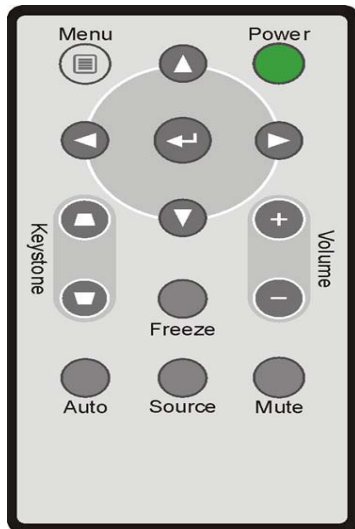


## SP8600 Remote IR Information

Standard consumer IR (NEC framing) Device ID: 0x31CE

Repeat key: Send REPEAT frame at every 108ms

Key	Function	Description	Keycode
1	Power	Lamp on/off toggle	0x81
2	Up arrow	Up key for OSD menu	0xC1
3	Left arrow	Left key for OSD menu	0xC3
4	Enter	Enter key for OSD menu	0xC5
5	Right arrow	Right key for OSD menu	0xC4
6	Down arrow	Down key for OSD menu	0xC2
7	Keystone +	Keystone correction increment	0x85
8	Keystone -	Keystone correction decrement	0x84
9	Volume -	Speaker volume decrement	0x8F
10	Volume +	Speaker volume increment	0x8C
11	Menu	OSD menu on/off	0x87
12	Auto	Auto adjustment for phase, tracking, size, position	0x86
13	Freeze	Freeze video	0x8E
14	Source	Input source selection	0x83
15	Mute	Speaker mute toggle	0x89



# SP8600 RS232 Commands

## RS232 Setting

Baud rate:	9600
Parity check:	None
Data bit:	8
Stop bit:	1
Flow Control	None

Minimum delay for next command: 25ms

## Control Command Structure

The command is structured by the Header code, command code, data code and end code. Most of the commands are structured except some for the compatibility issue with other projectors.

	Header code	Command code	Data code	End code
HEX	7Eh	Command	Data	0Dh
ASCII	~	Command	Data	CR

## Control Sequence

The projector will send a return code (0Dh) after it has received a command. If the command isn't received correctly, the projector will not send the return code.

## Operation Commands

The operation commands execute the basic operation setting of this projector.

Operation	ASCII	HEX
Power On □	~ P N CR □	7Eh 50h 4Eh 0Dh
Power Off	~ P F CR	7Eh 50h 46h 0Dh
Auto Image	~ A I CR	7Eh 41h 49h 0Dh
Input Select PC	~ S R CR	7Eh 53h 52h 0Dh
Input Select HDMI1	~ S D CR	7Eh 53h 44h 0Dh
Input Select HDMI	~ S H CR	7Eh 53h 48h 0Dh
Input Select Video	~ S V CR	7Eh 53h 56h 0Dh
Input Select S-Video	~ S S CR	7Eh 53h 53h 0Dh
Input Select Component	~ S Y CR	7Eh 53h 59h 0Dh

※ Power On command will not work for 1 minute after the power off command triggered.

※ CR : Carriage Return.

## Remote Commands

The remote commands simulate the code send from IR remote handset.

Button's name	ASCII	HEX
UP arrow	~ r U CR	7Eh 72h 55h 0Dh
DOWN arrow	~ r D CR	7Eh 72h 44h 0Dh
LEFT arrow	~ r L CR	7Eh 72h 4Ch 0Dh
RIGHT arrow	~ r R CR	7Eh 72h 52h 0Dh
POWER	~ r P CR	7Eh 72h 50h 0Dh
EXIT	~ r E CR	7Eh 72h 45h 0Dh
INPUT	~ r I CR	7Eh 72h 49h 0Dh
AUTO	~ r A CR	7Eh 72h 41h 0Dh
KEYSTONE+	~ r K CR	7Eh 72h 48h 0Dh
KEYSTONE-	~ r J CR	7Eh 72h 4Ah 0Dh
MENU	~ r M CR	7Eh 72h 4Dh 0Dh
STATUS	~ r S CR	7Eh 72h 53h 0Dh
MUTE	~ r T CR	7Eh 72h 54h 0Dh
BLANK	~ r B CR	7Eh 72h 42h 0Dh
FREEZE	~ r F CR	7Eh 72h 46h 0Dh
VOLUME+	~ r V CR	7Eh 72h 56h 0Dh
VOLUME-	~ r W CR	7Eh 72h 57h 0Dh
Enter	~ r N CR	7Eh 72h 4Eh 0Dh

