KRAMER

USER MANUAL

MODELS:

**TP-583Txr, TP-583T
HDMI Line Transmitter**

**TP-583Rxr, TP-583R
HDMI Line Receiver**

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/TP-583Txr to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving the 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 extender 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.

- 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 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/support/recycling.

Overview

The devices described in this user manual are generally referred to as **TP-583Txr** (**HDMI Line Transmitter**) and/or **TP-583Rxr** (**HDMI Line Receiver**) or generally an extender. A device is named specifically only when a device-specific feature is described.

Congratulations on purchasing your Kramer **TP-583Txr**, **TP-583Rxr**, **TP-583T** and/or **TP-583R**.

TP-583Txr / **TP-583Rxr** are a high-performance, HDBaseT transmitter/receiver system for 4K HDR HDMI™, RS-232 and IR signals over twisted pair.

TP-583Txr converts all input signals into the transmitted HDBaseT signal. **TP-583Rxr** converts the HDBaseT signal and outputs it to its HDMI and control ports.
The extenders are compatible with standard HDBaseT-compliant extenders up to 4K@30Hz (4:4:4) video resolutions.

TP-583Txr and **TP-583Rxr** extend video signals up to 100m (330ft) at 4K@60Hz (4:4:4) video resolution, up to 180m (590ft) at 4K@30Hz (4:4:4), and up to 200m (650ft) at HD video resolution over Kramer copper cables.

TP-583T and **TP-583R** extend video signals to up to 70m (230ft) at up to 4K@60Hz (4:4:4) video resolutions, over Kramer copper cables.

The extenders provide exceptional quality, advanced and user-friendly operation, and flexible control.

Exceptional Quality

- High Performance Standard Extender – Professional HDBaseT extender for providing long-reach signals over twisted-pair copper infrastructures. It employs low-level video compression technology that delivers visually lossless performance for 4K@60 (4:4:4) and HDR signals with near-zero latency. This high-quality compressed signal is extended to almost double the extension reach of the uncompressed signal.

- I-EDIDPro™ Kramer EDID Processing™ –EDID pass-through ensures plug and play operation for HDMI source and display systems.

- Multi-channel Audio Extension – Up to 32 channels of digital stereo uncompressed signals for supporting studio-grade surround sound.

- HDMI Signal Extension – HDMI 2.0 and HDCP 2.2 compliant. Supports HDR, 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. EDID and CEC signals are passed through from the source to the display.

Advanced and User-friendly Operation

- Future-proof, Standard Extender – Standard HDBaseT extender, backwards compatible with other standard HDBT extenders. It extends either compressed or uncompressed HDBaseT signal, by auto-adapting to the compression capabilities of its connected extender. This enables it to be connected to any market-available HDBaseT-compliant extension product.

- Intelligent Compression Handling – Automatically detects a standard HDBaseT extender without compression and disables the compression to extend the signal in compliance with the detected extender.

- Cost-Effective Maintenance – Status LED indicators for HDMI and HDBT ports facilitate easy local maintenance and troubleshooting. Local firmware upgrade via RS-232 connection ensures lasting, field-proven deployment.

Flexible Connectivity

- Bidirectional RS-232 Extension – Serial interface data flows in both directions, providing data transmission and device control.

- Bidirectional Infrared Extension – IR interface data flows in both directions, enabling remote control of peripheral devices located at either end of the extended line.

- Easy Installation – Compact DigiTOOLS® fan-less enclosure for dropped-ceiling mounting, or side-by-side mounting of 3 units in a 1U rack space with the recommended rack adapter.

Typical Applications

TP-583Txr is ideal for the following typical applications:

- Long-distance AV signal extension for multi-room, large dividable auditoriums and lecture hall connectivity.

- AV extension in conference rooms, boardrooms, control rooms, hotels and large church facilities.

