BenQ LU960ST Digital Projector Installation Guide

Digital Projector Installation Guide

Installation Projector LU960ST / LU960

Contents hide

Notice

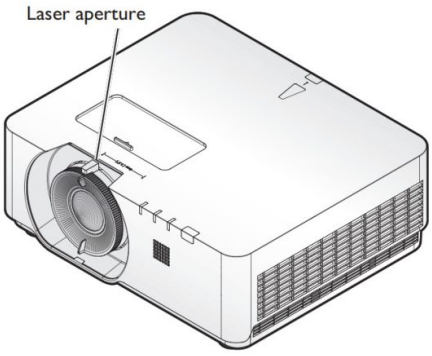
Notice on laser

Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Do not point laser or allow laser light to be directed or reflected toward other people or reflective objects. Direct or scattered light can be hazardous to the eyes and skin. There is a potential hazard of eye exposure to laser radiation if the included instructions are not followed. Do not allow to look into the projector beam at any distance from the projector. An adult should supervise the children to prevent exposure risks. Check that there is no one looking at the lens when using the remote control for starting the projector. Do not look at the projected light using optical devices(binoculars, telescopes, magnifying glasses, reflectors, etc).

- **Laser class**
  This Laser Product is designated as Class 1 during all procedures of operation and complies with IEC/EN 60825-1:2014.
- **Laser parameters**

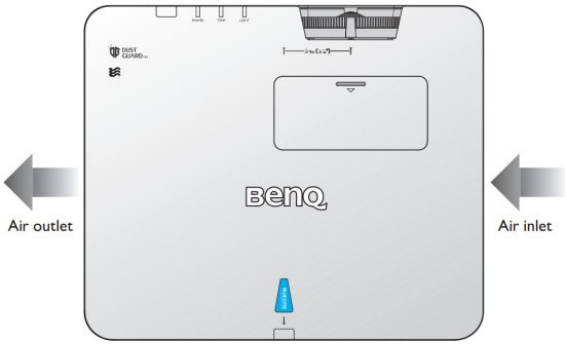
Wavelength	449nm – 461nm (Blue)
Mode of operation	Pulsed, due to frame rate
Pulse width	1.15ms
Pulse repetition rate	120Hz
Maximum laser energy	0.76mJ
Total internal power	>100w
Apparent source size	>10mm, at lens stop
Divergence	>100 mili Radian

- Laser light instruction

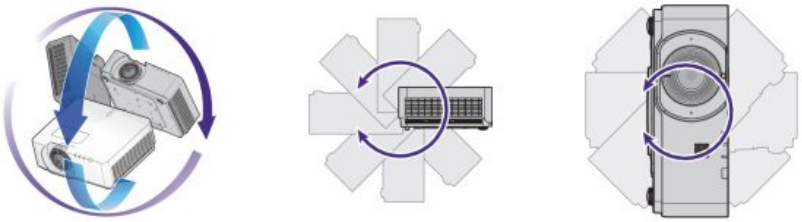


Cooling notice

Allow at least 50 cm (19.7 inches) for clearance around the exhaust vent. Make sure no objects block air inlet within 50 cm (19.7 inches).
Keep the outlet at least 1 m away from the inlets of other projectors.

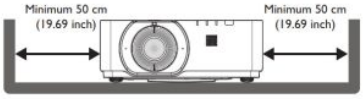


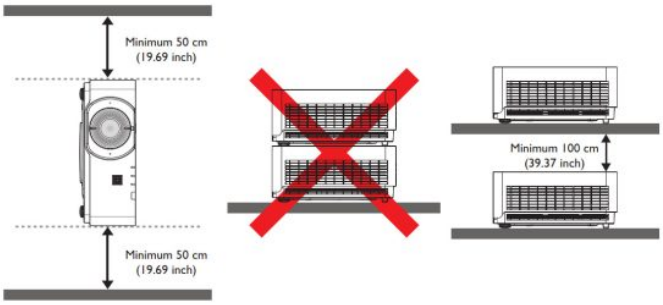
- The projector can be installed at any angle. 360-degree projection



Caution:
Installation of the projector should be performed carefully Incomplete or improper installation may cause the projector to fall, resulting in personal injury or property damage.

- Allow at least 50 cm of clearance around the exhaust vent.

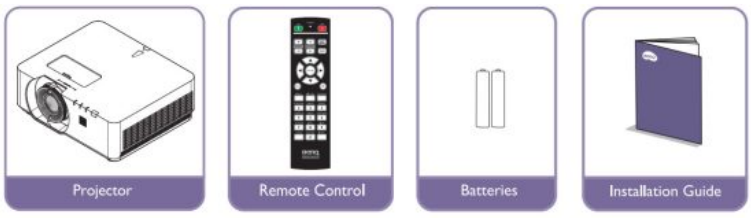


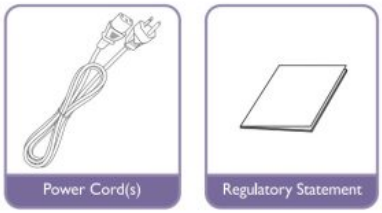


- Ensure that the air intake vents do not recycle hot air from the exhaust vent.
- When operating in an enclosed space, make sure that the surrounding air temperature does not exceed the projector's operating temperature and that the air intake and exhaust vents are unobstructed.
  All enclosures should pass a certified thermal evaluation to ensure that the projector does not recycle exhaust air. Recycling exhaust air may cause the projector to shut down even if the ambient temperature is within the acceptable operating temperature range.

