



# RS232 Protocol Function List

Baud Rate : 19200  
 Data Bits: 8  
 Parity: None  
 Stop Bits: 1  
 Flow Control : None  
 UART16550 FIFO: Disable

**Note:** It supports data rates from 9600 to 115200 bps. The default is 19200 bps. Depending on the equipment, a lower baud rate may be recommended for long cable runs.

**Write Command**

~	X	X	X	X	X		n	CR
Lead Code	Projector ID		Command			space	variable	carriage return
Prefix	00~99 (00: All projectors)		000~999				0~9999	suffix

**Response Format**

Pass:       Fail:

**Read Command**

~	X	X	X	X	X		n	CR
Lead Code	Projector ID		Command			space	variable	carriage return
Prefix	00~99 (00: All projectors)		000~999				0~9999	suffix

**Response Format**

Pass:         Fail:

**System Automatically Send**

I	N	F	O	n
				variable

**Note:** There is a <CR> after all ASCII commands. 0D is the HEX code for <CR> in ASCII code.

### Character to HEX table

Character	HEX
~	7E
0	30
1	31
2	32
3	33
4	34
5	32
6	36
7	37
8	38
9	39
Space	20
CR (Enter)	0D

*e.g.*

*ASCII to HEX*

RS232 Command	~	0	0	1	9	5		1	CR
HEX	7D	30	30	35	39	35	20	31	0D

Level 1	Level 2	Level 3	Level 4	Level 5	Optoma Write CMD					Write Parameter	Optoma Read CMD					Read Parameter	Reply Parameter			
PICTURE	Display Mode	Presentation								1								1		
		Video								3								3		
		Bright								2								2		
		DICOM SIM				~	X	X	2	0	13	~	X	X	1	2	3	1	O k	13
		2D High Speed								18									18	
		3D								9									9	
		User								5									5	
		Save to User																		
	Brightness	0 ~ 100				~	X	X	2	1	0 ~ 100	~	X	X	1	2	5	1	O k	%
	Contrast	0 ~ 100				~	X	X	2	2	0 ~ 100	~	X	X	1	2	6	1	O k	%
	Sharpness	0 ~ 4				~	X	X	2	3	0 ~ 4									
	Color	0 ~ 100				~	X	X	4	5	0 ~ 100									
	Tint	0 ~ 100				~	X	X	4	4	0 ~ 100									
	Phase	0 ~ 100				~	X	X	7	4	0 ~ 100									
	Frequency	0 ~ 100				~	X	X	7	3	0 ~ 100									
	Horz Position	0 ~ 100				~	X	X	7	5	0 ~ 100									
	Vert Position	0 ~ 100				~	X	X	7	6	0 ~ 100									
	Auto Image					~	X	X	0	1	1									
	3D Display	3D Enable	Auto								0									
			Frame Packing								7									
			Side by Side								1									
			Top and Bottom				~	X	X	4	0	5								
			Frame Sequential								3									
			Off								8									
		3D Invert	Off								1									
			On				~	X	X	2	3	1								
	DLP Link	Off				~	X	X	2	3	0									
		On								1										
Color Matching	Enable	Off							0 & 2											
		On				~	X	X	4	1	0									
	Auto Test Pattern	Off							0											
		On				~	X	X	4	1	1									

**Note:** Some commands are not supported depending on the model.

Level 1	Level 2	Level 3	Level 4	Level 5	Optoma Write CMD	Write Parameter	Optoma Read CMD	Read Parameter	Reply Parameter								
PICTURE	Color Matching	Red Part of Red	0 - 1000		~ X X	4 1 2				(0 ~ 1000)							
		Green Part of Red	0 - 1000		~ X X	4 1 3					(0 ~ 1000)						
		Blue Part of Red	0 - 1000		~ X X	4 1 4					(0 ~ 1000)						
		Green Part of Green	0 - 1000		~ X X	4 1 5					(0 ~ 1000)						
		Red Part of Green	0 - 1000		~ X X	4 1 6					(0 ~ 1000)						
		Blue Part of Green	0 - 1000		~ X X	4 1 7					(0 ~ 1000)						
		Blue Part of Blue	0 - 1000		~ X X	4 1 8					(0 ~ 1000)						
		Red Part of Blue	0 - 1000		~ X X	4 1 9					(0 ~ 1000)						
		Green Part of Blue	0 - 1000		~ X X	4 2 0					(0 ~ 1000)						
		Red Part of White	0 - 1000		~ X X	4 2 1					(0 ~ 1000)						
		Green Part of White	0 - 1000		~ X X	4 2 2					(0 ~ 1000)						
		Blue Part of White	0 - 1000		~ X X	4 2 3					(0 ~ 1000)						
		Reset to Default	No									0 & 2					
	Reset to Default	Yes			~ X X	2 1 5					1						
	Advanced	BrilliantColor™	Normal Look			~ X X	5 6 0					0					
			Bright Look									1					
		White Peaking	0 - 100			~ X X	3 4					0-100					
		Gamma	Vldeo										2				
			Film										1				
			Bright			~ X X	3 5						12				
			CRT										13				
			DICOM										11				
		Color Temperature	Warmest										1			1	
			Warm				~ X X	3 6					2	~ X X 1 2 8	1	O k	2
			Cool									3				3	
			Bright									5				7	
		Color Space	RGB										2				
REC709												5					
REC601				~ X X	3 7						6						
RGB Video											4						
Auto											1						

