

USER MANUAL

MODELS:

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

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



Contents

Introduction	1
Getting Started	1
Overview	2
Typical Applications	3
Defining TP-583Txx and TP-583T	4
Defining TP-583Rxx and TP-583R	5
Mounting TP-583Txx	6
Connecting the extenders	7
Connecting to an Extender via RS-232	8
Wiring HDBT RJ-45 Connectors	8
Controlling TP-583Txx	9
Technical Specifications	10
TP-583Txx and TP-583Rxx	10
TP-583T and TP-583R	11

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 Intelligent EDID Processing™ – Intelligent EDID pass-through algorithm that 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.

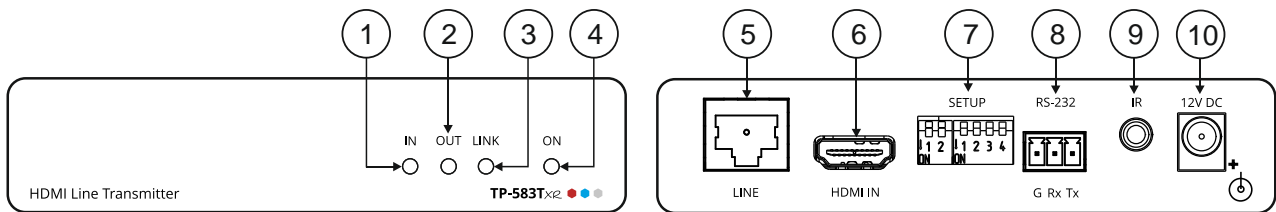


Figure 1: TP-583Txr HDMI Line Transmitter

#	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.

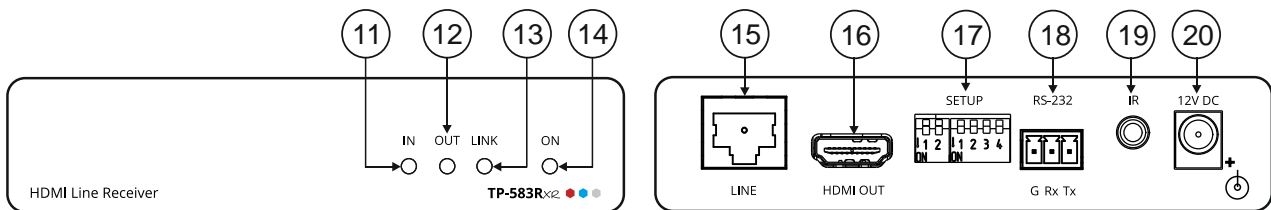


Figure 2: TP-583Rxr HDMI Line Receiver

#	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.
②①	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:**

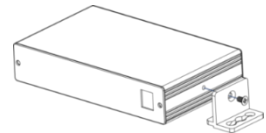
- Ensure that the environment (e.g., maximum ambient temperature & air flow) is compatible for the device.
- Avoid uneven mechanical loading.
- Appropriate consideration of equipment nameplate ratings should be used for avoiding overloading of the circuits.
- Reliable earthing of rack-mounted equipment 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-583Rrx** and **TP-583T / TP-583R** are connected in the same way.

