TPR-150CR Presenter® Transmitter Quick Start Guide


Thank you for purchasing the Luxi Electronics® TPR-150CR Presenter® transmitter. Please read through this guide before using the product.

How the product functions: The TPR-150CR has 2 PCBs. The front PCB has the switcher and scaler; please refer to the "Video signal path" and "Audio signal path" sections in the right column of the specs on page 4 for details. The rear PCB has the daisy chain circuits. Think of the daisy chain as the flow of a river; each transmitter (Tx) connects to a source device and loads the signal to the river flow; each receiver (Rx) unloads the signal from the river flow and sends it to the display it is connected to. The front panel and the RS-232 controls determine which source signal goes to which display.


Txm Tx2 Tx1 Rx1 Rx2 Rxn

Cat5, 6, 7
HDMI

Power options: This product draws power from an external 12 V power supply sold separately (Luxi P/N 69-002-01). Do NOT plug the power supply connector into any other connectors; this could cause permanent damages to the product and void the warranty.

Captive screw plug termination: The captive screw plugs for power, RS-232 and contact controls are supplied with the unit. Separate the wires about 1" (2.5 cm) long; strip off the wire insulation precisely 3/16" (5 mm) from the end. Identify the positive and negative leads for power; Luxi power supply has a white stripe on the positive wire. If not sure, use a multi meter to verify.
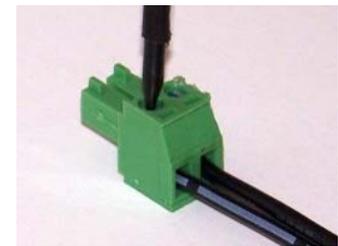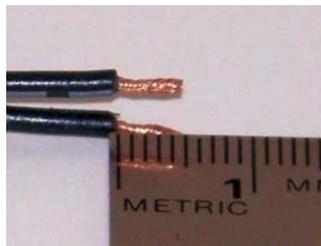
Mounting options: Luxi has the under desk mount sold separately (Luxi P/N 78-002-01); the product also fits many other mounting hardware from Extron, Middle Atlantic, etc. Only use the type 4-40, 3/16" (5 mm) long screws supplied with the mounting hardware to screw onto the product. Wrong type of screw could strip the threads; too long screw could touch and short the internal circuit, cause permanent damages to the product and void the warranty.
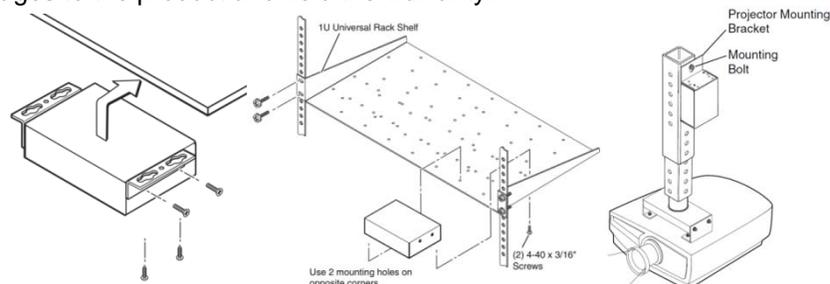
Control options: Pressing the "Show Me" button on the front panel will select the current box, or toggle thru the 3 video inputs. 3 sets of external contact closure push buttons and LEDs can select inputs discretely with the LED indication, see wiring diagram on the right side. Both front panel and external LEDs work like this: only one LED associated with the active input is lit at any given time. When the current box not selected in the daisy chain, the LED blinks slowly. When the current box selected, LED is solid on. A RS-232 host connected to the rear panel can control all functions.
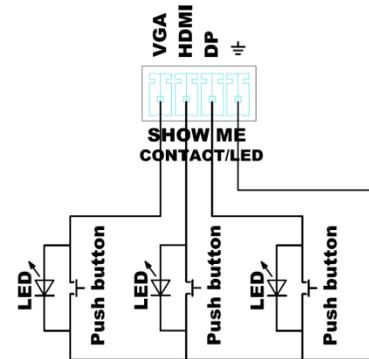
Auto input switching: When activated by a RS-232 command, the switcher will select the last connected input with active signal as the current input. Auto switching is turned off after any front panel, external button push, or a RS-232 input command. Default is auto switching off.

RS-232 controls: Only the Show Me/input selections can be controlled by front panel or external buttons; all other functions can only by controlled by RS-232. See the RS-232 Setup Guide on Luxi website for more information: http://luxielectronics.com/attachments/File/Luxi_RS-232_setup_guide.pdf. If RS-232 port does not seem to work, please double check the two bank DIP switches in a recessed window on the bottom of the enclosure, and make sure they are in "00" (low) positions.

