Kramer Electronics, Ltd.

USER MANUAL

Models:

TP-141 *XGA/Audio Line Transmitter*

TP-142 *XGA/Audio Line Receiver*

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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[1] that are clearly defined by function.

Congratulations on purchasing your Kramer TOOLS: **TP-141** *XGA/Audio Line Transmitter*, and **TP-142** *XGA/Audio Line Receiver* which are ideal for:

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

The package includes the following items:

- The **TP-141, TP-142**
- Power adapter (12V DC input)
- 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]

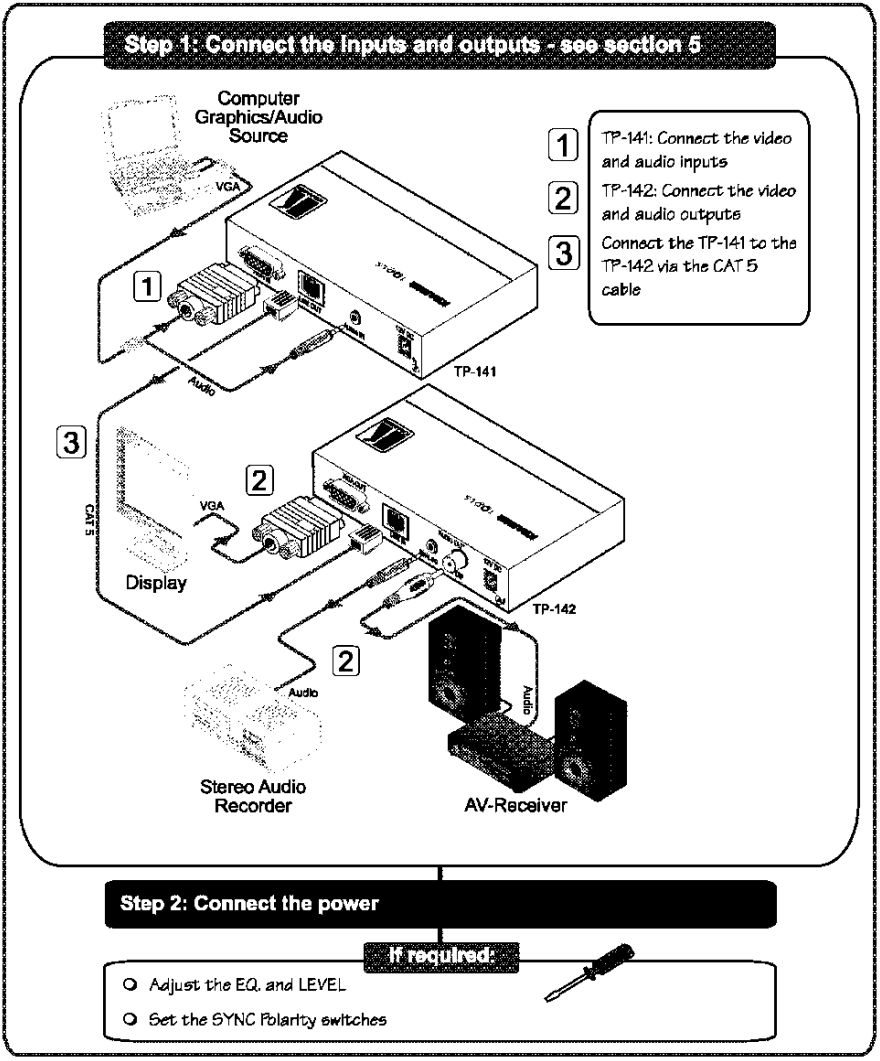
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from 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

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.



3 Overview

The **TP-141** and **TP-142** are a high-immunity, extended-range twisted pair transmitter and receiver for computer graphics video and unbalanced stereo audio signals.

The **TP-141** converts computer graphics video and audio inputs to twisted pair signals, and the **TP-142** converts the twisted pair signals back into computer graphics video, unbalanced stereo and S/PDIF digital audio signals. Together the **TP-141** and **TP-142** form a computer graphics video/audio line transmitter/receiver system.

