



KRAMER ELECTRONICS LTD.

# USER MANUAL

MODELS:

**TP-121x1**

UXGA/Audio Line Transmitter

**TP-122x1**

UXGA/Audio Line Receiver

---

P/N: 2900-300261 Rev 4

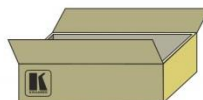
## TP-121xl and TP-122xl Quick Start Guide



This guide helps you install and use your product for the first time. For more detailed information, go to [http://www.kramerelectronics.com/support/product\\_downloads.asp](http://www.kramerelectronics.com/support/product_downloads.asp) to download the latest manual or scan the QR code on the left.

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

- TP-121xl or TP-122xl** UXGA/Audio Line Transmitter or Receiver
- 1 Power adapter (12V DC output)
- 1 Quick Start Guide
- 4 Rubber feet



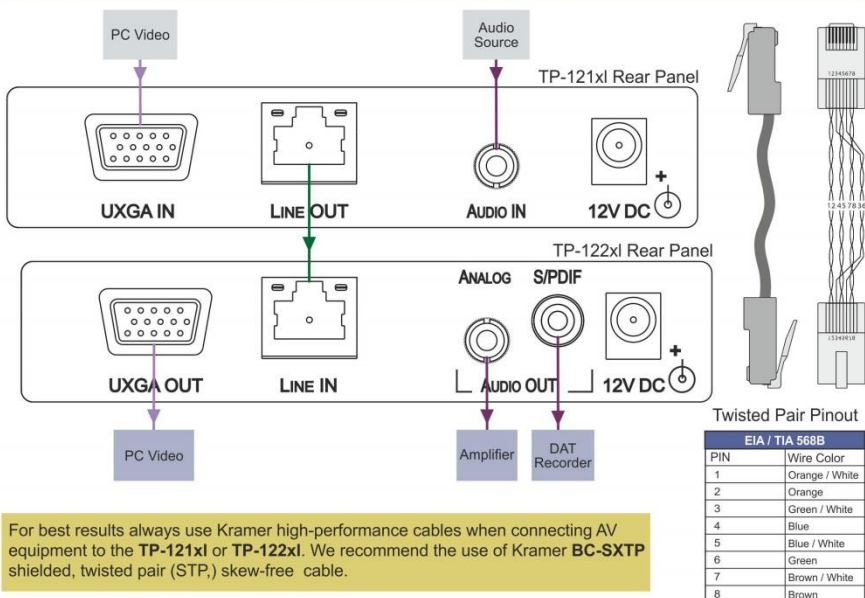
Save the original box and packaging materials in case your Kramer product needs to be returned to the factory for service.

### Step 2: Install the TP-121xl and TP-122xl

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 **TP-121xl** and **TP-122xl**.



For best results always use Kramer high-performance cables when connecting AV equipment to the **TP-121xl** or **TP-122xl**. We recommend the use of Kramer **BC-SXTP** shielded, twisted pair (STP), skew-free cable.

### Step 4: Connect the power

Connect the power adapters to the **TP-121xl** and **TP-122xl** and plug the adapters into the mains electricity.



# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Getting Started</b>	<b>2</b>
2.1	Achieving the Best Performance	2
2.2	Safety Instructions	2
2.3	About the Power Connect™ Feature	3
2.4	Shielded Twisted Pair/Unshielded Twisted Pair	3
2.5	Recycling Kramer Products	3
<b>3</b>	<b>Overview</b>	<b>4</b>
<b>4</b>	<b>Defining the TP-121xl Transmitter and TP-122xl Receiver</b>	<b>5</b>
4.1	Defining the TP-121xl UXGA/Audio Line Transmitter	5
4.2	Defining the TP-122xl UXGA/Audio Line Receiver	7
<b>5</b>	<b>Connecting the TP-121xl Transmitter and TP-122xl Receiver</b>	<b>8</b>
<b>6</b>	<b>Operating the TP-121xl and TP-122xl</b>	<b>10</b>
6.1	Capturing the EDID	10
6.2	Adjusting the Level and Equalization on the TP-122xl	10
<b>7</b>	<b>Wiring the Twisted Pair RJ-45 Connectors</b>	<b>11</b>
<b>8</b>	<b>Technical Specifications</b>	<b>12</b>

## Figures

Figure 1:	TP-121xl UXGA/Audio Line Transmitter Front Panel	5
Figure 2:	TP-121xl UXGA/Audio Line Transmitter Rear Panel	6
Figure 3:	TP-122xl UXGA/Audio Line Receiver Front Panel	7
Figure 4:	TP-122xl UXGA/Audio Line Receiver Rear Panel	7
Figure 5:	Connecting the TP-121xl Transmitter and TP-122xl Receiver	8
Figure 6:	TP Pinout Wiring	11

---

# 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 11 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 and GROUP 11: Sierra Video Products.

