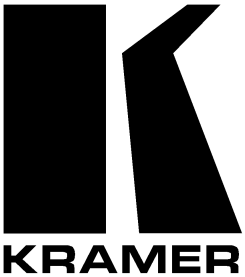
Kramer Electronics, Ltd.



USER MANUAL

Model:

VP-6A

1:6 UXGA / Audio / +1 CAT5 Distributor

Contents

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1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 500-plus different models now appear in 8 Groups[1], which are clearly defined by function.

Congratulations on purchasing your Kramer **VP-6A** *1:6 UXGA / Audio / +1 CAT5 Distributor*, which is ideal for:

- Presentation and multimedia applications that require high quality computer graphics and audio distribution to multiple monitors and/or projectors
- Long range graphics distribution for schools, hospitals, security, and stores

The package includes the following items:

- **VP-6A**
- Power cord
- This user manual[2]

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[3]

2.1 Quick Start

This quick start chart summarizes the basic setup and operation:

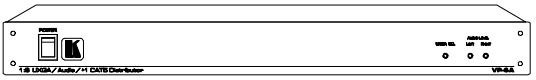
1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Download up-to-date Kramer user manuals from http://www.kramerelectronics.com

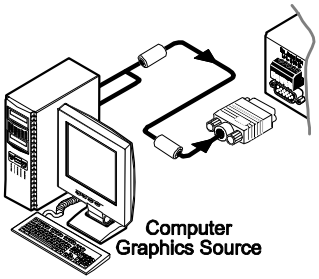
3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

Step 1: Mount the machine - see section 5

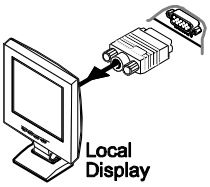
Mount the machine in a rack or stick the 4 rubber feet to the underside



Step 2: Connect the inputs and outputs - see section 6

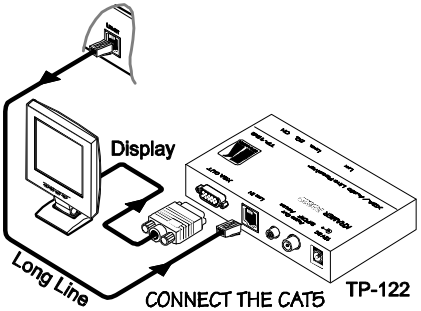


CONNECT THE INPUT



CONNECT THE OUTPUTS

The audio connections are not shown



CONNECT THE CAT5 CONNECTOR

Step 3: Turn the power ON

Step 4: Control the machine - see section 6

If required, adjust the left and right audio levels, and the UXGA EQ. level, using a screwdriver

Set the ID Bit:

ON OFF	ON OFF
ID Bit 11	ID Bit 4

Set the polarity:

Sync Polarity	
Normal	Negative
Vs	
Hs	
Normal	Negative

3 Overview

The Kramer **VP-6A** is a high performance distribution amplifier for computer graphics (UXGA) video and audio signals. The **VP-6A** accepts:

- One computer graphics input: provides correct buffering and isolation, and distributes the signal to six outputs on 15-pin HD connectors, and one twisted pair output
- A stereo audio input signal: either[1] an unbalanced stereo audio input signal on a 3.5mm mini jack, or a balanced stereo audio input signal on a 5-pin terminal block connector. The **VP-6A** outputs 12 stereo audio signals simultaneously: six unbalanced stereo audio signals on 3.5mm mini jacks, and six balanced stereo audio signals on 5-pin terminal block connectors. If the selected audio input is unbalanced, it is converted to balanced stereo audio; if the selected audio input is balanced, it is converted to unbalanced stereo audio

The **VP-6A** can:

- Power the receiver over the same CAT5 cable
- Be used with the **TP-122** *XGA / Audio Line Receiver* (converting the CAT5 signal to XGA, stereo analog and S/PDIF digital audio outputs) or with the **TP-120** *XGA Line Receiver* (converting the CAT5 signal to an XGA output)

In addition, the **VP-6A** features:

- A video bandwidth of 500MHz that ensures transparent operation at all graphics resolutions
- Switches on the underside for ID Bit control and sync polarity
- Front panel controls for UXGA equalization, as well as left and right audio level controls
- A transmission range of more than 300 ft. (more than 100 meters) over UTP cabling

1 Selected via a pushbutton

3.1 About the Power Connect Feature

The Power Connect feature lets you power a transmitter / receiver system by connecting just one power adapter— to either the transmitter or the receiver. The other unit is fed via the cable connecting between the transmitter/receiver. The Power Connect feature applies as long as the cable can carry power. The distance does not exceed 50 meters on standard CAT5 cable, for longer distances, heavy gauge cable should be used[1].