Product information

Packing content





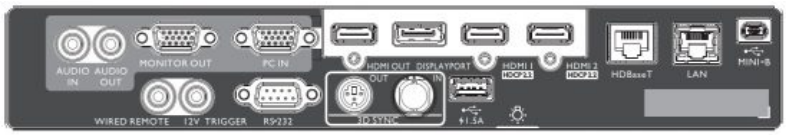
Specification

Projection system	LU960ST 1-CHIP DMD	LU960
Native resolution	1920*1200 pixels, 16:10	
Light source	Laser diodes	
Throw ratio	0.77 — 0.84	1.13 — 1.70
Power consumption	450Watts (Normal mode)/ 350Watts (Eco mode)	
Dimension	479.6 x 402 x 182.8 mm	
Weight	12 kg	

Note:

- The brightness output will vary depending on each unit and actual usage.
- Please find the latest user manual on the local website.

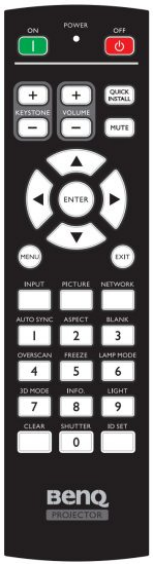
Terminals



MINI-B
Support Mini USB type B for service only.
LAN
For connection to RJ45 Cat5/Cat6 Ethernet cable to control the projector through a network.
HDBaseT
For connection to an HDBaseT transmitter via an Ethernet cable (Cat5/Cat6) to input up to 4K 30Hz, The RS232 control signal and IR control signal. The HDBaseT port supports RS-232/ IR/LAN Control, which can be selected in OSD.
HDMI 2
Connection to HDMI source.
HDMI 1
Connection to HDMI source.
DISPLAYPORT
Connection to a Display Port source.
HDMI OUT
Connection to HDMI device.
PC IN
15-pin VGA port for connection to RGB, component HD source, or PC.
MONITOR OUT
Connection to other display equipment for concurrent playback display.
AUDIO OUT
Connection to a speaker amplifier or headset.
AUDIO IN
Connection to an audio input source via an audio cable.
REAR LIGHT
Illumination for terminals.
USB 1.5A
Support 5V/1.5A output.
3D SYNC IN
Connect 3D-sync in the cable from a computer or an enabled device.
3D SYNC OUT
Connection to 3D IR sync signal transmitter.
RS-232 IN
Standard 9-pin D-sub interfaces for connection to PC control system and projector maintenance.
12V TRIGGER
3.5mm mini earphone jack, employs 200mA display relay to provide 12(+/-1.5)V output and short circuit protection.
WIRED REMOTE
Connection to wire remote controller.

Caution:
Make sure the port is valid before inserting a wired remote controller. The remote controller may be damaged in case of an invalid port, e.g. a wired remote controller is connected to trigger output. For more information about upgrading firmware via Lan, please contact BenQ service.

Remote control



ON / **OFF**
Toggles the projector between standby mode and on.
KEYSTONE+/KEYSTONEManually
corrects distorted images resulting from an angled projection.
VOLUME +/VOLUME
Increases/decreases the projector volume.
QUICK INSTALL
Displays the Quick Install OSD menu.
MUTE
Toggles projector audio between on and off.
Arrow keys (▲ Up, ▼ Down, ◄ Left, ► Right)
When the On-Screen Display (OSD) menu is activated, the arrow keys are used as directional arrows to select the desired menu items and to make adjustments.
ENTER
Selects an available picture setup mode. Activates the selected OnScreen Display (OSD) menu item.
MENU
Turns on the On-Screen Display (OSD) menu. Goes back to the previous OSD menu, exits, and saves menu settings.
EXIT
Goes back to the previous OSD menu, exits, and saves menu settings.
INPUT
Selects an input source for display.
PICTURE
Press to display Picture menu.
NETWORK
Selects Network Display as the input signal source.
AUTO-SYNC
Automatically determines the best picture timings for the displayed image.
ASPECT
Selects the display aspect ratio.
BLANK
Used to hide the screen picture.
OVERSCAN
Press to select overscan mode.
FREEZE
Freezes the projected image.
LAMP MODE
Press to display OSD menu to select desired light mode.
3D MODE
Press to display 3D setup menu.
INFO.
Press to display INFORMATION menu.
LIGHT
Press to open the backlight of the remote controller.
CLEAR
Clear remote ID SET assigned to all projectors. Press CLEAR and ID SET for five seconds. The LED blinks three times then the ID setting is cleared.
SHUTTER
The function is not available on this projector.
ID SET

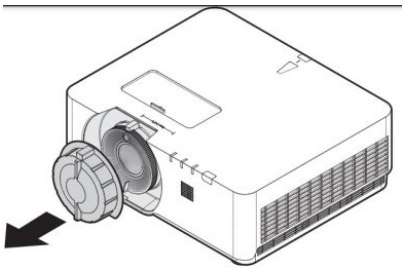
- Remote control ID SET (set the particular remote code) Press to set remote ID. Press ID SET for three seconds. The POWER indicator on the remote control blinks, then presses 01~99 to designate an ID.

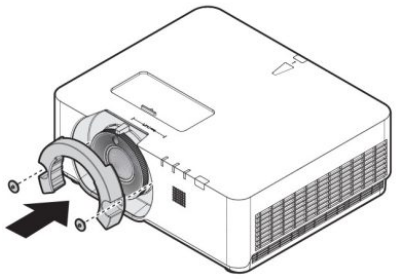
  Note:
  The remote control number (Remote control ID) must match the Projector ID Setting number for accurate control.
- Clear Remote ID SET (set remote code to all) Press CLEAR and ID SET for five seconds. The POWER indicator on the remote control blinks a single instance to reset remote code to all, can control projector no matter projector id setting.

