

Kramer Electronics, Ltd.



USER MANUAL

Model:

PT-100

XGA Line Extender

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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 groups¹ that are clearly defined by function.

Thank you for purchasing your Kramer PicoTOOLS™ **PT-100**, *XGA Line Extender* which is ideal for:

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

The package includes:

- **PT-100**, *XGA Line Extender*
- Power adapter (12V DC)
- 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

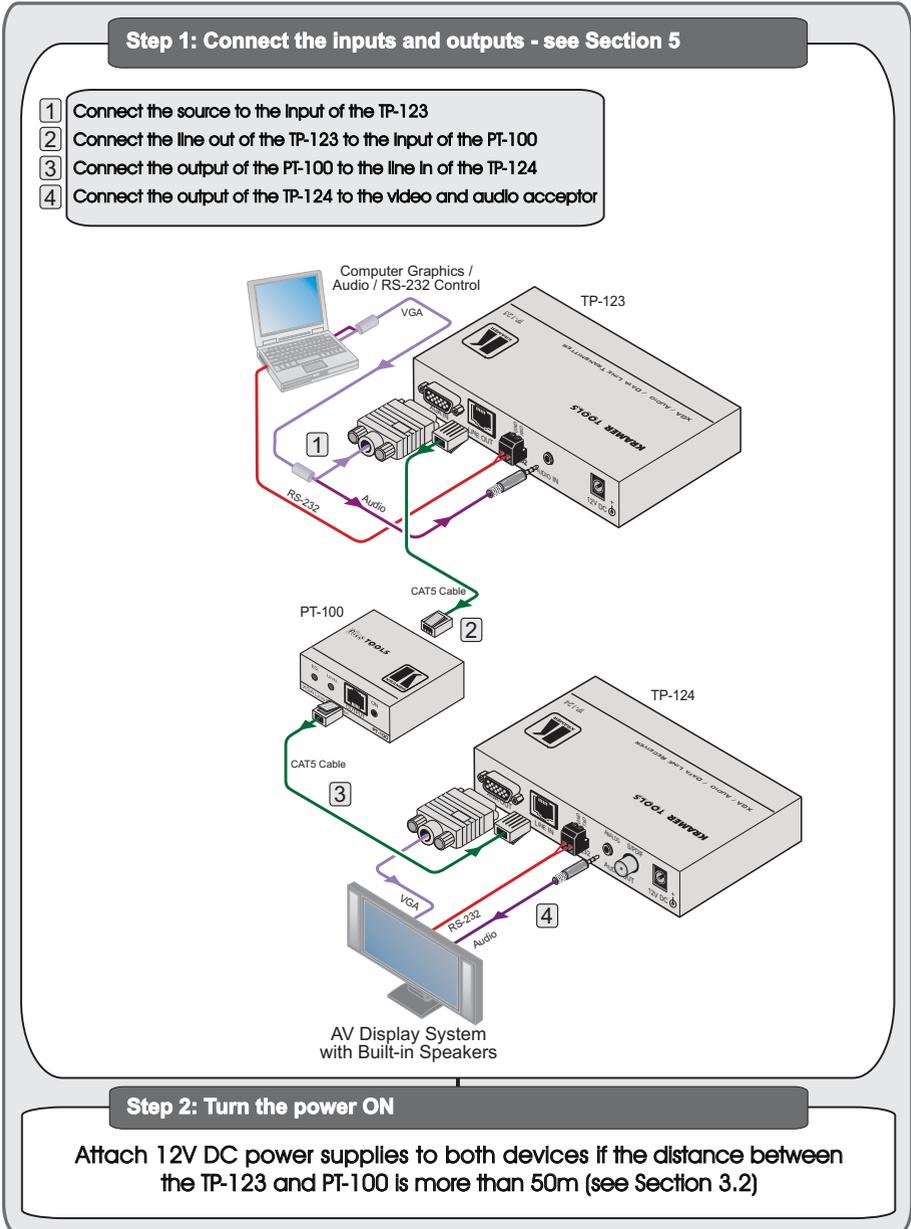
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Sealers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity;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

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

3 The complete list of Kramer cables is available from <http://www.kramerelectronics.com>

2.1 Quick Start

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



3 Overview

The **PT-100 XGA Line Extender** is a high-performance TP (Twisted Pair) line extender that transmits a computer graphics signal, an audio signal, unidirectional RS-232 data and 12V DC power over TP cable. The **PT-100** lets you adjust the line level and equalization. This makes it ideal for connecting between sources and a router where it can be used to match the level each channel independently (see [Figure 2](#)).