For a CAT5 cable exceeding a distance of 50 meters, separate power supplies should be connected to the transmitter and to the receiver simultaneously.

3.2 Shielded Twisted Pair (STP) / Unshielded Twisted Pair (UTP)

The decision whether to use shielded twisted pair (STP) cable or unshielded twisted pair (UTP) cable depends on the nature of the application.

It is recommended that in applications with high interference, shielded twisted pair (STP) cable is used. However, the shield itself does create a capacitance that degrades the frequency response of the machines. For shorter distances, of 50m or so, shielded twisted pair (STP) cable is preferred because it provides protection from interference (degradation is not apparent).

For long range applications, unshielded twisted pair (UTP) cable is preferred. However, the unshielded twisted pair (UTP) cable should be installed far away from electric cables, motors and so on, which are prone to create electrical interference.

3.3 Recommendations for Achieving the Best Performance

Achieving the best performance means:

- Connecting only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoiding interference from neighboring electrical appliances that may adversely influence signal quality, and positioning your Kramer **VP-6A** away from moisture, excessive sunlight and dust

4 Your VP-6A 1:6 UXGA / Audio / +1 CAT5 Distributor

Figure 1 and Table 1 define the **VP-6A** *1:6 UXGA / Audio / +1 CAT5 Distributor*:

1 CAT5 cable is still suitable for the video/audio transmission, but not for feeding the power at these distances

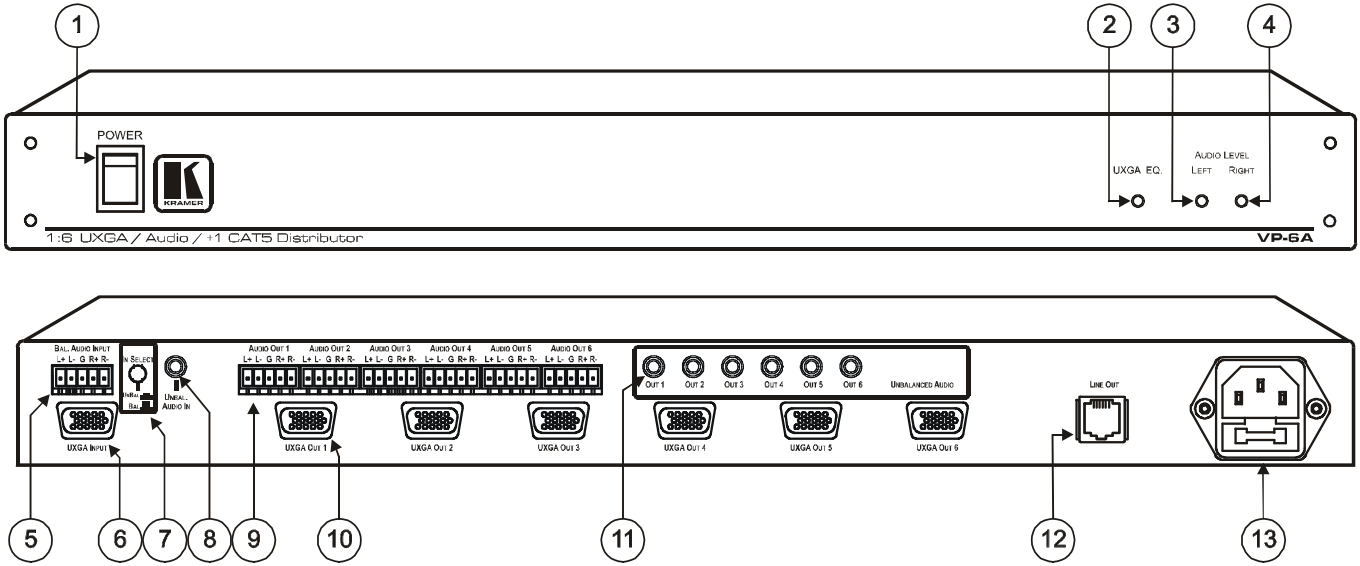


Figure 1: Front and Rear Panels of the VP-6A

Table 1: Front and Rear Panel Features of the VP-6A

#	Feature		Function
1	*POWER* Switch		Illuminated switch for turning the unit ON or OFF
2	*UXGA EQ.* Trimmer		Adjusts[1] the video EQ. (equalization) compensation
3	*AUDIO LEVEL*	*LEFT* Trimmer	Adjusts[1] the left output signal level
4		*RIGHT* Trimmer	Adjusts[1] the right output signal level
5	*BAL. AUDIO INPUT* Terminal Block Connector		Connect to the balanced stereo audio source
6	*UXGA INPUT* HD15F Connector		Connect to the computer graphics (UXGA) source
7	*UNBAL/BAL IN SELECT* Button		Selects balanced stereo audio when released; selects unbalanced stereo audio when pushed in
8	*UNBAL. AUDIO* IN 3.5mm Mini Jack		Connect to the unbalanced stereo audio source
9	*BALANCED AUDIO OUT* Terminal Block Connectors		Connect to the balanced stereo audio acceptors (from 1 to 6)
10	*UXGA OUT* HD15F Connectors		Connect to the computer graphics (UXGA) acceptors (from 1 to 6)
11	*UNBALANCED AUDIO OUT* 3.5mm Mini Jacks		Connect to the unbalanced stereo audio acceptors (from 1 to 6)
12	*LINE OUT* RJ-45 Connector		Connect to[2] the LINE IN RJ-45 connector on a Kramer CAT5 receiver[3]
13	Power Connector with Fuse		AC connector enabling power supply to the unit

Figure 2 and Table 2 define the underside panel switches of the **VP-6A**:

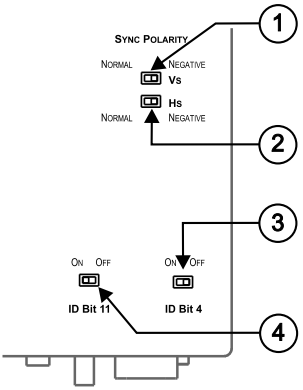


Figure 2: Underside of the VP-6A

Table 2: Underside Features of the VP-6A

#	Feature	Function
1	*VS*[4] Switch	Slide the switch to the right[5] to change the VS polarity to negative polarity[6]; slide the switch to the left (Normal) to retain the polarity
2	*HS*[4] Switch	Slide the switch to the right[5] to change the HS polarity to negative polarity[6]; slide the switch to the left (Normal) to retain the polarity
3	*ID BIT 4* Switch	Slide to the left to set to ON[7]; to the right to set to OFF
4	*ID BIT 11* Switch	Slide to the left to set to ON[7]; to the right to set to OFF

1 Insert a screwdriver into the hole and carefully rotate it, to trim the level

2 Using a UTP cable with CAT5 connectors at both ends (the PINOUT is defined in Table 3 and Figure 6)

3 For example, on the TP-120 XGA Line Receiver. Refer to the separate user manual: PT-110, PT-120, TP-120, WP-110, which can be downloaded at http://www.kramerelectronics.com

4 SYNC

5 By default, both switches are set to the left

6 Downgoing syncs

7 The default. Enabling the notebook or laptop to output a VGA signal to an external VGA monitor

5 Installing the VP-6A on a Rack

This section describes what to do before installing on a rack and how to rack mount.

Before Installing on a Rack

Before installing on a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5 to +45 Deg. Centigrade
Operating humidity range	5 to 65% RHL, non-condensing
Storage temperature range	-20 to +70 Deg. Centigrade
Storage humidity range	5 to 95% RHL, non-condensing

CAUTION!!

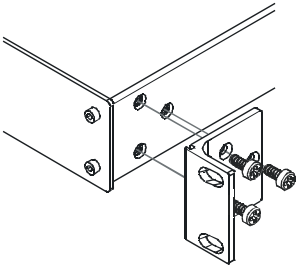
When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

How to Rack Mount

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note that:

- **In some models, the front panel may feature built-in rack ears**
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions (you can download it at: http://www.kramerelectronics.com)

6 Using Your VP-6A 1:6 UXGA / Audio / +1 CAT5 Distributor

The example in Figure 3 illustrates how to output a computer graphics signal (and audio) from a computer to up to six local monitors, as well as how to transmit it over UTP cabling to a **TP-122** *XGA / Audio Line Receiver*.

