

Projector/Monitor Common ASCII Control Command Reference Manual

Introduction

This manual describes the commands used to control a projector or monitor from a PC or other external device.

A projector or monitor can be controlled by exchanging commands with an external device connected via a serial port or network. ASCII character strings are used to express the commands.

The manual assumes a basic knowledge of projectors or monitors. For information about the connection between the projector or monitor and an external device, see the operation manual for the model being used.

Hereafter the word “display” is used generically to refer to “projector or monitor”.

Notes

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2. The contents of this reference manual are subject to change without notice.
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1. Command List

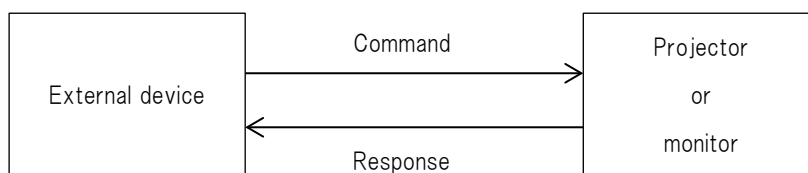
Command name	Description
power	Turns ON/OFF the power and gets the status.
input	Switches the input terminal and gets the status.
avmute	Operates the AV mute function and gets the status.
product	Gets product information.
usage	Gets usage times.
status	Gets the operation status.
volume	Adjusts the sound volume and gets the current value.
brightness	Adjusts the brightness and gets the current value.
contrast	Adjusts the contrast and gets the current value.
color	Adjusts the color (color intensity) and gets the current value.
hue	Adjusts the hue and gets the current value.
sharpness	Adjusts the sharpness and gets the current value.
backlight	Adjusts the backlight intensity and gets the current value.
light	Sets the light source and gets the current value.
tilematrix	Sets the tile matrix and gets the current value.
lens	Adjusts the lens.
shutter	Sets the shutter and gets the current value.
autoadj	Adjusts the picture.
freeze	Freezes the picture and gets the status.
help	Gets the list of available commands.

Note

- The list of available commands differs depending on the currently connected display.
Use the `help` command to get them.

1.1 Description of ASCII control commands

Data to be sent from an external device to a display is expressed as a command. The data to be returned from the display to the external device, in response to that command, is expressed as a response.



A command is always followed by a line feed code. A line feed code is represented in ASCII code as 0Ah (LF) or 0Dh (CR). In the remainder of this manual, a line feed code is referred to as <CRLF>. Similarly, a response is always followed by a line feed code.

When sending a command, do not allow more than 5 seconds to elapse between individual characters. If more than 5 seconds elapses, the character string that has been sent so far will be discarded on the display side. The response from the display will be returned within 2 seconds after the command is received. (This is true provided a 1-to-1 direct connection is established between the external device and the display using a serial cable.)

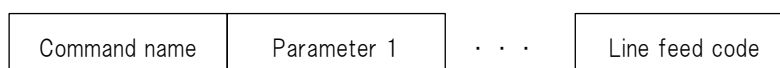
The characters to be used in a command are single-byte alphanumeric characters (A-Z, a-z, and 0-9) and some symbols (underscore "_", period ".", and space " ").

Commands are not case-sensitive.

In this manual, a space is represented as "_".

A command consists of a command name, parameter(s), and a line feed code.

Command system



The following four operations can be performed by specifying appropriate parameters.

(1) Setting

Change a set value on the display.

(2) Current value acquisition

Get the currently set value for a specified command.

(3) Information acquisition

By sending a command with a "?" specified as the parameter, information such as the currently set value and the adjustment range can be obtained.

(4) Help

By sending a command with "help" specified as the command name or parameter, the list of available commands or parameters can be obtained.

For information about the main parameters available for each command and the formats, see "2 Command Details".

1.2 Responses

When a command is sent to a display, the results are returned as a response. The contents of the response differ depending on the command type. A response starts with a ">" and ends with a line feed code.

The line feed code is the same as that used to end the sent command.

When command processing is successful

[Setting]

">ok" is returned.