## Set Value Commands

ITEM	ASCII	HEX
Brightness	~ s B ? CR	7Eh 73h 42h ?h 0Dh
Contrast	~ s C ? CR	7Eh 73h 43h ?h 0Dh
Color	~ s R ? CR	7Eh 73h 52h ?h 0Dh
Tint	~ s N ? CR	7Eh 73h 4Eh ?h 0Dh
Scaling	~ s A ? CR	7Eh 73h 41h ?h 0Dh
Color Temperature	~ s T ? CR	7Eh 73h 54h ?h 0Dh
Protection Mode	~ s J ? CR	7Eh 73h 4Ah ?h 0Dh

※ ? : ASCII Data

## Data Range

ITEM	Set Data Range	Source
Brightness(User1~User3 only)	0 ~ 100	ALL
Contrast(User1~User3 only)	-50 ~ -50	ALL
Color(User1~User3 only)	-50 ~ -50	Video/S-Video/Component
Tint(User1~User3 only)	-50 ~ -50	Video/S-Video/Component
Scaling	0: <b>AUTO</b> 1: <b>16:9</b> 2: <b>4:3</b> 3: <b>LETTER BOX</b> 4: <b>REAL</b>	ALL
Color Temperature	0: <b>Warm</b> 1: <b>Normal</b> 2: <b>Cool</b> 3: <b>Cooler</b> 4: <b>High Cool</b> 5: <b>Lamp Native</b>	ALL
Projection Mode	0: <b>Front Table</b> 1: <b>Front Ceiling</b> 3: <b>Rear Table</b> 4: <b>Rear Ceiling</b>	ALL

Brightness/Contrast/Color/Tint/Color Temperature adjustments are only available in User1~User3 picture mode.

**Example 1.** Adjust Brightness value to 100

Send Command : ~sB100**CR**

**Example 2.** Adjust Color Temperature to Warm

Send Command : ~sT2**CR**

## Query Commands

ITEM	ASCII	HEX
Software Version	~qVCR	7Eh 71h 56h 0Dh
Power State	~qPCR	7Eh 71h 50h 0Dh
Input Select	~qSCR	7Eh 71h 53h 0Dh
Lamp Hours	~qLCR	7Eh 71h 4Ch 0Dh
Brightness	~qBCR	7Eh 71h 42h 0Dh
Contrast	~qCCR	7Eh 71h 43h 0Dh
Color	~qRCR	7Eh 71h 52h 0Dh
Tint	~qNCR	7Eh 71h 4Eh 0Dh
Scaling	~qACR	7Eh 71h 41h 0Dh
Color Temperature	~qTCR	7Eh 71h 54h 0Dh
Projection Mode	~qJCR	7Eh 71h 4Ah 0Dh

## Response messages

ITEM	Response Message examples	
Software Version	.....	
Power State	On Off	
Input Select	PC HDMI1 HDMI2 Video S-Video Component	
Lamp Hours	2000	
Brightness	100	
Contrast	100	
Color (Video)	100	
Tint (Video)	100	
Scaling	AUTO 16:9 4:3 LETTER BOX REAL	
Color Temperature	Warm Normal Cool Cooler High Cool Lamp Native	
Projection Mode	Front Table Front Ceiling Rear Table Rear Ceiling	

