Kramer Electronics, Ltd.

USER MANUAL

Models:

VP-200XLT, ***XGA Line Amp / CAT 5 Transmitter***

VP-200XLTHD, ***XGA Line Amp / CAT 5 Transmitter***

VP-300T, ***1:2 XGA DA/CAT 5 Transmitter***

VP-5T, ***1:4 VGA/UXGA Distributor/CAT 5 Transmitter***

VP-5THD, ***1:4 VGA/UXGA Distributor/CAT 5 Transmitter***

VP-5R, ***CAT 5 Receiver / 1:5 VGA/UXGA Distributor***

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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: **VP-200XLT** *XGA Line Amp/CAT 5 Transmitter***, VP-200XLTHD** *XGA Line Amp / CAT 5 Transmitter*, **VP-300T** *1:2 XGA DA/ CAT 5 Transmitter*, **VP-5T**, **VP-5THD** *1:4 VGA/UXGA Distributor / CAT 5 Transmitter*, and/or **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor*, which are ideal for:

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

The package includes this user manual[2], and one or more of the following:

- **VP-200XLT**[3]**/VP-200XLTHD**[3], and/or **VP-300T**[3], and/or **VP-5T/HD**[4], and/or **VP-5R**[4]

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[5]

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 the Internet at this URL: http://www.kramerelectronics.com

