KRAMER

USER MANUAL

MODELS:

TP-752T
2-Wire Extra Range HD Transmitter

TP-752R
2-Wire Extra Range HD 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-752T 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 **TP-752T** / **TP-752R** 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:

- 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 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

Congratulations on purchasing your Kramer **TP-752T 2-Wire Extra Range HD Transmitter** and/or **TP-752R 2-Wire Extra Range HD Receiver**. **TP-752T** and **TP-752R** are a high-performance transmitter and receiver pair that can extend 1080p (HD) HDMI signals over distances of up to 600m (2000ft) using any 2-wire cabling. Both **TP-752T** and **TP-752R** support diverse cabling and connector options for typical long distance and legacy installations.

TP-752T and **TP-752R** are sold separately.

TP-752T and **TP-752R** provide exceptional quality, advanced and user-friendly operation, and flexible control.

Exceptional Quality

- High Performance Extender – Reliable HDMI signal extension over distances of up to 600m (2000ft).

- Cascaded Signal Distribution – The **TP-752T** transmitter has an active, reclocking HDMI output loop port for cascaded signal extenders or distributors, or local signal monitoring.

- Bidirectional RS-232 Extension – Enabling device control, such as control of the display from the source end, and control of a source from the display end.

Advanced and User-friendly Operation

- Easy Installation – Compact MegaTOOLS® fan-less enclosure for surface mounting or side-by-side mounting of 2 units in a 1U rack space with the recommended rack adapter.

- True Plug-and-Play – No setup or user configuration is required.

Flexible Connectivity

- Convenient Connector Options – Connect via one of 3 options: Terminal block (for common 2-wire connection), RJ-45 (CAT) (for typical long-distance applications), or VGA (to enable using HDMI over legacy VGA infrastructure).

- **TP-752R** Audio De-embedding – The transmitted digital audio signal is extracted from the AV signal and available in both digital (S/PDIF) and analog format, as well as being available on the HDMI output.
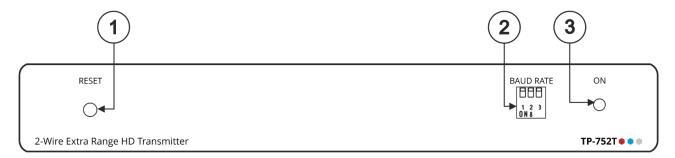
Typical Applications

TP-752T is ideal for the following typical applications:

- Legacy/existing long-distance cabling.

- Transmission of HDMI signals over standard 2-wire cable.

- Cost-effective transmission of video and audio over distances up to 2000 feet.

- Upgrading VGA systems to HDMI without having to change the wiring within the walls.

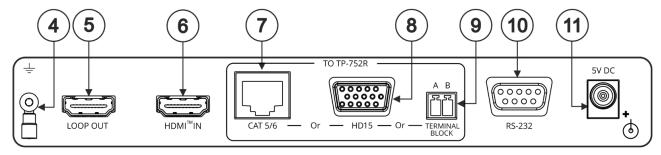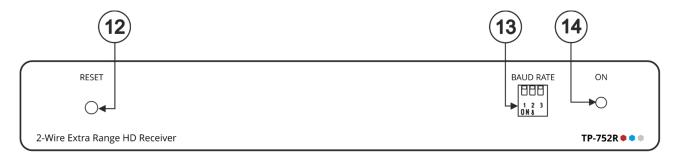# Defining the 2-Wire Extra Range HD Transmitter

This section defines **TP-752T**.