Thank you for purchasing the Kramer TOOLS® **TP-121xl UXGA/Audio Line Transmitter** and/or **TP-122xl UXGA/Audio Line Receiver** that are ideal for:

- Presentation and multimedia applications
- Long range graphics distribution for schools, hospitals, stores and security applications

---

## 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.kramerelectronics.com/support/product\\_downloads.asp](http://www.kramerelectronics.com/support/product_downloads.asp) 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 **TP-121xl** and **TP-122xl** 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

### 2.2 Safety Instructions



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

**Warning:** Use only the power cord that is supplied with the unit

**Warning:** Do not open the unit. High voltages can cause electrical shock! Servicing by qualified personnel only

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

## 2.3 About the Power Connect™ Feature

The Power Connect™ feature here means that only one unit in a system, the transmitter or receiver, needs to be connected to a power source when the devices are within 60m (197ft) of each other. The Power Connect™ feature applies as long as the cable can carry power and the distance does not exceed 60m on standard TP cable. (Heavier gauge cable may be used to extend the Power Connect™ range.)

## 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. Our non-skew-free cable, Kramer **BC-STP** is intended for analog signals where skewing is not an issue.

In cases where there is skewing, our Unshielded Twisted Pair (UTP) skew-free cable, Kramer **BC-XTP**, may be advantageous, and UTP cable might also be preferable for long range applications. In any event when using UTP cable, it is advisable to ensure that the cable is installed far away from electric cables, motors and so on, which are prone to create electrical interference.

## 2.5 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/>.

---

## 3 Overview

The **TP-121xl** and **TP-122xl** is a high-performance, TP (Twisted Pair) transmitter and receiver pair for transmitting computer graphics video and unbalanced stereo audio signals over extended distances using CAT 5/6 cable.

The **TP-121xl** and **TP-122xl** together form an extended computer graphics/audio line transmission and reception system.

The **TP-121xl** encodes computer graphics video and unbalanced stereo audio into a TP signal. The **TP-122xl** decodes the TP signal into computer graphics video and digital unbalanced stereo audio signals.

More specifically, the **TP-121xl** and **TP-122xl** support:

- Video resolutions up to UXGA (1920 x 1200)
- EDID (**TP-121xl**)
- HDTV
- Level (gain) and equalization (peaking) adjustment (**TP-122xl**)
- Increased level of protection against noise, spikes and interference in adverse environments
- Transmission range of up to 250m (820ft)
- Power Connect™ (see [Section 2.3](#))

# 4 Defining the TP-121xl Transmitter and TP-122xl Receiver

This section defines the:

- **TP-121xl** (see [Section 4.1](#))
- **TP-122xl** (see [Section 4.2](#))

The **TP-121xl** has inputs for:

- Computer graphics video
- Unbalanced stereo audio

The **TP-121xl** encodes the video and audio signals and transmits them over STP cable to a **TP-122xl** receiver.

The **TP-122xl** accepts the encoded signal over STP from the **TP-121xl** and outputs computer graphics video, unbalanced stereo audio and digital audio.

## 4.1 Defining the TP-121xl UXGA/Audio Line Transmitter

[Figure 1](#) defines the front panel of the **TP-121xl**.

