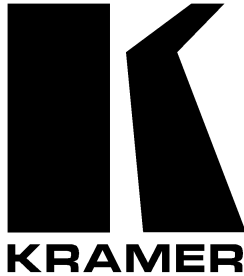


Kramer Electronics, Ltd.



USER MANUAL

Model:

TP-210

XGA Line Transmitter / DA

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1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 500-plus different models now appear in 8 Groups¹, which are clearly defined by function.

Congratulations on purchasing your Kramer **TP-210 XGA Line Transmitter /DA**. This product is ideal for utilizing existing CAT5 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
- 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: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

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

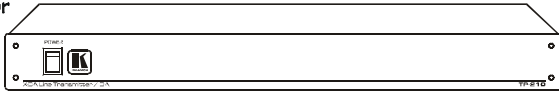
3 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com>

2.1 Quick Start

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

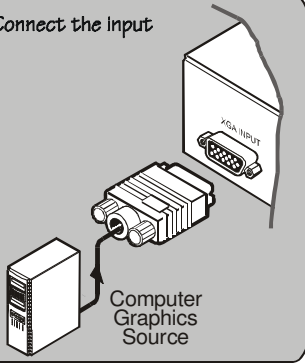
Step 1: Mount the machine - see section 5

Mount the machine in a rack or stick the 4 rubber feet to the underside

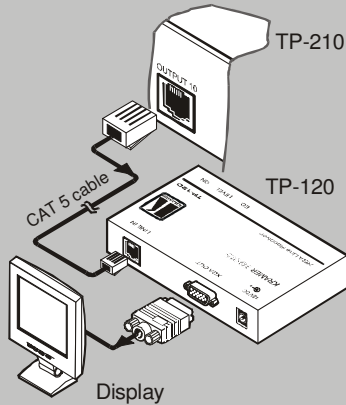


Step 2: Connect the input and outputs - see section 6

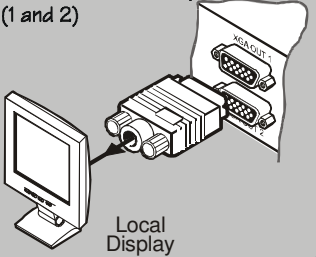
Connect the input



Connect the outputs (from 1 to 10) to line receivers (TP-120), and connect the line receivers to displays



Connect the local displays (1 and 2)



YOU DO NOT HAVE TO CONNECT ALL THE OUTPUTS

Step 3: Turn the power ON

3 Overview

The **TP-210 XGA Line Transmitter / DA** is a 1:2 XGA and 1:10 CAT5 transmitter distribution amplifier that receives an XGA signal¹ and transmits it over 10 CAT5 cables to appropriate receivers to create a multimode XGA/CAT5 distribution system.

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

- Features a resolution up to UXGA
- Has two XGA outputs for local monitoring
- Has 10 CAT5 outputs for simultaneous signal transmission to 10 locations, each with a transmission range of more than 300 ft. (more than 100 meters²)
- Includes H and V SYNC switches for changing the polarity of the signal

3.1 Power Connect Feature

The Power Connect feature lets you power a transmitter / receiver system by connecting just one power adapter— to either the transmitter or the receiver. The other unit is fed via the cable connecting between the transmitter/receiver. The Power Connect feature applies as long as the cable can carry power. The distance does not exceed 50 meters on standard CAT5 cable, for longer distances, heavy gauge cable should be used³.

For a CAT5 cable exceeding a distance of 50 meters, 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 CAT5 receivers.

1 The terminology XGA is used throughout this manual, where this implies any RGBHV signal on an HD15 connector having a resolution from VGA up to XGA

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

3 CAT5 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)

The decision whether to use shielded twisted pair (STP) cable or unshielded twisted pair (UTP) cable depends on the nature of the application.

It is recommended that in applications with high interference, shielded twisted pair (STP) cable will give better results. However, the shield itself does create a capacitance that degrades the frequency response of the machines. For shorter distances, of 50m or so, shielded twisted pair (STP) cable is preferred because it provides protection from interference (degradation is non-apparent).

For a long-range application, unshielded twisted pair (UTP) cable is preferred. However, the unshielded twisted pair (UTP) cable should be installed far away from electric cables, motors etc., which are prone to create electrical interference.

3.3 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding 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 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**:

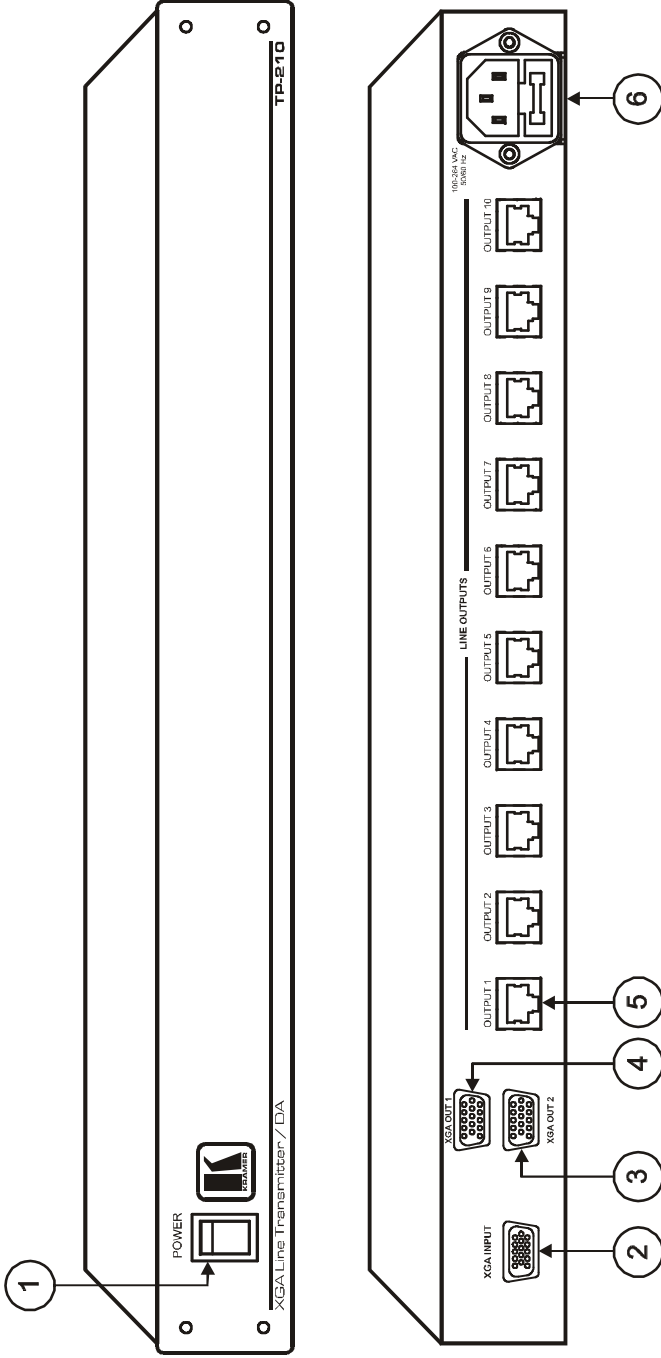


Figure 1: TP-210 XGA Line Transmitter / DA

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 HD15 Connector	Connects to the video source
3	XGA OUT 2 HD15 Connector	Connects to the video acceptor 2
4	XGA OUT 1 HD15 Connector	Connects to the video acceptor 1
5	OUT CAT5 Connectors	Connect to the LINE IN connectors on Line Receivers ¹ (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:

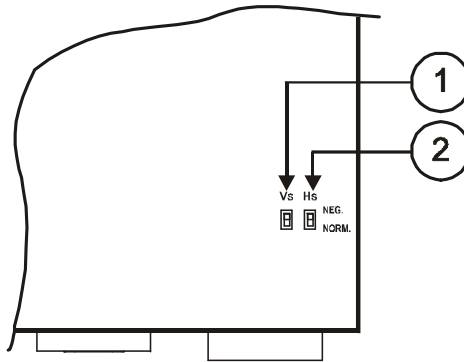


Figure 2: TP-210 Underside View

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

#	Feature	Function
1	VS Switch	Slide the switch down ² (to NORM.) to retain the polarity; slide the switch up (to NEG.) to change the VS polarity to negative polarity
2	HS Switch	Slide the switch down ² (to NORM.) to retain the polarity; slide the switch up (to NEG.) to change the HS polarity to negative polarity

¹ Using a cable with CAT5 connectors at both ends

² By default, both switches are set to NORM

5 Installing the TP-210 on a Rack

This section describes what to do before installing on a rack and how to rack mount.

Before Installing on a Rack

Before installing on a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5 to +45 Deg. Centigrade
Operating humidity range	5 to 65% RHL, non-condensing
Storage temperature range	-20 to +70 Deg. Centigrade
Storage humidity range	5 to 95% RHL, non-condensing



CAUTION!!

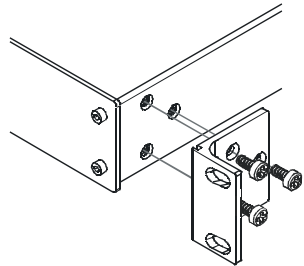
When installing on a 19" rack, avoid hazards by taking care that:

- 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 that:

- **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 (you can download it at: <http://www.kramerelectronics.com>)

6 Connecting the TP-210

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. Connect¹ the 10 LINE OUTPUT CAT5 connectors (from 1 to 10) to the LINE IN CAT5 connectors of 10 XGA line receivers (for example, the Kramer² **TP-120**).
5. Connect the power cord³ (not shown in Figure 3).