System query command: Command "q" is to check the daisy chain system size, and the current box ID.
Signal routing commands: Command "$m*n$s" is to send signal from box Txm to box Rxn. Command "m*s" is to send signal from box Txm to all Rx. Command "$n1,n2,n3,n4$S" is to send audio to the 4 designated Rx boxes.
Pass thru commands: There are two types of them: Command "$x*y${xxxx}Q" is to send RS-232 command from ext. host connected to box x to ext. slave connected to box y. Command "$x*y$(xxxx)Q" is to send from ext. host connected to box x to box y. The responses will be routed back to ext. host.
Product information commands: Command "p" and "P" are used to get the box part number and firmware version, respectively.
Input select commands: Command "s" is to check the current selected input; "0s" is to enable auto switching; "1s" is to select VGA input, "2s" HDMI input; "3s" DP input. There will be a blank screen for a brief period of time during input switching. The length of the duration depends on the handshake time of the display and the source device, and the input and output resolutions, generally around 2 seconds or less. Note: the DP input only works with the source devices compatible with DP++ (dual mode).
Front panel and contact closure lockup: Command "A" is to check the current front panel switch status; "0A" is to defeat front panel and contact closure controls; "1A" (default) is to allow front panel and contact closure controls.
Auto image settings: Command "a" is to initiate auto image settings.
Scaler output video format settings: Command "o" is to check the current output video format; "1o" is to set the output to 720p (default); "2o" is to set the output to 1080p; "3o" is to set the output to "Pixel to pixel" (source device to match display's native resolution).
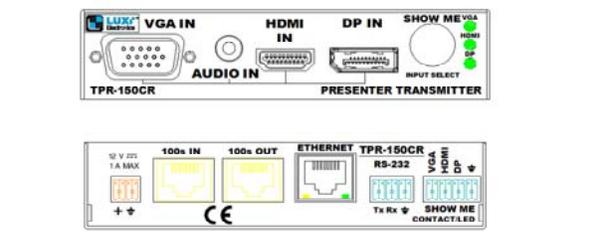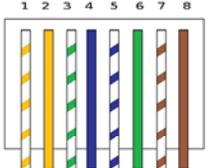**Image size (zoom) adjustments:** Many displays made by consumer electronics manufacturers tend to set the image on the screen in overscan even fed by computer signals, making the menu icons on the sides cut off or disappear. Use the "z" commands to set (shrink) the proper picture size on screen.
Audio mode commands: Command "M" is to check the current audio status; "0M" is to mute the audio; "1M" is to send digital audio from the HDMI or DP inputs directly to the output in their original format (default, use this option to retain the surround sound modes); "2M" is to mix the front panel analog audio input with the de-embedded audio from HDMI or DP inputs, then embed to output.
Resetting the product to factory defaults: Use the RS-232 command "r" to reset the product to factory defaults. See page 3 for the default values.

Support: Please contact your reseller directly for local support; or Luxi using the contact info in the header. See Luxi website for additional and more updated documents.