More specifically, the products feature:

- Highest immunity from any kind of interference
- Resolution exceeding UXGA
- HDTV compatibility
- Simultaneous unbalanced stereo and S/PDIF (24-bit 48kHz) audio outputs (**TP-142**)
- Level (gain) and EQ (peaking) controls (**TP-142**)
- System range up to 250m (750ft) when using the Kramer **BCP-HDTP** cable, or 600ft when using our standard skew free cable, such the **BC-XTP**
- Power Connect™ System - Only one unit in a system, the transmitter or the receiver, needs to be connected to a power source when the devices are within 50m (150ft) of each other

Note: The **TP-141** and **TP-142** are not compatible with existing Kramer TP units such as the TP-121, TP-122, and so on.

3.1 About the Power Connect Feature

The Power Connect feature applies as long as the cable can carry power. The distance does not exceed 50 meters on standard CAT 5 cable, for longer distances, heavy gauge cable should be used[1].

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

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

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 STP skew-free cable: Kramer **BC-SXTP**, is intended for transmitting VGA signals; our non-skew-free cable: Kramer **BC-STP,** is intended for digital signals.
The compliance to electromagnetic interference was tested using STP cables, therefore we recommend 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.

3.3 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables[1] 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-141/TP-142** 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[2].

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

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

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

4 Your TP-141 / TP-142

This section defines the **TP-141** *XGA/Audio Line Transmitter* (see section 4.1), and the **TP-142** *XGA/Audio Line Receiver* (see section 4.2).

4.1 Your TP-141 XGA/Audio Line Transmitter

This section describes the topside (see section 4.1.1), and the internal polarity switches (see section 4.1.2) of the **TP-141** *XGA/Audio Line Receiver*.

4.1.1 Your TP-141 XGA/Audio Line Transmitter (Topside)

The **TP-141** is an XGA/stereo audio line transmitter that receives an XGA signal and an unbalanced stereo analog audio signal, codes them, and transmits them over CAT 5 cable to a **TP-142** receiver.

Figure 1 and *Table 1* define the **TP-141**:

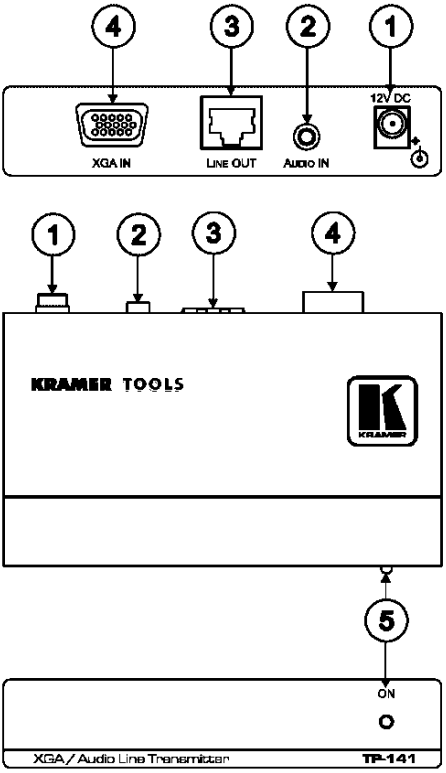


Figure 1: TP-141 XGA/Audio Line Transmitter

Table 1: TP-141 XGA/Audio Line Transmitter Features

#	Feature	Function
1	*12V DC*	+12V DC connector for powering the unit
2	*AUDIO IN* 3.5mm Mini Jack	Connects to the audio source
3	*LINE OUT* RJ-45 Connector	Connects to[1] the LINE IN RJ-45 connector on the **TP-142** *XGA/Audio Line Receiver*
4	*XGA IN* 15-pin HD F Connector	Connect to the XGA source
5	*ON* LED	Illuminates when receiving power

4.1.2 The TP-141 Internal Polarity Switches

Figure 2 and *Table 2* define the internal sync polarity switches inside the **TP-141**.

Note: If adjustment is necessary, open the **TP-141** unit to gain access to the Vs and Hs Polarity switches. After setting the switches, close the **TP-141** unit.