Numeric buttons
Enters numbers in network settings.
Numeric buttons 1, 2, 3, 4 cannot be pressed when asked to enter a password.
WIRE REMOTE jack
Connect to a projector for wire remote control.

Installation

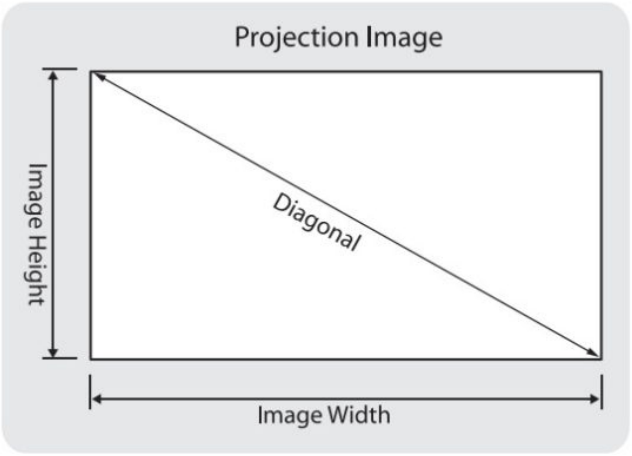
Lens Cap / **Lens Lock**





1. Remove lens cap before booting.
2. Install lens lock
3. Secure with screws, do not fully tighten
4. Adjust the focus
5. Tighten the screws

Projection table



• LU960ST

The screen aspect ratio is 16:10 and the projected picture is 16:10.

Note:

To optimize the projection quality, we suggest projecting images in an area without grayscale.

Image size						Distance					
Diagonal		Width		Height		Min distance – Wide		Average		Max distance – Tele	
Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
60	1524	51.	1292	32.	808	39.	995	41.	1043	43.	1091
100	2540	85.	2154	53.0	1346	65.	1659	68.	1738	72.	1818
130	3302	110.	2800	69.	1750	85.	2156	89.0	2260	93.0	2363
150	3810	127.	3231	80.	2019	98.	2488	103.	2607	107.	2727
160	4064	136.	3446	85.	2154	105.	2654	110.	2781	115.	2909
170	4318	144.	3662	90.	2289	111.0	2819	116.	2955	122.	3090
180	4572	153.	3877	95.	2423	118.	2985	123.	3129	129.	3272
190	4826	161.	4092	101.	2558	124.	3151	130.0	3303	136.0	3454
200	5080	170.	4308	106.0	2692	131.	3317	137.	3476	143.	3636
250	6350	212.0	5385	133.	3365	163.	4146	171.	4346	179.	4545
300	7620	254.	6462	159.0	4039	196.	4976	205.	5215	215.	5454

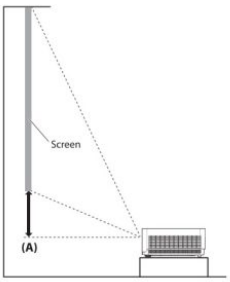
• LU960

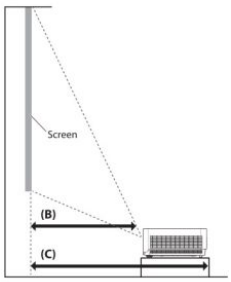
The screen aspect ratio is 16:10 and the projected picture is 16:10.

Note:

To optimize the projection quality, we suggest to project images in an area without grayscale.

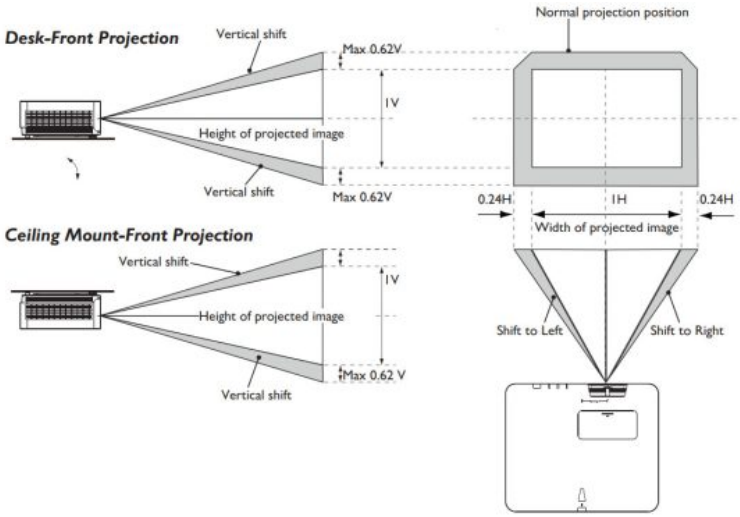
Image size						Distance					
Diagonal		Width		Height		Min distance – Wide		Average		Max distance – Tele	
Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
60	1524	51.	1292	32.	808	57.	1456	72.	1825	86.	2193
100	2540	85.	2154	53.0	1346	96.	2427	120.	3041	144.	3655
130	3302	110.	2800	69.	1750	124.	3156	156.	3954	187.	4752
150	3810	127.	3231	80.	2019	143.	3641	180.	4562	216.	5483
160	4064	136.	3446	85.	2154	153.	3884	192.	4866	230.	5848
170	4318	144.	3662	90.	2289	163.	4127	204.	5170	245.	6214
180	4572	153.	3877	95.	2423	172.0	4369	216.	5474	259.0	6579
190	4826	161.	4092	101.	2558	182.	4612	228.	5779	273.	6945
200	5080	170.	4308	106.0	2692	191.	4855	240.	6083	288.	7310
250	6350	212.0	5385	133.	3365	239.	6069	299.	7603	360.	9138
300	7620	254.	6462	159.0	4039	287.	7282	359.	9124	432.	10966





