gateway address</td>
</tr>
<tr>
<td>@GLF / @SLF</td>
<td>LAN communication mode</td>
</tr>
<tr>
<td>@GLP / @SLP</td>
<td>TCP port number</td>
</tr>
<tr>
<td>@GMC</td>
<td>MAC</td>
</tr>
</tbody>
</table>

### Control commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@EXC</td>
<td>Executing control command</td>
</tr>
<tr>
<td>@GEC / @SEC</td>
<td>Getting control command (Communication command control)</td>
</tr>
<tr>
<td>@GEC / @SEC</td>
<td>Control command (Displaying received data)</td>
</tr>
<tr>
<td>@GEC / @SEC</td>
<td>Control command (CEC control)</td>
</tr>
<tr>
<td>@GRC / @SRC</td>
<td>Reply command</td>
</tr>
<tr>
<td>@GCC / @SCC</td>
<td>Control command link</td>
</tr>
<tr>
<td>@GIT / @SIT</td>
<td>Ineffective time during control command execution</td>
</tr>
<tr>
<td>@DEC</td>
<td>Initializing registered command and association</td>
</tr>
<tr>
<td>@GTF / @STF</td>
<td>Getting flashing time of sink device power switch</td>
</tr>
</tbody>
</table>
### Preset memory

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@RCM</td>
<td>Loading cross point memory</td>
</tr>
<tr>
<td>@SCM / @SEM</td>
<td>Saving channels to cross point memory</td>
</tr>
<tr>
<td>@GCM / @ECM</td>
<td>Editing cross point memory</td>
</tr>
<tr>
<td>@RCV</td>
<td>Loading cross point memory (setting video channel)</td>
</tr>
<tr>
<td>@SCV / @SEV</td>
<td>Saving cross point memory (Setting video channel)</td>
</tr>
<tr>
<td>@GCV / @ECV</td>
<td>Editing cross point memory (Setting video channel)</td>
</tr>
<tr>
<td>@RCA</td>
<td>Loading audio channel setting from cross point memory</td>
</tr>
<tr>
<td>@SCA / @SEA</td>
<td>Saving cross point memory (Setting audio channel)</td>
</tr>
<tr>
<td>@GCA / @ECA</td>
<td>Editing cross point memory (Setting audio channel)</td>
</tr>
<tr>
<td>@RPM / @SPM</td>
<td>Saving all settings</td>
</tr>
<tr>
<td>@GMU / @SMU</td>
<td>Startup settings</td>
</tr>
</tbody>
</table>

### Bitmap

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GBM / @SBM</td>
<td>Outputting bitmap image</td>
</tr>
<tr>
<td>@GBB / @SBB</td>
<td>Background color</td>
</tr>
<tr>
<td>@GBT / @SBT</td>
<td>Aspect ratio</td>
</tr>
<tr>
<td>@GZP / @SZP</td>
<td>Display position</td>
</tr>
<tr>
<td>@GBA / @SBA</td>
<td>Bitmap</td>
</tr>
<tr>
<td>@GPB / @SPB</td>
<td>Outputting bitmap at startup</td>
</tr>
<tr>
<td>@GBD / @SBD</td>
<td>Dividing bitmap memory</td>
</tr>
<tr>
<td>@GBV</td>
<td>Bitmap memory status</td>
</tr>
<tr>
<td>@GBN / @SBN</td>
<td>Bitmap number</td>
</tr>
<tr>
<td>@GFZ / @SFZ</td>
<td>Freeze</td>
</tr>
<tr>
<td>@CAP</td>
<td>Capturing input image</td>
</tr>
</tbody>
</table>

### Other settings

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GLS / @SLS</td>
<td>Key lock</td>
</tr>
<tr>
<td>@GLM / @SLM</td>
<td>Setting target front panel keys to be locked</td>
</tr>
<tr>
<td>@GBZ / @SBZ</td>
<td>Setting buzzer</td>
</tr>
<tr>
<td>@GSS</td>
<td>Input and output status</td>
</tr>
<tr>
<td>@GES</td>
<td>Monitor’s EDID</td>
</tr>
<tr>
<td>@GIV</td>
<td>Version</td>
</tr>
</tbody>
</table>
### 3.3 Detailed descriptions

#### 3.3.1 Error status

<table>
<thead>
<tr>
<th>@ERR</th>
<th>Error status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Only return value</td>
</tr>
<tr>
<td>Return value</td>
<td>@ERR, error</td>
</tr>
<tr>
<td>Parameter</td>
<td>error: Error status</td>
</tr>
<tr>
<td></td>
<td>1 = Erroneous parameter format or value</td>
</tr>
<tr>
<td></td>
<td>2 = Undefined command or wrong format</td>
</tr>
<tr>
<td></td>
<td>3 = Currently cannot be used.</td>
</tr>
<tr>
<td></td>
<td>4 = Not used.</td>
</tr>
<tr>
<td></td>
<td>5 = The command could not be executed, because the control command was not</td>
</tr>
<tr>
<td></td>
<td>registered.</td>
</tr>
<tr>
<td></td>
<td>6 = The command could not be processed since another command was being</td>
</tr>
<tr>
<td></td>
<td>executed.</td>
</tr>
<tr>
<td></td>
<td>7 = Automatic measurement of input timing failed.</td>
</tr>
<tr>
<td></td>
<td>8 = Loading EDID from the sink device failed.</td>
</tr>
<tr>
<td></td>
<td>9 = Not used.</td>
</tr>
<tr>
<td></td>
<td>10 = The control command was stopped according to the stop condition.</td>
</tr>
<tr>
<td></td>
<td>11 = The control command was stopped since the number of retries exceeded</td>
</tr>
<tr>
<td></td>
<td>the set value of “RETRY”.</td>
</tr>
<tr>
<td></td>
<td>12 = The control command of PJLink was stopped since the password did not</td>
</tr>
<tr>
<td></td>
<td>match.</td>
</tr>
<tr>
<td></td>
<td>13 = The image could not be captured since the image size to be captured</td>
</tr>
<tr>
<td></td>
<td>exceeded the reserved memory size.</td>
</tr>
<tr>
<td></td>
<td>14 = Capturing input image failed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>Sending @IOS command</th>
</tr>
</thead>
<tbody>
<tr>
<td>@IOS</td>
<td>Command format error</td>
</tr>
<tr>
<td>@ERR, 2</td>
<td></td>
</tr>
</tbody>
</table>

Remarks —
## 3.3.2 Power switch

<table>
<thead>
<tr>
<th>@GDS/@SDS</th>
<th>Sink device power switch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GDS</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GDS, onoff_1 (, onoff_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>onoff_1-2: Sink device power switch</td>
</tr>
<tr>
<td></td>
<td>0 = OFF, 1 = ON</td>
</tr>
<tr>
<td></td>
<td>ch_1-2: Output channel</td>
</tr>
<tr>
<td></td>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GDS</td>
</tr>
<tr>
<td></td>
<td>@GDS,1,1</td>
</tr>
<tr>
<td></td>
<td>@SDS,1,1</td>
</tr>
<tr>
<td></td>
<td>@SDS,1,1</td>
</tr>
<tr>
<td></td>
<td>@SDS,1,1</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Since the result is sent after turning on/off the device, it may take a long time to reply.</td>
</tr>
</tbody>
</table>
### 3.3.3 Input channels

#### @GSW / @SSW  Switching video and audio channel simultaneously

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSW 🗒️</td>
<td>@SSW, input_1, output_1 (, input_2, output_2) 🗒️</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSW, video_1, audio_1 (, video_2, audio_2) 🗒️</td>
<td>@SSW, input_1, output_1 (, input_2, output_2) 🗒️</td>
</tr>
</tbody>
</table>
| 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, 2 = IN2, 3 = IN3, 4 = IN4, 5 = IN5  
6 = IN6, 7 = IN7  
output_1-2: Video and audio output channel  
0 = all outputs, 1 = OUT1, 2 = OUT2 | |
| Example  | @GSW 🗒️  
@GSW,2,2,0,0 🗒️ | Getting input channel status.  
OUT1 input channel is IN2 for both video and audio; OUT2 input channel is OFF for both video and audio.  
@SSW,1,1 🗒️  
@SSW,1,1 🗒️ | Selecting OUT1 input channel to IN1.  
Completed normally. |
| Remarks   | — | — |

#### @GSV / @SSV  Switching video channel

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSV 🗒️</td>
<td>@SSV, input_1, output_1 (, input_2, output_2) 🗒️</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSV, input_1 (, input_2) 🗒️</td>
<td>@SSV, input_1, output_1 (, input_2, output_2) 🗒️</td>
</tr>
</tbody>
</table>
| Parameter | input_1-2: Video input channel  
0 = OFF [Default], 1 = IN1, 2 = IN2, 3 = IN3, 4 = IN4, 5 = IN5  
6 = IN6, 7 = IN7  
output_1-2: Video output channel  
0 = All outputs, 1 = OUT1, 2 = OUT2 | |
| Example  | @GSV 🗒️  
@GSV,1,1 🗒️ | Getting video input channel status.  
OUT1 and OUT2 input channels: IN1  
@SSV,1,1 🗒️  
@SSV,1,1 🗒️ | Setting OUT1 input channel to IN1.  
Completed normally. |
<p>| Remarks   | — | — |</p>
<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSA</td>
<td>@SSA, input_1, output_1 (, input_2, output_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSA, input_1 (, input_2)</td>
<td>@SSA, input_1, output_1 (, input_2, output_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>input_1-2: Audio input channel</td>
<td>output_1-2: Audio output channel</td>
</tr>
<tr>
<td></td>
<td>0 = OFF [Default], 1 = IN1, 2 = IN2, 3 = IN3, 4 = IN4, 5 = IN5</td>
<td>0 = All inputs, 1 = OUT1, 2 = OUT2</td>
</tr>
<tr>
<td>Example</td>
<td>@GSA</td>
<td>Getting audio input channel status.</td>
</tr>
<tr>
<td></td>
<td>@GSA,1,1</td>
<td>OUT1 and OUT2 input channels: IN1</td>
</tr>
<tr>
<td></td>
<td>@SSA,1,1</td>
<td>Setting OUT1 input channel to IN1.</td>
</tr>
<tr>
<td></td>
<td>@SSA,1,1</td>
<td>Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>
### 3.3.4 Position, size, and masking

<table>
<thead>
<tr>
<th>@GOT / @SOT</th>
<th>Output resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td><strong>Getting</strong></td>
</tr>
<tr>
<td>Format</td>
<td>@GOT  📉</td>
</tr>
<tr>
<td>Return value</td>
<td>@GOT, resolution_1 (, resolution_2)  📉</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>resolution_1-2: Output resolution</td>
</tr>
<tr>
<td></td>
<td>0 = AUTO-A [Default],</td>
</tr>
<tr>
<td></td>
<td>2 = VGA@60 (640x480),</td>
</tr>
<tr>
<td></td>
<td>4 = XGA@60 (1024x768),</td>
</tr>
<tr>
<td></td>
<td>6 = WXGA@60 (1280x800),</td>
</tr>
<tr>
<td></td>
<td>8 = SXGA@60 (1280x1024),</td>
</tr>
<tr>
<td></td>
<td>10 = WXGA@60 (1366x768),</td>
</tr>
<tr>
<td></td>
<td>12 = WXGA++@60 (1440x900),</td>
</tr>
<tr>
<td></td>
<td>14 = UXGA@60 (1600x1200),</td>
</tr>
<tr>
<td></td>
<td>16 = VESAHD@60 (1920x1080),</td>
</tr>
<tr>
<td></td>
<td>18 = QWXAHD@60 (2048x1152),</td>
</tr>
<tr>
<td></td>
<td>20 = 480p@59.94 (720x480),</td>
</tr>
<tr>
<td></td>
<td>22 = 576p@50 (720x576),</td>
</tr>
<tr>
<td></td>
<td>24 = 720p@59.94 (1280x720),</td>
</tr>
<tr>
<td></td>
<td>26 = 1080i@50 (1920x1080),</td>
</tr>
<tr>
<td></td>
<td>28 = 1080i@60 (1920x1080),</td>
</tr>
<tr>
<td></td>
<td>30 = 1080p@59.94 (1920x1080),</td>
</tr>
<tr>
<td><strong>ch_1-2:</strong></td>
<td></td>
</tr>
<tr>
<td>Output channel</td>
<td>0 = All inputs,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Example</strong></th>
<th><strong>Getting output resolution.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>@GOT  📉</td>
<td>OUT1: Quad-VGA; OUT2:1080p 59.94Hz</td>
</tr>
<tr>
<td>@GOT,7,30  📉</td>
<td>Setting OUT1 output resolution to SXGA+.</td>
</tr>
<tr>
<td>@SOT,1,11  📉</td>
<td>Completed normally.</td>
</tr>
</tbody>
</table>

| **Remarks** | — |

---

MSD-701/702 Command Guide
<table>
<thead>
<tr>
<th>@GTD</th>
<th>Actual output resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GTD</td>
</tr>
<tr>
<td>Return value</td>
<td>@GTD, resolution_1 (, resolution_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>resolution_1-2: Actual output resolution</td>
</tr>
<tr>
<td></td>
<td>1 = VGA@60 (640x480), 2 = SVGA@60 (800x600),</td>
</tr>
<tr>
<td></td>
<td>3 = XGA@60 (1024x768), 4 = WXGA@60 (1280x768),</td>
</tr>
<tr>
<td></td>
<td>5 = WXGA@60 (1280x800), 6 = Quad-VGA@60 (1280x960),</td>
</tr>
<tr>
<td></td>
<td>7 = SXGA@60 (1280x1024), 8 = WXGA@60 (1360x768),</td>
</tr>
<tr>
<td></td>
<td>9 = WXGA@60 (1366x768), 10 = SXGA++@60 (1400x1050),</td>
</tr>
<tr>
<td></td>
<td>11 = WXGA@60 (1440x900), 12 = WXGA++@60 (1600x900),</td>
</tr>
<tr>
<td></td>
<td>13 = UXGA@60 (1600x1200), 14 = WXGA++@60 (1680x1050),</td>
</tr>
<tr>
<td></td>
<td>15 = VESAHD@60 (1920x1080), 16 = WXGA@60 (1920x1200),</td>
</tr>
<tr>
<td></td>
<td>17 = QWXGA@60 (2048x1152), 18 = 480i@59.94 (720x480),</td>
</tr>
<tr>
<td></td>
<td>19 = 480p@59.94 (720x480), 20 = 576i@50 (720x576),</td>
</tr>
<tr>
<td></td>
<td>21 = 576p@50 (720x576), 22 = 720p@50 (1280x720),</td>
</tr>
<tr>
<td></td>
<td>23 = 720p@59.94 (1280x720), 24 = 720p@60 (1280x720),</td>
</tr>
<tr>
<td></td>
<td>25 = 1080i@50 (1920x1080), 26 = 1080p@59.94 (1920x1080) [Default],</td>
</tr>
<tr>
<td></td>
<td>27 = 1080i@60 (1920x1080), 28 = 1080p@50 (1920x1080),</td>
</tr>
<tr>
<td></td>
<td>29 = 1080p@59.94 (1920x1080), 30 = 1080p@60 (1920x1080)</td>
</tr>
</tbody>
</table>

**Example**

@GTD

@GTD,29,26

Getting actual output resolution.

OUT1:1080p 59.94Hz; OUT2: 1080i 59.94 Hz

**Remarks**

If “@GOT / @SOT Output resolution (P.21)” is set to “AUTO-A” or “AUTO-B”, the actual output resolution is replied. If it is set to a resolution other than “AUTO-A” and “AUTO-B”, the set resolution is replied.

---

<table>
<thead>
<tr>
<th>@GUM / @SUM</th>
<th>Aspect ratio of sink device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting, Setting</td>
</tr>
<tr>
<td>Format</td>
<td>@GUM, @SUM, ch_1, aspect_1 (, ch_2, aspect_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GUM, aspect_1 (, aspect_2) @SUM, ch_1, aspect_1 (, ch_2, aspect_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>aspect_1-2: Aspect ratio of the sink device</td>
</tr>
<tr>
<td></td>
<td>0 = RESOLUTION [Default], 1 = 4:3, 2 = 5:4,</td>
</tr>
<tr>
<td></td>
<td>3 = 5:3, 4 = 16:9, 5 = 16:10</td>
</tr>
<tr>
<td></td>
<td>ch_1-2: Output channel</td>
</tr>
<tr>
<td></td>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
</tr>
</tbody>
</table>

**Example**

@GUM

@GUM,4,5

Getting aspect ratio of the connected sink device.

OUT1: 16:9; OUT2: 16:10

@SUM,1,4

Connecting 16:9 sink device to OUT1.

Completed normally.

**Remarks**

—
### @GAP / @SAP

**Aspect ratio**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GAP</td>
<td>@SAP, ch_1, aspect_1 (, ch_2, aspect_2...)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GAP, aspect_1, aspect_2, aspect_3, aspect_4, aspect_5</td>
<td>@SAP, ch_1, aspect_1 (, ch_2, aspect_2...)</td>
</tr>
<tr>
<td>Parameter</td>
<td>aspect_1-5: Aspect ratio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = AUTO-1 [Default]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 = AUTO-2,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 = 4:3,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 = 16:9,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 = 14:9,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = 16:9 LETTER BOX,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 = 14:9 LETTER BOX,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 = 4:3 SIDE PANEL,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 = 14:9 SIDE PANEL,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9 = FULL,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 = THROUGH</td>
<td></td>
</tr>
<tr>
<td>ch_1-7: Input channel</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td></td>
</tr>
</tbody>
</table>

**Example**

- **Getting aspect ratio.**
  - @GAP 0,0,2,0,0,0
  - IN3: 4:3; other inputs: AUTO-1.
- **Setting IN7 aspect ratio to 4:3.**
  - @SAP,7,2
  - Completed normally.

**Remarks**

- --

### @GAR / @SAR

**Aspect ratio restoration**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GAR</td>
<td>@SAR, ch_1, mode_1 (, ch_2, mode_2...)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GAR, mode_1, mode_2, mode_3, mode_4, mode_5</td>
<td>@SAR, ch_1, mode_1 (, ch_2, mode_2...)</td>
</tr>
<tr>
<td>Parameter</td>
<td>mode_1-7: Aspect ratio restoration processing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = Letter box/Side panel [Default]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 = Side cut/Top bottom cut</td>
<td></td>
</tr>
<tr>
<td>ch_1-7: Input channel</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td></td>
</tr>
</tbody>
</table>

**Example**

- **Getting aspect ratio restoration processing.**
  - @GAR,0,0,1,0,0,0
  - IN3: Side cut/Top bottom cut
  - Other inputs: Letter box/Side panel
- **Setting IN5 to Side cut/Top bottom cut.**
  - @SAR,5,1
  - Completed normally.

