Kramer Electronics, Ltd.

USER MANUAL

Models:

TP-100AXR, *PC/Audio Line Transmitter*

TP-200AXR, *PC/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.

Thank you for purchasing the Kramer **TP-100AXR** *PC/Audio Line Transmitter*, and/or **TP-200AXR** *PC/Audio Line Receiver* which are ideal for:

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

The package includes one or more of the following:

- **TP-100AXR**, **TP-200AXR**
- Power supply (12V DC)
- 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]

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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 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

The quick start charts summarize the basic setup and operation steps of the **TP-100AXR/TP-200AXR**.
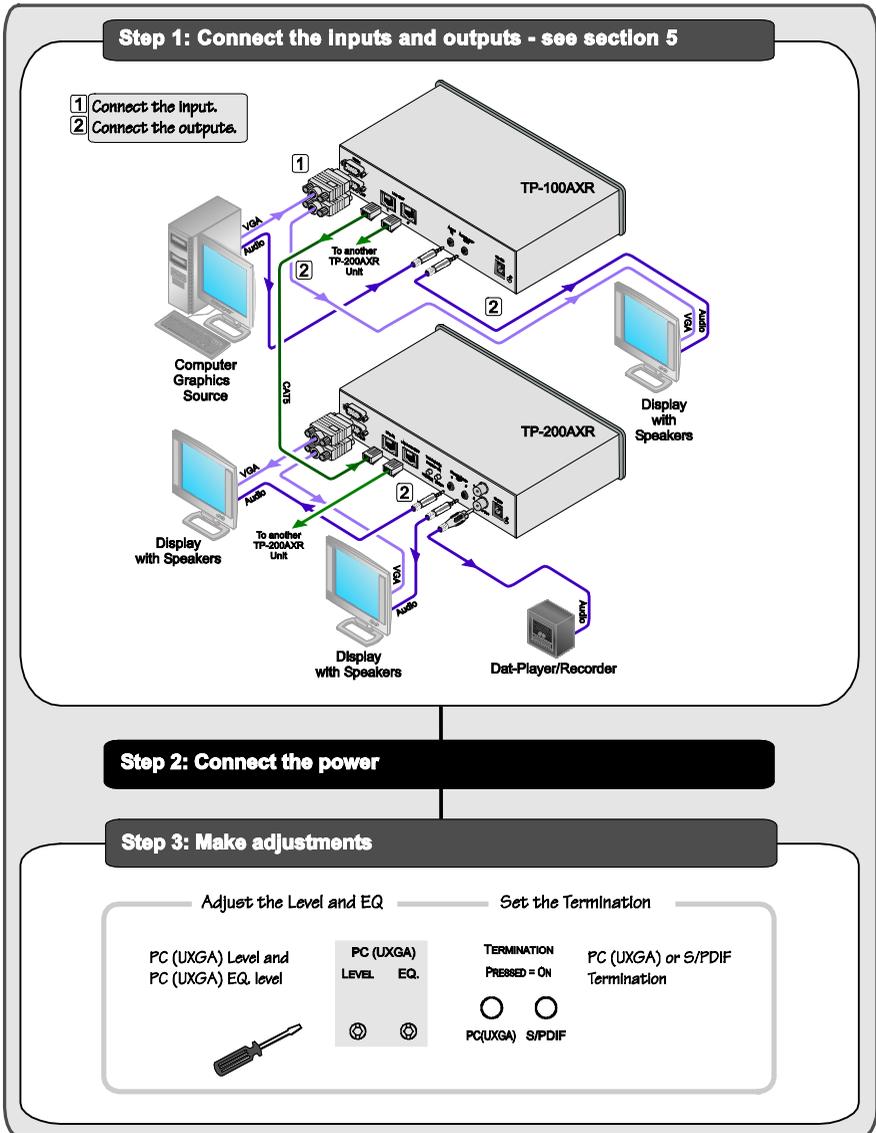
3   Overview

This section describes:

- The **TP-100AXR** *PC/Audio Line Transmitter*, see section
- The **TP-200AXR** *PC/Audio Line Receiver*, see section
- The power connect feature, see section
- Using shielded twisted pair (STP)/unshielded twisted pair (UTP), see section
- Recommendations for achieving the best performance, see section