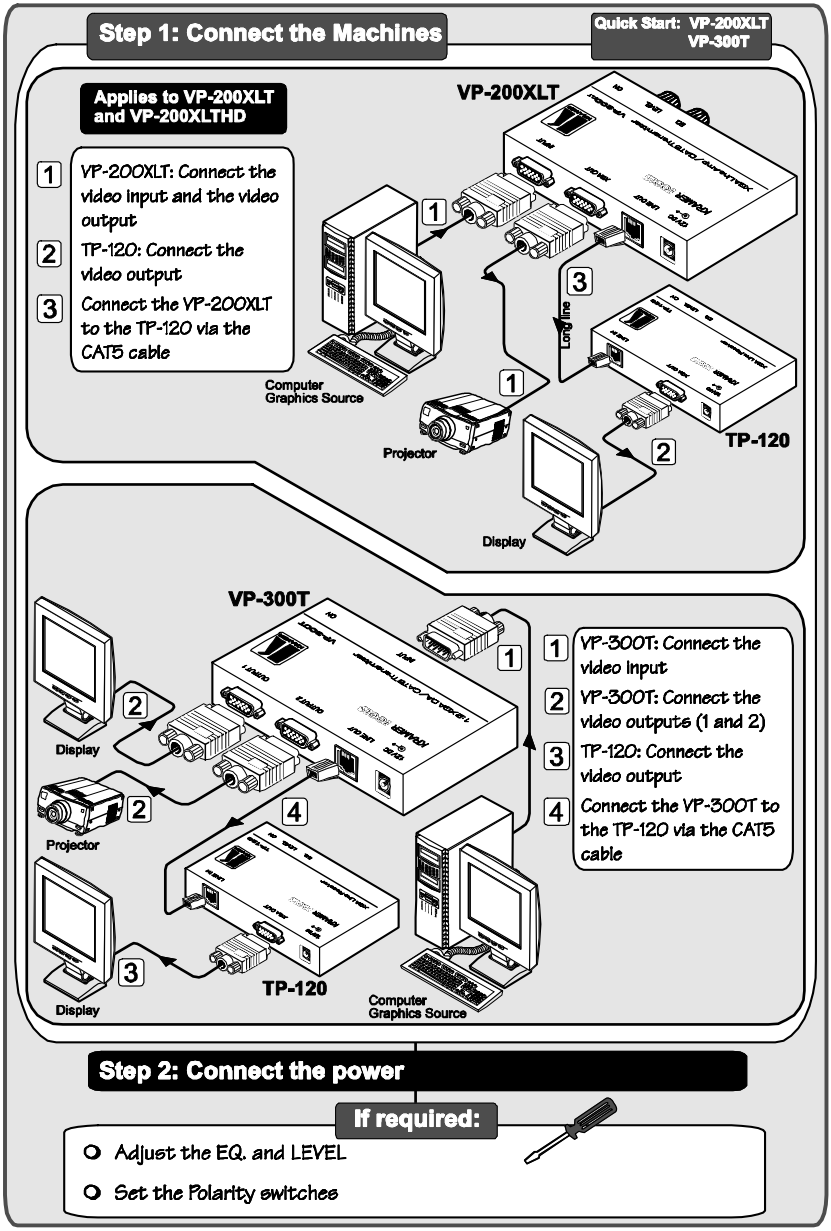
3 With a power adapter

4 With a power cord

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

2.1 Quick Start

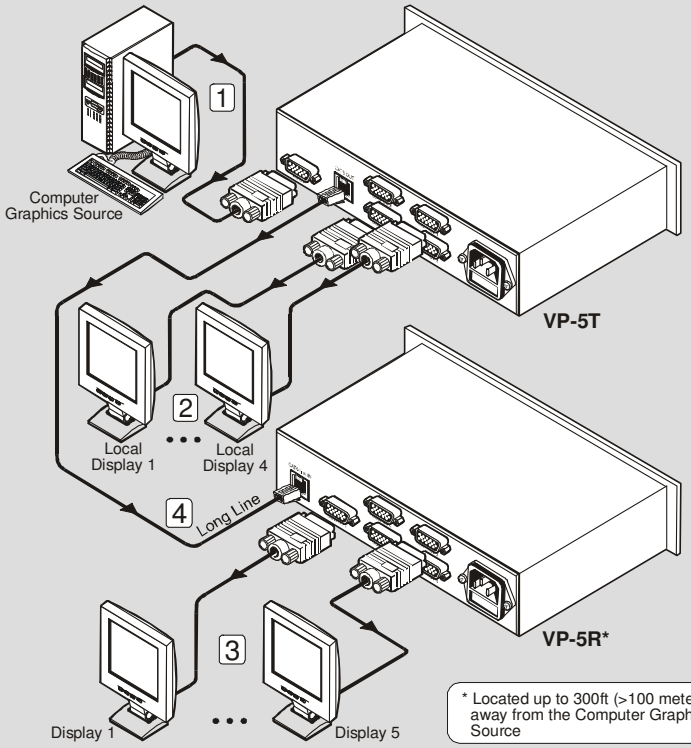
This quick start chart summarizes the basic setup and operation steps.



Step 1: Connect the Machines

Quick Start: VP-5T VP-5R

1. VP-5T: Connect the video input
2. VP-5T: Connect up to 4 video outputs
3. VP-5R: Connect up to 5 video outputs
4. Connect the VP-5T to the VP-5R via the CAT5 cable



Step 2: Connect the power

If required:

FOR THE TP-5T:
- Adjust the EQ. and LEVEL
- Set the ID Bit Control switches
- Set the Polarity switches

FOR THE TP-5R:
- Adjust the input EQ. and LEVEL
- Adjust the output EQ.
- Set the Polarity switches

3 Overview

This user manual describes the following products:

- Kramer TOOLS **VP-200XLT** *XGA Line Amp / CAT 5 Transmitter*, which accepts one computer graphics input and distributes the signal to its high-density 15 pin "D" connector output, as well as transmitting it over UTP cabling (CAT 5 or similar) to its appropriate receiver, see section 4
- Kramer TOOLS **VP-200XLTHD** *XGA Line Amp / CAT 5 Transmitter*, which accepts one computer graphics input and distributes the signal to its high-density 15 pin "D" connector output, as well as transmitting it over UTP cabling (CAT 5 or similar) to its appropriate receiver, see section 5
- Kramer TOOLS **VP-300T** *1:2 XGA DA/ CAT 5 Transmitter*, which is a distributor for computer graphics signals, accepting one input and distributing the signal to its identical 2 outputs, as well as transmitting it over CAT 5 UTP cable to its appropriate receiver, see section 6
- Kramer **VP-5T/VP-5THD** *1:4 VGA/UXGA Distributor / CAT 5 Transmitter*, which is a distributor for computer graphics signals, accepting one input, and distributing the signal to its identical 4 outputs, as well as transmitting it over CAT 5 UTP cable to its appropriate receiver, see section 7
- Kramer **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor*, which is a distributor for computer graphics signals, receiving the computer graphics signal via CAT 5 UTP cable, and distributing the signal to 5 identical 15-pin HD outputs, see section 8

