USER MANUAL

MODEL:

EXT3-U3-T / EXT3-U3-R
USB 3.2 Gen 1 Extender

Contents

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-U3-T/R 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-U3-T/R** 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-U3-T/R USB 3.2 Gen 1 Extender.**

EXT3−U3-T/EXT3−U3-R is a comprehensive, extended−reach CAT extender solution for USB 3.2 Gen1 (5 GBps) communication. The extender supports both USB3.2 Gen1 devices and legacy USB2.0/1.1 devices. In addition to USB3, RS232 signals and FSYNC video signal (for camera frame synchronization) are extended.
The **EXT3−U3−T** transmitter unit converts the USB3 host side signal into a CATx signal format based on HDBaseT USB.
The **EXT3−U3−R** receiver unit converts the CATx signal back into a USB3 device side signal and functions as a USB hub for up to 3 devices.
The extender operates seamlessly as a plug&play device with no need for any prior configuration. It supports a wide Variety of USB peripheral devices supporting all USB transaction modes including interrupt, bulk and isochronous and is especially suitable for high throughput video streaming USB devices such as cameras and capture devices.
EXT3−U3−T/R uses power delivery over the CATx cable requiring only one side to facilitate a power source.

These devices may be sold together as an extender bundle or separately (paired with other HDBaseT USB3 (VS6320 based) products).

EXT3-U3-T/R provides exceptional quality, advanced and user-friendly operation, and flexible control:

- Comprehensive USB Extender – Plug & play USB extender T/R for providing extended-reach CAT signals and 2-way power over twisted pair copper infrastructures. A local USB host is auto-connected to remote-connected USB devices employing either interrupt, bulk or isochronous USB standard data transfer communication.
- Flexible USB Connectivity – Wide Variety of USB peripheral devices can be extended including cameras, touch screens, smart boards, hard drives, game controllers, audio devices, printers, scanners, or HID (Human Interface Devices) devices such as a mouse or keyboard. Dual role and OTG (On-The-Go) devices such as smart phones and tablets, connected either to a transmitter–side USB host port or receiver-side USB device port, can communication with a remote host or peripheral pairing device.
- Remote USB Charging – Fast USB charging of peripheral devices when the receiver is powered by the external power supply, or standard USB charging when the receiver is powered by the transmitter via CAT.

- Bidirectional RS-232 Extension – Serial interface data flows in both directions, allowing data transmission and device control.
- Cost-Effective Maintenance – Status LED indicators facilitate easy local maintenance and troubleshooting.

Typical Applications

EXT3-U3-T/R is ideal for the following typical applications:

- USB Camera deployment in meeting spaces and lecture halls
- Extending Video Over USB formats like UVC or DisplayLink
- Smartphone docking applications
- USB storage devices remote deployment

Defining EXT3-U3-T / EXT3-U3-R USB 3.2 Gen 1 Extender−Receiver

Defining EXT3-U3-T

This section defines**EXT3-U3-T**.

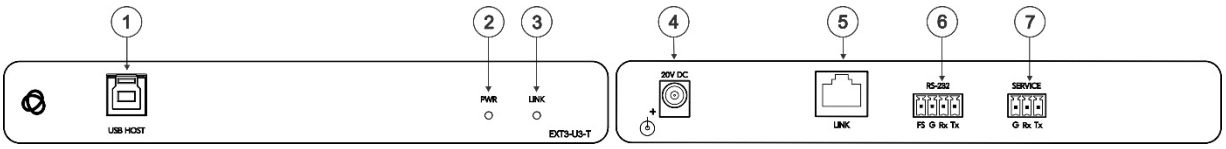


Figure 1: EXT3-U3-T Transmitter

#	Feature	Function
1	USB HOST Type B Port	Connect to USB Host.
2	PWR LED	Lights green when powered.
3	LINK LED	Lights blue when a link is established.
4	20V DC Power Connector	Connect to the supplied power adapter (when EXT3-U3-T is not powered by PoC).
5	Link RJ-45 Connector	Connect to the LINK IN port on the EXT3-U3-R.
6	RS-232 4-pin Terminal Block Connector	FS: Send the FSYNC signal from the transmitter to the receiver. Rx, Tx: RS-232 interface pass-through extension (supports any baud rate up to 115200).
7	Service 3-pin Terminal Block Connector (G, Rx, Tx)	Connect for firmware upgrade.

