Kramer Electronics, Ltd.

USER MANUAL

Model:

TP-205A

XGA / Audio / RS-232 Line Transmitter / DA

Contents

Figures

Tables

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 **TP-205A** *XGA / Audio / RS-232 Line Transmitter / DA*, which is ideal for:

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

The package includes the following items:

- **TP-205A** *XGA / Audio / RS-232 Line Transmitter / DA*
- Power adapter (12V DC Input) and 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

The quick start charts summarize the basic setup and operation steps of the **TP-205A**.

---

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 the Internet at this URL: http://www.kramerelectronics.com

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

Step 1: Connect the input and the outputs - see section 5

1 Connect the video and audio inputs

2 Connect to the receivers via CAT5 cables

3 Connect to an RS-232 port

TP-205A

Computer
Graphics
Source

TP-46

To the next
TP-46 unit

TP-122

Display

Display

Stereo Audio
Recorder

AV-Receiver
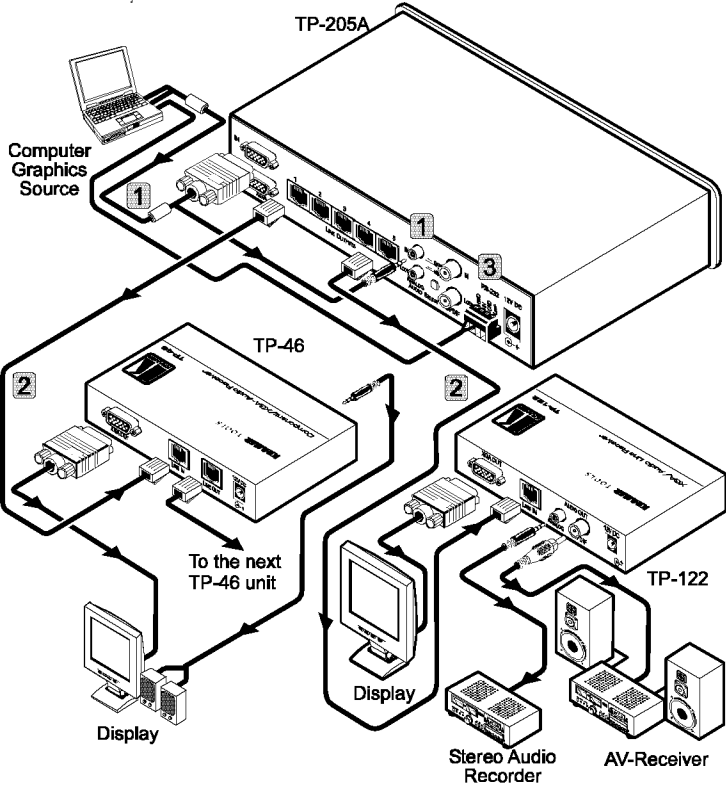
Step 2: Set the underside switches - see section 5

Set the Hs and Vs
polarity switches

NEGATIVE

Hs   Vs

NORMAL
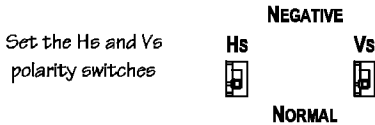
Step 3: Connect the power

3 Overview

This section describes:

- The **TP-205A** *XGA / Audio / RS-232 Line Transmitter / DA*, see section 3.1
- The power connect feature, see section 3.2
- Using shielded twisted pair (STP) / unshielded twisted pair (UTP), see section 3.3
- Recommendations for achieving the best performance, see section 3.4

3.1 Your TP-205A

The **TP-205A** is a high performance transmitter. It accepts a computer graphics input signal, a selectable unbalanced stereo analog audio signal or a digital audio (S/PDIF) signal, and unidirectional (TxD) RS-232 control commands. It transmits to up to five receivers (via CAT5 cables).

In addition, the **TP-205A**:

- Has a resolution of up to UXGA
- Can be looped to an additional **TP-205A** transmitter
- Has a transmission range of more than 300 ft. (more than 100 meters) over UTP cabling.
- Can power the receivers over the same CAT5 cable, and is 12VDC fed

3.2 About the Power Connect Feature

The Power Connect feature of the **TP-205A** lets you power the transmitter / receiver(s) system by connecting just the **TP-205A** power adapter. The other units are fed via the cables connecting between the transmitter/receivers. 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 receivers simultaneously.

