

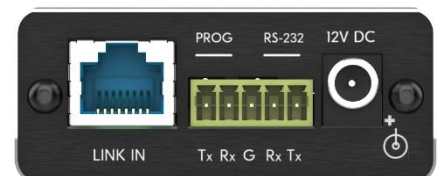
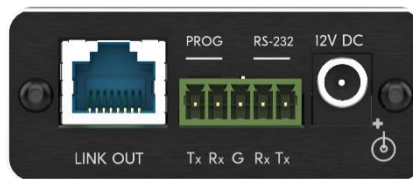


USER MANUAL

MODEL:

EXT3-U-KIT

USB 2.0, RS-232 & Audio Extender



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Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment.
- Review the contents of this user manual.



Go to www.kramerav.com/downloads/EXT3-U-KIT to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving Best Performance

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).
- Do not secure the cables in tight bundles or roll the slack into tight coils.
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality.
- Position your Kramer **EXT3-U-KIT** away from moisture, excessive sunlight and dust.

Safety Instructions



Caution:

- This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.
- For products with relay terminals and GPIO ports, please refer to the permitted rating for an external connection, located next to the terminal or in the User Manual.
- There are no operator serviceable parts inside the unit.



Warning:

- Use only the power cord that is supplied with the unit.
- To ensure continuous risk protection, replace fuses only according to the rating specified on the product label which is located on the bottom of the unit.



Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at www.kramerav.com/il/quality/environment.

Overview

Congratulations on purchasing your Kramer **EXT3-U-KIT USB 2.0, RS-232 & Audio Extender**.

EXT3-U-KIT is a comprehensive, extended-reach CAT extender kit for USB 2.0, RS-232 and audio signals and 2-way powering over twisted pair. The **EXT3-U-T** transmitter converts the USB input signal into a CAT signal. The **EXT3-U-R** receiver converts the transmitted CAT signal into a USB signal.

EXT3-U-KIT provides exceptional quality, advanced and user-friendly operation, and flexible control:

- Comprehensive USB Extender – Plug & play USB extender kit for providing extended-reach CAT signals and 2-way power over twisted pair copper infrastructures. A local USB host is auto-connected to remote-connected USB devices employing either interrupt, bulk or isochronous USB 2.0 standard data transfer communication.
- Flexible USB Connectivity – Wide Variety of USB peripheral devices can be extended including cameras, touch screens, smart boards, hard drives, game controllers, audio devices, printers, scanners, or HID (Human Interface Devices) devices such as a mouse or keyboard. Dual role and OTG (On The Go) devices such as smart phones and tablets, connected either to a transmitter-side USB host port or receiver-side USB device port, can communication with a remote host or peripheral pairing device.
- Remote USB Charging – Fast USB charging of peripheral devices when the receiver is powered by a power supply, and standard USB charging when the receiver is powered by the transmitter via CAT.
- Bidirectional RS-232 Extension – Serial interface data flows in both directions, allowing data transmission and device control.
- Audio Extension – Send an audio signal from an audio source connected to the transmitter to an active audio playing device connected to the receiver.
- Cost-Effective Maintenance – Status LED indicators facilitate easy local maintenance and troubleshooting.
- Easy Installation – Single twisted-pair cable for signal and power wiring. Compact PicoTOOLS® fan-less enclosure for device-back mounting, or side-by-side mounting of 4 units in a 1U rack space with the recommended rack adapter.



Typical Applications

EXT3-U-KIT is ideal for the following typical applications:

- Room camera and soundbar extension in conference and meeting rooms.
- Any hi-quality USB 2.0 extension in education, corporate, manufacturing and medical applications



Defining EXT3-U-KIT USB 2.0, RS-232 & Audio Extender

Defining EXT3-U-T

This section defines EXT3-U-T.

