

# KRAMER



## USER MANUAL

MODEL:

**103EQ**

3 Band Parametric EQ



Scan for full manual

## 103EQ Quick Start Guide

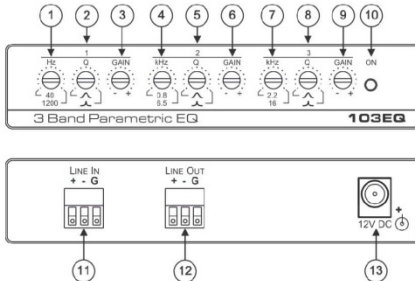
This guide helps you install and use your **103EQ** for the first time.

Go to [www.kramerav.com/downloads/103EQ](http://www.kramerav.com/downloads/103EQ) to download the latest user manual and check if firmware upgrades are available.

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

- ☒ **103EQ** 3 Band Parametric EQ
- ☒ 1 Power adapter (12V DC)
- ☒ 1 Power adapter (12V DC)
- ☒ 4 Rubber feet
- ☒ 1 Quick start guide

### Step 2: Get to know your 103EQ



#	Feature	Function
1	Hz Control	Band 1 Adjust to set between 40Hz and 1200Hz Adjust to set the Q Adjust to set the gain
2	Q Control	
3	GAIN Control	
4	kHz Control	Band 2 Adjust to set between 0.8kHz and 6.5kHz Adjust to set the Q Adjust to set the gain
5	Q Control	
6	GAIN Control	
7	kHz Control	Band 3 Adjust to set between 2.2kHz and 16kHz Adjust to set the Q Adjust to set the gain
8	Q Control	
9	GAIN Control	
10	ON LED	Lights when active
11	LINE IN Terminal Connector	Connects to the audio source
12	LINE OUT Terminal Connector	Connects to the audio output
13	12V DC Power Connector	Connects to the power supply

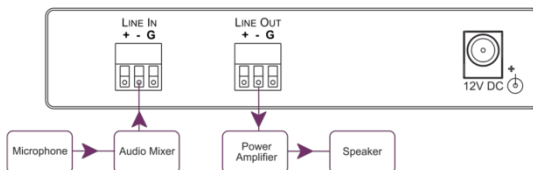
### Step 3: Install the 103EQ

To mount the **103EQ** in a rack, use an **RK-3T** rack adapter. Alternatively, attach the rubber feet to the underside of the **103EQ** and place it on a table.

A **Kramer TOOLS™** can also be mounted on a desk top, 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 4: Connect the inputs and outputs

Always switch OFF the power on each device before connecting it to your **103EQ**. For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **103EQ**.

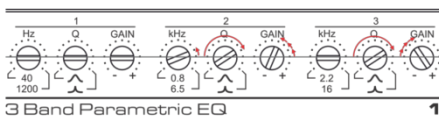


#### Step 5: Connect the power

Connect the power adapter to the **103EQ** and plug the adapter into the mains electricity.

#### Step 6: Set the 103EQ to operate with Kramer Galil-2C Speakers:

- Make sure that Band 1 remains at its default setting.
- Set Band 2 as follows:
  - kHz: 1 step counter-clockwise.
  - Q: clockwise to the maximum.
  - GAIN: 3 steps counter-clockwise
- Set Band 3 as follows:
  - kHz: keep at default setting.
  - Q: clockwise to the maximum.
  - GAIN: 3 steps clockwise.



Generally, adjust the sound to suit your needs by setting the frequency, the bandwidth and the gain of each of the three bands.

