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Kramer Electronics Ltd Kramer EXT3-TR Instruction Manual

Contents

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Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment.
- Review the contents of this user manual.
- Go to **www.kramerav.com/downloads/EXT3-XR-TR** or **www.kramerav.com/downloads/TP-**
- 600TR to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving Best Performance

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).
- Do not secure the cables in tight bundles or roll the slack into tight coils.
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality.
- Position your Kramer EXT3-XR-TR / EXT3-TR away from moisture, excessive sunlight and dust.

Safety Instructions

Caution

- This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.
- For products with relay terminals and GPI\O ports, please refer to the permitted rating for an external connection, located next to the terminal or in the User Manual.
- There are no operator serviceable parts inside the unit.

Warning

- Use only the power cord that is supplied with the unit.
- To ensure continuous risk protection, replace fuses only according to the rating specified on the product label which is located on the bottom of the unit.

Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of

WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at **www.kramerav.com/il/quality/environment**.

Overview

- Congratulations on purchasing your Kramer EXT3-XR-TR/EXT3-TR 4K60 HDMI/USB Extender.
- EXT3-TR is identical to EXT3-XR-TR except for ETH extension and reach performance. EXT3-XR-TR, in this User Manual, refers to both devices, unless specified otherwise.
- EXT3-XR-TR is a high-performance, extended-reach HDBaseT 3.0 extender for 4K60Hz (4:4:4) HDMI, USB, Ethernet (EXT3-XR-TR only), RS-232, and IR signals over twisted pair, flexibly set as transmitter-side or receiver-side device. EXT3-XR-TR transmitter-side converts all input signals into the transmitted HDBaseT 3.0 signal. EXT3-XR-TR receiver-side receives the HDBaseT 3.0 signal and converts it back into the original input signals.
- EXT3-XR-TR extends video signals up to 100m (330ft) over CAT copper cables at 4K@60Hz (4:4:4) video resolution.
- EXT3-TR extends video signals up to 40m (130ft) over CAT copper cables at 4K@60Hz (4:4:4) video resolution and up to 70m (230ft) at 4K@30Hz (4:4:4).
- EXT3-XR-TR provides exceptional quality, advanced and user-friendly operation, and flexible control.

Exceptional Quality

- High Performance Standard Extender – Professional HDBaseT extender for providing extended-reach signals over twisted-pair copper infrastructures. EXT3-XR-TR is a standard extender that can be connected to any market-available HDBaseT-compliant extension product. For optimum extension reach and performance, use recommended Kramer cables.
- HDMI Signal Extension – HDCP 2.3, EDID and CEC signals are passed through from the source to the display. Supports HDR10, deep color, x.v.Color™, lip sync, HDMI uncompressed audio channels, Dolby TrueHD, DTS-HD, 2K, 4K, and 3D as specified in HDMI 2.0.
- HDMI extension – Uncompressed 4K@60Hz (4:4:4).

Advanced and User-friendly Operation

- HDMI Mirroring – Transmitter-side extender mirrors input HDMI signal to loop output port for connecting a local monitor or an additional unit in a daisy chain.
- Flexible USB 2.0 Extension – An active USB host is connected to the extender at either the transmitter or receiver sides. USB 2.0 signals are extended between the extender transmitter and receiver sides, enabling connection of the active USB host to both local and remote USB devices, such as camera and audio devices, or HID (Human Interface Devices) mouse or keyboard devices.
- Cost-effective Maintenance – Status LED indicators for HDMI, Loop, HDBT, and USB active host ports, facilitate easy local maintenance and troubleshooting.
- Easy and Elegant Installation – MegaTOOLS™ fan-less enclosure for dropped-ceiling mounting, or side-by-side mounting of 2 units in a 1U rack space with the recommended rack adapter.

Flexible Connectivity

- Multi-channel Audio Transmission – Up to 32 channels of digital stereo uncompressed signals for supporting studio-grade surround sound.
- Flexible USB 2.0 host and devices extension.
- Ethernet Extension (EXT3-XR-TR only) – Ethernet interface data flows in both directions, allowing extension of up to 1 Gbps Ethernet connectivity for LAN communication and device control.
- Bidirectional RS-232 Extension – Serial interface data flows in both directions, allowing data transmission and device control.
- Bidirectional Infrared Extension – IR interface data flows in both directions, allowing remote control of peripheral devices located at either end of the extended line.

