

InFocus

Technical Documentation

Product	IN2102	IN2102EP	A1100	A1200EP	IN25	C212
	IN2104	IN2104EP	A1200		IN27	C214
	IN2106	IN2106EP	A1300		IN27W	C214
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.

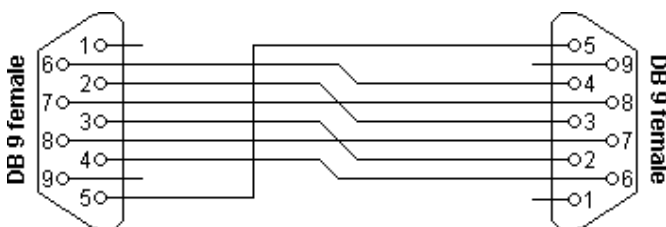
Configuration:

Setting	Value
Bits per second (bps)	115,200
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

To assure the projector can process a command, wait 500ms 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 Only	Remarks
AC Power On	APO	RANGE: 0-1, Default: 0		0: Off 1: On
Aspect Ratio	ARZ	RANGE: 0-6, Default: 2		0: Auto 1: Native 2: 4:3 3: 16:9 4:Letterbox 5:Panorama 6:Full Screen
Auto Image	AIM	N/A		Forces the projector to reacquire and lock to the input signal
Auto Off Time	AOT	RANGE: 0-6, Default: 0		0: Never 1: 5 minutes 2: 10 minutes 3: 15 minutes 4: 20 minutes 5: 25 minutes 6: 30 minutes
Auto Source Enable	ASC	RANGE: 0-1, Default: 0		0: Disable 1: Enable

Blank Screen Enable	BLK	RANGE: 0-1, Default: 0		0: Disable 1: Enable
Blank Screen Color	BSC	RANGE: 0-2, Default: 2		0: Black Screen 1: White Screen 2: Blue Screen
Blank Screen Style	BSS	RANGE: 0-2, Default: 0		0: Solid 1: Timer 2: Test Pattern
Brightness	BRT	RANGE: 0-100 Default: 50		0 is min Brightness 100 is max Brightness
BrilliantColor™ Look	BCL	RANGE: 0-1, Default: 0		0: Normal 1: Brilliant
Ceiling Mount Mode	CEL	RANGE: 0-1, Default: 0		0: Off (Image not Flipped) 1: On(Image Flipped)
Color	CLR	RANGE: 0-100, Default: 50		0 is min saturation 1 is max saturation
Color Space	CSM	RANGE: 0-4, Default: 0		0: RGB 1: REC709 2: REC601 3: RGB Video 4: Auto
Color Temp	TMP	RANGE: 0-4, Default: 0		0: Warmest 1: Warm 2: Cool 3: N/A (Reserved) 4: Bright
Contrast	CON	RANGE: 0-100, Default: 50		0 is min contrast 1 is max contrast
Current Source	SRC	RANGE: 0-3, Default: N/A		0: Computer 1 1: Computer 2 2: Composite 3: SVideo
Custom Key Setting	EFK	RANGE: 0-16, Default: 8		0 : Blank Screen 1 : Mute 3: Aspect Ratio 4: Source 5: Auto Image 6: Freeze Screen 8: Source Info 10: Projector Info 13: Overscan
Error Condition Setting	ERR	RANGE: 0-6, Default : N/A		0: No Error 1: The lamp won't strike after 5 attempts 2: N/A(Reserved) 3 : Lamp went out unexpectedly 4: Fan Failure 5: Over Temperature 6: Low Voltage
Factory Reset	RST	N/A		Returns all settings back to “new out of the box” configuration
Freeze Enable	FRZ	RANGE: 0-1, Default: 0		0: Disable , 1: Enable
Gamma	GTB	RANGE: 0-8, Default: N/A		2: Optimize gamma for video 3: Optimize gamma for Film 5: Optimize gamma for Bright ambient environment 7: Optimize gamma to simulate CRT display
Vertical Keystone Settings	DKV	RANGE: 0-100, Default: 50		Increasing this value increases positive keystoneing
Horizontal Position	HPS	RANGE: 0-100, Default: 50		Increasing the value moves active image to the right