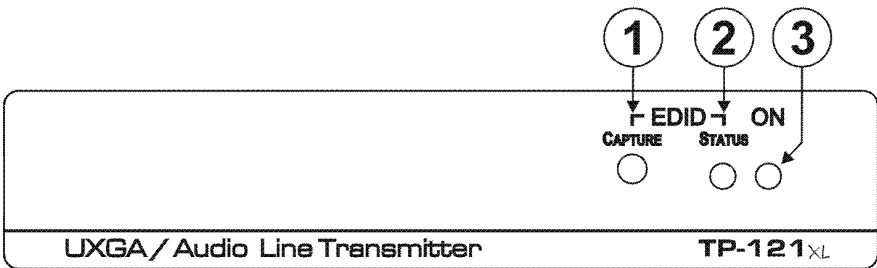


Figure 1: TP-121xl UXGA/Audio Line Transmitter Front Panel

#	Feature	Function
1	<i>CAPTURE</i> Button	Press to capture the EDID from the video display
2	<i>EDID</i> <i>STATUS</i> LED	Indicates the following EDID status: <ul style="list-style-type: none"><li>• Flashes slowly then lights solid—new EDID stored</li><li>• Flashes quickly then lights solid—default EDID stored</li></ul>
3	<i>ON</i> LED	Lights green when the device is powered on



Figure 2 defines the rear panel of the TP-121xl.

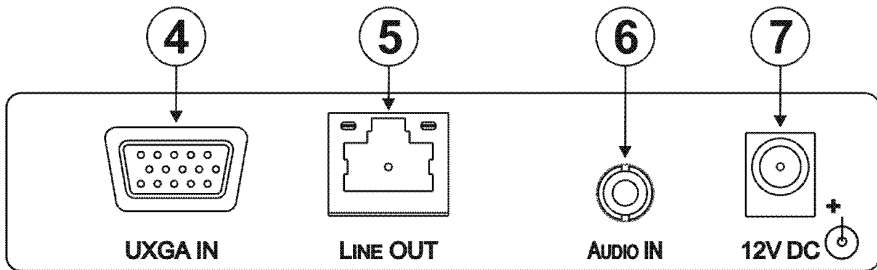


Figure 2: TP-121xl UXGA/Audio Line Transmitter Rear Panel

#	Feature	Function
4	<i>UXGA IN</i> 15-pin HD Connector (F)	Connect to a computer graphics source (see <a href="#">Section 5</a> )
5	<i>LINE OUT</i> RJ-45 Connector	Connect to the Line In RJ-45 connector on the TP-122xl (see <a href="#">Section 2.2</a> )
6	<i>AUDIO IN</i> 3.5mm Mini Jack	Connect to an unbalanced, stereo audio source (see <a href="#">Section 5</a> )
7	<i>12V DC</i> Power Connector	Connect to one of the supplied +12V DC power adapters. Center pin positive

## 4.2 Defining the TP-122xl UXGA/Audio Line Receiver

Figure 3 defines the front panel of the TP-122xl.

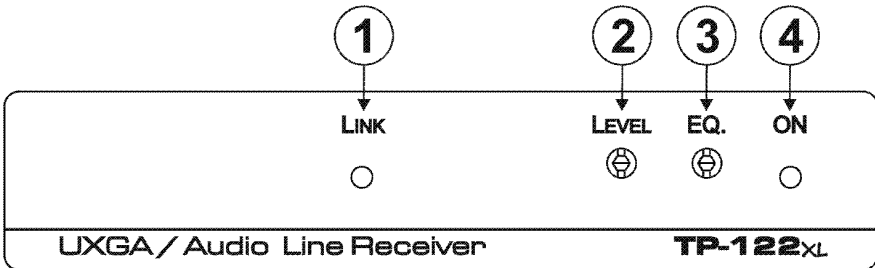


Figure 3: TP-122xl UXGA/Audio Line Receiver Front Panel

#	Feature	Function
1	LINK LED	Lights green when the TP link is established
2	LEVEL Trimmer	Use to adjust the output signal level (see <a href="#">Section 6.2</a> )
3	EQ. Trimmer	Use to adjust the cable compensation equalization level
4	ON LED	Lights green when the device is powered on

Figure 4 defines the rear panel of the TP-122xl.