Typical Applications

EXT3-XR-TR is ideal for the following typical applications:

- Corporate – Hybrid and online meetings.
- Education – Hybrid and online learning and training.
- Any AV, Ethernet (EXT3-XR-TR only) and USB room extension applications such as conference rooms, boardrooms, and training facilities.

Defining EXT3-XR-TR and EXT3-TR

- This section defines EXT3-XR-TR and EXT3-TR.
- The extender device functions as a transmitter or receiver as defined by the SETUP
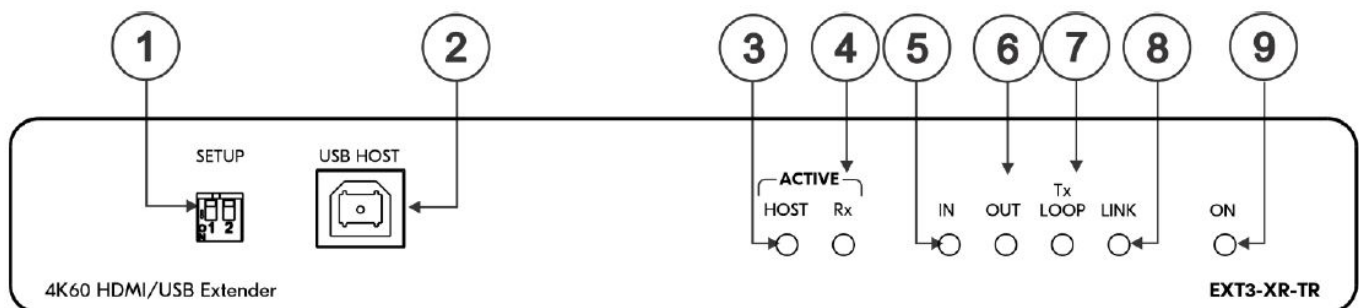- DIP-switch 1 setting on the rear panel (see Setting the DIP-Switches on).

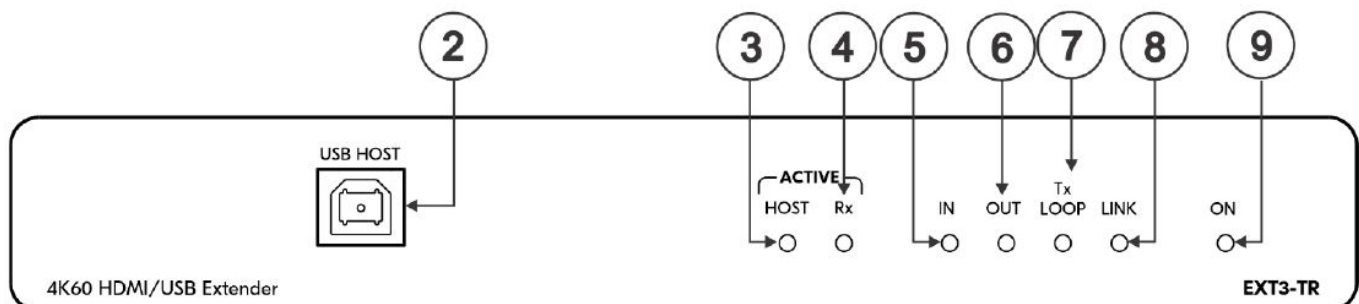Figure 1: EXT3-XR-TR 4K60 HDMI/USB Extender Front Panel

