



KRAMER ELECTRONICS LTD.

USER MANUAL

MODELS:

TP-133

Automatic PC/Audio/Data Line
Transmitter

TP-134

Automatic PC/Audio/Data Line
Receiver

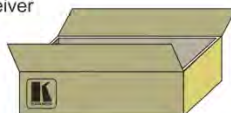
TP-133, TP-134 Quick Start Guide

This page guides you through a basic installation and first-time use of your **TP-133/TP-134**. For more detailed information, see the **TP-133/TP-134** user manual. You can download the latest manual at <http://www.kramerelectronics.com>.

Step 1: Check what's in the box

- ☒ **TP-133** or **TP-134** Automatic PC/Audio/Data Line Transmitter and Receiver
- ☒ Power adapter (5V DC output)
- ☒ 4 Rubber feet
- ☒ 1 Quick start guide
- ☒ 1 User Manual

Save the original box and packaging materials in case your Kramer product needs to be returned to the factory for service.

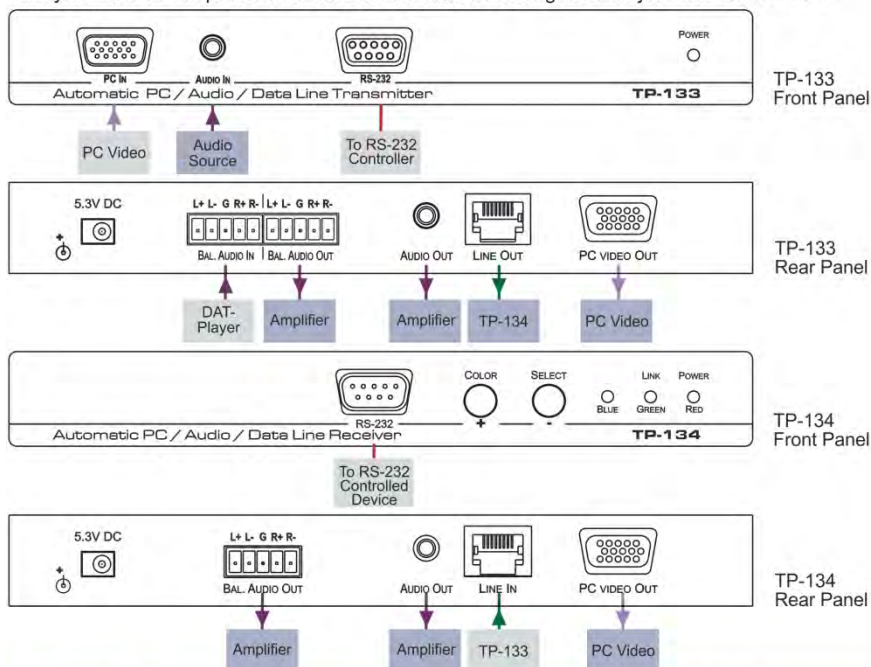


Step 2: Install the TP-133/TP-134

Mount the devices in racks (using the optional RK-T2B rack adapter) or place them on shelves.

Step 3: Connect the inputs and outputs

Always switch off the power to all devices before connecting them to your **TP-133/TP-134**.



For best results, we recommend that you always use Kramer high-performance cables when connecting AV equipment to the **TP-133/TP-134**.

Step 4: Connect the power



Connect the power adapters to the **TP-133** and **TP-134** and plug the adapters into the mains electricity.

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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 groups that are clearly defined by function: 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 and GROUP 11: Sierra Products.

Thank you for purchasing the Kramer MegaTOOLS® **TP-133** *Automatic PC/Audio/Data Line Transmitter* or **TP-134** *Automatic PC/Audio/Data Line Receiver* which are ideal for:

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

Each package includes the following items:

- **TP-133** *Automatic PC/Audio/Data Line Transmitter* or **TP-134** *Automatic PC/Audio/Data Line Receiver*
- Power adapter
- AD-GF/GF 15-pin HD (F/F) Gender Changer (with the **TP-133**)
- This user manual

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

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



Go to <http://www.kramerelectronics.com> to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).