Note:

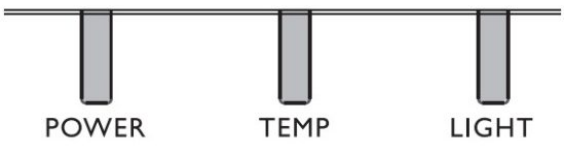
- For more visualized instructions, please go to the BenQ calculator website **http://projectorcalculator.benq.com/**.
- Ceiling installation must be done by a qualified professional. Contact your dealer for more information. It is not recommended you install the projector yourself.
- Only use the projector on a solid, level surface. Serious injury and damage can occur if the projector is dropped.
- Do not use the projector in an environment where extreme temperature occurs. The projector must be used at temperatures between 41 degrees Fahrenheit (5 degrees Celsius) and 104 degrees Fahrenheit (40 degrees Celsius).
- Screen damage will occur if the projector is exposed to moisture, dust or smoke.
- Do not cover the vents on the projector. Proper ventilation is required to dissipate heat. Damage to the projector will occur if the vents are covered.
- **Lens shift range diagram**
- **LU960ST / LU960**



Note:

- "To optimize the projection quality, we suggest utilizing the lens shift within vertical 50% and horizontal 20%.
- Black corner may occur when reaching the mechanical limitation"

LED indicator



- **LED Usage**

LED Name	Detailed Description
Power LED	Display the power on/off sequence status Orange: Power Off (Green + Red) Green: Power On Blink: Warming up/Shutting Down & Cooling / Error Code
Temperature Status LED	Display the Thermal status (Fan Fail, Over Temperature, etc.) Red: Thermal Over Temperature Blink: Error Code
Lamp Status LED	Display the Lamp status (Lamp fail, Lamp spoil, etc.) Red: Lamp Fail Blink: Error Code

System message

Power	Temp	Light	Status & Description
Orange			Stand-by
Green Flashing	–	–	Powering up
Green	–	–	Normal operation
Orange Flashing	–	–	Normal power-down cooling
Red Flashing	Red Flashing	Red Flashing	Download
Green		Red	CW start fails
Green	–	Red Fl ashi	Phosphor Wheel start fails
Orange	–	Red	Case open
Orange	–	ed FlasR hing	Filter replaces warning
Orange	Green Flashing	–	Thermal break sensor error

Burn-In Messages

Power	Temp	Light	Status & Description
Green	–	–	Burn-in ON
Green	Green	Green	Burn-in OFF

Lamp Error Messages

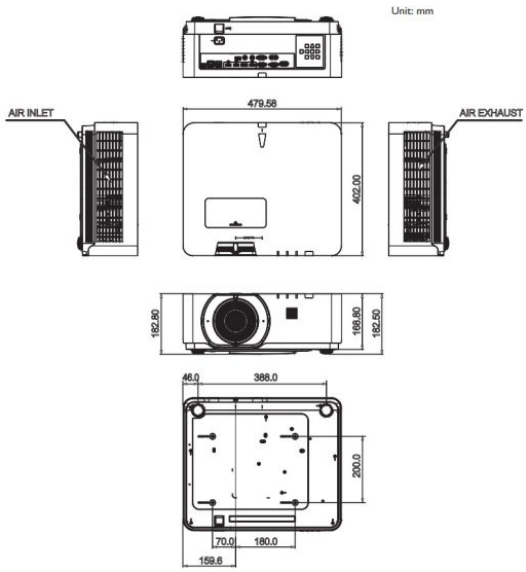
Power	Temp	Light	Status & Description
	–	Red	The lamp I error in normal operation
	–	Red Flashing	The lamp is not lit up

Thermal Error Messages

Power	Temp	Light	Status & Description
Red	Red	–	Fan I error (the actual fan speed is outside the desired speed)
Red	Red Flashing	–	Fan 2 error (the actual fan speed is outside the desired speed)
Red	Green	–	Fan 3 error(the actual fan speed is outside the desired speed)eed)
Red	Green Flashing	–	Fan 4 error (the actual fan speed is outside the desired speed)
Red Flashing	Red	–	Fan 5 error (the actual fan speed is outside the desired speed)
Red Flashing	Red Flashing		Fan 6 error (the actual fan speed is outside the desired speed)
Red Flashing	Green	–	Fan 7 error (the actual fan speed is outside the desired speed)
Green	Red	–	Temperature I error (over limited temperature)
Green	Red ng Fl ashi	–	Thermal Sensor I open error
Green	Green	–	Thermal Sensor I short error
Green	Green Flashing	–	Thermal IC #1 I2C Connection error
Green Flashing	Red	–	Temperature 2 error (over limited temperature)
Green Flashing	Red Flashing	–	Thermal Sensor 2 open error
Green Flashing	Green	–	Thermal Sensor 2 short error
Green Flashing	Green Flashing	–	Thermal IC #2 12C Connection error
Green	Red	Red	Temperature 3 error (over limited temperature)