Defining TP-583Txr and TP-583T

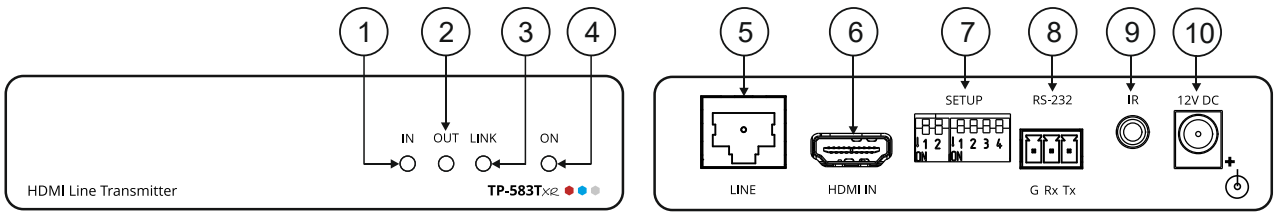This section defines **TP-583Txr** and **TP-583T**.

Figure 1: TP-583Txr HDMI Line Transmitter

#	Feature	Function
1	IN LED	Lights green when an active source device input signal is detected.
2	OUT LED	Lights green when an active, far-end sink (acceptor) connection is detected via the HDBT link.
3	LINK LED	Lights green when an HDBT link is established with the HDBaseT receiver.
4	ON LED	Lights green when the device receives power.
5	LINE RJ-45 Connector	Connect to the RJ-45 HDBT LINE connector on a receiver (for example, **TP-583Rxr/R**, **TP-580Rxr/R** and so on).
6	HDMI™ IN Connector	Connect to an HDMI source.
7	SETUP DIP-switches	Set the operation DIP-switches.
8	RS-232 (G, Rx, Tx) 3-pin Terminal Block Connector	Connect to a controller device (for example, **SL-240C**) to serially control a remote device (for example, the HDMI OUT acceptor) that is connected to **TP-583Rxr/TP-583R**.
9	IR 3.5mm Mini Jack Connector	Connect to an external infrared emitter / sensor.
10	12V DC Power Connector	12V DC connector for powering the unit.

Defining TP-583Rxr and TP-583R

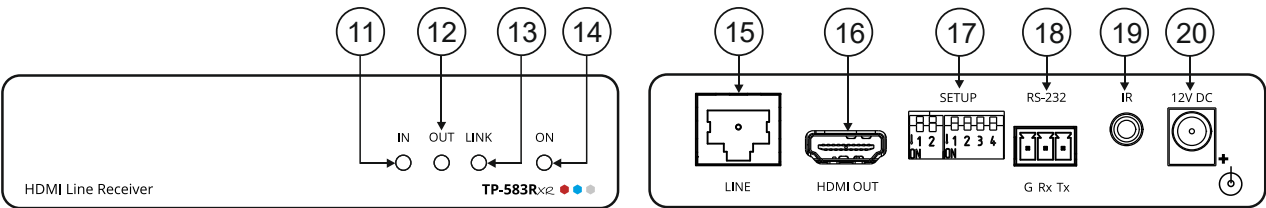This section defines **TP-583Rxr** and **TP-583R**.

Figure 2: TP-583Rxr HDMI Line Receiver

#	Feature	Function
11	IN LED	Lights green when an active, far-end source device input signal is detected via the HDBT link.
12	OUT LED	Lights green when an active sink (acceptor) connection is detected.
13	LINK LED	Lights green when an HDBT link is established with the HDBaseT transmitter.
14	ON LED	Lights green when the device receives power.
15	LINE RJ-45 Connector	Connect to the RJ-45 HDBT LINE connector on a transmitter (for example, **TP-583Txr/T**, **TP-580Txr/T** and so on).
16	HDMI™ OUT Connector	Connect to an HDMI acceptor.
17	SETUP DIP-switches	Set the operation DIP-switches.
18	RS-232 (G, Rx, Tx) 3-pin Terminal Block Connector	Connect to a serially controlled device (for example, the HDMI OUT acceptor) to enable its control by a remote controller device (for example, **SL-240C**) that is connected to **TP-583Txr/TP-583T**.
19	IR 3.5mm Mini Jack Connector	Connect to an external infrared emitter / sensor.
20	12V DC Power Connector	12V DC connector for powering the unit.

Mounting TP-583Txr

This section provides instructions for mounting **TP-583Txr**. 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 **TP-583Txr** 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.