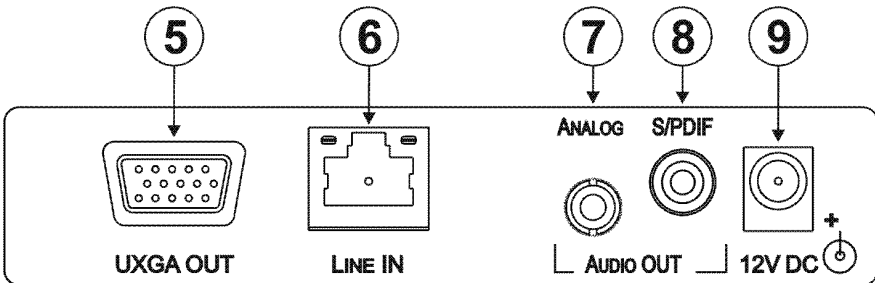


Figure 4: TP-122xl UXGA/Audio Line Receiver Rear Panel

#	Feature	Function	
5	UXGA OUT 15-pin HD Connector (F)	Connect to a computer graphics video acceptor (see <a href="#">Section 5</a> )	
6	LINE IN RJ-45 Connector	Connect to the Line Out RJ-45 connector on the TP-121xl (See <a href="#">Section 2.2</a> )	
7	AUDIO OUT	ANALOG 3.5mm Mini Jack	Connect to an unbalanced, stereo audio acceptor (see <a href="#">Section 5</a> )
8		S/PDIF RCA Connector	Connect to a digital audio acceptor
9	12V DC Power Connector	Connect to one of the supplied +12V DC power adapters. Center pin positive	

## 5 Connecting the TP-121xl Transmitter and TP-122xl Receiver



Switch off the power to all devices before connecting them to your **TP-121xl/TP-122xl**. After connecting your **TP-121xl/TP-122xl**, connect the power to the transmitter and receiver and then switch on the power to the other devices.

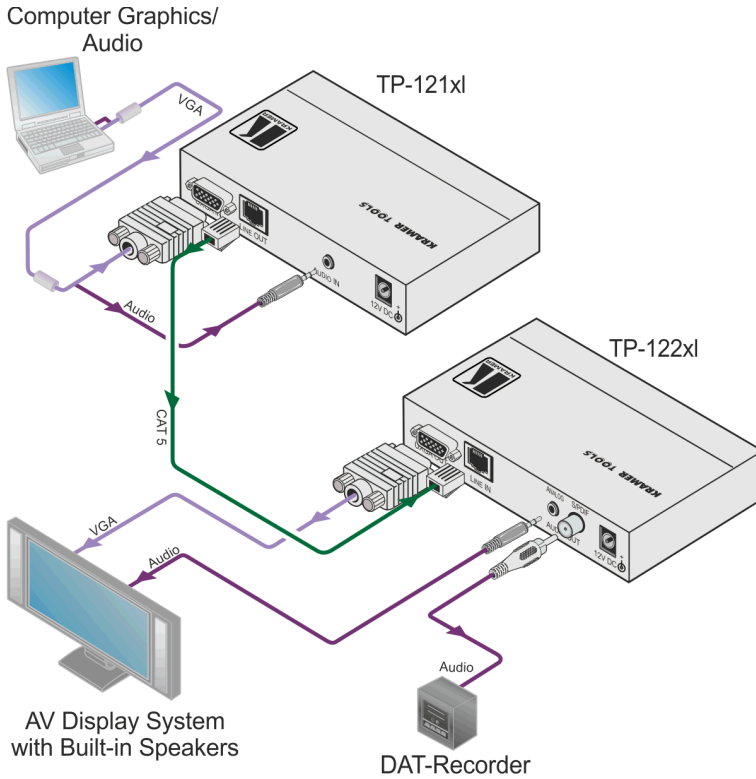


Figure 5: Connecting the TP-121xl Transmitter and TP-122xl Receiver

To connect the TP-121xl and the TP-122xl as illustrated in [Figure 5](#):

1. On the **TP-121xl**, connect:
  - The computer graphics video source, (for example, the graphics output from a laptop) to the UXGA In 15-pin HD connector (F)

- An unbalanced, stereo audio source, (for example, the audio output from a laptop) to the Audio In 3.5mm mini jack
2. On the **TP-122xl**, connect:
    - The UXGA Out 15-pin HD (F) connector to the video acceptor, (for example, an AV display system)
    - The Audio Out Analog 3.5mm mini jack to the unbalanced, stereo audio acceptor, (for example, an AV display system with speakers)
    - The Audio Out S/PDIF RCA connector to the digital audio acceptor, (for example, a DAT recorder)
  3. Using STP cabling, connect the **TP-121xl** Line Out RJ-45 connector to the **TP-122xl** Line In RJ-45 connector (see [Section 2.2](#)).
  4. Because the devices support Power Connect, if they are within 60m of one another, connect one of the power adapters to the power socket on either the **TP-121xl** or the **TP-122xl**. If the devices are more than 60m apart connect both power adapters to the devices and to the mains electricity (see [Section 2.2](#)).
  5. If necessary, adjust the level and equalization for an optimum picture (see [Section 6.2](#)).

