MODELS:

**VA-1USB-T**
USB Transmitter

**VA-1USB-R**
USB Receiver

P/N: 2900-300209 Rev 4
VA-1USB-T, VA-1USB-R USB Transmitter/Receiver Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerav.com/manual/VA-1USB-T, VA-1USB-R to download the latest manual or scan the QR code on the left.

Step 1: Check what’s in the box
- VA-1USB-T USB Transmitter and VA-1USB-R Receiver
- 2 Power adapters (5V DC)
- 8 Rubber feet
- 1 Quick start guide
- 1 IR Blaster Cable

Save the original box and packaging materials in case your Kramer product needs to be returned to the factory for service.

Step 2: Install the VA-1USB-T and VA-1USB-R
Mount the devices in racks (using the optional RK-T2B rack adapter available for purchase) or attach the rubber feet and place them on shelves.

Step 3: Connect the inputs and outputs
Always switch off the power to all devices before connecting them to your VA-1USB-T and VA-1USB-R.

For best results we recommend the use of shielded twisted pair (STP) non-skew-free Kramer BC-STP cable for digital signals.

Step 4: Connect the power
Connect the power adapters to the VA-1USB-T and VA-1USB-R and plug the adapters into the mains electricity.
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1 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.

Thank you for purchasing the Kramer MegaTOOLS® VA-1USB-T USB Transmitter and VA-1USB-R USB Receiver which are ideal for:

- Presentation and multimedia applications
- Long range USB distribution for schools, hospitals, stores and security installations
2 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 http://www.kramerav.com/downloads/ to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve 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 VA-1USB-T and VA-1USB-R away from moisture, excessive sunlight and dust

This equipment is to be used only inside a building. It may be connected only to other equipment that is installed inside a building.
2.2 Safety Instructions

Caution: No operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics power supply that is provided with the unit

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

2.3 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 http://www.kramerelectronics.com/support/recycling/.

2.4 Shielded Twisted Pair/Unshielded Twisted Pair

We recommend that you use Shielded Twisted Pair (STP) cable and stress that the compliance to electromagnetic interference was tested using STP cable. There are different levels of STP cable available and we advise you to use the best quality STP cable that you can afford.

For the VA-1USB-T and VA-1USB-R pair we recommend the use of shielded, twisted pair (STP), non-skew-free Kramer BC-STP cable.
Overview

The VA-1USB-T and VA-1USB-R are a high-performance, TP (Twisted Pair) transmitter and receiver for communicating USB, bidirectional RS-232 data and unidirectional IR signals over extended distances using CAT 5/6 cable.

The VA-1USB-T encodes USB signals and RS-232 data and transmits them over CAT 5/6 cable as a TP signal. The VA-1USB-R decodes the signal from the TP into USB signals and RS-232 data. The VA-1USB-R also acts as a 4-port USB hub and receives IR signals for transmission back to the VA-1USB-T.

More specifically, the VA-1USB-T and VA-1USB-R support:

- USB 2.0 high speed and USB 1.1 signals (bulk mode, not isochronous mode. Note that many USB cameras work in isochronous mode)
- True Plug and Play operation without drivers
- All major operating systems
- Full duplex, bidirectional RS-232 transmission
- Local and remote control of devices via the serial port
- Operation up to 100m (328ft) apart
- Web pages for maintenance and configuration
- Automatic Ethernet speed selection
- Up to 16 independent pairs of devices on a single network
4 Defining the VA-1USB-T and VA-1USB-R USB Transmitter and Receiver

This section defines the:

- **VA-1USB-T USB Transmitter** (see Section 4.1)
- **VA-1USB-R USB Receiver** (see Section 4.2)

4.1 Defining the VA-1USB-T USB Transmitter

In addition to encoding and transmitting the USB and RS-232 signals, the **VA-1USB-T** outputs the IR signal received from the **VA-1USB-R**.

RS-232 commands and data flow bidirectionally allowing status requests and control of a destination unit.

Figure 1 defines the front panel of the **VA-1USB-T**.

