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# KRAMER PT-580T HDMI Line Transmitter User Manual

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**KRAMER PT-580T HDMI Line Transmitter**



This guide helps you install and use your product for the first time. For more detailed information, go to <http://www.kramerav.com/manual/PT-580T> to download the latest manual or scan the QR code on the left

**Step 1:** Check what's in the box

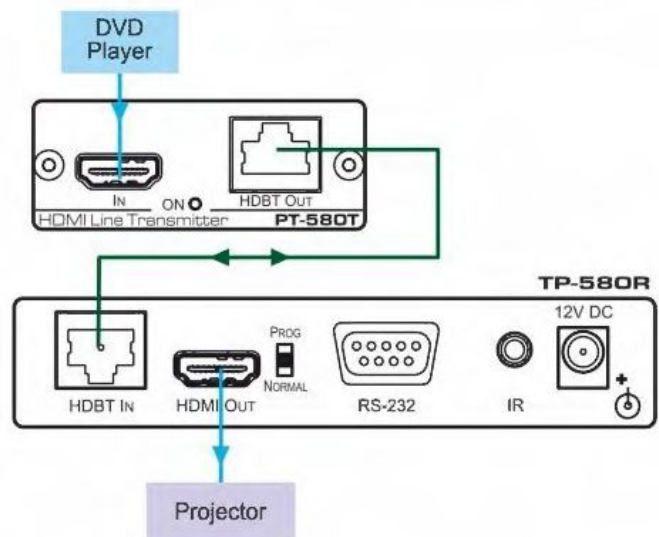
- The PT-580T HDMI Line Transmitter or TP-580T ~ Mounting Brackets
- HDMI Line Transmitter or the TP-580R HDMI Line Receiver ~
- 1 Power adapter (12V DC input for TP-SBOT/R and SV DC for PT-SBOT)
- Mounting Brackets
- 4 Rubber feet
- 1 Quick start guide

**Step 2:** Install the PT-580, TP-580T, TP-580R

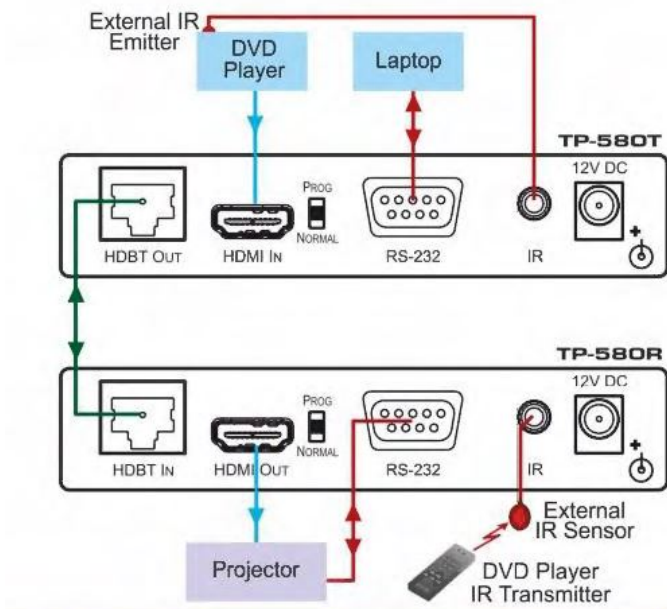
Mount the devices in racks using the optional RK-T2B rack adapter for TP-580T and TP-SBOR and the optional RK-1T2PT rack adapter for PT-580T (available for purchase) or place them on shelves.

**Step 3:** Connect the inputs and outputs

After mounting the units, connect the inputs and outputs. Always switch OFF the power on each device before



connecting it to your PT-580T/TP-580T and TP-580R.



**Twisted Pair Pinout:** For the HDBaseT connectors, see the wiring diagram below



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

#### Step 4: Connect the power

Connect the power adapters to the TP-580T/TP-580R and TP-580R and plug the adapter/s into the mains electricity.

## 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 video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 14 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Video Products; GROUP 12: Digital Signage; GROUP 13: Audio; and GROUP 14: Collaboration. Congratulations on purchasing your Kramer TP-580T or TP-580R or TP-580R transmitter/receiver pair, which is ideal for the following typical applications:

- Projection systems in conference rooms, boardrooms, auditoriums, hotels and churches, production studios
- Rental and staging

**Note:** that TP-580T, TP-580R, and TP-580R are purchased separately, and can be connected to other HDBaseT certified transmitters and receivers, respectively.

## 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/PT-580T](http://www.kramerav.com/downloads/PT-580T) 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 the signal quality
- Position your Kramer PT-580T, TP-580T, and TP-580R transmitter/receiver pair away from moisture, excessive sunlight, and dust. This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

## Safety Instructions

**Caution:** There are no operator serviceable parts inside the unit

**Warning:** Use only the Kramer Electronics input power wall adapter that is provided with the unit

**Warning:** Disconnect the power and unplug the unit from the wall before installing

## 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 landfills 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 <http://www.kramerAV.com/support/recycling/>.