The **PT-100** has a transmission range of more than 100m (320ft) over UTP cabling providing a total range of more than 200m (640ft) between the TP transmitter and receiver.

This section describes:

- Using Shielded Twisted Pair/Unshielded Twisted Pair cabling (see [Section 3.1](#))
- The Power Connect™ feature (see [Section 3.2](#))
- Recommendations for achieving the best performance (see [Section 3.3](#))

3.1 Shielded Twisted Pair/Unshielded Twisted Pair

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.

3.2 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 used¹. 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

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

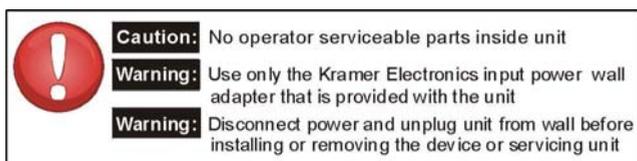
of the STP cable must be connected to a ground terminal on the units at both ends (use the ground terminal of the power supply connection if necessary).

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

3.3 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables¹ 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 transmitters away from moisture, excessive sunlight and dust



4 Defining the PT-100 XGA Line Extender

[Figure 1](#) and [Table 1](#) define the **PT-100**, XGA Line Extender.

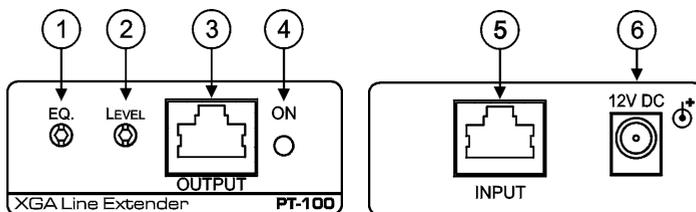


Figure 1: PT-100, XGA Line Extender Front and Rear Panels

Table 1: PT-100, XGA Line Extender Front and Rear Panel Features

#	Feature	Function
1	EQ Trimmer	Turn to adjust the line equalization
2	LEVEL Trimmer	Turn to adjust the line level
3	OUTPUT RJ-45 TP Connector	Connect to a compatible TP receiver (for example, VS-169TP or TP-122)
4	ON LED	Lights green when the device receives power
5	INPUT RJ-45 TP Connector	Connect to a compatible TP transmitter (for example, TP-121 or TP-125)
6	12V DC Power Connector	Connect to the 12V DC power adapter, center pin positive

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

5 Connecting the PT-100 XGA Line Extender

The **PT-100** can be used to compensate for varying TP cable lengths by adjusting the line level and equalization as shown in the following example.