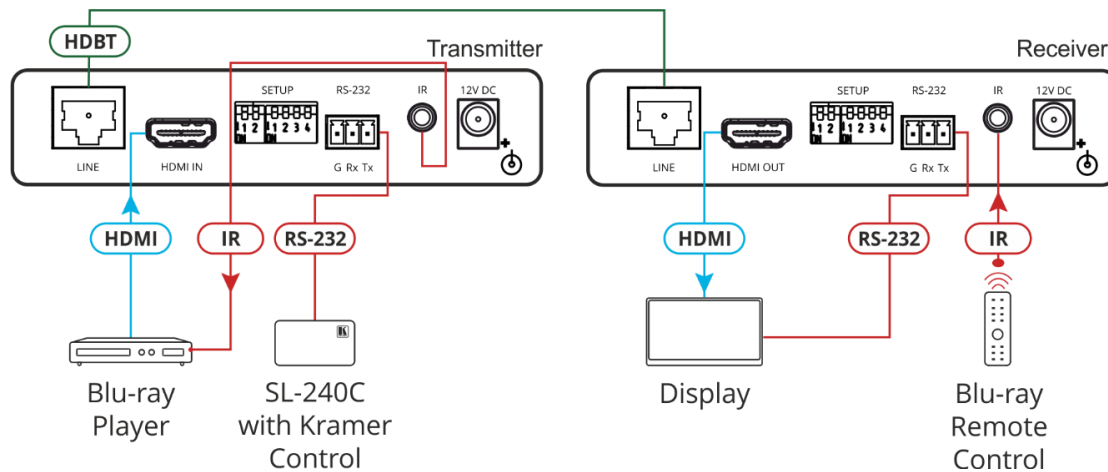


Figure 3: Connecting the extenders

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

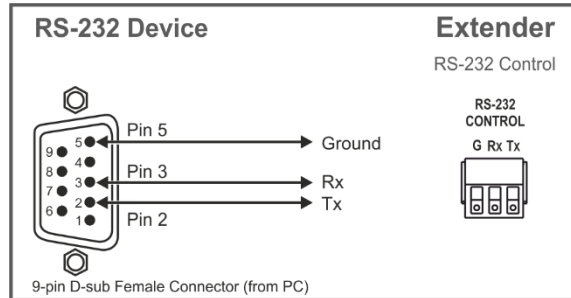
1. On TP-583Txr connect an HDMI source (for example, a Blu-ray player) to the HDMI IN connector (6).
2. On TP-583Rrx connect the HDMI OUT connector (16) to an HDMI acceptor (for example, a display).
3. Connect the LINE RJ-45 (5) connector on TP-583Txr to the LINE RJ-45 connector on TP-583Rrx (15).
4. 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-583Rrx 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-583Rrx 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



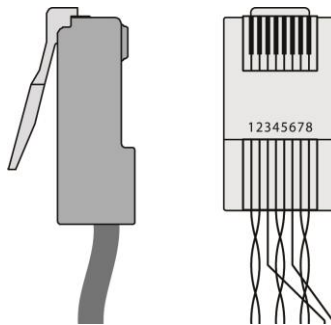
Wiring HDBT RJ-45 Connectors

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.

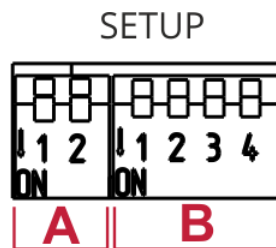



Figure 4: [Figure Caption]



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. ON (down) – High compression level for additional extension.

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 (0.44lbs) 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")	
	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			

The warranty obligations of Kramer Electronics Inc. ("Kramer Electronics") for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long this Coverage Lasts

The standard limited warranty for Kramer products is seven (7) years from the date of original purchase, with the following exceptions:

1. All Kramer VIA hardware products are covered by a standard three (3) year warranty for the VIA hardware and a standard three (3) year warranty for firmware and software updates; all Kramer VIA accessories, adapters, tags, and dongles are covered by a standard one (1) year warranty.
2. All Kramer fiber optic cables, adapter-size fiber optic extenders, pluggable optical modules, active cables, cable retractors, all ring mounted adapters, all Kramer speakers and Kramer touch panels are covered by a standard one (1) year warranty.
3. All Kramer Cobra products, all Kramer Calibre products, all Kramer Minicom digital signage products, all HighSecLabs products, all streaming, and all wireless products are covered by a standard three (3) year warranty.
4. All Sierra Video MultiViewers are covered by a standard five (5) year warranty.
5. Sierra switchers & control panels are covered by a standard seven (7) year warranty (excluding power supplies and fans that are covered for three (3) years).
6. K-Touch software is covered by a standard one (1) year warranty for software updates.
7. All Kramer passive cables are covered by a ten (10) year warranty.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics Will Do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics Will Not Do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy Under This Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, visit our web site at www.kramerav.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required (RMA number). You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation of Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

Exclusive Remedy

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SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

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