This section describes:

- The power connect feature, see section 3.1
- Using shielded twisted pair (STP) / unshielded twisted pair (UTP), see section 3.2
- Recommendations for achieving the best performance, see section 3.3

3.1 About the Power Connect Feature

The Power Connect feature applies as long as the cable can carry power. The distance does not exceed 50m on standard CAT 5 cable, for longer distances, heavy gauge cable should be used[1].

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

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

3.2 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 STP skew-free cable, Kramer **BC-SXTP**, is intended for transmitting VGA signals. Our non-skew-free cable, Kramer **BC-STP,** is intended for digital signals.
The compliance to electromagnetic interference was tested using STP cables, therefore we recommend 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 may not conform to electromagnetic standards, Kramer does not commit to meeting the standard with UTP cable.

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 machines 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 this unit[1].

Warning – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

1 For example, part number 2535-000251

4 Your VP-200XLT XGA Line Amp / CAT 5 Transmitter

The **VP-200XLT** is a high-performance XGA line amp / CAT 5 transmitter that accepts one computer graphics (XGA[1]) input, provides necessary buffering and isolation, and distributes the signal to its high-density 15 pin "D" connector output, as well as transmitting it over UTP CAT 5 cable to its appropriate receiver.

In particular, the **VP-200XLT** has:

- A transmission range of more than 300ft (more than 100m) over UTP cabling
- Video bandwidth exceeding 400MHz, ensuring transparency even when operating at the highest resolutions
- Output level control, and cable equalization, using two rotary controls on the side panel of the machine

Figure 1 and *Table 1* define the **VP-200XLT**:

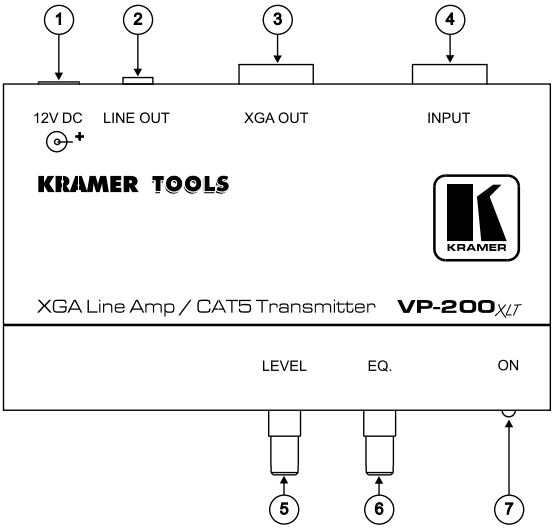


Figure 1: VP-200XLT XGA Line Amp / CAT 5 Transmitter

1 The terminology XGA is used throughout this manual, where this implies any RGBHV signal on an 15-pin HD connector having a resolution from VGA up to XGA

Table 1: VP-200XLT XGA Line Amp / CAT 5 Transmitter Features

#	Feature	Function
1	*12V DC*	+12V DC connector for powering the unit
2	*LINE OUT* RJ-45 Connector	Connects to[1] the LINE IN RJ-45 connector on the **TP-120** *XGA Line Receiver*[2] or the **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor*
3	*XGA OUT* 15-pin HD Connector	Connect to the XGA acceptor
4	*INPUT* 15-pin HD Connector	Connect to the XGA source
5	*LEVEL* Control knob	Rotate to adjust the output signal level
6	*EQ.* Control knob	Rotate to adjust the video EQ. (equalization) compensation
7	*ON* LED	Illuminates when receiving power