Figure 2: EXT3-TR 4K60 HDMI/USB Extender Front Panel

#	Feature	Function			
1	SETUP 2-way DIP-switch	Set the HDBT Range Mode.			
		DIP 1	**DIP 2**	**State Description**	
		Off (up)	Off (up)	Standard range mode (default).	
		Off (up)	On (down)	Ultra-long range mode.	
		On (down)	Off (up)	For future use.	
		On (down)	On (down)	For future use.	
2	HOST USB B 2.0 Connector	Connect to the USB host (for example, a laptop) to communicate with the USB peripheral devices (for example, a smart board) connected to USB device ports on either the transmitter or the receiver sides of the extender (see **Connecting the 4K60 HDMI/USB Extender** on page **7**).			
3	ACTIVE HOST LED	Lights orange when the USB host side is active			
4	ACTIVE Rx LED	Lights green when the extender receiver function is active			
5	IN LED	Lights blue when an active HDMI input signal is detected on HDMI IN.			
6	OUT LED	Lights blue when an output acceptor device is connected.			
7	TX LOOP	Transmitter mode	Lights blue an active signal is transmitted on the Tx LOOP port.		
		Receiver mode	N/A		
8	LINK LED	Lights green when the HDBT active link connection is established.			
9	ON LED	Lights green when the device receives power.			

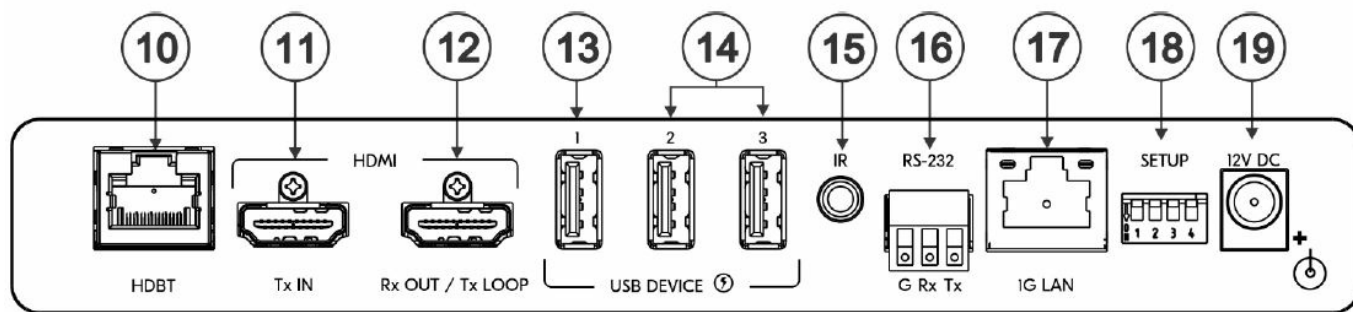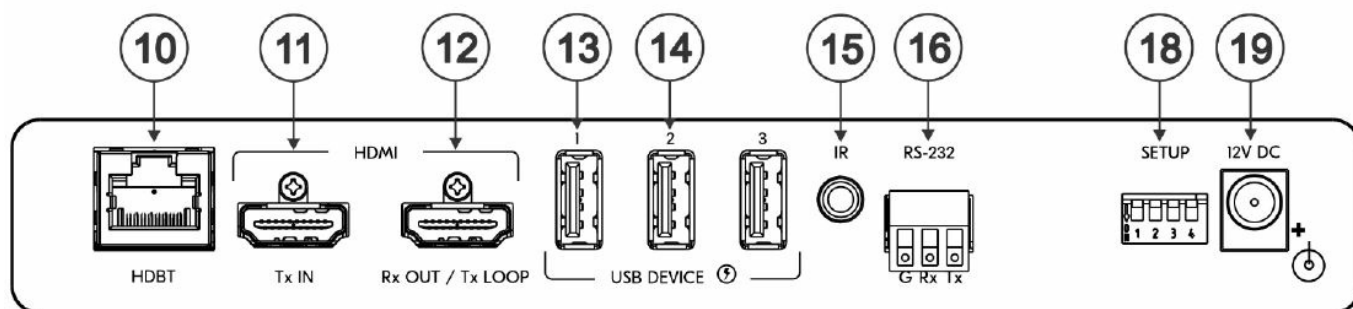Figure 3: EXT3-XR-TR 4K60 HDMI/USB Extender Rear Panel