Caution: No operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables 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
- Position your Kramer **TP-133** and **TP-134** away from moisture, excessive sunlight and dust

2.2 Shielded Twisted Pair/Unshielded Twisted Pair

We recommend that you use Shielded Twisted Pair (STP) cable, and stress that the compliance to electromagnetic interference was tested using 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. This pair of devices was designed for use with non-skew free cable, such as the Kramer **BC-DGKat623**.

3 Overview

The **TP-133** and **TP-134** are a high-performance, TP (Twisted Pair) transmitter and receiver for transmitting computer graphics video, balanced/unbalanced stereo audio and bidirectional RS-232 data signals over extended distances using CAT 5/6 cable. The **TP-133** and **TP-134** together form an extended computer graphics/audio/data line transmission and reception system. The **TP-133** converts computer graphics video, balanced/unbalanced stereo audio and RS-232 data into a TP signal. The **TP-134** converts the TP signal back into computer graphics video, balanced/unbalanced stereo audio and RS-232 data. More specifically, the **TP-133** and **TP-134** support:

- Video resolution up to WUXGA 1920 x 1200
- Automatic EQ Compensation - automatically detects and compensates for the EQ losses in the TP cable. Can also be set manually (**TP-134**)
- Automatic Skew Correction - automatically detects and corrects the differential delay in the R, G & B color components due to the TP cable. Can also be set manually (**TP-134**)
- Full duplex, bidirectional RS-232 transmission
- Increased level of protection against noise, spikes and interference in adverse environments
- Transmission range of up to 200m (656ft)
- Cable - for optimum range and performance, use Kramer's BC-DGKat524, BC-DGKat623 and BC-DGKat7a23 cables. Note that the transmission range depends on the signal resolution, graphics card and display used. The distance using non-Kramer CAT 5, CAT 6, and CAT 7 cables may not reach these ranges. Use only shielded cable where both ends of the shield are soldered to ground
- Control - Skew: auto or manual (R, G & B); equalization (peaking): auto or manual
- Built in Test Pattern Generator for manually setting R, G & B skew and equalization
- Compact MegaTOOLS™ - 2 units can be rack mounted side-by-side in a 1U rack space with the optional RK-T2B universal rack adapter

4 Defining the TP-133/TP-134 Line Transmitter and Receiver

This section defines the:

- **TP-133** *Automatic PC/Audio/Data Line Transmitter* (see [Section 4.1](#))
- **TP-134** *Automatic PC/Audio/Data Line Receiver* (see [Section 4.2](#))

4.1 Defining the TP-133 Automatic PC/Audio/Data Line Transmitter

The **TP-133** is a high-performance transmitter that accepts the following signals:

- Computer graphics video
- Balanced and unbalanced stereo audio
- RS-232 data

The **TP-133** encodes the signals and transmits them over TP cable to a **TP-134** receiver. RS-232 commands and data flow bidirectionally, allowing status requests and control of a destination unit.

[Figure 1](#) defines the front and rear panels of the **TP-133**.

