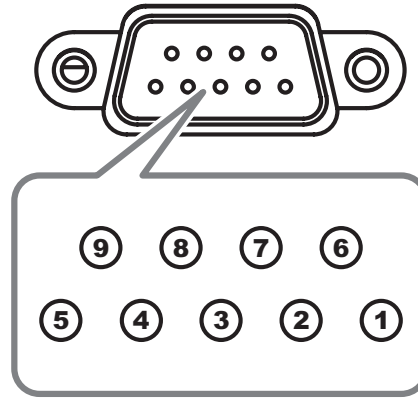


RS232 Commands

RS232 Connector



Pin No	Specification
1	N/A
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	N/A

RS232 Protocol Function List

RS232 Commands

Baud Rate	9600
Data Bits	8
Parity Check	None
Stop Bits	1
Flow Control	None
UART16550 FIFO	Disable

Lead Code	Projector ID		Command ID			space	variable	carriage return
~	X	X	X	X	X		n	CR
Fix code One Digit	Set in OSD 00~99 Two Digit 00 is for universal use		Defined by Optoma 2 or 3 Digit See the Follow content			One Digit	Per item Definition	Fix code One Digit

Keypad Command

Function			ASCII	Pass	Fail
Power	On/Off	n=1/n=2 & 0	~XX00 n	P	F
Power On with Password			~XX00 1nnnn	P	F
Resync		n=1	~XX01 n	P	F
AV Mute	On/Off	n=1/n=2 & 0	~XX02 n	P	F
Mute	On/Off	n=1/n=2 & 0	~XX03 n	P	F
Freeze		n=1	~XX04 n	P	F
Unfreeze		n=2			
IR Function	On/Off	n=1/n=2 & 0	~XX11 n	P	F
Direct Source Selection			~XX12 n	P	F
HDMI		n=1			
DVI-D		n=2			
BNC		n=4			
VGA 1		n=5			
VGA 2		n=6			
VGA 1 SCART		n=7			
VGA 1 Component		n=8			
S-Video		n=9			
Video		n=10			
VGA 2 SCART		n=12			
VGA 2 Component		n=13			
Component RCA		n=14			



Due to the difference application for each model. Function is dependent on the model purchased.

OSD/Image

Function			ASCII	Pass	Fail
Display Mode	Presentation	n=1	~XX20 n	P	F
	Bright	n=2			
	Movie	n=3			
	sRGB	n=4			
	Classroom	n=7			
	Blackboard	n=8			
	User 1	n=5			
	3D	n=11			
Brightness		n= -50 - +50	~XX21 n	P	F
Contrast		n= -50 - +50	~XX22 n	P	F
Sharpness		n= -15 - +15	~XX23 n	P	F

Appendices

Function					ASCII	Pass	Fail
Saturation				n= -50 - +50	~XX45 n	P	F
Tint				n= -50 - +50	~XX44 n	P	F
IMAGE /Advanced	BrilliantColor™ ¹			n= 0 - 10	~XX34 n	P	F
	Degamma	Film		n=1	~XX35 n	P	F
		Video		n=2			
		Graphics		n=3			
		PC		n=4			
	Color Temp.	Warm		n=1	~XX36 n	P	F
		Medium		n=2			
		Cold		n=3			
	Color Settings	Red	Hue	n=-50 ~ 50	~XX170 n	P	F
			Saturation	n=-50 ~ 50	~XX171 n	P	F
			Gain	n=-50 ~ 50	~XX27 n	P	F
		Green	Hue	n=-50 ~ 50	~XX172 n	P	F
			Saturation	n=-50 ~ 50	~XX173 n	P	F
			Gain	n=-50 ~ 50	~XX28 n	P	F
		Blue	Hue	n=-50 ~ 50	~XX174 n	P	F
			Saturation	n=-50 ~ 50	~XX175 n	P	F
			Gain	n=-50 ~ 50	~XX29 n	P	F
		Cyan	Hue	n=-50 ~ 50	~XX176 n	P	F
			Saturation	n=-50 ~ 50	~XX177 n	P	F
			Gain	n=-50 ~ 50	~XX30 n	P	F
		Yellow	Hue	n=-50 ~ 50	~XX178 n	P	F
			Saturation	n=-50 ~ 50	~XX179 n	P	F
			Gain	n=-50 ~ 50	~XX31 n	P	F
		Magenta	Hue	n=-50 ~ 50	~XX180 n	P	F
			Saturation	n=-50 ~ 50	~XX181 n	P	F
			Gain	n=-50 ~ 50	~XX32 n	P	F
		Reset			n=1	~XX33 n	P
	Color Space	Auto		n=1	~XX37 n	P	F
		RGB		n=2			
		YUV		n=3			
IMAGE /Advanced	Input Source Filters	HDMI		n=1	~XX39 n	P	F
		DVI-D		n=2			
		BNC		n=4			
		VGA 1		n=5			
		VGA 2		n=6			
		RCA Component		n=8			
		S-Video		n=9			
		Video		n=10			
IMAGE /Advanced	De-Interlace	On		n=1	~XX40 n	P	F
		Off		n=2 & 0			

¹ If no patent issue, the term will be modified to BrilliantColor™.