## Overview

This section describes the PT-580, TP-580T, and TP-580R features.

### TP-580T and TP-580R Overview

The TP-580T and TP-580R are a high-performance, HDBaseT technology twisted pair transmitter and receiver for HDMI, bidirectional RS-232 and IR signals. The TP-580T converts the HDMI signal, RS-232 and IR input signals to a twisted pair signal. The TP-580R converts the twisted pair signal back into HDMI, RS-232, and IR signals. The TP-580T and the TP-580R can form a transmission and reception system either together or each device separately with another certified HDBaseT device. For example, the transmitter and receiver system can be composed of the TP-580T that connects to the Kramer TP-580R to form a transmitter receiver pair.

The TP-580T transmitter and TP-580R receiver feature:

- A bandwidth of up to 10.2Gbps (3.4Gbps per graphic channel), supporting 4K resolution
- A range of 70m (230ft) at 2K, 40m (130ft) at 4K UHD resolutions  
For optimum range and performance using HDBaseT™, use Kramer's BC-HDKat6a cable. Note that the transmission range depends on the signal resolution, source and display used. The distance using non-Kramer CAT 6 cable may not reach these ranges.
- HDBaseT™ technology
- HDTV compatibility and HDCP compliance
- HDMI support – HDMI (deep color, x.v.Color™, lip-sync, HDMI uncompressed audio channels, Dolby TrueHD, DTS-HD, CEC, 2k, 4k, 3D)
- EDID pass-through, passes EDID/HDCP signals from the source to the display
- Bidirectional RS-232 interface – commands and data can flow in both directions via the RS-232 interface, allowing status requests and control of the destination unit
- Bidirectional infrared interface for remote control of peripheral devices (see Section 4.1)
- LED status indicators for input selection, output, link, and power
- Compact DigiTOOLS® enclosures and these can be rack mounted side-by-side in a 1U rack space with the optional RK-3T, RK-6T or RK-9T universal rack adapters

## PT-580T Overview

The PT-580T is a high-performance, HDBaseT technology Twisted Pair transmitter for HDMI signals and converts it to a twisted pair signal. An HDBaseT receiver (for example the TP-580R or WP-580R) converts the twisted pair signal back into an HDMI signal and together they form a transmitter-receiver pair. The PT-580T transmitter features:

- A bandwidth of up to 10.2Gbps (3.4Gbps per graphic channel), supporting 4K resolution
- A range of up to 70 meters (230 feet)
- HDBaseT technology
- HDTV compatibility and HDCP compliance
- HDMI support – HDMI (deep color, x.v.Color™, lip sync, HDMI uncompressed audio channels, Dolby TrueHD, DTS–HD, CEC, 2k, 4k, 3D)
- EDID pass-through – passes EDID signals from the source to the display
- LED status indicator for power
- Ultra-Compact PicoTOOLS™ – 4 units can be rack mounted side-by-side in a 1U rack space with the optional RK–4PT rack adapter

For optimum range and performance using HDBaseT™, use Kramer's BC–HDKat6a cable. Note that the transmission range depends on the signal resolution, source and display used. The distance using non–Kramer CAT 6 cable may not reach these ranges.

## About HDBaseT™ Technology

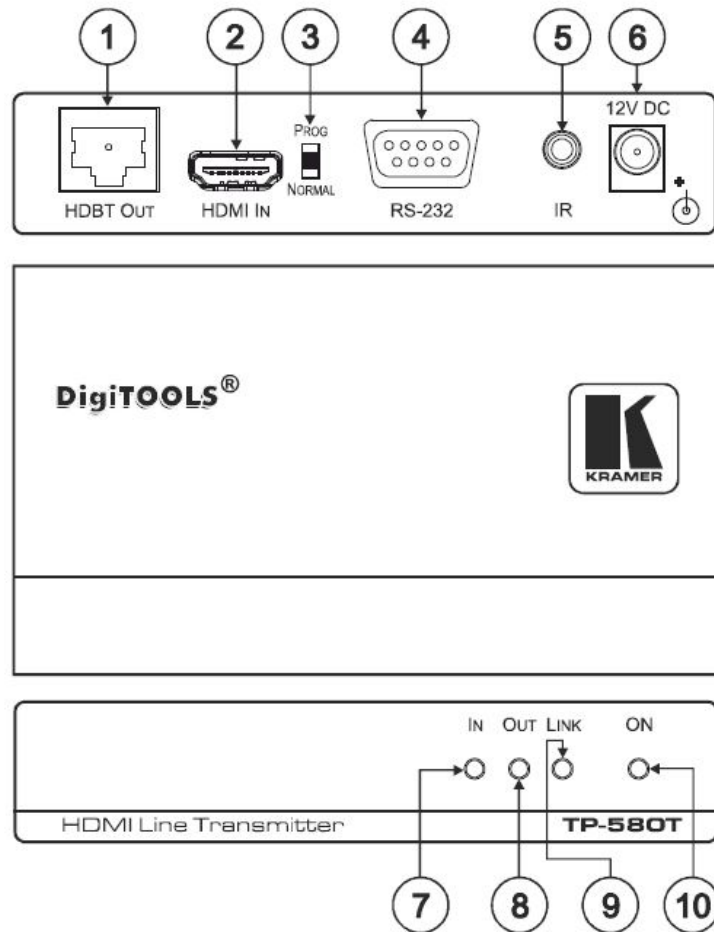
HDBaseT™ is an advanced all-in-one connectivity technology (supported by the HDBaseT Alliance). It is particularly suitable in the consumer home environment as a digital home networking alternative where it enables you to replace numerous cables and connectors by a single LAN cable used to transmit, for example, uncompressed full high-definition video, audio, IR, as well as various control signals.