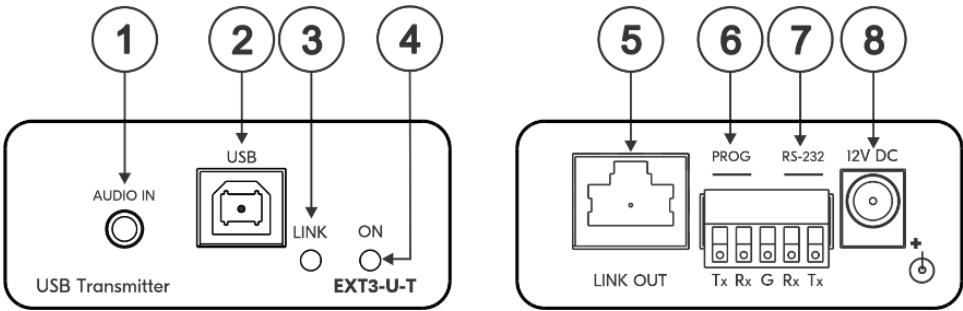


Figure 1: EXT3-U-T USB Transmitter

#	Feature		Function
①	AUDIO IN 3.5mm Mini Jack		Connect to an unbalanced stereo audio source.
②	USB 2 Type B Port		Connect to USB host.
③	LINK LED		Flashes blue when a link is established.
④	ON LED		Lights green when locally powered by the power adapter. Lights orange when powered by PoC.
⑤	LINK OUT RJ-45 Connector		Connect to the LINK IN port on the EXT3-U-R .
⑥	PROG (Tx, Rx)	5-pin Terminal Block Connector (with common G pin)	Connect for firmware upgrade (for factory use only).
⑦	RS-232 (Rx, Tx)		Connect for serial extension (9600 baud rate).
⑧	12V DC Power Connector		Connect to the supplied power adapter.



Defining EXT3-U-R

This section defines EXT3-U-R.

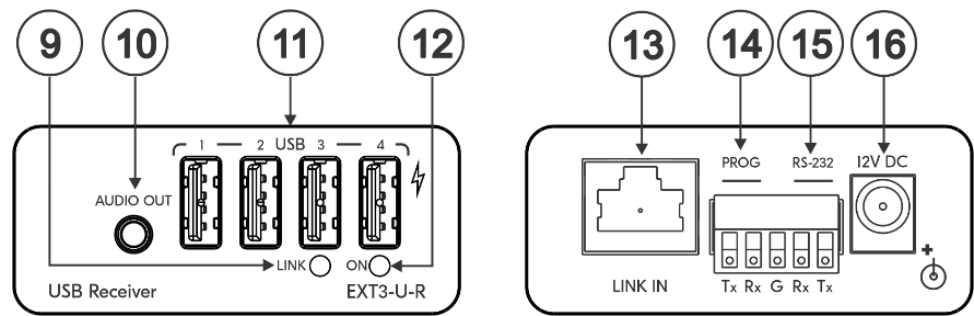


Figure 2: EXT3-U-R USB Receiver

#	Feature		Function
⑨	LINK LED		Flashes blue when a link is established.
⑩	AUDIO OUT 3.5mm Mini Jack		Connect to an unbalanced stereo audio acceptor.
⑪	USB 2 Type A Ports (1 to 4)		Connect to USB devices. Connect EXT3-U-T directly to the power adapter in order to charge USB devices.
⑫	ON LED		Lights green when locally powered by the power adapter. Lights orange when powered by PoC.
⑬	LINK IN RJ-45 Connector		Connect to the LINK OUT port on the EXT3-U-T .
⑭	PROG (Tx, Rx)	5-pin Terminal Block Connector (with common G pin)	Connect for firmware upgrade (for factory use only).
⑮	RS-232 (Rx, Tx)		Connect for serial extension (9600 baud rate).
⑯	12V DC Power Connector		Connect to the supplied power adapter.



Mounting EXT3-U-KIT

This section provides instructions for mounting **EXT3-U-KIT**. Before installing, verify that the environment is within the recommended range:



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

**Caution:**

- Mount **EXT3-U-KIT** before connecting any cables or power.

**Warning:**

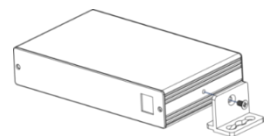
- Ensure that the environment (e.g., maximum ambient temperature & air flow) is compatible for the device.
- Avoid uneven mechanical loading.
- Appropriate consideration of equipment nameplate ratings should be used for avoiding overloading of the circuits.
- Reliable earthing of rack-mounted equipment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

Mount EXT3-U-KIT in a rack:

- Use the recommended rack adapter
(see www.kramerav.com/product/EXT3-U-KIT).

Mount EXT3-U-KIT on a surface using one of the following methods:

- Attach the rubber feet and place the unit on a flat surface.
- Fasten a bracket (included) on each side of the unit and attach it to a flat surface. For more information go to www.kramerav.com/downloads/EXT3-U-KIT.