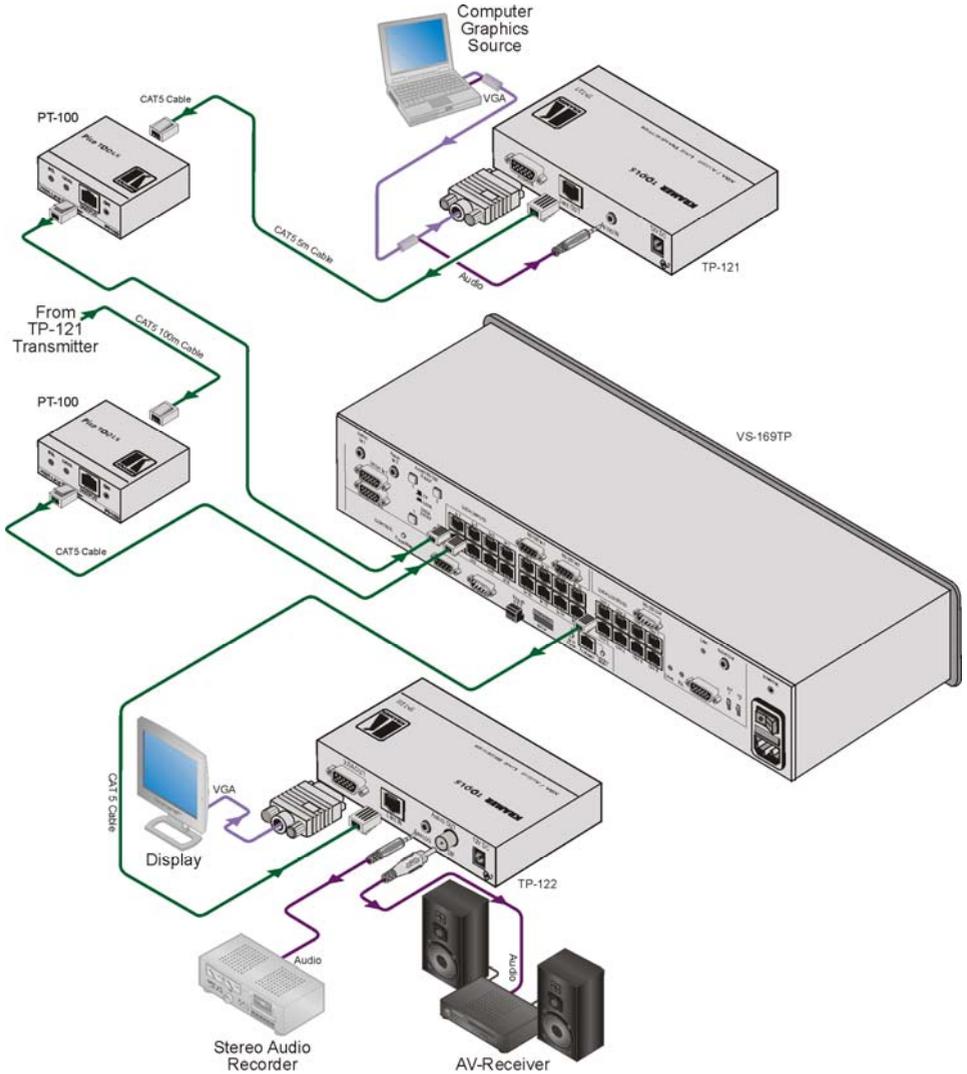


Figure 2: Connecting the PT-100 XGA Line Extender

To connect the PT-100 as a TP line extender as part of a system with line equalization and level control, as illustrated in the example in [Figure 2](#):

1. Connect the video and audio sources (for example, computer graphics source) to the first **TP-121**.
2. Connect the first **TP-121** transmitter (must have the power supply attached) to the input of the first **PT-100** using TP cabling.
Note: In this example, the cable is 5m (16ft) long and therefore no power supply to the **PT-100** is required (see [Section 3.2](#)).
3. Connect the output of the first **PT-100** to the **VS-169TP** Input 1 using TP cabling.
4. Connect the second **TP-121** transmitter to the input of the second **PT-100** using TP cabling.
Note: In this example, the cable is 100m (320ft) long and therefore a power supply to the **PT-100** is required (not shown, see [Section 3.2](#)).
5. Connect the output of the second **PT-100** to the **VS-169TP** Input 3 using TP cabling.
6. Connect the **VS-169TP** Output 1 to the input of the **TP-122** receiver using TP cabling.
7. Connect the output of the **TP-122** to the display and to the audio acceptors (for example, display, stereo audio recorder and AV receiver).
8. Using the Level and Equalization controls on the front of both **PT-100** devices, adjust the level and equalization so that the inputs to the **VS-169TP** are matched. Use the front panel switches to switch each input to the local output of the **VS-169TP** to assist in matching levels.

5.1 Connecting the PT-100 XGA Line Extender as a Simple Line Extender

The **PT-100** can be connected as a simple TP line extender as shown in [Figure 3](#). In this example, the **PT-100** is used to extend the distance (to 200m) between the **TP-123** and **TP-124** transmitter and receiver pair.

To connect the PT-100 as a simple line extender as illustrated in the example in [Figure 3](#):

1. Connect the computer graphics, audio and RS-232 data sources (for example, computer graphics source) to the input of the **TP-123**.
Note: The RS-232 data link is unidirectional.
2. Connect the output of the **TP-123** to the input of the **PT-100** using TP cabling¹.
3. Connect the output of the **PT-100** to the input of the **TP-124** using TP cabling¹.

