



KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

TP-202
UXGA Line Transceiver/DA

P/N: 2900-000226 Rev 5

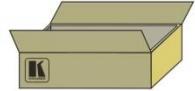


TP-202 Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- TP-202** UXGA Line Transceiver/DA
- 4 Rubber feet
- 1 Power supply (12V DC)
- 1 Quick Start sheet



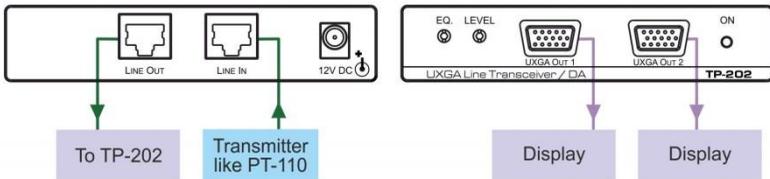
Save the original box and packaging materials in case you need to return your **TP-202** for service.

Step 2: Install the TP-202

Attach the rubber feet and place on a table or mount the **TP-202** in a rack (using an optional **RK-3T** rack mount).

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **TP-202**.



Always use Kramer high-performance cables for connecting AV equipment to the **TP-202**.

Step 4: Connect the power

Connect the 12V DC power adapter to the **TP-202** and plug the adapter into the mains electricity.



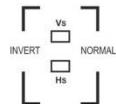
Step 5: Operate the TP-202

Adjust the Level and Equalization as necessary using the trimmers on the front panel.

EQ. LEVEL



Set the sync polarity on the underside switches.



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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 video, audio, presentation, and broadcasting professionals 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 that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; 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 and GROUP 11: Sierra Products.

Congratulations on purchasing your Kramer **TP-202 UXGA Line Transceiver/DA**, which is ideal for the following typical applications:

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

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



Go to <http://www.kramerelectronics.com> to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **TP-202** away from moisture, excessive sunlight and dust



This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions



Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at <http://www.kramerelectronics.com/support/recycling/>.

3 Overview

The **TP-202** is a twisted pair branching receiver for computer graphics video signals with resolutions from VGA up to UXGA and higher or HDTV signals. It takes a twisted pair signal and converts it into a computer graphics video signal or HDTV signal available on two 15-pin HD outputs, and simultaneously re-transmits the original twisted pair signal to another compatible receiver.

The **TP-202 UXGA Line Transceiver/DA** features:

- A transmission range of more than 300ft (more than 100m)
- HD signal reception (high-definition resolutions: 480p, 576p, 720p, 1080i and 1080p)
- Two UXGA outputs on 15-pin HD connectors
- EQ. and LEVEL controls
- Selectable polarity for decoding H and V Sync for UXGA graphics
- A 12V DC power supply and it can power or be powered by the receiver over the same CAT 5 cable
- A CAT 5 output for transmitting the signal to an additional receiver

3.1 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 (164ft) on standard CAT 5 cable. For longer distances, use heavier gauge cable (TP cable is still suitable for the video/audio transmission, but not for feeding the power at these distances). For units that 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 that 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 TP cable exceeding a distance of 50m, separate power supplies should be connected to the transmitter and to the receiver simultaneously.

3.2 Shielded Twisted Pair (STP) / Unshielded Twisted Pair (UTP)

We recommend that you use Shielded Twisted Pair (STP) cable, and stress that the compliance to electromagnetic interference was tested using 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.

In cases where there is skewing, our Unshielded Twisted Pair (UTP) skew-free cable, Kramer **BC-XTP**, may be advantageous, and UTP cable might also be preferable for long range applications. In any event when using UTP cable, it is advisable to ensure that the cable is installed far away from electric cables, motors and so on, which are prone to create electrical interference.

3.3 Defining the TP-202 UXGA Line Transceiver/DA

This section defines the **TP-202**.