Figure 4: EXT3-TR 4K60 HDMI/USB Extender Rear Panel

#	Feature	Function	
10	HDBT RJ-45 Port	Connect to the HDBT RJ-45 connector on a paired receiver/transmitter device (for example, a second **EXT3-XR-TR** device).	
11	HDMI TX IN Connector	Transmitter mode	Connect to an HDMI source.
		Receiver mode	N/A
12	HDMI Rx OUT/Tx LOOP Connector	Transmitter mode	Connect to a local acceptor.
		Receiver mode	Connect to an HDMI acceptor.
13	USB A 2.0 Connector 1	Connect to the USB local peripheral devices (for example, a USB PTZ camera). When USB Host PC is disconnected, the USB signal and charging power for this port are inactive.	
14	USB A 2.0 Connectors 2-3	Connect to the USB local peripheral devices (for example, a USB camera, a soundbar, microphone and so on). When USB Host PC is disconnected, the USB charging power for this port continues to be active.	

15	IR 3.5mm Mini Jack Connector	Connect to an external IR emitter to control a local IR-controlled device from the remote extender (for example, **EXT3-XR-TR**). Connect to an IR sensor to control a remote IR-controlled device connected to the remote extender side (for example, **EXT3-XR-TR**).
16	RS-232 3-pin Terminal Block	Connect to a controller device (for example, **SL240C**) to control a remote device via serial connection (for example, the remotely connected PTZ USB camera).
17	ETHERNET RJ-45 Connector	Connect to LAN.
18	SETUP 4-way DIP-switch	Sets the device behavior (see **Setting the DIP-Switches** on page **10**).
19	12V DC Power Connector	Connect to the power supply.

Mounting EXT3-XR-TR

This section provides instructions for mounting EXT3-XR-TR. Before installing, verify that the environment is within the recommended range:

- Operation temperature – 0 to 40C (32 to 104F).
- Storage temperature – -40 to +70C (-40 to +158F).
- Humidity – 10% to 90%, RHL non-condensing.

Caution

- Mount EXT3-XR-TR before connecting any cables or power.

Warning

- Ensure that the environment (e.g., maximum ambient temperature & air flow) is compatible for the device.
- Avoid uneven mechanical loading.
- Appropriate consideration of equipment nameplate ratings should be used for avoiding overloading of the circuits.
- Reliable earthing of rack-mounted equipment should be maintained.
- Maximum mounting height for the device is 2 meters.

Mount EXT3-XR-TR in a rack

- Use the recommended rack adapter (see **www.kramerav.com/product/TP-600TRxr**).

Mount EXT3-XR-TR on a surface using one of the following methods
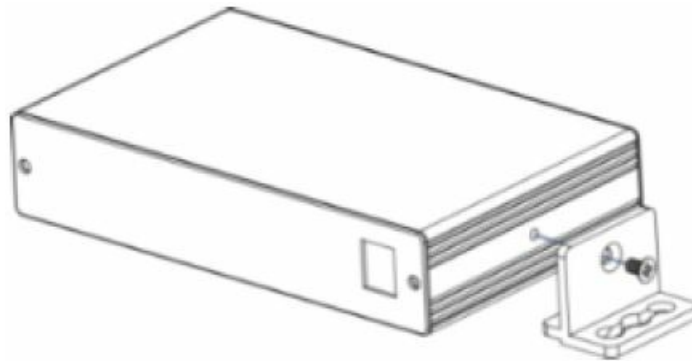
- Attach the rubber feet and place the unit on a flat surface.
- Fasten a bracket (included) on each side of the unit and attach it to a flat surface. For more information go to **www.kramerav.com/downloads/TP-600TRxr**.