---

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

3.3 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.

3.4 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Connect 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)
- Avoid interference from neighboring electrical appliances and position your Kramer **TP-205A** away from moisture, excessive sunlight and dust

Caution – No operator-serviceable parts inside unit.

Warning – Use only the Kramer Electronics input power wall adapter that is provided with this unit[1].

Warning – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

1 For example: model number AD2512C, part number 2535-000251

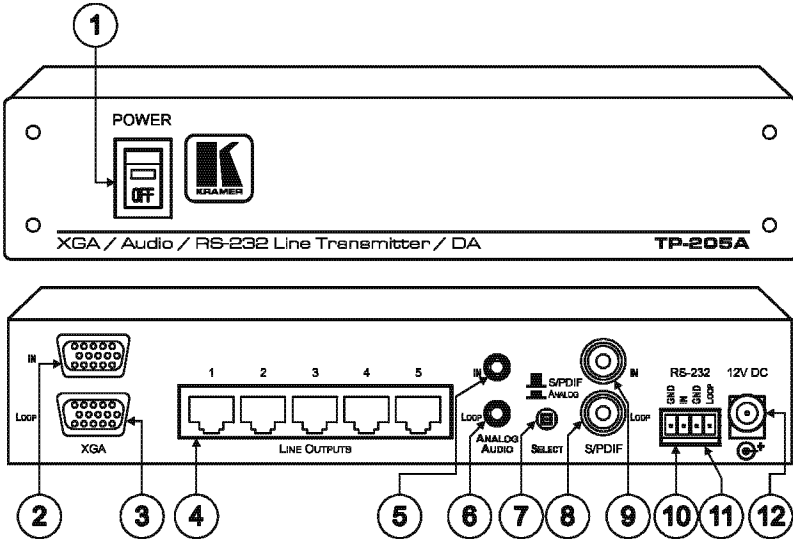# 4 Your TP-205A

Figure 1 and Table 1 define the **TP-205A**:

Figure 1: TP-205A

Table 1: TP-205A Features

#	Feature		Function
1	*POWER* Switch		Illuminated switch for turning the unit ON or OFF
2	XGA HD15F Connector	*IN*	Connect to the computer graphics source
3		*LOOP*	Connect to a display or to the XGA IN connector of an additional **TP-205A** unit
4	*LINE OUTPUTS* RJ-45 Connectors		Connect to[1] the LINE IN RJ-45 connector on a receiver[2] (from 1 to 5)
5	*ANALOG AUDIO* 3.5mm Mini Jack	*IN*	Connects to the unbalanced stereo analog audio source
6		*LOOP*	Connect to an unbalanced stereo analog audio acceptor or to the ANALOG AUDIO IN connector of an additional **TP-205A** unit
7	*S/PDIF – ANALOG SELECT* Selector Button		Release to select digital audio (S/PDIF) Press to select analog audio
8	*S/PDIF* RCA Connector	*LOOP*	Connect to a digital audio acceptor or to the S/PDIF IN connector of an additional **TP-205A** unit
9		*IN*	Connect to the digital audio source
10	*RS-232* Terminal Block Connector	*IN*	Connect the two connectors on the left (GND and IN) to a PC or remote controller (see section 5.4)
11		*LOOP*	Connect the two connectors on the right (GND and LOOP) to the GND and IN connectors of an additional **TP-205A**
12	*12V DC*		+12V DC connector for powering the unit