(Example)	(Command)	power_on
	(Response)	>ok

Note

Even if a command is sent successfully, the set value that is sent may not be reflected as intended, depending on the status of the display.

After sending a setting command, use the current value acquisition command or the information acquisition command, described later, to check if the set value is reflected by the display.

[Current value acquisition]

The current value or current status is returned.

(Example)	(Command)	power
	(Response)	>power_on
(Example)	(Command)	volume
	(Response)	>volume_5

[Information acquisition]

Information such as the current value and adjustment range is returned.

cur=	Current value
def=	Initial value
min=	Minimum value
max=	Maximum value
step=	Step width
sel=	Selection or list

(Example)	(Command)	volume_?
	(Response)	>volume_cur=25,def=10,min=0,max=30,step=1

<Explanation>

Sound volume, current value = 25, initial value = 10, minimum value = 0, maximum value = 30, step width = 1

Any adjustment item for which the step width is not constant, "step=na" is returned.

(Example) If the adjusted value is "0, 20, 50, 100"

(Command) volume_?

(Response) >volume_cur=50,def=20,min=0,max=100,step=na

<Explanation>

Because the step width is not constant, "step=na" is returned.

[Help]

This indicates how to use the command.

| Character string delimiter

[] Optional character string

VAL Set value

(Example) (Command) power_help

(Response) >power_[on|off|?]

<Explanation>

The parameters that can be specified with the power command are on, off, and ?.

(Example) (Command) volume_help

(Response) >volume_[[++|--]VAL|?]

<Explanation>

The parameters that can be specified with the volume command are numerical values and ?.

To check the adjustment range of a numerical value, use the information acquisition command "?".

See [Information acquisition].

When command processing fails

- >error:command_-_try_'help'

The relevant command name does not exist.

Use the help command "help" to check the valid command names.

- >error:parameter

The parameter is incorrect. For example, the numerical value may be outside the valid adjustment range or the character string may be incorrect.

Use the information acquisition command "?" or the help command "help" to check the valid parameters.

- >error:busy

Temporary period while power processing, input switching, or automatic adjustment is being performed.

Wait a short while and then retry.

- >error:unavailable

This function is currently unavailable.

Check the status of the display.

2. Command Details

► Legend

VAL	Set value
<Information>	
	Unless otherwise specified, an integer must be specified as the numerical value.
_	Space character
<CRLF>	Line feed code (CR, LF, or CRLF)

► Set value

- VAL differs depending on the connected display or the command to be sent. Use the information acquisition command "?" or the help command "help" to check the settable character strings and valid adjustment range.
- A numerical value is treated as a value to specify directly. By adding a + or – a positive value or negative value can be specified. If the +/- sign is omitted, the value is assumed to be positive.

(Example)	(Command)	volume_10
	(Response)	>ok

<Explanation>

The volume level is adjusted to 10.

- If you wish to increase or decrease the value according to a step width, use the ++ or -- character string. The step width can be checked with the information acquisition command "?".

Formula: "Post-adjustment value" = "Current value" + "Specified value" × "Step width"

(Example) The current value is 10, the step width is 5, and to be adjusted by 3 steps in the + direction:

- Get the current value and the step width.

(Command) volume_?

(Response) >volume_cur=10,def=10,min=0,max=30,step=5

- Adjust by 3 steps in the + direction.

(Command) volume_++3

(Response) >ok

- Get the post-adjustment value.

(Command) volume

(Response) >volume_25

<Explanation>

The post-adjustment value will be "10+5×3=25".

2.1 power

[Description]	Turns ON/OFF the power and gets the status.
[Setting]	power_VAL<CRLF> VAL examples on, off
[Current value acquisition]	power<CRLF>
Response format	
>power_off	Power off (standby) status
>power_warming	Start process in progress (pre-cooling or power off prohibited period)
>power_on	Power on status
>power_cooling	After-cooling in progress
[Information acquisition]	power_?<CRLF>
[Help]	power_help<CRLF>

2.2 input

[Description]	Switches the input terminal and gets the status.
[Setting]	<code>input_VAL<CRLF></code>
VAL examples	<code>hdmi,displayport</code>
	<Information>
	For details on the parameters, use the [Help] command or see the operation manual for the model being used.
[Current value acquisition]	<code>input<CRLF></code>
[Information acquisition]	<code>input_?<CRLF></code>
[Help]	<code>input_help<CRLF></code>

2.3 avmute

[Description] Operates the AV mute function and gets the status.