To connect the **VP-6A** and a **TP-122**, do the following:

1. Connect a computer graphics source (for example, a computer) to the INPUT HD15F connector and to the UNBAL. AUDIO IN 3.5mm mini jack, for example, using a Kramer C-GMA/GMA cable[1]. Press the IN SELECT button[2].
2. Connect the OUTPUT HD15F connectors to up to[3] six acceptors (for example, Local Display 1 to Local Display 6).
3. Connect up to[3] 12 stereo audio outputs[4], that is, up to six:
   - Unbalanced stereo audio OUT 3.5mm mini jacks, **and**
   - Balanced[5] stereo audio 5-pin terminal block connectors (see section 6.1)
4. Connect[6] the CAT5 RJ-45 LINE OUT connector[7] to the LINE IN RJ-45 connector on a Kramer CAT5 receiver, such as the **TP-122** unit.
5. Connect the power cord[8] to the **VP-6A** (not illustrated in Figure 3).
6. On the **VP-6A**:
   - Adjust[9] the UXGA cable compensation equalization level and/or the audio level, if required
   - Set the ID BIT switches 4 and 11 on the underside to ON (by sliding them to the left). This would enable a notebook or laptop (if connected instead of a computer) to output an UXGA signal to an external VGA monitor
   - If necessary, slide the VS and HS switches to the right to output

1 XGA HD15M +Audio jack to XGA HD15M +Audio jack (not supplied). The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com. Alternatively, you can connect an XGA source to the XGA INPUT HD15F connector, and a separate audio source to the UNBAL. AUDIO IN

2 Alternatively, connect a computer graphics source to the INPUT HD15F connector, and a balanced stereo audio source to the BAL. AUDIO INPUT 5-pin terminal block connector, and release the IN SELECT button

3 When not all outputs are required, connect only the outputs that are required and leave the other outputs unconnected

4 Note, that if the selected audio input is unbalanced, it is converted to balanced stereo audio; if the selected audio input is balanced, it is converted to unbalanced stereo audio

5 By wiring the balanced outputs as unbalanced (see Figure 5) you can output 12 unbalanced stereo audio outputs

6 Via UTP cabling, with a range of more than 300ft (>100m): see section 6.1

7 The TP-122 (or TP-120) may be powered via this connector (instead of via the 12VDC external supply)

8 We recommend that you use only the power cord that is supplied with this machine

9 Use a screwdriver to carefully rotate the trimmer, adjusting the appropriate level

negative sync polarity (or leave them in the left position (Normal) to retain the sync polarity)

7. On the **TP-122**:
   - Connect the XGA OUT HD15F connector to the XGA acceptor (for example, a display), and connect the AUDIO OUT S/PDIF RCA connector to the digital audio acceptor (for example, an AV Receiver), and the ANALOG 3.5mm mini jack to the analog audio acceptor (for example, a stereo audio recorder)
   - Adjust[1] the video output signal level and/or cable compensation equalization level, if required
   - If necessary, set the H SYNC and V SYNC switches[2], on the underside