#### Specifications

Input:	1 balanced mono audio on 3-pin terminal blocks		
Output:	1 balanced mono audio on 3-pin terminal blocks		
Indicator LED:	ON	Controls:	9 trimmers
Frequency Response:	20Hz to 20kHz @ $\pm 1$ dB		
THD+N:	<0.007% @1kHz at maximum level		
S/N Ratio:	>83dB		
Band GAIN Adjustment:	Between +15dB and -20dB.		
Band Q Factor	Between 0.4 - 4.5		
Band Frequency Adjustment	Band 1: 40Hz – 1200Hz; Band 2: 800Hz – 6.5kHz; Band 3: 2.2kHz – 16kHz		
Input Impedance:	50k	Output Impedance:	150
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		
Power Consumption:	12V DC, 75mA max.		
Dimensions:	12cm x 7.15cm x 2.44cm (4.7" x 2.8" x 0.96") W, D, H		
Shipping Dimensions:	15.7cm x 12cm x 8.7cm (6.2" x 4.7" x 3.4") W, D, H		
Weight:	0.19kg (0.42lbs) approx.	Shipping Weight:	0.59kg (1.3lbs) approx.
Included Accessories:	Power supply (12V/2A)		
Options:	RK-3T 19" rack adapter		

All Audio specification are from Analog In to Analog Out.

Specifications are subject to change without notice For the most updated resolution list, go to our Web site at [www.kramerav.com/](http://www.kramerav.com/)

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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.

Congratulations on purchasing your Kramer **103EQ 3 Band Parametric EQ**, which is ideal for the following typical applications:

- Enhancing the sound of the Kramer **Galil-2C** Closed-Back Ceiling Speakers



Note that the **103EQ** needs to be set as described in [Section 5.1](#) to be used with the **Galil-2C**.

- Sound equalization
- Optimization of the sound quality for different environments

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## 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 [www.kramerav.com/downloads/103EQ](http://www.kramerav.com/downloads/103EQ) 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 neighbouring electrical appliances that may adversely influence signal quality
- Position your **103EQ** 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 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 [www.kramerav.com/support/recycling/](http://www.kramerav.com/support/recycling/).

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## 3 Overview

The Kramer **103EQ** is a 3-band parametric equalizer that is used to optimize the quality of sound of speakers, specifically the Kramer **Galil-2C**.

The **103EQ** fixes microphone feedback and fine-tunes the room sound. The **103EQ** lets you set the low, mid and high frequencies separately allowing flexibility in fitting the audio signal to your specific needs. For each frequency range you can set the center frequency (kHz), the bandwidth (in terms of Q) and the gain (amplitude).



The **103EQ** is always connected between the source and the amplifier.

The **103EQ** 3 Band Parametric EQ features:

- Three adjustable frequency bands (low, mid and high)
- For each band you can set the frequency, the Q and the gain
  - Frequency – setup of the center of the frequency of the band
  - Q – setup of the bandwidth; a low value widens the bell and a high value narrows it
  - Gain – ranges between +15dB and -20dB
- One balanced input and one balanced output
- Size – Compact TOOLS, three units can be rack mounted side-by-side in a 1U rack space with the optional **RK-3T** rack adapter



### 3.1 Defining the 103EQ 3 Band Parametric EQ

This section defines the **103EQ**.