Figure 1: **TP-752T 2-Wire Extra Range HD Transmitter**

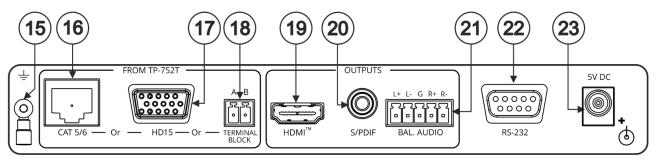| #	Feature		Function
1	RESET Recessed Button		Press to reset the device.
2	BAUD RATE DIP-switches		Set the RS-232 baud rate (baud rate on **TP-752T** and **TP-752R** should be identical), see Setting the Baud Rate on page 9.
3	ON LED		Lights green when the device is powered.
4	Ring Tongue Terminal Grounding Screw		Connect to grounding wire (optional), see Grounding the TP-752T/TP-752R on page 8.
5	LOOP OUT HDMI Connector		Connect to a local monitor.
6	HDMI IN Connector		Connect to an HDMI source.
7	TO TP-752R (Connect via **one** of these options)	CAT 5/6 RJ-45 Port	Connect to the RJ-45 port on **TP-752R**.
8		HD15 15-pin HD Connector	Connect to the 15-pin HD connector on **TP-752R**.
9		A, B 2-pin TERMINAL BLOCK Connector	Connect to the 2-pin terminal block connectors on **TP-752R**. ⓘ For 2-wire cabling where the 2 wires have similar characteristics (e.g. twin-flex cable), wire by connecting to the 2 terminals of the terminal block connector. When using co-ax cable, it is best to wire with the inner cable connected to the A terminal, and the shield connected to the ground tab (the ring tongue terminal grounding screw).
10	RS-232 9-pin D-sub Connector		Bi-directional RS-232 between the devices, allowing control of the display from the source end/control of a source from the display end.
11	5V DC		+5V DC connector for powering the unit.

Figure 2: TP-752R 2-Wire Extra Range HD Receiver

#	Feature		Function
12	RESET Recessed Button		Press to reset the device.
13	BAUD RATE DIP-switches		Set the baud rate (baud rate on **TP-752T** and **TP-752R** should be identical), see Setting the Baud Rate on page 9.
14	ON LED		Lights green when the device is powered.
15	Ring Tongue Terminal Grounding Screw		Connect to grounding wire (optional), see Grounding the TP-752T/TP-752R on page 8.
16	FROM TP-752T (Connect via **one** of these options)	CAT 5/6 RJ-45 Port	Connect to the RJ-45 port on **TP-752T**.
17		HD15 15-pin HD Connector	Connect to the 15-pin HD connector on **TP-752T**.
18		A, B 2-pin TERMINAL BLOCK Connector	Connect to the 2-pin terminal block connectors on **TP-752T**. ⓘ For 2-wire cabling where the 2 wires have similar characteristics (e.g. twin-flex cable), wire by connecting to the 2 terminals of the terminal block connector. When using co-ax cable, it is best to wire with the inner cable connected to the A terminal, and the shield connected to the ground tab (the ring tongue terminal grounding screw).
19	OUTPUTS	HDMI Connector	Connect to an HDMI acceptor.
20		S/PDIF RCA Connector	Connect to a digital audio acceptor.
21		BAL. AUDIO 5-pin Terminal Block Connector	Connect to a stereo balanced audio acceptor.
22	RS-232 9-pin D-sub Connector		Bi-directional RS-232 between the devices, allowing control of the display from the source end/control of a source from the display end.
23	5V DC		+5V DC connector for powering the unit.

Mounting TP-752T/TP-752R

This section provides instructions for rack mounting **TP-752T/TP-752R**. Before installing in a rack, verify that the environment is within the recommended range:
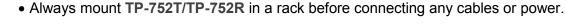
- Operation temperature – 0° to 40°C (32 to 104°F).
- Storage temperature – -40° to +70°C (-40 to +158°F).
- Humidity – 10% to 90%, RHL non-condensing.

- **TP-752T/TP-752R** must be placed upright in the correct horizontal position.

