

ESC/VP21 Command User's Guide

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1. Introduction of ESC/VP21

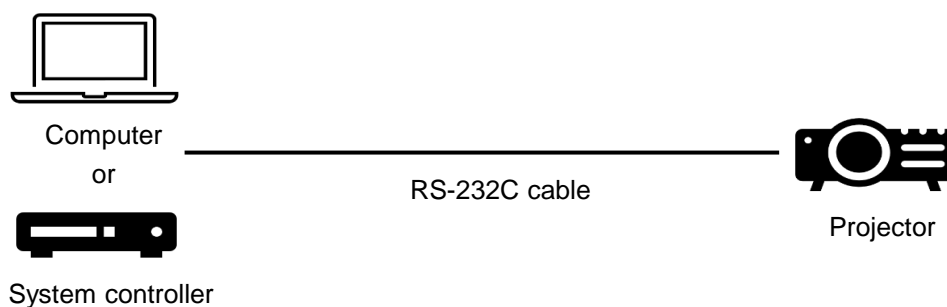
ESC/VP21 is a control command and protocol for Epson projectors, which is used for A/V controller to control and monitor Epson projectors.

The command codes are comprised of ASCII codes. Therefore the command codes can be understood very easily and you can easily control projectors using a PC with a terminal emulator such as Microsoft Hyper terminal.

Since ESC/VP21 is independent of communication protocols. Serial, USB or TCP/IP network can be used to transmit the commands to projectors. Please check the command list for available terminals.

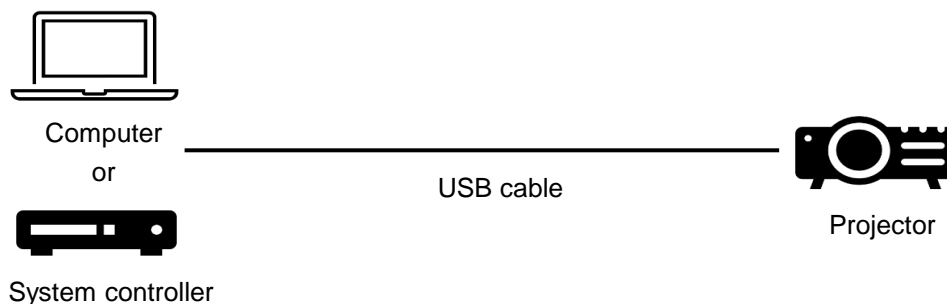
1.1. Serial connection

Control a projector by connecting to an external device such as an AV system controller via a serial communication (RS-232C).



1.2. USB connection

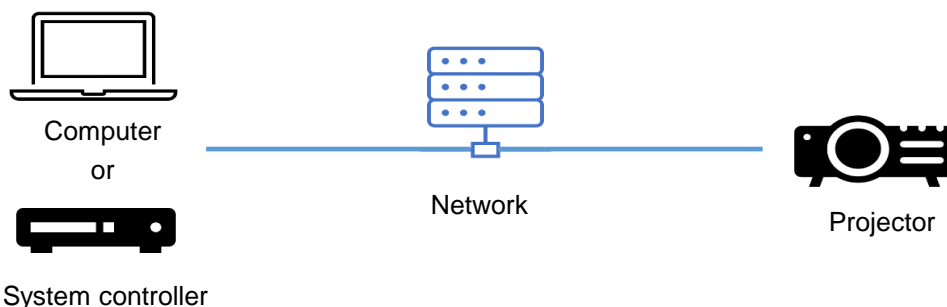
Control projector by connecting to an external device such as an AV system controller via USB.



1.3. Network connection

Control projectors by connecting to a network-compatible AV system controller via a network.

After establishing a TCP session, ESC/VP21 commands can be sent to projectors. Refer to ESC/VP.net protocol manual.



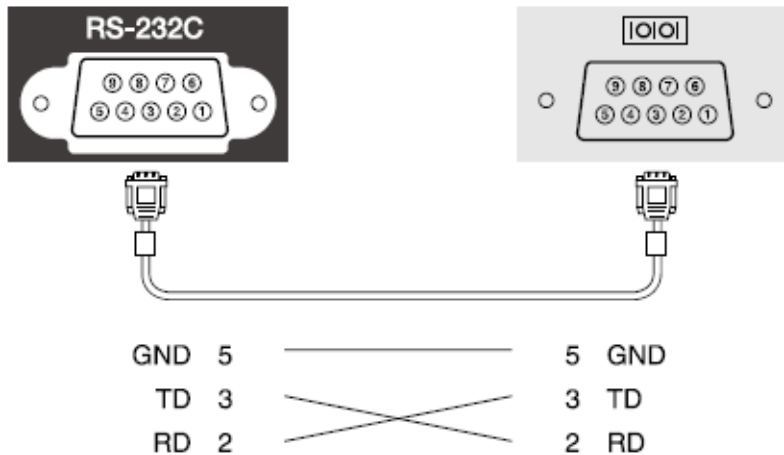
2. Communication specification

A projector and a computer can be connected using a serial or USB port. The projector can be remotely controlled by sending commands to the projector.