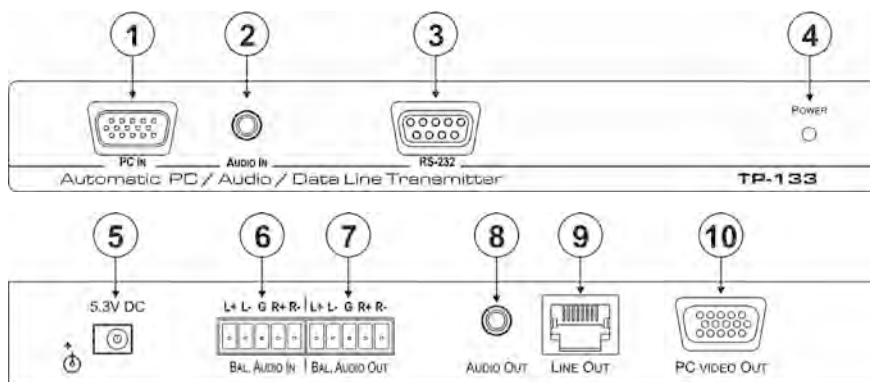


Figure 1: TP-133 Automatic PC/Audio/Data Line Transmitter Front and Rear Panels

#	Feature	Function
1	<i>PC IN</i> 15-pin HD Connector (M)	Connect to a computer graphics video source
2	<i>AUDIO IN</i> 3.5mm Mini Jack	Connect to an unbalanced, stereo audio source
3	<i>RS-232</i> 9-pin D-sub Connector (F)	Connect to the RS-232 device (PC or controller)
4	<i>POWER LED</i>	Lights red when the unit receives power
5	<i>5.3V DC Power</i> Connector	Connect to one of the supplied +5.3V DC power adapters. Center pin positive
6	<i>BAL. AUDIO IN</i> 5-pin Terminal Block	Connect to a balanced, stereo audio source
7	<i>BAL. AUDIO OUT</i> 5-pin Terminal Block	Connect to a balanced, stereo audio acceptor (loop output), see Section 5.1
8	<i>AUDIO OUT</i> 3.5mm Mini Jack	Connect to an unbalanced, stereo audio acceptor (loop output)
9	<i>LINE OUT</i> RJ-45 Connector	Connect to the LINE IN RJ-45 connector on the TP-134 , see Section 5.2
10	<i>PC VIDEO OUT</i> 15-pin HD Connector (F)	Connect to a computer graphics monitor (loop output)

4.2 Defining the TP-134 Automatic PC/Audio/Data Line Receiver

The **TP-134** is a high-performance receiver that accepts the computer graphics/audio/RS-232 data from the Kramer **TP-133** via TP cabling at its RJ-45 LINE IN input. The **TP-134** outputs a computer graphics signal, an unbalanced stereo audio signal, a balanced stereo audio signal and RS 232 data signal.

In addition, the **TP-134** features color skew and equalization control for the video signal.

[Figure 2](#) defines the **TP-134**.