The products described in this user manual are HDBaseT certified.

## Using Twisted Pair Cable

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; the Kramer BC–HDKat6a (CAT 6 23 AWG cable) significantly outperforms regular CAT 5 / CAT 6 cables.

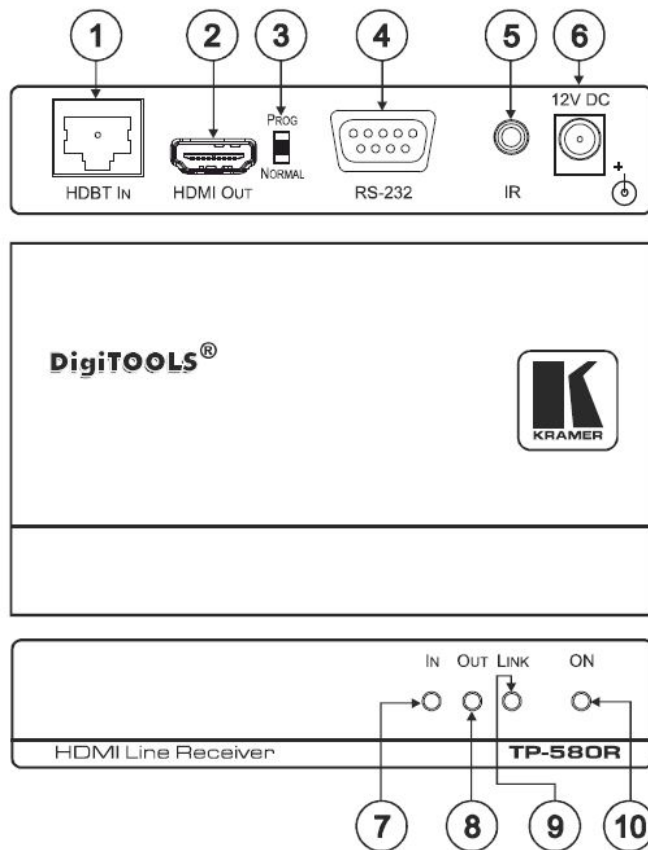
We strongly recommend that you use a shielded twisted pair cable.



#### Defining the TP-580T HDMI Line Transmitter

#	Feature	Function
1	HDBT OUT RJ-45 Connector	Connects to the <i>HDBT IN</i> RJ-45 connector on the <b>TP-580R</b>
2	HDMI IN Connector	Connects to the HDMI source
3	PROG/NORMAL Switch	Slide to PROG to upgrade to the latest Kramer firmware via RS-232, or slide to NORMAL for normal operation

4	<i>RS-232</i> 9-pin D-sub Connector	Connects to an RS-232 port for firmware upgrade and control of the destination unit
5	<i>IR</i> 3.5mm Mini-Jack Connector	Connects to an external infrared transmitter/sensor (receiver)
6	<i>12V DC</i>	+12V DC connector for powering the unit
7	<i>IN</i> LED	Lights green when an HDMI input device is connected
8	<i>OUT</i> LED	Lights green when an HDMI output device is detected
9	<i>LINK</i> LED	Lights green when the TP connection is active
10	<i>ON</i> LED	Lights when receiving power