**Remarks**

- --
### @GOV / @SOV - Overscan

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GOV</td>
<td>@SOV, ch_1, overscan_1 (, ch_2, overscan_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GOV, overscan_1, overscan_2, overscan_3, overscan_4, overscan_5, overscan_6, overscan_7</td>
<td>@SOV, ch_1, overscan_1 (, ch_2, overscan_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>overscan_1-7: Overscan 100% to 115% [Default]: NTSC / PAL / SDTV: 105%, HDTV or PC: 100%</td>
<td></td>
</tr>
<tr>
<td>ch_1-7: Input channel</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GOV</td>
<td>@GOV,100,100,105,100,100,100,100</td>
</tr>
<tr>
<td></td>
<td>@SOV,7,105</td>
<td>@SOV,7,105</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

### @GNP / @SNP - Input position

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GNP</td>
<td>@SNP, ch_1, h_position_1, v_position_1 (, ch_2, h_position_2, v_position_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GNP, h_position_1, v_position_1, h_position_2, v_position_2, h_position_3, v_position_3, h_position_4, v_position_4, h_position_5, v_position_5, h_position_6, v_position_6, h_position_7, v_position_7</td>
<td>@SNP, ch_1, h_position_1, v_position_1 (, ch_2, h_position_2, v_position_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>h_position_1-7: Horizontal input position -Horizontal input size to +Horizontal output resolution [Default]: 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>v_position_1-7: Vertical input position -Vertical input size to +Vertical output resolution [Default]: 0</td>
<td></td>
</tr>
<tr>
<td>ch_1-7: Input channel</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GNP</td>
<td>@GNP,-50,20,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0</td>
</tr>
<tr>
<td></td>
<td>@SNP,1,-50,20</td>
<td>@SNP,1,-50,20</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
<td>If resolutions differ depending on output, the resolution of OUT1 will be the standard.</td>
</tr>
</tbody>
</table>
### @GNS / @SNS

#### Input size

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GNS</td>
<td>@SNS, ch_1, h_size_1, v_size_1 (, ch_2, h_size_2, v_size_2 •••)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GNS, h_size_1, v_size_1, h_size_2, h_size_3, h_size_4, h_size_5, h_size_6, h_size_7</td>
<td>@SNS, ch_1, h_size_1, v_size_1 (, ch_2, h_size_2, v_size_2 •••)</td>
</tr>
</tbody>
</table>

#### Parameter

- **h_size_1-7**: Horizontal input size
  - Horizontal output resolution ÷ 4 to Horizontal output resolution × 4
  - [Default]: Horizontal output resolution
- **v_size_1-7**: Vertical display size
  - Vertical output resolution ÷ 4 to Vertical output resolution × 4
  - [Default]: Vertical output resolution
- **ch_1-5**: Input channel
  - 0 = All inputs, 1 = IN1 to 7 = IN7

#### Example

- **@GNS**
  - @GNS,1925,1084,1920,1080,1920,1080,1920,1080,1920,1080,1920,1080
  - Getting input size.
  - Horizontal and vertical display sizes of IN1 are 1925 and 1084, respectively; other inputs: 1920 and 1080, respectively.

- **@SNS,1,1925,1084**
  - Setting IN1 horizontal and vertical input size are 1925 and 1084, respectively.
  - Completed normally.

#### Remarks

If resolutions differ depending on outputs, the resolution of OUT1 will be the standard.
### @GNM / @SNM  
**Input masking**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GNM, ch</td>
<td>@SNM, ch, left, right, top, bottom</td>
</tr>
<tr>
<td>Return value</td>
<td>@GNM, ch, left, right, top, bottom</td>
<td>@SNM, ch, left, right, top, bottom</td>
</tr>
</tbody>
</table>

#### Parameter

<table>
<thead>
<tr>
<th>ch: Input channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = IN1 to 7 = IN7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>left: Left side masking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal input position to right side masking</td>
</tr>
<tr>
<td>[Default]: 0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>right: Right side masking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left side masking to horizontal input position +horizontal input size</td>
</tr>
<tr>
<td>[Default]: Horizontal input size</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>top: Top side masking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical input position to bottom side masking</td>
</tr>
<tr>
<td>[Default]: 0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>bottom: Bottom side masking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top side masking to vertical input position +vertical input size</td>
</tr>
<tr>
<td>[Default]: Vertical input size</td>
</tr>
</tbody>
</table>

#### Example

<table>
<thead>
<tr>
<th>@GNM,1</th>
<th>Getting IN1 input masking.</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GNM,1,0,1920,0,1080</td>
<td>Left: 0, right: 1920, top:0, bottom: 1080</td>
</tr>
</tbody>
</table>

| @SNM,1,0,1920,0,1080 | Setting IN1 input masking to 0 for left, 1920 for right, 0 for top, 1080 for bottom. Completed normally. |

#### Remarks

- 

### @IAS  
**Input automatic sizing**

<table>
<thead>
<tr>
<th>Function</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@IAS, ch_1 (, ch_2 ⋅⋅⋅)</td>
</tr>
<tr>
<td>Return value</td>
<td>@IAS, ch_1 (, ch_2 ⋅⋅⋅)</td>
</tr>
</tbody>
</table>

#### Parameter

<table>
<thead>
<tr>
<th>ch_1-7: Input channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
</tr>
</tbody>
</table>

#### Example

<table>
<thead>
<tr>
<th>@IAS,1</th>
<th>Initialize the following settings in order to display images input from IN1 on the full screen: @GAP / @SAP, @GOV / @SOV, @GNP / @SNP, @GNS / @SNS, @GNM / @SNM</th>
</tr>
</thead>
</table>

| @IAS,1 | Completed normally. |

#### Remarks

- 

---

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### @GOP / @SOP

<table>
<thead>
<tr>
<th>Function</th>
<th>Output position</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GOP, ch_1, h_position_1, v_position_1 (, ch_2, h_position_2, v_position_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GOP, h_position_1, v_position_1 (, h_position_2, v_position_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>h_position_1-2: Horizontal output position</td>
</tr>
<tr>
<td></td>
<td>Horizontal input size to +Horizontal output resolution [Default]: 0</td>
</tr>
<tr>
<td></td>
<td>ch_1-2: Output channel</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GOP</td>
</tr>
<tr>
<td></td>
<td>@SOP, 1920, 1080</td>
</tr>
</tbody>
</table>

### @GOS / @SOS

<table>
<thead>
<tr>
<th>Function</th>
<th>Output size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GOS, ch_1, h_size_1, v_size_1 (, ch_2, h_size_2, v_size_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GOS, h_size_1, v_size_1 (, h_size_2, v_size_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>h_size_1-2: Horizontal output size</td>
</tr>
<tr>
<td></td>
<td>Horizontal output resolution÷4 to Horizontal output resolution×4</td>
</tr>
<tr>
<td></td>
<td>[Default]: Horizontal output resolution</td>
</tr>
<tr>
<td></td>
<td>ch_1-2: Output channel</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GOS</td>
</tr>
<tr>
<td></td>
<td>@GOS, 1920, 1035, 1920, 1080</td>
</tr>
</tbody>
</table>

### Remarks
-
### @GOM / @SOM

<table>
<thead>
<tr>
<th>Function</th>
<th>Output masking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting Setting</td>
</tr>
<tr>
<td>Format</td>
<td>@GOM, ch</td>
</tr>
<tr>
<td>Return value</td>
<td>@GOM, ch, left, right, top, bottom</td>
</tr>
</tbody>
</table>

**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
  - Bottom side masking to vertical output position + vertical output size (vertical output resolution or smaller)  
    - [Default]: Vertical output resolution

**Example**

- **@GOM,1**
- **@GOM,1,0,1920,0,1080**
  - Getting OUT1 output masking.
  - Left: 0, right: 1920, top: 0, bottom: 1080
- **@SOM,1,0,1920,0,1080**
  - Setting OUT1 output masking to 0 for left, 1920 for right, 0 for top, and 1080 for bottom.
  - Completed normally.

**Remarks**

- 

### @OAS

<table>
<thead>
<tr>
<th>Function</th>
<th>Output automatic sizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Setting</td>
</tr>
<tr>
<td>Format</td>
<td>@OAS, ch_1 (, ch_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@OAS, ch_1 (, ch_2)</td>
</tr>
</tbody>
</table>

**Parameter**

- **ch_1-2**: Output channel
  - 0 = All outputs, 1 = OUT1, 2 = OUT2

**Example**

- **@OAS,1**
- Initialize the following settings in order to display OUT1 output images on the full screen:
  - @GOP / @SOP, @GOS / @SOS, @GOM / @SOM
  - Completed normally.

**Remarks**

- 

---

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### @GBC / @SBC

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GBC, ch &lt;br&gt;</td>
<td>@SBC, ch_1, red_1, green_1, blue_1&lt;br&gt;(, ch_2, red_2, green_2, blue_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GBC, ch, red, green, blue</td>
<td>@SBC, ch_1, red_1, green_1, blue_1&lt;br&gt;(, ch_2, red_2, green_2, blue_2)</td>
</tr>
</tbody>
</table>

**Parameter**

- **ch**: Output channel<br> 1 = OUT1, 2 = OUT2<br>0 = All outputs, 1 = OUT1, 2 = OUT2<br>
- **red / red_1-2**: Background color (Red)<br>- **green / green_1-2**: Background color (Green)<br>- **blue / blue_1-2**: Background color (Blue)<br>0 to 255 [Default]: 0 (black)

**Example**

- @GBC,1<br>Getting OUT1 background color. RGB: 128 (gray).
- @SBC,1,128,128,128<br>Setting OUT1 background color to 128 (gray) for all RGB. Completed normally.

**Remarks**

-
### Function

<table>
<thead>
<tr>
<th>@GTP / @STP</th>
<th>Test pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GTP, pattern_1, scroll_1 (, ch_2, pattern_2, scroll_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GTP, pattern_1, scroll_1 (, pattern_2, scroll_2)</td>
</tr>
</tbody>
</table>

**Parameter**
- **pattern_1-2**: Test pattern
  - 0 = OFF [Default], 1 = VERTICAL COLOR BAR,
  - 2 = HORIZONTAL COLOR BAR, 3 = VERTICAL GRAY SCALE,
  - 4 = HORIZONTAL GRAY SCALE, 5 = VERTICAL LAMP,
  - 6 = HORIZONTAL LAMP, 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

- **scroll_1-2**: Scrolling
  - 0 = OFF [Default], 1 = 3 pixels/1 frame to 10 = 30 pixels/1 frame
  - The number of pixels to be scrolled per frame = the set value × 3

- **ch_1-2**: Output channel
  - 0 = All outputs, 1 = OUT1, 2 = OUT2

**Example**
- @GTP 3, 1, 0, 0
- Setting OUT1 to VERTICAL COLOR BAR without scrolling.
  - @STP, 1, 1, 0
  - Completed normally.

**Remarks**
- --
### 3.3.5 Image quality

<table>
<thead>
<tr>
<th>@GFL / @SFL</th>
<th>Sharpness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GFL</td>
</tr>
<tr>
<td>Return value</td>
<td>@GFL, sharp_1, sharp_2, sharp_3, sharp_4, sharp_5, sharp_6, sharp_7</td>
</tr>
<tr>
<td>Parameter</td>
<td>sharp_1-7: Sharpness [-5 to +15] [Default]: 0</td>
</tr>
<tr>
<td></td>
<td>ch_1-7: Input channel</td>
</tr>
<tr>
<td></td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
</tr>
<tr>
<td>Example</td>
<td>@GFL</td>
</tr>
<tr>
<td></td>
<td>@GFL,5,0,0,0,0,0,0</td>
</tr>
<tr>
<td></td>
<td>@SFL,1,5</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>@GBR / @SBR</th>
<th>Input brightness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GBR</td>
</tr>
<tr>
<td>Return value</td>
<td>@GBR, bright_1, bright_2, bright_3, bright_4, bright_5, bright_6, bright_7</td>
</tr>
<tr>
<td>Parameter</td>
<td>bright_1-5: Input brightness 80 to 120 [Default]: 100</td>
</tr>
<tr>
<td></td>
<td>ch_1-5: Input channel</td>
</tr>
<tr>
<td></td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
</tr>
<tr>
<td>Example</td>
<td>@GBR</td>
</tr>
<tr>
<td></td>
<td>@GBR,110,100,100,100,100,100,100</td>
</tr>
<tr>
<td></td>
<td>@SBR,3,110</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
</tr>
<tr>
<td>@GCO / @SCO</td>
<td>Input contrast</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GCO, ch</td>
</tr>
<tr>
<td>Return value</td>
<td>@GCO, ch, red, green, blue</td>
</tr>
</tbody>
</table>
| Parameter   | ch: Input channel  
1 = IN1 to 7 = IN7 
ch_1-7: Input channel  
0 = All inputs, 1 = IN1 to 7 = IN7 
red / red_1-7 : Input contrast (Red) 
green / green_1-7 : Input contrast (Green) 
blue / blue_1-7 : Input contrast (Blue)  
0 to 200  [Default]:100 |
| Example     | @GCO,3 | Getting IN3 contrast setting. |
|             | @GCO,3,105,100,95 | Red: 105%, green: 100%, blue: 95% |
|             | @SCO,3,105,100,95 | Setting IN3 contrast to 105% for red, 100% for green, 95% for blue. |
|             | @SCO,3,105,100,95 | Completed normally. |
| Remarks     | -- | -- |

<table>
<thead>
<tr>
<th>@GHU / @SHU</th>
<th>Hue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GHU</td>
</tr>
<tr>
<td>Return value</td>
<td>@GHU, hue_1, hue_2, hue_3, hue_4, hue_5, hue_6, hue_7</td>
</tr>
</tbody>
</table>
| Parameter   | hue_1-7: Hue  
0 to 359  [Default]: 0 
ch_1-7: Input channel  
0 = All inputs, 1 = IN1 to 7 = IN7 |
| Example     | @GHU | Getting HUE settings. |
|             | @GHU,60,0,0,0,0,0 | IN1: 60°; other inputs: 0° |
|             | @SHU,1,60 | Setting IN1 HUT to 60°. |
|             | @SHU,1,60 | Completed normally. |
| Remarks     | -- | -- |
### @GST / @SST Saturation

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GST</td>
<td>@GST, ch_1, saturation_1 (, ch_2, saturation_2\cdots)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GST, saturation_1, saturation_2, saturation_3, saturation_4, saturation_5, saturation_6, saturation_7</td>
<td>@GST, ch_1, saturation_1 (, ch_2, saturation_2\cdots)</td>
</tr>
<tr>
<td>Parameter</td>
<td>saturation_1-7: Saturation</td>
<td>Parameter</td>
</tr>
<tr>
<td></td>
<td>0 to 200 [Default]: 100</td>
<td>setup_1-7: Black level</td>
</tr>
<tr>
<td>ch_1-7: Input channel</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td>-20 = -20 x 0.5 (-10.0%) to +20 = +20 x 0.5 (+10.0%) [Default]: ±0 = ±0.0%</td>
</tr>
<tr>
<td>Example</td>
<td>@GST</td>
<td>Getting black levels.</td>
</tr>
<tr>
<td></td>
<td>@GST,100,100,100,100,100,100</td>
<td>IN5: +7.5%; other inputs: 0%</td>
</tr>
<tr>
<td></td>
<td>@SST,5,105</td>
<td>Setting IN5 black level to +7.5%.</td>
</tr>
<tr>
<td></td>
<td>@SST,5,105</td>
<td>Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

### @GSU / @SSU Black level

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSU</td>
<td>@SSU, ch_1, setup_1 (, ch_2, setup_2\cdots)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSU, setup_1, setup_2, setup_3, setup_4, setup_5, setup_6, setup_7</td>
<td>@SSU, ch_1, setup_1 (, ch_2, setup_2\cdots)</td>
</tr>
<tr>
<td>Parameter</td>
<td>setup_1-7: Black level</td>
<td>Parameter</td>
</tr>
<tr>
<td></td>
<td>-20 = -20 x 0.5 (-10.0%) to +20 = +20 x 0.5 (+10.0%) [Default]: ±0 = ±0.0%</td>
<td>ch_1-7: Input channel</td>
</tr>
<tr>
<td></td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td>—</td>
</tr>
<tr>
<td>Example</td>
<td>@GSU</td>
<td>Getting black levels.</td>
</tr>
<tr>
<td></td>
<td>@GSU,0,0,0,0,15,0,0</td>
<td>IN5: +7.5%; other inputs: 0%</td>
</tr>
<tr>
<td></td>
<td>@SSU,5,15</td>
<td>Setting IN5 black level to +7.5%.</td>
</tr>
<tr>
<td></td>
<td>@SSU,5,15</td>
<td>Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
### @IDC

**Input default color**

<table>
<thead>
<tr>
<th>Function</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@IDC, ch_1 (, ch_2· · ·)</td>
</tr>
<tr>
<td>Return value</td>
<td>@IDC, ch_1 (, ch_2· · ·)</td>
</tr>
</tbody>
</table>
| Parameter | ch_1-7: Input channel  
0 = All inputs,  1 = IN1 to 7 = IN7 |
| Example  | @IDC,1  
@IDC,1  |
| Remarks  | —  
Initialize the following settings of IN1:  
@GFL / @SFL, @GBR / @SBR, @GCO / @SCO, @GHU / @SHU, @GST / @SST,  
@GSU / @SSU  
Completed normally. |

### @GOB / @SOB

**Output brightness**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GOB</td>
<td>@SOB, ch_1, bright_1 (, ch_2, bright_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GOB, bright_1 (, bright_2)</td>
<td>@SOB, ch_1, bright_1 (, ch_2, bright_2)</td>
</tr>
</tbody>
</table>
| Parameter | bright_1-2: Output brightness  
80 to 120  [Default] 100  
ch_1-2: Output channel  
0 = All outputs,  1 = OUT1,  2 = OUT2 |
| Example  | @GOB   | Getting brightness settings.  
OUT1: 110%; OUT2: 100%. |
|          | @GOB,110,100  |  
@SOB,1,110  |
|          | @SOB,1,110  | Setting OUT1 brightness to 110%.  
Completed normally. |
| Remarks  | — |
### @GOC / @SOC  
**Function**: Output contrast  
**Getting**  
**Format**: `@GOC, ch`  
**Return value**: `@GOC, ch, red, green, blue`  
**Setting**  
**Format**: `@SOC, ch_1, red_1, green_1, blue_1 (, ch_2, red_2, green_2, blue_2)`  
**Return value**: `@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`  
**Example**  
- `@GOC,1`  
  - Getting OUT1 contrast setting.  
  - Red: 105%, green: 100%, blue: 95%  
- `@SOC,1,105,100,95`  
  - Setting OUT1 contrast to 105% for red, 100% for green, 95% for blue.  
  - Completed normally.  
**Remarks**

### @ODC  
**Function**: Output default color  
**Setting**  
**Format**: `@ODC, ch_1 (, ch_2)`  
**Return value**: `@ODC, ch_1 (, ch_2)`  
**Parameter**  
- `ch_1-2`: Output channel  
  - `0 = All outputs, 1 = OUT1, 2 = OUT2`  
**Example**  
- `@ODC,1`  
  - Initializing OUT1 image quality settings.  
- `@ODC,1`  
  - Completed normally.  
**Remarks**

---

*MSD-701/702 Command Guide*
### 3.3.6 Input settings

<table>
<thead>
<tr>
<th><strong>@GDT / @SDT</strong></th>
<th><strong>No-signal-input monitoring</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GDT</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GDT, time_1, time_2, time_3,</td>
</tr>
<tr>
<td></td>
<td>time_4, (time_5)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>time_1-5: No-signal-input monitoring</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GDT</td>
</tr>
<tr>
<td></td>
<td>@GDT,6000,10000,10000,</td>
</tr>
<tr>
<td></td>
<td>4000,4000</td>
</tr>
<tr>
<td></td>
<td>@SDT,3,6000</td>
</tr>
<tr>
<td></td>
<td>@SDT,3,6000</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Those commands are only for digital input. IN5 is available only when “1” (Digital signal). is selected for “@GIN / @SIN”.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>@GHE / @SHE</strong></th>
<th><strong>HDCP input enabled/disabled</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GHE</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GHE, hdcp_1, hdcp_2, hdcp_3,</td>
</tr>
<tr>
<td></td>
<td>hdcp_4, (hdcp_5)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>in_1-5: HDCP input enabled/disabled</td>
</tr>
<tr>
<td></td>
<td>ch_1-5: Input channel</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GHE</td>
</tr>
<tr>
<td></td>
<td>@GHE,1,1,0,1,1</td>
</tr>
<tr>
<td></td>
<td>@SHE,1,0</td>
</tr>
<tr>
<td></td>
<td>@SHE,1,0</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Those commands are only for digital input. IN5 is available only when “1” (Digital signal). is selected for “@GIN / @SIN”.</td>
</tr>
</tbody>
</table>
### @GIQ / @SIQ Input equalizer

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GIQ</td>
<td>@SIQ, ch_1, level_1 (, ch_2, level_2⋅⋅⋅)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GIQ, level_1, level_2, level_3</td>
<td>@SIQ, ch_1, level_1 (, ch_2, level_2⋅⋅⋅)</td>
</tr>
</tbody>
</table>
| Parameter | level_1-4: Input equalizer  
  0 = OFF,  1 = ON  [Default]  
  ch_1-4: Input channel  
  0 = All digital inputs,  1 = IN1 to 4 = IN4 |

**Example**

- **@GIQ**
  - @GIQ
  - @GIQ,0,1,1,1

  Getting input equalizer.  
  IN1: Input equalizer OFF; other inputs: Input equalizer ON

- **@SIQ**
  - @SIQ,3,0
  - @SIQ,3,0

  Setting IN3 input equalizer to OFF.  
  Completed normally.