Connecting the 4K60 HDMI/USB Extender

- You can use two EXT3-XR-TR units, define them as transmitter and receiver and then connect the transmitter to the receiver (as described in this section). You can also connect the device to a different unit. For example:
- Connecting EXT3-XR-TR that is set as a transmitter to the Kramer TP-590R receiver.
- Connecting a transmitter (for example, the Kramer TP-590T transmitter) to a EXT3-XR-TR that is set as a receiver.
- Note that although the TP-590T is compatible with EXT3-XR-TR, the performance of this pair will be limited by the TP-590T capabilities.
- Connecting the EXT3-XR-TR (defined as a transmitter or receiver to a switcher or other system, for example, the VS-84UT).
- This section describes the following actions:
- Connecting EXT3-XR-TR on page 8.
- Error! Reference source not found. on page Error! Bookmark not defined..
- Connecting to EXT3-XR-TR via RS-232 on page 10.
- Setting the DIP-Switches on page 10.
- Always switch off the power to each device before connecting it to your EXT3-XR-TR. After connecting your EXT3-XR-TR, connect its power and then switch on the power to each device.

Connecting EXT3-XR-TR and EXT3-TR
This section describes the connection procedure for EXT3-XR-TR and EXT3-TR. This procedure is described for EXT3-XR-TR and is the same for EXT3-TR except for the IG LAN connections.
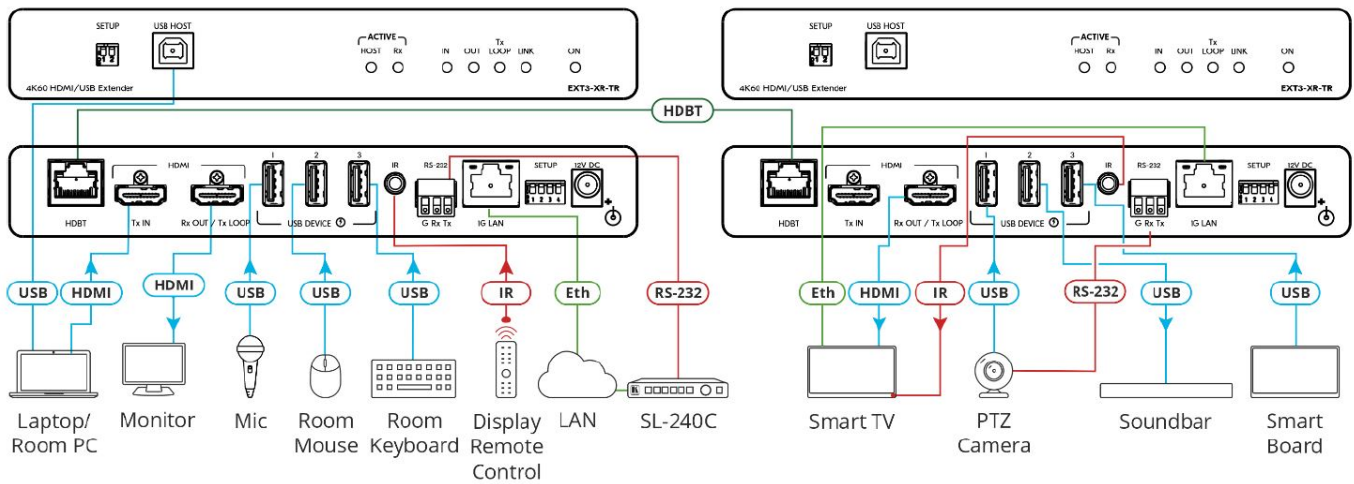
Figure 5: Connecting to EXT3-XR-TR