OSD/Display

Function			ASCII	Pass	Fail
Format	4:3	n=1	~XX60 n	P	F
	16:9 I/16:9	n=2			
	16:9 II / 16:10	n=3			
	Native	n=6			
	Auto	n=7			
Overscan		n=0-10	~XX61 n	P	F
Zoom		n= -30 - +100	~XX62 n	P	F
H Image Shift		n= -50 - +50	~XX63 n	P	F
V Image Shift (16:9)		n= -24 - +24	~XX64 n	P	F
V Keystone		n= -30 - +30	~XX66 n	P	F
3D	Off/DLP-Link	n=2&0, n=1	~XX230 n	P	F
3D Sync Invert	On/Off	n=1/n=2 &0	~XX231 n	P	F

OSD/Setup

Function			ASCII	Pass	Fail
Language	English	n=1	~XX70 n	P	F
	German	n=2			
	French	n=3			
	Italian	n=4			
	Spanish	n=5			
	Portuguese	n=6			
	Polish	n=7			
	Dutch	n=8			
	Swedish	n=9			
	Norwegian/Danish	n=10			
	Finnish	n=11			
	Greek	n=12			
	Traditional Chinese	n=13			
	Simplified Chinese	n=14			
	Japanese	n=15			
	Korean	n=16			
	Russian	n=17			
	Hungarian	n=18			
	Czechoslovak	n=19			
	Arabic	n=20			
	Thai	n=21			
	Turkish	n=22			
Projection	Front-Desktop	n=1	~XX71 n	P	F
	Rear-Desktop	n=2			
	Front-Ceiling	n=3			
	Rear-Ceiling	n=4			
Menu Location	Top Left	n=1	~XX72 n	P	F
	Top Right	n=2			
	Centre	n=3			
	Bottom Left	n=4			
	Bottom Right	n=5			
Signal	Frequency	n= 0~31	~XX73 n	P	F

Appendices

Function				ASCII	Pass	Fail
	Phase		n= -5 - +5	~XX74 n	P	F
	H. Position		n= -5 - +5	~XX75 n	P	F
	V. Position		n= -5 - +5	~XX76 n	P	F
Security	Security Timer	Hour/Day/Month	nnnnnn	~XX77 n	P	F
	Change Password				send back the password to confirm	
	Security Settings	Enable/Disable	n=1/n=2 &0	~XX78 n	P	F
Projector ID			n=00-99	~XX79 n	P	F
Audio	Mute	On/Off	n=1/n=2 &0	~XX80 n	P	F
	Volume		n=0-10	~XX81 n	P	F
Advanced	Logo	Optoma/User	n=1/n=2	~XX82 n	P	F
	Logo Capture		n=1	~XX83 n	P	F
	Closed Captioning	On/Off	n=1/n=2 &0	~XX88 n	P	F
RS232		RS232	n=1	~XX86 n	P	F
		Network	n=2		P	F

OSD/Option

Function				ASCII	Pass	Fail
Source Lock		On/Off	n=1/n=2 &0	~XX100 n	P	F
High Altitude		On/Off	n=1/n=2 &0	~XX101 n	P	F
Information Hide		On/Off	n=1/n=2 &0	~XX102 n	P	F
Keypad Lock		On/Off	n=1/n=2 &0	~XX103 n	P	F
Background Color	Blue		n=1	~XX104 n	P	F
	Black		n=2			
	Red		n=3			
	Green		n=4			
	White		n=5			
Advanced	Direct Power On	On/Off	n=1/n=2 &0	~XX105 n	P	F
	Signal Power On	On/Off	n=1/n=2 &0	~XX113 n	P	F
	Auto Power Off (min)		n=0-180	~XX106 n	P	F
	Sleep Timer (min)		n=000-995	~XX107 n	P	F
	Power Mode(Standby)	ECO mode/Active Mode	n=1/n=2 &0	~XX114 n	P	F
Lamp Setting	Lamp Hour		n=1	~XX108 n	nnnn	F
	Lamp Reminder	On/Off	n=1/n=2 &0	~XX109 n	P	F
	Brightness Mode	Bright/STD	n=1/n=2	~XX110 n	P	F
	Lamp Reset	Yes	n=1	~XX111 n	P	F
		No	n=2			
Reset		Yes	n=1	~XX112 n	P	F
		No	n=2			

Note: To also include AMX beacon signal in RS232 protocol

In basic terms, AMX controllers will issue a poll periodically to detect 3rd party devices connected to the RS232 port (in this case Optoma). The poll is "AMX" in ASCII followed by a carriage return '\r'.