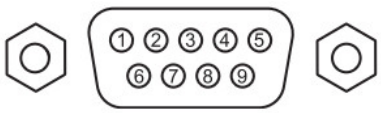
Power	Temp	Light	Status & Description
Green	Red	Red Flashing	Thermal Sensor 3 open error
Green	Red	Green	Thermal Sensor 3 short error
Green	Red	Green Flashing	Thermal IC #3 12C Connection error
Green	Red Flashing	Red	Temperature 4 error (over limited temperature)
Green	Red Flashing	Red Flas hing	Thermal Sensor 4 open error
Green	Red Flas ping	Green	Thermal Sensor 4short error
Green	Red Flashing	Gre F lashing in	Thermal IC #412C Connection error

Projector dimension

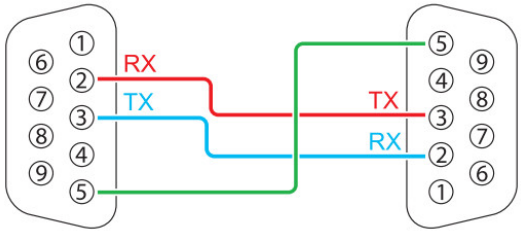


RS232 command control
RS232 pin assignment

No.	Serial
1	N.C
2	RDX
3	TXD
4	N.C
5	Ground
6	N.C
7	Short with pin8
8	Short with pin7
9	N.C



RS232 serial port with a crossover cable



Function	Type	Operation	ASCII
Power	Write	Power On	<CR>*pow=on#<CR>
	Write	Power Off	<CR>*pow=off#<CR>
	Read	Power Status	<CR>*pow=?#<CR>
Source Selection	Write	COMPUTER/YPbPr	<CR>*sour=RGB#<CR>
	Write	HDMI(MHL)	<CR>*sour=hdmi#<CR>
	Write	HDMI 2(MHL2)	<CR>*sour=hdmi2#<CR>
	Write	HDBaseT	<CR>*sour=hdbaset#<CR>
	Write	DisplayPort	<CR>*sour=dp#<CR>
	Read	Current source	<CR>*sour=?#<CR>
Audio Control	Write	Mute On	<CR>*mute=on#<CR>
	Write	Mute Off	<CR>*mute=off#<CR>
	Read	Mute Status	<CR>*mute=?#<CR>
	Write	Volume +	<CR>*vol=+#<CR>
	Write	Volume –	<CR>*vo1=-#<CR>
	Write	Volume level for customer	<CR>*vol=value#<CR>
	Read	Volume Status	<CR>*vol=?#<CR>

Function	Type	Operation	ASCII
	Write	Audio pass Through off	<CR>*audiosour=off#<CR>
	Write	Audio-Computerl	<CR>*audiosour=RGB#<CR>
	Write	Audio-HDMI	<CR>*audiosour=hdmi#<CR>
Audio Source Select	Write	Audio-HDMI2	<CR>*audiosour=hdmi2#<CR>
	Write	DisplayPort	<CR>*audiosour=dp#<CR>
	Write	HDBaseT	<CR>*audiosour=hdbaset#<CR>
	Read	Audio pass Status	<CR>*audiosour=?#<CR>
	Write	Presentation	<CR>*appmod=preset#<CR>
	Write	sRGB	<CR>*appmod=srgb#<CR>
	Write	Bright	<CR>*appmod=bright#<CR>
	Write	DICOM	<CR>*appmod=dicom#<CR>
	Write	Infographic	<CR>*appmodrinfographic#<CR>
	Write	Userl	<CR>*appmod=userl#<CR>
Picture Mode	Write	User2	<CR>*appmodr user2#<CR>
	Write	3D	<CR>*appmodrthreed#<CR>
	Write	HDRI 0	<CR>*appmodr hdr<CR>
	Write	HLG	<CR>*appmodr hlg<CR>
	Write	Video	<CR>*appmod=video<CR>
	Read	Picture Mode	<CR>*appmod=?#<CR>
	Write	Contrast +	<CR>*con=+#<CR>
	Write	Contrast –	<CR>*con=-#<CR>
	Write	Set Contrast value	<CR>*con=value#<CR>
	Read	Contrast value	<CR>*con=?#<CR>
	Write	Brightness +	<CR>Thri=+#<CR>
	Write	Brightness –	<CR>thri=-#<CR>
	Write	Set Brightness value	<CR>Thri=value#<CR>
	Read	Brightness value	<CR>thri=?#<CR>
	Write	Color +	<CR>*color=+#<CR>
	Write	Color –	<CR>*color=-#<CR>
	Write	Set Color value	<CR>*color=value#<CR>
Picture Setting	Read	Color value	<CR>*color=?#<CR>
	Write	Sharpness +	<CR>*sharp=+#<CR>
	Write	Sharpness –	<CR>*sharp=-#<CR>
	Write	Set Sharpness value	<CR>*sharp=value#<CR>
	Read	Sharpness value	<CR>*sharp=?#<CR>
	Write	Color Temperature-Warm	<CR>*tt=warm#<CR>
	Write	Color Temperature-Normal	<CR>*ct=normal#<CR>
	Write	Color Temperature-Cool	<CR>*ct=cool#<CR>
	Read	Color Temperature Status	<CR>'ct=?#<CR>
	Write	Aspect 4:3	<CR>tasp=4:3#<CR>
	Write	Aspect 16:9	<CR>tasp= l 6:9#<CR>
	Write	Aspect 16:10	<CR>*asp= l 6:1 0#<CR>