2.1. Serial connection

- Connector shape: D-Sub 9-pin (male)
- Projector input part name: RS-232C
- Cable type: Crossover (null modem) cable

In the following illustration, a projector side is shown on the left, and a computer side on the right.



Signal name	Function
GND	Signal wire ground
TD	Transmit data
RD	Receive data

2.2. USB connection

Install the USB communication driver (EPSON USB-COM Driver) on a computer. For information about the EPSON USB-COM driver, contact Epson.

2.2.1. Support OS

The supported OS of EPSON USB COM Driver are as follows.

- Windwos10 32bit
- Windwos10 64bit
- Windows8.1 32bit
- Windows8.1 64bit
- Windows7 32bit
- Windows7 64bit

2.3. Communications protocol

Default baud rate setting	: 9600bps
Data length	: 8 bits
Parity	: None
Stop bit	: 1 bit
Flow control	: None

2.4. Communication software

Terminal software (please use a commercially available one)

3. ESC/VP21 Command Format

3.1. Set command format

A set command consists of a command and a parameter. Projector returns a colon after executing the command.

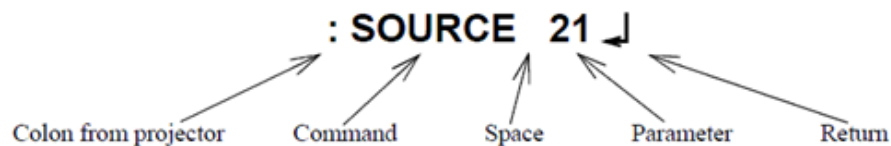
There are two types of parameters. One is fixed such as ON, OFF, or 21. Other is a step parameter such as INC, DEC or INIT.

INC: increments the parameter by one.

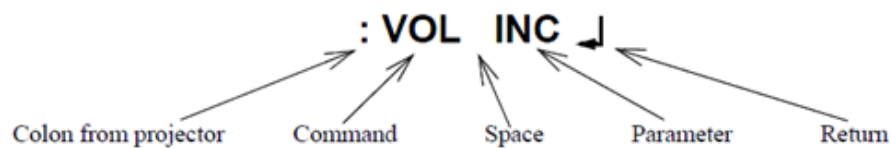
DEC: decrements the parameter by one.

INIT: initializes the parameter.

Set command example 1



Set command example 2



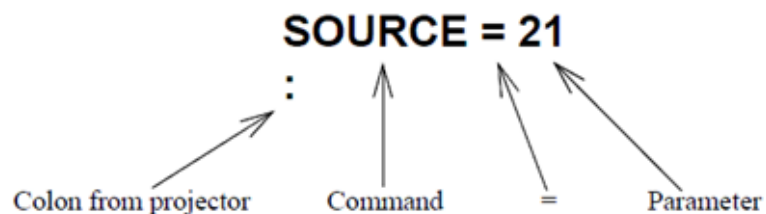
3.2. Get command format

A get command consists of a command and ?. Projector returns a response parameter after executing the command.

Get command example



Response parameter example



3.3. Null command

The null command is as command code of the return key code (Hex 0D). Projector returns a colon. The null command can be used to confirm that the projector is in operation.

3.4. Illegal commands

Projector returns "ERR" and a return key code (Hex 0D) and a colon when it receives invalid command.

ERR

:

4. Sending command

4.1. Projector system status

The commands that can be executed by the projector differ depending on the system status. Refer to the following table to send the executable command.

In the warning state (lamp life warning, high temperature warning, etc.), the command can be executed in the same way as in the normal state.

Not all commands are supported by the projector. See the command list on the target projector sheet.

