Kramer Electronics, Ltd.

USER MANUAL

Model:

900xl

Power Amplifier
**900xl Quick Start Guide**

This guide helps you install and use your 900xl for the first time. For more detailed information, go to http://www.kramerav.com/manual/900xl to download the latest manual or scan the QR code on the left.

---

**Step 1: Check what’s in the box**

- 900xl Power Amplifier
- Power adapter (12V DC)
- 4 Rubber feet
- Bracket installation kit
- 1 Quick start guide

---

**Step 2: Install the 900xl**

To mount the 900xl in a rack, use an RK-3T rack adapter. Alternatively, attach the rubber feet to the underside of the 900xl and place it on a table.

A Kramer TOOLS™ can also be mounted on a desktop, wall or similar area. Fasten a bracket on each side of the TOOLS using the two M3x8 screws (supplied). Use the flat-head screws (supplied) to fix the TOOLS to the mounting surface or enable it to slide in place.

---

**Step 3: Connect the inputs and output**

After mounting the device, connect the inputs and output. Always switch off the power to each device before connecting it to your 900xl.

---

**Step 4: Connect the power**

Connect the power adapter to the 900xl and plug the adapter into the mains electricity.
Introduction

Contents

1  Introduction .............................. 1
2  Getting Started .......................... 1
2.1 Recycling Kramer Products .............. 1
3  Overview ................................ 2
4  Your 900xl Power Amplifier .............. 3
5  Connecting the 900xl Power Amplifier .... 5
5.1 Connecting a PC ......................... 6
6  Operating the 900xl Power Amplifier ...... 6
6.1 Using the Front Panel Buttons ............ 6
6.2 Using Serial Commands ................. 7
7  Technical Specifications ................. 7
8  Hex Table ................................ 8
9  Kramer Protocol 2000 ..................... 8

Figures

Figure 1: 900xl Power Amplifier – Top, Front, and Rear Views .............................. 3
Figure 2: 900xl Power Amplifier – Underside View ........................................ 4
Figure 3: Connecting the 900xl Power Amplifier ............................................. 5
Figure 4: RS-232 Control Cable ................................................................. 6

Tables

Table 1: 900xl Power Amplifier Front, and Rear Functions .............................. 3
Table 2: 900xl Power Amplifier Underside Functions ..................................... 4
Table 3: 900xl Technical Specifications ..................................................... 7
Table 4: 900xl Hex Table ................................................................. 8
Table 5: Protocol Definitions ........................................................... 8
Table 6: Instruction Codes for Protocol 2000 ........................................... 9
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 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! Our 1,000-plus different models now appear in 11 groups that are clearly defined by function.

Thank you for purchasing the Kramer TOOLS 900xl Power Amplifier, which is ideal for:

- Presentation rooms and multimedia applications for quick, local audio amplification
- Personal audio listening (for example, a PC and portable CD player)

The package includes the following items:

- 900xl Power Amplifier
- 12V DC power supply

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
- Use Kramer high performance high-resolution cables

2.1 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 Kramer 900xl is a high-performance power amplifier for line-level stereo audio signals. It accepts either a stereo audio signal on an RCA connector or a stereo audio signal on a 3.5mm mini jack. It delivers a speaker output of 10 watts RMS per channel into a 4Ω load on a 10A 4-pin terminal block connector.

The 900xl includes:

- Input selector buttons
- Audio gain buttons for volume control
- Overheating warning protection with LED indicator
- A 12V DC power adapter

The 900xl is housed in a Kramer TOOLS enclosure.

To achieve the best performance:

- Use only good quality connection cables\(^1\) 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 900xl away from moisture, excessive sunlight and dust

\(^1\) Available from Kramer Electronics on our Web site at http://www.kramerelectronics.com
4 Your 900xl Power Amplifier

Figure 1, Figure 2, Table 1, and Table 2 define the unit.

