

Kramer Electronics, Ltd.



USER MANUAL

Model:

TP-305A

UXGA – Audio – RS-232 Line Receiver/DA

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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 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 groups¹ that are clearly defined by function.

Thank you for purchasing the Kramer **TP-305A UXGA - Audio - RS-232 Line Receiver/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-305A UXGA - Audio - RS-232 Line Receiver/DA**
- Power supply (12V DC)
- This user manual²

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 cables³

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; 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 Products

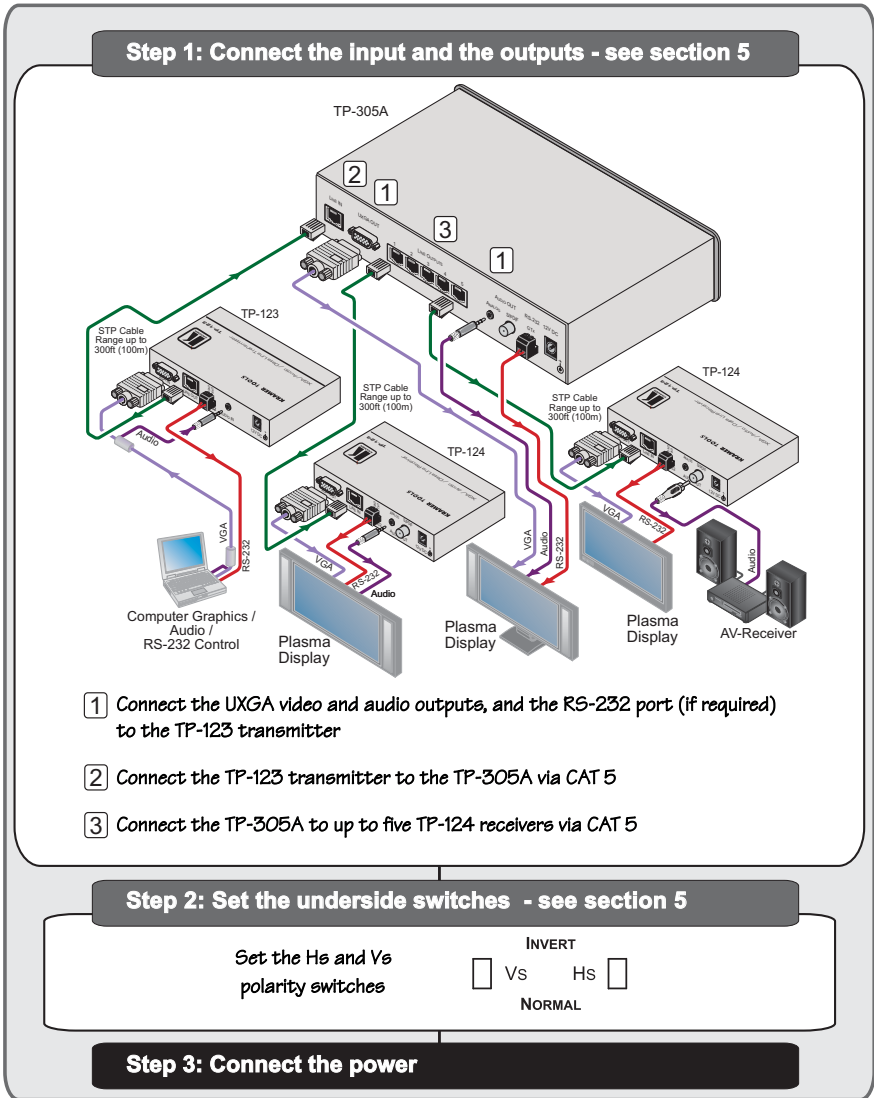
2 Download up-to-date Kramer user manuals from our Web site at <http://www.kramerelectronics.com>

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



2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps of the TP-305A.



3 Overview

The **TP-305A UXGA - Audio - RS-232 Line Receiver/DA** receives a CAT 5 signal from a transmitter¹ and distributes it to up to five other receivers (via CAT 5 cables). The **TP-305A** also decodes the CAT 5 signal and distributes it to a UXGA output, an analog audio output, a digital audio output and an RS-232 output.