Function	Type	Operation	ASCII
	Write	Aspect Auto	<CR>xasp=AUTO#<CR>
	Write	Aspect Real	<CR>*asp=REAL#<CR>
	Write	Aspect 2.4:1	<CR>*asp=2.4#<CR>
	Read	Aspect Status	<CR>xasp=?#<CR>
	Write	Vertical Keystone +	<CR>*vkeystone=+#<CR>
	Write	Vertical Keystone –	<CR>*vkeystone=-#<CR>
	Write	Set Vertical Keystone value	<CR>* vkeystone=value#<CR>
	Read	Vertical Keystone value	<CR>tvkeystone=?#<CR>
	Write	Horizontal Keystone +	<CR>*hkeystone=+#<CR>
	Write	Horizontal Keystone –	<CR>*hkeystone=-#<CR>
	Write	Set Horizontal Keystone value	<CR>* hkeystone=value#<CR>
	Read	Horizontal Keystone value	<CR>*hkeystone=?#<CR>
	Write	Overscan Adjustment +	<CR>*overscan=+#<CR>
	Write	Overscan Adjustment –	<CR>*overscan=-#<CR>
	Read	Overscan Adjustment value	<CR>*overscan=?#<CR>
	Write	4 Corners Top-Left-X Decrease	<CR>*cornerfittlx=-#<CR>
	Write	4 Corners Top-Left-X Increase	<CR>*cornerfittlx=+#<CR>
	Read	4 Corners Top-Left-X Status	<CR>*cornerfittlx=?#<CR>
	Write	4 Corners Top-Left-Y Decrease	<CR>*cornerfittly=-#<CR>
	Write	4 Corners Top-Left-Y Increase	<CR>*cornerfittly=+#<CR>
	Read	4 Corners Top-Left-Y Status	<CR>*cornerfittly=?#<CR>
Picture Setting	Write	4 Corners Top-Right-X Decrease	<CR>*cornerfittrx=-#<CR>
	Write	4 Corners Top-Right-X Increase	<CR>*cornerfittrx=+#<CR>
	Read	4 Corners Top-Right-X Status	<CR>*cornerfittrx=?#<CR>
	Write	4 Corners Top-Right-Y Decrease	<CR>*cornerfittry=-#<CR>
	Write	4 Corners Top-Right-Y Increase	<CR>*cornerfittry=+#<CR>
	Read	4 Corners Top-Right-Y Status	<CR>*cornerfittry=?#<CR>
	Write	4 Corners Bottom-Left-X Decrease	<CR>*cornerfitblx=-#<CR>
	Write	4 Corners Bottom-Left-X Increase	<CR>*cornerfitblx=+#<CR>
	Read	4 Corners Bottom-Left-X Status	<CR>*cornerfitblx=?#<CR>
	Write	4 Corners Bottom-Left-Y Decrease	<CR>*cornerfitbly=-#<CR>
	Write	4 Corners Bottom-Left-Y Increase	<CR>*cornerfitbly=+#<CR>
	Read	4 Corners Bottom-Left-Y Status	<CR>*cornerfitbly=?#<CR>
	Write	4 Corners Bottom-Right-X Decrease	<CR>*cornerfitbrx=-#<CR>
	Write	4 Corners Bottom-Right-X Increase	<CR>*cornerfitbrx=+#<CR>
	Read	4 Corners Bottom-Right-X Status	<CR>*cornerfitbrx=?#<CR>
	Write	4 Corners Bottom-Right-Y Decrease	<CR>*cornerfitbry=-#<CR>
	Write	4 Corners Bottom-Right-Y Increase	<CR>*cornerfitbry=+#<CR>
	Read	4 Corners Bottom-Right-Y Status	<CR>*cornerfitbry=?#<CR>
	Write	Digital Zoom In	<CR>*zooml#<CR>
	Write	Digital Zoom out	<CR>xzoom0#<CR>
	Write	Auto	<CR>*auto#<CR>

Function	Type	Operation	ASCII
	Write	Brilliant color +	<CR>I3C=+#<CR>
	Write	Brilliant color –	<CR>13C=-#<CR>
	Write	Brilliant color set value	<CR>*BC=value#<CR>
	Read	Brilliant color status	<CR>*BC=?#<CR>
	Write	Auto(HDR)	<CR>*hdr=auto#<CR>
Picture Setting	Write	SDR	<CR>*hdr=sdr#<CR>
	Write	HDRIO	<CR>*hdr=hdr#<CR>
	Write	HLG	<CR>*hdr=hlg#<CR>
	Read	HDR status	<CR>*hdr=?#<CR>
	Write	Reset current picture settings	<CR>*rstcurpicsetting#<CR>
	Write	Reset all picture settings	<CR>*rstallpicsetting#<CR>
	Write	Projector Position-Front Table	<CR>xpp=FT#<CR>
	Write	Projector Position-Rear Table	<CR>*pp=RE#<CR>
	Write	Projector Position-Rear Ceiling	<CR>*pp=RC#<CR>
	Write	Projector Position-Front Ceiling	<CR>*pp=FC#<CR>
	Read	Projector Position Status	<CR>sap=?#<CR>
	Write	Quick auto search	<CR>*QAS=on#<CR>
	Write	Quick auto search	<CR>*QAS=off#<CR>
	Read	Quick auto search status	<CR>*QAS=?#<CR>
	Write	Menu Position – Center	<CR>tmenuposition=center#<CR>
	Write	Menu Position – Top-Left	<CR>tmenuposition=t1#<CR>
Operation Settings	Write	Menu Position – Top-Right	<CR>*menuposition=tr#<CR>
	Write	Menu Position – Bottom-Right	<CR>*menuposition=br#<CR>
	Write	Menu Position – Bottom-Left	<CR>*menuRosition=b1#<CR>
	Read	Menu Position Status	<CR>*menuRosition=?#<CR>
	Write	Direct Power On-on	<CR>*directpower=on#<CR>
	Write	Direct Power On-off	<CR>*directpower=off#<CR>
	Read	Direct Power On-Status	<CR>*directpower=?#<CR>
	Write	Signal Power On-on	<CR>*autopower=on#<CR>
	Write	Signal Power On-off	<CR>*autopower=off#<CR>
	Read	Signal Power On-Status	<CR>*autopower=?#<CR>
	Write	2400	<CR>thaud=2400#<CR>
	Write	4800	<CR>thaud=4800#<CR>
	Write	9600	<CR>xbaud=9600#<CR>
	Write	14400	<CR>xbaud=14400#<CR>
Baud Rate	Write	19200	<CR>xbaud=19200#<CR>
	Write	38400	<CR>*baud=38400#<CR>
	Write	57600	<CR>*baud=57600#<CR>
	Write	115200	<CR>*baud= I I 5200#<CR>
	Read	Current Baud Rate	<CR>*baud=?#<CR>
	Read	Lamp Hour	<CR>ltim=?#<CR>
Lamp Control	Write	Normal mode	<CR>lampm=lnor#<CR>