System status	Executable command	Remarks
Standby	PWR ON	
	AMX	
	PWR?	
	LAMP?	
	SNO?	
Standby Mode (Network ON) / Communication Standby (*1) AV Standby (*2)	PWR ON	
	PWR OFF	Colon reply only
	AMX	
	LAMP?	
	ONTIME?	
	ERR?	Home model only
	SNO?	
	VOL	AV Standby status only
	VOL?	
	KEY 56/KEY 57 (Volume+/Volume-)	
	HDBASET?	
	SOURCELIST?	
	SOURCELISTA?	
	HREVERSE/ HREVERSE?	
	VREVERSE/ VREVERSE?	
	LUMINANCE/ LUMINANCE?	
	AVOUT/AVOUT?	
	SCFORMAT/ SCFORMAT?	
	STANDBYCONF/ STANDBYCONF?	
	MENUDISP/ MENUDISP?	
	ILLUM/ILLUM?	

Warm-up (Initialization in progress)	LAMP?	
	HREVERSE?	
	VREVERSE?	
	SOURCE	
	SOURCE?	
	PWR ON	Colon reply only
	SNO?	
	ERR?	Only when an error occurs in an Auto Iris (Home model)
	PWR?	
Warm-up (Lamp lighting process in progress)	LAMP?	
	HREVERSE?	
	VREVERSE?	
	SOURCE	
	SOURCE?	
	PWR ON	
	SNO?	
	ERR?	
	PWR?	
	AMX	
Cool down	AMX	
	PWR?	
	LAMP?	
	PWR OFF	Colon reply only
	ERR?	
	SNO?	
Abnormal standby (* Home model indicates a system outage.)	PWR ON	
	PWR OFF	Colon reply only
	AMX	
	PWR?	
	LAMP?	
	ONTIME?	
	SNO?	
	ERR?	
	VOL	Only when A/V Output is set to Always On
	VOL?	
	KEY 56/KEY 57 (Volume+/Volume-)	
	HDBASET?	
	SOURCELIST?	
	SOURCELISTA?	

Error status	AMX	
	PWR?	
	SNO?	
	ERR?	

***1 Standby Mode (Network ON) / Communication Standby**

With the projector setting menu "Standby Mode" set to "Communication On", can communicate with the projector via the network even in the standby state. Standby power is higher than "Standby Mode: Communication Off".

***2 AV Standby**

With the projector setting menu "A/V Output" set to "Always On", video and audio signals can be output (including speaker output) even in the standby state. Compared to "Standby Mode: Communication On", the standby power is even higher.

The setting method may differ depending on the product.

4.2. Command transmission timing

The first command can be sent anytime and the subsequent commands should be set after receiving a colon from the projector.

After receiving the "PWR ON" command, the next command cannot be responded to for a certain period of time due to the initialization process of the projector. Therefore, if you send the following command before receiving the colon from the projector, the projector may not respond.

"SOURCE" command when the input video sync signal is stable, a colon is returned within 5 seconds. However, it may take more than 5 seconds when the input video sync signal is unstable.

Projectors execute the "PWR OFF" command after they start completely.

If you want to send the following command without checking the colon from the projector, refer to the command execution time in the table below. The execution time is a reference value, so if the projector does not work as intended, increase the time until the next command is sent.

Command	Execution time
PWR ON	Please see the execution time of the target product sheet.
PWR OFF	Please see the execution time of the target product sheet.
SOURCE	5 seconds
All others	3 seconds

If the projector fails to turn on the light source after receiving the "PWR ON" command, the execution time may be longer.

5. Error Status

When the projector is in an error state, get the error state of the projector by sending the "ERR?" command.

The following table shows the acquisition code and the contents of the error state.

Not all return codes are supported by the product. Please see the return code of the target product sheet.

Command	Return code	Error content
ERR?	00	There is no error or the error is recovered
	01	Fan error
	03	Lamp failure at power on
	04	High internal temperature error
	06	Lamp error
	07	Open Lamp cover door error
	08	Cinema filter error
	09	Electric dual-layered capacitor is disconnected
	0A	Auto iris error
	0B	Subsystem Error
	0C	Low air flow error
	0D	Air filter air flow sensor error
	0E	Power supply unit error (Ballast)
	0F	Shutter error
	10	Cooling system error (Peltier element)
	11	Cooling system error (Pump)
	12	Static iris error
	13	Power supply unit error (Disagreement of Ballast)
	14	Exhaust shutter error
	15	Obstacle detection error
	16	IF board discernment error
	17	Communication error of "Stack projection function"
	18	I2C error
	1A	Lens shift error
	1B	Quartz N Polarizer error
	1C	No lens error
	1D	Subsystem error 2
	1E	Power supply voltage error
	1F	Other error

6. Revision History

Revision	Issued date	Description
A	26-Jan-22	New release as consolidated version of business/home
B	2-Feb-24	Added the support OS for EPSON USB COM Driver.
C	14-Feb-24	Added information about available terminals.