![Figure 1: VA-1USB-T USB Transmitter Front Panel](image)

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>IR OUT</em> 3.5mm Mini Jack</td>
<td>Connect the IR blaster</td>
</tr>
<tr>
<td>2</td>
<td><em>RS-232</em> 9-pin D-sub Serial Port Connector (F)</td>
<td>Connect to the serial controller &lt;br&gt;Note: The RS-232 link is bidirectional</td>
</tr>
<tr>
<td>3</td>
<td><em>RESET</em> Button</td>
<td>Press to reset the device to factory default (see Section 5.3)</td>
</tr>
<tr>
<td>4</td>
<td><em>LINK LED</em></td>
<td>Lights green when the TP link to the receiver is established</td>
</tr>
<tr>
<td>5</td>
<td><em>ON LED</em></td>
<td>Lights green when the device is powered on</td>
</tr>
</tbody>
</table>
4.2 Defining the VA-1USB-R USB Receiver

The VA-1USB-R decodes the USB signal and RS-232 data from the TP link sent from the VA-1USB-T. The receiver distributes the USB signal across four USB ports (acting as a USB hub) and outputs the RS-232 data. The VA-1USB-R receives an IR signal via its IR sensor and sends it over the TP link to the VA-1USB-T.

Figure 3 defines the front panel of the VA-1USB-R.
Figure 3: VA-1USB-R USB Receiver Front Panel

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IR Sensor</td>
<td>Receives IR signals from an IR transmitter</td>
</tr>
<tr>
<td>2</td>
<td>USB DEVICES 1~4 Type A USB Connectors</td>
<td>Connect to up to four USB devices</td>
</tr>
<tr>
<td>3</td>
<td>LINK Button</td>
<td>Press to establish the TP link to the transmitter</td>
</tr>
<tr>
<td>4</td>
<td>LED</td>
<td>Lights green when the TP link to the transmitter is established</td>
</tr>
<tr>
<td>5</td>
<td>ON LED</td>
<td>Lights green to indicate that the device is powered on</td>
</tr>
</tbody>
</table>

Figure 4 defines the rear panel of the VA-1USB-R.

Figure 4: VA-1USB-R USB Receiver Rear Panel

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>CAT 5/6 IN RJ-45 Connector</td>
<td>Connect to the CAT 5/6 OUT RJ-45 connector on the rear panel of the VA-1USB-T (see Section 2.4)</td>
</tr>
<tr>
<td>7</td>
<td>RS-232 9-pin D-sub Serial Port Connector (F)</td>
<td>Connect to the device to be controlled via the serial link. <strong>Note:</strong> The RS-232 link is bidirectional</td>
</tr>
<tr>
<td>8</td>
<td>MACHINE ID 4-way DIP-switch</td>
<td>Use to set the device ID to pair with the transmitter (see Section 5.2)</td>
</tr>
<tr>
<td>9</td>
<td>5V DC Power Connector</td>
<td>Connect to one of the supplied +5V DC power adapters. Center pin positive</td>
</tr>
</tbody>
</table>
5 Connecting the VA-1USB-T and VA-1USB-R

Switch off the power to all devices before connecting them to your VA-1USB-T/VA-1USB-R. After connecting your VA-1USB-T/VA-1USB-R, connect the power to the transmitter and receiver and then switch on the power to the other devices.

Figure 5: Connecting the VA-1USB-T Transmitter and VA-1USB-R Receiver
To connect the VA-1USB-T and the VA-1USB-R as illustrated in the example in Figure 5:

1. On the **VA-1USB-T**, connect:
   - The USB host, (for example, a computer) to the USB Host Input connector
   - The RS-232 controller, (for example, a laptop controller with an RS-232 interface) to the RS-232 9-pin D-sub connector
   - An IR blaster to the IR 3.5mm mini jack

2. On the **VA-1USB-R**, connect:
   - The first USB Devices port to a USB hard drive
   - The second USB Devices port to a multimedia player
   - The fourth USB Devices port to a USB flash storage device

3. Using STP cabling, connect the CAT 5/6 Out RJ-45 connector on the **VA-1USB-T** to the CAT 5/6 In RJ-45 connector on the **VA-1USB-R** (see Section 2.4).

4. Set the machine ID on both devices to the same ID using the Machine ID DIP-switch (see Section 5.2).

5. Connect the power adapters to the power sockets on the **VA-1USB-T** and **VA-1USB-R**, and plug the adapters into the mains electricity (not shown in Figure 5).

6. Establish a TP link by pressing the Link button on the receiver.
5.1 Connecting to the product via RS-232

You can connect to the VA-1USB-T/VA-1USB-R via an RS-232 connection using, for example, a PC. Note that a null-modem adapter/connection is not required.