Figure 1: 900xl Power Amplifier – Top, Front, and Rear Views

Table 1: 900xl Power Amplifier Front, and Rear Functions

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12V DC Connector</td>
<td>+12V DC for powering the unit</td>
</tr>
<tr>
<td>2</td>
<td>RS-232 Tx Rx G Terminal Block Connector</td>
<td>Connect to PC</td>
</tr>
<tr>
<td>3</td>
<td>L+ L– R+ R– OUT Terminal Block Connector</td>
<td>Speaker output</td>
</tr>
<tr>
<td>4</td>
<td>IN 2 RIGHT RCA Connector</td>
<td>Connect to stereo audio right input of source 2</td>
</tr>
<tr>
<td>5</td>
<td>IN 2 LEFT RCA Connector</td>
<td>Connect to stereo audio left input of source 2</td>
</tr>
<tr>
<td>6</td>
<td>IN 1 3.5mm Mini-jack Connector</td>
<td>Connect to stereo audio input of source 1</td>
</tr>
<tr>
<td>7</td>
<td>INPUT 1 Button</td>
<td>Selects the input from audio source 1</td>
</tr>
<tr>
<td>8</td>
<td>INPUT 2 Button</td>
<td>Selects the input from audio source 2</td>
</tr>
<tr>
<td>9</td>
<td>VOLUME – Button</td>
<td>Decreases output volume</td>
</tr>
<tr>
<td>10</td>
<td>VOLUME + Button</td>
<td>Increases output volume</td>
</tr>
<tr>
<td>11</td>
<td>OVER LED</td>
<td>Illuminates red when device is overheating and mutes output</td>
</tr>
<tr>
<td>12</td>
<td>ON LED</td>
<td>Illuminates green when receiving power</td>
</tr>
</tbody>
</table>
Your 900xl Power Amplifier

Figure 2: 900xl Power Amplifier – Underside View

Table 2: 900xl Power Amplifier Underside Functions

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>LEVEL L/H</em> Switch</td>
<td>Input level – low / high gain; set to low in case of distortion</td>
</tr>
<tr>
<td>2</td>
<td><em>PROG ON</em> Switch</td>
<td>For use when upgrading device firmware</td>
</tr>
</tbody>
</table>
5 Connecting the 900xl Power Amplifier

To connect the 900xl, as illustrated in Figure 3, perform the following:

1. Connect an unbalanced stereo audio source (for example, a computer audio line out) to the IN 1 mini jack connector.

2. Connect an unbalanced stereo audio source (for example, an unbalanced stereo audio player) to the LEFT and RIGHT IN 2 RCA connectors.

3. Connect the SPKR OUT terminal block to a pair of loudspeakers:
   Connect the “L+” and the “L-” terminal block connectors to the left loudspeaker, and the “R+” and the “R-” terminal block connectors to the right loudspeaker. **Do not ground the loudspeakers.**

4. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 3).

![Figure 3: Connecting the 900xl Power Amplifier](image-url)
5.1 Connecting a PC

You can control the **900xl** with a PC (or other controllers) via the RS-232 port using serial commands.

To connect a PC to the **900xl**:
- Connect the RS-232 9-pin D-sub port on your PC to the RS-232 rear panel port on the Master **900xl** using a cable as shown in Figure 4:

![Figure 4: RS-232 Control Cable](image)

6 Operating the 900xl Power Amplifier

You can operate your **900xl** using:
- The front panel buttons
- RS-232 serial commands transmitted by a PC, touch screen system, or other serial controller

6.1 Using the Front Panel Buttons

To operate the **900xl** using the front panel buttons:
- To choose audio input source 1 (the PC line-out as shown in Figure 3), press INPUT 1 button.
- To choose audio input source 2 (a stereo tape), press INPUT 2 button.

Adjust the output volume to the speakers using the VOLUME + and – buttons.

**Note:** In the case of output distortion that cannot be corrected using the volume controls, try switching the LEVEL switch on the underside of the unit (see Figure 2) from H to L and alter the output using the volume control.
6.2 Using Serial Commands

To operate your device using serial commands, you need to install Kramer's control software\(^1\).

For an explanation of all control commands, see sections 8 and 9.

7 Technical Specifications

900xl technical specifications are shown in Table 3:

*Table 3: 900xl Technical Specifications\(^2\)*

<table>
<thead>
<tr>
<th>INPUTS:</th>
<th>1 unbalanced stereo audio on a 3.5mm mini-jack connector; 1 unbalanced stereo audio on RCA connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTPUT:</td>
<td>1 stereo differential speaker output</td>
</tr>
<tr>
<td>OUTPUT POWER:</td>
<td>2x10W (4Ω)</td>
</tr>
<tr>
<td>INPUT SENSITIVITY:</td>
<td>460mV</td>
</tr>
<tr>
<td>OUTPUT MUSIC POWER:</td>
<td>2x40W (4Ω)</td>
</tr>
<tr>
<td>BANDWIDTH (-3dB):</td>
<td>25kHz</td>
</tr>
<tr>
<td>S/N RATIO:</td>
<td>85dB @1kHz, 0dBu output</td>
</tr>
<tr>
<td>CONTROLS:</td>
<td>Gain range: -14 to +32dB at high-gain; -21 to +20dB at low-gain</td>
</tr>
<tr>
<td>COUPLING:</td>
<td>Input: AC; output: DC</td>
</tr>
<tr>
<td>AUDIO THD + NOISE:</td>
<td>0.6% @0dBu output</td>
</tr>
<tr>
<td>AUDIO 2nd HARMONIC:</td>
<td>0.35% @0dBu output</td>
</tr>
<tr>
<td>POWER SOURCE:</td>
<td>12V DC, 2.0A</td>
</tr>
<tr>
<td>OPERATING TEMPERATURE:</td>
<td>0° to +40°C (32° to 104°F)</td>
</tr>
<tr>
<td>STORAGE TEMPERATURE:</td>
<td>−45° to +72°C (−49° to 162°F)</td>
</tr>
<tr>
<td>HUMIDITY:</td>
<td>10% to 90%, RHL non-condensing</td>
</tr>
<tr>
<td>DIMENSIONS:</td>
<td>12cm x 7.5cm x 2.5cm (4.7” x 3.0” x 1.0”) W, D, H</td>
</tr>
<tr>
<td>WEIGHT:</td>
<td>0.2kg (0.4lbs) approx.</td>
</tr>
<tr>
<td>INCLUDED ACCESSORIES:</td>
<td>Power supply</td>
</tr>
<tr>
<td>OPTIONS:</td>
<td>RK-3T 19” rack adapter</td>
</tr>
</tbody>
</table>

---

\(^1\) Download control software from our Web site at [http://www.kramerelectronics.com](http://www.kramerelectronics.com)

\(^2\) Specifications are subject to change without notice
8 Hex Table

Table 4 lists the Hex values (described in section 9) for the 900xl:

Table 4: 900xl Hex Table

<table>
<thead>
<tr>
<th>Instruction #</th>
<th>Hex Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Switch Audio</td>
<td>02 81 81 81</td>
<td>Connect Input 1 to output</td>
</tr>
<tr>
<td></td>
<td>02 82 81 81</td>
<td>Connect Input 2 to output</td>
</tr>
<tr>
<td>22. Gain Control</td>
<td>Output 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 81 80 81</td>
<td>Mute</td>
</tr>
<tr>
<td></td>
<td>16 81 81 81</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 81 82 81</td>
<td>…</td>
</tr>
<tr>
<td></td>
<td>…</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 81 FF 81</td>
<td>Maximum gain</td>
</tr>
<tr>
<td>24. Increase/Decrease Audio Parameter</td>
<td>18 81 80 81</td>
<td>Increase output</td>
</tr>
<tr>
<td></td>
<td>18 81 81 81</td>
<td>Decrease output</td>
</tr>
</tbody>
</table>

9 Kramer Protocol 2000

The 900xl is compatible with Kramer’s Protocol 2000, version 0.50. This RS-232/RS-485 communication protocol uses four bytes of information as defined below. For RS-232, a null-modem connection between the machine and controller is used. The default data rate is 9600 baud, with no parity, 8 data bits, and 1 stop bit.

Note: Compatibility with Kramer’s Protocol 2000 does not mean that a machine uses all of the commands below. Each machine uses a sub-set of Protocol 2000, according to its needs.

Table 5: Protocol Definitions

<table>
<thead>
<tr>
<th>MSB</th>
<th>DESTINATION</th>
<th>INSTRUCTION</th>
<th>LSB</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>D</td>
<td>N5</td>
<td>N4</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1st byte</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>I6</td>
<td>I5</td>
<td>I4</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2nd byte</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>O6</td>
<td>O5</td>
<td>O4</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3rd byte</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>OVR</td>
<td>X</td>
<td>M4</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>4th byte</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Table 6: Instruction Codes for Protocol 2000**

Note: All values in the table are decimal, unless otherwise stated.