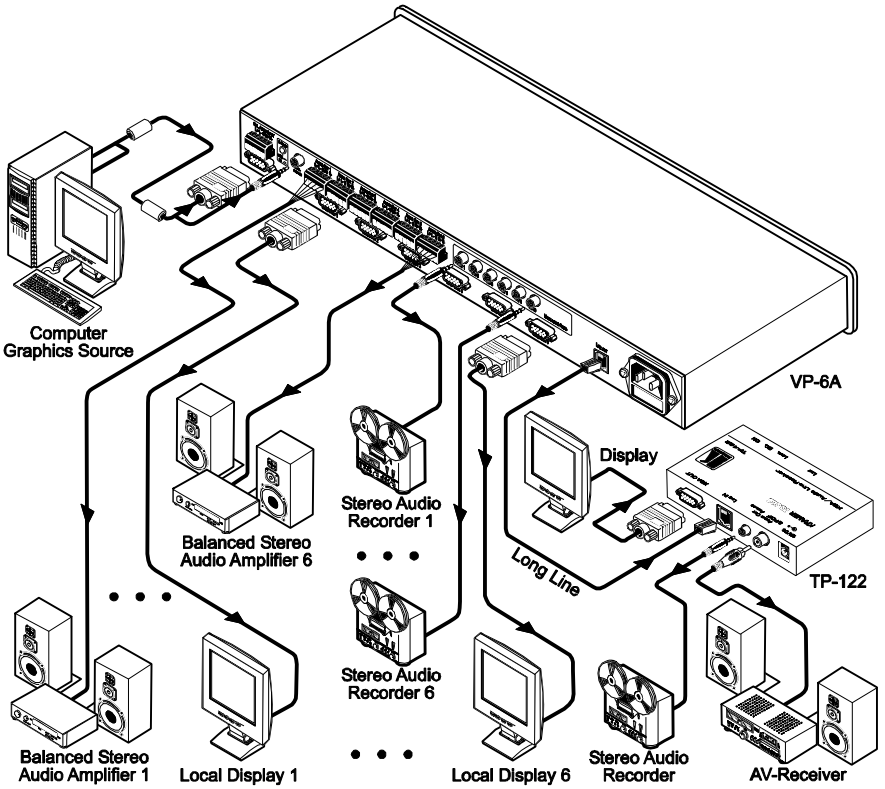


Figure 3: Connecting the VP-6A

1 Use a screwdriver to carefully rotate the trimmer, adjusting the appropriate level

2 By default, both switches are set down (for negative V SYNC and H SYNC polarity)

6.1 Connecting the Balanced/Unbalanced Stereo Audio Output

Figure 4 and Figure 5 illustrate how to wire a balanced/unbalanced stereo audio output connection:

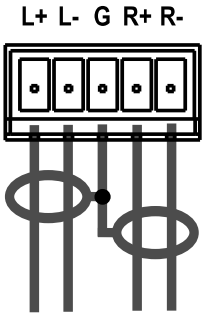


Figure 4: Connecting the Balanced Stereo Audio Output

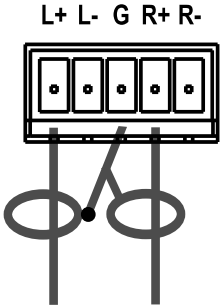


Figure 5: Connecting the Unbalanced Stereo Audio Output

6.2 Wiring the CAT5 LINE IN / LINE OUT RJ-45 Connectors

Table 3 and Figure 6 define the UTP CAT5 PINOUT, using a straight pin to pin cable with RJ-45 connectors:

Figure 6: CAT5 PINOUT

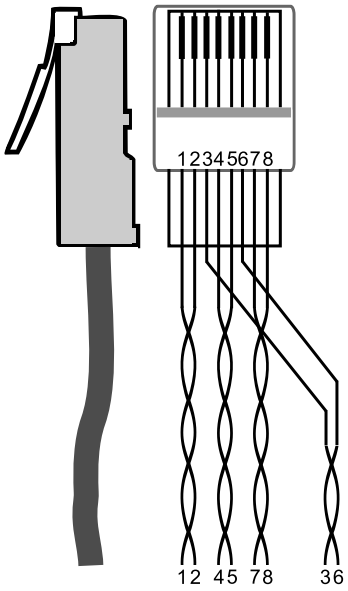


Table 3: CAT5 PINOUT

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

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
Pair 4	7 and 8

7 Technical Specifications

Table 4 includes the technical specifications:

Table 4: Technical Specifications[1] of the VP-6A

INPUTS:	VIDEO: 1 XGA on an HD15F connector	AUDIO: 1 unbalanced stereo audio on a 3.5mm mini jack; 1 balanced stereo audio on a 5-pin terminal block connector
OUTPUTS:	VIDEO: 6 XGA on HD15F connectors; 1 RJ-45 connector	AUDIO: 6 unbalanced stereo audio on 3.5mm mini jacks; 6 balanced stereo audio on 5-pin terminal block connectors
MAX. OUTPUT LEVEL:	VIDEO: 1.7Vpp	AUDIO: balanced and unbalanced 26Vpp
BANDWIDTH (-3dB):	VIDEO: 500MHz	AUDIO: balanced and unbalanced >100kHz; S/PDIF: 22kHz (TP-122 OUT)
DIFF. GAIN:	0.09%	
DIFF. PHASE:	0.01 Deg.	
K-FACTOR:	<0.05%	
S/N RATIO:	VIDEO: 72dB	AUDIO: balanced and unbalanced out 88dB
CONTROLS:	XGA: 0 to +10dB EQ.; AUDIO: 0 to +9.9dB Level (balanced/unbalanced)	
COUPLING:	VIDEO: DC	AUDIO: Input: AC; Output: DC
AUDIO THD + NOISE:	0.015%	
AUDIO 2nd HARMONIC:	0.004%	
POWER SOURCE:	230 VAC, 50 / 60 Hz (115VAC, U.S.A.) 17.5VA	
DIMENSIONS:	19 inch (W), 7 inch (D) 1U (H) rack mountable	
WEIGHT:	2.7 kg. (6 lbs.) approx.	
ACCESSORIES:	Power cord	

1 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: "Radio frequency devices Subpart B Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

For the latest information on our products and a list of Kramer distributors, visit our Web site: 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.

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com
P/N: 2900-000090 REV 2