---

## 6 Operating the TP-121xl and TP-122xl

### 6.1 Capturing the EDID

The **TP-121xl** is programmed with a default EDID. The default EDID can be replaced with the EDID from a display device.

**To capture a new EDID:**

- With the display device connected to the **TP-121xl**, press the EDID Capture button on the front panel.  
If the EDID is successfully captured the Status LED flashes slowly for a few seconds and then lights solid. If the EDID is not successfully captured the Status LED flashes quickly for a few seconds then lights solid when the default EDID is loaded.

### 6.2 Adjusting the Level and Equalization on the TP-122xl

To achieve optimum picture quality, you can manually adjust the signal level and equalization using the trimmers on the front of the **TP-122xl**.

**To adjust the level and equalization on the TP-122xl:**

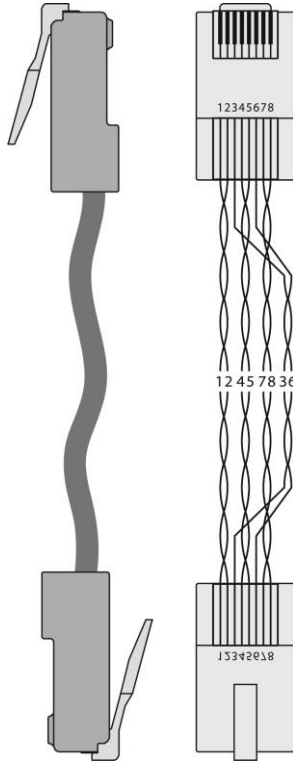
1. Use a small screwdriver to slowly turn the Level trimmer clockwise to increase or anticlockwise to reduce the signal level of the **TP-122xl**.
2. Use a small screwdriver to slowly turn the EQ trimmer clockwise or anticlockwise until you achieve an optimum picture.

# 7 Wiring the Twisted Pair RJ-45 Connectors

When using STP cable, connect/solder the cable shield to the RJ-45 connector shield. [Figure 6](#) defines the TP pinout using a straight pin-to-pin cable with RJ-45 connectors.

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

Figure 6: TP Pinout Wiring



**Warning:** Using a TP cable that is incorrectly wired will cause permanent damage to the device

## 8 Technical Specifications

		TP-121xl	TP-122xl
INPUTS:		1 UXGA on a 15-pin HD connector (F) 1 Unbalanced stereo audio on a 3.5mm mini jack	1 TP on an RJ-45 connector
OUTPUTS:		1 TP on an RJ-45 connector	1 UXGA on a 15-pin HD connector (F) 1 Digital audio on an RCA connector 1 Unbalanced stereo audio on a 3.5mm mini jack
VIDEO RESOLUTION:		Up to WUXGA, 1080p	
MAX. OUTPUT LEVEL:			Video: 1.1V Audio: 2.2V
AUDIO:	BANDWIDTH:	Audio: 20Hz-20kHz @-3dB	
	S/N RATIO:	Audio: 84dB unweighted	
	COUPLING:	AC	
	TND+N:	Audio: 0.02% unweighted	
	TOTAL GAIN:	Analog/analog: 0dB Analog/SPDIF: -12dBFS	
POWER CONSUMPTION:		12V DC 190mA (380mA when powering both devices)	12V DC 220mA (380mA when powering both devices)
TRANSMISSION DISTANCE:		Up to 250m (820ft)	
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	
DIMENSIONS:		12.1cm x 7.18cm x 2.48cm (4.76" x 2.83" x 0.98"), W, D, H	
WEIGHT:		0.2kg (0.44lbs.) approx. each	
INCLUDED ACCESSORIES:		Power supply	
OPTIONS:		RK-3T 19" rack adapter	

## 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 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 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 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, please visit our web site at [www.kramerelectronics.com](http://www.kramerelectronics.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

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, please visit our Web site at [www.kramerelectronics.com](http://www.kramerelectronics.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.





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.**

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

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



**SAFETY WARNING**

Disconnect the unit from the power supply before opening and servicing



P/N: 2900-300261



Rev: 4