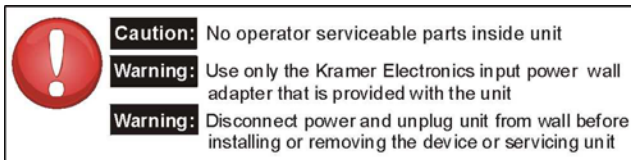
The **TP-305A** serves as a power center that can distribute power to both the transmitter and the connected receivers (see section [3.1](#)).

In particular, the **TP-305A** features:

- Resolution of up to UXGA
- UXGA output on a 15-pin HD computer graphics video connector
- Digital audio output (S/PDIF) on an RCA connector and an analog audio output on a 3.5mm mini jack
- A transmission range of up to 300ft (up to 100 meters) over STP cabling
- Changeable polarity of the encoded H and V Sync for video (UXGA)
- EQ, and LEVEL controls for the video (UXGA) output

To achieve the best performance:

- Use only good quality connection cables² to avoid 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 that may adversely influence signal quality and position your Kramer **TP-305A** away from moisture, excessive sunlight and dust



¹ For example, the Kramer TP-121, TP-123 or TP-45

² Available from Kramer Electronics on our Web site at <http://www.kramerelectronics.com>

3.1 About the Power Connect Feature

The Power Connect feature applies as long as the cable can carry power. This feature is available when using STP cable and the distance does not exceed 50m on standard CAT 5 cable. For longer distances, heavy gauge cable should be used¹. For units which are connected via RJ-45 connectors, make sure that the shield of the STP cable is connected to the metal casing of the connectors on both ends of the cable. For units which are connected via terminal block connectors, the shield of the STP cable must be connected to a ground terminal on the units at both ends (use the ground terminal of the power supply connection if necessary).

For a CAT 5 cable exceeding a distance of 50m, separate power supplies should be connected to the transmitter and to the receiver simultaneously.

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

We recommend that you use Shielded Twisted Pair (STP) cable. There are different levels of STP cable available, and we advise you to use the best quality STP cable that you can afford. Our non-skew-free cable, Kramer **BC-STP** is intended for analog signals where skewing is not an issue. For cases where there is skewing, our UTP skew-free cable, Kramer **BC-XTP**, may be used. Bear in mind, though, that we advise using STP cables where possible, since the compliance to electromagnetic interference was tested using those cables.

Although Unshielded Twisted Pair (UTP) cable might be preferred for long range applications, the UTP cable should be installed far away from electric cables, motors and so on, which are prone to create electrical interference. However, since the use of UTP cable might cause inconformity to electromagnetic standards, Kramer does not commit to meeting the standard with UTP cable.

¹ CAT 5 cable is still suitable for the video/audio transmission, but not for feeding the power at these distances

4 Your TP-305A UXGA - Audio - RS-232 Line Receiver/DA

[Figure 1](#) and [Table 1](#) define the **TP-305A**:

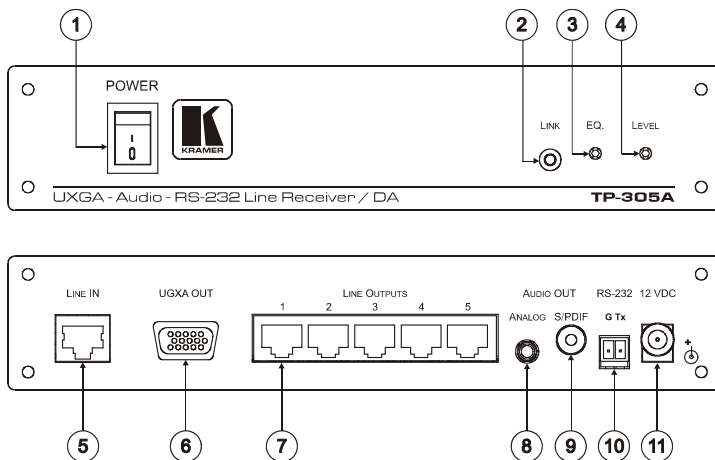


Figure 1: TP-305A UXGA - Audio - RS-232 Line Receiver/DA

Table 1: TP-305A UXGA - Audio - RS-232 Line Receiver/DA Features

#	Feature	Function	
1	POWER Switch	Illuminated switch for turning the unit ON or OFF	
2	LINK LED	Lights when receiving a valid input signal	
3	EQ. ¹ Trimmer	Adjusts ² the cable compensation (equalization) level for the UXGA output	
4	LEVEL Trimmer	Adjusts ² the output signal level for the UXGA output	
5	LINE IN RJ-45 Connector	Connect to the <i>LINE OUT</i> connector of a transmitter ³	
6	UXGA OUT 15-pin HD Connector	Connect to the video acceptor	
7	LINE OUTPUT RJ-45 Connectors	Connect to ⁴ the LINE IN RJ-45 connector on a receiver ⁵ (from 1 to 5)	
8	AUDIO OUT	ANALOG 3.5mm Mini Jack	Connect to the stereo analog audio acceptor 1
9		S/PDIF RCA Connector	Connect to the digital audio acceptor 1
10	RS-232 G, Tx Terminal Block	Connect the connector (G and Tx) to control a device (see section 5.3)	
11	Power Connector with Fuse	AC connector enabling power supply to the unit	

1 Degradation and VGA/XGA signal loss can result from using long cables (due to the effects of stray capacitance, for example), sometimes leading to a loss of sharpness in high-resolution signals

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

3 The PINOUT is defined in [Table 3](#) and [Figure 5](#)

4 Using UTP or STP cable with RJ-45 connectors at both ends (the PINOUT is defined in [Table 3](#) and [Figure 5](#))

5 For example, the Kramer TP-124 or TP-46

4.1 The TP-305A UXGA - Audio - RS-232 Line Receiver/DA Underside

[Figure 2](#) and [Table 2](#) define the underside of the **TP-305A**

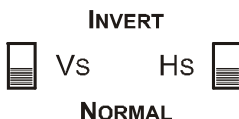


Figure 2: TP-305A Underside

Table 2: Features of the TP-305A Underside

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

5 Connecting the TP-305A UXGA-Audio-RS-232 Line Receiver/DA

You can use the **TP-305A** with a *UXGA - Audio - RS-232 Line Receiver/DA* such as the Kramer **TP-123**². You can connect a single **TP-305A** to up to five receivers, and up to five **TP-305A** units can be connected to increase the number of outputs to 25.

5.1 Connecting a Single TP-305A

To connect a **TP-123/TP-305A** UXGA – Audio - RS-232/Line Receiver/DA system³ as illustrated in the example in [Figure 3](#), do the following⁴:

1. On the **TP-305A**, connect the:
 - UXGA OUT 15-pin HD computer graphics video connector to the UXGA acceptor (for example, a plasma display), and the AUDIO OUT ANALOG 3.5mm mini jack connector to the analog audio connector on the acceptor. If required, connect the RS-232 G and TX terminal block connector to the RS-232 port on the acceptor
 - LINE OUTPUT RJ-45 connector on the **TP-123** to the LINE IN

¹ By default, both switches are set to NORM.

² Refer to the separate user manual, which can be downloaded at: <http://www.kramerelectronics.com>

³ Using up to 300ft (100m) of UTP cabling

⁴ Switch OFF the power on each device before connecting it to your TP-305A. After connecting your TP-305A, switch on its power and then switch on the power on each device

- RJ-45 connector on the **TP-305A**, via STP cabling (with a range of up to 300ft (up to 100m)), see section [3.2](#)
2. On the **TP-123**, connect:
 - A UXGA source (for example, the graphics card of a laptop) to the XGA IN 15-pin HD computer graphics video connector and an audio source to the Audio IN 3.5mm mini jack, for example, using a Kramer C-GMA/GMA cable (VGA HD15M +Audio jack to VGA HD15M +Audio jack)¹
 - An RS-232 cable with a 9-pin D-sub connector at one end to the laptop, and a 2-PIN terminal block connector at the other end to the **TP-123** RS-232 port
 3. Connect the LINE OUTPUT CAT 5 connectors as follows²:
 - The LINE OUTPUT 1 RJ-45 connector on the **TP-305A** to the LINE IN RJ-45 connector on a **TP-124**³ unit via STP cabling⁴ (with a range of up to 300ft (up to 100m))⁵
 - The LINE OUTPUT 5 RJ-45 connector on the **TP-305A** to the LINE IN RJ-45 connector on another **TP-124**³ unit, via STP cabling⁴ (with a range of up to 300ft (up to 100m))
 4. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.
 5. If necessary, set the HS and VS switches⁶ on the underside.