Vertical Position	VPS	RANGE: 0-100, Default: 50		Increasing the value moves the active region up
Force Wide	FWM	RANGE: 0-1, Default: Projector Specific		0: Disable ((Default for 4:3 projectors) 1: Enable(Default for wide projectors)
Key Click	KCL	RANGE: 0-1, Default: 0		0: Off 1: On
Keypad Enable Setting	KPE	RANGE: 0-1, Default: 1		0: Disabled 1: Enabled
Language	LAN	RANGE: 0-17, Default: 0		0: English 1: French 2: German 3: Italian 4: Japanese 5: Korean 6: Norwegian 7: Portuguese 8: Russian 9: Simplified Chinese 10: Spanish 11: Traditional Chinese 12: Swedish 13: Dutch 14: Polish 15: Turkish 16: Danish 17: Finnish
Lamp Life Setting	LIF	N/A	string	Reports the expected maximum lamp life, in hours (max lamp life returns 3000)
Lamp Low Power	IPM	RANGE: 0-1, Default: 0		0: Off 1: On
Menu Enable Setting	MNU	RANGE: 0-1, Default: N/A		0: Off 1: On
Menu Navigation Setting	NAV	RANGE: 0-3, Default: N/A		0: Menu Key 1: Up Key 2: Down Key 3: Select Key
EE1 HDMI DDC Settings	EE1	RANGE: 0-1, Default: 0		0: Disable , 1: Enable
Vertical Keystone	DKV	RANGE: 0-100, Default: 50		Changes the size of the projector's display area
Horizontal Shift	DSH	N/A		Horizontal Shift Setting
Vertical Shift	DSV	N/A		Vertical Shift Setting
Digital Zoom Settings	DZM	RANGE: 0-100, Default:100		Changes the size of projector's display area
Keycode Entry Setting	KEY	N/A	Write Only	Sends key codes to the projector, which should respond as if the key came from the keypad or remote. See <i>Infrared Keycode Specification</i> for a list of key codes
Magnify Controls	MGC	RANGE: 0-1, Default: 0		0: Off 1: On
Magnify Level	MGL	RANGE: 0-25, Default: 0		Magnifies the image
Magnify Horizontal Position	MGH	RANGE: -80 - 80, Default: 0		Performs pan and scan of magnified region of image when Magnify Level setting is greater than 0
Magnify Vertical Position	MGV	RANGE: -60 - 60, Default: 0		Performs pan and scan of magnified region of image when Magnify Level setting is greater than 0

Menu Lockout Setting	MNL	RANGE: 0-15, Default: 0		0: No menus are locked out 1: Basic Picture Menu is locked out 2: Advanced Picture Menu is locked out 4: Setup Menu is locked out 8: Status and Service Menu is locked out 10: Lock out Advanced Picture & Status and Service Menu 15: Lock out all menus
OSD Offset (Menu Position)	OFF	RANGE: 0-100, Default: 0		When value is zero, the space above and to the left of the menu (and below and to the left of messages) is approximately equal to the height of the menu font. As value increases, the menu moves down and to the right, and messages move up and to the right. When value is at maximum (100) the offset is 6% of vertical resolution in both axes
Menu Transparency	TOE	RANGE: 0-90, Default: 60		As value increase, more image behind OSD. At 0, OSD is totally opaque, At, 60 OSD is 60% transparent
Audio Mute	MTE	RANGE: 0-1, Default: 0		0: Disable 1: Enable
Overscan Setting	OVS	RANGE: 0-1, Default: 0		0: Off 1: On
Phase	MSS	RANGE: 0-100, Default: Auto		Controls the phase
PIN Change	PCG	N/A	Write Only	"dsiuu,mimid" ("old pin,new pin") The setting value is treated as a write-only string value, maximum length 11 ASCII characters. The string is the current PIN, followed by a comma, followed by the new PIN. To generate the strings that represent the PIN sequences, use these equivalents: m = menu u = up d = down s = select i = source
PIN Entry (Enter pin code when pin code window show)	PET	N/A	Write Only	"dsiuu"
PIN Protect Setting	PIV	RANGE: 0-1, Default: 0		0: Off (Start without pin) 1: On (Start with pin)
Power On/Off	PWR	RANGE: 0-1, Default: 1		0: Off 1: On
Chime Enable	ACE	RANGE: 0-1, Default: 0		0: Disable 1: Enable
Power-Up Source	DSC	RANGE: 0-5, Default: 0		0: Computer 1 1: Computer 2 2: Composite 3: SVideo
Preset	PST	RANGE: 0-13, Default: 7		1: User 5: Presentation 7: Video 10: Bright 11: Whiteboard 12: Blackboard 13: Beige Wall