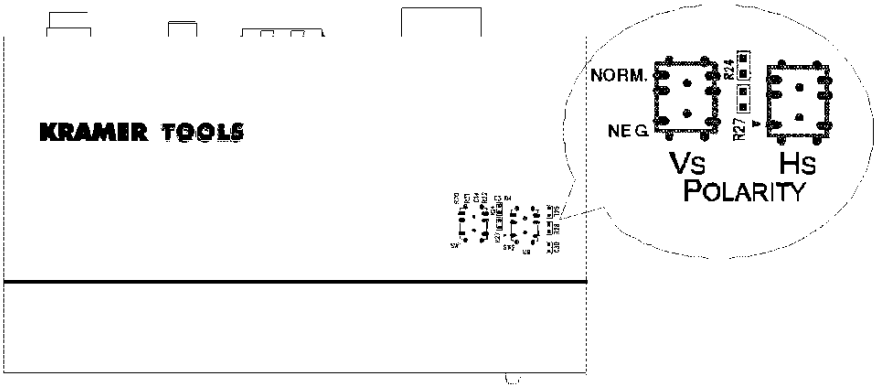


Figure 2: TP-141 Internal Polarity Switches

Table 2: Features of the TP-141 Internal Polarity Switches

Feature	Function
VS Switch	To set V SYNC to negative polarity (NEG), slide the switch down[2]; to set V SYNC to its input polarity (NORM), slide the switch up
HS Switch	To set H SYNC to negative polarity (NEG), slide the switch down[2]; to set H SYNC to its input polarity (NORM), slide the switch up

1 Using a UTP CAT 5 cable with RJ-45 connectors at both ends (the PINOUT is defined in *Figure 6* and *Table 5*)

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

4.2 Your TP-142 XGA/Audio Line Receiver

This section describes the topside (see section 4.2.1), and the underside (see section 4.2.2) of the **TP-142** *XGA/Audio Line Receiver*.

4.2.1 Your TP-142 XGA/Audio Line Receiver (Topside)

The **TP-142** is an XGA/audio line receiver that receives the coded CAT 5 signal transmitted by a **TP-141**, decodes it and converts it to XGA, stereo analog and S/PDIF digital audio outputs.

Figure 3 and *Table 3* define the topside of the **TP-142** *XGA/Audio Line Receiver*:

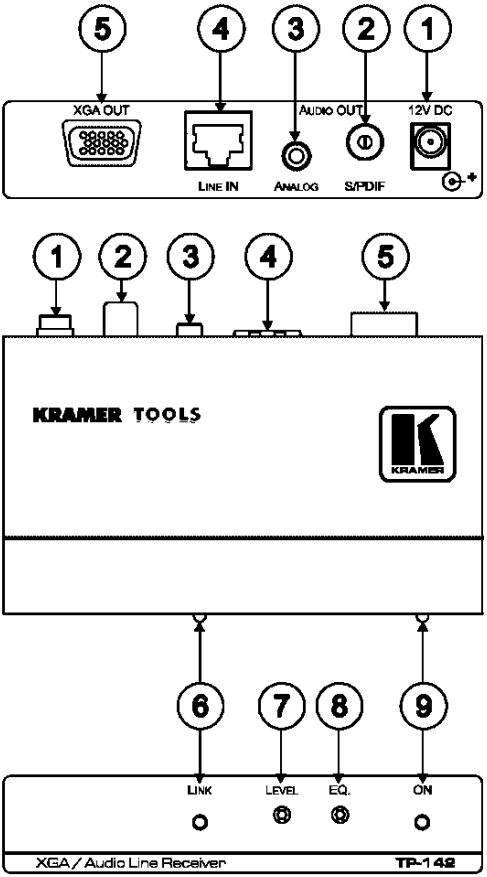


Figure 3: TP-142 XGA/Audio Line Receiver (Topside)

Table 3: TP-142 XGA/Audio Line Receiver (Topside) Features

#	Feature		Function
1	*12V DC*		+12V DC connector for powering the unit
2	AUDIO OUT	*S/PDIF* RCA connector	Connects to the digital audio acceptor
3	AUDIO OUT	*ANALOG* 3.5mm Mini Jack	Connects to the analog audio acceptor
4	*LINE IN* RJ-45 Connector		Connects to[1] the **TP-141**
5	*XGA OUT* 15-pin HD F Connector		Connects to the XGA acceptor
6	*LINK* LED		Illuminates when receiving the correct input signal
7	*LEVEL* Trimmer		Adjusts the output signal level
8	*EQ.*[2] Trimmer		Adjusts[3] the cable compensation equalization level
9	*ON* LED		Illuminates when receiving power

4.2.2 Your TP-142 XGA/Audio Line Receiver (Underside)

Figure 4 and *Table 4* define the underside of the **TP-142** *XGA/Audio Line Receiver*:

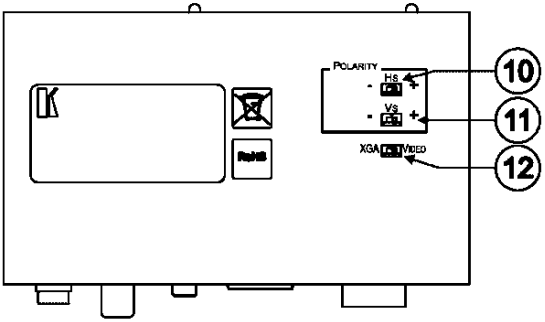


Figure 4: TP-142 XGA/Audio Line Receiver (Underside)

Table 4: TP-142 XGA/Audio Line Receiver (Underside) Features

#	Feature	Function
10	*HS* Switch	To set H SYNC to positive polarity, slide the switch to the right[4]; to set the H SYNC to negative polarity, slide the switch to the left
11	*VS* Switch	To set V SYNC to positive polarity, slide the switch to the right[4]; to set the V SYNC to negative polarity, slide the switch to the left
12	*XGA/Video* Switch	To set for any video signal, such as HDTV, slide the switch to VIDEO; to set for a computer graphics signal, slide the switch to XGA

1 Using a UTP CAT 5 cable with RJ-45 connectors at both ends (the PINOUT is defined in *Figure 6* and *Table 5*.)

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

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

4 By default, both switches are set to the left (for a negative V SYNC and H SYNC polarity)

5 Connecting the XGA/Audio Line Transmitter/Receiver

You can use the **TP-141** and **TP-142** to configure an XGA/Audio Line-to-Twisted Pair Transmitter and Receiver system.

To connect the **TP-141** *XGA/Audio Line Transmitter* with the **TP-142** *XGA/Audio Line Receiver*, as illustrated in *Figure 5*, do the following:

1. On the **TP-141**, connect the XGA source (for example, the graphics card of a laptop) to the XGA INPUT 15-pin HD (F) connector.
2. Connect an audio source to the AUDIO IN 3.5mm mini jack, for example, using a Kramer C-GMA/GMA cable (VGA 15-pin HD (M) +audio jack to VGA 15-pin HD (M) +audio jack)[1].
   Alternatively, you can connect an XGA source to the XGA INPUT 15-pin HD (F) connector, and a separate audio source to the AUDIO IN 3.5mm mini jack.
3. On the **TP-142**, connect the XGA OUT 15-pin HD (F) connector to the XGA acceptor (for example, a display).
4. Connect the AUDIO OUT S/PDIF RCA connector to the digital audio acceptor (for example, an AV receiver).
5. Connect the ANALOG 3.5mm mini jack to the analog audio acceptor (for example, a stereo audio recorder).
6. Connect the LINE OUTPUT RJ-45 connector on the **TP-141** to the LINE IN RJ-45 connector on the **TP-142**, via CAT 5 (UTP or STP) cabling, (see connector pinouts in section 5.1).
7. Connect the 12V DC power adapter to the power socket of either the **TP-141** or the **TP-142** and connect the adapter to the mains electricity. The Power Connect feature feeds power to the second device. If the second device does not power on due to a long line, connect a 12V DC power adapter to the second device as well.
8. On the **TP-142**:
   - Adjust[2] the video output signal level and/or cable compensation equalization level, if required
   - If necessary, set the H SYNC and V SYNC switches[3], on the underside