Function	Type	Operation	ASCII
Lamp Control	Write	Eco mode	<CR>xlampmreco#<CR>
	Write	Dimming mode	<CR>lampm=dimming#<CR>
	Write	Custom mode	<CR>lampm=custom#<CR>
	Write	Light level for custom mode	<CR>lampcustom=value#<CR>
	Read	Light level status for custom mode	<CR>lampcustom=?#<CR>
	Read	Lamp Mode Status	<CR>lampm=?#<CR>
	Read	Model Name	<CR>*modelname=?#<CR>
	Read	System F/W Version	<CR>*sysfwversion=?#<CR>
	Read	Scaler F/W Version	<CR>*scalerfwversion=?#<CR>
	Read	Lan F/W Version	<CR>lanfwversion=?#<CR>
	Read	MCU F/W Version	<CR>*mcufwversion=?#<CR>
Miscellaneous	Write	Blank On	<CR>thlank=on#<CR>
	Write	Blank Off	<CR>*blank=off#<CR>
	Read	Blank Status	<CR>*blank=?#<CR>
	Write	Freeze On	<CR>*freeze=on#<CR>
	Write	Freeze Off	<CR>*freeze=off#<CR>
	Read	Freeze Status	<CR>*freeze=?#<CR>
	Write	Menu On	<CR>*menu=on#<CR>
	Write	Menu Off	<CR>*menu=off#<CR>
	Read	Menu Status	<CR>*menu=?#<CR>
	Write	Up	<CR>*up#<CR>
	Write	Down	<CR>*down#<CR>
	Write	Right	<CR>*right#<CR>
	Write	Left	<CR>left#<CR>
	Write	Enter	<CR>*enter#<CR>
	Write	Back	<CR>*back#<CR>
	Write	Source Menu On	<CR>*sourmenu=on#<CR>
	Write	Source Menu Off	<CR>*sourmenu=off#<CR>
	Read	Source Menu Status	<CR>xsourmenu=?#<CR>
	Write	3D Sync Off	<CR>8d=off#<CR>
	Write	3D Auto	<CR>*3d=auto#<CR>
	Write	3D Sync Top Bottom	<CR>9d=tb#<CR>
	Write	3D Sync Frame Sequential	<CR>*3d=fs#<CR>
	Write	3D Frame packing	<CR>8d=fp#<CR>
	Write	3D Side by side	<CR>ld=sbs#<CR>
	Write	3D inverter disable	<CR>9d=da#<CR>
	Write	3D inverter	<CR>*3d=iv#<CR>
	Write	3D nVIDIA	<CR>9d=nvidia#<CR>
	Read	3D Sync Status	<CR>*3d=?#<CR>
	Write	Remote Receiver-front	<CR>*rr=1#<CR>
	Write	Remote Receiver-top	<CR>*rr=t#<CR>
	Write	Remote Receiver-top+front	<CR>*rr=tf#<CR>

Function	Type	Operation	ASCII
Miscellaneous	Read	Remote Receiver Status	<CR>*rr=?#<CR>
	Write	AMX Device Discovery-on	<CR>*amxdd=on#<CR>
	Write	AMX Device Discovery-off	<CR>*amxdd=off#<CR>
	Read	AMX Device Discovery Status	<CR>*amxdd=?#<CR>
	Read	Mac Address	<CR>*macaddr=?#<CR>
	Read	Serial Number	<CR>*serialnumber=?#<CR>
	Write	High Altitude mode on	<CR>*Highaltitude=on#<CR>
	Write	High Altitude mode off	<CR>9-lighaltitude=off#<CR>
	Read	High Altitude mode status	<CR>*Highaltitude=?#<CR>
	Write	Tint +	<CR>int=+#<CR>
	Write	Tint –	<CR>*tint=-#<CR>
	Write	Set Tint value	<CR>stint=value#<CR>
	Read	Get Tint value	<CR>xtint=?#<CR>
	Write	Set gamma value	<CR>*gamma=value#<CR>
	Read	Gamma value status	<CR xgamma=?#<CR>
	Write	Set HDR Brightness value	<CR>*hdrbri=value#<CR>
	Read	Get HDR Brightness value	<CR>thdrbri=?#<CR>
	Write	Red Gain +	<CR>*RGain=+#<CR>
	Write	Red Gain –	<CR>*RGain=-#<CR>
	Write	Set Red Gain value	<CR>*RGain=value#<CR>
	Read	Get Red Gain value	<CR>*RGain=?#<CR>
	Write	Green Gain +	<CR>*GGain=+#<CR>
	Write	Green Gain –	<CR>xGGain=-#<CR>
	Write	Set Green Gain value	<CR>*GGain=value#<CR>
	Read	Get Green Gain value	<CR>xGGain=?#<CR>
Color Calibration	Write	Blue Gain +	<CR>*BGain=+#<CR>
	Write	Blue Gain –	<CR>*BGain=-#<CR>
	Write	Set Blue Gain value	<CR>*BGain=value#<CR>
	Read	Get Blue Gain value	<CR>*BGain=?#<CR>
	Write	Red Offset +	<CR>*ROffset=+#<CR>
	Write	Red Offset –	<CR>*ROffset=-#<CR>
	Write	Set Red Offset value	<CR>*ROffset=value#<CR>
	Read	Get Red Offset value	<CR>*ROffset=?#<CR>
	Write	Green Offset +	<CR>*GOffset=+#<CR>
	Write	Green Offset –	<CR>*GOffset =-#<CR>
	Write	Set Green Offset value	<CR>*GOffset=value#<CR>
	Read	Get Green Offset value	<CR *GOffset=?#<CR>
	Write	Blue Offset +	<CR *BOffset=+#<CR>
	Write	Blue Offset –	<CR *BOffset=-#<CR>
	Write	Set Blue Offset value	<CR>*BOffservalue#<CR>
	Read	Get Blue Offset value	<CR>*80ffset=?#<CR>
	Write	Primary Color	<CR>*primcr=value#<CR>