On recognition of the poll, the Optoma projector will respond with a beacon string (in ASCII) identifying your device. The AMX controller (Branded NetLinX) can then download the interface from the amx website to control your device. An example beacon string for Optoma could be:

```
AMXB<-SDKClass=VideoProjector><-Make=Optoma><-Model=EX??><-Revision=1.0.0>
```

The beacon needs to be terminated by a carriage return ('\r', 0x0D)

Revision will indicate the firmware version that is running on the Optoma projector.

Device discovery is also supported over IP if control protocol works across it (most manufacturers take their RS232 command set and also use it for IP on a dedicated application port)

Information Format: INFOa

Status	Code Definition
Standby Mode	a=0
Warming up	a=1
Cooling Down	a=2
Out of Range	a=3
Lamp Fail	a=4
Thermal Switch Error	a=5
Fan Lock	a=6
Over Temperature	a=7
Lamp Hour Running Out	a=8

Information display:

Function		ASCII	Display Format	Fail
Information	n=1	~XX150 n	Okabbbbccddde	F

Format Definition		Code Definition
a = Power State	On	a=1
	Off	a=0
b = Lamp Hour		bbbb
c = Input Source	None	c=0
	HDMI	c=1
	DVI-D	c=2
	BNC	c=3
	VGA 1	c=4
	VGA 2	c=5
	Component RCA	c=6
	S-Video	c=7
	Video	c=8
d = Firmware Version		dddd
e = Display mode	None	e=0
	Presentation	e=1
	Bright	e=2
	Movie	e=3
	sRGB	e=4
	User1	e=5
	User2	e=6
	Classroom	e=7
	Blackboard	e=8

Note: The command ~XX150 n MUST work when projector is in standby mode

Model Name

Function		ASCII	Display	Depends	Fail
Model Name	n=1	~XX151 n	Oka	a=1/2/ 1=EX785, 2=EW775	F

RS232 Version No

Function		ASCII	Display	Depends	Fail
RS232 Version No	n=1	~XX152 n	Oka	a=??	F

Input Source Display

Function		ASCII	Display	Fail
Input Source	n=1	~XX121 n	Oka	F

Note: The command ~XX121 n MUST work when projector is in standby mode

Appendices

Status	Code Definition
None	c=0
HDMI	c=1
DVI-D	c=2
BNC	c=3
VGA 1	c=4
VGA 2	c=5
Component RCA	c=6
S-Video	c=7
Video	c=8

Software Version

Function		ACCII	Display	Fail
Software Version	n=1	~XX122 n	Okdddd	F

Display Mode

Function		ACCII	Display	Fail
Display Mode	n=1	~XX123 n	Oka	F

Status	Code Definition
Presentation	a=0
Bright	a=1
Movie	a=2
sRGB	a=3
User 1	a=4
User 2	a=5
Classroom	a=6
Blackboard	a=7

Power State

Function		ACCII	Display	Fail
Power State	n=1	~XX124 n	Oka	F

Note: The command ~XX124 n MUST work when projector is in standby mode

Status	Code Definition
On	a=1
Off	a=0

Brightness

Function		ACCII	Display	Fail
Brightness	n=1	~XX125 n	Oka	F

Contrast

Function		ACCII	Display	Fail
Contrast	n=1	~XX126 n	Oka	F

Aspect Ratio

Function		ACCII	Display	Fail
Aspect Ratio	n=1	~XX127 n	Oka	F

Status	Code Definition
4:3	a=0
16:9 I	a=1
16:9 II / 16:10	a=2
Native	a=3
Auto	a=4

Color Temperature

Function		ASCII	Display	Fail
Color Temperature	n=1	~XX128 n	Oka	F

Status	Code Definition
Warm	a=0
Medium	a=1
Cold	a=2

Projection Mode

Function		ASCII	Display	Fail
Projection Mode	n=1	~XX129 n	Oka	F

Status	Code Definition
Front-Desktop	a=0
Rear-Desktop	a=1
Front-Ceiling	a=2
Rear-Ceiling	a=3

Remote control

Customer code : 0x32CD

Item	Key Definition		ASCII	Pass	Fail
1	Power	n=1	~XX140 n	P	F
2	Resync	n=2		P	F
3	Keystone	n=3		P	F
4	AV Mute	n=4		P	F
5	Freeze	n=5		P	F
6	Display	n=6		P	F
7	Zoom in	n=7		P	F
8	Zoom out	n=8		P	F
9	Volume +	n=9		P	F
10	Volume -	n=10		P	F
11	Enter (for projection MENU)	n=11		P	F
12	Menu	n=12		P	F
13	Left	n=13		P	F
14	Up	n=14		P	F
15	Right	n=15		P	F
16	Down	n=16		P	F
17	Brightness	n=17		P	F
18	Format/1	n=18		P	F
19	HDMI/2	n=19		P	F
20	YPbPr/3	n=20		P	F
21	Source/4	n=21		P	F
22	DVI/5	n=22		P	F
23	BNC/6	n=23		P	F
24	VGA-1/7	n=24		P	F
25	Video/8	n=25		P	F
26	Video/9	n=26		P	F
27	VGA-2/0	n=27		P	F