1 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 15-pin HD connector, and a separate audio source to the AUDIO IN 3.5mm mini jack

2 You do not have to connect all the outputs

3 Refer to the separate user manual, which can be downloaded at <http://www.kramerelectronics.com>

4 For details of how to wire a CAT 5 LINE IN/LINE OUT RJ-45 connector, see section [5.3](#)

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

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

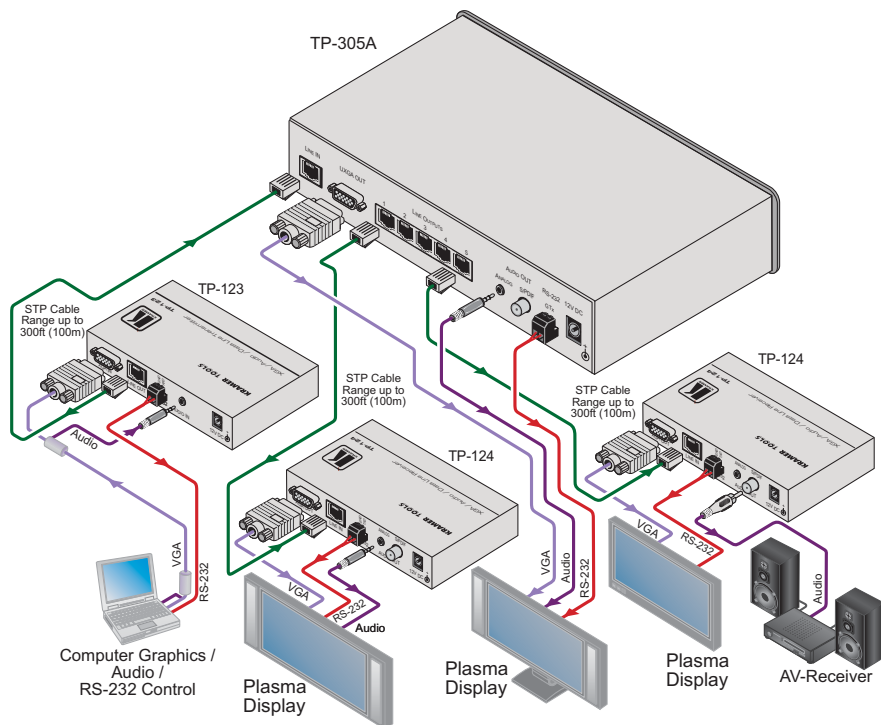


Figure 3: Connecting the TP-305A UXGA - Audio - RS-232 Line Receiver/DA

5.2 Connecting Several TP-305A Units

You can connect up to five additional **TP-305A** units via the **LINE OUTPUT** RJ-45 connectors on the first unit. The number of **TP-305A** units that can be connected depends upon the quality of the input signal that you require and the distance between the machines.

In the example illustrated in [Figure 4](#), a **TP-305A** unit is connected to three additional **TP-305A** units via the **LINE OUTPUT** RJ-45 connectors. Each of the three connected **TP-305A** units can distribute the signal to five receivers. The system, in total, distributes the signal to 17 receivers.

To connect an expanded UXGA – Audio Line Receiver/DA system, do the following:

1. Connect a transmitter to the **LINE IN** RJ-45 connector of the first **TP-305A**.
2. Connect the **LINE OUTPUT 1** RJ-45 connector of the first **TP-305A** to the **LINE IN** RJ-45 connector of the second **TP-305A**.

3. Connect the LINE OUTPUT 2 RJ-45 connector of the first **TP-305A** to the LINE IN RJ-45 connector of the third **TP-305A**.
4. Connect the LINE OUTPUT 3 RJ-45 connector of the first **TP-305A** to the LINE IN RJ-45 connector of the fourth **TP-305A**.
5. Connect the LINE OUTPUT RJ-45 connectors of each **TP-305A** unit, to the LINE IN RJ-45 connectors of the appropriate receivers, as illustrated in [Figure 4](#).
6. On each **TP-305A** unit, connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.