To connect EXT3-XR-TR as illustrated in the example in Figure 5

- Use the DIP-switches **(18)** to define one device as a transmitter and the other as a receiver (see Setting the DIP-Switches).
- Connect the HDBT port **(10)** on the EXT3-XR-TR transmitter side to the HDBT port **(10)** on the EXT3-XR-TR receiver side.
- On the EXT3-XR-TR transmitter side, connect an HDMI source (for example, a laptop) to the HDMI Tx IN connector **(11).**
- On the EXT3-XR-TR transmitter side, connect the HDMI Rx OUT/Tx LOOP connector **(12)** to an HDMI acceptor.
- On the EXT3-XR-TR receiver side, connect the HDMI Rx OUT/Tx LOOP connector **(12)** to an HDMI acceptor (for example, a smart TV).
- Connect the USB ports:
- Connect the HOST USB port to a laptop or room PC.
- The HOST USB port can be connected to either the transmitter or the receiver side, as necessary & set Active host DIP-switch 2 accordingly.
- Connect the USB DEVICE ports on the transmitter side to USB devices (for example, the room microphone, mouse, and keyboard).
- Connect the USB DEVICE ports on the receiver side to USB devices (for example, a camera to USB 1, a soundbar to USB 2 and a smart board to USB 3). note that some USB devices, for example, the camera, require the USB 1 disconnection function.
- USB devices can be connected to both the transmitter and receiver sides, as necessary.
- For optimal operation follow USB best practice:
- The recommended connected USB hubs capacity is ≤6 with a maximum of ≤9.
- USB endpoints capacity is ≤15.
- Use USB host PC tools, such as USB TreeView tool, to verify connected USB hubs (internal and external) and endpoints capacity.
- To control the smart TV via IR, connect the following:
- On the EXT3-XR-TR transmitter side, connect an IR sensor cable to the IR 3.5mm mini jack **(15)** .
- On the EXT3-XR-TR receiver side, connect the IR 3.5mm mini jack **(15)** to an emitter cable and attach the emitter side to the IR sensor of the smart TV. Point the smart TV IR remote controller to the IR sensor to pass

an IR command via HDBT to the smart TV.

- To Control the smart TV via Ethernet, connect the following (EXT3-XR-TR only):
- On the EXT3-XR-TR transmitter side, connect a room controller (for example, the Kramer SL-240C with Kramer Control) to the IG LAN RJ-45 port **(17)** .
- On the EXT3-XR-TR receiver side, connect the IG LAN RJ-45 port **(17)** to the smart TV.
- Send IP commands via the room controller to the smart TV via LAN.
- To control the PTZ camera, connect the following:
- On EXT3-XR-TR transmitter side connect a controller (for example, SL-240C room controller) to the RS-232 port **(16)** (and also to the IG LAN RJ-45 port) **(17).**
- On EXT3-XR-TR receiver side connect the RS-232 port **(16)** to a PTZ camera.
- Send serial commands from SL-240C to the camera via RS-232.
- Connect the power adapter to EXT3-XR-TR and to the mains electricity (not shown in Figure 5).

Connecting to EXT3-XR-TR via RS-232

- You can connect to EXT3-XR-TR via an RS-232 connection **(13)** using, for example, a PC.
- EXT3-XR-TR features an RS-232 3-pin terminal block connector to extend RS-232 signals via
- EXT3-XR-TR transmitter and receiver.
- Connect the RS-232 terminal block on the rear panel of EXT3-XR-TR to a device, as follows:
- From the RS-232 9-pin D-sub serial port connect:
- Pin 2 to the TX pin on the EXT3-XR-TR RS-232 terminal block
- Pin 3 to the RX pin on the EXT3-XR-TR RS-232 terminal block
- Pin 5 to the G pin on the EXT3-XR-TR RS-232 terminal block
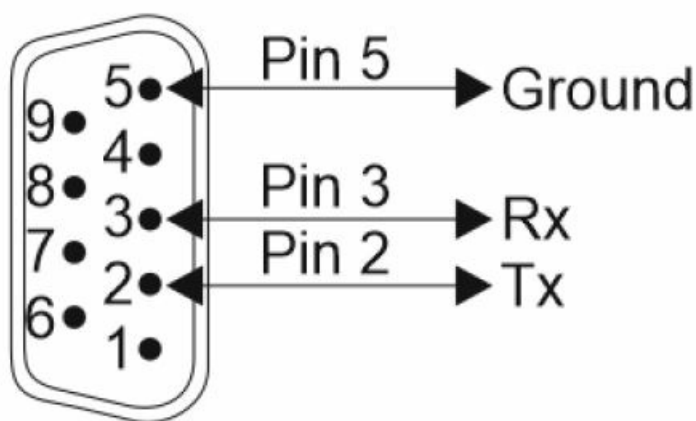
Documents / Resources

USER MANUAL

MODELS:
EXT3-XR-TR
EXT3-TR
4K60 HDMI/USB Extender

Kramer Electronics Ltd Kramer EXT3-TR [pdf] Instruction Manual
EXT3-XR-TR, EXT3-TR

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