Prevent PC Screen Saver Settings	NND	RANGE: 0-1, Default: 1		0: Off - Mouse movement data is not sent 1: On - Mouse movement data is sent
Model Name.	MDL	N/A	string	Displays projector model
Firmware Version	FVS	N/A	string	Displays firmware version
Total Lamp Hours(current lamp)	LMP	N/A	string	Displays total hours
Total Lamp Hours(current lamp in high power mode)	LMO	N/A	string	Displays hours
Total Lamp Hours(current lamp in low power mode)	LME	N/A	string	Displays total hours
Total Lamp Hours(all lamps)	LMT	N/A	string	Displays total hours
Total Lamp Hours(all lamps in high power mode)	LTO	N/A	string	Displays total hours
Total Lamp Hours(all lamps in low power mode)	LTE	N/A	string	Displays total hours
Number of Lamp Resets	LMR	N/A	string	Displays no of times lamp is reset
Serial Number	USN	N/A	string	Displays projector's serial no.
Rear Project Mode	REA	N/A		0: Off 1: On
Reset Lamp Hours Command	LRT	RANGE: 0-1, Default: 0		0: Not Reset 1: Reset
Save User Preset	US1	N/A		1 to save User Preset
Screen Save Time Setting	SSV	RANGE: 0-6, Default: 4		0: Never 1: 5 mins 2: 10 mins 3: 15 mins 4: 20 mins 5: 25 mins 6: 30 mins
Sharpness	SHP	RANGE: 0-4, Default: 2		0: Max 1: High 2: Normal 3: Low 4: Min
Display Message Enable	DMG	RANGE: 0-1, Default: 0		0: Off, 1: On

Serial Port Baud Rate	BR1	RANGE: 0-8, Default: 7		0: 2400 1: 4800 2: 9600 3: 14400 4: 19200 5: 38400 6: 57600 7: 115200 8: 1200
Source Info	ABT	N/A	string	Displays Info on Current Source
Current Source Name	QAS	N/A	string	Displays Current Source Name
Aspect Ratio of Input Signal	QAR	N/A	string	Displays 4:3, 16:9 or 15:9
Resolution String	RES	N/A	string	Displays Resolution
Vertical refresh frequency, value specified to 1/100Hz	QVR	N/A	string	59.94Hz
Horizontal refresh frequency, value specified to 1/1000kHz	QHR	N/A	string	56.32kHz
Signal Format	QSF	N/A	string	NTSC, PAL, SECAM, Analog, 480p, 480i, 576p, 576i, 720p, 1080p or 1080i
Source Info Settings - Sync Type	QST	N/A	string	Separate, Sync on Green, Composite
Source Info Settings - Pixel Clock	QPC	N/A	string	Current color space except Auto
Current color space	QCS	N/A	string	RGB
Startup Screen	DSU	RANGE: 0-2, Default: 0		0: Factory Logo 1: Blank Screen 2: Snapshot
Sync Threshold	STH	RANGE: 0-100, Default: 0		Adjusts sync threshold
Tint	TNT	RANGE: 0-100, Default: 50		S-Video(NTSC only), Composite Video(NTSC) Increasing the value increases green. Decreasing the value increases red
Tracking	MTS	RANGE: 0-100, Default: 1		Increasing video, increases the number of pixel clocks per horizontal sync
Video Standard	VSU	RANGE: 0-5, Default: 0		0: Auto 1: NTSC 2: PAL 5: SECAM
Audio Volume	VOL	RANGE: 0-100, Default: 50		Increasing value, increases volume
White Peaking	WPK	RANGE: 0-100, Default: 0		0: Disables White Processing 100: Enables White Processing

Dynamic Messaging	PRN	"String (maximum Length : 53 characters)"	<p>Escape codes: The following escape codes can be included in the text string</p> <p>\c - Initialize (Box Mode) \d - Initialize (Ticker Bottom Mode) \u - Initialize (Ticker Top Mode) \e - Solid Background \f - Transparent Background \1 - Small Font Size \2 - Large Font Size \n - New Line \a – Beep \tnnn – Timer \b – Start Blink \s – Stop Blink</p> <p>\” - Print a double quote character \’ - Print a single quote character \\ - Print a backslash character</p> <p>Example: PRN"This is line 1\nThis is line 2" Note: Maximum number of characters between double quotes is 53</p>
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