[Setting]

Picture and sound	avmute_VAL<CRLF>
Picture	avmute_video_VAL<CRLF>
Sound	avmute_audio_VAL<CRLF>

VAL examples on, off

[Current value acquisition]

Picture and sound	avmute<CRLF>
Picture	avmute_video<CRLF>
Sound	avmute_audio<CRLF>

[Information acquisition]

Picture and sound	avmute_?<CRLF>
Picture	avmute_video_?<CRLF>
Sound	avmute_audio_?<CRLF>

[Help] (Example) avmute_help<CRLF>

2.4 product

[Description] Gets product information.

[Current value acquisition]

Serial number `product_serial<CRLF>`

Model name `product_model<CRLF>`

Version number `product_firmware1<CRLF>`

<Information>

For information about other available parameters, check with the [Help] command.

[Information acquisition] (Not supported)

[Help] `product_help<CRLF>`

2.5 usage

[Description]	Gets usage times. The units of usage time are hours, while the units of remaining life are "%".	
[Current value acquisition]		
Light source usage time		usage_light_hours<CRLF>
Light source remaining life		usage_light_remains<CRLF>
Filter usage time		usage_filter_hours<CRLF>
[Information acquisition]		
Light source usage time		usage_light_hours_?<CRLF>
Light source remaining life		usage_light_remains_?<CRLF>
Filter usage time		usage_filter_hours_?<CRLF>
[Help]	(Example)	usage_help<CRLF>

2.6 status

[Description] Gets the operation status.

[Setting] (Not supported)

[Current value acquisition] `status<CRLF>`

Response example

```
>status_standby;error:cover&filter;warning:light
          *1              *2              *3
```

*1: Represents the power status.

<code>standby</code>	Power off (standby) status
<code>warming</code>	Start process in progress (pre-cooling or power off prohibited period)
<code>running</code>	Power on status
<code>cooling</code>	After-cooling in progress

*2: Represents the error status.

<code>error:cover</code>	Cover error
<code>error:temp</code>	Temperature error
<code>error:fan</code>	Fan error
<code>error:light</code>	Light source or backlight off, light source usage time exceeded
<code>error:system</code>	System error
<code>error:filter</code>	Filter error

If there are multiple errors, they are delimited by "&".

*3: Represents the warning status.

<code>warning:filter</code>	Filter cleaning time exceeded
<code>warning:light</code>	Light source due for replacement

If there are multiple errors, they are delimited by "&". If there are no errors or warnings, they will not be included in the response.

(Example) `>status_running`

[Information acquisition] `status_?<CRLF>`

Response example

```
>status_cur=standby,sel=cover|temp|fan|light|system|filter
                                     *4
```

*4: Represents the character strings that may be returned as error statuses.

[Help] `status_help<CRLF>`

<Information>

For information about the contents of a response from either the error status or the warning status, see the operation manual or supplement for the display.

2.7 volume

[Description]	Adjusts the sound volume and gets the current value. An integer is specified as the numerical value.
[Setting]	volume_VAL<CRLF>
VAL example	10
[Current value acquisition]	volume<CRLF>
[Information acquisition]	volume_?<CRLF>
[Help]	volume_help<CRLF>

2.8 brightness

[Description]	Adjusts the brightness and gets the current value. An integer is specified as the numerical value.
[Setting]	brightness_VAL<CRLF>
VAL example	10
[Current value acquisition]	brightness<CRLF>
[Information acquisition]	brightness_?<CRLF>
[Help]	brightness_help<CRLF>

2.9 contrast

[Description]	Adjusts the contrast and gets the current value. An integer is specified as the numerical value.
[Setting]	contrast_VAL<CRLF>
VAL example	10
[Current value acquisition]	contrast<CRLF>
[Information acquisition]	contrast_?<CRLF>
[Help]	contrast_help<CRLF>