3.1   Your TP-100AXR PC/Audio Line Transmitter

The **TP-100AXR** is a PC/audio stereo line transmitter that receives a PC signal and an unbalanced stereo analog audio signal and transmits them over CAT 5 cable to up to two **TP-200AXR** receivers, converting the unbalanced stereo analog audio signal to digital audio (S/PDIF) stream before transmitting, thus preserving the quality of the audio signal. In particular, the **TP-100AXR** features:

- Resolution up to and including WUXGA
- HDTV compatibility
- Looping inputs that allow connection of a local display and audio acceptor
- A transmission range of more than 300 ft (more than 100 meters), and a 20kHz audio bandwidth with an S/N ratio that exceeds 80dB on the same transmission range
- The Power Connect™ feature that can power both units over the CAT 5 cable
- 12V DC power

3.2   Your TP-200AXR PC/Audio Line Receiver

The **TP-200AXR** is a PC/audio line receiver that receives the coded CAT 5 signal transmitted by a **TP-100AXR**, decodes it and converts it to two PC, stereo analog and S/PDIF digital audio outputs. The **TP-200AXR**, with a **TP-100AXR**, allows an operation range of more than 300 ft. (more than 100 meters) over standard CAT 5 cable.

In addition, the **TP-200AXR**:

- Provides high resolution up to WUXGA
- Is HDTV compatible

- Has a looping CAT 5 input that allows the expansion of systems by daisy-chaining the receivers
- Can power or be powered by the transmitter over the same CAT 5 cable
- Can change the polarity of decoding H and V Sync for video
- Includes EQ. and level controls
- Is 12VDC fed

3.3 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 used[1]. 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.

3.4 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.

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

3.5 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 product 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 the unit
	Warning:	Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

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

4 Your TP-100AXR/TP-200AXR

This section defines the **TP-100AXR** *PC/Audio Line Transmitter* (see section 4.1), and the **TP-200AXR** *PC/Audio Line Receiver* (see section 4.2).

4.1 Your TP-100AXR PC/Audio Line Transmitter

Figure 1 and Table 1 define the **TP-100AXR**:

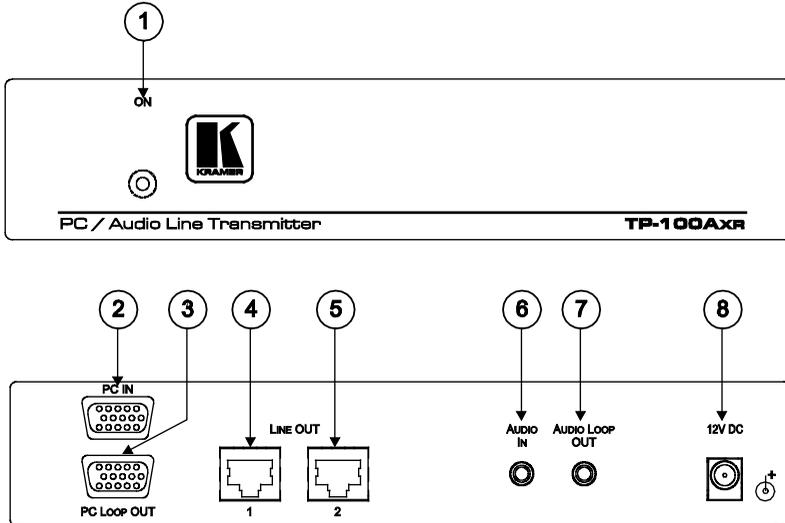*Figure 1: TP-100AXR PC/Audio Line Transmitter*

Table 1: TP-100AXR PC/Audio Line Transmitter Features

#	Feature	Function
1	*ON* LED	Illuminates when receiving power
2	*PC IN* 15-pin HD (F) Connector	Connects to the PC source
3	*PC LOOP OUT* 15-pin HD (F) Connector	Connects to a computer graphics acceptor
4	*LINE OUT 1* RJ-45 Connector	Connects to[1] the LINE IN RJ-45 connector on a **TP-200AXR** *PC/Audio Line Receiver*
5	*LINE OUT 2* RJ-45 Connector	Connects to[1] the LINE IN RJ-45 connector on a second **TP-200AXR** *PC/Audio Line Receiver*
6	*AUDIO IN* 3.5mm Mini Jack	Connects to the audio source
7	*AUDIO LOOP OUT* 3.5mm Mini Jack	Connects to an audio acceptor
8	*12V DC*	+12V DC connector for powering the unit

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

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4.2   Your TP-200AXR PC/Audio Line Receiver

