

**Kramer Electronics, Ltd.**



# **USER MANUAL**

**Model:**

**TP-210**

*XGA Line Transmitter/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 groups<sup>1</sup> that are clearly defined by function.

Thank you for purchasing the Kramer **TP-210 XGA Line Transmitter /DA**. This product is ideal for utilizing existing CAT 5 cabling that results in an efficient, fast and uncluttered environment for:

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

The package includes the following items:

- **TP-210 XGA Line Transmitter/DA**
- Power cord<sup>2</sup>
- This user manual<sup>3</sup>

## 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<sup>4</sup>

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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

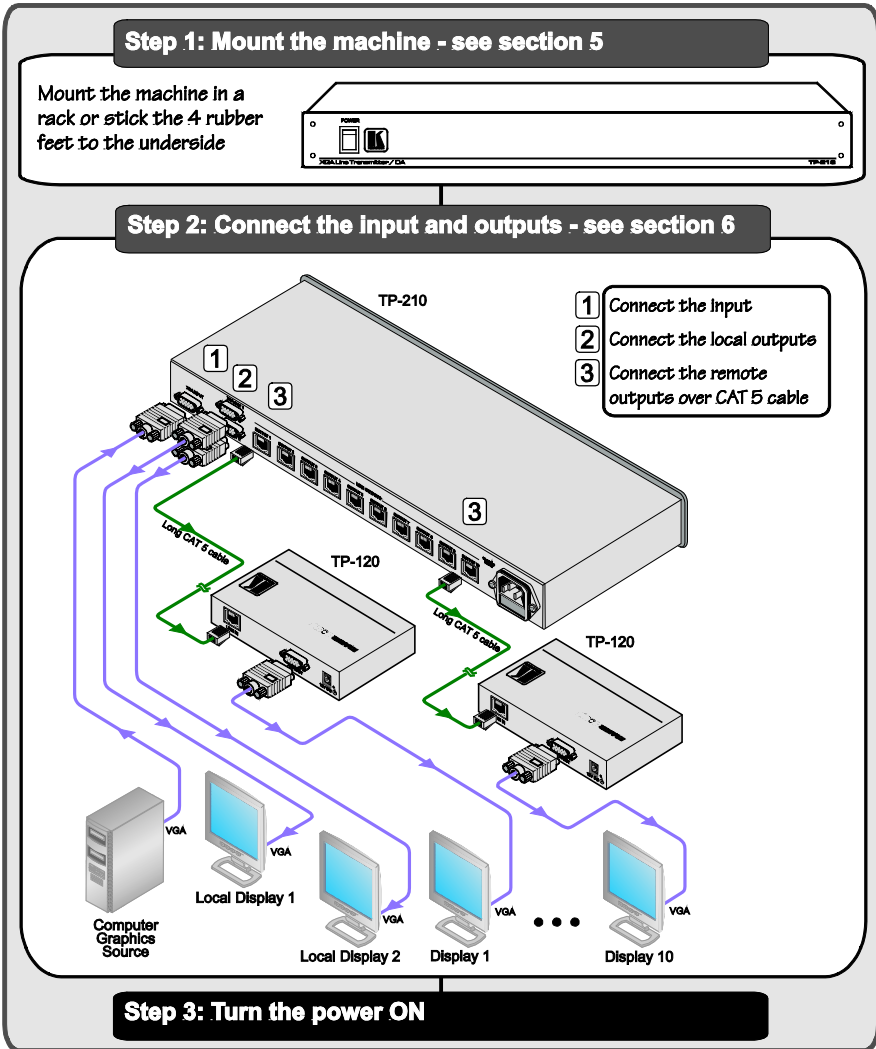
2 We recommend that you use only the power cord supplied with this device

3 Download up-to-date Kramer user manuals from our Web site at [www.KramerAV.com](http://www.KramerAV.com)

4 The complete list of Kramer cables is on our Web site at [www.KramerAV.com](http://www.KramerAV.com)

## 2.1 Quick Start

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



### 3 Overview

The **TP-210 XGA Line Transmitter** is a high-performance distribution amplifier for computer graphics video signals with resolutions up to UXGA/1080p/WUXGA. It takes one input and provides 10 twisted pair outputs plus two computer graphics video outputs on 15-pin HD connectors for local monitoring.