Function	Type	Operation	ASCII
	Read	Primary Color Status	<CR>*primcr=?#<CR>
	Write	Hue +	<CR>*hue=+#<CR>
	Write	Hue –	<CR>thue=-#<CR>
	Write	Set Hue value	<CR>*hue=value#<CR>
	Read	Get Hue value	<CR>thue=?#<CR>
	Write	Saturation +	<CR>*saturation=+#<CR>
Color Calibration	Write	Saturation –	<CR>*saturation=-#<CR>
	Write	Set Saturation value	<CR>*saturation=value#<CR>
	Read	Get Saturation value	<CR>*saturation=?#<CR>
	Write	Gain +	<CR>*gain=+#<CR>
	Write	Gain –	<CR>tgain=-#<CR>
	Write	Set Gain value	<CR>*gain=value#<CR>
	Read	Get Gain value	<CR>tgain=?#<CR>
	Read	Error Code report	<CR>*error=report#<CR>
	Read	FAN I speed	<CR>sfanI=?#<CR>
	Read	FAN 2 speed	<CR>sfan2=?#<CR>
	Read	FAN 3 speed	<CR>*fan3=?#<CR>
	Read	FAN 4 speed	<CR>tlan4=?#<CR>
	Read	FAN 5 speed	<CR>tlan5=?#<CR>
Service	Read	FAN 6 speed	<CR>tfan6=?#<CR>
	Read	FAN 7 speed	<CR>lian7=?#<CR>
	Read	Temperature I	<CR>*tmpl=?#<CR>
	Read	Temperature 2	<CR>*tmp2=?#<CR>
	Read	Temperature 3	<CR>*tmp3=?#<CR>
	Read	Temperature 4	<CR>ttmp4=?#<CR>
	Read	LED indicator	<CR>*led=?#<CR>

PJLink

- **PJLink protocal**
  The network function of this projector supports the PJLink class 1, and the PJLink protocol can be used to perform projector setting and projector status query operations from a computer.
- **Control commands**
  The following table lists the PJLink protocol commands that can be used to control the projector.
- x characters in the table are non-specific characters.

Command	Control Details	Parameter/ Return String	Remark		
POWR	Power supply control	0 I	Standby Power on		
POWR?	Power supply status query	0 I	Standby Power on		
INPT	Input selection	II 12 21 31	PCI / YPbPrI PC2 / YPbPr2		
INPT?	Input status que- ry	32 33 34	VIDEO HDMII HDMI2 DVI-D HDBaseT		
AVMT	Mute	11	Video mute On Video mute Off Audio mute On Audio mute Off Video & Audio mute On		
AVMT?	Mute query	10 21 20 31 30	Video & Audio mute Off		
ERST?	Error status query	xxxxxx	Ist byte	Indicates fan errors, and returns 0 – 2	0 — No error is detected I = Warning
			2nd byte	Indicates light source errors, and returns 0 – 2	
			3rd byte	Indicates temperature errors. and returns 0 – 2	
			4th byte	2 = Error Return 0	
			5th byte	Return 0	
			6th byte	Indicates other errors, and returns 0 – 2	
LAMP?	Light source status query	xxxxxxxxxxx	1st numbe (1-S digitals): Light source I runtime		
INST?	Input selection list query	11 12 21 31 32 33 34	LU960ST		

Command	Control Details	Parameter/ Return String	Remark
NAME?	Projector name query	xxxxx	Returns the name set in [PROJECTOR NAME] of [NET-WORK SETUP]
INFI?	Manufacturer name query	BenQ	Returns manufacturer name
INF2?	Model name query	LU960ST	Returns model name
INFO?	Other informadon queries	xxxxx	Returns information such as version number
CLASS?	Class information query	I	Returns class for PJLink

Note:
RS-2З2 baud rate options are 2400, 4800, 9600, 14400, 19200, 38400, 57600 and 115200 (Default : 115200).

Documents / Resources

BenQ LU960ST Digital Projector [pdf] Installation Guide
LU960ST, Digital Projector, LU960ST Digital Projector, Projector