Figure 2 and Table 2 define the **TP-200AXR** *PC/Audio Line Receiver*:

Figure 2: TP-200AXR PC/Audio Line Receiver
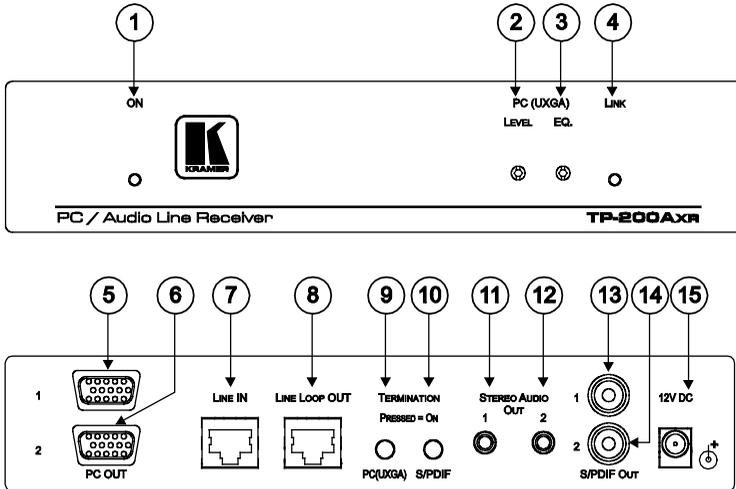
Table 2: TP-200AXR PC/Audio Line Receiver Features

#	Feature	Function
1	*ON* LED	Illuminates when receiving power
2	*PC (UXGA) LEVEL* Trimmer	Adjusts[2] the output signal level
3	*PC (UXGA) EQ.*[1] Trimmer	Adjusts[2] the cable compensation equalization level
4	*LINK* LED	Illuminates when receiving the correct input signal
5	*PC OUT 1* 15-pin HD (F) Connector	Connects to the first PC acceptor
6	*PC OUT 2* 15-pin HD (F) Connector	Connects to the second PC acceptor
7	*LINE IN* RJ-45 Connector	Connects to[3] the **TP-100AXR**
8	*LINE LOOP OUT* RJ-45 Connector	Connects to[3] another **TP-200AXR**
9	*TERMINATION PC(UXGA)* Pushbutton	Press IN to terminate the PC (UXGA) connection
10	*TERMINATION S/PDIF* Pushbutton	Press IN to terminate the S/PDIF connection
11	*STEREO AUDIO OUT 1* 3.5mm Mini Jack	Connects to the first analog audio acceptor
12	*STEREO AUDIO OUT 2* 3.5mm Mini Jack	Connects to the second analog audio acceptor
13	*S/PDIF OUT 1* RCA connector	Connects to the first digital audio acceptor
14	*S/PDIF OUT 2* RCA connector	Connects to the second digital audio acceptor
15	*12V DC*	+12V DC connector for powering the unit

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1 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

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

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

5 Connecting the PC/Audio Line Transmitter/Receiver

You can use the **TP-100AXR** and **TP-200AXR** to configure a PC/Audio Line-to-Twisted Pair Transmitter and Receiver system.

- To connect a transmitter/ receiver pair, see section 5.1
- To connect multiple devices, see section 5.2

5.1 Connecting a Transmitter/Receiver Pair

To connect the **TP-100AXR** *PC/Audio Line Transmitter* with the **TP-200AXR** *PC/Audio Line Receiver*, as the example in Figure 3 illustrates, do the following[1]:

1. On the **TP-100AXR**, connect a PC source (for example, a laptop's graphics card) to the PC INPUT 15-pin HD (F) connector and the PC audio source[2] to the AUDIO IN 3.5mm mini jack[3].

2. On the **TP-200AXR**, connect the PC OUT 15-pin HD (F) connector to the PC acceptor (for example, a display), and connect the AUDIO OUT S/PDIF RCA connector to the digital audio acceptor (for example, an AV Receiver), and the ANALOG 3.5mm mini jack to the analog audio acceptor (for example, a stereo audio recorder).

3. Connect the LINE OUTPUT RJ-45 connector on the **TP-100AXR** to the LINE IN RJ-45 connector on the **TP-200AXR**, via UTP cabling (the range can exceed 300ft (>100m)), see section 5.3.

4. Connect the 12V DC power adapters to the power sockets[4] and connect the adapters to the mains electricity on both[5] the **TP-100AXR** and the **TP-200AXR**.
   The signal from the PC source is transmitted via CAT 5 cable, decoded and converted at the PC OUT 15-pin HD (F) connector to the PC acceptor.