**Remarks**

Those commands are only for digital input.

### @GAI / @SAI Analog input type

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GAI</td>
<td>@SAI, ch_1, type_1 (, ch_2, type_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GAI, type_1, type_2, type_3</td>
<td>@SAI, ch_1, type_1 (, ch_2, type_2)</td>
</tr>
</tbody>
</table>
| Parameter | type_1-3: Signal type  
  0 = AUTO  [Default],  1 = RGB,  2 = YPbPr,  
  3 = VIDEO AUTO,  4 = VIDEO,  5 = Y/C  
  ch_1-3: Input channel  
  0 = All analog inputs,  5 = IN5 to 7 = IN7 |

**Example**

- **@GAI**
  - @GAI
  - @GAI,0,2

  Getting signal type of analog input.  
  IN7: YPbPr, IN5 and IN6: AUTO

- **@SAI**
  - @SAI,0,2
  - @SAI,0,2

  Setting the signal type of all inputs to YPbPr.  
  Completed normally.

**Remarks**

Those commands are only for analog input.  
IN5 is available only when “0” (analog signal) is selected for “@GIN / @SIN”.

### Remarks

Those commands are only for digital input.
### @GiD / @SiD
#### Automatic detection of input video interruption

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GiD</td>
<td>@SiD, ch_1, detect_1 (, ch_2, detect_2 ...)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GiD, detect_1, detect_2, detect_3, detect_4, detect_5, detect_6, detect_7</td>
<td>@SiD, ch_1, detect_1 (, ch_2, detect_2 ...)</td>
</tr>
<tr>
<td>Parameter</td>
<td>detect_1-7: Automatic detection</td>
<td>ch_1-7: Input channel</td>
</tr>
<tr>
<td></td>
<td>0 = OFF, 1 = ON</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
</tr>
<tr>
<td>Example</td>
<td>@GiD</td>
<td>Getting the setting of automatic detection of input video interruption.</td>
</tr>
<tr>
<td></td>
<td>@GiD, 1,1,1,1,0,1</td>
<td>IN6: If input video signals are interrupted, the video output is not turned off instantly; other inputs: OFF</td>
</tr>
<tr>
<td></td>
<td>@SiD, 0</td>
<td>If input video signals of IN2 are interrupted, not to turn off the video output instantly. Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

### @GiN / @SiN
#### Signal selection of DVI input connector

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GiN</td>
<td>@SiN, signal</td>
</tr>
<tr>
<td>Return value</td>
<td>@GiN, signal</td>
<td>@SiN, signal</td>
</tr>
<tr>
<td>Parameter</td>
<td>signal: Input signal selection</td>
<td>0 = Analog signal, 1 = Digital signal [Default]</td>
</tr>
<tr>
<td>Example</td>
<td>@GiN</td>
<td>Getting input signal. Analog signal can be input to the DVI input connector.</td>
</tr>
<tr>
<td></td>
<td>@GiN, 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@SiN, 1</td>
<td>Enabling digital signal to be input from the DVI input connector. Completed normally.</td>
</tr>
<tr>
<td></td>
<td>@SiN, 1</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>
### @GAU / @SAU  
**Priority of input channel automatic switching**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GAU, in_1, out_1, priority_1, in_2, out_1, priority_1 (, in_2, out_1, priority_1)</td>
<td>@SAU, in_1, out_1, priority_1 (, in_2, out_1, priority_1)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GAU, in1_out1, in2_out1, in3_out1, in4_out1, in5_out1, in6_out1, in7_out1, in1_out2, in2_out2, in3_out2, in4_out2, in5_out2, in6_out2, in7_out2</td>
<td>@SAU, in_1, out_1, priority_1 (, in_2, out_1, priority_1)</td>
</tr>
</tbody>
</table>
| Parameter | in1_out1-in7_out2: Priority 0 = OFF, 1 = Priority (high) to 7 = priority (low)  
in_1-7: Input channel 1 = IN1 to 7 = IN7  
out_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2  
priority_1-5: Priority 0 = OFF, 1 = Priority (high) to 5 = priority (low) | |
| Example | @GAU,1,2,3,4,5,6,7,0,6,5,4,3,2,1  
   Getting priority of automatic switching.  
   OUT1: IN1>IN2>IN3>IN4>IN5>IN6>IN7  
   OUT2: IN1:OFF IN2<IN3<IN4<IN5<IN6<IN7  
   @SAU,1,1,2  
   @SAU,1,1,2  
   Setting priority of OUT1 IN1 to “2”.  
   Completed normally. |
| Remarks | — | |

### @GMT / @SMT  
**Masking time after automatic switching of input channel**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GMT, ch_1, time_1, (, ch_2, time_2)</td>
<td>@SMT, ch_1, time_1, (, ch_2, time_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GMT, time_1, time_2</td>
<td>@SMT, ch_1, time_1, (, ch_2, time_2)</td>
</tr>
</tbody>
</table>
| 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 | |
| Example | @GMT,2000,10000 | Getting masking time after automatic switching of input channel.  
OUT1: 2000 ms. (2 sec.); OUT2: 10000 ms. (10 sec.)  
@SMT,1,2000,2,10000  
   Setting masking time to 2000 ms. (2 sec.) for OUT1 and 10000 ms. (10 sec.) for OUT2.  
   Completed normally. |
| Remarks | — | |
### 3.3.7 Input timing

<table>
<thead>
<tr>
<th>@AIS / @AIT</th>
<th>Automatic measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Automatic measurement of start position and display period.</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@AIS, ch</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@AIS, ch</td>
</tr>
</tbody>
</table>
| **Parameter** | ch: Input channel 5 = IN5 to 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. |
| **Example** | @AIS,6  
@AIS,6  
@AIS,6  
@AIS,6  
@AIS,6  
@AIS,6  
@AIS,6  | Measuring start position and display period of IN6 automatically.  
Completed normally.  
Measuring IN6 input timing setting at the aspect ratio of “4:3” automatically.  
Completed normally.  
If automatic measurement fails, an error is replied. |
| **Remarks** | Those commands are valid only when analog RGB/analog YPbPr signals are input. |

<table>
<thead>
<tr>
<th>@GHT / @SHT</th>
<th>The total number of horizontal dots</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GHT</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GHT, h_total_1, h_total_2, h_total_3, h_total_4, h_total_5, h_total_6, h_total_7</td>
</tr>
</tbody>
</table>
| **Parameter** | h_total_1-7 / h_total: The number of horizontal dots  
400 to 4125 (sampling block should be 13 MHz to 162 MHz)  
[Default]: depends on input signals  
ch: Input channel  
0 = All analog inputs,  5 = IN5 to 7 = IN7 | |
| **Example** | @GHT  
@GHT,2200,2200,0,2640,1344,1790,0  
@SHT,6,1344  
@SHT,6,1344  
@SHT,6,1344  
@SHT,6,1344  
@ERR,3  | Getting the total number of horizontal dots. “0” will be replied to channels without input signals.  
Setting the total number of IN6 horizontal dots to “1344”.  
Completed normally.  
If analog RGB signals or analog YPbPr signals are not input, an error will be replied. |
| **Remarks** | Getting command will acquire statuses of all channels.  
Setting commands are valid only when analog RGB/analog YPbPr signals are input. |

Remarks: Those commands are valid only when analog RGB/analog YPbPr signals are input.
<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GHS</td>
<td>@SHS, ch, h_start</td>
</tr>
<tr>
<td>Return value</td>
<td>@GHS, h_start_1, h_start_2, h_start_3, h_start_4, h_start_5, h_start_6, h_start_7</td>
<td>@SHS, ch, h_start</td>
</tr>
<tr>
<td>Parameter</td>
<td>h_start_1-7 / h_start: Horizontal start position</td>
<td></td>
</tr>
<tr>
<td></td>
<td>64 to 2900 (should be [the total number of horizontal dots – horizontal display period] or less)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[Default]: depends on input signals</td>
<td></td>
</tr>
<tr>
<td>ch: Input channel</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GHS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@GHS,192,192,496,0,296,0,378</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@SHS,5,296</td>
<td>Setting IN5 horizontal start position to “296”. Completed normally.</td>
</tr>
<tr>
<td></td>
<td>@SHS,6,296</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@ERR,3</td>
<td>If signals are not input, an error is replied.</td>
</tr>
<tr>
<td>Remarks</td>
<td>Setting command is valid only when signals are input.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GHD</td>
<td>@SHD, ch, h_disp</td>
</tr>
<tr>
<td>Return value</td>
<td>@GHD, h_disp_1, h_disp_2, h_disp_3, h_disp_4, h_disp_5, h_disp_6, h_disp_7</td>
<td>@SHD, ch, h_disp</td>
</tr>
<tr>
<td>Parameter</td>
<td>h_disp_1-7 / h_disp: Horizontal display period</td>
<td></td>
</tr>
<tr>
<td></td>
<td>64 to 2900 (should be [the total number of horizontal dots – 64] or less)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[Default]: depends on input signals</td>
<td></td>
</tr>
<tr>
<td>ch: Input channel</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GHD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@GHD,1920,1920,0,1920,1024,1360,0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@SHD,5,1024</td>
<td>Setting IN5 horizontal display period to “1024”. Completed normally.</td>
</tr>
<tr>
<td></td>
<td>@SHD,6,1024</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@ERR,3</td>
<td>If signals are not input, an error is replied.</td>
</tr>
<tr>
<td>Remarks</td>
<td>Setting command is valid only when signals are input.</td>
<td></td>
</tr>
</tbody>
</table>
### @GVS / @SVS
#### Vertical start position

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GVS</td>
<td>@SVS, ch, v_start</td>
</tr>
<tr>
<td>Return value</td>
<td>@GVS, v_start_1, v_start_2, v_start_3, v_start_4, v_start_5, v_start_6, v_start_7</td>
<td>@SVS, ch, v_start</td>
</tr>
</tbody>
</table>
| Parameter | v_start_1-7 / 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 signals | |
| ch: Input channel  
0 = All inputs, 1 = IN1 to 7 = IN7 | |
| Example | @GVS  
@GVS,40,0,40,35,0,24 | Getting vertical start position  
“0” will be replied to channels without input signals.  
@SVS,5,35  
@SVS,5,35  
@SVS,6,35  
@ERR,3 | Setting IN5 vertical start position to “35”.  
Completed normally.  
@SVS,5,35  
@SVS,5,35  
@SVS,6,35  
@ERR,3 | If signals are not input, an error is replied. |
| Remarks | Setting command is valid only when signals are input. |

### @GVD / @SVD
#### Vertical display period

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GVD</td>
<td>@SVD, ch, v_disp</td>
</tr>
<tr>
<td>Return value</td>
<td>@GVD, v_disp_1, v_disp_2, v_disp_3, v_disp_4, v_disp_5, v_disp_6, v_disp_7</td>
<td>@SVD, ch, v_disp</td>
</tr>
</tbody>
</table>
| Parameter | v_disp_1-7 / v_disp: Vertical display period  
10 to 2048 (should be [the total number of vertical lines – 10] or less)  
[Default]: depends on input signals | |
| ch: Input channel  
0 = All inputs, 1 = IN1 to 7 = IN7 | |
| Example | @GVD  
@GVD,0,1080,1080,900,768,0,900 | Getting vertical display period.  
“0” will be replied to channels without input signals.  
@SVD,5,768  
@SVD,5,768  
@SVD,5,768  
@ERR,3 | Setting IN5 vertical display period to “768”.  
Completed normally.  
@SVD,5,768  
@SVD,5,768  
@SVD,5,768  
@ERR,3 | If signals are not input, an error is replied. |
| Remarks | Setting command is valid only when signals are input. |
### @GIS / @SIS  
**Automatic measurement of start position**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GIS</td>
<td>@GIS, ch, mode</td>
</tr>
<tr>
<td>Return value</td>
<td>@GIS, mode_1, mode_2</td>
<td>@SIS, ch, mode</td>
</tr>
<tr>
<td>Parameter</td>
<td>mode_1-3 / mode: Automatic measurement</td>
<td>ch: Input channel</td>
</tr>
<tr>
<td></td>
<td>0 = All inputs from this input channel are not measured automatically.</td>
<td>0 = All analog inputs, 5 = IN5 to 7 = IN7</td>
</tr>
<tr>
<td></td>
<td>1 = Current input signals are not measured automatically.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 = Current input signals are measured automatically.  [Default]</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GIS</td>
<td>Getting setting of Automatic measurement of start position.</td>
</tr>
<tr>
<td></td>
<td>@GIS,0,2,2</td>
<td>IN5: not measured automatically; IN6 and IN7: measured automatically.</td>
</tr>
<tr>
<td></td>
<td>@SIS,6,1</td>
<td>Setting not to measure signals input currently from IN6.</td>
</tr>
<tr>
<td></td>
<td>@SIS,6,1</td>
<td>Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>Those commands are only for analog input.</td>
<td>IN5 is available only when “0” (Analog signal) is selected for “@GIN / @SIN”.</td>
</tr>
</tbody>
</table>

### @GSM / @SSM  
**Automatic measurement when unregistered signals are input**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSM</td>
<td>@SSM, mode</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSM, mode</td>
<td>@SSM, mode</td>
</tr>
<tr>
<td>Parameter</td>
<td>mode: Automatic measurement</td>
<td>0 = Not execute, 1 = Execute  [Default]</td>
</tr>
<tr>
<td>Example</td>
<td>@GSM</td>
<td>Getting automatic measurement mode when unregistered signals are input.</td>
</tr>
<tr>
<td></td>
<td>@GSM,1</td>
<td>Automatic measurement will be executed when unregistered signals are input.</td>
</tr>
<tr>
<td></td>
<td>@SSM,1</td>
<td>Execute automatic measurement when unregistered signals are input.</td>
</tr>
<tr>
<td></td>
<td>@SSM,1</td>
<td>Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
### @RTT  Loading device data

<table>
<thead>
<tr>
<th>Function</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@RTT, ch (, table)</td>
</tr>
<tr>
<td>Return value</td>
<td>@RTT, ch (, table)</td>
</tr>
</tbody>
</table>
| Parameter  | ch: Input channel  
1 = IN1 to 7 = IN7  
(table: Device table  
1 to 99 (Registered device data),  
100 to 100+n (Preset device data. "n" varies depending on input signals, but 0 for most cases.)  
Only for analog input, specify the device table.) |
| Example    | @RTT,1  
@RTT,6,2  
Example  
@RTT,6,2  
Example  
@STT,6,2,XGA 60Hz |
| Remarks    | This command is valid only when signals are input.  
For analog input, this command is valid only when the device data of input signals is registered. |

### @STT  Registering device data

<table>
<thead>
<tr>
<th>Function</th>
<th>Saving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@STT, ch, table (, name)</td>
</tr>
<tr>
<td>Return value</td>
<td>@STT, ch, table (, name)</td>
</tr>
</tbody>
</table>
| Parameter  | ch: Input channel  
5 = IN5 to 7 = IN7  
(table: Device table  
1 to 99  
name: Device table name  
Up to 14 characters from 20 to 7D of ASCII code.  
If you do not set the device table name, only input timing settings are saved. However, if no device table name is currently saved, the resolution is saved automatically as the device table name.) |
| Example    | @STT,6,2  
@STT,6,2,XGA 60Hz  
Example  
@STT,6,2,XGA 60Hz  
Example  
@STT,6,2,XGA 60Hz |
| Remarks    | This command is valid only if analog RGB / YPbPr signals are input. |
### Tracking

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GTK</td>
<td>@STK, ch_1, track_1 (, ch_2, track_2,...)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GTK, track_1, track_2 (, track_3)</td>
<td>@STK, ch_1, track_1 (, ch_2, track_2,...)</td>
</tr>
</tbody>
</table>
| Parameter      | track_1-3: Tracking  
0 to 63  [Default] 0  
ch_1-3: Input channel  
0 = All analog inputs, 5 = IN5 to 7 = IN7 |
| Example        | @GTK,4,0,5 | Setting IN6 tracking to “4”.  
Completed normally. |
| Remarks        | This command is valid only if analog RGB / YPbPr signals are input. |
### 3.3.8 Output settings

<table>
<thead>
<tr>
<th><strong>@GEQ / @SEQ</strong></th>
<th><strong>Output equalizer</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GEQ</td>
</tr>
<tr>
<td>Return value</td>
<td>@GEQ, level_1 (, level_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>level_1-2: Output equalizer</td>
</tr>
<tr>
<td></td>
<td>0 = OFF [Default], 1 = LOW, 2 = MIDDLE, 3 = HIGH</td>
</tr>
<tr>
<td></td>
<td>ch_1-2: Output connector</td>
</tr>
<tr>
<td></td>
<td>0 = All HDMI output, 1 = OUT1A, 2 = OUT2A</td>
</tr>
<tr>
<td>Example</td>
<td>@GEQ</td>
</tr>
<tr>
<td></td>
<td>@GEQ,0,1</td>
</tr>
<tr>
<td></td>
<td>@SEQ,1,0</td>
</tr>
<tr>
<td></td>
<td>@SEQ,1,0</td>
</tr>
<tr>
<td>Remarks</td>
<td>Those commands are only for HDMI output connector.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>@GDM / @SDM</strong></th>
<th><strong>Output mode</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GDM</td>
</tr>
<tr>
<td>Return value</td>
<td>@GDM, mode_1A, mode_1B (, mode_2A, mode_2B)</td>
</tr>
<tr>
<td>Parameter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mode_1A / mode_2A: OUTA output mode</td>
</tr>
<tr>
<td></td>
<td>mode_1B / mode_2B: OUTB output mode</td>
</tr>
<tr>
<td></td>
<td>mode_1-4: Output mode</td>
</tr>
<tr>
<td></td>
<td>0 = DVI MODE, 1 = HDMI RGB MODE, 2 = HDMI YCbCr4:2:2 MODE, 3 = HDMI YCbCr4:4:4 MODE [Default]</td>
</tr>
<tr>
<td></td>
<td>ch_1-4: Output connector</td>
</tr>
<tr>
<td></td>
<td>0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B</td>
</tr>
<tr>
<td>Example</td>
<td>@GDM</td>
</tr>
<tr>
<td></td>
<td>@GDM,3,0,3,3</td>
</tr>
<tr>
<td></td>
<td>@SDM,1,3</td>
</tr>
<tr>
<td></td>
<td>@SDM,1,3</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
</tr>
</tbody>
</table>
### Synchronous signal output when no video signals are input

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GUY, ch_1, sync_1 (, ch_2, sync_2)</td>
<td>@SUY, ch_1, sync_1 (, ch_2, sync_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GUY, sync_1 (, sync_2)</td>
<td>@SUY, sync_1 (, sync_2)</td>
</tr>
</tbody>
</table>
| Parameter    | sync_1-2: Synchronous signal output 0 = Not output, 1 = Output [Default]  
ch_1-2: Output channels 0 = All outputs, 1 = OUT1, 2 = OUT2 |
| Example      | @GUY        | Getting synchronous signal output when no video signals are input. OUT1: synchronous signals are output. OUT2: synchronous signals are not output.  
@GUY,1,0 | @SUY,1,1 | Setting OUT1 to “1” (synchronous signals are output even if video signals are not input.). Completed normally.  
@SUY,1,1 |
| Remarks      | —           | —                                           |