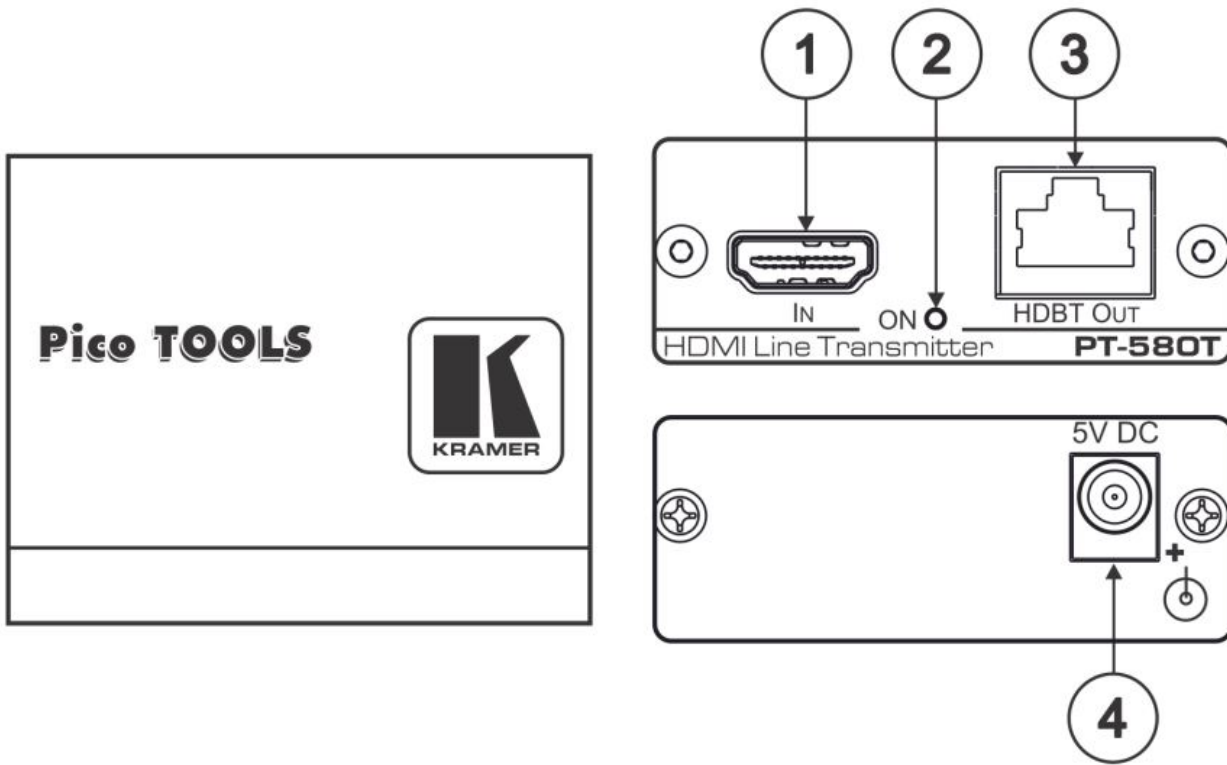
**Defining the TP-580R HDMI Line Receiver**

#	Feature	Function
1	HDBT IN RJ-45 Connector	Connects to the HDBT OUT RJ-45 connector on the TP-580T
2	HDMI OUT Connector	Connects to the HDMI acceptor
3	PROG/NORMAL Button	Slide to PROG to upgrade to the latest Kramer firmware via RS-232, or slide to NORMAL for normal operation



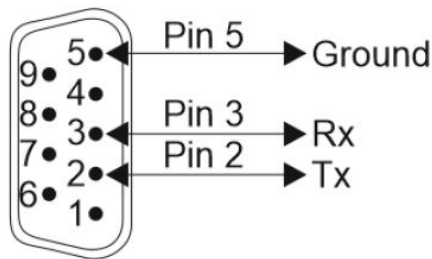
4	<i>RS-232</i> 9-pin D-sub Connector	Connects to an RS-232 port for firmware upgrade and control of the destination unit
5	<i>IR</i> 3.5mm Mini-Jack Connector	Connects to an external infrared transmitter/sensor (receiver)
6	<i>12V DC</i>	+12V DC connector for powering the unit
7	<i>IN</i> LED	Lights green when an HDMI input device is connected
8	<i>OUT</i> LED	Lights green when an HDMI output device is detected
9	<i>LINK</i> LED	Lights green when the TP connection is active
10	<i>ON</i> LED	Lights green when receiving power

## Defining the PT-580T



#	Feature	Function
1	IN HDMI Connector	Connects to the HDMI source
2	ON LED	Lights when receiving power
3	HDBT OUT RJ-45 Connector	Connects to the HDBT IN RJ-45 connector on the <b>TP-580R</b>
4	5V DC	+5V DC connector for powering the unit

**Note:** Section 5 shows how to connect the PT-580T.



Connecting vis RS-232

## Connecting the TP-580T and TP-580R

Always switch off the power to each device before connecting it to your Transmitter and Receiver. After connecting your Transmitter and Receiver, connect their power and then switch on the power to each device.