To mount the TP-583Txr on a rack

Mount the unit in a rack using the recommended rack adapter
(see www.kramerav.com/product/TP-583Txr)

To mount the TP-583Txr on a table or shelf

- 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.
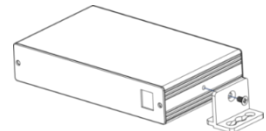
For more information go to www.kramerav.com/downloads/TP-583Txr

Connecting the extenders

ⓘ Always switch off the power to each device before connecting it to your **HDMI Line Transmitter / HDMI Line Receiver**. After connecting your **HDMI Line Transmitter / HDMI Line Receiver**, connect its power and then switch on the power to each device.

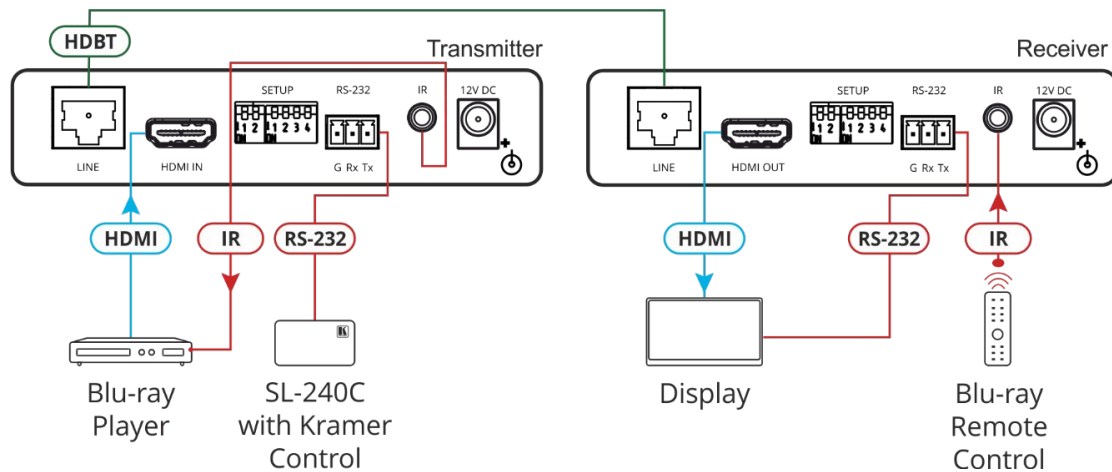ⓘ **TP-583Txr / TP-583Rxr** and **TP-583T / TP-583R** are connected in the same way.

Figure 3: Connecting the extenders

To connect the TP-583Txr and TP-583Rxr as illustrated in the example in [Figure 3](#):

1. On **TP-583Txr** connect an HDMI source (for example, a Blu-ray player) to the HDMI IN connector ⑥.

2. On **TP-583Rxr** connect the HDMI OUT connector ⑯ to an HDMI acceptor (for example, a display).

3. Connect the LINE RJ-45 ⑤ connector on **TP-583Txr** to the LINE RJ-45 connector on **TP-583Rxr** ⑮.

4. Extend RS-232 signals (for example, control the display via a room controller on the transmitter side):

   ▪ On **TP-583Txr** connect a controller (for example, **SL-240C** room controller) to the RS-232 3-pin terminal block connector ⑧.

   ▪ On **TP-583Rxr** connect the RS-232 3-pin terminal block connector ⑱ to the RS-232 control port on the display.

5. Extend IR signals (for example, control the Blu-ray via its IR remote control transmitter from the receiver side).

   ▪ On **TP-583Txr** connect the IR 3.5mm mini jack ⑨ to an IR emitter cable and connect it to the Blu-ray IR sensor.

   ▪ On **TP-583Rxr** connect the IR 3.5mm mini jack ⑲ to an IR sensor (receiver) cable.

6. Connect the power adapters to both extenders and to the mains electricity (not shown in [Figure 3](#)).

Connecting to an Extender via RS-232

You can connect to the extender (for example, **TP-583Txr**) via an RS-232 ⑧ connection to a room controller (for example, **SL-240C** with Kramer Control) to control a remote serially controlled device that is connected to the other, paired, extender device.