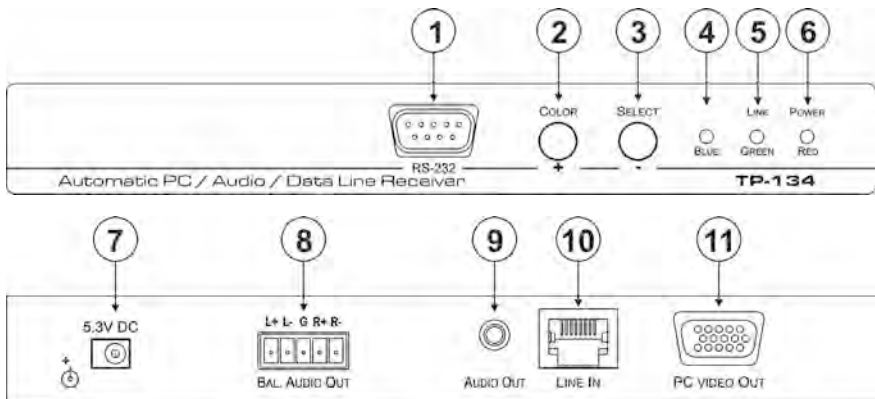


Figure 2: TP-134 Automatic PC/Audio/Data Line Transmitter Front and Rear Panels

#	Feature	Function
1	RS-232 9-pin D-sub Connector (M)	Connect to the controlled RS-232 device (monitor)
2	COLOR / + Button	Press to enter the setting mode (see Section 6). Press and hold together with the SELECT button to trigger the auto-adjust function
3	SELECT / – Button	Press to select the setting to change (see Section 6). Press and hold together with the COLOR button to trigger the auto-adjust function
4	BLUE LED	Flashes to indicate that the blue color setting is selected
5	LINK / GREEN LED	<ul style="list-style-type: none"> Lights orange to indicate that the TP link is established Flashes orange to indicate that there is a link problem Flashes green to indicate that the green color is selected
6	POWER / RED LED	<ul style="list-style-type: none"> Lights green to indicate that the device is receiving power Flashes red to indicate that the red color is selected Flashes red together with the GREEN LED flashing green) to indicate that the equalization setting is selected
7	5.3V DC Power Connector	Connect to one of the supplied +5.3V DC power adapters. Center pin positive
8	BAL. AUDIO OUT 5-pin Terminal Block	Connect to a balanced, stereo audio acceptor (see Section 5.1)
9	AUDIO OUT 3.5mm Mini Jack	Connect to an unbalanced, stereo audio acceptor
10	LINE IN RJ-45 Connector	Connect to the LINE OUT RJ-45 connector on the TP-133 (see Section 5.2)
11	PC VIDEO OUT 15-pin HD Connector (F)	Connect to a computer graphics video acceptor

5 Connecting the TP-133/TP-134



After connecting your **TP-133** and **TP-134**, connect the power adapters.

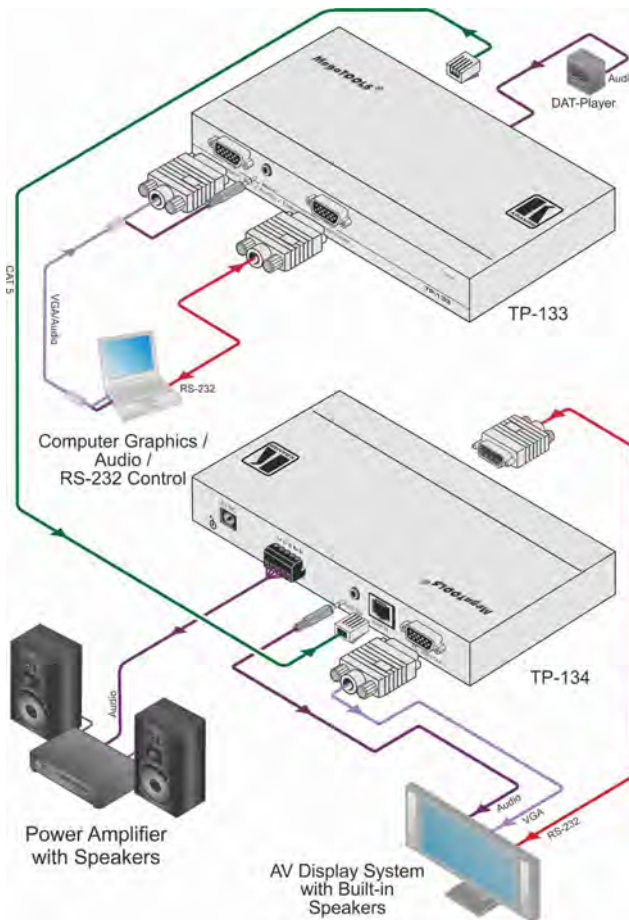


Figure 3: Connecting the TP-133/TP-134 PC/Audio/Data Line Transmitter/Receiver System

To connect the TP-133 and the TP-134 to create a TP transmitter and receiver system as illustrated in [Figure 3](#):