### Output video when no video signals are input

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GBO, ch_1, video_1 (, ch_2, video_2)</td>
<td>@SBO, ch_1, video_1 (, ch_2, video_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GBO, video_1 (, video_2)</td>
<td>@SBO, video_1 (, video_2)</td>
</tr>
</tbody>
</table>
| Parameter    | video_1-2: Output video when no video signals are input 0 = Black, 1 = Blue [Default], 2 = Background color  
ch_1-2: Output channel 0 = All outputs, 1 = OUT1, 2 = OUT2 |
| Example      | @GBO        | Getting output video when no video signals are input. OUT1: blue screen; OUT2: black screen  
@GBO,1,0 | @SBO,1,1 | Setting OUT1 to blue when no video signals are input. Completed normally.  
@SBO,1,1 |
| Remarks      | —           | —                                           |
### @GFF / @SFF

**Function**

Getting

<table>
<thead>
<tr>
<th>Format</th>
<th>@GFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GFF, switching_1 (, switching_2)</td>
<td>@SFF, ch_1, switching_1 (, ch_2, switching_2)</td>
</tr>
</tbody>
</table>

**Return value**

<table>
<thead>
<tr>
<th>Format</th>
<th>@GFF, switching_1 (, switching_2)</th>
<th>@SFF, ch_1, switching_1 (, ch_2, switching_2)</th>
</tr>
</thead>
</table>

**Parameter**

<table>
<thead>
<tr>
<th>switching_1-2: Video switching effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = CUT, 1 = FADE OUT/IN, 2 = FREEZE + FADE OUT/IN [Default], 3 = LEFT→RIGHT WIPE, 4 = RIGHT→LEFT WIPE, 5 = TOP→BOTTOM WIPE, 6 = BOTTOM→TOP WIPE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ch_1-2: Output channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
</tr>
</tbody>
</table>

**Example**

<table>
<thead>
<tr>
<th>@GFF</th>
<th>@GFF,0,1</th>
<th>@SFF,1,1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@GFF, switching_1 (, switching_2)</td>
<td>@SFF, ch_1, switching_1 (, ch_2, switching_2)</td>
</tr>
</tbody>
</table>

**Remarks**

- 

---

### @GFT / @SFT

**Function**

Getting

<table>
<thead>
<tr>
<th>Format</th>
<th>@GFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GFT, time_1 (, time_2)</td>
<td>@SFT, ch_1, time_1 (, ch_2, time_2)</td>
</tr>
</tbody>
</table>

**Return value**

<table>
<thead>
<tr>
<th>Format</th>
<th>@GFT, time_1 (, time_2)</th>
<th>@SFT, ch_1, time_1 (, ch_2, time_2)</th>
</tr>
</thead>
</table>

**Parameter**

<table>
<thead>
<tr>
<th>time_1-2: Switching time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 = 0.1 sec. to 2000 = 2 sec. [Default] 350 = 0.35 sec.</td>
</tr>
</tbody>
</table>

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.)

<table>
<thead>
<tr>
<th>ch_1-2: Output channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
</tr>
</tbody>
</table>

**Example**

<table>
<thead>
<tr>
<th>@GFT</th>
<th>@GFT,400,350</th>
<th>@SFT,1,400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@GFT, switching_1 (, switching_2)</td>
<td>@SFT, ch_1, switching_1 (, ch_2, switching_2)</td>
</tr>
</tbody>
</table>

**Remarks**

- 

---
### Wipe color

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GWC, ch_1</td>
<td>@SWC, ch_1, red_1, green_1, blue_1&lt;br&gt;(, ch_2, red_2, green_2, blue_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GWC, ch, red, green, blue_1</td>
<td>@SWC, ch_1, red_1, green_1, blue_1&lt;br&gt;(, ch_2, red_2, green_2, blue_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>ch: Output channel&lt;br&gt;1 = OUT1, 2 = OUT2&lt;br&gt;ch_1-2: Output channel&lt;br&gt;0 = All outputs, 1 = OUT1, 2 = OUT2&lt;br&gt;red / red_1-2: Wipe color (Red)&lt;br&gt;green / green_1-2: Wipe color (Green)&lt;br&gt;blue / blue_1-2: Wipe color (Blue)&lt;br&gt;0 to 255 [Default] 0 (Black)</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GWC, 1&lt;br&gt;@GWC, 1, 255, 255, 255&lt;br&gt;@SWC, 1, 255, 255, 255&lt;br&gt;@SWC, 1, 255, 255, 255</td>
<td>Getting OUT1 wipe color.&lt;br&gt;RGB: 255 (white)&lt;br&gt;Setting OUT1 wipe colors of RGB to “255” (white).&lt;br&gt;Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

### Video output connector

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GVO&lt;br&gt;@GVO, 0, 1, 1, 1</td>
<td>@SVO, ch_1, out_1&lt;br&gt;(, ch_2, out_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GVO, out_1A, out_1B&lt;br&gt;(, out_2A, out_2B)</td>
<td>@SVO, ch_1, out_1&lt;br&gt;(, ch_2, out_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>out_1A / out_2A: OUTA video output&lt;br&gt;out_1B / out_2B: OUTB video output&lt;br&gt;out_1-4: Video output&lt;br&gt;0 = Not output, 1 = Output [Default]</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GVO&lt;br&gt;@GVO, 0, 1, 1, 1&lt;br&gt;@SVO, 1, 1&lt;br&gt;@SVO, 1, 1</td>
<td>Getting video output connector.&lt;br&gt;OUT1A: not output video.&lt;br&gt;Other outputs: output video.&lt;br&gt;Setting OUT1A to “Output”.&lt;br&gt;Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
### @GEN / @SEN

<table>
<thead>
<tr>
<th>Function</th>
<th>HDCP output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Getting</strong></td>
<td><em>Function Getting Setting</em></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GEN, @SEN, ch_1, hdcp_1 (, ch_2, hdcp_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GEN, hdcp_1A, hdcp_1B (, hdcp_2A, hdcp_2B)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>hdcp_1A / hdcp_2A: OUTA HDCP output</td>
</tr>
<tr>
<td></td>
<td>hdcp_1-4: HDCP output</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ch_1-4: Output connector</strong></td>
<td>0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B</td>
</tr>
</tbody>
</table>

| **Example** | @GEN,1,1,1,0 |
| | Getting HDCP output. |
| | OUT2B: HDCP is output only if input signals are with HDCP. |
| | Other outputs: HDCP is always output. |
| @SEN,1,1 | Setting OUT1A to output HDCP always. |
| Completed normally. |

### @GHR / @SHR

<table>
<thead>
<tr>
<th>Function</th>
<th>The number of HDCP retries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Getting</strong></td>
<td><em>Function Getting Setting</em></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GHR, @SHR, ch_1, retry_1 (, ch_2, retry_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GHR, retry_1A, retry_1B (, retry_2A, retry_2B)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>retry_1A / retry_2A: The number of retries (OUTA)</td>
</tr>
<tr>
<td></td>
<td>-1 = Retry until succeed [Default],</td>
</tr>
<tr>
<td><strong>ch_1-4: Output connector</strong></td>
<td>0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B</td>
</tr>
</tbody>
</table>

| **Example** | @GHR, @GHR,-1,-1,-1,10 |
| | Getting the number of HDCP retires. |
| | OUT2B: Retry for up to 10 times |
| | Other outputs: continue to retry until succeed. |
| @SHR,4,10 | Setting OUT2B to retry up to 10 times. |
| Completed normally. |

### Remarks
-
### @GDC / @SDC  Deep Color

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GDC</td>
<td>@SDC, ch_1, color_1 (, ch_2, color_2...)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GDC, color_1A, color_1B (, color_2A, color_2B)</td>
<td>@SDC, ch_1, color_1 (, ch_2, color_2...)</td>
</tr>
<tr>
<td>Parameter</td>
<td>color_1A / color_2A : OUTA color depth</td>
<td>@GDC, color_1A, color_1B (, color_2A, color_2B)</td>
</tr>
<tr>
<td></td>
<td>color_1B / color_2B : OUTB color depth</td>
<td>@SDC, ch_1, color_1 (, ch_2, color_2...)</td>
</tr>
<tr>
<td></td>
<td>out_1-4 : Color depth</td>
<td>@GDC, color_1A, color_1B (, color_2A, color_2B)</td>
</tr>
<tr>
<td></td>
<td>0 = 24-BIT COLOR [Default], 1 = 30-BIT COLOR</td>
<td>@SDC, ch_1, color_1 (, ch_2, color_2...)</td>
</tr>
<tr>
<td></td>
<td>ch_1-4: Output connector</td>
<td>@GDC, color_1A, color_1B (, color_2A, color_2B)</td>
</tr>
<tr>
<td></td>
<td>0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B</td>
<td>@SDC, ch_1, color_1 (, ch_2, color_2...)</td>
</tr>
</tbody>
</table>

**Example**

- @GDC
  - @GDC 1, 1, 0, 1
    - Getting color depth.
    - OUT2A: 24-BIT COLOR
    - other outputs: 30-BIT COLOR

- @SDC, 1, 0
  - Setting OUT1A to 24-BIT COLOR.
  - Completed normally.

**Remarks**

- @GCE / @SCE  CEC connection

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GCE</td>
<td>@SCE, ch_1, connect_1 (, ch_2, connect_2...)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GCE, connect_1A, connect_1B (, connect_2A, connect_2B)</td>
<td>@SCE, ch_1, connect_1 (, ch_2, connect_2...)</td>
</tr>
<tr>
<td>Parameter</td>
<td>connect_1A / connect_2A: OUTA CEC connection</td>
<td>@GCE, connect_1A, connect_1B (, connect_2A, connect_2B)</td>
</tr>
<tr>
<td></td>
<td>connect_1B / connect_2B: OUTB CEC connection</td>
<td>@SCE, ch_1, connect_1 (, ch_2, connect_2...)</td>
</tr>
<tr>
<td></td>
<td>connect_1-4 : CEC connection</td>
<td>@GCE, connect_1A, connect_1B (, connect_2A, connect_2B)</td>
</tr>
<tr>
<td></td>
<td>0 = not connected [Default], 1 = selected video input channel, 2 = input channel1, 3 = input channel2, 4 = input channel3, 5 = input channel4</td>
<td>@SCE, ch_1, connect_1 (, ch_2, connect_2...)</td>
</tr>
<tr>
<td></td>
<td>ch_1-4: Output connector</td>
<td>@GCE, connect_1A, connect_1B (, connect_2A, connect_2B)</td>
</tr>
<tr>
<td></td>
<td>0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B</td>
<td>@SCE, ch_1, connect_1 (, ch_2, connect_2...)</td>
</tr>
</tbody>
</table>

**Example**

- @GCE
  - @GCE 4, 0, 0, 0
    - Getting CEC connection.
    - OUT1A: connecting to input channel3
    - Other outputs: not connected.

- @SCE, 1, 4
  - Setting OUT1A CEC to connect input channel3.
  - Completed normally.

**Remarks**

-
### Function Setting

<table>
<thead>
<tr>
<th>Format</th>
<th>Return value</th>
</tr>
</thead>
<tbody>
<tr>
<td>@HAU, ch_1 (, ch_2⋅⋅⋅)</td>
<td>@HAU, ch_1 (, ch_2⋅⋅⋅)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ch_1-4: Output connector</td>
<td>0 = All outputs, 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>@HAU,1</td>
<td>Setting sink device HDCP of OUT1A to be re-authorized. Completed normally.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
</tr>
</tbody>
</table>
### 3.3.9 Audio

<table>
<thead>
<tr>
<th>@GSL / @SSL</th>
<th>Audio output level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GSL</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSL, level_1 (,level_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>level_1-2: Audio output level</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ch_1-2: Output channel</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GSL</td>
</tr>
<tr>
<td></td>
<td>@GSL, -4,0</td>
</tr>
<tr>
<td></td>
<td>@SSL,1,-4</td>
</tr>
<tr>
<td></td>
<td>@SSL,1,-4</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>@SOL</th>
<th>Relative value of audio output level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Setting</td>
</tr>
<tr>
<td>Format</td>
<td>@SOL, ch_1, updown_1 (, ch_2, updown_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@SOL, ch_1, updown_1 (, ch_2, updown_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>ch_1-2: Output channel</td>
</tr>
<tr>
<td></td>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
</tr>
<tr>
<td></td>
<td>updown_1-2: setting relative value</td>
</tr>
<tr>
<td></td>
<td>-70 to +70</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>Example</td>
<td>@SOL,1,-1</td>
</tr>
<tr>
<td></td>
<td>@SOL,1,-1</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>@GOL</th>
<th>Limit status of audio output level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GOL</td>
</tr>
<tr>
<td>Return value</td>
<td>@GOL, out_1 (, out_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>out_1-2: Limit status of audio output level</td>
</tr>
<tr>
<td></td>
<td>-1 = minimum settable value (-60 dB), 0 = not limit status, 1 = maximum settable value (+10 dB)</td>
</tr>
<tr>
<td>Example</td>
<td>@GOL</td>
</tr>
<tr>
<td></td>
<td>@GOL,1,0</td>
</tr>
<tr>
<td></td>
<td>@GOL,1,0</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>
### @GAM / @SAM

**Audio output mute**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GAM</td>
<td>@SAM, ch_1, mute_1 (, ch_2, mute_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GAM, mute_1 (, mute_2)</td>
<td>@SAM, ch_1, mute_1 (, ch_2, mute_2)</td>
</tr>
</tbody>
</table>

**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

**Example**
- @GAM
- @GAM,1,0
  - Getting audio output mute.
  - OUT1: mute ON; OUT2: mute OFF
- @SAM,1,1
- @SAM,1,1
  - Muting OUT1 audio output.
  - Completed normally.

**Remarks**
- Selecting audio input

### @GAS / @SAS

**Selecting audio input**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GAS</td>
<td>@SAS, ch_1, select_1 (, ch_2, select_2, select_3, select_4, select_5)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GAS, select_1, select_2, select_3, select_4, select_5</td>
<td>@SAS, ch_1, select_1 (, ch_2, select_2, select_3, select_4, select_5)</td>
</tr>
</tbody>
</table>

**Parameter**
- **select_1-5**: Audio input selection
  - 0 = Automatic [Default], 1 = Analog audio, 2 = Digital audio
- **ch_1-5**: Input channel
  - 0 = All digital inputs, 1 = IN1 to 5 = IN5

**Example**
- @GAS
- @GAS,1,0,0,0,0
  - Getting audio input selection.
  - IN1: analog audio is used
  - Other inputs: automatic.
- @SAS,3,1
- @SAS,3,1
  - Setting IN3 audio input to analog audio.
  - Completed normally.

**Remarks**
- Those commands are only for digital input.
- IN5 is available only when “1” (Digital signal) is selected for “@GIN / @SIN”.

---

**54**
### @GSD
**Selecting actual audio input**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSD</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSD, in_1, in_2, in_3, in_4, (in_5)</td>
</tr>
</tbody>
</table>
| Parameter  | in_1-5: Actual audio input selection  
1 = analog audio [Default].  
2 = digital audio |
| Example    | @GSD  |
|            | @GSD,1,2,2,2,2 |
| Remarks    | This command is only for digital input.  
IN5 is available only when “1” (Digital signal). is selected for “@GIN / @SIN”. |

### @GSO / @SSO
**Audio input level**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSO</td>
<td></td>
</tr>
</tbody>
</table>
| Return value | @GSO, level_1, level_2, level_3, level_4,  
level_5, level_6, level_7 |
| Parameter  | level_1-7: Audio input level  
-60 to ±0 [Default] ±0  
ch_1-7: Input channel  
0 = All inputs,  1 = IN1 to 7 = IN7 |
| Example    | @GSO  |
|            | @GSO,0,0,0,0,-4,0,0 |
|            | @SSO,5,-8 |
| Remarks    | — |

### @SIL
**Relative value of audio input level**

<table>
<thead>
<tr>
<th>Function</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@SIL, ch_1, updown_1, (ch_2, updown_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@SIL, ch_1, updown_1</td>
</tr>
</tbody>
</table>
| Parameter  | ch_1-7: Input channel  
0 = All inputs,  1 = IN1 to 7 = IN7  
updown_1-7: 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. |
| Example    | @SIL,1,-1 |
|            | Lowering IN1 audio input level (1 dB).  
Completed normally. |
| Remarks    | — |
### @GIL

**Limit status of audio input level**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GIL</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GIL, in_1, in_2, in_3, in_4, in_5, in_6, in_7</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>in_1-7: Limit status</td>
</tr>
<tr>
<td></td>
<td>-1 = minimum settable value (-60 dB), 0 = not limit status, 1 = maximum settable value (+0 dB)</td>
</tr>
</tbody>
</table>

**Example**

@GIL
@GIL,1,0,0,0,0,0

Getting limit status of audio input level.
IN1: maximum settable value
Other inputs: not limit value

**Remarks**

---

### @GLO / @SLO

**Output lip sync**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GLO @SLO, ch_1, frame_1 (, ch_2, frame_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GLO, frame_1 (, frame_2) @SLO, ch_1, frame_1 (, ch_2, frame_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>frame_1-2: Output lip sync</td>
</tr>
<tr>
<td></td>
<td>0 to 8 [Default] 0</td>
</tr>
<tr>
<td>ch_1-2: Output channel</td>
<td></td>
</tr>
<tr>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
<td></td>
</tr>
</tbody>
</table>

**Example**

@GLO
@GLO,0,2
@SLO,1,2

Getting lip sync of the output side..
OUT1: 0 frame; OUT2: 2 frames
Setting OUT1 lip sync to 2 frames.
Completed normally.

**Remarks**

---

### @GLY / @SLY

**Input lip sync**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GLY @SLY, ch_1, frame_1 (, ch_2, frame_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GLY, frame_1, frame_2, frame_3, frame_4, frame_5, frame_6, frame_7 @SLY, ch_1, frame_1 (, ch_2, frame_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>frame_1-7: Input lip sync</td>
</tr>
<tr>
<td></td>
<td>0 to 8 [Default] 0</td>
</tr>
<tr>
<td>ch_1-7: Input channel</td>
<td></td>
</tr>
<tr>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
<td></td>
</tr>
</tbody>
</table>

**Example**

@GLY
@GLY,0,0,0,0,0
@SLY,4,2

Getting lip sync of input side.
IN4: 2 frames; other inputs: 0 frame
Setting IN4 lip sync to 2 frames.
Completed normally.