### Example 1. Get Brightness value

Send Command : ~qB`CR`

Response : 100

### Example 2. Get Color Temperature

Send Command : ~qT`CR`

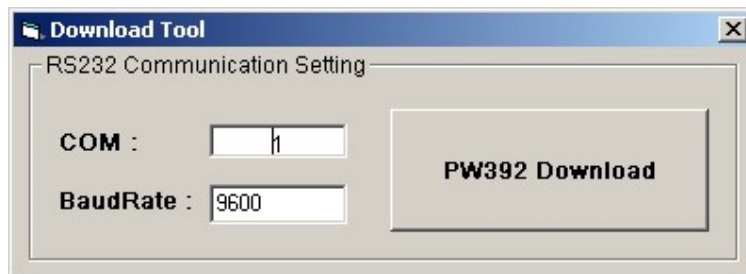
Response : Warm

## SP8600 Firmware Upgrade Procedure

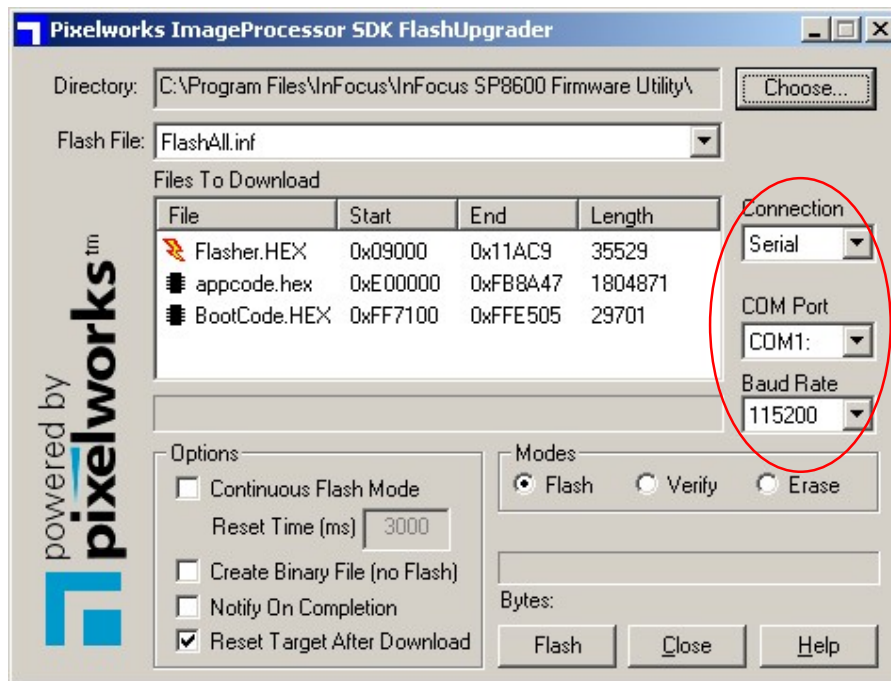
**Step 1.** Plug a power cord from power to the projector.

**Step 2.** Connect a null Modem DB9 cable to the Projector and from the PC.

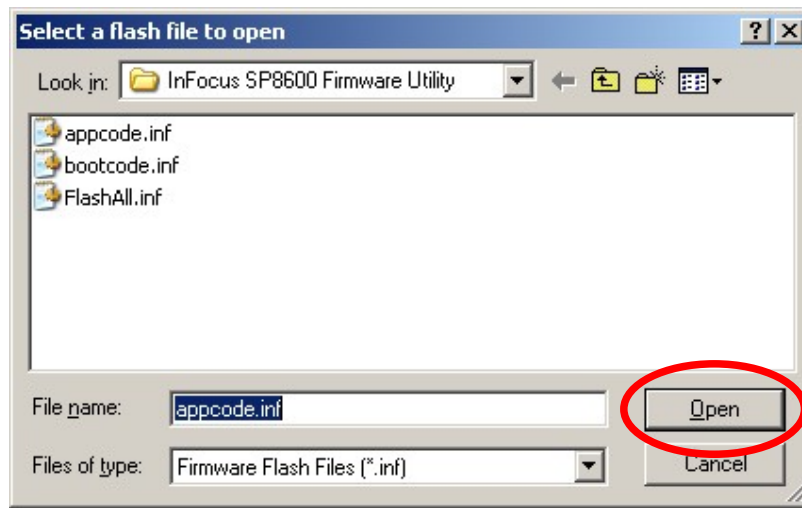
**Step 3.** Run the download tool SP8600\_versionXXXXX.exe.