Connect the RS-232 terminal block on the rear panel of the extender (for example, **TP-583Txr**) to an RS-232 9-pin D-sub serial port on a laptop/controller, as follows:

- Pin 2 to the TX pin on the **TP-583Txr** RS-232 terminal block

- Pin 3 to the RX pin on the **TP-583Txr** RS-232 terminal block

- Pin 5 to the G pin on the **TP-583Txr** RS-232 terminal block
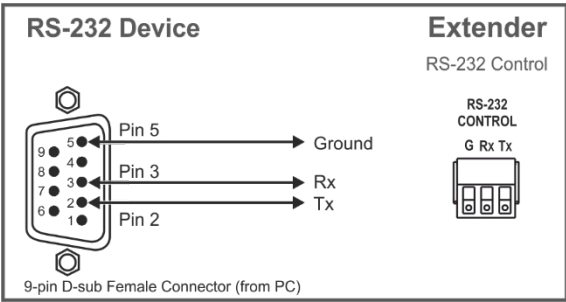
Wiring HDBT RJ-45 Connectors

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

ⓘ For HDBT cables, 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
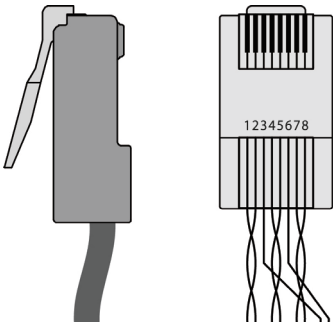
Controlling TP-583Txr

The DIP-switches are used to:

- Set the HDBT range (applicable to **TP-583Txr** and **TP-583Rxr** only).

- Set the compression levels and resolutions.

- Enable RS-232 signal extension.
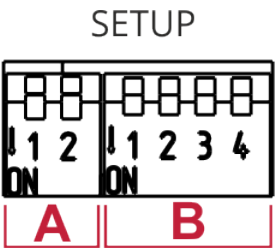
- Determine IR signal pass-through modes.

SETUP

Figure 4: [Figure Caption]

ⓘ All the DIP-switches are set to **OFF** (up) by default.

To use your **TP-583Txr** or **TP-583Rxr** with any other standard HDBaseT extender (**without compression**), verify that DIP-switch 1B is **OFF** (up).

A – DIP-switch Settings

#	Feature	DIP-switch Settings
1A	**TP-583Txr** and **TP-583Rxr**	
	Set HDBT Range	OFF (up) – HDBaseT normal range. ON (down) – HDBaseT ultra-long range (to enable increased range at a reduced bandwidth). ⓘ The ultra-long range mode is activated when on at least one of the devices DIP-switch 1 is set to ON.
	TP-583T and **TP-583R**	
	Reserved	Set to OFF (up).
2A	Set Compression Level (for Extended Range)	OFF (up) – Standard compression level, EDID will be passthrough. ON (down) – High compression level for additional extension, EDID will be the hardcoded EDID.

B – DIP-switch Settings
Changes to DIP-switches 2B and 3B only take effect after power cycling the device.

#	Feature	DIP-switch Settings
1B	Define Compressed Resolutions	OFF (up) – Compress signal resolutions higher than 1080p. ON (down) – Compress all signal resolutions to enable extended reach.
2B, 3B	Define RS-232 Function	OFF (up), OFF (up) – Embed RS-232 data and control signals over the extension line. ⓘ Other DIP-switch settings are reserved for firmware upgrade. For further details, contact support@kramerav.com.
4B	Define IR Pass-through	OFF (up) – Pass-through the IR signal to the IR port via IR cable. ON (down) – Add IR modulation to the IR output signal (applies only when the IR port is connected to an IR emitter cable). ⓘ The IR Pass-through DIP-switch setup depends on the IR control configuration. We recommend that you test which position best suits your application.

Technical Specifications

TP-583Txr and TP-583Rxr

TP-583Txr

Input	HDMI	On a female HDMI connector
Output	HDBT	On an RJ-45 connector
Port	RS-232	On a 3-pin terminal block connector for serial link extension
	IR	On a 3.5mm mini jack connector

TP-583Rxr

Input	HDBT	On an RJ-45 connector
Output	HDMI	On a female HDMI connector
Port	RS-232	On a 3-pin terminal block connector for serial link extension
	IR	On a 3.5mm mini jack connector