The **TP-210 XGA Line Transmitter** features:

- HDTV compatibility
- Maximum resolution – UXGA/1080p/WUXGA
- Two XGA outputs for local monitoring
- 10 CAT 5 outputs for simultaneous signal transmission to 10 locations, each with a transmission range of more than 300 feet (more than 100 meters<sup>1</sup>)
- H and V SYNC switches for changing the polarity of the signal

#### 3.1 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 used<sup>2</sup>. 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.

Each output on the **TP-210** can supply up to 500mA/12V, but no more than 2.5A in total (for all the outputs). Before using this feature, be sure that the **TP-210** is capable of providing the current requirements of the CAT 5 receivers.

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1 If the receiver is connected at a distance of over 50 meters, you need to connect a separate power supply for that receiver

2 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 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.

### 3.3 Recommendations for Achieving the Best Performance

- Use only good quality connection cables<sup>1</sup> 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-210** away from moisture, excessive sunlight and dust

## 4 Your TP-210 XGA Line Transmitter/DA

[Figure 1](#) and [Table 1](#) define the **TP-210**:

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

Your TP-210 XGA Line Transmitter/DA

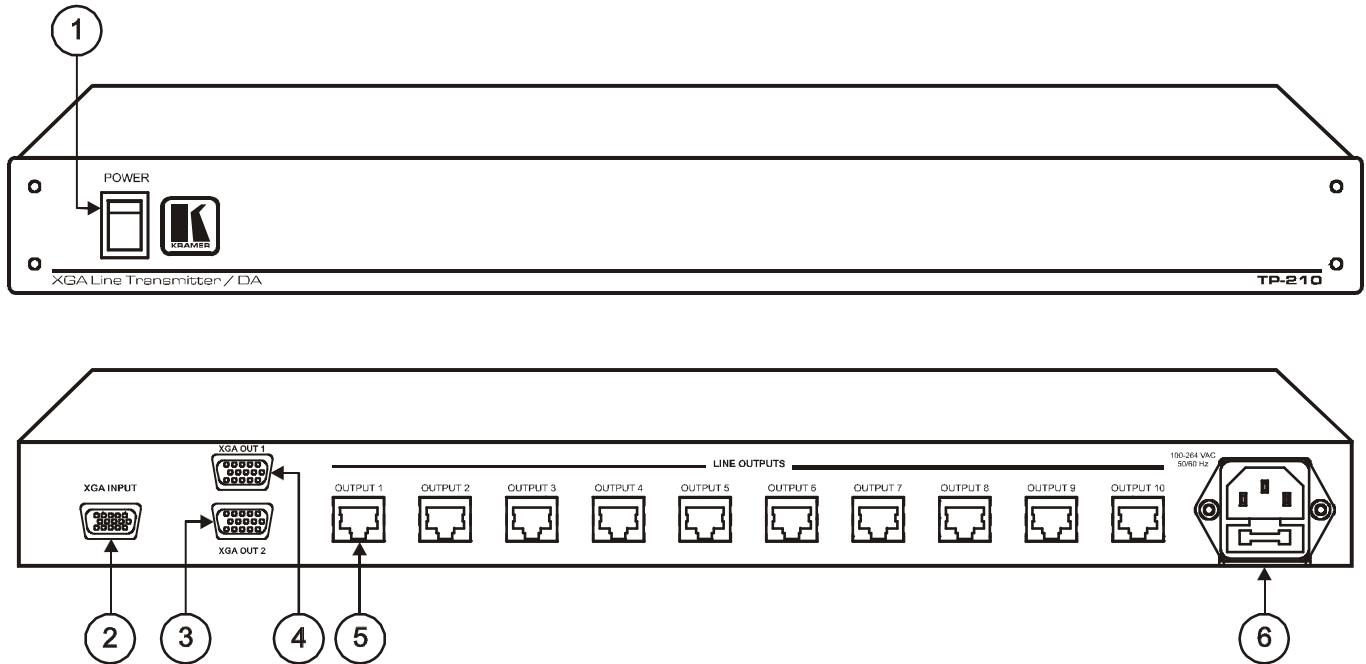


Figure 1: TP-210 XGA Line Transmitter/DA

Table 1: Front Panel TP-210 XGA Line Transmitter/DA Features

#	Feature	Function
1	POWER Switch	Illuminated switch for turning the unit ON or OFF
2	XGA INPUT 15-pin HD Connector	Connects to the video source
3	XGA OUT 2 15-pin HD Connector	Connects to the video acceptor 2
4	XGA OUT 1 15-pin HD Connector	Connects to the video acceptor 1
5	OUT CAT 5 Connectors	Connect to the LINE IN connectors of Line Receivers <sup>1</sup> (from 1 to 10)
6	Power Connector with FUSE	AC connector enabling power supply to the unit