To connect to the VA-1USB-T/VA-1USB-R via RS-232:

- Connect the RS-232 9-pin D-sub port on the VA-1USB-T/VA-1USB-R via a 9-wire, straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC

5.2 Setting the Device ID DIP-switch

The Device ID DIP-switch is used on both the VA-1USB-T transmitter and VA-1USB-R receiver to set matching device numbers. This allows up to 16 pairs of transmitters and receivers to communicate independently on the same TP subnet.

![Machine ID DIP-switch](image)

Figure 6: Machine ID DIP-switch

Set each device in a transmitter and receiver pair to the same device ID according to the following table. Press a switch up to turn it on and down to turn it off.

<table>
<thead>
<tr>
<th>Device ID</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (default)</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>1</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>4</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>5</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>On</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>7</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>8</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>9</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
</tr>
</tbody>
</table>
### 5.3 Resetting the VA-1USB-T to Factory Default Settings

To reset the **VA-1USB-T** to factory default settings:

1. Turn off the power to the device.
2. Press and hold the Reset button while turning on the power to the device.
3. When the Link LED starts to flash, release the Reset button.
   The device is reset to factory default settings.

### 5.4 Resetting the VA-1USB-R to Factory Default Settings

To reset the **VA-1USB-R** to factory default settings:

1. Turn off the power to the device.
2. Press and hold the Link button while turning on the power to the device.
3. When the Link LED starts to flash, release the Link button.
   The device is reset to factory default settings.
6 Using the Web Pages

The VA-1USB-T and VA-1USB-R provide built-in Web pages accessible by standard Web browsers that allow you to configure and maintain the devices.

6.1 Accessing the VA-1USB-T/VA-1USB-R Embedded Web Pages

Before you can use the embedded Web pages, check that your computer is correctly connected to the VA-1USB-T/VA-1USB-R via the Ethernet connection.

To access the VA-1USB-T/VA-1USB-R embedded Web pages:

1. Open your Internet browser.

2. Type the IP address (see Section 9) of the VA-1USB-T/VA-1USB-R in the address bar of your browser. (The IP address for the VA-1USB-T is shown, for the IP address of the VA-1USB-R see Section 8).

![Figure 7: Entering the IP Address in your Browser](attachment://192.168.1.39)

The screen shown in Figure 8 appears.

![Figure 8: Main Page System Tab](attachment://System_Network_Functions_Version_Information_Upload_Firmware_Utilsities.png)
The Web pages consist of the following tabs:

- System tab (see Section 6.2)
- Network tab (see Section 6.3)
- Functions tab (see Section 6.4)

6.2 The System Tab

Using the System tab (Figure 9) you can:

- View the version information
- Update the firmware
- Run functions

Figure 9: System Tab

To update the firmware:

1. Click on Update Firmware.
   The window shown in Figure 10 is displayed.
2. Click on Browse.
   The Windows Browser is displayed.

3. Browse to the new firmware file location.

4. Select the new firmware file.

5. Click OK.
   The name of the new firmware file is displayed in the Update Firmware window.

6. Click on Upload.
   The update starts.

**Warning**: Do not turn off or in any way interrupt the update process as this may cause the device to become inoperable.

7. When the process is complete, reboot the device (as indicated by the message shown in Figure 11) by clicking on Utilities and clicking Reboot. The device is rebooted with the new firmware.
6.3 **The Network Tab**

Using the **Network** tab (Figure 12), you can modify the IP parameters of the device. Currently only static IP addressing is allowed.

![Figure 12: The Network Tab](image)

**To change the IP parameters:**

1. Click on the Network tab.
   The window shown in Figure 12 is displayed.

2. Modify the IP address, subnet mask and default gateway addresses as required.

3. Click Apply.
   The changes are made and the message shown in Figure 13 is displayed.

![Figure 13: Warning Message](image)
4. Reboot the device by clicking on Utilities and clicking Reboot. The device is rebooted with the new IP parameters.

6.4 The Functions Tab

Using the Functions tab (Figure 14) you can enable/disable and modify the serial-over-IP parameters.

To modify the serial-over-IP functionality:

1. Click on the Functions tab. The window shown in Figure 14 is displayed.

2. Enable or disable the device by checking or unchecking the Enable Serial over IP box.

3. Modify the serial communication parameters using the drop-down lists for Baud rate, Data bits, Parity and Stop bits.

4. Click Apply. The changes are made and the message shown in Figure 15 is displayed.
Warning: Reboot for new settings to take effect.