1 Using a UTP CAT5 cable with RJ-45 connectors at both ends (the PINOUT is defined in Table 3 and Figure 5)

2 For example, the Kramer TP-124, the Kramer TP-46, and so on

4.1.1 The TP-205A Underside

Figure 2 and Table 2 define the underside of the **TP-205A**
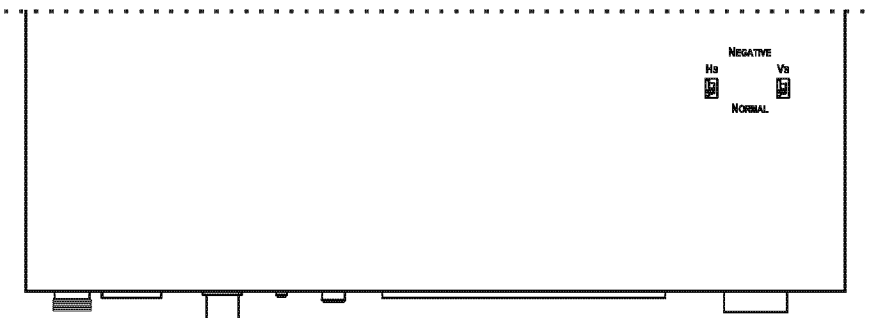
Figure 2: TP-205A Underside

Table 2: Features of the TP-205A Underside

Feature	Function
HS Switch[1]	Slide the switch up, to set the H SYNC to negative polarity (NEGATIVE) Slide the switch down, to set the H SYNC to its input polarity (NORMAL)
VS Switch[1]	Slide the switch up, to set the V SYNC to negative polarity (NEGATIVE) Slide the switch down, to set the V SYNC to its input polarity (NORMAL)

---

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

5 Configuring the TP-205A

This section describes how to:

- Connect the **TP-205A** (see section 5.1)
- Connect an additional **TP-205A** (see section 5.2)
- Wire the CAT5 LINE IN / LINE OUT RJ-45 Connectors (see section 5.3)
- Control via RS-232 (see section 5.4)

5.1 Connecting the TP-205A

You can connect the **TP-205A** to up to five transmitters. Use it to transmit the video, audio and RS-232 control signals via CAT5 UTP cable.

To connect the **TP-205** as illustrated in the example in Figure 3, do the following:

1. Connect an XGA source (for example, a laptop's graphics card) to the XGA IN HD15F connector and an audio source to the ANALOG AUDIO IN 3.5mm mini jack[1], for example, using a Kramer C-GMA/GMA cable (VGA HD15M +Audio jack to VGA HD15M +Audio jack)[2].

2. Press the SELECT button to select the ANALOG input[3].

3. Connect an RS-232 cable with a DB9 connector at one end to the laptop, and the other end to the 2 left-hand pins of the terminal block connector[4] (GND and IN) on the **TP-205A** RS-232 port[5].

4. Connect the LINE OUTPUT CAT5 connectors as follows[6]:

   - The LINE OUT 1 RJ-45 connector on the **TP-205A** to the LINE IN RJ-45 connector on the **TP-46**[7] via UTP cabling[8] (with a range of more than 300ft (>100m))[9]

   - The LINE OUT 5 RJ-45 connector on the **TP-205A** to the LINE IN RJ-45 connector on the **TP-122**[7], via UTP cabling[8] (with a range of more than 300ft (>100m))

---

1 Or alternatively to the digital audio S/PDIF IN RCA connector

2 Not supplied. The full list of Kramer cables is on our Web site at http://www.kramerelectronics.com. Alternatively, you can connect an XGA source to the XGA IN HD15F connector, and a separate audio source to the AUDIO IN 3.5mm mini jack

3 If the digital audio input is selected, release the SELECT button

4 The two right pins (GND and LOOP) can be connected to the GND and IN connectors on an additional TP-205A unit

5 As defined in Figure 6 and Table 4 (see section 5.4)

6 You do not have to connect all the outputs

7 Refer to the separate user manual, which can be downloaded from the Internet at http://www.kramerelectronics.com

8 For details of how to wire a CAT5 LINE IN / LINE OUT RJ-45 connector, see section 5.3

9 The TP-46 is connected to an additional TP-46 unit for transmitting the signal further

5. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.