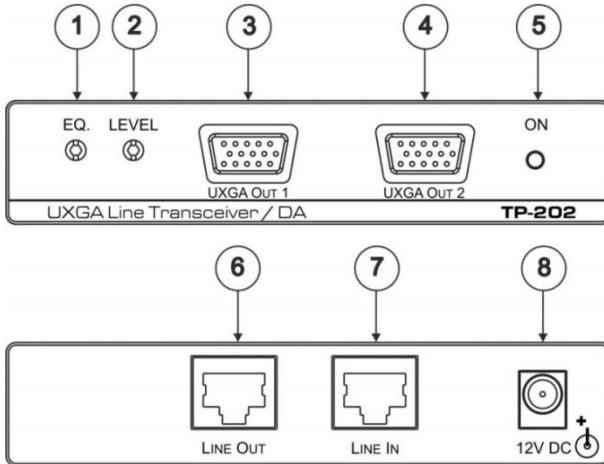


Figure 1: TP-202 UXGA Line Transceiver/DA

#	Feature	Function
1	EQ. Trimmer	Adjust the cable compensation equalization level Insert a screwdriver into the small hole and carefully rotate it, to trim the appropriate level
2	LEVEL Trimmer	Adjust the output signal level
3	UXGA OUT 1 15-pin HD Connector	Connect to the first UXGA acceptor
4	UXGA OUT 2 15-pin HD Connector	Connect to the second UXGA acceptor
5	ON LED	Illuminates when receiving power
6	LINE OUT RJ-45 Connector	Connect to the LINE IN connector on an additional TP-202 Using a UTP CAT 5 cable with RJ-45 connectors at both ends (the PINOUT is defined in 4.1)
7	LINE IN RJ-45 Connector	Connect to the LINE OUT RJ-45 connector on the transmitter For example, the PT-110 , as Figure 3 illustrates
8	12V DC	+12V DC connector for powering the unit

[Figure 2](#) defines the **TP-202** underside panel:

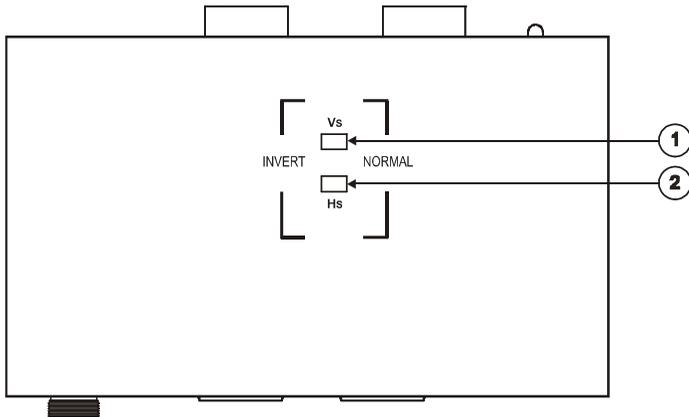


Figure 2: TP-202 (Underside Panel)

#	Feature	Function
1	VS Switch	Slide the switch to NORMAL to retain the polarity Slide the switch to INVERT to invert the VS polarity By default, both switches are set to NORMAL
2	HS Switch	Slide the switch to NORMAL to retain the polarity Slide the switch to INVERT to invert the HS polarity By default, both switches are set to NORMAL

4 Connecting the TP-202



Always switch off the power to each device before connecting it to your **TP-202**. After connecting your **TP-202**, connect its power and then switch on the power to each device.

You can use the **TP-202 UXGA Line Transceiver/DA** to configure a UXGA DA system. This lets you transmit a computer graphics signal to two displays via long line CAT 5 UTP cabling.

By using two **TP-202** units, you can transmit the signal to an additional **TP-202**.

To connect the **TP-202**, as the example in [Figure 3](#) illustrates, do the following:

1. Connect a transmitter (for example, the Kramer **PT-110 UXGA Line Transmitter**) to the LINE IN RJ-45 connector via CAT 5 cabling, see Section [4.1](#).
You can also connect an HD transmitter, such as the Kramer **TP-219HD**.
2. Set the VS and HS switches on the underside of the unit to NORMAL.
3. Connect the UXGA OUT 1 15-pin HD connector to an UXGA acceptor (for example, display 1).
4. Connect the UXGA OUT 2 15-pin HD connector to an UXGA acceptor (for example, display 2).
5. Check the image on the display. If it is not stable, set the VS and HS switches to INVERT to obtain a stable image.
6. If required, connect the **LINE OUT** RJ-45 connector on the **TP-202** to an additional **TP-202**.
Up to six units may be connected with minimal deterioration. The combined length between the first and the last unit may exceed 300 meters.
7. If required, adjust the video output signal level and/or cable compensation equalization level.
Use a screwdriver to carefully rotate the trimmer, adjusting the appropriate level
8. If necessary, set the HS and VS switches on the **TP-202** underside.
By default, both switches are set to normal (see [Figure 2](#)).
9. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in [Figure 3](#)).
The signal from the UXGA source is transmitted via CAT 5 cable to the

TP-202, decoded and converted at the UXGA OUT 1 and UXGA OUT 2 15-pin HD connectors to the UXGA acceptors simultaneously.