5 VP-200XLTHD XGA Line Amp / CAT 5 Transmitter

The **VP-200XLTHD** is a high-performance XGA line amp / CAT 5 transmitter that accepts one computer graphics (XGA) input, provides necessary buffering and isolation, and distributes the signal to its high-density 15 pin "D" connector output, as well as transmitting it over UTP CAT 5 cable to its appropriate receiver. In particular, the **VP-200XLTHD**:

- Can also receive HD signals (high-definition resolutions: 480p, 576p, 720p, 1080i and 1080p)
- Has a transmission range of more than 300ft (more than 100m) over UTP cabling
- Has a video bandwidth exceeding 400MHz, ensuring transparency even when operating at the highest resolutions
- Includes output level control and cable equalization control, via two trimmers on the side panel of the machine

Figure 2 and *Table 2* define the **VP-200XLTHD**:

1 Using a UTP CAT 5 cable with RJ-45 connectors at both ends (the PINOUT is defined in *Table 10* and *Figure 13*)

2 Refer to the separate user manual: PT-110, PT-120, TP-120, WP-110, which can be downloaded from the Internet at this URL: http://www.kramerelectronics.com

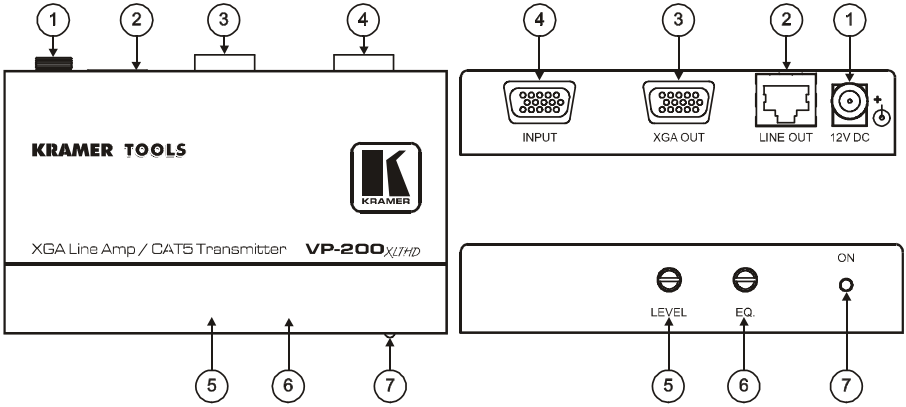


Figure 2: VP-200XLTHD XGA Line Amp / CAT 5 Transmitter

Table 2: VP-200XLTHD XGA Line Amp / CAT 5 Transmitter Features

#	Feature	Function
1	*12V DC*	+12V DC connector for powering the unit
2	*LINE OUT* RJ-45 Connector	Connects to[1] the LINE IN RJ-45 connector on the **TP-120** *XGA Line Receiver*[2] or the **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor*
3	*XGA OUT* 15-pin HD Connector	Connect to the XGA acceptor
4	*INPUT* 15-pin HD Connector	Connect to the XGA source
5	*LEVEL* trimmer	Adjust[3] the output signal level
6	*EQ.* trimmer	Adjust[3] the video EQ. (equalization) compensation
7	*ON* LED	Illuminates when receiving power

Figure 3 and *Table 3* define the **VP-200XLTHD**:

1 Using a UTP CAT 5 cable with RJ-45 connectors at both ends (the PINOUT is defined in *Table 10* and *Figure 13*)

2 Refer to the separate user manual: PT-110, PT-120, TP-120, WP-110, which can be downloaded from the Internet at this URL: http://www.kramerelectronics.com