Defining EXT3-U3-R

This section defines **EXT3-U3-R**.

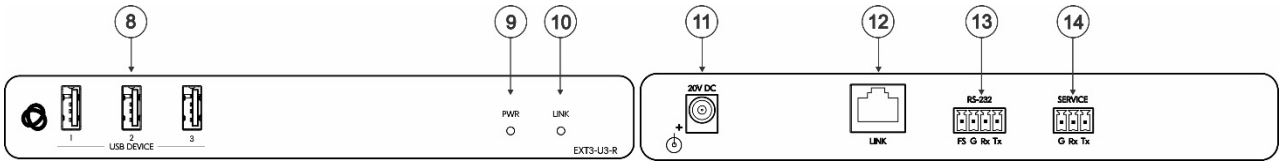


Figure 2: EXT3-U3-R Receiver

#	Feature	Function
8	USB 3 Type A Ports (1 to 3)	Connect to USB local devices (for example, a USB camera, a sound-bar, microphone, etc.). All 3 USB connectors on the receiver can provide power.
9	PWR LED	Lights green when powered.
10	LINK LED	Lights blue when a link is established.

(11)	20V DC Power Connector	Connect to the power adapter (when EXT3-U3-R is not powered by PoC).
(12)	Link RJ-45 Connector	Connect to the LINK OUT port on the EXT3-U3-T.
(13)	RS-232 4-pin Terminal Block Connector	FS: Send the FSYNC signal from the transmitter to the receiver. Rx, Tx: RS-232 interface pass-through extension (supports any baud rate up to 115200).
(14)	Service 3-pin Terminal Block Connector (G, Rx, Tx)	Connect for firmware upgrade.

Mounting EXT3-U3-T/R

This section provides instructions for mounting **EXT3-U3-T/R**. Before installing, verify that the environment is within the recommended range:

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

Caution:

- Mount **EXT3-U3-T/R** before connecting any cables or power.

Warning:

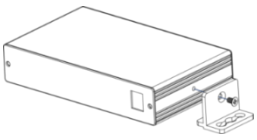
- Ensure that the environment (e.g., maximum ambient temperature & air flow) is compatible for the device.
- Avoid uneven mechanical loading.
- Appropriate consideration of equipment nameplate ratings should be used for avoiding overloading of the circuits.
- Reliable earthing of rack-mounted equipment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

Mount EXT3-U3-T/R in a rack:

- Use the recommended rack adapter (see www.kramerav.com/product/EXT3-U3-T/R).

Mount EXT3-U-T/R 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.



- Mount the unit in a rack using the recommended rack adapter.
- For more information go to (see www.kramerav.com/downloads/EXT3-U3-T / www.kramerav.com/downloads/EXT3-U3-R).

Connecting EXT3-U3-T/R

- PSU (Power Source Unit) at receiver side for illustration purposes only.
- PSU may be deployed on either the transmitter or the receiver, or both.

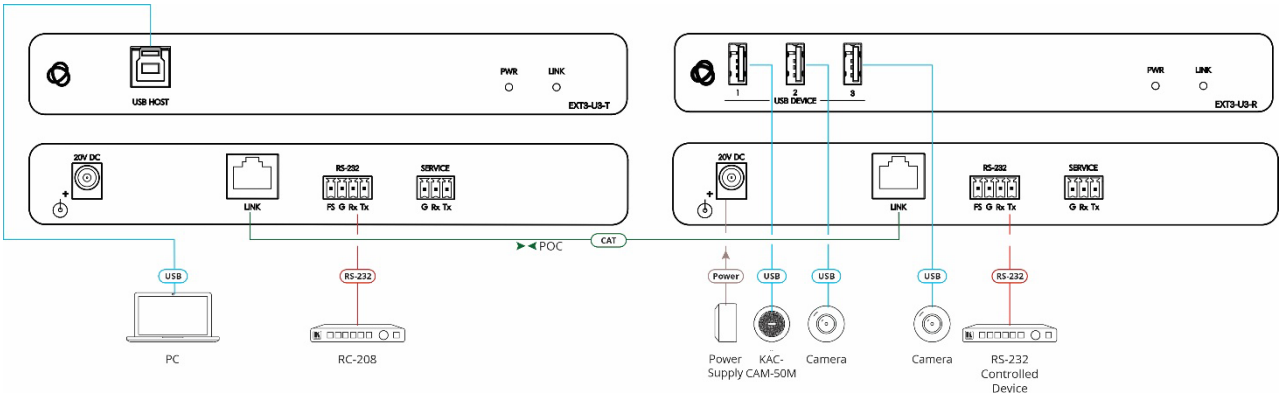


Figure 3: Connecting to the **EXT3-U3-T/R**

To connect EXT3-U3-T/R as illustrated in the example in Figure 3:

1. Connect the USB type B port (1) on the **EXT3-U3-T** to a USB Host (for example a PC).
2. Connect the RS-232 ports:
   - On the **EXT3-U3-T**, connect the RS-232 3-pin terminal block (6) to an RS-232-controller (for example, **RC-208**).
   - On the **EXT3-U3-R**, connect the RS-232 3-pin terminal block (13) to an RS-232 controlled device ,Blu-Ray player).

Alternatively, you can connect RS-232 ports the other way around: connect a controlled device to the **EXT3-U3-T** RS-232 port and a controller to the **EXT3-U3-R** RS-232 port.

3. Connect the USB type A ports (8) on the **EXT3-U3-R** to USB devices (for example, KAC-CAM-50M and/or a smartphone).
4. Connect the power adapter to the **EXT3-U3-R** and then to the mains.
   EXT3-U3-T is powered via LINK RJ-45 ports (5) / (12).

- Alternatively, you can connect the power adapter the other way around: connect the power adapter to the **EXT3-U3-T** so that **EXT3-U3-R** is powered via the LINK RJ-45 ports.
- For best device current performance, it is recommended to connect a PSU at the receiver side.

Connecting to EXT3-U3-T/R via RS-232

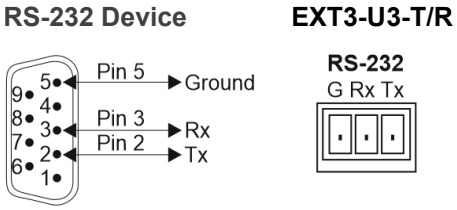
You can connect to **EXT3-U3-T/R** via an RS-232 connection (13) using, for example, a PC.

EXT3-U3-T/R features an RS-232 3-pin terminal block connector allowing control of an RS-232 device over the extension.

Connect the RS-232 terminal block on the rear panel of **EXT3-U3-T/R** to a PC/controller, as follows:

From the RS-232 9-pin D-sub serial port connect:

- Pin 2 to the TX pin on the **EXT3-U3-T/R** RS-232 terminal block
- Pin 3 to the RX pin on the **EXT3-U3-T/R** RS-232 terminal block
- Pin 5 to the G pin on the **EXT3-U3-T/R** RS-232 terminal block

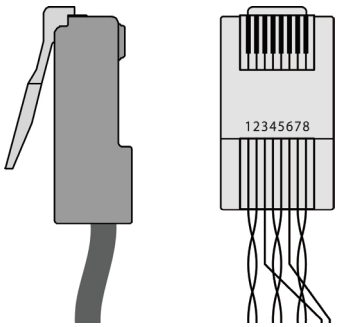


Wiring RJ-45 Connectors

This section defines the TP HDBT pinout, using a straight pin-to-pin cable with RJ-45 connectors.

It is recommended that the cable ground shielding be connected/soldered to the connector shield.

EIA /TIA 568B	
PIN	**Wire Color**
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown



Technical Specifications

	EXT3-U3-T	**EXT3-U3-R**
Host Port	1 X type B USB3 connector	-
Device Ports	-	3 X type A USB3 connectors
Traffic rate	5 Gbps	
Extension Link	HDBaseT.USB over CATx	
Reach distance	100 meters	
Power	20 VDC	20 VDC
	PoC+ (PSE or PD)	PoC+ (PSE or PD)
Environmental Conditions	Operating Temperature: 0° to +40°C (32° to 104°F)	
	Storage Temperature: -40° to +70°C (-40° to 158°F)	
	Humidity: 10% to 90%, RHL non-condensing	
Regulatory Compliance	Safety: CE, FCC, UL	
	Environmental: RoHs, WEEE	
Enclosure	Demi Tool	Demi Tool
	Type: Aluminum	
	Cooling	Passive
Accessories	Power adaptor Included	-

P/N: 2900-301820 Rev: 2

SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

For the latest information on our products and a list of Kramer distributors, visit our website where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

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