Caution:
- Always mount **TP-752T/TP-752R** in a rack 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-752T/TP-752R on a rack

Mount the unit in a rack using the recommended rack adapter
(see www.kramerav.com/product/TP-752T)

To mount the TP-752T/TP-752R 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-752T

Connecting the TP-752T/TP-752R

ⓘ Always switch off the power to each device before connecting it to your **TP-752T** and **TP-752R**. After connecting your **TP-752T** and **TP-752R**, connect their power and then switch on the power to each device.
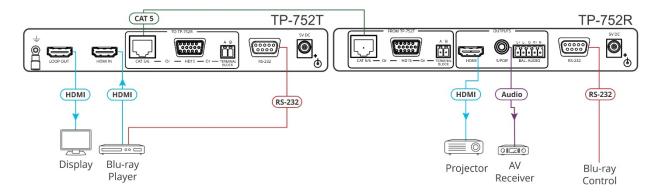

Figure 3: Connecting the Transmitter to the Receiver

To connect the TP-752T and TP-752R as illustrated in the example in Figure 3:

1. On the **TP-752T**:

   ▪ Connect the LOOP OUT HDMI connector ⑤ to an HDMI acceptor (for example, a display)

   ▪ Connect the HDMI source (for example, a Blu-ray player) to the HDMI IN connector ⑥.

   ▪ Connect the RS-232 9-pin D-sub connector ⑩ to the HDMI source (for example, to control the Blu-ray player).

2. On the **TP-752R**:

   ▪ Connect the HDMI OUTPUT ⑲ to an HDMI acceptor (for example, a projector).

   ▪ Connect the S/PDIF RCA connector ⑳ to a digital audio acceptor (for example, an AV receiver).

   ▪ Connect the BAL. AUDIO 5-pin terminal block connector ㉑ to a stereo balanced audio acceptor (not shown in Figure 3).

   ▪ Connect the RS-232 9-pin D-sub connector ㉒ to a controller (to control the Blu-ray player on the transmitter side).

3. Connect the transmitter to the receiver via **one** of the following ways:

   ▪ The CAT 5/6 RJ-45 connector, ⑦ to ⑯ via a CAT 5 cable.

   ▪ The TERMINAL BLOCK 2-pin terminal block connector, ⑨ to ⑱ (not shown in Figure 3).

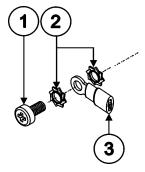   ▪ The HD15 15-pin HD connctor, ⑧ to ⑰ (not shown in Figure 3).

ⓘ Because of the extremely high sensitivity of the receivers, there may be crosstalk between systems within close proximity, and when running cabling from multiple transmitters close together. To prevent this, in applications employing more than one transmitter, we recommend using shielded cabling with the shield grounded. When connecting via:

- **CAT 5/6**: use shielded CAT cable. (The connectors within the **TP-752T/TP-752R** ground the shield).
- **TERMINAL BLOCK**: connect shielded cable, with the shield connected to the ground tabs (see Grounding the TP-752T/TP-752R on page 8).
- **HD15**: no special cautions need to be taken when connecting via standard VGA cabling. (VGA cable is typically shielded and the connectors within the **TP-752T/TP-752R** ground the shield).

4. Set the same baud rate on both devices via the BAUD RATE DIP-switches ② and ⑬ (see Setting the Baud Rate on page 9).

5. Connect the power adapters to the **TP-752T** and **TP-752R** power connectors (⑪ and ㉓), and to the mains electricity (not shown in Figure 3).

Grounding the TP-752T/TP-752R

You can use the grounding screw to earth the chassis of the unit to the building ground preventing static electricity from impacting the performance of the unit.

Figure 4 defines the grounding screw components.

#	Component Description
1	M3X6 screw
2	1/8" Toothed Lock Washer
3	M3 Ring Tongue Terminal

Figure 4: Grounding Connection Components

To ground the TP-752T/TP-752R, if required:

1. Connect the ring tongue terminal to the building grounding point wire (it is recommended to use a green-yellow AWG#18 (0.82mm^2) wire, crimped with a proper hand-tool).

2. Insert the M3x6 screw through the toothed lock washers and the tongue terminal in the order shown above.

3. Insert the M3x6 screw (with the two toothed lock washers and ring tongue terminal) into the grounding screw hole and tighten the screw.