1. On the **TP-133**, connect:
 - A computer graphics video source (for example, the graphics card on a laptop) to the PC IN 15-pin HD connector (M)
 - An unbalanced, stereo audio source (for example, the audio source on the computer graphics station) to the AUDIO IN 3.5mm mini jack
 - The RS-232 device, for example, PC or controller with an RS-232 interface to the RS-232 9-pin D-sub connector (F)
 - The balanced, stereo audio source (for example, a DAT-Player) to the BAL AUDIO IN 5-pin terminal block
 - If needed, connect a computer monitor and audio amplifier/loudspeakers to the looping VGA/audio outputs (not shown in [Figure 3](#))
2. On the **TP-134**, connect the:
 - BAL AUDIO OUT 5-pin terminal block to the balanced, stereo audio acceptor (for example, an amplifier)
 - AUDIO OUT 3.5mm mini jack to the unbalanced, stereo audio acceptor (for example, an AV display system)
 - PC VIDEO OUT 15-pin HD (F) connector to the video acceptor (for example, an AV display system)
 - RS-232 9-pin D-sub connector (M) to the controlled device with an RS-232 interface
3. Using STP cabling, connect the LINE OUT RJ-45 connector on the **TP-133** to the LINE IN RJ-45 connector on the **TP-134** (see [Section 5.2](#)).
4. Connect the power adapters to the power sockets on the **TP-133** and **TP-134**, and connect the adapters to the mains electricity (not shown in [Figure 3](#)).

5.1 Connecting the Audio Output to Balanced and Unbalanced Audio Equipment

Figure 4 illustrates how to connect the **TP-133/TP-134** balanced audio output to a balanced acceptor.

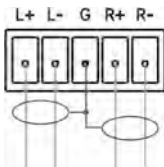


Figure 4: Connecting to a Balanced Acceptor

Figure 5 illustrates how to connect the **TP-133/TP-134** balanced audio output to an unbalanced acceptor.

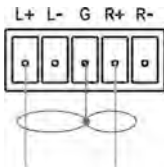


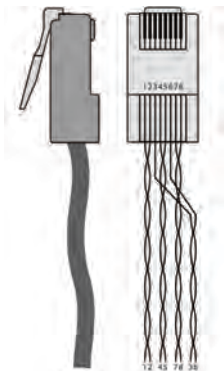
Figure 5: Connecting to an Unbalanced Acceptor

5.2 Wiring the TP RJ-45 Connectors

When using STP cable, connect/solder the cable shield to the RJ-45 connector shield. Figure 6 defines the TP pinout using a straight pin-to-pin cable with RJ-45 connectors.

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

Figure 6: CAT 5 Pinout



6 Adjusting RGB and Compensation on the TP-134

The skew and equalization can be set either manually or automatically.

After connecting the **TP-133/TP-134** to the power adapters (assuming that the twisted pair link is working), the LINK and POWER LEDs on the front of the **TP-134** light green.

Note: During any setup, the process times-out after 10 seconds and the device returns to normal operation.

6.1 Setting the Skew and Equalization Manually

The color and equalization can be set either with the live signal or using the built-in pattern generator.

6.1.1 Setting the Skew and Equalization Manually (Using a Live Signal)

To set the color and equalization using a live signal:

1. Press the COLOR button briefly.
The RED LED flashes red.
2. To change the red gain, press the + or – button to increase or decrease the gain respectively.
3. To move to the green setting, press and hold the COLOR button for three seconds.
The GREEN LED flashes green.
4. To change the green gain, press the + or – button to increase or decrease the gain respectively.
5. To move to the blue setting, press and hold the COLOR button for three seconds.
The BLUE LED flashes blue.

6. To change the blue setting, press the + or – button to increase or decrease the gain respectively.
7. To move to the equalization setting, press and hold the COLOR button for three seconds.
The RED LED flashes red and the GREEN LED flashes green together.
8. To change the equalization, press the + or – button to increase or decrease the blue gain respectively.
9. To return to normal operation, either wait 10 seconds for the time-out or press and hold the COLOR button for three seconds.
The LINK and POWER LEDs light green.