		Luxi Presenter TPR-150CR RS-232 commands			
					Rev 1.21
Daisychain commands	Command		Response		
		Local box	Destination box	All other boxes	
Function	External host to MCU	MCU to external host	MCU to external host	MCU to external host	Notes
System information commands					
Query system size	q	Max Tx=M¶ Max Rx=N¶ Me=Txm¶ or Me=Rxn¶			Handled locally at daisy chain FW from local device list
Unsolicited message when system status changes		Reset¶	Reset¶	Reset¶	Host to send "q" after receiving this "Reset" from the device; this happens after device detects any changes in the daisy-chain, or after daisy chain IC reboots and sync the UART port
Signal routing commands					
Send video and audio from source m to display n	m*ns	AV Txm live¶ AV Rxn live¶	AV Txm live¶ AV Rxn live¶	AV Txm live¶ AV Rxn live¶	Any device can send, daisy chain req is sent to Txm and Rxn to create the video stream. The response is sent to all Tx and Rx boxes
Send video from source Txm to all displays and audio from source Txm to audio sinks on the Audio Sink Distribution List, same behavior for 'Show Me' button when pressed from Txm	m*s	AV Txm live¶	AV Txm live¶	AV Txm live¶	Any device can send, daisy chain req is sent to Txm to broadcast to all Rx. The response is sent to all Tx and Rx boxes. The next broadcast command will change the source but maintain the audio distribution list. The broadcast will be turned off by the next point to point route command in row 13.
Define devices Rxn1, $n2$, $n3$ and $n4$ to be on the Audio Sink Distribution List	$n1$,$n2$,$n3$,$n4$S	Audio Sink Rx$n1$,$n2$,$n3$,$n4$ live¶	Audio Sink Rx$n1$,$n2$,$n3$,$n4$ live¶	Audio Sink Rx$n1$,$n2$,$n3$,$n4$ live¶	This list needs to be setup repeatedly at each Tx device locally. Use pass thru command in row 18 to send to each Tx one by one if setup is done from an external controller at one location. The MCU of each Tx will then send the command locally to the daisy chain IC. The current list will be replaced by the next (new) list command. If not defined, Rx1,Rx2,Rx3,Rx4 will be the default list. The response is send to all Tx and Rx boxes
Pass thru commands					
The external host connected to Presenter x sending to the external device connected to Presenter y to control the functions of that external device	x*y(xxxxx)Q		xxxxx		Add a leading "0" in front of any number associated with a Rx device to distinguish from the Tx number. Response send back to the host device. Maximum 25 charactors in bracket
The external device connected to Presenter y sending the response back to the external host connected to Presenter x		rrrrr	rrrrr		Any message comes in to the RS-232 port on box y within 1 seconds from the command in row 19 is considerted a response to command 19 and will be sent back to box x. MCU in box y will end the response reception mode when seeing 1st carriage return or 1s timer ending whichever happens first
The external host connected to Presenter x sending to Presenter y to control the functions of that Presenter	x*y(xxxxx)Q				Add a leading "0" in front of any number associated with a Rx device to distinguish from the Tx number. Response send back to the host device
Presenter y sending response back to the external host connected to Presenter x		rrrrr			
All commands below are local commands when the control host is connected directly to the Presenter device					
To control a Presenter device remotely, place the local commands and responses below into pass thru command in line 22					
Product information commands					
Query device part number	p	74-018-01¶			Numeric and dash only
Query rear PCB MCU firmware version	P	x.xx¶			Numeric only
Query front PCB MCU firmware version	1P	x.xx¶			Numeric only; local only, no pass thru
Query front PCB scaler firmware version	2P	x.xx¶			Numeric only; local only, no pass thru
Query front PCB splitter firmware version	3P	x.xx¶			Numeric only; local only, no pass thru
Front panel scaler firmware update	2u	Firmware upgrade OK¶			Local only, no pass thru
System information commands					
Query current live source and display	*s	AV Txm live¶ AV Rxn live¶			If in AV broadcast mode (one source to all displays), no need for this response
Query current live audio sinks	S	Audio Sink Rxn1,n2,n3,n4 live¶			
EQ value reading	E	xx			Input EQ value reading
Scaler commands					Factory default settings
Reset command					
Reset to factory defaults	r	Txm reset			This command requires system power recycle after at least 10 seconds. Do not use it during presentation.
Tx input selection commands					
Select local input x of Txm device	xs	Txm Input x live¶			From Txm device
Set auto sw on on Txm device	0s	Txm auto sw on¶			From Txm device
Query local input status	s	Txm Input x live¶ (or) Txm auto sw on¶			From Txm device	2s (HDMI input)
Defeat Show Me sw on Txm device	0A	Txm Show Me sw off¶			From Txm device
Allow Show Me sw on Txm device	1A	Txm Show Me sw on¶			From Txm device	1A (Show Me sw allowed)
Query Show Me sw status on Txm device	A	Txm Show Me sw on¶ (or) Txm Show Me sw off¶			From Txm device
Scaler commands					
Initiate auto image on Txm device	a	Txm auto image on¶			From Txm device
Set output format to 720p on Txm device	1o	Txm output format 720p¶			From Txm device	1o (output 720p)
Set output format to 1080p on Txm device	2o	Txm output format 1080p¶			From Txm device
Set output format to 1080p on Txm device	3o	Txm output format pixel to pixel¶			From Txm device; Only supports 5 preset resolutions: 720p, 1080p, 1024x768, 1280x800, 1366x768
Query output format on Txm device	o	Txm output format 720p¶ (or) Txm output format 1080p¶ (or) Txm output format pixel to pixel¶			From Txm device
Set zoom level on Txm device	xz	Txm zoom level x¶			From Txm device; x has 6 possible values, 1 thru 6	1z (zoom level 1)
Query zoom level on Txm device	z	Txm zoom level x¶			From Txm device
Audio commands					
					From Txm device
Audio mute on	0M	Txm audio mute on¶			From Txm device
Digital audio pass thru	1M	Txm digital audio pass thru¶			From Txm device	1M (digital audio pass thru)
Audio mixing and embedding	2M	Txm audio mixing and embedding¶			From Txm device
Query audio mode	M	Txm audio mute on¶			From Txm device
		(or) Txm digital audio pass thru¶			From Txm device
		(or) Txm audio mixing and embedding¶			From Txm device
RS-232 baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity		**RS-232 port pin conf** 1 = Tx, 2 = Rx, 3 = GND		
Note: The italic and underlined letters represent decimal numeric numbers			¶ is CR/LF (carriage return/line feed) (HEX value 0D 0A)		Copyright C 2015 Luxi Electronics Corp