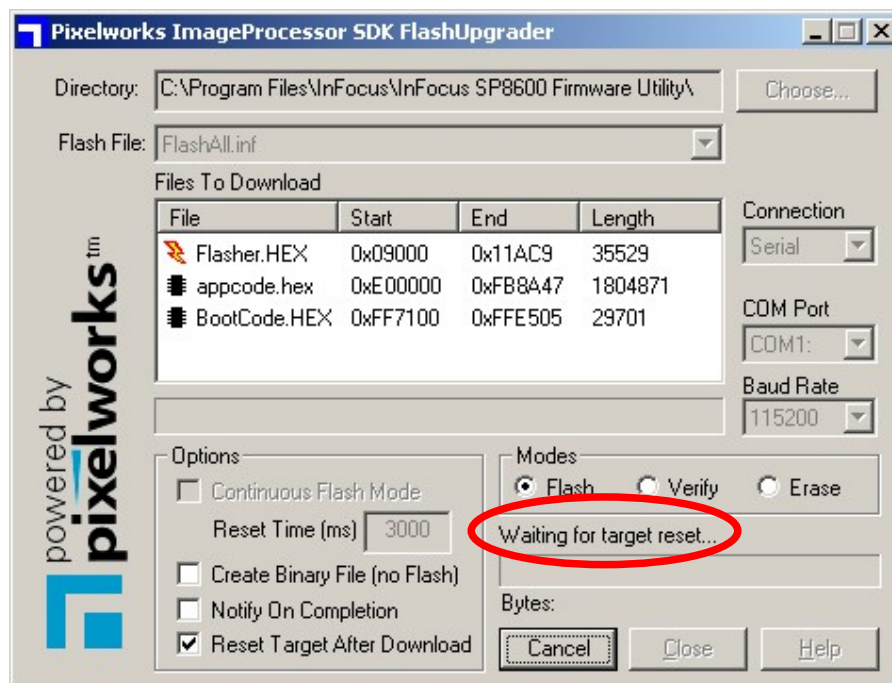
**Step 4.** Click "PW392 Download", the Pixelworks FlashUpgrader will open. Make sure that Connection, COM Port, Baud Rate and Modes are set correctly.



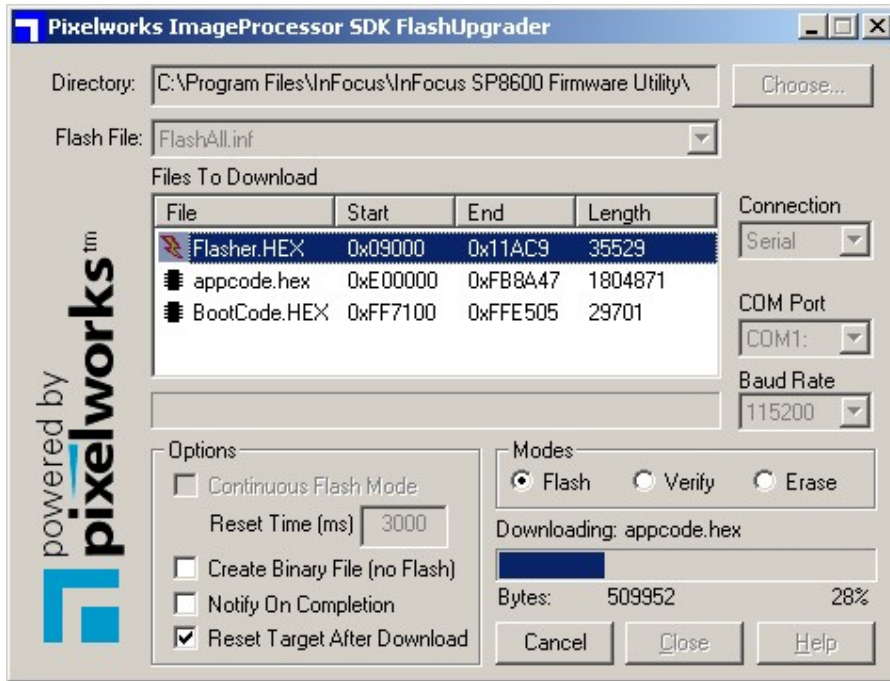
**Step 5.** Click on “Choose” to select the flash file, FlashAll.inf.



**Step 6.** Click on “Flash”, the upgrader will wait for the projector to start.



**Step 7.** Turn on the projector with the remote or the rear panel switch. The flash progress will be displayed.



**Step 8.** The FlashUpgrader will return to the original window when the flash process is complete.