Connecting EXT3-U-KIT

-  Devices that are connected to the **EXT3-U-R** USB ports are powered/charged while connected.
-  Only 9600 baud rate is supported for RS-232 communication for both **EXT3-U-T** and **EXT3-U-R**.

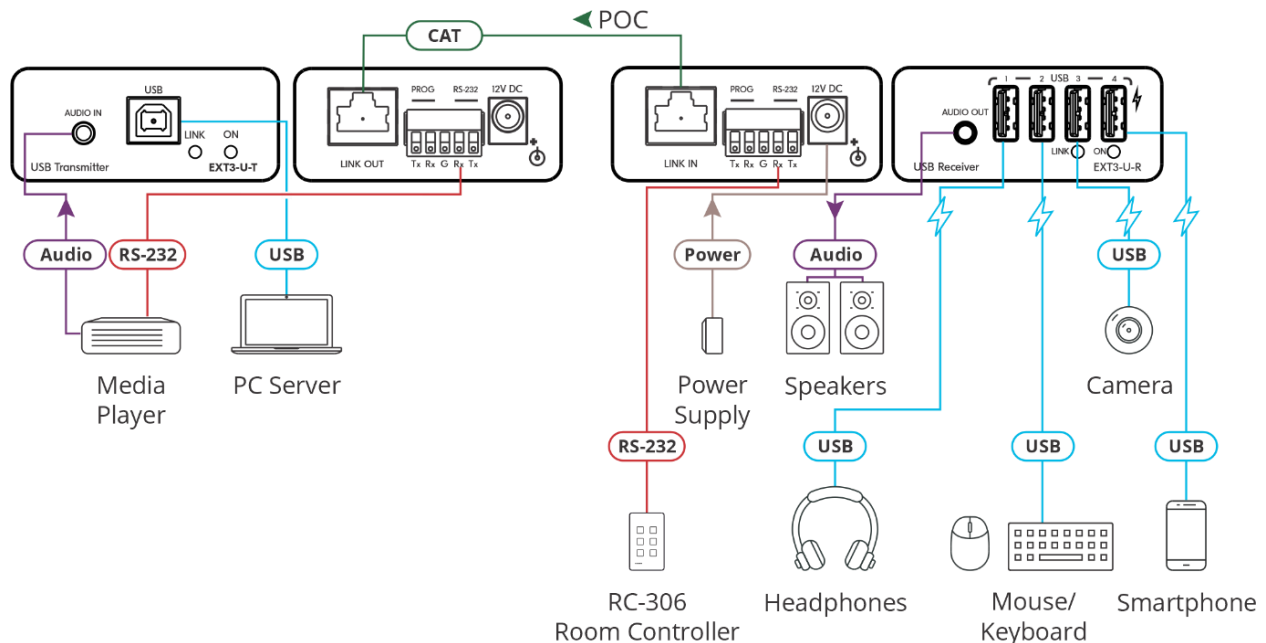


Figure 3: Connecting to the EXT3-U-KIT

To connect EXT3-U-KIT as illustrated in the example in [Figure 3](#):

1. Connect an audio source (for example, a media player) to the AUDIO IN 3.5mm mini jack ① on the **EXT3-U-T** front panel.
2. Connect the AUDIO OUT 3.5mm mini jack on the **EXT3-U-R** ⑩ to an unbalanced stereo audio acceptor (for example, speakers).
3. Connect the RS-232 ports:
 - On the **EXT3-U-T**, connect the RS-232 3-pin terminal block ⑦ to an RS-232-controlled device (for example, a media player).
 - On the **EXT3-U-R**, connect the RS-232 3-pin terminal block ⑮ to an RS-232 controller (for example, Kramer **RC-306** room controller).

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

4. Connect the USB type B port ② on the **EXT3-U-T** to a USB Host (for example a PC server).
5. Connect the USB type A ports ⑪ on the **EXT3-U-R** to USB devices (for example, a keyboard and mouse, headphones, a camera, and/or a smartphone).
6. Connect the power adapter to the **EXT3-U-R** and then to the mains. **EXT3-U-T** is powered via LINK RJ-45 ports ⑩.



Alternatively, you can connect the power adapter the other way around: connect the power adapter to the **EXT3-U-T** and then to the mains so that **EXT3-U-R** is powered via the LINK RJ-45 ports.