**Note:** Some commands are not supported depending on the model.

Level 1	Level 2	Level 3	Level 4	Level 5	Optoma Write CMD	Write Parameter	Optoma Read CMD	Read Parameter	Reply Parameter	
PICTURE	Advanced	Color Settings	Red Gain	0 ~ 100	~ X X	2 4	0 ~ 100			
			Green Gain	0 ~ 100	~ X X	2 5	0 ~ 100			
			Blue Gain	0 ~ 100	~ X X	2 6	0 ~ 100			
			Red Offset	0 ~ 100	~ X X	2 7	0 ~ 100			
			Green Offset	0 ~ 100	~ X X	2 8	0 ~ 100			
			Blue Offset	0 ~ 100	~ X X	2 9	0 ~ 100			
			Reset RGB Gain/Offset		~ X X	5 1 7	1			
		Color Enhancement	0 ~ 2							
		Color Wheel Speed	2X		~ X X	5 4 7	1			
			3X				2			
		DynamicBlack™	Off		~ X X	1 9 1	0			
			On				1			
		Noise Reduction	0 ~ 100		~ X X	1 9 6	(0 ~ 10)			
		Flesh Tone Correction	0 ~ 100							
		Video Black Level	Off		~ X X	2 0 4	1			
			On				0			
		Film Mode	Off							
On										
OUTPUT	Aspect Ratio	Auto				7			7	
		4:3				1			1	
		16:10		~ X X	6 0	3	~ X X 1 2 7	1	O k	3
		Native				6				6
		3D Mode				13				13
	Overscan	Off				0				
		Zoom		~ X X	5 4 8	1				
		Crop				2				
	H Digital Zoom	50% ~ 400%		~ X X	5 0 4	50 ~ 400	~ X X 5 4 3	8	O k	%
	V Digital Zoom	50% ~ 400%		~ X X	5 0 5	50 ~ 400		7		
H Digital Shift	0 ~ 100		~ X X	6 3	0~100	~ X X 5 4 3	1	O k	%	
V Digital Shift	0 ~ 100		~ X X	6 4	0~100		2			

**Note:** Some commands are not supported depending on the model.

Level 1	Level 2	Level 3	Level 4	Level 5	Optoma Write CMD	Write Parameter	Optoma Read CMD	Read Parameter	Reply Parameter			
OUTPUT	Image Warping	PC Mode	Off		~	X X 5 4 9	0					
			On			1						
		H Keystone	0 ~ 40		~	X X 6 5	0 ~ 40		4	O k %		
		V Keystone	0 ~ 40		~	X X 6 6	0 ~ 40	~	X X 5 4 3		3	
		H Pincushion	0 ~ 100		~	X X 3 0 0	0 ~ 100		6			
		V Pincushion	0 ~ 100		~	X X 3 0 1	0 ~ 100		5			
	PIP/PBP	PIP/PBP Enable	Off		~	X X 3 0 2	0					
			On			1						
		Main Source	VGA					5			2	
			BNC					4			6	
			HDMI					1			7	
			DVI-D			~	X X 1 2	2	~	X X 1 2 1	1	1
			3G-SDI					22			18	
			HDBaseT					21			16	
			CVBS					10			5	
			Network Display					18			13	
		Sub Source	VGA					2			2	
			BNC					6			6	
			HDMI					1			7	
			DVI-D			~	X X 3 0 5	9	~	X X 1 3 1	1	1
			3G-SDI					11			17	
			HDBaseT					10			16	
			CVBS					8			5	
			Network Display					12			13	
		Swap			~	X X 3 0 6	1					
		Size	Small					3				
	Medium				~	X X 3 0 4	2					
	Large						1					