1 Not supplied. The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

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

3 By default, both switches are set to the left (for negative V SYNC and H SYNC polarity)

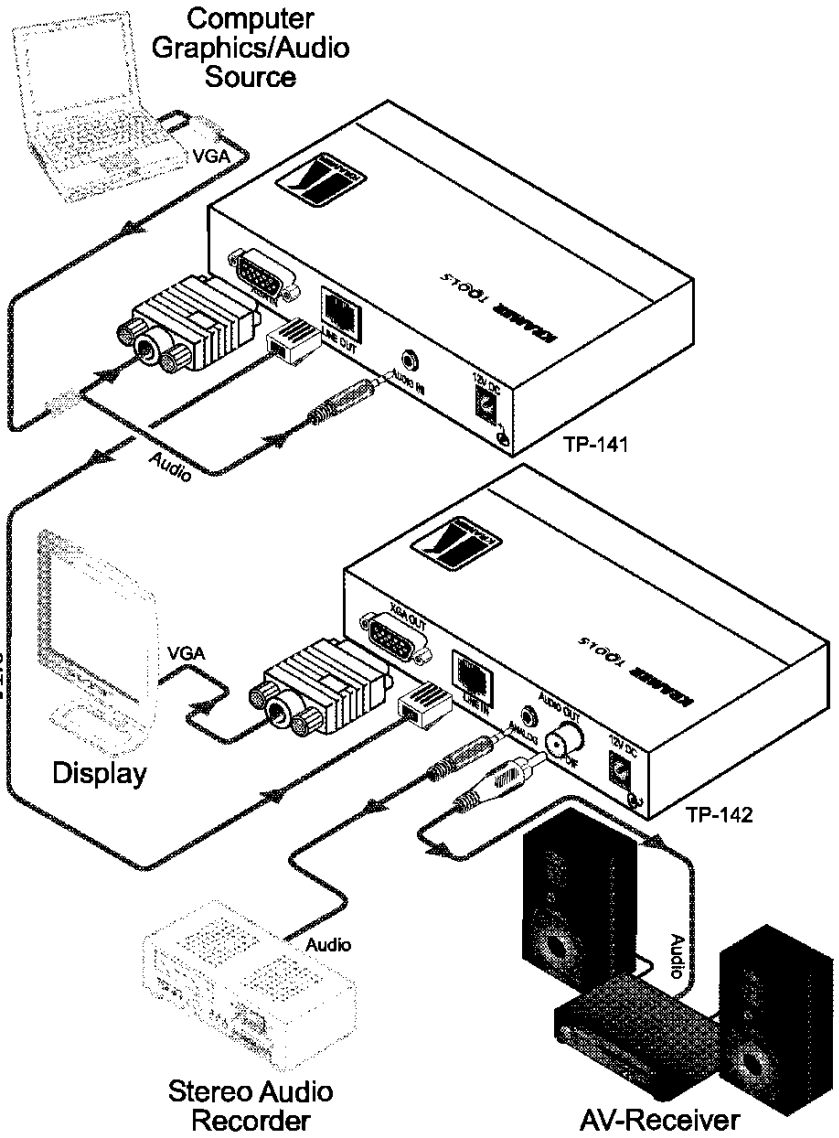


Figure 5: Connecting the XGA/Audio Line Transmitter/Receiver System

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

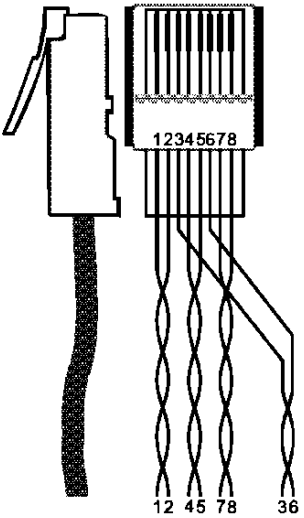
Table 5 and *Figure 6* define the UTP CAT 5 PINOUT, using a straight pin to pin cable with RJ-45 connectors:

Table 5: CAT 5 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

Figure 6: CAT 5 PINOUT



6 Technical Specifications

The technical specifications are shown in *Table 6*:

Table 6: TP-141/TP-142 Technical Specifications[1]

	TP-141	TP-142
INPUTS:	Video: 1 computer graphics video on a 15-pin HD connector Audio: 1 audio analog 3.5mm mini jack	1 RJ-45 LINE IN connector
OUTPUTS:	1 RJ-45 OUT connector	Video: 1 computer graphics video on a 15-pin HD connector Audio: 1 audio S/PDIF RCA connector, 1 audio analog 3.5mm mini jack
MAX. OUTPUT LEVEL:		Video: 1V, Audio: 2.5V
CONTROLS:		Level: –7.5dB to +4.4dB EQ: 0dB to +33dBm, (130m) @50MHz
BANDWIDTH (-3dB)[2]:	Audio: 20Hz–20kHz @0.5dB	
RESOLUTION:	Exceeding UXGA	
S/N RATIO:	Audio: <–80dB	
TOTAL GAIN:	Audio: Analog/analog: 0dB, Analog/SPDIF: –12dBFS	
COUPLING:	AC	
TND+N:	Audio: <0.01%	
POWER SOURCE:	12V DC, 60mA	
DIMENSIONS:	12.1cm x 7.18cm x 2.42cm (4.76" x 2.83" x 0.95"), W, D, H	
WEIGHT:	0.3kg (0.67lbs) approx.	
ACCESSORIES:	Power supply	

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, 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 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: 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.
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P/N: 2900-000419 REV 2