Connecting the Output to a Balanced/Unbalanced Stereo Audio Acceptor

The following are the pinouts for connecting the output to a balanced or unbalanced stereo audio acceptor:

Figure 5: Connecting to a Balanced Stereo Audio Acceptor

Figure 6: Connecting to an Unbalanced Stereo Audio Acceptor

Connecting to TP-752T/TP-752R via RS-232

Passing bi-directional RS-232 signals between the devices, allows control of the display from the source end and/or control of a source from the display end. For example, you can control the Blu-ray player that is connected to **TP-752T** from the display side.

To connect a controller/device to be controlled via the RS-232 port:

* Connect the RS-232 9-pin D-sub port to the controller/controlled device.

ⓘ   If you are connecting to an RS-232 terminal block connector, connect only the following pins: Tx to pin 2, Rx to pin 3, and G to pin 5.

Setting the Baud Rate

A DIP-switch that is down is ON; a DIP-switch that is up is OFF.

To set the baud rate:

* Set the DIP-switches identically for **TP-752T** and **TP-752R** according to the table below:

DIP-switch 1	DIP-switch 2	DIP-switch 3	Baud Rate
OFF (up)	OFF (up)	OFF (up)	2400
ON (down)	OFF (up)	OFF (up)	4800
OFF (up)	ON (down)	OFF (up)	9600
ON (down)	ON (down)	OFF (up)	19200
OFF (up)	OFF (up)	ON (down)	28800
ON (down)	OFF (up)	ON (down)	38400
OFF (up)	ON (down)	ON (down)	57600
ON (down)	ON (down)	ON (down)	115200

BAUD RATE

Technical Specifications

TP-752T

Inputs	1 HDMI	On a female HDMI connector
Outputs	1 LOOP HDMI	On a female HDMI connector
	CAT 5/6	On an RJ-45 connector
	VGA	On a 15-pin HD connector
	2-wire	On a 2-pin terminal block connector
Ports	RS-232	On 9-pin D-sub connector for serial link extension

TP-752R

Inputs	CAT 5/6	On an RJ-45 connector
	VGA	On a 15-pin HD connector
	2-wire	On a 2-pin terminal block connector
Outputs	1 HDMI	On a female HDMI connector
	1 S/PDIF	On an RCA connector
	1 Balanced Stereo Audio	On a 5-pin terminal block connector
Ports	RS-232	On 9-pin D-sub connector for serial link extension

General

Video	Max Resolution	1080p60
	Compliance	HDCP 1.4
	Latency	0.35 seconds (typical)
Audio	Support	2.0 channel PCM, 48kHz/44.1kHz sampling rate
	Bandwidth	12kHz
	Analog THD + NOISE	0.08% @1kHz at nominal level
Extension Range	Full HD (1080p @60Hz)	Up to 600m (2000ft)
Extended RS-232	Baud Rate	2400 to 115200, selectable
Controls	Front Panel	ON LED indicator
		Baud rate DIP-switches
		Reset recessed button
Power	Consumption	5V DC, 1.5A
	Source	5.2V DC, 4A
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	Mega Tool
	Cooling	Convection ventilation
General Information (per device)	Net Dimensions (W, D, H)	18.7cm x 11.5cm x 2.5cm (7.4" x 4.5" x 1")
	Shipping Dimensions (W, D, H)	34.5cm x 16.5cm x 5.2cm (13.6" x 6.5" x 2.1")
	Net Weight	0.46kg (1lbs) approx.
	Shipping Weight	0.96kg (2.1lbs) approx.
	Type	Aluminum
Accessories	Included	2 Power adapters, 2 power cords
Specifications are subject to change without notice at www.kramerav.com		

The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

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

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF KRAMER ELECTRONICS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPLICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, visit our web site at www.kramerav.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

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⚠ **SAFETY WARNING**
Disconnect the unit from the power supply before opening and servicing

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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