**Note:** Some commands are not supported depending on the model.





Level 1	Level 2	Level 3	Level 4	Level 5	Optoma Write CMD	Write Parameter	Optoma Read CMD	Read Parameter	Reply Parameter											
SETUP	Communications	Serial Port Baud Rate	9600																	
			14400																	
			19200																	
			38400																	
			57600																	
			115200																	
		Serial Port Echo	Off			~	X	X	5	5	6	0								
			On									1								
		Serial Port Path	RS232			~	X	X	5	5	7	1								
			HDBaseT									2								
Projector Address	0 - 9			~	X	X	7	9		(00 ~ 99)	~	X	X	5	5	8	1	O k	%	
OPTION	Auto Source	Off			~	X	X	1	0	0	1									
		On									0 & 2									
	High Altitude	Off			~	X	X	1	0	1	0 & 2									
		On									1									
	Test Pattern	Off									0									
		Grid									1									
		Red									5									
		Green									6									
		Blue			~	X	X	1	9	5	7									
		Yellow									8									
		Magenta									9									
		Cyan									10									
		White									2									
		Black									11									
	Background Color	Logo									7									
		Blue			~	X	X	1	0	4	1									
		Black									2									
		White									5									

**Note:** Some commands are not supported depending on the model.



Level 1	Level 2	Level 3	Level 4	Level 5	Optoma Write CMD					Write Parameter	Optoma Read CMD					Read Parameter	Reply Parameter				
OPTION	Light Source Settings	Auto Switch	On Failure Only							0											
			At Power-Up		~	X	X	5	5	0	1										
			After X Hours								2										
		Auto Switch Time (Hours)	5 - 3000		~	X	X	5	5	1	5-3000										
		Light Source Info	Lamp 1 Hours									~	X	X	1	0	8	1	O	k	%
			Lamp 2 Hours															2	O	k	%
			Total Projector Hours																		
		Reset Light Source Hours	1								1										
			2		~	X	X	1	1	1	2										
	Both (Dialog box)									3											
	Light Sensor	Light Sensor Calibration								1	~	X	X	5	5	2					
		Calibrated?	(Display Yes/No)																		
	Information	Model Name									~	X	X	1	5	1	1	O	k	#	
		Serial Number									~	X	X	3	5	3	1	O	k	#	
		Native Resolution									~	X	X	1	5	0	2	O	k	#	
		Firmware									~	X	X	1	2	2	1	O	k	#	
		Main Source															3	O	k	#	
		- Resolution															4	O	k	#	
		- Signal Format															5	O	k	#	
		- Pixel Clock															6	O	k	#	
		- Horz Refresh															7	O	k	#	
		- Vert Refresh															8	O	k	#	
		Sub Source									~	X	X	1	5	0	9	O	k	#	
		- Resolution															10	O	k	#	
		- Signal Format															11	O	k	#	
- Pixel Clock																12	O	k	#		
- Horz Refresh																13	O	k	#		
- Vert Refresh																14	O	k	#		
Light Source Mode															15	O	k	#			

**Note:** Some commands are not supported depending on the model.

Level 1	Level 2	Level 3	Level 4	Level 5	Optoma Write CMD	Write Parameter	Optoma Read CMD	Read Parameter	Reply Parameter
OPTION	Information	Current Light Source					~ X X 1 5 0	20	O k #
		Lamp 1 Hours					~ X X 1 0 8	1	O k #
		Lamp 2 Hours					~ X X 1 0 8	2	O k #
		Standby Power Mode					~ X X 1 5 0	16	O k #
		IP Address					~ X X 8 7	3	O k *** _ *** _ *** _
		DHCP					~ X X 1 5 0	17	O k #
		System Temperature					~ X X 1 5 0	18	O k #
	Factory Reset	Yes/No (Dialog box)			~ X X 1 1 2	1			
Service									

