

InFocus

Technical Documentation

Product  IN5108

Title  RS232 Documentation

Introduction:

RS-232 is a communication protocol that can be used to send commands to and retrieve status information from projectors and other RS-232 enabled devices. Most commonly the RS-232 capability of projectors is used in conjunction with a control system capable of managing several other systems, such as lighting, curtains and audio systems, often via a touch panel remote. Simpler RS-232 implementations require nothing more than a personal computer, an RS-232 capable projector and the appropriate cable.

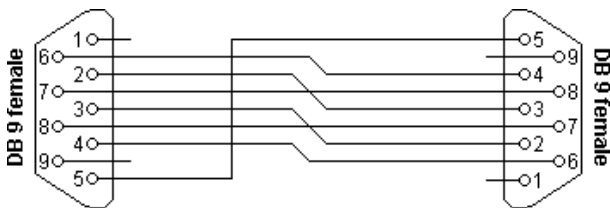
Configuration:

Setting	Value
Bits per second (bps)	19,200
Data bits	8
Parity	None
Stop Bits	1
Flow control	None
Emulation	VT100

Required Cables:

Null modem cable - female to female DB9 connector (9-pin serial)

Connector Pin-out:



Connector 1	Connector 2	Function
1	9	Carrier Detect (not used)
2	3	Receive Data
3	2	Transmit Data
4	6	Data Terminal Ready
5	5	Signal Ground
6	4	Data Set Ready
7	8	Request to Send
8	7	Clear to Send
9	1	Ring Indicator (not used)

Command Format:

All commands consist of 3 alpha characters followed by a request, all enclosed in parentheses. The request can be a read request (indicated by a “?”) or a write request (indicated by 1 to 4 ASCII digits).

A read command returns the range and the current setting, for example: Some commands have ranges, while others are absolute. If a number greater than the maximum range is received, it is automatically set to the maximum number for that function. If a command is received that is not understood, a “?” is returned.

Example read commands:

Function	Command	Response	Meaning
Power On/Off	(PWR?)	(0-1,1)	Projector is turned on
Brightness	(BRT?)	(0-100, 75)	Brightness is at 75
Current lamp hours	(LMP?)	(0-3000, 350)	Unit has 350 lamp hours

A write command will change a value in the projector and can be used to mimic menu or remote control commands that are manually entered. Some commands may have 1, 2, or up to 101 values. A command that only has a value of 1 is a pulse command that activates once then goes back to rest. An example of this would be Auto Image. Most other commands will consist of a toggle state (0 or 1) or a selected range (0 to 100).

Example write commands:

Function	Command	Response
Power On/Off	(PWR1)	Turns power on
Current Source	(SRC2)	Set current source to Composite
Factory Reset	(RST1)	Reset's unit to factory default

NOTE : To assure the projector can process a command, wait 500ms/3 seconds before entering the next command.

Error Conditions

Not all commands are supported for all projectors. If an unsupported command is issued, the command will be ignored. If a command is received that is not understood, a ‘?’ character will be returned indicating the command was not understood.

Supported Commands:

Function	Command	Value	Read/Write	Step	Remarks
About (Source Info)	ABT	RANGE: 0-1, Default: N/A	W		0:n/a 1:enable
Aspect Ratio	ARZ	RANGE: 0-2, Default: 1	RW		0:Native 1: 16:9 2 : 4:3
Active Iris	IRI	RANGE: 0-2, Default: 2	RW		0:off 1:Presentation 2:Film
Auto Image	AIM	RANGE: 0-1, Default: N/A	W		0: n/a 1:enable
Auto Power	APO	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Auto Source	ASC	RANGE: 0-1, Default: 1	RW		0:disable 1:enable
Blank Screen Enable	BLK	RANGE: 0-1, Default: 0	RW		0:off 1:on
Blank Screen Color	BSC	RANGE: 0-2, Default: 1	RW		0:black 1:blue 2:white
Blue Gain	BCG	RANGE: 64-192, Default: 128	RW	1	
Brightness	BRT	RANGE: 96-160, Default: 128	RW	1	
Ceiling Mount Mode	CEL	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Color	CLR	RANGE: 96-160, Default: 128	RW	1	
Closed Captions Channel	CCC	RANGE: 0-7, Default: 0	RW		0: CC1 1: CC2 2: CC3 3: CC4 4: Text1 5: Text2 6: Text3 7: Text4
Closed Captions Display	CCD	RANGE: 0-2, Default: 0	RW		0: Off 1: On 2: Auto
Color Space	CSM	RANGE: 0-4, Default: 0	RW		0:Auto 1:RGB 2:REC709 3:REC601 4:RGB Video
Color Temp	TMP	RANGE: 0-3, Default: 0	RW		0:9300K 1:6500K 2:7200K 3:User 2 (computer 2, 3) 0 (other)
Contrast	CON	RANGE: 96-160, Default: 128	RW	1	

Custom Key (Effect)	EFK	RANGE: 0-18, Default: 7	RW		0:blank 1:mute 2:aspect ratio 3:source 4:auto image 5:freeze 6:magnify 7:Source Info 8:Service Info 15:AV Mute 18:Ruled Lines
Display Message Enable	DMG	RANGE: 0-1, Default: 1	RW		0:disable 1:enable
Factory Reset	RST	RANGE: 0-1, Default: N/A	W		0:not reset 1:reset
Freeze	FRZ	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Green Gain	GCG	RANGE:64-192,Default: 128	RW	1	
Horizontal Keystone	DKH	RANGE:118-138,Default: 128	RW	1	
HDMI Position	HPS	RANGE: def:-128 to def:+128, Default : auto	RW	1	
HDMI Noise Cancel	HNC	RANGE: 0-1, Default: 1	RW		
Internal Sound Enable	INT	RANGE: 0-1, Default: 1	RW		0:disable 1:enable
IR Receiver front	IRF	RANGE: 0-1, Default: 1	RW		0:disable 1:enable
IR Receiver rear	IRR	RANGE: 0-1, Default: 1	RW		0:disable 1:enable
IR Receiver top	IRT	RANGE: 0-1, Default: 0	RW		
Lamp Lit	LML	RANGE: 0-1, Default: 1	R		0:not lit 1:lit
Lamp Hours	LMP	RANGE: 0-32766, Default: 0	R	1	
Language	LAN	RANGE: 0-17, Default: 0	RW		0:English 1:French 2:German 3:Italian 5:Korean 6:Norwegian 7:Portugese 8:Russian 9:Simplified Chinese 10:Spanish 11:Traditional Chinese 12:Swedish 13:Dutch 14:Polish 15:Turkish 16:Danish 17:Finnish
Reset Lamp Hours	LRT	RANGE: 0-1, Default: N/A	W		0:Not Reset 1:Reset
Number of Lamp Resets	LMR	RANGE: 0-32766, Default: 0	R		
Lamp Total On	LMT	RANGE: 0-2147483646,	R		

Time (All Bulbs)		Default: 0			
Time in Hours Last (Bulb 1 Lasted)	LB1	RANGE: 0-32766, Default: 0	R		
Time in Hours Last (Bulb 2 Lasted)	LB2	RANGE: 0-32766, Default: 0	R		
Time in Hours Last (Bulb 3 Lasted)	LB3	RANGE: 0-32766, Default: 0	R		
Low Power	LPE	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Magnify	MAG	RANGE: 0-48, Default: 0	RW	1	
Magnify Enable	MGE	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Magnify Position Horizontal	MPH	RANGE: 0-64, Default: 32	RW	1	
Magnify Position Vertical	MPV	RANGE: 0-64, Default: 32	RW	1	
Menu	MNU	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Menu Navigation	NAV	RANGE: 0-4, Default: N/A	W		0:up 1:down 4:select
Mute	MTE	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Monitor Out Default	MOD	RANGE: 1-5, Default: 1	RW		1: Computer2 2: Computer3 3: Off
Network Restart	NTR	RANGE: 0-1, Default: N/A	W		0:not restart 1:restart
NND (PC Screen Saver Off)	NND	RANGE: 0-1, Default: 1	RW		0:disable 1:enable
Overscan	OVS	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Phase	MSS	RANGE: 0-31, Default: 0	RW	1	
Power	PWR	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Power Save	PSV	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Power-up Source	DSC	RANGE: 0-5, Default: 1	RW		0:computer 1 1:computer 2 2:computer 3 3:video 1 4:video 2 5:video 3
Presets	PST	RANGE: 0-11, Default: computer2 ,3:5 computer 1, video 7	RW		0: user 1 1:user 2 2:user 3 3:Presets Off 5:presentation 7:video 10:bright 11:whiteboard
Rear	REA	RANGE: 0-1, Default: 0	RW		0:disable 1:enable
Red Gain	RCG	RANGE: 64-192, Default:	RW	1	