When chaining several units, we recommend using an STP cable between the transmitter and the receiver and a skew-free cable for connecting the **TP-202** units. When using the **TP-202** as a standalone, we recommend using UTP cables.

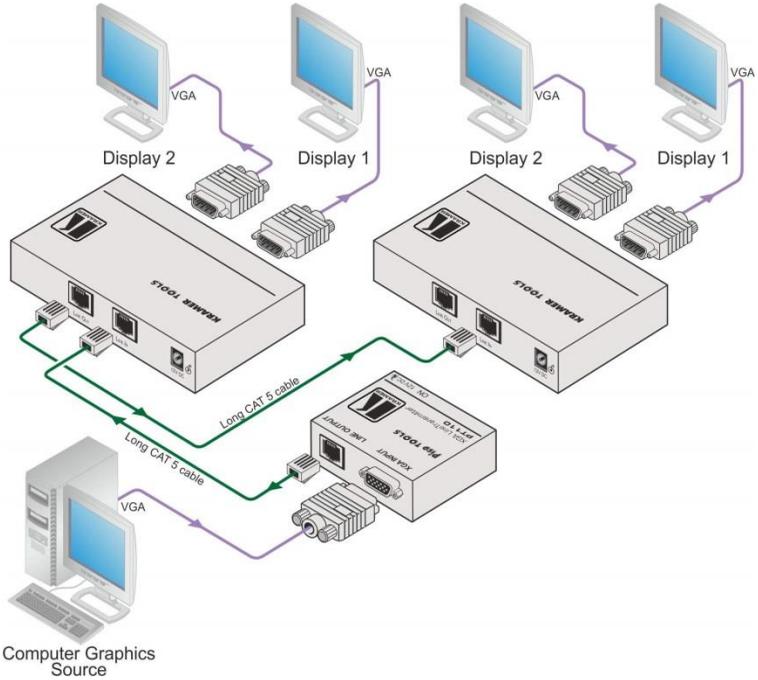


Figure 3: Connecting the TP-202 UXGA Line Transceiver/DA

4.1 Wiring the TP LINE IN / LINE OUT RJ-45 Connectors

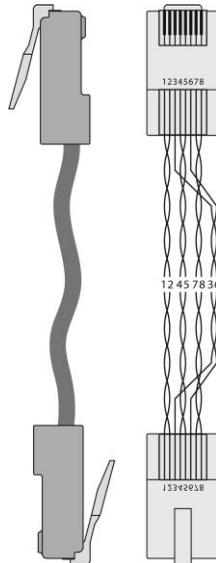
This section defines the TP pinout, using a **straight** pin-to-pin cable with RJ-45 connectors.



Note, that the cable Ground shielding must be connected / soldered to the connector shield.

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

Figure 4: TP PINOUT



5 Technical Specifications

INPUT:	1 CAT 5 LINE IN on an RJ-45 connector
OUTPUTS:	1 CAT 5 LINE OUT on an RJ-45 connector 2 UXGA on 15-pin HD connectors
MAX. OUTPUT LEVEL:	1.5Vpp
RESOLUTION:	Up to UXGA, up to 1080p
DIFF. GAIN:	2.8%
DIFF. PHASE:	0.2Deg
K-FACTOR:	0.1%
S/N RATIO:	69.2dB @5MHz
CONTROLS:	Level: -9.6dB to +2.3dB; Equalization: 0dB to 36.3dB @50MHz
COUPLING:	Receiver section: DC, looping section: AC
POWER CONSUMPTION:	12V, 525mA maximum current (when feeding TP-219HD (as the transmitter) and a looped TP-202)
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
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
OPTIONS:	RK-3T 19" rack adapter
Specifications are subject to change without notice at http://www.kramerelectronics.com	

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

Exclusive Remedy

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF KRAMER ELECTRONICS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPLICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.



For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing



P/N: 2900-00026



Rev: 5