

ESC/VP21 Command User's Guide for Business Projectors

Table of Contents

1. Introduction to ESC/VP21	4
2. ESC/VP21 Command Formats.....	5
2.1. Set command format	5
2.2. Get command format.....	5
2.3. Null command.....	5
2.4. Illegal commands.....	5
3. Projector state and commands.....	6
3.1. Standby state (Operation indicator is in orange).....	6
3.2. Power on state (Operation indicator is in green)	6
4. Command transmission timing	7
4.1. Standby state	7
4.2. Power on state.....	7
4.3. Warning and abnormal cases.....	7
5. Error Status	8
Communication specification.....	9
6. Revision History.....	10

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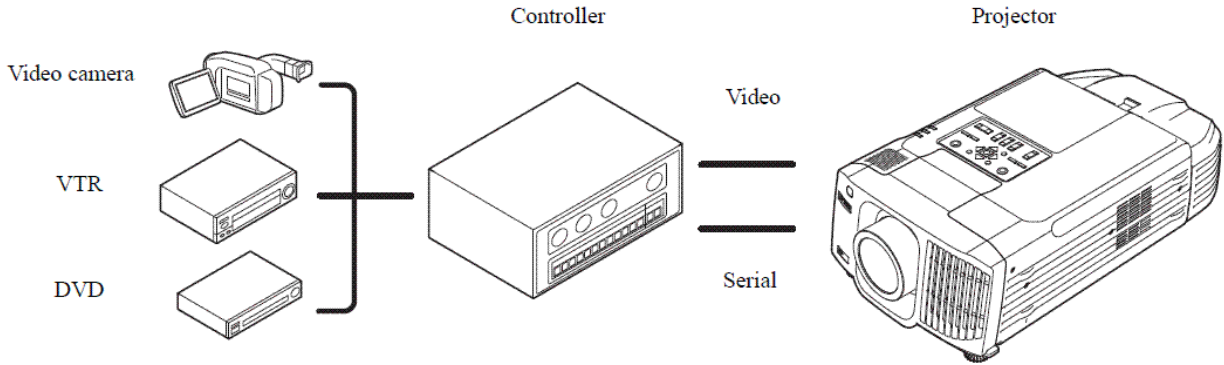
1. Introduction to ESC/VP21

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.

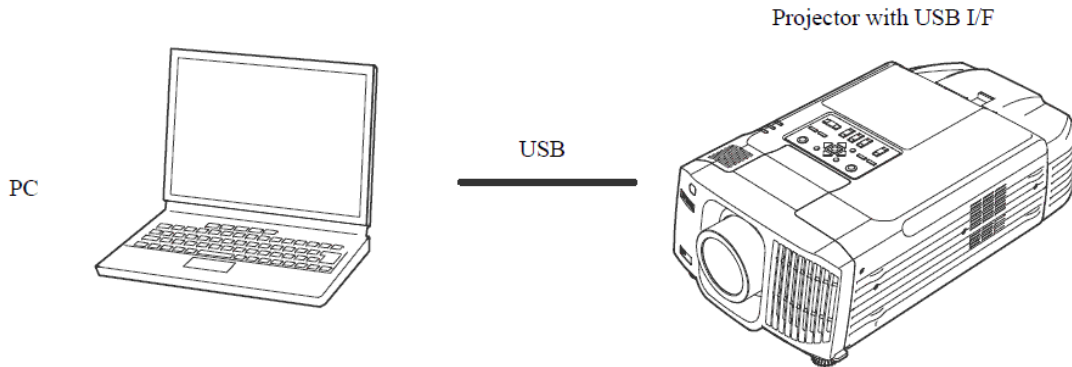
* Serial connection

A/V controller normally use as serial connection to control projectors. Refer to Appendix for details.



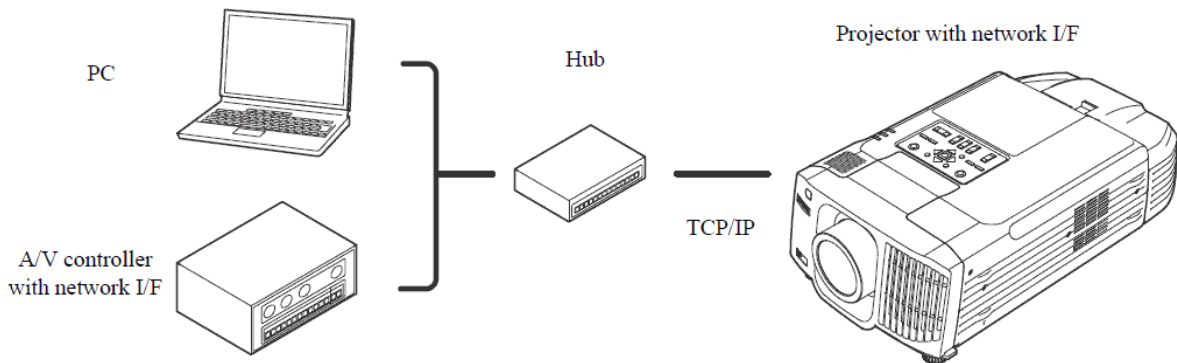
* USB connection

A USB interface can be used to control a projector. Refer to Appendix for details.