128				
Reset Filter Hours	FRT	RANGE: 0-1, Default: N/A	W	0:not reset 1:reset
Save User Presets 1	US1	RANGE: 0-1, Default: N/A	W	0:not saved 1:saved
Save User Presets 2	US2	RANGE: 0-1, Default: N/A	W	0:not saved 1:saved
Save User Presets 3	US3	RANGE: 0-1, Default: N/A	W	0:not saved 1:saved
Screen Save	SSV	RANGE: 0-5, Default: 0	RW	0: 5 minutes 1: 10 minutes 2: 15 minutes 3: 20 minutes 4: 25 minutes 5: 30 minutes
Sharpness	SHP	RANGE: 5-9, Default: 7(computer & video1) 6(video2 & 3)	RW	5= Sharpest 6= Sharper 7= Standard 8= Softer 9= Softest
Source	SRC	RANGE: 0-5, Default: 0	RW	0: computer 1 1: computer 2 2: computer 3 3: video 1 4: video 2 5: video 3
Source 1	SR1 Source 2:SR2 Source 3:SR3 Source 4:SR4	RANGE: 0-5, Default: 0 Default: 1 Default: 3 Default: 4	RW	0: computer 1 1: computer 2 2: computer 3 3: video 1 4: video 2 5: video 3
Audio for Source 0	SA0	RANGE: 0-5, Default: 4	RW	0: audio 1 1: audio 2 2: audio 3 3: audio 4 4: HDMI Internal 5: mute
Audio for Source 1	SA1 Source 2:SA2 Source 3:SA3 Source 4:SA4 Source 5:SA5	RANGE: 0-5, Default: 0 Default: 1 Default: 3 Default: 2 Default: 2	RW	0: audio 1 1: audio 2 2: audio 3 3: audio 4 4: HDMI Internal 5: mute
Startup Logo	DSU	RANGE: 0-2, Default: 1	RW	0: blank screen 1: default 2: captured
Ruled Lines Enable	RLE	RANGE: 0-1, Default: 0	RW	0:disable 1:enable
Ruled Lines	RLL	RANGE: 0-3, Default: 0	RW	0: Lines On

					White 1: Lines On Black 2: Grid On White 3: Grid On Black
Sync on Green	SOG	RANGE: 0-1, Default: 1	RW		0:Sync on G off 1:Auto
Tint	TNT	RANGE: 96-160, Default: 128	RW	1	
Tracking	MTS	RANGE def: -384 - +384, Default: Auto	RW	1	
Unit Total Time On	ONL	RANGE: 0-2147483646, Default: 0	R		
Vertical Keystone	DKC	RANGE: 98-158, Default: 128	RW	1	
Vertical Position	VPS	RANGE : If : def < 128:0 , Else : def-128 to def :+128 Default : Auto	RW	1	
Video Standard	VSU	RANGE: 0-3, Default: 0	RW		0:Auto 1:NTSC 2:PAL 3:SECAM
Volume	VOL	RANGE: 0-32, Default: 16	RW	1	