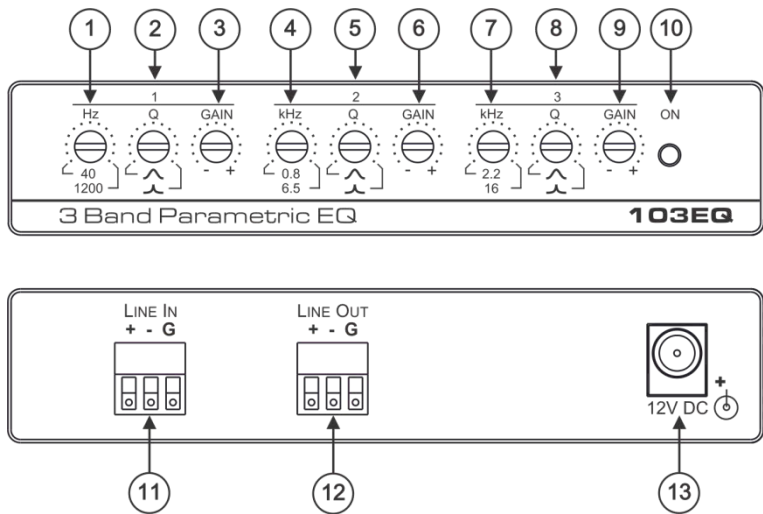


Figure 1: 103EQ 3 Band Parametric EQ

#	Feature		Function
1	Hz Control	Band 1	Adjust to set between 40Hz and 1200Hz
2	Q Control		Adjust to set the Q
3	GAIN Control		Adjust to set the gain
4	kHz Control	Band 2	Adjust to set between 0.8kHz and 6.5kHz
5	Q Control		Adjust to set the Q
6	GAIN Control		Adjust to set the gain
7	kHz Control	Band 3	Adjust to set between 2.2kHz and 16kHz
8	Q Control		Adjust to set the Q
9	GAIN Control		Adjust to set the gain
10	ON LED		Lights when active
11	LINE IN Terminal Connector		Connects to the audio source
12	LINE OUT Terminal Connector		Connects to the audio output
13	12V DC Power Connector		Connects to the power supply

---

## 4 Connecting the 103EQ



Always switch off the power to each device before connecting it to your **103EQ**. After connecting your **103EQ**, connect its power and then switch on the power to each device.



You do not have to connect all the inputs and outputs, connect only those that are required.



The **103EQ** is always connected between the source and the amplifier.

**To connect the 103EQ, as illustrated in the example in [Figure 2](#):**

1. Connect the audio source (for example, a microphone via an audio mixer, the Kramer **102MX**) to the 3-pin LINE IN terminal block (see [Section 4.1](#)).
2. Connect the LINE OUT 3-pin terminal block to a power amplifier (for example, the Kramer **920** power amplifier).
3. Connect the **920** power amplifier to the audio acceptor (for example, the Kramer **Galil-2C**).
4. Connect the power adapter to the **103EQ** and plug the power adapter into the mains power supply.

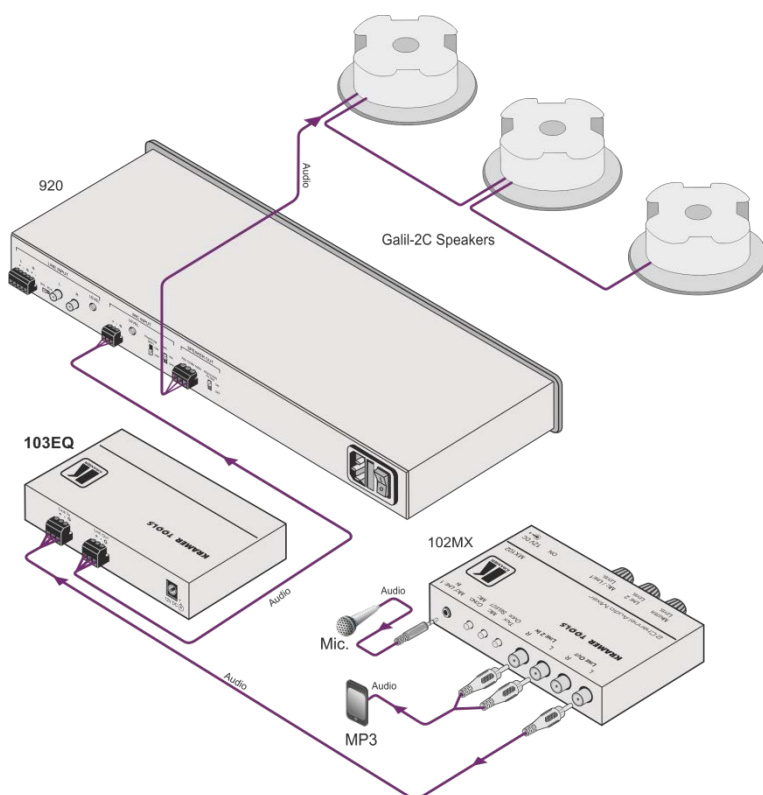


Figure 2: Connecting the 103EQ 3 Band Parametric EQ

## 4.1 Connecting the Input and the Output

The LINE IN / LINE OUT 3-pin terminal block connectors can accept either a balanced or an unbalanced connection; however, an unbalanced connection requires some modification. The next two sections explain how to connect the **103EQ** to its input source/output acceptor.

### 4.1.1 Connecting Balanced Mono Inputs/Outputs

When using a balanced input source / output acceptor and connector, you must ensure that the hot, cold, and ground pins of the connector are matched up to the +, -, and ground pins of the **103EQ** terminal block connector respectively. The following diagrams illustrate how to connect standard XLR and 6.5mm phone jack.