5. On the **TP-200AXR,** adjust[6] the video output signal level and/or cable compensation equalization level and make sure the termination pushbuttons are pressed IN.

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1 Switch OFF the power on each device before connecting it to your Kramer product. After connecting your product, switch on its power and then switch on the power on each device

2 Any audio source can be used. It does not have to come from the PC

3 Using, for example, a Kramer C-GMA/GMA cable (VGA 15-pin HDM +audio jack to VGA 15-pin HDM +audio jack). Not supplied. The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

4 Switch OFF the power on each device before connecting it to your Kramer product. After connecting your product, switch on its power and then switch on the power on each device

5 Alternatively, you can connect the power to one unit only

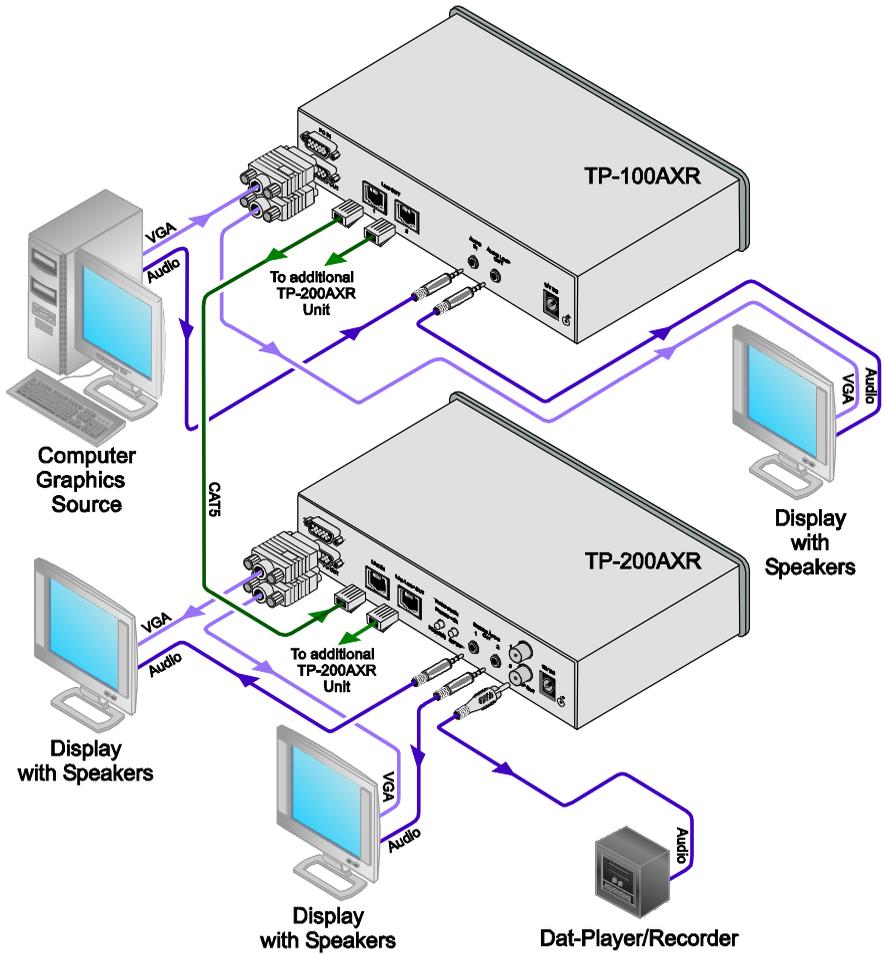6 Use a screwdriver to carefully rotate the trimmer, adjusting the appropriate level

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Figure 3: Connecting the PC/Audio Line Transmitter/Receiver System

5.2   Connecting Multiple Devices

To connect multiple units in a chain as shown in <u>Figure 4</u>, do the following:

1. Connect the **TP-100AXR** to the source, as explained in section <u>5.1</u>.

2. Connect the LINE OUT 1 RJ-45 connector on the **TP-100AXR** to the LINE IN RJ-45 connector on the first **TP-200AXR**.

3. Connect the LINE LOOP OUT RJ-45 connector on the first **TP-200AXR** to the LINE IN on the next **TP-200AXR**.

4. Repeat this connection for all remaining units in the line.

5. On the last **TP-200AXR** press in the termination pushbuttons. Do not terminate the devices in the middle of the line.