You can use the TP-580T HDMI Line Transmitter and the TP-580R HDMI Line Receiver to configure an HDMI transmitter/receiver system, as shown in the example in Figure 5. To connect the TP-580T, connect the:

1. HDMI source (for example, a DVD player) to the HDMI IN connector.
2. RS-232 9-pin D-sub connector to a computer (for example, a laptop to control the projector).
3. IR 3.5mm mini-jack to an IR emitter.
4. HDBT OUT RJ-45 connector over twisted pair to the TP-580R HDBT IN connector. Alternatively, you can use any other certified HDBaseT receiver device (for example, the Kramer WP-580R)
5. 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 5). To connect the TP-580R, connect the:
  - To connect the TP-580R, connect the:
  6. HDMI OUT connector to the HDMI acceptor (for example, a projector).
  7. RS-232 9-pin D-sub connector to an RS-232 port (for example, a projector that is controlled by the laptop connected to TP-580T).
  8. IR 3.5mm mini-jack to an IR sensor.
  9. HDBT IN RJ-45 connector over twisted pair to the TP-580T HDBT OUT connector. Alternatively, you can use any other certified HDBaseT transmitter device (for example, the Kramer WP-580T)
  10. 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in

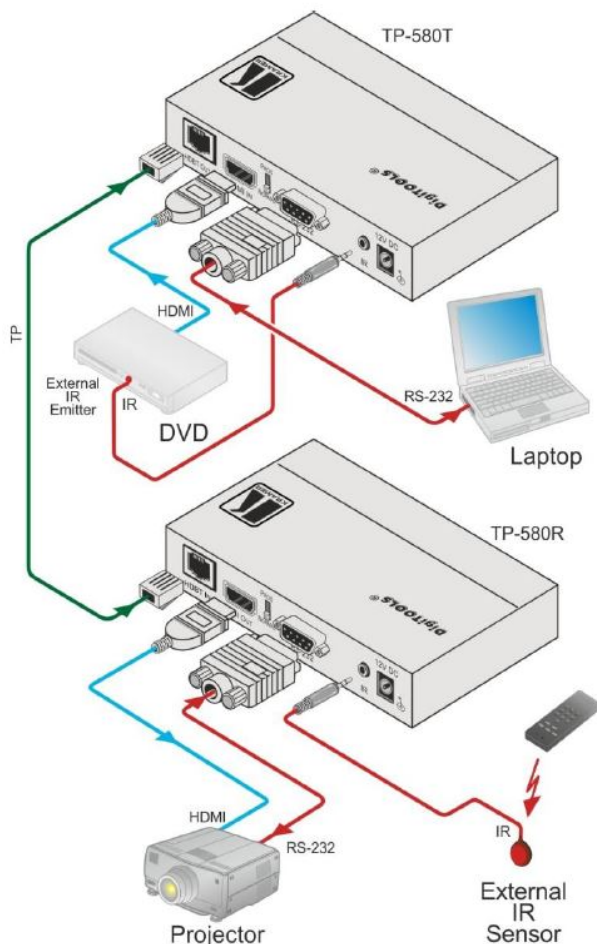


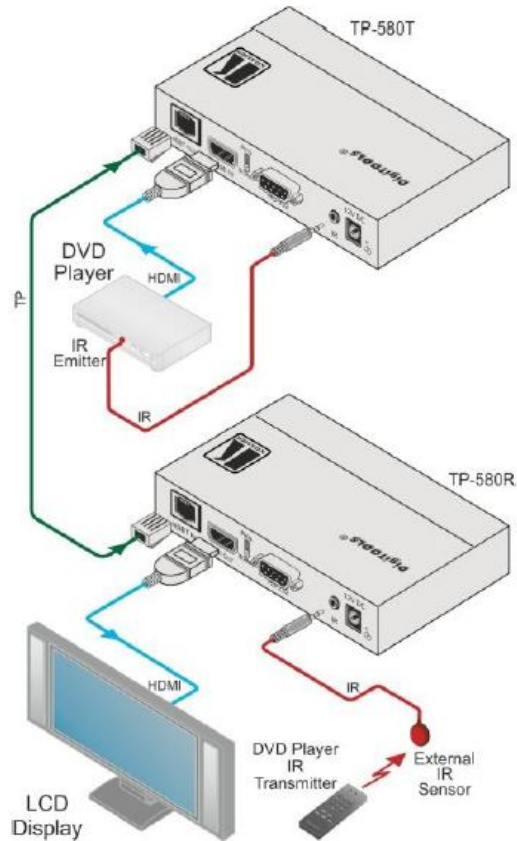
Figure 5).