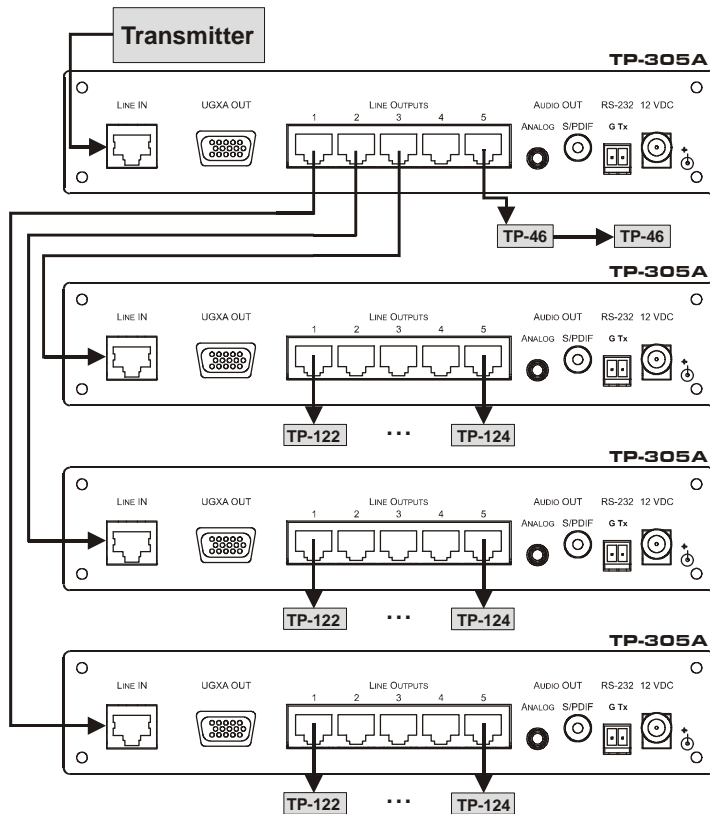


Figure 4: Distributing the Signal to 17 Receivers

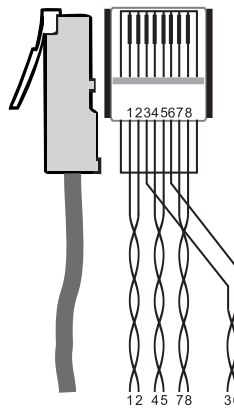
5.3 Wiring the CAT 5 LINE IN / LINE OUT RJ-45 Connectors

[Table 3](#) and [Figure 5](#) define the UTP CAT 5 PINOUT, using a straight pin to pin cable with RJ-45 connectors:

Table 3: CAT 5 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

Figure 5: CAT 5 PINOUT



5.4 Wiring the RS-232 Connector

Prepare an RS-232 cable with a 9-pin D-sub 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 9-pin D-sub Connector	To the Terminal Block Connector PIN:
PIN 3	TX (1 and 2)
PIN 5	G

RS-232 to TP-305A

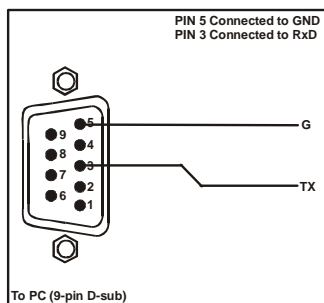


Figure 6: RS-232 PINOUT Connection

6 Technical Specifications

[Table 5](#) includes the technical specifications¹ of the **TP-305A**:

Table 5: Technical Specifications of the TP-305A

INPUT:	1 LINE IN on an RJ-45 connector
OUTPUTS:	5 LINE OUT on RJ-45 connectors 1 UXGA video output on a 15-pin HD connector 1 audio output on a 3.5mm mini jack connector 1 S/PDIF output on an RCA connector 1 2-pin terminal block for 1 RS-232 Tx/D out line
MAX. OUTPUT LEVEL:	Video: 1.6V; Audio: 2.3V
POWER OUTPUTS:	12V DC 0.5A max via each RJ-45 output (pins 4, 5)
RESOLUTION:	WUXGA & 1080p
BANDWIDTH:	20Hz to 20kHz @1dB (audio)
SAMPLING RATE FOR S/PDIF:	48kHz
S/N RATIO:	Audio: >75dB
TOTAL GAIN:	Audio: Analog/analog: 0dB Analog/SPDIF: -12dBFS
TND+N:	Audio: <0.02%
POWER SOURCE:	12V DC, 2.3A
DIMENSIONS:	21.46cm x 16.25cm x 4.36cm (8.45" x 6.4" x 1.72") W, D, H
WEIGHT:	1.3kg (2.9lbs) approx.
ACCESSORIES:	Power cord ²
OPTIONS:	RK-1 19" rack adapter

¹ Specifications are subject to change without notice

² We recommend that you use only the power cord that is supplied with this machine



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, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
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 your 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.



Caution

Safety Warning:

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



P/N: 2900-000365



Rev: 3



Kramer Electronics, Ltd.

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