The TP-210 underside is illustrated in [Figure 2](#) and defined in [Table 2](#):

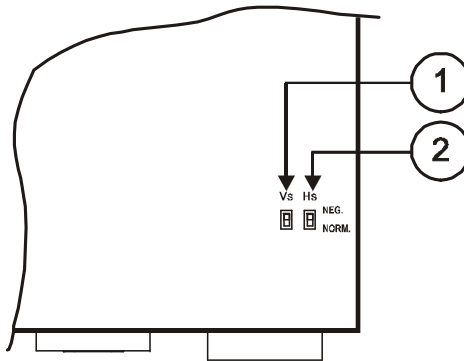


Figure 2: TP-210 XGA Line Transmitter/DA Underside View

Table 2: TP-210 XGA Line Transmitter/DA Underside Features

#	Feature	Function
1	VS Switch	To retain the polarity, slide the switch down <sup>2</sup> (to NORM.); to change the VS polarity to negative polarity, slide the switch up (to NEG.)
2	HS Switch	To retain the polarity, slide the switch down <sup>2</sup> (to NORM.); to change the HS polarity to negative polarity, slide the switch up (to NEG.)

<sup>1</sup> Using a cable with CAT 5 connectors at both ends

<sup>2</sup> By default, both switches are set to NORM



## 5 Installing the TP-210 XGA Line Transmitter/DA in a Rack

This section provides instructions for rack mounting the unit.

### Before Installing in a Rack

Before installing in a rack, be sure that the environment is within the recommended range:

Operating temperature range	+5° to +45° C (41° to 113° F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20° to +70° C (-4° to 158° F)
Storage humidity range	5 to 95% RHL, non-condensing



### CAUTION!

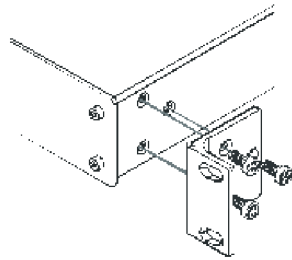
When installing on a 19" rack, avoid hazards by taking care that:

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:

- 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 available from: <http://www.kramerelectronics.com>

## 6 Connecting the TP-210 XGA Line Transmitter/DA

To connect the **TP-210**, as [Figure 3](#) illustrates, do the following:

1. Connect an XGA source (for example, a computer graphics source) to the XGA INPUT connector.
2. Connect the XGA OUT 1 XGA connector to an XGA acceptor (for example, local display 1).
3. Connect the XGA OUT 2 XGA connector to an XGA acceptor (for example, local display 2).
4. Connect<sup>1</sup> the 10 LINE OUTPUT CAT 5 connectors (from 1 to 10) to the LINE IN CAT 5 connectors of 10 XGA line receivers (for example, the Kramer<sup>2</sup> **TP-120**).
5. Connect the power cord<sup>3</sup> (not shown in [Figure 3](#)).

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<sup>1</sup> You do not have to connect all the LINE OUTPUTS

<sup>2</sup> Alternatively, you can use a different Kramer receiver, for example, the Kramer PT-120

<sup>3</sup> We recommend that you use only the power cord that is supplied with this machine