Connecting the TP-580T/TP-580R

## Transmitter/Receiver Pair

### Controlling the A/V Equipment via an IR Transmitter

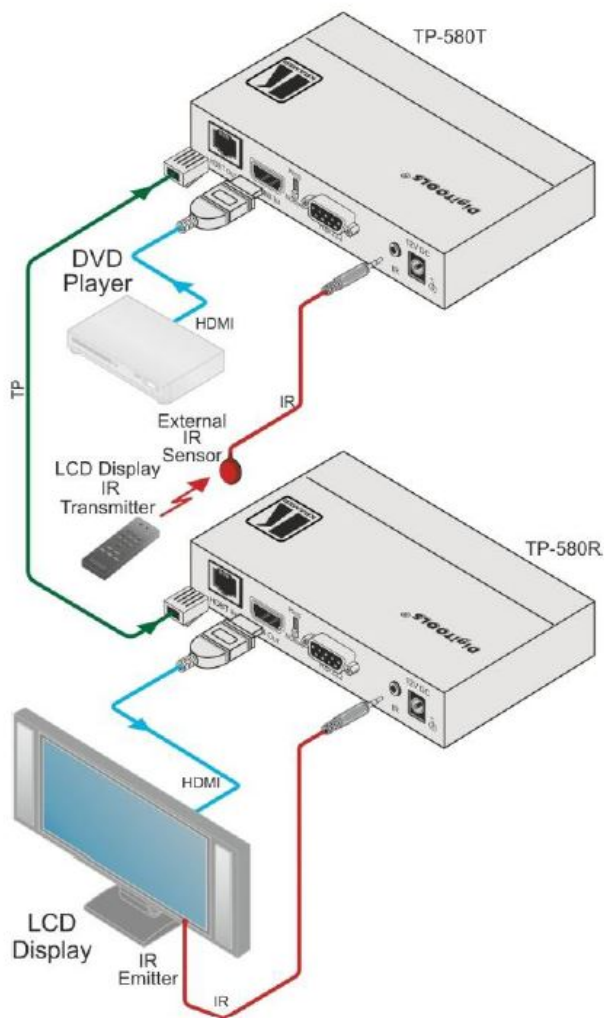
Since the IR signal on the TP-580T/TP-580R transmitter/receiver pair is bidirectional, you can use a remote control transmitter (that is used for controlling a peripheral device, for example, a DVD player) to send commands (to the A/V equipment) from either end of the transmitter /receiver system. To do so, you have to use the Kramer external IR sensor on one end (P/N: 95-0104050) and the Kramer IR emitter cable on the other end (P/N: C-A35/IRE-10). Two IR Emitter Extension Cables are also available: a 15 meter cable and a 20 meter cable. The example in Figure 6 illustrates how to control the DVD player that is connected to TP-580T using a remote control, via the TP-580R. In this example, the External IR Sensor is connected to the IR connector of the TP-580R and an IR Emitter is connected between the TP-580T and the DVD player. The DVD remote control sends a command while pointing towards the External IR Sensor. The IR signal passes through the TP cable and the IR Emitter to the DVD player,



which responds to the command sent.

### Controlling a DVD Player via the TP-580R

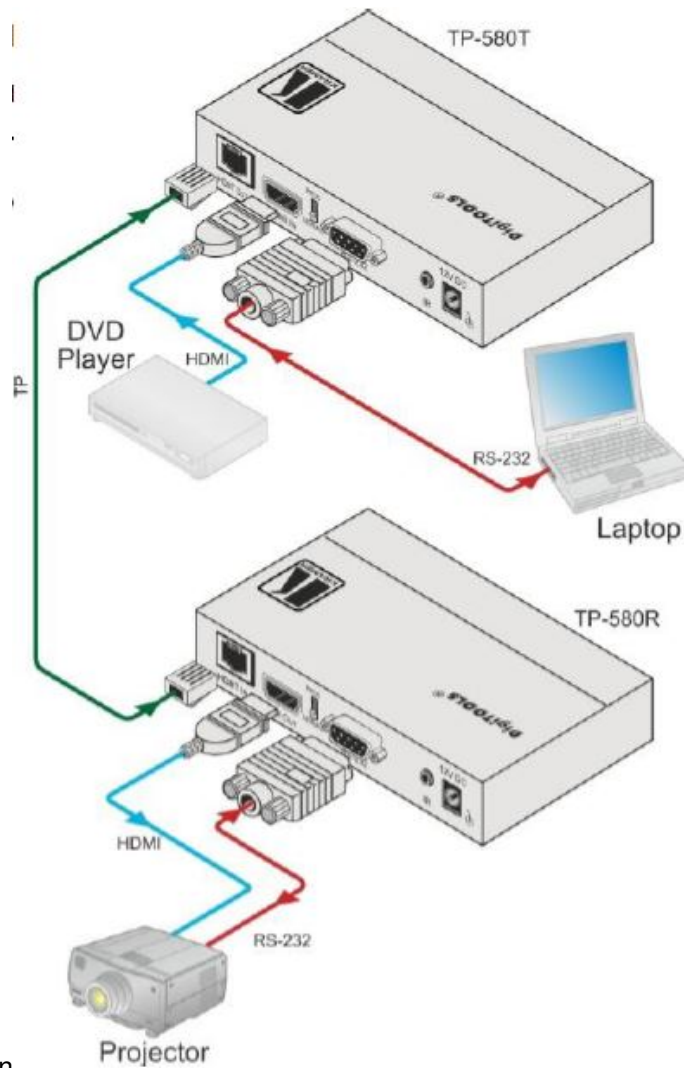
The example in Figure 7 illustrates how to control the LCD display that is connected to TP-580R using a remote control, via the TP-580T. In this example, the External IR Sensor is connected to the IR connector of the TP-580T and an IR Emitter is connected between the TP-580R and the LCD display. The LCD display remote control sends a command while pointing towards the External IR Sensor. The IR signal passes through the TP cable and the IR Emitter to the LCD display, which response to the command sent.