<table>
<thead>
<tr>
<th>#</th>
<th>DESCRIPTION</th>
<th>DEFINITION FOR SPECIFIC INSTRUCTION</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>RESET MACHINE</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>SWITCH AUDIO</td>
<td>Set equal to audio input which is to be switched (0 = disconnect)</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>REQUEST STATUS OF AN AUDIO OUTPUT</td>
<td>Set as SETUP #</td>
<td>4, 3</td>
</tr>
<tr>
<td>12</td>
<td>REQUEST VIDEO / AUDIO TYPE SETTING</td>
<td>Set as SETUP #, or set to 126 or 127 to request if machine has this function</td>
<td>3, 4, 6</td>
</tr>
<tr>
<td>22</td>
<td>SET AUDIO PARAMETER</td>
<td>Equal to output number whose parameter is to be set = 1</td>
<td>2, 11</td>
</tr>
<tr>
<td>24</td>
<td>INCREASE / DECREASE AUDIO PARAMETER</td>
<td>Equal to output number whose parameter is to be increased / decreased by 1</td>
<td>24</td>
</tr>
<tr>
<td>25</td>
<td>REQUEST AUDIO PARAMETER</td>
<td>Equal to output number whose parameter is requested</td>
<td>6, 20, 24</td>
</tr>
<tr>
<td>57</td>
<td>SET AUTO-SAVE</td>
<td>I3 - no save</td>
<td>12, 2</td>
</tr>
<tr>
<td>61</td>
<td>IDENTIFY MACHINE</td>
<td>2 - audio machine name</td>
<td>13</td>
</tr>
<tr>
<td>62</td>
<td>DEFINE MACHINE</td>
<td>1 - number of inputs</td>
<td>14</td>
</tr>
</tbody>
</table>
NOTES on the above table:

NOTE 1 – When the master switcher is reset, (e.g. when it is turned on), the reset code is sent to the PC. If this code is sent to the switchers, it will reset according to the present power-down settings.

NOTE 2 – These are bi-directional definitions. That is, if the switcher receives the code, it will perform the instruction; and if the instruction is performed (due to a keystroke operation on the front panel), then these codes are sent. For example, if the HEX code

```
02 82 81 81
```

was sent from the PC, then the switcher (machine 3) will switch input 1 to output 1. If the user switched input 1 to output 1 via the front panel keypad, then the switcher will send HEX codes:

```
42 81 81 81
```

to the PC.

When the PC sends one of the commands in this group to the switcher, then, if the instruction is valid, the switcher replies by sending to the PC the same four bytes that it was sent (except for the first byte, where the DESTINATION bit is set high).

NOTE 3 – SETUP # 0 is the present setting. SETUP # 1 and higher are the settings saved in the switcher's memory, (i.e. those used for Store and Recall).

NOTE 4 – The reply to a "REQUEST" instruction is as follows: the same instruction and INPUT codes as were sent are returned, and the OUTPUT is assigned the value of the requested parameter.

NOTE 6 – If INPUT is set to 127 for these instructions, then, if the function is defined on this machine, it replies with OUTPUT=1. If the function is not defined, then the machine replies with OUTPUT=0, or with an error (invalid instruction code).

If the INPUT is set to 126 for these instructions, then, if possible, the machine will return the current setting of this function, even for the case that the function is not defined.

NOTE 11 – For machines where the audio parameter is programmable.

NOTE 12 – Under normal conditions, the machine's present status is saved each time a change is made. The "power-down" save (auto-save) may be disabled using this code. Note that whenever the machine is turned on, the auto-save function is set.

NOTE 13 – This is a request to identify the switcher/s in the system. If the OUTPUT is set as 0, and the INPUT is set as 1, 2, 5 or 7, the machine will send its name. The reply is the decimal value of the INPUT and OUTPUT.

If the request for identification is sent with the INPUT set as 3 or 4, the appropriate machine will send its software version number. Again, the reply would be the decimal value of the INPUT and OUTPUT - the INPUT representing the number in front of the decimal point, and the OUTPUT representing the number after it. For example, for version 3.5, the reply to the request to send the version number would be (HEX codes):

```
7D 83 85 81
```

(i.e. 128dec+3dec for 2nd byte, 128dec+5dec for 3rd byte).

NOTE 14 – The number of inputs and outputs refers to the specific machine which is being addressed, not to the system. For example, if six 16X16 matrices are configured to make a 48X32 system (48 inputs, 32 outputs), the reply to the HEX code

```
3E 82 81 82
```

would be HEX codes

```
7E 82 90 82
```

i.e. 16 outputs
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 packaging and shipping methods, lightning, power surges or 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 telephony software (including, but not limited to, the product, integrated circuitry) written into 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 the 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 nearest 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 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 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: [www.kramerelectronics.com](http://www.kramerelectronics.com) where updates to this user manual may be found.

We welcome your questions, comments and feedback.

---

**Safety Warning:**

Disconnect the unit from the power supply before opening/servicing.