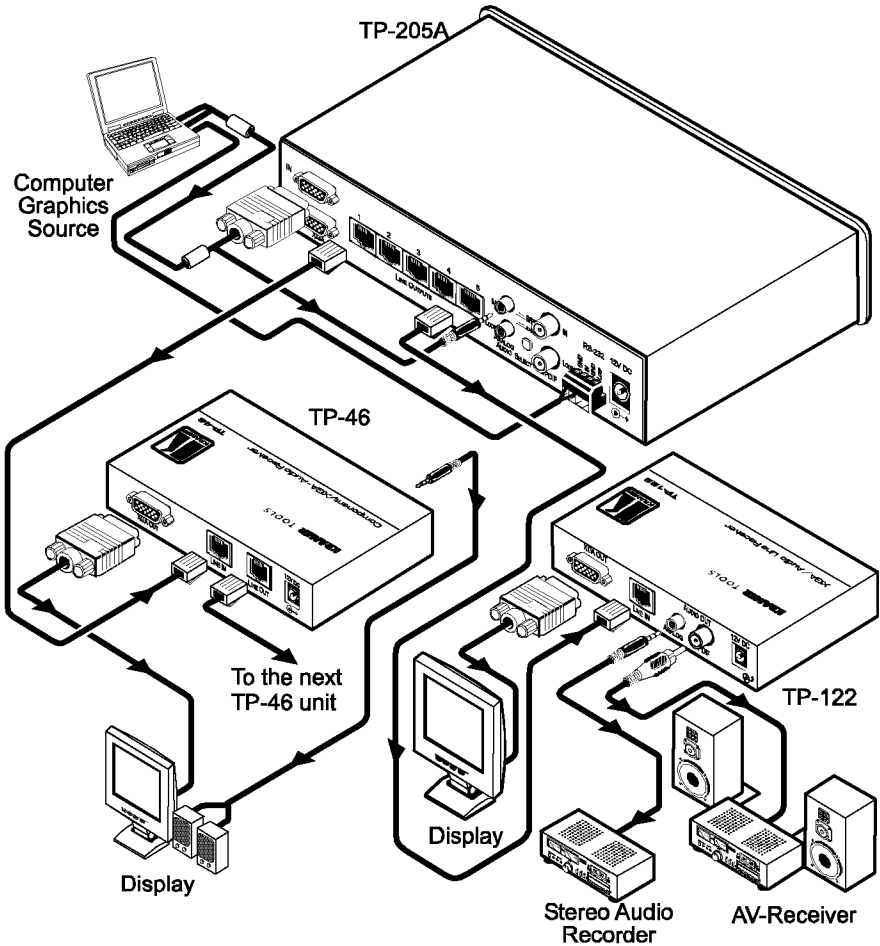6. If necessary, set the H SYNC and V SYNC switches[1] on the underside.

Figure 3: Connecting the XGA / Audio / Data Line Transmitter / Receiver System

---

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

5.2 Looping the TP-205A

You can loop two[1] **TP-205A** units to add further output signals to the system, as illustrated in the example in Figure 4. In this example:

1. Connect the XGA LOOP HD15F connector of the first **TP-205A** to the XGA IN HD15F connector of the second **TP-205A**.

2. Connect the S/PDIF LOOP RCA connector of the first TP-205A to the S/PDIF LOOP RCA connector of the second **TP-205A**.

3. Connect the GND and LOOP right terminal block connectors of the first **TP-205A** to the GND and IN left terminal block connectors of the second **TP-205A**.

4. Connect the LINE OUTPUT RJ-45 connectors on each **TP-205A** unit, to the LINE IN RJ-45 connectors of various receivers, as illustrated in Figure 4.

5. On each **TP-205A** unit, connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.
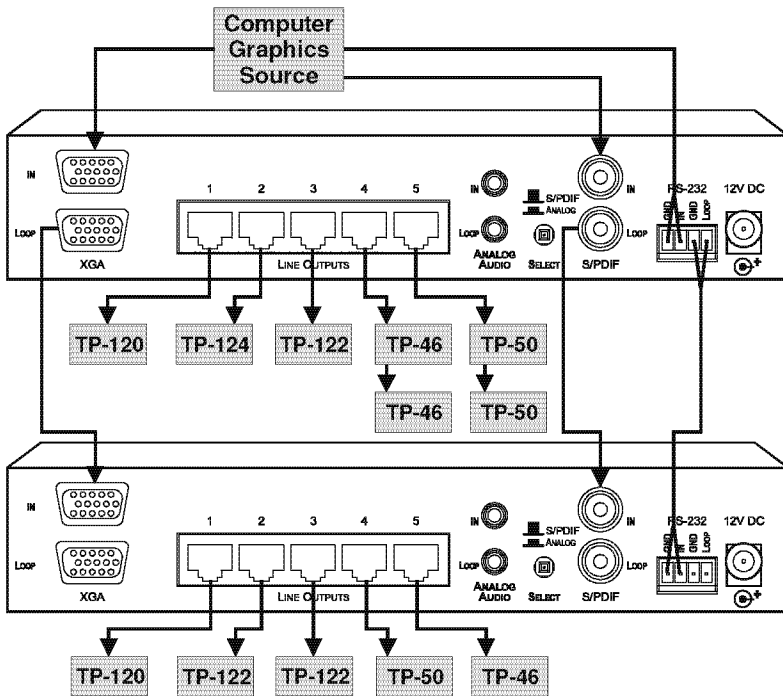