2.10 color

[Description]	Adjusts the color (color intensity) and gets the current value. An integer is specified as the numerical value.
[Setting]	color_VAL<CRLF>
VAL example	10
[Current value acquisition]	color<CRLF>
[Information acquisition]	color_?<CRLF>
[Help]	color_help<CRLF>

2.11 hue

[Description]	Adjusts the hue and gets the current value. An integer is specified as the numerical value.
[Setting]	hue_VAL<CRLF>
VAL example	10
[Current value acquisition]	hue<CRLF>
[Information acquisition]	hue_?<CRLF>
[Help]	hue_help<CRLF>

2.12 sharpness

[Description]	Adjusts the sharpness and gets the current value. An integer is specified as the numerical value.
[Setting]	sharpness_VAL<CRLF>
VAL example	10
[Current value acquisition]	sharpness<CRLF>
[Information acquisition]	sharpness_?<CRLF>
[Help]	sharpness_help<CRLF>

2.13 backlight

[Description]	Adjusts the backlight intensity and gets the current value. An integer is specified as the numerical value.
[Setting]	backlight_VAL<CRLF>
VAL example	10
[Current value acquisition]	backlight<CRLF>
[Information acquisition]	backlight_?<CRLF>
[Help]	backlight_help<CRLF>

2.14 light

[Description]	Sets the light source and gets the current value. An integer is specified as the numerical value.	
[Setting]	Light source brightness adjustment	light_adjust_VAL<CRLF>
	VAL example	10
[Current value acquisition]		light_adjust<CRLF>
[Information acquisition]		light_adjust_?<CRLF>
[Help] (Example)		light_adjust_help<CRLF>

2.15 tilematrix

[Description]		Sets the tile matrix and gets the current value. An integer is specified as the numerical value.
[Setting]		
Tile matrix	tilematrix_VAL<CRLF>	
VAL examples	enable,disable	
Number of horizontal monitors	tilematrix_h_monitor_VAL<CRLF>	
Number of vertical monitors	tilematrix_v_monitor_VAL<CRLF>	
Position	tilematrix_position_VAL<CRLF>	
VAL example	2	
TILECOMP	tilematrix_tilecomp_VAL<CRLF>	
VAL examples	on,off	
[Current value acquisition]		
Tile matrix	tilematrix<CRLF>	
Number of horizontal monitors	tilematrix_h_monitor<CRLF>	
Number of vertical monitors	tilematrix_v_monitor<CRLF>	
Position	tilematrix_position<CRLF>	
TILECOMP	tilematrix_tilecomp<CRLF>	
[Information acquisition]		
Tile matrix	tilematrix_?<CRLF>	
Number of horizontal monitors	tilematrix_h_monitor_?<CRLF>	
Number of vertical monitors	tilematrix_v_monitor_?<CRLF>	
Position	tilematrix_position_?<CRLF>	
TILECOMP	tilematrix_tilecomp_?<CRLF>	
[Help]	(Example)	tilematrix_help<CRLF>

2.16 lens

[Description] Adjusts the lens.

An integer is specified as the numerical value for the position specification.

Either an integer or decimal is specified as the numerical value for the travel time.

This is specified in increments of 0.5.

<Information>

Depending on the lens type, the position specification may result in an error.

[Setting]