3 Insert a screwdriver into the hole and carefully rotate it, to trim the level

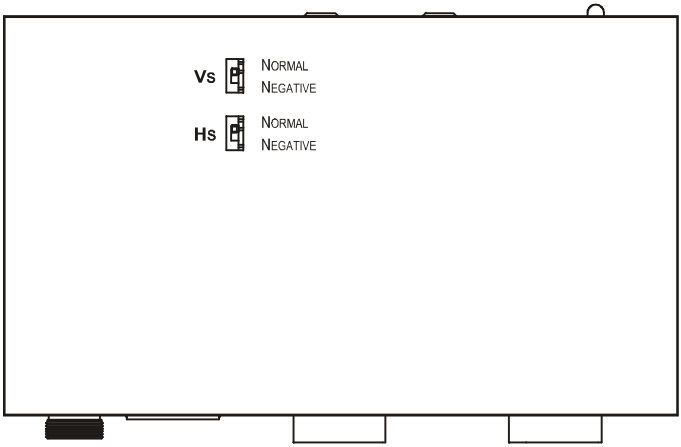


Figure 3: VP-200XLTHD XGA Line Amp / CAT 5 Transmitter

Table 3: VP-200XLTHD XGA Line Amp / CAT 5 Transmitter Features

VS Switch	Slide the switch downward to change the VS polarity to negative polarity[1]; slide the switch upward to retain the polarity (default)
HS Switch	Slide the switch downward to change the HS polarity to negative polarity[1]; slide the switch upward to retain the polarity (default)

6 Your VP-300T 1:2 XGA DA/ CAT 5 Transmitter

This section describes the topside (see section 6.1), and the underside (see section 6.2) of the **VP-300T** *1:2 XGA DA/ CAT 5 Transmitter*.

6.1 Your VP-300T 1:2 XGA DA/ CAT 5 Transmitter (Topside)

The **VP-300T** is a high-performance distributor for computer graphics signals, accepting one input, providing necessary buffering and isolation, and distributing the signal to its identical 2 outputs, as well as transmitting it over UTP CAT 5 cable to its appropriate receiver. In particular, the **VP-300T** has a:

- Video bandwidth exceeding 430MHz, ensuring transparency even when operating at the highest resolutions
- Transmission range of more than 300ft (more than 100m) over UTP cabling
- Switch for ID Bit control
- Is 12V DC fed

1 Downgoing syncs

Figure 4 and *Table 4* define the **VP-300T**:

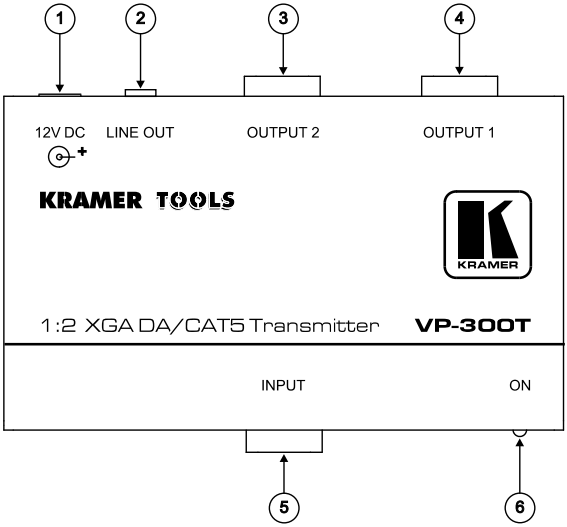


Figure 4: VP-300T 1:2 XGA DA/ CAT 5 Transmitter (Topside)

Table 4: VP-300T 1:2 XGA DA/ CAT 5 Transmitter (Topside) Features

#	Feature	Function
1	*12V DC*	+12V DC connector for powering the unit
2	*LINE OUT* RJ-45 Connector	Connects to[1] the LINE IN RJ-45 connector on the **TP-120** *XGA Line Receiver*[2] or the **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor*
3	*OUTPUT* 2 15-pin HD Connector	Connect to the XGA acceptor 2
4	*OUTPUT* 1 15-pin HD Connector	Connect to the XGA acceptor 1
5	XGA *INPUT* 15-pin HD Connector	Connect to the XGA source
6	*ON* LED	Illuminates when receiving power

6.2 Your VP-300T 1:2 XGA DA/ CAT 5 Transmitter (Underside)

Figure 5 and *Table 5* define the underside of the **VP-300T** *1:2 XGA DA/ CAT 5 Transmitter*:

1 Using a UTP CAT 5 cable with RJ-45 connectors at both ends (the PINOUT is defined in *Table 10* and *Figure 13*)

2 Refer to the separate user manual: PT-110, PT-120, TP-120, WP-110, which can be downloaded from the Internet at this URL: http://www.kramerelectronics.com

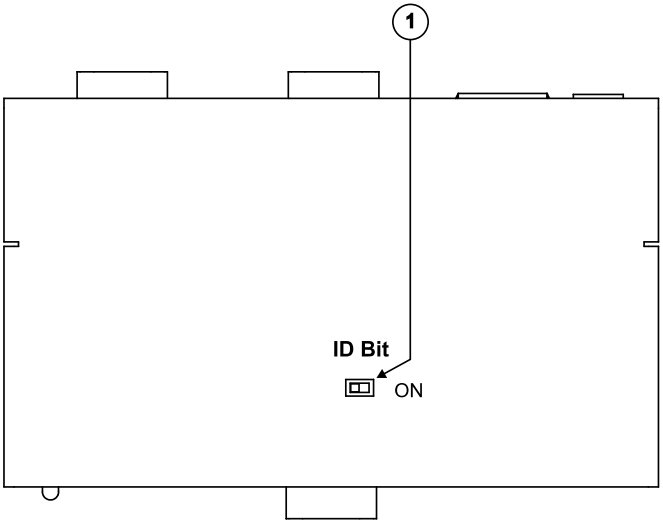


Figure 5: VP-300T 1:2 XGA DA/ CAT 5 Transmitter (Underside)

Table 5: VP-300T 1:2 XGA DA/ CAT 5 Transmitter (Underside) Features

#	Feature	Function
1	*ID Bit* Switch	Slide to the right to set to ON[1]; to the left to set to OFF

7 Your VP-5T/VP-5THD 1:4 VGA/UXGA Distributor / CAT 5 Transmitter

This section describes the front and rear panels of the **VP-5T/VP-5THD** *1:4 VGA/UXGA Distributor / CAT 5 Transmitter* (see section 7.1), and the underside (see section 7.2).

7.1 Your VP-5T/VP-5THD 1:4 VGA/UXGA Distributor / CAT 5 Transmitter

The **VP-5T/VP-5THD** is a high-performance distributor for computer graphics signals, accepting one input, providing necessary buffering and isolation, and distributing the signal to its identical 4 outputs, as well as transmitting it over UTP CAT 5 cable to its appropriate receiver.

In particular, the **VP-5T**:

- Features front panel EQ. control
- Has switches on the underside for ID Bit control

1 The default. Enabling the notebook or laptop to output a VGA signal to an external VGA monitor

- Has video bandwidth exceeding 440MHz, ensuring transparency even when operating at the highest resolutions
- Has a transmission range of more than 300ft (more than 100m) over UTP cabling
- Is mains fed and housed in a half 19" enclosure

The **VP-5THD**:

- Includes all the features as the VP-5T
- Has Hs and Vs polarity switches on its underside
- Also receives HD signals (high-definition resolutions: 720p, 1080i and 1080p) and SD signals

Figure 6 and *Table 6* define the **VP-5T** and **VP-5THD**:

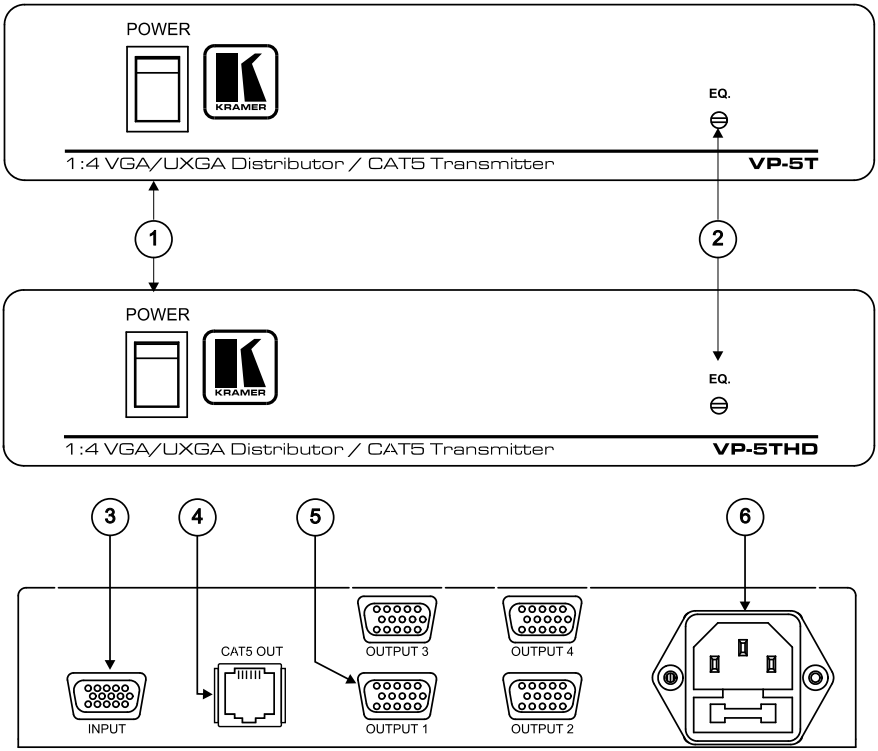


Figure 6: VP-5T/VP-5THD 1:4 VGA/UXGA Distributor / CAT 5 Transmitter

Table 6: VP-5T 1:4 VGA/UXGA Distributor / CAT 5 Transmitter Features

#	Feature	Function
1	*POWER* Switch	Illuminated switch for turning the unit ON or OFF
2	*EQ.* Trimmer	Adjusts[1] the video EQ. (equalization) compensation
3	*INPUT* 15-pin HD Connector	Connect to the VGA/UXGA source
4	*CAT 5 OUT* RJ-45 Connector	Connect to[2] the LINE IN RJ-45 connector on the **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor*
5	*OUTPUT* 15-pin HD Connector	Connect to the VGA/UXGA acceptor (from 1 to 4)
6	Power Connector with *FUSE*	AC connector enabling power supply to the unit

7.2 Your VP-5T/VP5THD (Underside)

Figure 7 and *Table 7* define the underside of the **VP-5T/VP-5THD** *1:4 VGA/UXGA Distributor / CAT 5 Transmitter*:

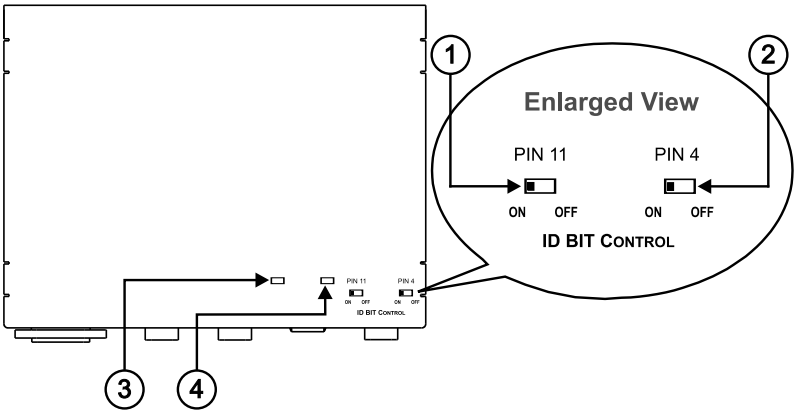


Figure 7: VP-5T/VP-5THD 1:4 VGA/UXGA Distributor / CAT 5 Transmitter (Underside)

1 Insert a screwdriver into the hole and carefully rotate it, to trim the level

2 Using a UTP CAT 5 cable with RJ-45 connectors at both ends (the PINOUT is defined in *Table 10* and *Figure 13*)

Table 7: VP-5T/VP-5THD 1:4 VGA/UXGA Distributor / CAT 5 Transmitter (Underside) Features