Figure 4: Looping the TP-205A

1 The number of TP-205A units that can be looped depends upon the quality of the input signal that you require and the distance between the machines. We do not recommend cascading more than five TP-205A units

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

Table 3 and Figure 5 define the UTP CAT5 PINOUT, using a straight pin to pin cable with RJ-45 connectors:

Figure 5: CAT5 PINOUT

Table 3: CAT5 PINOUT

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

Pair 1	4 and 5	Pair 1	4 and 5
Pair 2	3 and 6	Pair 2	1 and 2
Pair 3	1 and 2	Pair 3	3 and 6
Pair 4	7 and 8	Pair 4	7 and 8
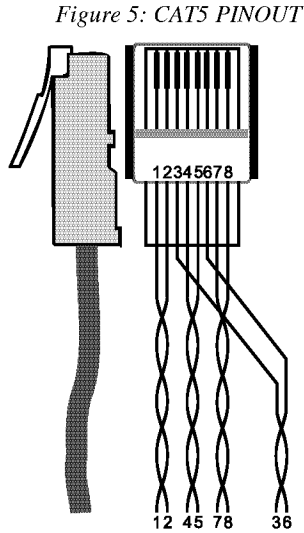
5.4 Controlling via RS-232 (for example, using a PC)

Prepare an RS-232 cable with a DB9 connector at one end, and a 2 PIN terminal block connector at the other end, as defined in Figure 6 and Table 4:

Table 4: RS-232 PINOUT Connection

Attach the DB9 Connector	To the Terminal Block Connector PIN:
PIN 3	IN
PIN 5	GND (on the left)

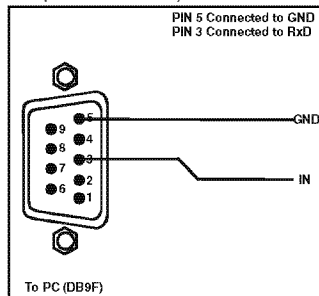## PC (Controller) to TP-205A

Figure 6: RS-232 PINOUT Connection

6 Technical Specifications[1]

Table 5 includes the technical specifications of the **TP-205A**:

Table 5: Technical Specifications of the TP-205A

INPUTS:	VIDEO: 1 VGA / UXGA on an HD15 connector	
	AUDIO: 1 audio ANALOG 3.5mm mini jack, 1 audio S/PDIF RCA connector	
OUTPUTS:	1 RJ-45 OUT connector	
MAX. OUTPUT LEVEL:	VIDEO: 1V	AUDIO: 2.3V
RESOLUTION:	Up to UXGA	
BANDWIDTH (-3dB)2:	AUDIO: 20Hz – 20kHz@0.5dB	
S/N RATIO:	AUDIO: >80dB	
TOTAL GAIN:	AUDIO: Analog/analog: 0dB Analog/SPDIF: –12dBFS	
TND+N:	AUDIO: <0.01%	
POWER SOURCE:	12 VDC 60mA	
DIMENSIONS:	21.46cm x 16.25cm x 4.36cm (8.45" x 6.4" x 1.72"), W, D, H	
WEIGHT:	1.2kg. (2.65lbs.) approx.	
ACCESSORIES:	Power supply	
OPTIONS:	19" rack adapters	

---

1 Specifications are subject to change without notice

2 For the Transmitter/Receiver pair

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.

$C \in$