**Remarks**

---
### @GSF / @SSF

<table>
<thead>
<tr>
<th>Function</th>
<th>Sampling frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td><strong>Getting</strong></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GSF, ch_1, frequency_1 (, ch_2, frequency_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GSF, frequency_1 (, frequency_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>frequency_1-2: Sampling frequency</td>
</tr>
<tr>
<td></td>
<td>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</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GSF,0,2</td>
</tr>
<tr>
<td></td>
<td>@GSF,0,2</td>
</tr>
<tr>
<td></td>
<td>@SSF,1,3</td>
</tr>
<tr>
<td></td>
<td>@SSF,1,3</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td></td>
</tr>
</tbody>
</table>

### @GFD

<table>
<thead>
<tr>
<th>Function</th>
<th>Actual sampling frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td><strong>Getting</strong></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GFD</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GFD, frequency_1 (, frequency_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>frequency_1-2: Sampling frequency</td>
</tr>
<tr>
<td></td>
<td>1 = 32 kHz, 2 = 44.1 kHz, 3 = 48 kHz [Default], 4 = 88.2 kHz, 5 = 96 kHz, 6 = 192 kHz</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GFD</td>
</tr>
<tr>
<td></td>
<td>@GFD,5,3</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>If &quot;@GSF / @SSF Sampling frequency&quot; is set to &quot;AUTO-A&quot; or &quot;AUTO-B&quot;, the sampling frequency that is output actually will be replied. If it is set to value other than &quot;AUTO-A&quot; or &quot;AUTO-B&quot;, the set sampling frequency will be replied.</td>
</tr>
</tbody>
</table>

---

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### @GDO / @SDO Audio output connector

<table>
<thead>
<tr>
<th>Format</th>
<th>@GDO, ch_1, out_1, (, ch_2, out_2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GDO, out_1, (, out_2)</td>
<td>@SDO, ch_1, out_1, (, ch_2, out_2)</td>
</tr>
</tbody>
</table>

#### Parameter
- **out_1-2**: Audio output connector
  - 0 = Only to analog audio output connectors,
  - 1 = To HDMI output and HDBaseT output connectors,
  - 2 = To analog audio output connectors, HDMI output connectors, and HDBaseT output connectors  
    [Default]

- **ch_1-2**: Output channel
  - 0 = All outputs,  1 = OUT1,  2 = OUT2

#### Example
- **@GDO**  
  - Getting connectors that output audio.
  - **@GDO,0,1**  
    - OUT1: only to analog audio output connectors;
    - OUT2: only to HDMI output connector and HDBaseT output connector

- **@SDO,1,0**  
  - Setting OUT1 to output to only analog audio output connectors
  - Completed normally.

### @GAO / @SAO Digital audio output connector

<table>
<thead>
<tr>
<th>Format</th>
<th>@GAO, ch_1, out_1, (, ch_2, out_2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GAO, out_1A, out_1B, (, out_2A, out_2B)</td>
<td>@SAO, ch_1, out_1, (, ch_2, out_2)</td>
</tr>
</tbody>
</table>

#### 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 connectors
  - 0 = All outputs,  1 = OUT1A,  2 = OUT1B,  3 = OUT2A,  4 = OUT2B

#### Example
- **@GAO**  
  - Getting connectors that output digital audio.
  - **@GAO,1,1,1,0**  
    - OUT2B: Not output digital audio.
    - Other outputs: Output digital audio.

- **@SAO,1,0**  
  - OUT1A: not output digital audio.
  - Completed normally.
### @GMD / @SMD  Multi channel audio output

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GMD</td>
<td>@SMD, ch_1, out_1 (, ch_2, out_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GMD, out_1 (, out_2)</td>
<td>@SMD, ch_1, out_1 (, ch_2, out_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>out_1-2: Multi channel audio output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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]</td>
<td></td>
</tr>
<tr>
<td>ch_1-2: Output channel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Example

- **Getting multi channel audio output.**
  - `@GMD` (getting the default setting)
  - `@GMD,4,8` (getting a specific setting)
  - `@SMD,1,8` (setting OUT1 to output down mixed audio)

### Remarks

- Test tone

### @GAT / @SAT  Test tone

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GAT</td>
<td>@SAT, ch_1, tone_1, speaker_1 (, ch_2, tone_2, speaker_2)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GAT, tone_1, speaker_1 (, tone_2, speaker_2)</td>
<td>@SAT, ch_1, tone_1, speaker_1 (, ch_2, tone_2, speaker_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>tone_1-2: Test tone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = OFF [Default], 1 = 1kHz, 2 = 400Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>speaker_1-2: Speaker</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>ch_1-2: Output channel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Example

- **Getting test tone output settings.**
  - `@GAT` (getting the default setting)
  - `@GAT,2,1,0,0` (getting a specific setting)
  - `@SAT,1,1,0` (setting OUT1 to output test tone)
  - `@SAT,1,1,0` (setting OUT1 to output test tone)

### Remarks

- Test tone

---

**MSD-701/702 Command Guide**

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### 3.3.10 EDID

<table>
<thead>
<tr>
<th>@GED / @SED</th>
<th>EDID data</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
<td>@SED, ch_1, edid_1 (, ch_2, edid_2 ⋯)</td>
</tr>
<tr>
<td>Format</td>
<td>@GED 🛋️</td>
<td>@SED, ch_1, edid_1 (, ch_2, edid_2 ⋯)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GED, edid_1, edid_2, edid_3, edid_4 (, edid_5)</td>
<td>@SED, ch_1, edid_1 (, ch_2, edid_2 ⋯)</td>
</tr>
<tr>
<td>Parameter</td>
<td>edid_1-5: EDID data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ch_1-3: Input channel</td>
<td>0 = All digital inputs, 1 = IN1 to 5 = IN5</td>
</tr>
<tr>
<td>Example</td>
<td>@GED 🛋️</td>
<td>Getting EDID data. IN4: EDID of the sink device connected to OUT2A. Other inputs: built-in EDID</td>
</tr>
<tr>
<td></td>
<td>@GED,0,0,0,3,0 🛋️</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@SED,2,3 🛋️</td>
<td>Setting IN2: EDID read from the sink device connected to OUT2A. Completed normally</td>
</tr>
<tr>
<td>Remarks</td>
<td>Those commands are only for digital input. IN5 is available only when “1” (Digital signal) is selected for “@GIN / @SIN”. In order to use a copied data, read EDID data from the sink device in “@RME Copying EDID (P.65)” in advance.</td>
<td></td>
</tr>
</tbody>
</table>
# MSD-701/702 Command Guide

## Function: Input resolution for PC

<table>
<thead>
<tr>
<th>@GVF / @SVF</th>
<th>Input resolution for PC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td><strong>Getting</strong></td>
</tr>
<tr>
<td>Format</td>
<td>@GVF, ch_1, resolution_1 (, ch_2, resolution_2 ⋯)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GVF, resolution_1, resolution_2, resolution_3, resolution_4, resolution_5, resolution_6, resolution_7</td>
</tr>
<tr>
<td>Parameter</td>
<td>resolution_1-5: Input resolution for PC</td>
</tr>
<tr>
<td></td>
<td>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 = 1080(1920x1080), 15 = 1080p(1920x1080), 16 = WUXGA(1920x1200), 17 = QWXGA(2048x1152)</td>
</tr>
<tr>
<td></td>
<td>[Default] IN1 to IN5: 1080p (1920x1080); IN6 to IN7: UXGA (1600x1200)</td>
</tr>
<tr>
<td>ch_1-7: Input channel</td>
<td>0 = All inputs, 1 = IN1 to 7 = IN7</td>
</tr>
<tr>
<td>Example</td>
<td>@GVF, ch_1, resolution_1 (, ch_2, resolution_2 ⋯)</td>
</tr>
<tr>
<td></td>
<td>@GVF,6,6,9,6,6,6,6</td>
</tr>
<tr>
<td></td>
<td>@GVF, ch_1, resolution_1 (, ch_2, resolution_2 ⋯)</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
</tr>
</tbody>
</table>

---

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<table>
<thead>
<tr>
<th><strong>Function</strong></th>
<th><strong>Setting</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input resolution for AV devices</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GHF, ch_1, resolution_1 (, ch_2, resolution_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GHF, resolution_1, resolution_2, resolution_3, resolution_4 (, resolution_5)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>resolution_1-5: Input resolution for AV devices</td>
</tr>
<tr>
<td></td>
<td>0 = UNUSED, 1 = 480p, 2 = 720p, 3 = 1080i, 4 = 1080p, 5 = AUTO [Default]</td>
</tr>
<tr>
<td></td>
<td>ch_1-5: Input channel</td>
</tr>
<tr>
<td></td>
<td>0 = All digital inputs, 1 = IN1 to 5 = IN5</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GHF, 5, 5, 5, 4, 5</td>
</tr>
<tr>
<td></td>
<td>@GHF, 5, 5, 5, 4, 5</td>
</tr>
<tr>
<td></td>
<td>@SHF, 0, 4</td>
</tr>
<tr>
<td></td>
<td>@SHF, 0, 4</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>This command is only for digital input.</td>
</tr>
<tr>
<td></td>
<td>IN5 is available only when “1” (Digital signal). is selected for “@GIN / @SIN”.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Function</strong></th>
<th><strong>Setting</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deep Color input</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GDI, ch_1, color_1 (, ch_2, color_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GDI, color_1, color_2, color_3, color_4 (, color_5)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>color_1-5: Color depth</td>
</tr>
<tr>
<td></td>
<td>0 = 24-BIT COLOR [Default], 1 = 30-BIT COLOR</td>
</tr>
<tr>
<td></td>
<td>ch_1-5: Input channel</td>
</tr>
<tr>
<td></td>
<td>0 = All digital inputs, 1 = IN1 to 5 = IN5</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GDI</td>
</tr>
<tr>
<td></td>
<td>@GDI, 1, 1, 1, 0, 1</td>
</tr>
<tr>
<td></td>
<td>@SDI, 4, 0</td>
</tr>
<tr>
<td></td>
<td>@SDI, 4, 0</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>This command is only for digital input.</td>
</tr>
<tr>
<td></td>
<td>IN5 is available only when “1” (Digital signal). is selected for “@GIN / @SIN”.</td>
</tr>
<tr>
<td>Function</td>
<td>Setting</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>Format</td>
<td>@SAF, ch, format_1, frequency_1 (, format_2, frequency_2... )</td>
</tr>
<tr>
<td>@GAF, ch, ch</td>
<td></td>
</tr>
<tr>
<td>Return value</td>
<td>@SAF, ch, format_1, frequency_1 (, format_2, frequency_2... )</td>
</tr>
<tr>
<td>Parameter</td>
<td>@GAF, ch, format_1, frequency_1 (, format_2, frequency_2... )</td>
</tr>
</tbody>
</table>

- **ch**: Input channel
  - 0 = All digital inputs (only for setting), 1 = IN1 to 5 = IN5

- **format_1-7**: 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

- **frequency_1-7**: Maximum sampling frequency
  - 0 = Output disabled, 1 = 32 kHz, 2 = 44.1 kHz, 3 = 48 kHz, 4 = 88.2 kHz, 5 = 96 kHz, 6 = 176.2 kHz, 7 = 192 kHz
  - [Default] DTS-HD: 192 kHz, Dolby TrueHD: 96 kHz, others: 48 kHz
  - “Output disabled”: only set commands can be specified.
  - Maximum settable sampling frequency depends on the audio format.

<table>
<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>

- **Example**
  - @GAF,1  Getting audio formats of IN1 that are allowed to be output. Up to 192 kHz of PCM.
  - @GAF,1,0,7
  - @SAF,2,4,3  Enable IN2 to output Linear PCM and DTS 32, 44.1, and 48 kHz (Sampling frequency of PCM is not changed). Completed normally.
  - @SAF,2,4,3

- **Remarks**
  - This command is only for digital input.
  - IN5 is available only when “1” (Digital signal). is selected for “@GIN / @SIN”.

---

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### @GSP / @SSP The number of speakers

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSP, ch</td>
<td>@SSP, ch, number (, speaker_1, speaker_2... )</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSP, ch, number (, speaker_1, speaker_2... )</td>
<td>@SSP, ch, number (, speaker_1, speaker_2... )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>ch: Input channel</th>
<th>number: The number of speakers</th>
<th>speaker_1-8: Speaker configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 = All digital inputs, 1 = IN1 to 5 = IN5</td>
<td>1 to 8 [Default] 2</td>
<td>0 = Front Left / Right [Default], 1 = Low Frequency Effect,</td>
</tr>
<tr>
<td></td>
<td>“All digital inputs”: only setting commands can be specified.</td>
<td></td>
<td>2 = Front Center, 3 = Rear Left / Right,</td>
</tr>
<tr>
<td></td>
<td>number: The number of speakers</td>
<td></td>
<td>4 = Rear Center, 5 = Front Left / Right Center,</td>
</tr>
<tr>
<td></td>
<td>1 to 8 [Default] 2</td>
<td></td>
<td>6 = Rear Left / Right Center, 7 = Front Left / Right Wide,</td>
</tr>
<tr>
<td></td>
<td>speaker_1-8: Speaker configuration</td>
<td></td>
<td>8 = Front Left / Right High, 9 = Top Center,</td>
</tr>
<tr>
<td></td>
<td>0 = Front Left / Right [Default], 1 = Low Frequency Effect,</td>
<td></td>
<td>10 = Front Center High</td>
</tr>
</tbody>
</table>

**Getting command:** the number of speakers and which speakers will be used will be replied.

**Setting command:** if you do not specify the speaker configuration, the following configuration will be applied depending on the set number of speakers.

<table>
<thead>
<tr>
<th>number</th>
<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>ON</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

If you specify `speaker_1-8` and the `number` and total number of speakers (`speaker_1-8`) do not match, the `number` is set automatically. In case the `number` exceeds the settable range, an error is replied.

**Example**

- **@GSP,1**
  - Getting IN1 speaker configuration.
  - Six speakers (Front Left / Right, Low Frequency Effect, Front Center, Rear Left / Right) are used.
- **@SSP,2,8**
  - Setting IN2 speaker configuration to Front Left / Right, Low Frequency Effect, Front Center, Rear Left / Right, Rear Left / Right Center (eight speakers).
  - Completed normally.
### @GSP / @SSP

**The number of speakers**

<table>
<thead>
<tr>
<th>Example</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>@SSP,3,8,0,3,5,6,7</td>
<td>ERR,1</td>
</tr>
</tbody>
</table>

**Remarks**

This command is only for digital input.

### @RME

**Copying EDID**

**Function**

Setting

**Format**

@RME, out, number (, name) 

**Return value**

@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**: Name of COPY DATA  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.

**Example**

<table>
<thead>
<tr>
<th>Example</th>
<th>Loading EDID data of the sink device connected to OUT1A and saving it in COPY DATA 1. Completed normally.</th>
</tr>
</thead>
<tbody>
<tr>
<td>@RME,1,1</td>
<td>@RME,1,1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>Loading EDID data of the sink device connected to OUT2A, naming it “800x600” and saving it in COPY DATA 4. Completed normally.</th>
</tr>
</thead>
<tbody>
<tr>
<td>@RME,3,4,800x600</td>
<td>@RME,3,4,800x600</td>
</tr>
</tbody>
</table>

**Remarks**

@GED / @SED EDID (P.60)
3.3.11 RS-232C communication

<table>
<thead>
<tr>
<th>@GCT / @SCT</th>
<th>RS-232C communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GCT</td>
</tr>
<tr>
<td>Return value</td>
<td>@GCT, rs_232c, out_1B</td>
</tr>
</tbody>
</table>

Parameter
- rs_232c: Communication settings of RS-232C connector
- out_1B: Communication settings of OUT1B connector
- out_2B: Communication settings of OUT2B connector
- setting: Communication settings
  - 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)

For setting values, see the table below.

<table>
<thead>
<tr>
<th>Connector</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>All connectors,</td>
</tr>
<tr>
<td>1</td>
<td>RS-232C connector,</td>
</tr>
<tr>
<td>2</td>
<td>OUT1B connector,</td>
</tr>
<tr>
<td>3</td>
<td>OUT2B connector</td>
</tr>
</tbody>
</table>

Example
- @GCT
  - Getting communication settings of RS-232C.
  - All baud rates = 19200 [bps], data bit length = 8 [bit], parity check = None, stop bit = 1 [bit].

- @SCT,1,24
  - Setting RS-232C connector as follows: baud rate = 19200 [bps], data bit length = 8 [bit], parity check = NONE, stop bit = 1 [bit].
  - Completed normally.

Remarks
- Once IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings of communication based on the MSD settings.

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

<table>
<thead>
<tr>
<th>Value</th>
<th>Communication</th>
<th>Value</th>
<th>Communication</th>
<th>Value</th>
<th>Communication</th>
<th>Value</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4800 8 NONE 1</td>
<td>12</td>
<td>9600 8 NONE 1</td>
<td>24</td>
<td>19200 8 NONE 1</td>
<td>36</td>
<td>38400 8 NONE 1</td>
</tr>
<tr>
<td>1</td>
<td>4800 8 NONE 2</td>
<td>13</td>
<td>9600 8 NONE 2</td>
<td>25</td>
<td>19200 8 NONE 2</td>
<td>37</td>
<td>38400 8 NONE 2</td>
</tr>
<tr>
<td>2</td>
<td>4800 8 ODD 1</td>
<td>14</td>
<td>9600 8 ODD 1</td>
<td>26</td>
<td>19200 8 ODD 1</td>
<td>38</td>
<td>38400 8 ODD 1</td>
</tr>
<tr>
<td>3</td>
<td>4800 8 ODD 2</td>
<td>15</td>
<td>9600 8 ODD 2</td>
<td>27</td>
<td>19200 8 ODD 2</td>
<td>39</td>
<td>38400 8 ODD 2</td>
</tr>
<tr>
<td>4</td>
<td>4800 8 EVEN 1</td>
<td>16</td>
<td>9600 8 EVEN 1</td>
<td>28</td>
<td>19200 8 EVEN 1</td>
<td>40</td>
<td>38400 8 EVEN 1</td>
</tr>
<tr>
<td>5</td>
<td>4800 8 EVEN 2</td>
<td>17</td>
<td>9600 8 EVEN 2</td>
<td>29</td>
<td>19200 8 EVEN 2</td>
<td>41</td>
<td>38400 8 EVEN 2</td>
</tr>
<tr>
<td>6</td>
<td>4800 7 NONE 1</td>
<td>18</td>
<td>9600 7 NONE 1</td>
<td>30</td>
<td>19200 7 NONE 1</td>
<td>42</td>
<td>38400 7 NONE 1</td>
</tr>
<tr>
<td>7</td>
<td>4800 7 NONE 2</td>
<td>19</td>
<td>9600 7 NONE 2</td>
<td>31</td>
<td>19200 7 NONE 2</td>
<td>43</td>
<td>38400 7 NONE 2</td>
</tr>
<tr>
<td>8</td>
<td>4800 7 ODD 1</td>
<td>20</td>
<td>9600 7 ODD 1</td>
<td>32</td>
<td>19200 7 ODD 1</td>
<td>44</td>
<td>38400 7 ODD 1</td>
</tr>
<tr>
<td>9</td>
<td>4800 7 ODD 2</td>
<td>21</td>
<td>9600 7 ODD 2</td>
<td>33</td>
<td>19200 7 ODD 2</td>
<td>45</td>
<td>38400 7 ODD 2</td>
</tr>
<tr>
<td>10</td>
<td>4800 7 EVEN 1</td>
<td>22</td>
<td>9600 7 EVEN 1</td>
<td>34</td>
<td>19200 7 EVEN 1</td>
<td>46</td>
<td>38400 7 EVEN 1</td>
</tr>
<tr>
<td>11</td>
<td>4800 7 EVEN 2</td>
<td>23</td>
<td>9600 7 EVEN 2</td>
<td>35</td>
<td>19200 7 EVEN 2</td>
<td>47</td>
<td>38400 7 EVEN 2</td>
</tr>
</tbody>
</table>
### RS-232C communication mode

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GCF</td>
<td>@SCF, mode</td>
</tr>
<tr>
<td>Return value</td>
<td>@GCF, mode</td>
<td>@SCF, mode</td>
</tr>
<tr>
<td>Parameter</td>
<td>mode: Operation mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = RECEIVER mode [Default], 1 = TRANSMITTER mode</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GCF</td>
<td>Getting operation mode of RS-232C.</td>
</tr>
<tr>
<td></td>
<td>@GCF,1</td>
<td>RS-232C connector: Transmitter mode</td>
</tr>
<tr>
<td></td>
<td>@SCF,1</td>
<td>Setting RS-232C connector to transmitter mode.</td>
</tr>
<tr>
<td></td>
<td>@SCF,1</td>
<td>Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>Those commands are only for RS-232C connector.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Once IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings of communication based on the MSD settings.</td>
<td></td>
</tr>
</tbody>
</table>