## Connecting the TP-210 XGA Line Transmitter/DA

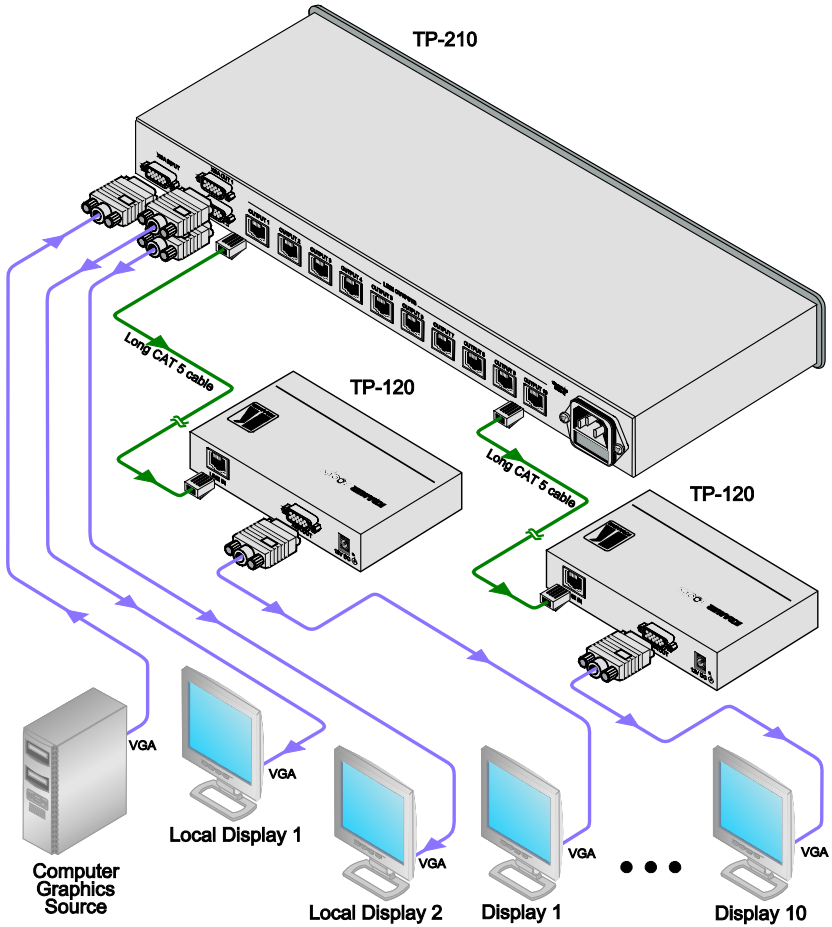


Figure 3: Connecting the TP-210 XGA Line Transmitter/DA

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

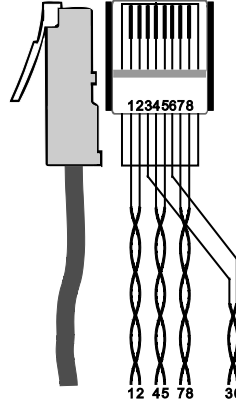
[Table 3](#) and [Figure 4](#) define the UTP CAT 5 PINOUT, using a straight pin to pin cable with RJ-45 connectors:

Table 3: CAT 5 PINOUT

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

Figure 4: CAT 5 PINOUT



## 7 Technical Specifications

[Table 4](#) defines the technical specifications<sup>1</sup>:

Table 4: Technical Specifications<sup>2</sup> of the TP-210

INPUTS:	1 XGA on an 15-pin HD (F) connector
OUTPUTS:	2 XGA on 15-pin HD (F) connectors; 10 CAT 5 on RJ-45 connectors
MAX. OUTPUT LEVEL:	1.9Vpp/1.6Vpp <sup>3</sup>
RESOLUTION:	Up to UXGA/1080p/WUXGA
DIFF. GAIN:	0.03%/2.5% <sup>3</sup>
DIFF. PHASE:	0.05 Deg/0.5 Deg <sup>3</sup>
K-FACTOR:	<0.05%/<0.05% <sup>3</sup>
S/N RATIO @5MHz:	73.6dB/68.5dB <sup>3</sup>
CONTROLS:	Level: -9.6dB to 2.4dB; EQ. @50MHz: 0 to 37.6dB, CAT 5 by TP-120
COUPLING:	AC/DC
POWER SOURCE:	100 – 240V AC, 50/60Hz, 54 VA
DIMENSIONS:	19" x 7" x 1U (W, D, H)
WEIGHT:	2.5kg (5.5lbs) approx.
ACCESSORIES:	Power cord

<sup>1</sup> Specifications for 60m of CAT 5 cable, unless otherwise specified

<sup>2</sup> Specifications are subject to change without notice

<sup>3</sup> For XGA/CAT 5 system (including TP-120)

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## 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](http://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.  
\* 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.KramerAV.com](http://www.KramerAV.com), where updates to this user manual may be found. We welcome your questions, comments and feedback.

	<p><b>Safety Warning:</b> Disconnect the unit from the power supply before opening/servicing.</p>
<p><b>Caution</b></p>	



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