General

Video	Transmitted Data Bandwidth	Up to 18Gbps (6Gbps per graphic channel)	
	Max Resolution	Standard compression level	4096x2160@60Hz (4:4:4) 24bpp
		High compression level	3840x2160@60Hz (4:4:4) 24bpp
	Compliance	HDCP 2.2, HDR 10	
Reach Extension	We recommend that you use Kramer shielded cables to achieve optimum extension ranges (see www.kramerav.com/product/TP-583Txr).		
	Standard Compression Level	Up to 100m (330ft) at 4K@60Hz (4:4:4), 4K@60Hz (4:2:0) or 4K@30Hz (4:4:4) Up to 180m (590ft) at full HD (1080p @60Hz 24bpp)	
	High Compression Level	Up to 100m (330ft) at 4K@60Hz (4:4:4), or 4K@60Hz (4:2:0) Up to 180m (590ft) at 4K@30Hz (4:4:4) Up to 200m (650ft), full HD (1080p @60Hz 24bpp)	
	Compliance	HDBaseT 1.0	
Extended RS-232	Baud Rate	300 to 115200	
Extended IR	Frequency	20kHz to 100kHz	
Controls	Front Panel	IN, OUT, LINK and ON LED indicators	
	Rear Panel	DIP-switches	
Power	Consumption	12V DC, **TP-583Txr** 400mA; **TP-583Rxr** 600mA	
	Source	12V DC, 2A	
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, UL	
	Environmental	RoHs, WEEE	
Enclosure	Size	Tool	
	Type	Aluminum	
	Cooling	Convection ventilation	
General	Net Dimensions (W, D, H), each	12cm x 7.2cm x 2.4cm (4.7" x 2.8" x 0.94")	
	Shipping Dimensions (W, D, H)	15.7cm x 12cm x 8.7cm (6.2" x 4.7" x 3.4")	
	Net Weight, each	0.2kg (0.44bs) approx.	
	Shipping Weight	0.72kg (1.6lbs) approx.	
Accessories	Included	1 Power adapter, 1 power cord and 1 bracket set per device	
Specifications are subject to change without notice at www.kramerav.com			

TP-583T and TP-583R

TP-583T

Input	HDMI	On a female HDMI connector
Output	HDBT	On an RJ-45 connector
Port	RS-232	On a 3-pin terminal block connector for serial link extension
	IR	On a 3.5mm mini jack connector

TP-583R

Input	HDBT	On an RJ-45 connector
Output	HDMI	On a female HDMI connector
Port	RS-232	On a 3-pin terminal block connector for serial link extension
	IR	On a 3.5mm mini jack connector

General

Video	Transmitted Data Bandwidth	Up to 18Gbps (6Gbps per graphic channel)	
	Max Resolution	Standard compression level	4096x2160@60Hz (4:4:4) 24bpp
		High compression level	3840x2160@60Hz (4:4:4) 24bpp
	Compliance	HDCP 2.2, HDR 10	
Reach Extension	We recommend that you use Kramer shielded cables to achieve optimum extension ranges (see www.kramerav.com/product/TP-583T).		
	Standard Compression Level	Up to 40m (130ft) at 4K@60Hz (4:4:4) or 4K@60Hz (4:2:0) Up to 70m (230ft) at 4K@30Hz (4:4:4) or full HD (1080p @60Hz 36bpp)	
	High Compression Level	Up to 70m (230ft) at 4K@60Hz (4:4:4), 4K@60Hz (4:2:0) and full HD (1080p @60Hz 36bpp)	
	Compliance	HDBaseT 1.0	
Extended RS-232	Baud Rate	300 to 115200	
Extended IR	Frequency	20kHz to 100kHz	
Controls	Front Panel	IN, OUT, LINK and ON LED indicators	
	Rear Panel	DIP-switches	
Power	Consumption	12V DC, **TP-583T** 480mA; **TP-583R** 680mA	
	Source	12V DC, 2A	
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, UL	
	Environmental	RoHs, WEEE	
Enclosure	Size	Tool	
	Type	Aluminum	
	Cooling	Convection ventilation	
General	Net Dimensions (W, D, H), each	12cm x 7.2cm x 2.4cm (4.7" x 2.8" x 0.94")	
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KRAMER

P/N: 2900-301246   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 Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

www.KramerAV.com
info@KramerAV.com