Zoom (position specification)	lens_zoom_VAL<CRLF>
VAL example	1000
Zoom (travel time specification)	lens_zoom_time_VAL<CRLF>
VAL example (+ direction)	1.5
VAL example (- direction)	-1.5
Zoom (travel direction + specification)	lens_zoom_start_+<CRLF>
Zoom (travel direction - specification)	lens_zoom_start_-<CRLF>
Zoom (stop)	lens_zoom_stop<CRLF>
Focus (position specification)	lens_focus_VAL<CRLF>
Focus (travel time specification)	lens_focus_time_VAL<CRLF>
Focus (travel direction + specification)	lens_focus_start_+<CRLF>
Focus (travel direction - specification)	lens_focus_start_-<CRLF>
Focus (stop)	lens_focus_stop<CRLF>
Periphery Focus (position specification)	lens_pffocus_VAL<CRLF>
Periphery Focus (travel time specification)	lens_pffocus_time_VAL<CRLF>
Periphery Focus (travel direction + specification)	lens_pffocus_start_+<CRLF>
Periphery Focus (travel direction - specification)	lens_pffocus_start_-<CRLF>
Periphery Focus (stop)	lens_pffocus_stop<CRLF>
Horizontal shift (position specification)	lens_h_shift_VAL<CRLF>
Horizontal shift (travel time specification)	lens_h_shift_time_VAL<CRLF>
Horizontal shift (travel direction + specification)	lens_h_shift_start_+<CRLF>
Horizontal shift (travel direction - specification)	lens_h_shift_start_-<CRLF>
Horizontal shift (stop)	lens_h_shift_stop<CRLF>
Vertical shift (position specification)	lens_v_shift_VAL<CRLF>
Vertical shift (travel time specification)	lens_v_shift_time_VAL<CRLF>
Vertical shift (travel direction + specification)	lens_v_shift_start_+<CRLF>
Vertical shift (travel direction - specification)	lens_v_shift_start_-<CRLF>
Vertical shift (stop)	lens_v_shift_stop<CRLF>
Home position	lens_home<CRLF>

[Current value acquisition]

Zoom	<code>lens_zoom<CRLF></code>
Focus	<code>lens_focus<CRLF></code>
Periphery Focus	<code>lens_pfocuse<CRLF></code>
Horizontal shift	<code>lens_h_shift<CRLF></code>
Vertical shift	<code>lens_v_shift<CRLF></code>

[Information acquisition]

Zoom

lens_zoom_?<CRLF>

Focus

lens_focus_?<CRLF>

Periphery Focus

lens_pfocus_?<CRLF>

Horizontal shift

lens_h_shift_?<CRLF>

Vertical shift

lens_v_shift_?<CRLF>

[Help]

(Example)

lens_help<CRLF>

2.17 shutter

[Description]	Sets the shutter and gets the current value.
[Setting]	shutter_VAL<CRLF>
VAL examples	open, close
[Current value acquisition]	shutter<CRLF>
[Information acquisition]	shutter_?<CRLF>
[Help]	shutter_help<CRLF>

2.18 autoadj

[Description]	Adjusts the picture.
[Setting]	autoadj_exec<CRLF>
[Current value acquisition]	(Not supported)
[Information acquisition]	(Not supported)
[Help]	autoadj_help<CRLF>

2.19 freeze

[Description]	Freezes the picture and gets the status.
[Setting]	freeze_VAL<CRLF>
VAL examples	on, off
[Current value acquisition]	freeze<CRLF>
[Information acquisition]	freeze_?<CRLF>
[Help]	freeze_help<CRLF>

2.20 help

[Description] Gets the list of available commands.

[Format] `help<CRLF>`

<Information>

- The names of the available commands and parameters differ depending on the currently connected display. To get the list of available commands, send the `help` command.

(Example) `help<CRLF>`

- By sending a command with `help` as the parameter, the parameters that can be specified with that command can be acquired. See the format example under [Help] in the explanation of each command.

(Example) `avmute_help<CRLF>`

(Example) `avmute_video_help<CRLF>`

If no help can be provided, this results in a parameter error.

3. Command Execution Example

An example of sending and receiving a series of commands is given below. This example corresponds to a case in which a projector in the standby state is to be started first, after which the input terminal is to be switched to video. Then, the sound volume is to be increased by 2 steps, and finally, the error status is to be checked.

```
power_?  
>power_cur=off,sel=on|off  
power_on  
>ok  
power  
>power_warming  
power  
>power_on  
input_?  
>input_cur=hdmi1,sel=hdmi1|hdmi2|video  
input_video  
>ok  
input  
>input_video  
volume_?  
>volume_cur=10,def=10,min=0,max=30,step=1  
volume_++2  
>ok  
volume  
>volume_12  
status  
>status_running
```


4. Revision History

Revision	Date	Description
1.0	September 05, 2024	First version