### RS-232C transmission between control devices

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GCD</td>
<td>@SCD, mode</td>
</tr>
<tr>
<td>Return value</td>
<td>@GCD, mode</td>
<td>@SCD, mode</td>
</tr>
<tr>
<td>Parameter</td>
<td>mode: RS-232C transmission</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = OFF [Default],</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RS-232C connector operates in the mode set in “@GCF / @SCF RS-232C communication mode (P.67)”.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 = OUT1B connector,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 = OUT2B connector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>@GCD</td>
<td>Getting RS-232C transmission.</td>
</tr>
<tr>
<td></td>
<td>@GCD,0</td>
<td>RS-232C connector operates in the mode set in “@GCF / @SCF RS-232C communication mode”.</td>
</tr>
<tr>
<td></td>
<td>@SCD,1</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>@SCD,1</td>
<td>Completed normally.</td>
</tr>
<tr>
<td>Remarks</td>
<td>For RS-232C transmission, set the same values for communication settings of the external device’s (such as PCs) transistor and receiver sides.</td>
<td></td>
</tr>
</tbody>
</table>
### 3.3.12 LAN communication

#### @GIP / @SIP  
**IP address**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GIP</td>
<td>@SIP, unit_1, unit_2, unit_3, unit_4</td>
</tr>
<tr>
<td>Return value</td>
<td>@GIP, unit_1, unit_2, unit_3, unit_4</td>
<td>@SIP, unit_1, unit_2, unit_3, unit_4</td>
</tr>
<tr>
<td>Parameter</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>Getting IP address of the MSD. IP address: 192.168.3.2. Setting IP address to 192.168.3.2. Completed normally.</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Once IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings of communication based on the MSD settings.</td>
<td></td>
</tr>
</tbody>
</table>

#### @GSB / @SSB  
**Subnet mask**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSB</td>
<td>@SSB, unit_1, unit_2, unit_3, unit_4</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSB, unit_1, unit_2, unit_3, unit_4</td>
<td>@SSB, unit_1, unit_2, unit_3, unit_4</td>
</tr>
<tr>
<td>Parameter</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>Getting subnet mask of the MSD. 255.255.192.0 (= 18 bit) Setting subnet mask to 255.255.192.0 (=18 bit). Completed normally.</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Once IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings of communication based on the MSD settings.</td>
<td></td>
</tr>
</tbody>
</table>

#### @GGW / @SGW  
**Gateway address**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GGW</td>
<td>@SGW, unit_1, unit_2, unit_3, unit_4</td>
</tr>
<tr>
<td>Return value</td>
<td>@GGW, unit_1, unit_2, unit_3, unit_4</td>
<td>@SGW, unit_1, unit_2, unit_3, unit_4</td>
</tr>
<tr>
<td>Parameter</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Once IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings of communication based on the MSD settings.</td>
<td></td>
</tr>
<tr>
<td>@GLF / @SLF</td>
<td>LAN communication mode</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Getting</td>
<td>Setting</td>
</tr>
<tr>
<td>Format</td>
<td>@GLF, connection 📇</td>
<td>@SLF, connection, mode (, ip_1, ip_2,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ip_3, ip_4, pjlink, tcp, password) 📇</td>
</tr>
<tr>
<td>Return value</td>
<td>@GLF, connection, mode (, ip_1, ip_2,</td>
<td>@SLF, connection, mode (, ip_1, ip_2,</td>
</tr>
<tr>
<td>Parameter</td>
<td></td>
<td>ip_3, ip_4, pjlink, tcp, password) 📇</td>
</tr>
</tbody>
</table>

**Parameter**

- **connection**: Connection number  
  - 1 = connection 1 to 8 = connection 8

- **mode**: Operation mode  
  - 0 = RECEIVER mode [Default], 1 = TRANSMITTER mode

- **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  
  - Replied/Set only if the **mode** is TRANSMITTER.

- **pjlink**: PJLink protocol connection  
  - 0 = PJLink not used [Default], 1 = PJLink used  
  - Replied/Set only if the **mode** is TRANSMITTER.

- **tcp**: Destination port number  
  - 1 to 65535 [Default] 1100  
  - Replied/Set only if the **mode** is “1” (TRANSMITTER) and **pjlink** is “0” (PJLink not used). For PJLink protocol connection, the port number is “4352” (static).

- **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 **mode** is “1” (TRANSMITTER) and **pjlink** is “0” (PJLink not used).  
  - For get commands, replied only if the password is set.  
  - For set commands, you can skip this password setting if you disable password authentication for PJLink protocol connection.

**Example**

- **@GLF,3 📇**  
  - Getting operation mode of connection 3.  
  - Mode = transmitter mode; destination IP address = 192.168.1.2; PJLink = to be used; password = “PROJECTOR1”

- **@SLF,3,1,192,168,1,2,1 📇**  
  - Setting connection 3 as follows:  
  - Mode = transmitter mode; destination IP address = 192.168.1.2; PJLink = to be used; password = disabling password authentication.  
  - Completed normally.

**Remarks**

- Once IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings of communication based on the MSD settings.
### @GLP / @SLP

<table>
<thead>
<tr>
<th>Function</th>
<th>TCP port number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Getting</strong></td>
<td>@GLP</td>
</tr>
<tr>
<td><strong>Setting</strong></td>
<td>@GLP, port_1, port_2, port_3, port_4, port_5, port_6, port_7, port_8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Return value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GLP, port_1, port_2, port_3, port_4, port_5, port_6, port_7, port_8</td>
<td>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 connection_1-8: Connection number 0 = All connections, 1 = Connection 1 to 8 = connection 8</td>
</tr>
</tbody>
</table>

**Example**

@GLP, 1100, 1100, 1100, 23, 23, 23, 8
@GLP, 00, 08, E5, 5F, 00, 00

**Remarks**

Once IP address or RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings of communication based on the MSD settings.

### @GMC

<table>
<thead>
<tr>
<th>MAC address</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Getting</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Return value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>@GMC, unit_1, unit_2, unit_3, unit_4, unit_5, unit_6</td>
<td>unit_1: Upper bit of the MAC address to unit_6: lower bit of the MAC address 00 to FF = 8 bit (in hexadecimal)</td>
</tr>
</tbody>
</table>

**Example**

@GMC, 00, 08, E5, 5F, 00, 00

**Remarks**

The MAC address is replied.
3.3.13 Control commands

<table>
<thead>
<tr>
<th>@EXC</th>
<th>Executing control commands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Set</td>
</tr>
<tr>
<td>Format</td>
<td>@EXC, command_1 (, command_2・・・)</td>
</tr>
<tr>
<td>Return value</td>
<td>@EXC, command_1 (, command_2・・・)</td>
</tr>
<tr>
<td>Parameter</td>
<td>command_1-5: Control command 1 = COMMAND 1 to 32 = COMMAND 32</td>
</tr>
<tr>
<td>Example</td>
<td>@EXC,1,2,3 EXEC</td>
</tr>
<tr>
<td></td>
<td>@EXC,6 EXEC</td>
</tr>
<tr>
<td>Remarks</td>
<td>Because the result is replied after control command execution, it sometimes may take a long time for the reply.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>@GEC / @SEC</th>
<th>Getting control command (Communication command control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting Setting</td>
</tr>
<tr>
<td>Format</td>
<td>@GEC, no</td>
</tr>
<tr>
<td>Return value</td>
<td>@GEC, no, delay, port, memo, length, command, timeout, retry, interval, retry over, display (, recv_1, recv_2・・・)</td>
</tr>
<tr>
<td>Parameter</td>
<td>no: Control command number 1 to 32 delay: Delay time 0 = 0 to 999999 = 999.999 seconds port: Output port 1 to 4095</td>
</tr>
<tr>
<td>bit</td>
<td>7</td>
</tr>
<tr>
<td>port</td>
<td>LAN 5</td>
</tr>
<tr>
<td>bit</td>
<td>15</td>
</tr>
<tr>
<td>port</td>
<td>―</td>
</tr>
</tbody>
</table>

“1” is for the bit of the output port to send a command (Since bit 12-15 are not used, they are always “0”). For example, if you want to send a command to RS-232C, specify “1”(0000000000000001 in binary). If sending a command to LAN 1, specify “8”(000000000001000 in binary).
### Getting control command (Communication command control)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>memo:</strong></td>
<td>Memo&lt;br&gt;Up to 14 characters of 20 to 7D except 2C (,).</td>
</tr>
<tr>
<td><strong>length:</strong></td>
<td>Data size of send command (the number of bytes)&lt;br&gt;0 to 30</td>
</tr>
<tr>
<td><strong>command:</strong></td>
<td>Send command data&lt;br&gt;Specify <em>length</em> × 2 digits with 0 to 9, A to F, a to f: (4 bit per digit in hexadecimal).</td>
</tr>
<tr>
<td><strong>timeout:</strong></td>
<td>Time-out time&lt;br&gt;0 = 0 second to 99999 = 99.999 seconds</td>
</tr>
<tr>
<td><strong>retry:</strong></td>
<td>The number of retries&lt;br&gt;0 to 99</td>
</tr>
<tr>
<td><strong>interval:</strong></td>
<td>The number of retries&lt;br&gt;0 = 0 second to 99999 = 99.999 seconds</td>
</tr>
<tr>
<td><strong>retryover:</strong></td>
<td>Processing at retry timeout&lt;br&gt;0 = Stop processing, 1 = Continue processing</td>
</tr>
<tr>
<td><strong>display:</strong></td>
<td>Displaying received data&lt;br&gt;0 = communication command control</td>
</tr>
<tr>
<td><strong>recv_1-32:</strong></td>
<td>Checking replied command check&lt;br&gt;1 to 32</td>
</tr>
</tbody>
</table>

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 / @SRCReply command (P.77)”.

### Example

```plaintext
@GEC,1
@GEC,1,10,1,POWER,7,5057204F4E0D0A,1000,2,500,0,0,1,2
```

Getting settings registered in control command 1.<br>Delay: 10 ms.<br>Output port: RS-232C<br>Memo: POWER<br>Data size: 7 bytes<br>Command data: PW ON CR LF (ASCII codes)<br>Timeout: 1000 ms.<br>Retry: 2 times<br>Retry interval: 500 ms.<br>Retry over: Stop<br>Received data: Not displayed<br>Replied command: Check 1 and 2
### Getting control command (Communication command control)

<table>
<thead>
<tr>
<th>@GEC / @SEC</th>
<th>Example</th>
<th>Setting control command 2 as follows:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@SEC,2,0,2048,IN1</td>
<td>• Delay: 0 ms.</td>
</tr>
<tr>
<td></td>
<td>SELECT,10, 405353572C312C310D0A,0,0,0, 1,0</td>
<td>• Output port: LOOP BACK</td>
</tr>
<tr>
<td></td>
<td>@SEC,2,0,2048,IN1</td>
<td>• Memo: IN1 SELECT</td>
</tr>
<tr>
<td></td>
<td>SELECT,10, 405353572C312C310D0A,0,0,0, 1,0</td>
<td>• Data size: 10 bytes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Command data: @SSW,1,1 CR LF (ASCII codes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Timeout: 0 ms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Retry: 0 time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Interval: 0 ms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Retry over: Execute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Received data: Not displayed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reply command: Not checked</td>
</tr>
</tbody>
</table>

**Remarks**
- 

### Control command (Displaying received data)

<table>
<thead>
<tr>
<th>@GEC / @SEC</th>
<th>Function</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Getting</td>
<td>Setting</td>
</tr>
<tr>
<td></td>
<td>@GEC, no</td>
<td>@SEC, no, delay, port, memo, length, command, timeout, retry, interval, retryover, display, delimiter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>@GEC / @SEC</th>
<th>Return value</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@GEC, no, delay, port, memo, length, command, timeout, retry, interval, retryover, display, delimiter</td>
<td>No: Control command number 1 to 32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>delay: Delay time 0 = 0 second to 999999 = 999.999 seconds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>port: Output port 1 to 4095</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>bit</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>port</td>
<td>LAN 5</td>
<td>LAN 4</td>
</tr>
<tr>
<td>bit</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>port</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

“1” is for the bit of the output port to send a command (Since bit 12-15 are not used, they are always “0”). For example, if you want to send a command to RS-232C, specify “1”(0000000000000001 in binary). If sending a command to LAN 1, specify “8” (0000000000010000 in binary).
**Control command (Displaying received data)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>@GEC / @SEC</strong></td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td></td>
</tr>
<tr>
<td>memo:</td>
<td>Up to 14 characters of 20 to 7D except 2C (,) from ASCII codes.</td>
</tr>
<tr>
<td>Length:</td>
<td>Send command data size (the number of bites)</td>
</tr>
<tr>
<td>0 to 30</td>
<td></td>
</tr>
<tr>
<td>command:</td>
<td>Send command data</td>
</tr>
<tr>
<td>Specify length × 2 digits with 0 to 9, A to F, a to f = 4 bit per digit (in hexadecimal)</td>
<td></td>
</tr>
<tr>
<td>timeout:</td>
<td></td>
</tr>
<tr>
<td>0 = 0 second to 99999 = 99.999 seconds</td>
<td></td>
</tr>
<tr>
<td>retry:</td>
<td>The number of retires</td>
</tr>
<tr>
<td>0 to 99</td>
<td></td>
</tr>
<tr>
<td>interval:</td>
<td>Retry interval</td>
</tr>
<tr>
<td>0 = 0 second to 99999 = 99.999 seconds</td>
<td></td>
</tr>
<tr>
<td>retryover:</td>
<td>Processing at retry timeover</td>
</tr>
<tr>
<td>0 = Stop processing, 1 = Continue processing</td>
<td></td>
</tr>
<tr>
<td>display:</td>
<td>Displaying received data</td>
</tr>
<tr>
<td>1 = in ASCII codes, 2 = in hexadecimals</td>
<td></td>
</tr>
<tr>
<td>delimiter:</td>
<td></td>
</tr>
<tr>
<td>2 digits of 0 to 9, A to F, a to f = 4 bit per digit (in hexadecimal) for monitoring</td>
<td></td>
</tr>
<tr>
<td>delimiter</td>
<td></td>
</tr>
<tr>
<td>100 = Not monitor</td>
<td></td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td></td>
</tr>
<tr>
<td>@GEC,3</td>
<td>Getting settings of control command 3.</td>
</tr>
<tr>
<td>@GEC,3,0,8,POWER</td>
<td>• Delay time: 0 ms.</td>
</tr>
<tr>
<td>STATUS,9,</td>
<td>• Output port: LAN1</td>
</tr>
<tr>
<td>47455420504F570D0A,</td>
<td>• Memo: POWER STATUS</td>
</tr>
<tr>
<td>2000,2,200,0,1,0D</td>
<td>• Data size: 9 bytes</td>
</tr>
<tr>
<td></td>
<td>• Command data: GET POW CR LF (ASCII codes)</td>
</tr>
<tr>
<td></td>
<td>• Timeout: 2000 ms.</td>
</tr>
<tr>
<td></td>
<td>• Retry: 2 times</td>
</tr>
<tr>
<td></td>
<td>• Retry interval: 200 ms.</td>
</tr>
<tr>
<td></td>
<td>• Retryover: Stop</td>
</tr>
<tr>
<td></td>
<td>• Received data: Displayed in ASCII codes</td>
</tr>
<tr>
<td></td>
<td>• Delimiter: 0D in hex (CR = ASCII codes)</td>
</tr>
<tr>
<td>@GEC / @SEC</td>
<td>Control command (Displaying received data)</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Example</td>
<td>Setting control command 3 as follows:</td>
</tr>
<tr>
<td></td>
<td>◦ Delay time: 0 ms.</td>
</tr>
<tr>
<td></td>
<td>◦ Output port: LAN1</td>
</tr>
<tr>
<td></td>
<td>◦ Memo: POWER STATUS</td>
</tr>
<tr>
<td></td>
<td>◦ Data size: 9 bytes</td>
</tr>
<tr>
<td></td>
<td>◦ Command data: GET POW CR LF (ASCII codes)</td>
</tr>
<tr>
<td></td>
<td>◦ Timeout: 2000 ms.</td>
</tr>
<tr>
<td></td>
<td>◦ Retry: 2 times</td>
</tr>
<tr>
<td></td>
<td>◦ Retry interval: 200 ms.</td>
</tr>
<tr>
<td></td>
<td>◦ Retryover: Stop</td>
</tr>
<tr>
<td></td>
<td>◦ Received data: Displayed in ASCII codes</td>
</tr>
<tr>
<td></td>
<td>◦ Delimiter: 0D in hex (CR =ASCII codes)</td>
</tr>
</tbody>
</table>

Remarks

---
<table>
<thead>
<tr>
<th><strong>@GEC / @SEC</strong></th>
<th><strong>Control command (CEC control)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td><strong>Getting</strong></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GEC, no delay, port, memo, error, ch_1, cec_1 (, ch_2, cec_2 ⋯)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GEC, no delay, port, memo, error, ch_1, cec_1 (, ch_2, cec_2 ⋯)</td>
</tr>
</tbody>
</table>

| **Parameter**    | **no**: Control command number |
|                 | 1 to 32                        |
| **delay**: Delay time | 0 = 0 second to 999999 = 999.999 seconds |
| **port**: CEC control | For 4096 = CEC control, the value is 4096. |
| **memo**:         | Up to 14 characters of 20 to 7D except 2C (,) from ASCII codes. |
| **error**:        | Processing at no response from the device |
|                  | 0 = Stop processing, 1 = Continue processing |
| **ch_1-4**: Output connector | 1 = OUT1A, 2 = OUT1B, 3 = OUT2A, 4 = OUT2B |
| **cec_1-4**: Control command | 0 = Not controlled, 1 = POWER OFF, 2 = POWER ON |

For get commands, the control output connector and control command are separated from each other by a comma. For set commands, the control output connector and control command can be specified. Up to 32 commands can be specified by separating them by a comma. By sending target parameters, the other parameters will be set to Not controlled automatically.

**Example**

**@GEC,7**

@GEC,7,0,4096,DISPLAY1 ON, 0,1,2

Getting settings of control command 7.
- Delay time: 0ms
- Memo: DISPLAY1 ON
- Error: Stop
- OUT1 sink device: Turning on
- Other outputs: not controlled.

@SEC,7,0,4096,DISPLAY1 ON, 0,1,2

@SEC,7,0,4096,DISPLAY1 ON, 0,1,2

Setting control command 7 as follows:
- Delay time: 0 ms.
- Memo: DISPLAY1 ON
- Error: Stop
- OUT1 sink device: Turning on
- Other outputs: not controlled.