The LINE OUT pinout is identical to the LINE IN pinout examples illustrated in [Figure 3](#) and [Figure 4](#).



Figure 3: Connecting a Balanced XLR Input

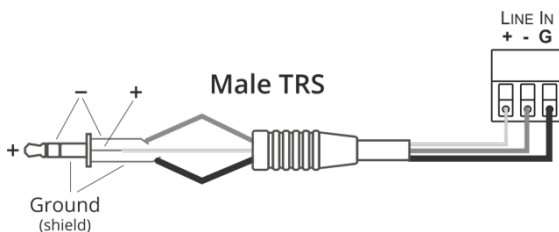


Figure 4: Connecting a Balanced 6.5mm Phone Jack

### 4.1.2 Connecting Unbalanced Mono Inputs/Outputs

When using an unbalanced input source / output acceptor, a jumper must be added between the negative (–) and ground terminals. The unbalanced source/acceptor is connected to the positive (+) and ground terminals.



The LINE OUT pinout is identical to the LINE IN pinout examples illustrated in [Figure 5](#) and [Figure 6](#).

A jumper is required for connecting an unbalanced input/output.

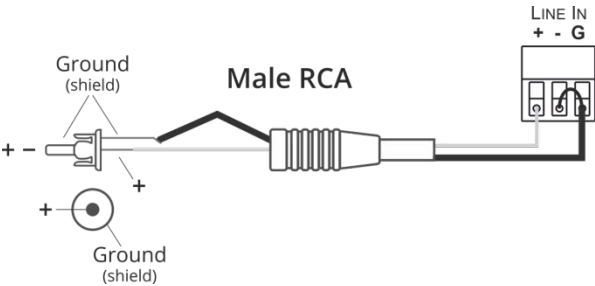


Figure 5: Connecting an Unbalanced RCA Input

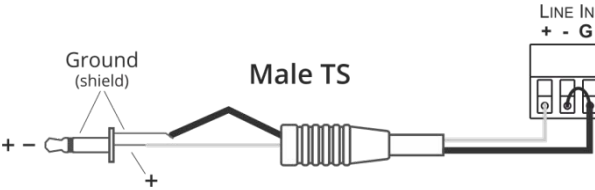


Figure 6: Connecting an Unbalanced 6.5mm Phone Jack

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## 5 Setting the 103EQ

The **103EQ** parametric equalizer lets you adjust the sound so it will suit your needs.



For optimal adjustment of the **103EQ** when using with the Kramer **Galil-2C**, see [Section 5.1](#).

When setting the **103EQ** for other applications, bear in mind that:

- There are no steadfast rules to follow
- The adjustment process is personal and you can adjust the different elements of sound to your own liking
- Each time you adjust the **103EQ**, wait a moment to hear the result before you readjust
- Any change you make affects not only the range that you have just adjusted but the total sound since the frequencies interact with each other
- For the most efficient results start working with the low frequencies
- You may need to make readjustments

### To adjust the 103EQ:

1. Set the lower frequencies (band 1, from 40Hz to 1200Hz) as follows:
  - Increase the gain in order to identify the frequency band
  - Center the frequency to the band of interest
  - Set the bandwidth accordingly
  - Adjust the gain to the level required
  - Tweak the three trimmers (repeatedly) for optimal sound
2. Take a moment to listen to the result.

3. Set the Mid frequencies (band 2, from 0.8kHz to 6.5kHz) as follows:
  - Increase the gain in order to identify the frequency band
  - Center the frequency to the band of interest
  - Set the bandwidth accordingly
  - Adjust the gain to the level required
  - Tweak the three trimmers (repeatedly) for optimal sound
4. Take a moment to listen to the result.
5. Set the high frequencies (band 3, from 2.2kHz to 16kHz) as follows:
  - Increase the gain in order to identify the frequency band
  - Center the frequency to the band of interest
  - Set the bandwidth accordingly
  - Adjust the gain to the level required
  - Tweak the three trimmers (repeatedly) for optimal sound
6. Take a moment to listen to the result.
7. Repeat this process as many times as necessary until you are happy with the resulting sound.