Controlling an LCD Display via the TP-580T

### Connecting to a PC

Since the IR signal on the TP-580T/TP-580R transmitter/receiver pair is bidirectional, you can use a remote control transmitter (that is used for controlling a peripheral device, for example, a DVD player) to send commands (to the A/V equipment) from either end of the transmitter /receiver system. To do so, you have to use the Kramer external IR sensor on one end (P/N: 95-0104050) and the Kramer IR emitter cable on the other end (P/N: C-A35/IRE-10) Two IR Emitter Extension Cables are also available: a 15 meter cable and a 20 meter cable. The example in Figure 6 illustrates how to control the DVD player that is connected to TP-580T using a remote control, via the TP-580R. In this example, the External IR Sensor is connected to the IR connector of the TP-580R and an IR Emitter is connected between the TP-580T and the DVD player. The DVD remote control sends a command while pointing towards the External IR Sensor. The IR signal passes through the TP cable and the IR Emitter to the DVD player,



which responds to the command sen

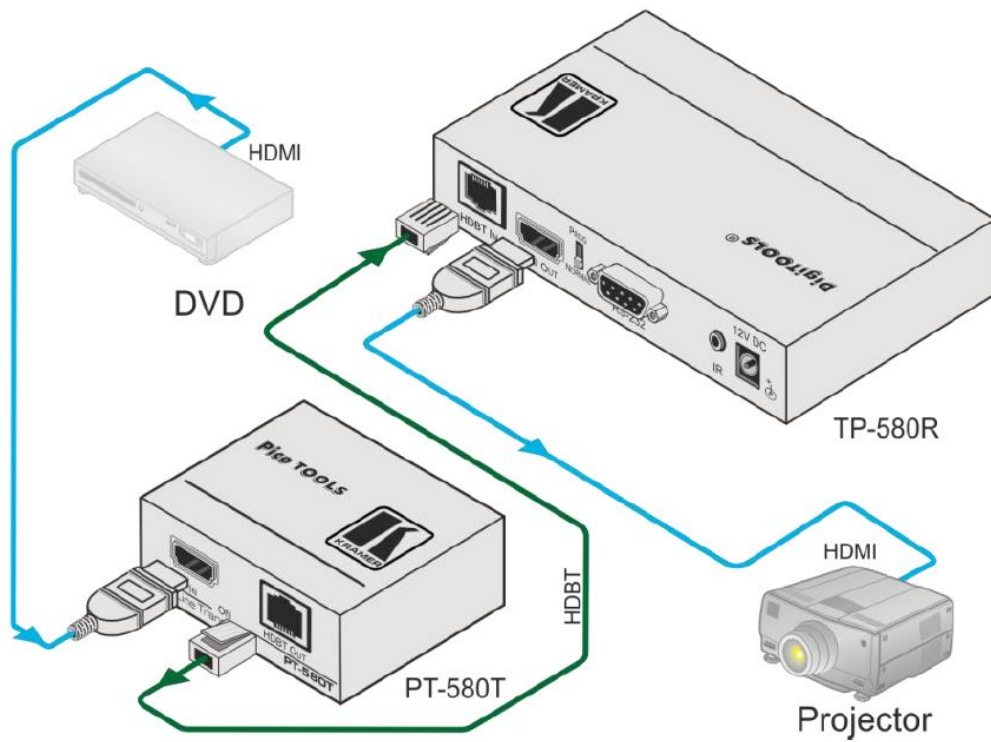
RS-232 Control

## Connecting the PT-580T

Always switch off the power to each device before connecting it to your PT-580T and the receiver. After connecting your PT-580T/receiver, connect the power and then switch on the power to each device.

To connect the PT-580T to a receiver (for example, the TP-580R), as illustrated in the example in Figure 9, do the following:

1. Connect an HDMI source (for example, a DVD player) to the HDMI IN connector.
2. Connect the HDBT OUT RJ-45 connector over twisted pair to the TP-580R HDBT IN connector. Alternatively, you can use any other certified HDBaseT receiver device (for example, the Kramer WP-580R)
3. On the TP-580R, connect the HDMI OUT connector to an HDMI acceptor (for example, a projector).
4. Connect the 5V DC power adapter to the power socket on the PT-580T and the 12V DC power adapter to the power socket on the TP-580R and connect the adapter to the mains electricity (not shown in Figure 9).