* Network connection

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



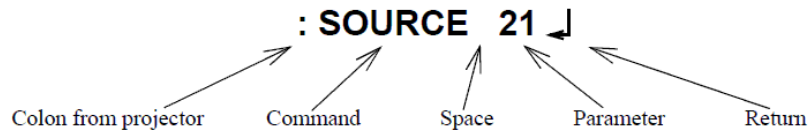
2. ESC/VP21 Command Formats

2.1. Set command format

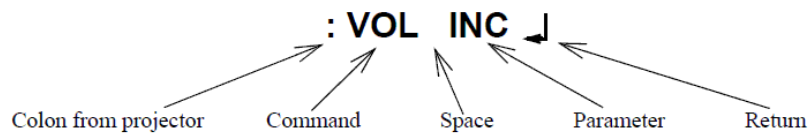
A set command consists of a command and a parameter. Projector returns a colon after executing the command. There are two types of parameters. One is fixed such as ON, OFF, or 21. Other is a step parameter such as INC, DEC or INIT.

INC: increments the parameter by one.
 DEC: decrements the parameter by one.
 INIT: initializes the parameter.

Set command example 1



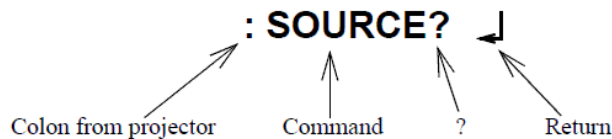
Set command example 2



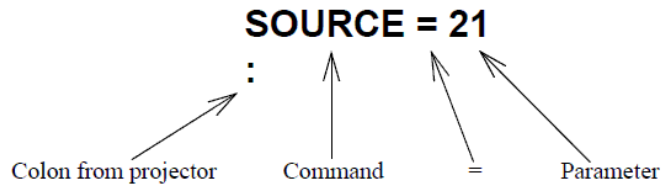
2.2. Get command format

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

Get command example



Response parameter example



2.3. 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.

2.4. Illegal commands

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

ERR
 ↵
 :

3. Projector state and commands

3.1. Standby state (Operation indicator is in orange)

When a projector is in a standby state, executable commands depends on projector models and standby configuration (network on, network off). Refer to the following table.

Models	Configuration	Executable commands
61/81, 830/835, 821/828 740/745/732/737, 760/765 S3/S4, 765/760/755/750 62/82/X3(76), 6100/6000 1715/1710/1705/1700 1815/1810/1825 S5/X5/83/822/823/83+/822+, 260/280, 400W/410W G5350/G5300/G5100/G5200W/ G5150/G5000, 6110/6010, 1735W/1730W/1725/1720 84/85/824/825/826W Z8000WU/Z8050W S7/X7/W7, S8/X8/W8 1900/1910/1915/1920W/1925W 84H/85H/825H/826H 440W/450W/460 , and later model	Network on/off	PWR ON PWR? LAMP?
7800/7850 8300/8350/9300	Network on	PWR ON, PWR?, SOURCE?, Null command(note1)
7900/7950 (note3)	Network off	PWR ON(Note2)
Others	-	

(note1)EMP-61/81/830/835/740/745/821/828 returns "ERR" when it received commands other than PWR ON, PWR?, LAMP? and Null commands.

(note2) EMP-7800/7850 returns "ERR" when it received commands other than PWR ON, PWR?, SOURCE? and Null commands.

(note3) EMP-8300/9300 returns "ERR" when it received commands other than PWR ON, SOURCE xx, PWR?, SOURCE? and Null commands

All projectors returns "ERR" when the command format is not good. All projectors returns "ERR" when the projector is not ready to reply the command. A null command is command name for "ENTER" or "RETURE" key of the keyboard the reply is ":".

3.2. Power on state (Operation indicator is in green)

All commands are executable.

4. Command transmission timing

4.1. Standby state

1). For all mode with the standby configuration of "network on"

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

2). Other than 1)

PWR ON can be sent any time.

4.2. Power on state

A command should be sent after receiving the colon of the previous command from the projector. The following is an exception. When the PWR OFF command is sent to 7800/7850/8300/9300 with the standby configuration of "network off", the subsequent command should be sent 10 seconds after the colon is received.