¹ You do not have to connect all the LINE OUTPUTS

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

³ We recommend that you use only the power cord that is supplied with this machine

Connecting the TP-210

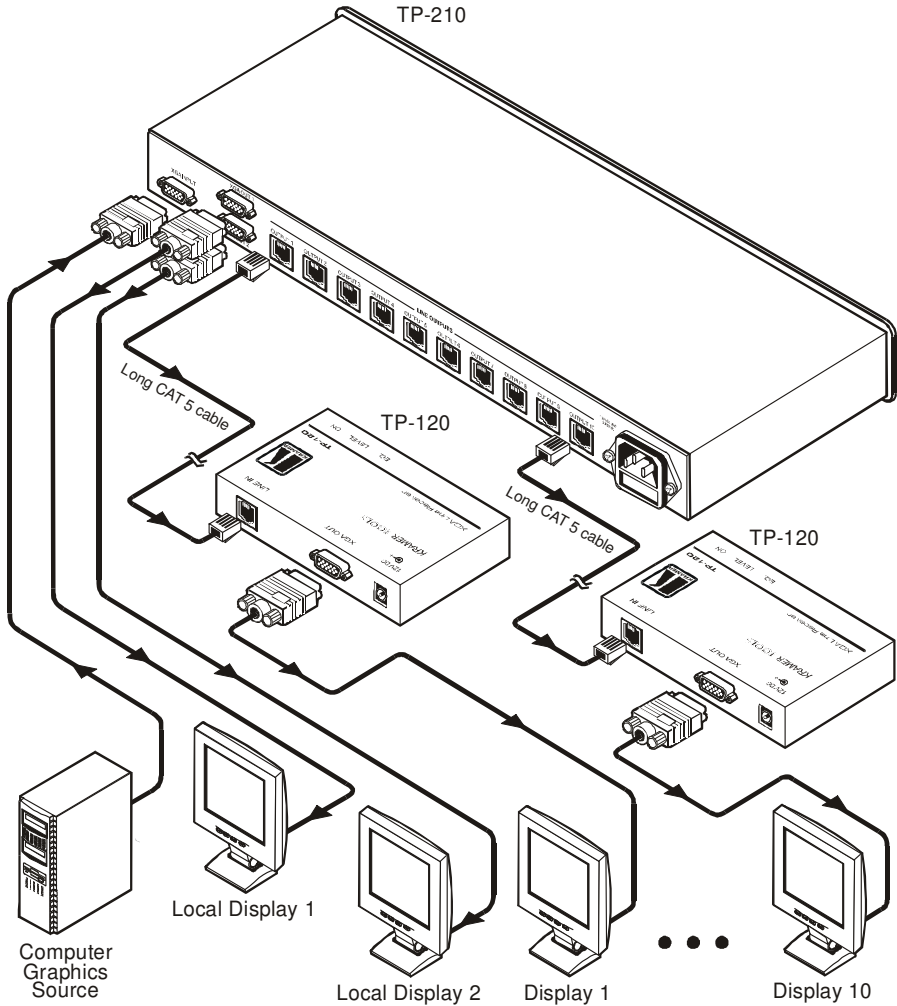


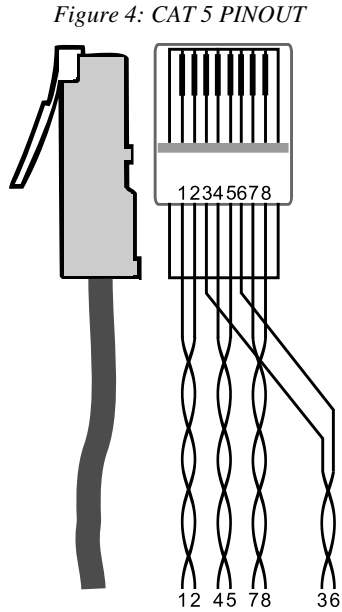
Figure 3: Connecting the TP-210 XGA Line Transmitter / DA

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

Table 3 and Figure 4 define the 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 2		3 and 6	
Pair 3		1 and 2	
Pair 4		7 and 8	



7 Technical Specifications

Table 4 defines the technical specifications¹:

Table 4: Technical Specifications² of the TP-210

INPUTS:	1 XGA on an HD15F connector
OUTPUTS:	2 XGA on HD15F connectors 10 CAT5 on RJ-45 connectors
MAX. OUTPUT LEVEL:	1.9Vpp / 1.6Vpp ³
RESOLUTION:	Up to UXGA
DIFF. GAIN:	0.03% / 2.5% ³
DIFF. PHASE:	0.05 Deg / 0.5 Deg ³
K-FACTOR:	<0.05% / <0.05% ³
S/N RATIO @5MHz:	73.6dB / 68.5dB ³
CONTROLS:	Level: -9.6dB to 2.4dB; EQ. @50MHz: 0 to 37.6dB, CAT5 by TP-120
COUPLING:	AC/DC
POWER SOURCE:	100 – 240 VAC, 50/60Hz, 54 VA
DIMENSIONS:	19-inch (W), 7-inch (D), 1U (H)
WEIGHT:	2.5kg. (5.5lbs.) approx.
ACCESSORIES:	Power cord

1 Specifications for 60m of CAT5 cable, unless otherwise specified

2 Specifications are subject to change without notice

3 For XGA / CAT5 system (including TP-120)

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.
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.



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.



Kramer Electronics, Ltd.

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P/N: 2900-000199 REV 2