Connecting to EXT3-U-KIT via RS-232

You can connect to **EXT3-U-KIT** via an RS-232 connection (13) using, for example, a PC.

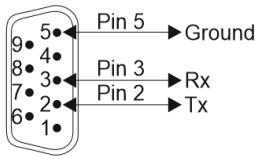
EXT3-U-KIT features an RS-232 3-pin terminal block connector allowing the RS-232 to control **EXT3-U-KIT**.

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

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

- Pin 2 to the TX pin on the **EXT3-U-KIT** RS-232 terminal block
- Pin 3 to the RX pin on the **EXT3-U-KIT** RS-232 terminal block
- Pin 5 to the G pin on the **EXT3-U-KIT** RS-232 terminal block

RS-232 Device



EXT3-U-KIT

RS-232

G Rx Tx



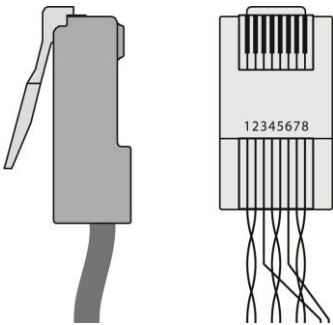
Wiring RJ-45 Connectors

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



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

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



Technical Specifications

EXT3-U-KIT

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, UKCA
	Environmental	RoHs, WEEE
Enclosure	Size	Pico Tools
	Type	Aluminum
	Cooling	Convection Ventilation
General	Device Net Dimensions (W, D, H)	6.22cm x 5.2 cm x 2.44cm (8.45" x 6.42" x 1.7")
	Kit Shipping Dimensions (W, D, H)	49cm x 12cm x 8.7cm (13.82" x 8.35" x 2.8")
	Device Net Weight	0.11 kg (2.1lbs)
	Kit Shipping Weight	0.7kg (3.2lbs) approx.
Accessories	Included	1 Power adapter and cord, 1 USB-A to USB-B 2m cable
Specifications are subject to change without notice at www.kramerav.com		

EXT3-U-T

Inputs	1 Stereo Analog Unbalanced Audio	On a 3.5mm mini jack for audio extension
Outputs	1 CAT	On an RJ-45 female connector for extension line
Ports	1 USB	On a USB-B female connector for USB host extension
	1 RS-232	On a 3-pin terminal block for serial link extension
Extended USB	Data Rate	Up to 480Mbps
	Transmitted Data Bandwidth	Up to 300Mbps
	Standards Compliance	1.1 and 2.0 USB
Extension Line	Reach	CAT 6A: Up to 100m (330ft) CAT 5e: Up to 30m (100ft) When using Kramer cables
Extended RS-232	Baud Rate	9600
Indication LEDs	Front Panel	LINK LED and ON LED
Power	Consumption	12V DC, 1200mA
	Source	12V DC, 2A
Specifications are subject to change without notice at www.kramerav.com		



EXT3-U-R

Inputs	1 CAT	On an RJ-45 female connector for extension line
Outputs	1 Stereo Analog Unbalanced Audio	On a 3.5mm mini jack for audio extension
Ports	4 USB	On USB-A female connector for USB devices extension
	1 RS-232	On a 3-pin terminal block for serial link extension
Extended USB	Data Rate	Up to 480Mbps
	Transmitted Data Bandwidth	Up to 300Mbps
	Standards Compliance	1.1 and 2.0 USB
Extension Line	Reach	CAT 6A: Up to 100m (330ft) CAT 5e: Up to 30m (100ft) When using Kramer cables
Extended RS-232	Baud Rate	9600
USB Charging	Max Total Current	PSU-powered: 2.5A PoC-powered: 0.5A
	Max Current Per Port	PSU-powered: 2A PoC-powered: 0.5A
Indication LEDs	Front Panel	LINK LED and ON LED
Power	Consumption	12V DC, 1500mA
	Source	12V DC, 2A
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. Kramer fiber optic cables, adapter-size fiber optic extenders, pluggable optical modules, active cables, cable retractors, ring mounted adapters, portable power chargers, Kramer speakers, and Kramer touch panels are covered by a standard one (1) year warranty. Kramer 7-inch touch panels purchased on or after April 1st, 2020 are covered by a standard two (2) year warranty.
3. 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 lifetime 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. If a direct or similar replacement product is supplied, the original product's end warranty date remains unchanged and is transferred to the replacement 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.





HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

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

We welcome your questions, comments, and feedback.

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.