## 5.1 Setting the 103EQ to use with the Galil-2 Speakers

**The following are the speaker equalizer requirements:**

**Band 2**

Frequency: 2kHz  
Gain: -6dB  
1/3 Octave (Q: 4.3)

**Band 3**

Frequency: 5kHz  
Gain: +6dB  
1/3 Octave (Q: 4.3)

# 5.2 EQ Graph Shape

Figure 7 defines the required EQ graph shape

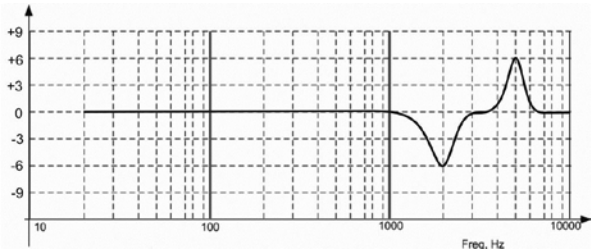


Figure 7: EQ Graph shape – Requirements

To setup the **103EQ** to work with the Kramer **Galil-2C** speakers, set the device as illustrated in [Figure 8](#) (note that the gray horizontal line indicates the default setup).

**Set the trimmers as indicated by the red arrows shown in [Figure 8](#):**

1. Make sure that Band 1 remains at its default setting.
2. Set Band 2 as follows:
  - kHz: 1 step counter-clockwise.
  - Q: clockwise to the maximum.
  - GAIN: 3 steps counter-clockwise
3. Set Band 3 as follows:
  - kHz: keep at default setting.
  - Q: clockwise to the maximum.
  - GAIN: 3 steps clockwise.

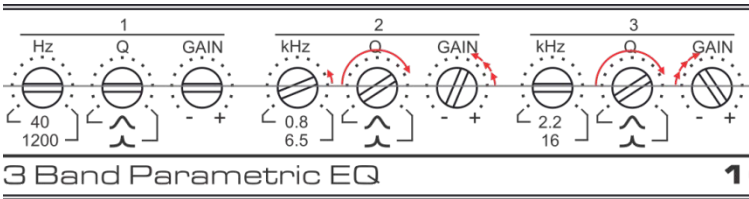


Figure 8: Setting the 103EQ for using with the Galil-2C Speakers



## 6 Technical Specifications

Input:	1 balanced mono audio on 3-pin terminal blocks
Output:	1 balanced mono audio on 3-pin terminal blocks
Indicator LED:	ON
Controls:	9 trimmers
Frequency Response:	20Hz to 20kHz @ $\pm 1$ dB
THD+N:	<0.007% @ 1kHz at maximum level
S/N Ratio:	>83dB
Band GAIN Adjustment:	Between +15dB and -20dB.
Band Q Factor	Between 0.4 - 4.5
Band Frequency Adjustment	Band 1: 40Hz – 1200Hz Band 2: 800Hz – 6.5kHz Band 3: 2.2kHz – 16kHz
Input Impedance:	50k $\Omega$
Output Impedance:	150 $\Omega$
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
Power Consumption:	12V DC, 75mA max.
Dimensions:	12cm x 7.15cm x 2.44cm (4.7" x 2.8" x 0.96") W, D, H
Shipping Dimensions:	15.7cm x 12cm x 8.7cm (6.2" x 4.7" x 3.4") W, D, H
Weight:	0.19kg (0.42lbs) approx.
Shipping Weight:	0.59kg (1.3lbs) approx.
Included Accessories:	Power supply (12V/2A)
Options:	RK-3T 19" rack adapter
<p>All Audio specification are from Analog In to Analog Out.</p> <p>Specifications are subject to change without notice</p> <p>For the most updated resolution list, go to our Web site at <a href="http://www.kramerav.com/">www.kramerav.com/</a></p>	

## 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.

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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.

# KRAMER



P/N:

2900-300594



Rev: 1



## 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 Web site to find updates to this user manual.

We welcome your questions, comments, and feedback.

[www.kramerAV.com](http://www.kramerAV.com)  
[info@kramarel.com](mailto:info@kramarel.com)