In case that you can not wait for the colon and send a command after receiving it, instead send a command after the execution time listed in the following table.

Command	Models	Execution time
PWR ON	Others	40seconds
	830/835(note5) 7900/7950/740/745	20seconds
	61/81/821/S3/S4	25seconds
PWR OFF (note4)	600/800/810/811/820	130seconds
	740745, 732/737, 821	20seconds
	S3/S4, 765/760/755/750, 830/835 82, 6100, 1715/1710/1705/1700, 1815/1810/1825, X5/822/823, 400W/410W, G5350/G5100/G5200W S6/X6/W6,1735W/1730W/1725/1720, 84/85/824/825/826W, and later model	10seconds
SOURCE (note3)	-	5seconds (note2)
All others	-	3seconds

(note1) When a projector receives the PWR ON command, it tries to ignite the lamp by activating the ballast unit. In case that the lamp fails to be ignited, it tries to ignite the lamp three times at maximum. When the lamp fails to be ignited three times, it is a lamp failure.
The projector returns a colon within 40, 70 and 100 seconds when successful in the first, second and third times respectively.

(note2) When the input vide 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.

(note3) Projector initiates the process of the input video signal recognition when it receives a SOURCE command. If the signal of the video input is changing (for example, from SVGA to XGA by A/V controller) during the process of the input video signal recognition, the projector returns "ERR".

(note4) Projectors execute the PWR OFF command after they start completely.

(note5) Projectors might return "ERR" when "Quick Setup" and "Auto Focus" functions are set to ON.

4.3. Warning and abnormal cases

Projector executes commands normally while a warning indicator such as a high temperature warning is on.

Projector does not execute commands nor return a colon when the projector is in an abnormal state such as a lamp failure and abnormal high temperature.

As for EMP-6100/6000, EMP-1715/1710/1705/1700, EMP-1815/1810, EMP-S5/X5/83/822 and the following models, when an abnormal state is continued for 130 seconds after, PWR ON command becomes possible.

5. Error Status

A projector returns the error status when a projector receives "ERR?" command.

The following projectors can return the error status while the projectors become the error status after cooling down.

EMP-1700/1705/1710/1715, 6000/6100/6110/6010, 1815/1810/1825, S5/X5/83/
EB-G5000/G5100/G5150/G5200W/G5300/G5350

And later models.

[The other models except the above models]

The models except the above models can return the error status while the projectors

The following table shows the return codes and the meaning of error status.

Command	Return code
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 (peltiert 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	

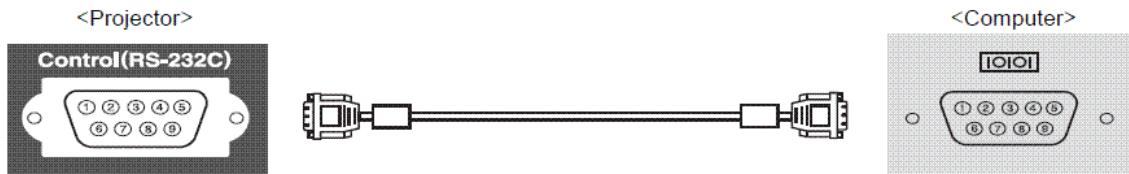
Appendix

Communication specification

Serial connection

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.

- Select RS-232C at Advanced Setting of the Menu.
- Communication condition
 - Baud rate : 9600bps
 - Data length : 8 bits
 - Parity : No
 - Stop bit : 1 bit
 - Flow control : No
- Connector : D-Sub 9pin
- Projector input : Control(RS-232C)



Projector		PC serial cable	Computer	
GND	5	—————	5	GND
RD	2	←—————	3	TD
TD	3	—————→	2	RD

Signal name	Function
GND	Common ground
TD	Transmitted data
RD	Received data

USB connection

- For 600/800/810/811/820, 74/54, select USB at advanced setting of the Menu.
- For 720/730/520, 73/53, 740/745, 732/737, S3/S4/X3, 760/765, 1715/1710/1705/1700, S5/X5, 260, select Link 21L at Advanced Setting of the Menu.
- For 8300/8350/9300, select USB at Advanced2 setting of the Menu.
- For 61/81, 830/835/821, select USB at Extended setting of the Menu.
- Except for above model select Wireless Mouse and select Link 21L at Extended Setting of the Menu.
- EPSON USB COM Driver has to be installed in your computer to use USB for communication. A COM port is added to your computer, when the projector and your computer is connected by a USB cable. The added COM is listed at PORT (COM/LPT) in the device manager tab of System in Control Panel as EPSON COM Emulation port (COMn).

- Connector



6. Revision History

Revision	Issued date	Page	Description
A	Apr 15, 2014	All pages	First release.