6. A similar chain can be connected to the LINE OUT 2 RJ-45 connector on the **TP-100AXR**.

7. Connect the 12V DC power adapters to the power sockets and connect the adapters to the mains electricity on all the units[1].

Notes:

•   Multiple **TP-100AXR** units can be connected on a UTP line no longer than 200m

•   The number of units connected depend on the required line quality

•   The lines do not have to be of equal length or configuration

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1 Alternatively, you can connect the power supply to some of the units so that others are powered via the Power Connect feature (see section <u>3.3</u>). Feeding more than three units from each power supply is not recommended. As an example, the system in <u>Figure 4</u>, could be powered by two power supplies
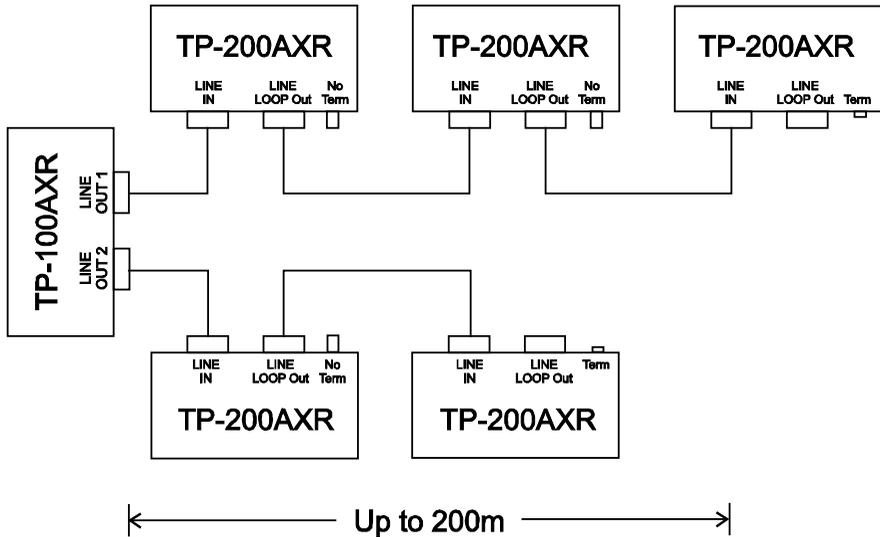
Figure 4: Connecting Multiple Devices

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

Figure 5: 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
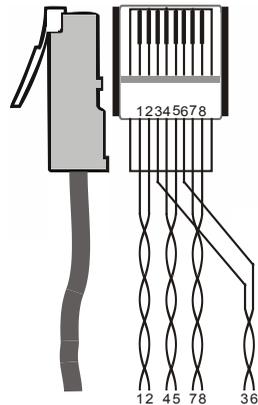
6   Technical Specifications

The **TP-100AXR, TP-200AXR** technical specifications[1] are shown in
[Table 4](#):

Table 4: TP-100AXR, TP-200AXR Technical Specifications

	TP-100AXR	**TP-200AXR**
INPUTS:	1 VGA on a 15-pin HD connector 1 analog audio on a 3.5mm mini jack	1 RJ-45 LINE IN connector
OUTPUTS:	2 RJ-45 OUT connectors 1 VGA loop on a 15-pin HD connector 1 analog audio loop out on a 3.5mm mini jack	1 RJ-45 line loop out 2 VGA on 15-pin HD connectors 2 S/PDIF on RCA connectors 2 audio analog 3.5mm mini jacks
MAX. OUTPUT LEVEL:	–	Video: 1.8V, audio: 2.9V
CONTROLS:	–	Level: –7dB to +4dB, EQ.: 0dB to +16dB (60m) @ 50MHz
RESOLUTION:	Up to WUXGA	
BANDWIDTH (-3dB)[2]:	20kHz	
S/N RATIO:	Video: 60dB; Audio: <89dB	
TOTAL GAIN:	Analog/analog: 0dB Analog/SPDIF: –12dBFS	
COUPLING:	AC	
THD+N:	Audio: 0.25%	
POWER SOURCE:	12V DC, 860mA	12V DC, 860mA
DIMENSIONS:	21.5cm x 16.3cm x 4.4cm (8.6" x 7" x 1.8") W, D, H	
WEIGHT:	1.1kg (2.4lbs)	
ACCESSORIES:	Power supply	
OPTIONS:	RK-1 19" rack mount adapter	

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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)

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

Caution