¹ Up to 100m (320ft) away

4. Connect the outputs of the **TP-124** to the video, audio and RS-232 data acceptors (for example, an AV display system).
5. Connect the 12V DC power adapter to the power socket on the **PT-100** and connect the adapter to the mains electricity.

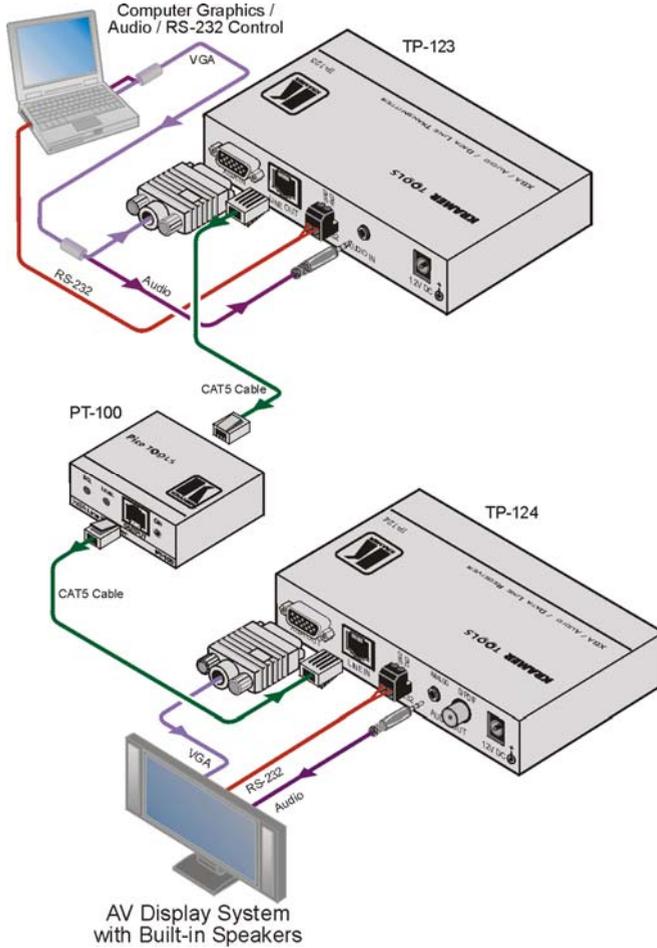


Figure 3: Connecting the PT-100 as a Simple TP Line Extender

6 Wiring the Twisted Pair Connectors

When using STP cable, connect/solder the cable shield to the RJ-45 connector shield. [Table 2](#) and [Figure 4](#) define the TP pinout using a straight pin-to-pin cable with RJ-45 connectors.

Table 2: TP Connector 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	

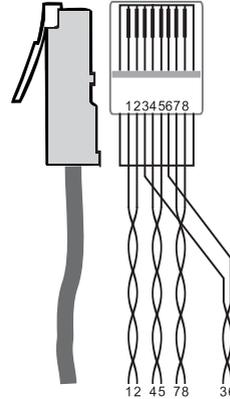


Figure 4: TP Connector

7 Technical Specifications

[Table 3](#) includes the technical specifications¹ of the **PT-100, XGA Line Extender**.

Table 3: Technical Specifications of the PT-100 XGA Line Extender

INPUT:	1 CAT 5 IN on an RJ-45 connector
OUTPUT:	1 CAT 5 OUT on an RJ-45 connector
RESOLUTION:	Up to WUXGA and 1080p
S/N RATIO:	VIDEO: 58dB unweighted, 68dB @5MHz weighted Audio: <-80dB
CONTROLS:	Equalization trimmer Level trimmer
COUPLING:	AC
POWER SOURCE:	12V DC 900mA
DIMENSIONS:	6.2cm x 5cm x 2.4cm (2.44" x 1.97" x 0.94") W, D, H
WEIGHT:	0.2kg (0.44lbs) approx.
ACCESSORIES:	Power supply, rack ears
OPTIONS:	RK-4PT, RK-1TPT, RK-1T2PT 19" rack adapter

¹ Specifications are subject to change without notice

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 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 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.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com

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