**Note:** Some commands are not supported depending on the model.

## Other Uart Command

Item	Command	Range or Explanation	Optoma Write CMD			Write Parameter	Optoma Read CMD			Read Parameter	Reply Parameter								
Color Wheel	Color Wheel Index 2x	0 ~ 248	~	X	X	5	5	3	0-248	~	X	X	5	5	9	2	O k	%	
	Color Wheel Index 3x	0 ~ 248	~	X	X	5	5	4	0-248						3				
Power	Power On	0 ~ 1	~	X	X	0	0		1	~	X	X	1	2	4	1	O k	1 0	
	Power Off	0 ~ 1							0 & 2										
AV Mute	AV Mute Enable	0 ~ 1	~	X	X	3	2	5	1	~	X	X	3	5	5	1	O k	1 0	
	AV Mute Disable	0 ~ 1							0 & 2										
Freeze	Freeze Screen	0 ~ 1	~	X	X	0	4		1										
	Unfreeze Screen	0 ~ 1							0 & 2										
Key input	Power On	simulate Key input							1										
	Power Off								50										
	1								51										
	2								52										
	3								53										
	4								54										
	5								55										
	6								56										
	7								57										
	8								58										
	9								59										
	Info			~	X	X	1	4	0	40									
	0									60									
	Mode									36									
	Auto									41									
	Input									46									
	Up									10									
	Left									11									
	Enter									12									
	Right									13									
Down								14											
Menu								20											

**Note:** Some commands are not supported depending on the model.

Item	Command	Range or Explanation	Optoma Write CMD				Write Parameter	Optoma Read CMD				Read Parameter	Reply Parameter							
Key input	Exit	simulate Key input	~	X	X	1	4	0	72											
	Gamma								61											
	Bright								19											
	Cont.								62											
	PIP								63											
	Lens H(Left)								64											
	Lens H(Right)								65											
	Focus(Up)								34											
	Lens V(Up)								66											
	Lens V(Down)								67											
	Focus(Down)								35											
	Keystone H(Left)								68											
	Keystone H(Right)								69											
	Zoom(Up)								32											
	Keystone V(Up)								15											
	Keystone V(Down)								16											
	Zoom(Down)								33											
	Shutter(AV Mute)								24											
Hot Key	70																			
Pattern	71																			
Focus in		Focus in – stop	~	X	X	3	0	8												
		Focus in – go small step							1											
		Focus in – go large step																		
Focus out		Focus out – stop	~	X	X	3	0	8												
		Focus out – go small step							2											
		Focus out – go large step																		
Zoom in		Zoom in – stop	~	X	X	3	0	7												
		Zoom in - go small step							1											
		Zoom in - go large step																		
Zoom out		Zoom out – stop	~	X	X	3	0	7												
		Zoom out - go small step							2											
		Zoom out - go large step																		

**Note:** Some commands are not supported depending on the model.

Item	Command	Range or Explanation	Optoma Write CMD				Write Parameter	Optoma Read CMD				Read Parameter	Reply Parameter				
Lens Shift Up		Left shift up – stop	~	X	X	8	4										
		Left shift up - go small step						3									
		Left shift up - go large step															
Lens Shift Down		Left shift down – stop															
		Left shift down - go small step						4									
		Left shift down - go large step															
Lens Shift Right		Left shift right – stop															
		Left shift right - go small step						6									
		Left shift right - go large step															
Lens Shift Left		Left shift left – stop															
		Left shift left - go small step						5									
		Left shift left - go large step															
PIN Protect	~XX527 12345	"12345" is current PIN code. When PIN protect is <b>off</b> , input this command will turn PIN protect <b>on</b> , and vice versa.	~	X	X	5	2	7	00000~99999								

**Note:** Some commands are not supported depending on the model.

## Error Message

Item	Command	Range or Explanation	Description	Note	Optoma Write CMD						
Error Message	Standby mode		Projector goto standby mode	Query command will reply all Error messages in system						0	
	Warming up		Projector warming up								1
	Cooling Down		Projector cooling down								2
	Out of range		Signal out of range								3
	Lamp hours running out		Lamp hours running out								8
	Lamp Ignite Fail		Laser fail to ignite								10
	Format Board Power On Fail		Format board fail to power on and projector auto shutdown								11
	Color Wheel Unexpected Stop		Color wheel unexpected stop and projector auto shutdown								12
	Over Temperature		System over temperature and projector auto shutdown								13
	FAN 1 Lock		Fan 1 failure and projector auto shutdown								14
	FAN 2 Lock		Fan 2 failure and projector auto shutdown								15
	FAN 3 Lock		Fan 3 failure and projector auto shutdown								16
	FAN 4 Lock		Fan 4 failure and projector auto shutdown								17
	FAN 5 Lock		Fan 5 failure and projector auto shutdown								18
	LAN fail then restart		Network communication failure and projector auto restart network								19
	LD lower than 60%		Available laser diodes is less than 60%								20
	LD NTC (1) Over Temperature		Laser bank 1 over temperature and projector auto shut down								21
	LD NTC (2) Over Temperature		Laser bank 2 over temperature and projector auto shut down								22
	High Ambient Temperature		High ambient temperature and projector auto dim to protect laser								23
	System Ready		System ready								24

**Note:** Some commands are not supported depending on the model.