6.1.2 Setting the Skew and Equalization Using the Built-in Pattern Generator

To set the color and equalization using the built-in pattern generator:

1. Press and hold the COLOR button for three seconds.
The RED LED flashes red and the OSD pattern is displayed with a broad, red, horizontal band across the bottom to indicate the current setting.
2. To change the red gain, press the + or – button to increase or decrease the gain respectively.
The effect is seen in the red vertical bars shifting to the left or right.
3. To move to the green setting, press and hold the COLOR button for three seconds.
The GREEN LED flashes green and the OSD pattern is displayed with a broad, green, horizontal band across the bottom to indicate the current setting.
4. To change the green gain, press the + or – button to increase or decrease the gain respectively.
The effect is seen in the green vertical bars shifting to the left or right.
5. To move to the blue setting, press and hold the COLOR button for three seconds.

The BLUE LED flashes blue and the OSD pattern is displayed with a broad, blue, horizontal band across the bottom to indicate the current setting.

6. To change the blue setting, press the + or – button to increase or decrease the gain respectively.

The effect is seen in the red vertical bars shifting to the left or right.

7. To move to the equalization setting, press and hold the COLOR button for three seconds.

The RED LED flashes red and the GREEN LED flashes green together. The OSD pattern is displayed with no horizontal band across the bottom to indicate the current setting.

8. To change the equalization, press the + or – button to increase or decrease the blue gain respectively.

The effect is seen in the four vertical white bars becoming blurred on the left or right hand side of each bar.

9. To return to normal operation, either wait 10 seconds for the time-out or press and hold the COLOR button for three seconds.

The LINK and POWER LEDs light green.

6.2 Setting the Skew and Equalization Automatically

To adjust the color skew on the TP-134:

- Press and hold the COLOR and SELECT buttons together for three seconds.

The color and equalization are set automatically.

7 Technical Specifications

		TP-133	TP-134
INPUTS:		Video: 1 Computer graphics on a 15-pin HD connector Audio: 1 Unbalanced stereo audio on a 3.5mm mini jack 1 Balanced stereo audio on a 5-pin terminal block Data: 1 RS-232 bidirectional on a 9-pin D-sub connector	Communication: 1 LINE IN on an RJ-45 connector
OUTPUTS:		Video Loop: 1 Computer graphics on a 15-pin HD connector Audio Loop: 1 Balanced stereo audio on a 5-pin terminal block, 1 Unbalanced stereo audio on a 3.5mm mini jack Communication: 1 RJ-45 LINE OUT on an RJ-45 connector	Video: 1 Computer graphics on a 15-pin HD connector Audio: 1 Balanced stereo audio on a 5-pin terminal block, 1 Unbalanced stereo audio on a 3.5mm mini jack Data: 1 RS-232 bidirectional on a 9-pin D-sub connector
CONTROLS:			Skew/Equaliza ion
VIDEO RESOLUTION:		Up to WUXGA	
MAX. OUTPUT LEVEL:			Video: 1.1V Audio: 2.2V
AUDIO:	BANDWIDTH:	Audio: 20–20kHz @-3dB	
	S/N RATIO:	Audio: 84dB/unweighted	
	COUPLING:	AC	
	TND+N:	Audio: 0.02% unweighted	
RS-232:	BAUD RATE:	Up to 115200bps	
	MODE:	Full-duplex	
POWER SOURCE:		5.3V DC 450mA	5.3V DC 760mA
TRANSMISSION DISTANCE:		Up to 200m (656ft)	
OPERATING TEMPERATURE:		0° to +55°C (32° to 131°F)	
STORAGE TEMPERATURE:		–45° to +72°C (–49° to 162°F)	
HUMIDITY:		10% to 90%, RHL non-condensing	
DIMENSIONS:		19.05cm x 8.63cm x 2.44cm (7.5" x 3.4" x 0.96") W, D, H	
WEIGHT:		0.33kg (0.73lbs.) approx. each	
ACCESSORIES:		Power supply, AD-GF/GF 15-pin HD (F/F) Gender Changer	Power supply
OPTIONS:		RK-T2B 19" rack adapter, Kramer BC-DGKat623	

LIMITED WARRANTY

We warrant 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 us 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 F 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 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.

* FCC and CE approved using STP cable (for twisted pair products)



For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing



P/N 2900-300012



Rev 4