**Remarks**
-
<table>
<thead>
<tr>
<th><strong>@GRC / @SRC</strong></th>
<th><strong>Reply command</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td><strong>Getting</strong></td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GRC, no</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GRC, no, process, length, command, mask, memo</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>no: Control command number 1 to 32</td>
</tr>
<tr>
<td></td>
<td>process: 0 = Stop, 1 = Continue, 2 = Resending commands</td>
</tr>
<tr>
<td></td>
<td>length: Reply command data size (bytes) 0 to 30</td>
</tr>
<tr>
<td></td>
<td>command: Reply command data length × 2 digits with 0 to 9, A to F, a to f = 4 bit per digit (in hexadecimal)</td>
</tr>
<tr>
<td></td>
<td>mask: Mask data length × 2 digits with 0 to 9, A to F, a to f = 4 bit per digit (in hexadecimal)</td>
</tr>
<tr>
<td></td>
<td>memo: Up to 14 characters of 20 to 7D except 2C (,) from ASCII codes</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GRC,2</td>
</tr>
<tr>
<td></td>
<td>@GRC,2,0,1,40,40,NG</td>
</tr>
<tr>
<td></td>
<td>@SRC,1,1,9, 52454356204F4B0D0A, FFFFFFFFFFFFFFFFF,OK</td>
</tr>
<tr>
<td></td>
<td>@SRC,1,1,9, 52454356204F4B0D0A, FFFFFFFFFFFFFFFFF,OK</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>—</td>
</tr>
</tbody>
</table>
### Control command link

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GCC, event</td>
<td>@SCC, event, c_1 (, c_2, c_3···)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GCC, event, c_1 (, c_2, c_3···)</td>
<td>@SCC, event, c_1 (, c_2, c_3···)</td>
</tr>
</tbody>
</table>
| Parameter | event: Control command execution condition  
For settable values, see the table below.  
c_1-10: Send command  
0 = Not link, 1 to 32 = Control command 1 to 32  
Control commands registered in one of the following commands will be linked.  
**@GEC / @SEC Getting control command (Communication command control) (P.71),**  
**@GEC / @SEC Control command (Displaying received data) (P.73),**  
**@GEC / @SEC Control command (CEC control) (P.76)**  
| Example | @GCC,1 | @GCC,1,5,2,1 | @GCC,1,5,2,1 |
| Remarks | — |

### Parameter of control command execution condition

<table>
<thead>
<tr>
<th>Event</th>
<th>Execution condition</th>
<th>Event</th>
<th>Execution condition</th>
<th>Event</th>
<th>Execution condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>POWER ON</td>
<td>6</td>
<td>VIDEO:OUT1-IN1</td>
<td>22</td>
<td>VIDEO:OUT2-IN1</td>
</tr>
<tr>
<td>2</td>
<td>DISPLAY1 POWER ON</td>
<td>7</td>
<td>VIDEO:OUT1-IN2</td>
<td>23</td>
<td>VIDEO:OUT2-IN2</td>
</tr>
<tr>
<td>3</td>
<td>DISPLAY1 POWER OFF</td>
<td>8</td>
<td>VIDEO:OUT1-IN3</td>
<td>24</td>
<td>VIDEO:OUT2-IN3</td>
</tr>
<tr>
<td>4</td>
<td>DISPLAY2 POWER ON</td>
<td>9</td>
<td>VIDEO:OUT1-IN4</td>
<td>25</td>
<td>VIDEO:OUT2-IN4</td>
</tr>
<tr>
<td>5</td>
<td>DISPLAY2 POWER OFF</td>
<td>10</td>
<td>VIDEO:OUT1-IN5</td>
<td>26</td>
<td>VIDEO:OUT2-IN5</td>
</tr>
<tr>
<td>11</td>
<td>VIDEO:OUT1-IN6</td>
<td>27</td>
<td>VIDEO:OUT2-IN6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>VIDEO:OUT1-IN7</td>
<td>28</td>
<td>VIDEO:OUT2-IN7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>VIDEO:OUT1-OFF</td>
<td>29</td>
<td>VIDEO:OUT2-OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>AUDIO:OUT1-IN1</td>
<td>30</td>
<td>AUDIO:OUT2-IN1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>AUDIO:OUT1-IN2</td>
<td>31</td>
<td>AUDIO:OUT2-IN2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>AUDIO:OUT1-IN3</td>
<td>32</td>
<td>AUDIO:OUT2-IN3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>AUDIO:OUT1-IN4</td>
<td>33</td>
<td>AUDIO:OUT2-IN4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>AUDIO:OUT1-IN5</td>
<td>34</td>
<td>AUDIO:OUT2-IN5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>AUDIO:OUT1-IN6</td>
<td>35</td>
<td>AUDIO:OUT2-IN6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>AUDIO:OUT1-IN7</td>
<td>36</td>
<td>AUDIO:OUT2-IN7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>AUDIO:OUT1-OFF</td>
<td>37</td>
<td>AUDIO:OUT2-OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### @GIT / @SIT  Ineffective time during control command execution

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GIT</td>
<td>@SIT, time</td>
</tr>
<tr>
<td>Return value</td>
<td>@GIT, time</td>
<td>@SIT, time</td>
</tr>
<tr>
<td>Parameter</td>
<td>time: Invalid time</td>
<td>0 = 0 second to 999999 = 999.999 seconds [Default] 0</td>
</tr>
<tr>
<td>Example</td>
<td>@GIT,2000</td>
<td>Setting ineffective time during control command execution to 2000 ms. (2 seconds). Completed normally.</td>
</tr>
<tr>
<td></td>
<td>@SIT,2000</td>
<td>Disabling operation during control command execution or 2000 ms. (2 seconds) after control command starts.</td>
</tr>
</tbody>
</table>

### Remarks

- @DEC Initializing registered command and association

<table>
<thead>
<tr>
<th>Function</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@DEC, no_1 (, no_2, no_3… )</td>
</tr>
<tr>
<td>Return value</td>
<td>@DEC, no_1 (, no_2, no_3… )</td>
</tr>
<tr>
<td>Parameter</td>
<td>no_1-32: Commands or links to be initialized</td>
</tr>
<tr>
<td></td>
<td>1 to 32: control command 1 to 32</td>
</tr>
<tr>
<td></td>
<td>101 to 132: reply command 1 to 32 (&quot;1xx&quot;: xx is the reply command number)</td>
</tr>
<tr>
<td></td>
<td>201 to 237: control command link 1 to 37 (&quot;2xx&quot;: xx is the control command execution condition)</td>
</tr>
</tbody>
</table>

#### Reference:
- @GRC / @SRC Reply command (P.77)
- @GCC / @SCC Control command (P.78)

| Example | @DEC,201 | Initializing POWER ON link. |
|         | @DEC,201 | Completed normally. |

### Remarks

-
### @GTF / @STF

**Getting flashing time of sink device power switch**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GTF, <code>switch_1</code> (, <code>switch_2</code>)</td>
<td>@STF, <code>switch_1</code>, <code>flash_1</code> (, <code>switch_2</code>, <code>flash_2</code>)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GTF, <code>switch_1</code>, <code>flash_1</code> (, <code>switch_2</code>, <code>flash_2</code>)</td>
<td>@STF, <code>switch_1</code>, <code>flash_1</code> (, <code>switch_2</code>, <code>flash_2</code>)</td>
</tr>
</tbody>
</table>
| Parameter | `switch_1`: Switch type  
0 = All switches, 1 = DISPLAY1 POWER, 2 = DISPLAY2 POWER  
`flash_1`: Flashing time  
-1 = Flashes during control command execution [Default],  
0 = Not flash,  
1 to 1000 = Flashes for 1 second to 1000 seconds |

| Example | Getting flashing time of DISPLAY 1 POWER.  
The switch will be flashed during control command execution. | Setting DISPLAY 1 POWER to flash for five seconds after control command starts.  
Completed normally. |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>@GTF, 1</td>
<td>@GTF, 1,-1</td>
<td>@STF, 1,5</td>
</tr>
</tbody>
</table>

| Remarks | — |

---

@GTF

Getting flashing time of sink device power switch

- Format: @GTF, `switch_1` (, `switch_2`)
- Return value: @GTF, `switch_1`, `flash_1` (, `switch_2`, `flash_2`)
- Parameter:  
  - `switch_1`: Switch type  
    0 = All switches, 1 = DISPLAY1 POWER, 2 = DISPLAY2 POWER  
  - `flash_1`: Flashing time  
    -1 = Flashes during control command execution [Default],  
    0 = Not flash,  
    1 to 1000 = Flashes for 1 second to 1000 seconds

Example:

- @GTF, 1  
- @GTF, 1,-1  
- @STF, 1,5  
- @STF, 1,5

Remarks: —
### 3.3.14 Preset memory

<table>
<thead>
<tr>
<th><strong>@RCM</strong></th>
<th><strong>Loading cross point memory</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Setting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@RCM, memory</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@RCM, memory</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>memory: cross point memory</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@RCM,1</td>
</tr>
<tr>
<td></td>
<td>@RCM,1</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>@SCM / @SEM</strong></th>
<th><strong>Saving channels to cross point memory</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Overwriting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@SCM, memory (, name)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@SCM, memory (, name)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>memory: Cross point memory</td>
</tr>
<tr>
<td></td>
<td>name: Memory name</td>
</tr>
<tr>
<td></td>
<td>Up to 10 characters using 20 to 7D from ASCII codes.</td>
</tr>
<tr>
<td></td>
<td>If you do not specify memory name, only cross point settings are saved without changing the current memory name.</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@SCM,2</td>
</tr>
<tr>
<td></td>
<td>@SCM,2</td>
</tr>
<tr>
<td></td>
<td>@SEM,2,PATTERN2</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>—</td>
</tr>
</tbody>
</table>
### Editing cross point memory

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GCM, memory</td>
<td>@ECM, memory, v_1, a_1 (, v_2, a_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GCM, memory, v_1, a_1 (, v_2, a_2)</td>
<td>@ECM, memory, v_1, a_1 (, v_2, a_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>memory: Cross point memory 1 to 7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>v_1-2: Video channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a_1-2: Audio channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-1 = Not controlled [Default], 0 = OFF, 1 = IN1 to 7 = IN7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name: Memory name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Up to 10 characters using 20 to 7D from ASCII codes. [Default] 20 (space)</td>
<td></td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GCM,2</td>
<td>Getting video and audio channel of cross point memory 2. With the name of “PATTERN2”, OUT1: IN3; OUT2: Not controlled.</td>
</tr>
<tr>
<td></td>
<td>@GCM,2,3,3,1,1,PATTERN2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@ECM,2,1,1,-1,-1</td>
<td>When cross point memory 2 is loaded, OUT1 is set to IN1 and OUT2 is Not controlled.</td>
</tr>
<tr>
<td></td>
<td>@ECM,2,1,1,-1,-1</td>
<td></td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>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 cross point settings, “-1” (Not controlled) is replied to unsaved audio and video.</td>
<td></td>
</tr>
</tbody>
</table>

### Loading cross point memory (setting video channel)

<table>
<thead>
<tr>
<th>Function</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@RCV, memory</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@RCV, memory</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>memory: Cross point memory 1 to 7</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@RCV,1</td>
</tr>
<tr>
<td></td>
<td>@RCV,1</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>—</td>
</tr>
<tr>
<td><strong>@SCV / @SEV</strong></td>
<td>Saving cross point memory (Setting video channel)</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Overwritten</td>
</tr>
<tr>
<td></td>
<td>Saving settings other than channels set to Not controlled in “@GCM / @ECM Editing cross point memory”</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@SCV, memory (, name)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@SCV, memory (, name)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>memory: Cross point memory 1 to 7</td>
</tr>
<tr>
<td></td>
<td>name: Memory name</td>
</tr>
<tr>
<td></td>
<td>Up to 10 characters using 20 to 7D from ASCII codes.</td>
</tr>
<tr>
<td></td>
<td>If you do not specify memory name, only settings of cross point are saved without changing the memory name.</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@SCV,2</td>
</tr>
<tr>
<td></td>
<td>@SCV,2</td>
</tr>
<tr>
<td></td>
<td>@SCV,2</td>
</tr>
<tr>
<td></td>
<td>@SEV,2, PATTERN2</td>
</tr>
<tr>
<td></td>
<td>@SEV,2, PATTERN2</td>
</tr>
<tr>
<td></td>
<td>Saving the current video channel in cross point memory 2 without changing memory name.</td>
</tr>
<tr>
<td></td>
<td>Saving the current video channel in cross point memory 2 with the name of “PATTERN2”. Output settings that are set to Not Controlled are not saved.</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>–</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>@GCV / @ECV</strong></th>
<th>Editing cross point memory (Setting video channel)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td><strong>Setting</strong></td>
<td>Setting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GCV, memory</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GCV, memory, v_1 (, v_2), name</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>memory: Cross point memory 1 to 7</td>
</tr>
<tr>
<td></td>
<td>v_1-2: Video channel</td>
</tr>
<tr>
<td></td>
<td>-1 = Not controlled  [Default], 0 = OFF, 1 = IN1 to 7 = IN7</td>
</tr>
<tr>
<td></td>
<td>name: Memory name</td>
</tr>
<tr>
<td></td>
<td>Up to 10 characters using 20 to 7D from ASCII codes. [Default] 20 (space)</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GCV,2, PATTERN2</td>
</tr>
<tr>
<td></td>
<td>@GCV,2,3,1, PATTERN2</td>
</tr>
<tr>
<td></td>
<td>@GCV,2,3,1, PATTERN2</td>
</tr>
<tr>
<td></td>
<td>@ECV,2, 1, -1</td>
</tr>
<tr>
<td></td>
<td>@ECV,2, 1, -1</td>
</tr>
<tr>
<td></td>
<td>Getting video channel of cross point memory 2. OUT1: IN3; OUT2: IN1 with the name of “PATTERN2”.</td>
</tr>
<tr>
<td></td>
<td>When cross point memory 2 is loaded, OUT1 is set to IN1 and OUT2 is Not controlled.</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>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 cross point settings, “-1” (Not controlled) is replied to unsaved audio and video.</td>
</tr>
</tbody>
</table>
### @RCA

<table>
<thead>
<tr>
<th>Function</th>
<th>Loading audio channel setting from cross point memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@RCA, memory</td>
</tr>
<tr>
<td>Return value</td>
<td>@RCA, memory</td>
</tr>
<tr>
<td>Parameter</td>
<td>memory: Cross point memory 1 to 7</td>
</tr>
</tbody>
</table>

#### Example
@RCA,1
@RCA,1

- Loading audio channel of cross point memory 1.
- Completed normally.

#### Remarks

### @SCA / @SEA

<table>
<thead>
<tr>
<th>Function</th>
<th>Saving cross point memory (Setting audio channel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@SCA, memory (name)</td>
</tr>
<tr>
<td>Return value</td>
<td>@SEA, memory (name)</td>
</tr>
<tr>
<td>Parameter</td>
<td>memory: Cross point memory 1 to 7</td>
</tr>
<tr>
<td>name: Memory name</td>
<td></td>
</tr>
<tr>
<td>Up to 10 characters using 20 to 7D from ASCII codes.</td>
<td></td>
</tr>
<tr>
<td>If you do not specify memory name, only cross point settings are saved without changing the memory name.</td>
<td></td>
</tr>
</tbody>
</table>

#### Example
@SCA,2
@SCA,2
@SEA,2, PATTERN2
@SEA,2, PATTERN2

- Saving the current audio channel in cross point memory 2 without changing memory name.
- Saving the current video channel in cross point memory 2 with the name of “PATTERN2”. Output settings that are set to Not Controlled are not saved.

#### Remarks

---

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### Editing cross point memory (Setting audio channel)

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GCA, memory</td>
<td>@ECA, memory, a_1, a_2</td>
</tr>
<tr>
<td>Return value</td>
<td>@GCA, memory, a_1, a_2, name</td>
<td>@ECA, memory, a_1, a_2</td>
</tr>
</tbody>
</table>
| Parameter | memory: Cross point memory 1 to 7  
  a_1-2: Audio channel  
  -1 = Not controlled [Default], 0 = OFF, 1 = IN1 to 7 = IN7  
  name: Memory name  
  Up to 10 characters using 20 to 7D from ASCII codes. [Default] 20 (space) |

| Example | @GCA,2  
  @GCA,2,3,1,PATTERN2  
  @ECA,2,1,2  
  @ECA,2,1,2 | Getting audio channel of cross point memory 2. OUT1: IN3; OUT2: IN1 with the name of "PATTERN2"  
  When cross point memory 2 is loaded, OUT1 is set to IN1 and OUT2 is set to 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 cross point settings, "-1" (Not controlled) is replied to unsaved audio and video. |

### Saving all settings

<table>
<thead>
<tr>
<th>Function</th>
<th>Setting</th>
<th>Saving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@RPM, preset</td>
<td>@SPM, preset, name</td>
</tr>
<tr>
<td>Return value</td>
<td>@RPM, preset</td>
<td>@SPM, preset, name</td>
</tr>
</tbody>
</table>
| 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 cross point settings are saved without changing the memory name. |

| Example | @RPM,3  
  @RPM,3  
  @SPM,2  
  @SPM,2  
  @SPM,2,MEMORY2  
  @SPM,2,MEMORY2 | Loading preset memory 3. Completed normally.  
  Saving the current settings in preset memory 2 without changing the memory name.  
  Saving the current settings in preset memory 2 with the name of "MEMORY2". |

<p>| Remarks | Once preset memory is loaded, all settings of video and audio I/O except for some environmental settings will be updated. |</p>
<table>
<thead>
<tr>
<th>@GMU / @SMU</th>
<th>Startup settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GMU</td>
</tr>
<tr>
<td>Return value</td>
<td>@GMU, state</td>
</tr>
<tr>
<td>Parameter</td>
<td>state: Startup settings</td>
</tr>
</tbody>
</table>
|             | 1 to 7 = Cross point memory 1 to 7,  
|             | 8 = Channel OFF,  
|             | 9 = Last channel [Default],  
|             | 10 to 17 = Preset memory 1 to 8  |
| Example     | @GMU             | @SMU,3          |
|             | @GMU,3           | Getting settings for startup.  
|             |                   | Channel settings of cross point memory 3 will be applied at startup.  |
|             | @SMU,3           | Setting channel settings at startup to cross point memory 3.  
|             | @SMU,3           | Completed normally.  |
| Remarks     | —                | —               |

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### 3.3.15 Bitmap

<table>
<thead>
<tr>
<th>@GBM / @SBM</th>
<th>Outputting bitmap image</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GBM</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GBM, out_1 (, out_2)</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>out_1-2: Outputting bitmap image</td>
</tr>
<tr>
<td></td>
<td>0 = OFF [Default], 1 = bitmap 1 ON, 2 = bitmap 2 ON, 3 = bitmap 3 ON, 4 = bitmap 4 ON</td>
</tr>
<tr>
<td></td>
<td>Only registered numbers can be specified.</td>
</tr>
<tr>
<td></td>
<td>ch_1-2: output channel</td>
</tr>
<tr>
<td></td>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GBM</td>
</tr>
<tr>
<td></td>
<td>@GBM,1,0</td>
</tr>
<tr>
<td></td>
<td>@SBM,1,1</td>
</tr>
</tbody>
</table>

**Remarks**

—
### @GBB / @SBB Background color

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GBB, ch (,)</td>
<td>@SBB, ch, bitmap_1, red_1, green_1, blue_1 (, ch, bitmap_2, red_2, green_2, blue_2 (,) )</td>
</tr>
<tr>
<td>Return value</td>
<td>@GBB, ch, red1, green1, blue1 (, red_2, green_2, blue_2 (,) )</td>
<td>@SBB, ch, 1, bitmap_1, red_1, green_1, blue_1 (, ch, bitmap_2, red_2, green_2, blue_2 (,) )</td>
</tr>
</tbody>
</table>

#### 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)

For get commands, registered bitmap settings will be replied 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.

#### Example

- **@GBB,2**
- **@GBB,2,255,0,0**
  - Getting background color of OUT2.
  - R: 255; G and B: 0 (Red)
- **@SBB,1,1,255,255,255**
- **@SBB,1,1,255,255,255**
  - Setting background color for when Bitmap 1 is output to OUT1 to 255 for RGB (white).
  - Completed normally.

#### Remarks

- --
### Aspect ratio

<table>
<thead>
<tr>
<th>@GBT / @SBT</th>
<th>Function</th>
<th>Getting / Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GBT, ch</td>
<td>@SBT, ch_1, bitmap_1, aspect_1 (, ch_2, bitmap_2, aspect_2 ⋯)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GBT, ch, aspect_1 (, aspect_2 ⋯)</td>
<td>@SBT, ch_1, bitmap_1, aspect_1 (, ch_2, bitmap_2, aspect_2 ⋯)</td>
</tr>
</tbody>
</table>

#### Parameter

- **ch**: Output channel  
  1 = OUT1, 2 = OUT2
- **ch_1-8**: Output channel  
  0 = All outputs, 1 = OUT1, 2 = OUT2
- **aspect_1-8**: Aspect ratio  
  0 = AUTO [Default], 1 = FULL, 2 = THROUGH  
  For get commands, registered bitmap settings will be replied 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.