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Product Specifications	Part Number: 74-018-01
Presenter 150 series transmitter	Model: TPR-150CR
Product Image	**Product Drawing**

Front

Back

Features and Benefits

> Universal interface, compatible with all source signal formats
> Built in scaler, audio de-embedder, embedder
> Completely scalable; you can form many different sized switcher, splitter by daisy chaining with Presenter 110 Tx/Rx
> Only 1 Cat6 cable needed to connect the adjacent Presenter Tx or Rx; no more heavy clusters of cables; very easy cable pull and termination
> No compression; full 18 Gbps bandwidth; virtually no propagation delays
> "Show Me" control button on every Tx box gives every user a simplified way to control the signal routing
> Additional control devices can be inserted anywhere in the daisy chain via RS-232
> Signals can be transmitted to very long distances with multiple daisy-chained devices up to 110' (33 m) each span (e.g., 10 spans for up to 330 m)
> Remote power capability
> Rack mountable, under-table mountable, above-projector mountable metal enclosures

Package

One piece in one color cardboard box; with captive screw plugs and quick start guide
no power supply

Box size: 7.4" x 6.1" x 1.1" (18.9 x 15.4 x 2.8 cm)
Weight: package, 1.1 lb (0.49kg); product, 0.97 lb (0.44kg)
20-pc box size: 12.4" x 11.6" x 9.4" (31.5 x 29.5 x 24.0 cm)
20-pc box weight: 23 lb (10.5 kg)

Connections

Input connectors: VGA, HDMI, DP, audio, chain in, Ethernet
Output connector: 1 daisy chain out
Power connector: 2-pin 3.5 mm captive screw receptacle
Control connectors: 1 RS-232, 1 Show Me/Input selection

Other Related Products

Power supply, 100-240 V in on US plug, 12 V out, P/N 69-002-01

Under desk mount, P/N 78-002-01

Presenter receiver, P/N 74-020-01, model RPR-110CR

Mechanical

Enclosure material: steel
Enclosure size: 4.29" x 1.00" x 6.00" (10.9 x 2.5 x 15.2 cm)

Electrical

Video signal path: There are 3 video inputs and 1 video output
The analog RGB video from the VGA input goes to the scaler's analog input; the DisplayPort (DP) input signal is first converted to HDMI, then switched with the HDMI input signal, the selected signal goes to the digital input of the scaler. The scaler converts all video to LVDS, feeds to a HDMI encoder, then the daisy chain processer.
VGA input: 0.7 Vp-p analog RGBHV, 75 ohm impedance
HDMI input: HDMI 2.0, 1080p deep color, max 6.7 Gbps
DP input: DP 1.3 Dual Mode, 1080p deep color, max 6.7 Gbps
Video processing: 36-bit decoding, sampling, 225 MHz clock
Video input resolution range: from 800x600 to 1920x1080
Scaled video output resolutions presets: 1080p, 720p, "pixel to pixel": 1024x768, 1280x800, 1366x768, 720p, 1080p, etc
HDCP compliance: HDCP 1.2
Audio signal path: There are 3 audio inputs and 1 audio output. The digital audio embedded in HDMI and DP inputs are selected by a HDMI switcher, then goes to the scaler. The scaler produces both SPDIF digital audio and de-embedded analog audio. The HDMI encoder can select the former in pass thru or the latter mixed with analog input and embeds into HDMI, then the daisy chain processer
Daisy chain system
Luxi proprietary format, digital video, audio, control, Ethernet and power, up to 32 devices (1 Tx = 1; 1 Rx = 2)
System cables: unshielded Cat6 550 MHz rated 23 AWG solid conductor cables recommended
Max distance between 2 adjacent devices: Typical 33 m (110') for 720p; 18 m (60') for 1080p (depends on source, display device performance, and signal format)
RJ45 connector pin configuration: standard EIA 568B pinout
Power: 12 V DC, 0.3 A from external power or other Presenter
Optional power supply: Not included. Luxi 69-002-01
Auto switching 100-240 V AC input on US plug, 12 V DC 1 A max on bare wires, wall ward type, UL, PSE, CE, FCC
Mounting: Not included. Luxi under desk mount 78-002-01. compatible with many Extron and Middle Atlantic models
Regulatory compliance
Safety: CE, cUL, UL (power supply only)
EMI/EMC: CE, FCC Class A
MTBF: 30,000 hours
Warranty: 3 years parts and labor