## Wiring the RJ-45 Connectors

This section defines the TP pinout, using a straight pin-to-pin cable with RJ-45 connectors.  
**Note:** that the cable Ground shielding must be connected/soldered to the connector shield.

**E**      **IA /TIA 568B**

**PIN**      **Wire Color**

1      Orange / White

2      Orange

3      Green / White

4      Blue

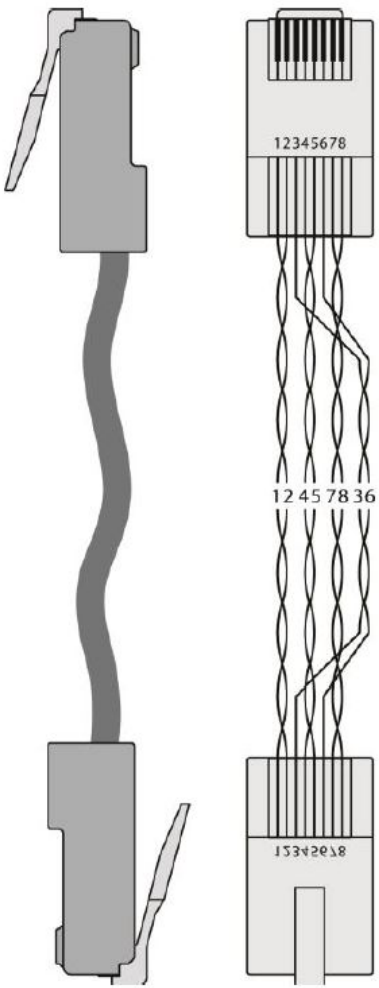
5      Blue / White

6      Green

7      Brown / White

8      Brown





## Technical Specifications

### TP-580T

### TP-580R

#### INPUTS:

1 HDMI connector

1 RJ-45 connector

#### OUTPUTS:

1 RJ-45 connector

1 HDMI connector

PORTS:                    1 IR on a 3.5mm mini jack (for emitter or sensor)    1 IR on a 3.5mm mini jack (for emitter or sensor)

                              1 RS-232 on a 9-pin D-sub connector    1 RS-232 on a 9-pin D-sub connector

MAX. DATA RATE:    Up to 10.2Gbps (3.4Gbps per graphic channel)

RANGE:                    70m (230ft) at 2K, 40m (130ft) at 4K UHD resolutions

RS-232 BAUD RATE:    115200

COMPLIANCE WITH HDMI STANDARD:    Supports HDMI and HDCP

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

POWER CONSUMPTION: 12V DC, 275mA 12V DC, 430mA

DIMENSIONS: 12cm x 7.15cm x 2.44cm (4.7" x 2.8" x 1.0") W, D, H.

WEIGHT: 0.2kg (0.44lbs)

SHIPPING DIMENSIONS: 15.7cm x 12cm x 8.7cm (6.2" x 4.7" x 3.4") W, D, H.

SHIPPING WEIGHT: 0.72kg (1.6lbs).

INCLUDED ACCESSORIES: 2 Power supply units 12V/1.25A

OPTIONS: RK-3T 19" rack mount; Kramer external IR sensor (P/N: 95-0104050), Kramer IR emitter cable (P/N: C-A35/IRE-10);  
Kramer BC-HDKat6a cable

Specifications are subject to change without notice

Go to our Web site at <http://www.kramerav.com> to access the list of resolutions

## PT-580T

INPUTS:	1 HDMI connector
OUTPUTS:	1 RJ-45 connector
BANDWIDTH:	Supports up to 3.4Gbps bandwidth per graphic channel
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
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
POWER CONSUMPTION:	5V DC, 570mA

DIMENSIONS: 6.2cm x 5.2cm x 2.4cm (2.4" x 2.1" x 1") W, D,  
H

WEIGHT: 0.14kg (0.3lbs)

SHIPPING DIMENSIONS: 15.7cm x 12cm x 8.7cm (6.2" x 4.7" x 3.4") W,  
D, H.

SHIPPING WEIGHT: 0.4kg (0.88lbs)

INCLUDED ACCESSORIES: 5V DC power supply

OPTIONS: 19" RK-4PT rack adapter; Kramer  
BC-HDKat6a cable

Specifications are subject to change without notice

Go to our Web site at <http://www.kramerav.com> to access the list of resolutions

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. The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc: All brand names, product names, and trademarks are the property of their respective owners We welcome your questions, comments, and feedback.

Web site: [www.KramerAV.com](http://www.KramerAV.com)

E-mail: [info@KramerAV.com](mailto:info@KramerAV.com)

**Documents / Resources**



## [KRAMER PT-580T HDMI Line Transmitter](#) [pdf] User Manual PT-580T, TP-580T, TP-580R, PT-580T HDMI Line Transmitter, PT-580T, HDMI Line Transmitter

### References

- [info@KramerAV.com](mailto:info@KramerAV.com)
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