Figure 15: Warning Message

5. Reboot the device by clicking on Utilities and clicking Reboot.
   The device is rebooted with the new IP parameters.
Wiring the Twisted Pair RJ-45 Connectors

When using STP cable, connect/solder the cable shield to the RJ-45 connector shield. **Figure 16** defines the TP pinout using a straight pin-to-pin cable with RJ-45 connectors.

<table>
<thead>
<tr>
<th>EIA / TIA 568B PIN</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Orange / White</td>
</tr>
<tr>
<td>2</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>Green / White</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>Blue / White</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>Brown / White</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
</tr>
</tbody>
</table>

**Pair 1**: 4 and 5  
**Pair 2**: 1 and 2  
**Pair 3**: 3 and 6

![Figure 16: TP Pinout Wiring](image)
## Technical Specifications

<table>
<thead>
<tr>
<th></th>
<th>VA-1USB-T</th>
<th>VA-1USB-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUTS:</td>
<td>1 USB host on a USB Type B connector</td>
<td>1 TP CAT 5/6 IN on an RJ-45 connector</td>
</tr>
<tr>
<td></td>
<td>1 Bidirectional RS-232 serial port on a 9-pin D-sub connector (F)</td>
<td>1 IR sensor</td>
</tr>
<tr>
<td>OUTPUTS:</td>
<td>1 TP CAT 5/6 OUT on an RJ-45 connector</td>
<td>4 USB devices on USB Type A connectors</td>
</tr>
<tr>
<td></td>
<td>1 Unidirectional IR port on a 3.5mm mini jack</td>
<td>1 Bidirectional RS-232 serial port on a 9-pin D-sub connector (F)</td>
</tr>
<tr>
<td>USB SUPPORT:</td>
<td>1.1 and 2.0 (bulk mode, not isochronous)</td>
<td></td>
</tr>
<tr>
<td>ETHERNET SPEED:</td>
<td>100/1000Mbps automatic selection</td>
<td></td>
</tr>
<tr>
<td>RS-232:</td>
<td>BAUD RATE: Up to 115200bps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MODE: Full-duplex</td>
<td></td>
</tr>
<tr>
<td>POWER CONSUMPTION:</td>
<td>5V DC 800mA</td>
<td>5V DC 2.8A</td>
</tr>
<tr>
<td>MAXIMUM POWER OUTPUT:</td>
<td></td>
<td>5V 500mA per USB port</td>
</tr>
<tr>
<td>TRANSMISSION DISTANCE:</td>
<td>Up to 100m (328ft)</td>
<td></td>
</tr>
<tr>
<td>OPERATING TEMPERATURE:</td>
<td>0° to +40°C (32° to 104°F)</td>
<td></td>
</tr>
<tr>
<td>STORAGE TEMPERATURE:</td>
<td>−40° to +70°C (−40° to 158°F)</td>
<td></td>
</tr>
<tr>
<td>HUMIDITY:</td>
<td>10% to 90%, RHL non-condensing</td>
<td></td>
</tr>
<tr>
<td>DIMENSIONS:</td>
<td>12.1cm x 7.18cm x 2.42cm (4.76&quot; x 2.83&quot; x 0.95&quot;), W, D, H</td>
<td></td>
</tr>
<tr>
<td>WEIGHT:</td>
<td>0.44kg (0.97lbs.) approx. each</td>
<td></td>
</tr>
<tr>
<td>INCLUDED ACCESSORIES:</td>
<td>2 Power supplies</td>
<td></td>
</tr>
<tr>
<td>OPTIONS:</td>
<td></td>
<td>RK-T2B 19&quot; rack adapter</td>
</tr>
</tbody>
</table>
# Default Communication Parameters

<table>
<thead>
<tr>
<th></th>
<th>VA-1USB-T</th>
<th>VA-1USB-R</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RS-232</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baud Rate:</td>
<td></td>
<td>115200</td>
</tr>
<tr>
<td>Data Bits:</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Stop Bits:</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Parity:</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP Address:</td>
<td>192.168.1.39</td>
<td>192.168.1.40</td>
</tr>
<tr>
<td>Network Mask:</td>
<td></td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>Default Gateway:</td>
<td></td>
<td>192.168.1.1</td>
</tr>
</tbody>
</table>
LIMITED WARRANTY

The warranty obligations of 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 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 Does This Coverage Last
Seven years as of this printing, please check our Web site for the most current and accurate warranty information.

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 extant 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 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, please visit our web site at www.kramerexports.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. 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 on Liability
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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, please visit our Web site at www.kramerelectronics.com contact a Kramer Electronics reseller.

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E-mail: info@kramerel.com

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

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Rev: 4