#### Example

- @GBT,1  Getting aspect ratio of OUT1.  
  Displayed on FULL screen.
- @SBT,1,1,1  Setting aspect ratio of bitmap 1 that is output to OUT1 to FULL.  
  Completed normally.
- @SBT,1,1,1  

#### Remarks

- —
### @GZP / @SZP

#### Display position

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GZP, ch</td>
<td>@SZP, ch_1, bitmap_1, position_1 (, ch_2, bitmap_2, position_2, ...)</td>
</tr>
<tr>
<td>Return value</td>
<td>@GZP, ch, position_1 (, position_2, ...)</td>
<td>@SZP, ch_1, bitmap_1, position_1 (, ch_2, bitmap_2, position_2, ...)</td>
</tr>
</tbody>
</table>

**Parameter**

- **ch**: Output channel
  - 1 = OUT1, 2 = OUT2

- **ch_1-8**: Output channel
  - 0 = All outputs, 1 = OUT1, 2 = OUT2

- **position_1-8**: Display position
  - 0 = CENTER [Default], 1 = TOP-LEFT, 2 = BOTTOM-LEFT, 3 = TOP-RIGHT, 4 = BOTTOM-RIGHT

For get commands, registered bitmap settings will be replied 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.

#### Example

- **@GZP,1**
  - Getting display position of OUT1.
  - Displaying at upper left.

- **@GZP,1,1**

- **@SZP,1,1,1**
  - Setting bitmap 1 to be displayed at upper left when it is output to OUT1.
  - Completed normally.

- **@SZP,1,1**

#### Remarks

- —
### @GBA / @SBA  
**Bitmap assignment**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GBA, ch</td>
<td>@SBA, ch, input_1, bitmap_1 (, ch_2, input_2, bitmap_2 ⋯)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GBA, ch, bitmap_1, bitmap_2, bitmap_3, bitmap_4, bitmap_5, bitmap_6, bitmap_7</td>
<td>@SBA, ch, input_1, bitmap_1 (, ch_2, input_2, bitmap_2 ⋯)</td>
</tr>
</tbody>
</table>
| **Parameter** | ch: Output channel  
1 = OUT1, 2 = OUT2  
ch_1-14: Output channel  
0 = All outputs, 1 = OUT1, 2 = OUT2  
bitmap_1-14: Assigning bitmap  
0 = NONE [Default], 1 = Bitmap 1, 2 = Bitmap 2, 3 = Bitmap 3, 4 = Bitmap 4  
Only registered numbers can be specified.  
input_1-14: Input channel  
0 = All inputs, 1 = IN1 to 7 = IN7 | |
| **Example** | @GBA,1  
@GBA,1,0,0,0,0,0,1 | Getting OUT1 bitmap assignment.  
OUT1: bitmap 1 to IN7; other input channels: no bitmap is assigned. |
|  | @SBA,1,7,1 | Setting OUT2: assigning bitmap 1 to IN7 (if IN7 is selected, bitmap 1 will be output.)  
Completed normally. |
| **Remarks** | — | |

### @GPB / @SPB  
**Outputting bitmap at startup**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>@GPB</td>
<td>@SPB, ch, out_1 (, ch_2, out_2)</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GPB, out_1 (, out_2)</td>
<td>@SPB, ch, out_1 (, ch_2, out_2)</td>
</tr>
</tbody>
</table>
| **Parameter** | out_1-2: Outputting bitmap image  
0 = OFF [Default], 1 = Bitmap1 ON, 2 = Bitmap2 ON, 3 = Bitmap3 ON, 4 = Bitmap4 ON  
Only registered numbers can be specified.  
ch_1-2: Output channel  
0 = All outputs, 1 = OUT1, 2 = OUT2 | |
| **Example** | @GPB  
@GPB,0,1 | Getting bitmap output at startup.  
Bitmap 1 will be output to OUT2. |
|  | @SPB,1,0  
@SPB,1,0 | OUT1: not output a bitmap at startup.  
Completed normally. |
| **Remarks** | — | |
### @GBD / @SBD

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GBD, num, mode, (, size_1, size_2, ...), block_1 (, block_2, ...), ...</td>
<td>@SBD, num, mode, block_1 (, block_2, ...), ...</td>
</tr>
<tr>
<td>Return value</td>
<td>@GBD, num, block_1 (, block_2, ...), ...</td>
<td>@SBD, num, mode, block_1 (, block_2, ...), ...</td>
</tr>
</tbody>
</table>

#### Parameter

- **num**: The number of divides  
  1 to 4  [Default] 1  

- **block_1-4**: Block size of each memory  
  0 to 128  [Default] 128  
  If the memory is divided correctly, the block size after divide will be replied.

- **mode**: Divide mode  
  0 = AUTO,  1 = RESIZE,  2 = FORCE,  3 = Specify size  
  If you select "3", set size_1-4 below.

- **size_1-4**: Block size of each memory  
  0 to 128  [Default] 128  
  1 block: 65,536 bytes; the total size of all bitmaps: 128 blocks (8,388,608 bytes or smaller)  
  Only if you select the divide mode to "3", specify this value.

#### Example

- **@GBD**  
  @GBD,2,64,64  
  Getting dividing bitmap memory. Bitmap 1 and bitmap 2: 64 blocks (4,194,304 bytes) are allocated for each.

- **@SBD**  
  @SBD,2,1  
  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

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GBV</td>
</tr>
<tr>
<td>Return value</td>
<td>@GBV, num, block_1 (, block_2 ...)</td>
</tr>
</tbody>
</table>
| Parameter | num: The number of divides  
1 to 4  [Default] 1  
block_1-4: Block size of each memory actually used  
0 to 128  [Default] 12 |
| Example  | @GBV  
@GBV,2,32,0  
Getting actual state of bitmap memory.  
Bitmap 1: 32 blocks (2,097,152 bytes) are used;  
bitmap 2: not registered. |
| Remarks  | — |

### @GBN / @SBN - Bitmap number

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GBN</td>
<td>@SBN, bitmap</td>
</tr>
<tr>
<td>Return value</td>
<td>@GBN, bitmap</td>
<td>@SBN, bitmap</td>
</tr>
</tbody>
</table>
| Parameter | bitmap: Bitmap number  
1 = Bitmap 1  [Default],  
2 = Bitmap 2,  
3 = Bitmap 3,  
4 = Bitmap 4  
Only the number of divides or smaller value can be specified.  
Specify the bitmap number first if using a remote control application or the like. |
| Example  | @GBN  
@GBN,2  
Getting bitmap number to be registered.  
Bitmap 2.  
@SBN,2  
Registered an image in bitmap 2. (the bitmap file to be sent next time will be registered in bitmap 2).  
Completed normally. |
| Remarks  | — |
### @GFZ / @SFZ

<table>
<thead>
<tr>
<th>Function</th>
<th>Freeze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Getting</td>
</tr>
<tr>
<td>Format</td>
<td>@GFZ</td>
</tr>
<tr>
<td>Return value</td>
<td>@GFZ, freeze_1 (, freeze_2)</td>
</tr>
<tr>
<td>Parameter</td>
<td>freeze_1-2: Setting freeze</td>
</tr>
<tr>
<td></td>
<td>0 = OFF [Default], 1 = ON</td>
</tr>
<tr>
<td></td>
<td>ch_1-2: Output channel</td>
</tr>
<tr>
<td></td>
<td>0 = All outputs, 1 = OUT1, 2 = OUT2</td>
</tr>
<tr>
<td>Example</td>
<td>@GFZ</td>
</tr>
<tr>
<td></td>
<td>@GFZ,1,0</td>
</tr>
<tr>
<td></td>
<td>@SFZ,1,1</td>
</tr>
<tr>
<td></td>
<td>@SFZ,1,1</td>
</tr>
<tr>
<td>Remarks</td>
<td>Images freeze temporarily. When input channel is switched or input signals are changed, the freeze is released automatically and input image is output normally.</td>
</tr>
</tbody>
</table>

### @CAP

<table>
<thead>
<tr>
<th>Function</th>
<th>Capturing input image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Setting</td>
</tr>
<tr>
<td>Format</td>
<td>@CAP, ch, bitmap</td>
</tr>
<tr>
<td>Return value</td>
<td>@CAP, ch, bitmap</td>
</tr>
<tr>
<td>Parameter</td>
<td>ch: Output channel</td>
</tr>
<tr>
<td></td>
<td>1 = OUT1, 2 = OUT2</td>
</tr>
<tr>
<td></td>
<td>bitmap: Bitmap number</td>
</tr>
<tr>
<td></td>
<td>1 = Bitmap1, 2 = Bitmap2, 3 = Bitmap3, 4 = Bitmap4</td>
</tr>
<tr>
<td></td>
<td>Only the number of divides or smaller value can be specified.</td>
</tr>
<tr>
<td>Example</td>
<td>@CAP,1,2</td>
</tr>
<tr>
<td></td>
<td>@CAP,1,2</td>
</tr>
<tr>
<td>Remarks</td>
<td>—</td>
</tr>
</tbody>
</table>
### 3.3.16 Other settings

<table>
<thead>
<tr>
<th>@GLS / @SLS</th>
<th><strong>Key lock</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GLS</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GLS, lock</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>lock: Key lock</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GLS</td>
</tr>
<tr>
<td></td>
<td>@GLS,1</td>
</tr>
<tr>
<td></td>
<td>@SLS,1</td>
</tr>
<tr>
<td></td>
<td>@SLS,1</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>@GLM / @SLM</th>
<th><strong>Setting target front panel keys to be locked</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Getting</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>@GLM</td>
</tr>
<tr>
<td><strong>Return value</strong></td>
<td>@GLM, channel, channel_mode, menu, power</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td>channel : Input channel selection key</td>
</tr>
<tr>
<td></td>
<td>channel_mode : Channel switching mode key</td>
</tr>
<tr>
<td></td>
<td>menu : Menu operation key</td>
</tr>
<tr>
<td></td>
<td>power : Sink device power key</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>@GLM</td>
</tr>
<tr>
<td></td>
<td>@GLM,1,0,0,0</td>
</tr>
<tr>
<td></td>
<td>@SLM,1,0,0,0</td>
</tr>
<tr>
<td></td>
<td>@SLM,1,0,0,0</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>—</td>
</tr>
</tbody>
</table>
### @GBZ / @SBZ

**Setting buzzer**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GBZ, @SBZ, bz</td>
<td>@GBZ, @SBZ, bz</td>
</tr>
<tr>
<td>Return value</td>
<td>@GBZ, bz</td>
<td>@GBZ, bz</td>
</tr>
<tr>
<td>Parameter</td>
<td>bz: Buzzer sound</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = OFF, 1 = ON [Default]</td>
<td></td>
</tr>
</tbody>
</table>

**Example**

- @GBZ,1
- @GBZ,1
- @SBZ,1
- @SBZ,1

**Remarks**

- ¬

### @GSS

**Input and output status**

<table>
<thead>
<tr>
<th>Function</th>
<th>Getting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>@GSS, channel, mode</td>
</tr>
<tr>
<td>Return value</td>
<td>@GSS, channel, mode, status_1, status_2, status_3 ⋯</td>
</tr>
</tbody>
</table>

**Parameter**

channel: I/O channel

- 1 = IN1, 2 = IN2, 3 = IN3, 4 = IN4,
- 5 = IN5, 6 = IN6, 7 = IN7
- 11 = OUT1A, 12 = OUT1B, 13 = OUT2A, 14 = OUT2B

mode: Getting status

- channel = 1 to 5 (digital input channel)
  - 0 = All of 1 to 4,
  - 1 = Type of input signal\(^1\),
  - 2 = Format of video input signal\(^2\),
  - 3 = Format of audio input signal\(^3\),
  - 4 = with/without HDCP input
- channel = 5 to 7 (analog input channel)
  - 0 = All of 1 to 2,
  - 1 = Type of input signal\(^1\),
  - 2 = Format of video input signal\(^2\)
- channel = 11 to 14 (output channel)
  - 0 = All of 1 to 3,
  - 1 = HDCP authorization\(^4\),
  - 2 = Type of output signal\(^5\),
  - 3 = Error code\(^6\)

\(^1\) For type of input signal

<table>
<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 input</td>
</tr>
</tbody>
</table>
## Input and output status

### Parameter: *2 For format of video input signal

<table>
<thead>
<tr>
<th>Reply example</th>
<th>Format of video input signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1080i 59.94Hz</td>
<td>SDTV/HDTV signal is input, which replies the format type and vertical synchronous frequency</td>
</tr>
<tr>
<td>800 x 600 60.00Hz</td>
<td>RGB signal is input, and [Horizontal resolution x Vertical resolution and vertical synchronous frequency] is replied.</td>
</tr>
<tr>
<td>NTSC</td>
<td>Analog composite video signal or analog S-video signal is input, which replies the format type.</td>
</tr>
<tr>
<td>56.83kHz 60.02Hz</td>
<td>Undetectable signal is input, which replies the horizontal and vertical synchronous frequencies.</td>
</tr>
<tr>
<td>NO SIGNAL</td>
<td>No video signal is input</td>
</tr>
</tbody>
</table>

### Parameter: *3 Format of audio input signals

<table>
<thead>
<tr>
<th>Reply example</th>
<th>Format of audio input signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINEAR PCM 48kHz</td>
<td>Linear PCM signal is input, which replies the sampling frequency.</td>
</tr>
<tr>
<td>LINEAR PCM 48kHz (MULTI CHANNEL)</td>
<td>Multi channel linear PCM signal is input.</td>
</tr>
<tr>
<td>COMPRESSED AUDIO</td>
<td>Compressed audio signal (such as Dolby Digital and DTS) is input (The MSD does not recognize detailed formats. “COMPRESSED AUDIO” is sent to all compressed audios).</td>
</tr>
<tr>
<td>NO SIGNAL</td>
<td>No video signal is input.</td>
</tr>
</tbody>
</table>

### Parameter: *4 HDCP authorization

<table>
<thead>
<tr>
<th>Reply example</th>
<th>HDCP authorization</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDCP SUPPORT</td>
<td>Device with HDCP is connected.</td>
</tr>
<tr>
<td>HDCP NOT SUPPORT</td>
<td>Device without HDCP is connected.</td>
</tr>
<tr>
<td>HDCP ERROR</td>
<td>Device with HDCP is connected, but the authorization failed.</td>
</tr>
<tr>
<td>HDCP CHECK NOW</td>
<td>Connection status of sink device was changed, and the status is being checked.</td>
</tr>
<tr>
<td>MONITOR DISCONNECT</td>
<td>Sink device is disconnected.</td>
</tr>
<tr>
<td>Cat6 LINK DISCONNECT</td>
<td>Cat6 / Cat5e cable is disconnected. (Only for OUT1B and OUT2B)</td>
</tr>
<tr>
<td>Cat6 NO LINK</td>
<td>Cat6 / Cat5e cable is not connected. (Only for OUT1B and OUT2B)</td>
</tr>
<tr>
<td>UNCONNECTED</td>
<td>Sink device is not connected.</td>
</tr>
</tbody>
</table>
### @GSS Input and output status

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type of output signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>*5 Type of output signals</td>
<td></td>
</tr>
<tr>
<td>Reply example</td>
<td>Type of output signals</td>
</tr>
<tr>
<td>Hxx</td>
<td>HDMI signal is output. xx stands for the color depth, 24 or 30.</td>
</tr>
<tr>
<td>D</td>
<td>DVI signal is input.</td>
</tr>
<tr>
<td>C</td>
<td>HDCP is being authorized. No video is output.</td>
</tr>
<tr>
<td>N</td>
<td>No sink device is connected.</td>
</tr>
<tr>
<td>O</td>
<td>No twisted pair cable is connected.</td>
</tr>
</tbody>
</table>

*6 One of the following error codes is replied in the following order: HDMI output connector / video output to HDBaseT output connector, HDMI output connector / audio output to HDBaseT output connector, audio output to analog audio output connector.

<table>
<thead>
<tr>
<th>Error code</th>
<th>Video output status</th>
<th>Audio output status</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Video or audio is output correctly.*7</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>@GVO / @SVO Video output connector is set to “OFF”.</td>
<td>@GAM / @SAM Audio output mute is set to “ON”.</td>
</tr>
<tr>
<td>2</td>
<td>Only replied if digital input, which means DDC power is not input. (Normally, if input device is not connected, this error code is displayed)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Video signal is not input</td>
<td>Audio signal is not input</td>
</tr>
<tr>
<td>4</td>
<td>Only replied if digital input, which means video or audio output of the source device is muted</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Only replied if digital input, which means signal with HDCP is input but sink device is HDCP incompliant (This error code may be also replied during HDCP authorization)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Only replied if digital input, which means source device does not output the required information (packets) for output of video or audio</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Signal that is not supported by MSD series (dot clock is out of range) is input. Since compressed audio is input, audio cannot be output (Compressed audio can be output only to sink devices supporting compressed audio).</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>@GDO / @SDOAudio output connector is set to “OFF”.</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>@GDM / @SDMOutput mode is set to “DVI MODE” or a sink device that does not support audio is connected.*8</td>
</tr>
</tbody>
</table>
### @GSS

#### Input and output status

<table>
<thead>
<tr>
<th>Error code</th>
<th>Video output status</th>
<th>Audio output status</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Input channel is set to “OFF” @GSS / @SSW, @GSV / @SSV, @GSA / @SSA</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>—</td>
<td>is set to “OFF”</td>
</tr>
<tr>
<td>C</td>
<td>Sink device is not connected.*7</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>HDCP is being authorized.*8</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>HDCP authorization failed.*8</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Twisted pair cable is not connected.</td>
<td></td>
</tr>
</tbody>
</table>

*7  Analog audio input status cannot be detected. Even if “0” is replied, audio may not be output with analog input selected.

*8  Only statuses of HDMI output connector / HDBaseT output connector.

#### Example

@GSS,1,0  
@GSS,1,0,H30,1080P 60Hz, LINEAR PCM 48kHz, HDCP ON  

Getting IN1 all statuses.
- Type of input signal: 30-BIT COLOR HDMI signal
- Video input signal: 1080P 60Hz
- Audio input signal: LINEAR PCM 48kHz
- HDCP:ON

#### Remarks

—
### @GES

**Function**
Getting

**Format**
@GES, channel, mode

**Return value**
@GES, channel, mode, status_1 (, status_2, status_3 ⋅⋅⋅)

**Parameter**
- **channel**: Output connector
  - 1 = OUT1A,
  - 2 = OUT1B,
  - 3 = OUT2A,
  - 4 = OUT2B
- **mode**: Getting statuses
  - 0 = All of 1 to 4,
  - 1 = Monitor 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

*1 For sink device that does not support HDMI, “DVI” is replied.
For sink device that supports HDMI, “HDMI” is replied, and then supported sampling structures (RGB, YCbCr 4:2:2, YCbCr 4:4:4) and supported color depths (24, 30, 36) are replied in that order.

*2 For sink device that does not support audio, “AUDIO NOT SUPPORT” is replied.
For sink device that supports audio, “LINEAR PCM” is replied, and then supported sampling frequencies (32, 44.1, 48, 88.2, 96, 176.4, and 192), bit length (16, 20, and 24), the number of channels (one of 1 to 8), and “COMPRESSED AUDIO SUPPORT” (if compressed audio is supported) are replied in that order.

**Example**
@GES,1,0
@GES,1,0,MSD-501, 1920x1080 148.50MHz,DVI,AUDIO NOT SUPPORT

**Remarks**
—

### @GIV

**Function**
Getting

**Format**
@GIV

**Return value**
@GIV, id, ver

**Parameter**
- **id**: Model number
- **ver**: Firmware version

**Example**
@GIV
@GIV,MSD-501,1.00

**Remarks**
—
MSD-701 / 702 User’s guide (Command Guide)

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