#	Feature		Function
1	*PIN 11 ID BIT* CONTROL Switch		Slide to the left to set to ON[1]; to the right to set to OFF
2	*PIN 4 ID BIT* CONTROL Switch		Slide to the left to set to ON[1]; to the right to set to OFF
3	HD ONLY	VS Switch	Slide the switch to the left to change the VS polarity to negative polarity[2]; slide the switch to the right to retain the polarity (default)
4	HD ONLY	HS Switch	Slide the switch to the left to change the HS polarity to negative polarity[2]; slide the switch to the right to retain the polarity (default)

8 Your VP-5R CAT 5 Receiver / 1:5 VGA/UXGA Distributor

This section describes the front and rear panels of the **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor* (see section 8.1), and the underside (see section 8.2).

8.1 Your VP-5R CAT 5 Receiver / 1:5 VGA/UXGA Distributor

The **VP-5R** is a high-performance distributor for computer graphics signals, receiving the computer graphics signal via UTP CAT 5 cable, and distributing the signal to 5 identical 15-pin HD outputs. In particular, the **VP-5R**:

- Features front panel line input level and EQ. control, as well as output EQ. control
- Is mains fed
- Is housed in a half 19" enclosure

Figure 8 and *Table 8* define the **VP-5R**:

1 The default. Enabling the notebook or laptop to output a VGA signal to an external VGA monitor

2 Downgoing syncs

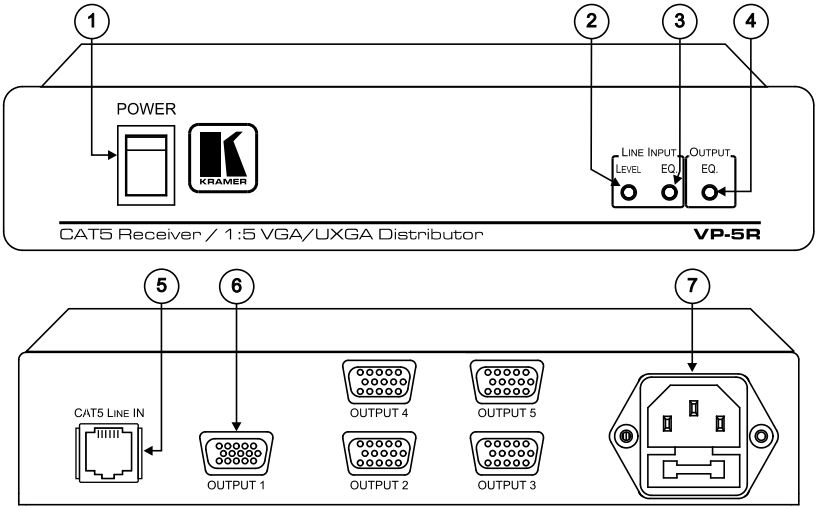


Figure 8: VP-5R CAT 5 Receiver / 1:5 VGA/UXGA Distributor

Table 8: VP-5R CAT 5 Receiver / 1:5 VGA/UXGA Distributor Features

#	Feature	Function
1	*POWER* Switch	Illuminated switch for turning the unit ON or OFF
2	*LINE INPUT LEVEL* Trimmer	Adjusts[1] the video input level
3	*LINE INPUT EQ.* Trimmer	Adjusts[1] the video input EQ. (equalization) compensation
4	*OUTPUT EQ.* Trimmer	Adjusts[1] the video output EQ. (equalization) compensation
5	*CAT 5 LINE IN* RJ-45 Connector	Connect to[2] the LINE OUT RJ-45 connector on the **VP-5T** *1:4 VGA/UXGA Distributor / CAT 5 Transmitter*
6	*OUTPUT* 15-pin HD Connector	Connect to the VGA/UXGA acceptor (from 1 to 5)
7	Power Connector with *FUSE*	AC connector enabling power supply to the unit

8.2 Your VP-5R CAT 5 Receiver / 1:5 VGA/UXGA Distributor (Underside)

Figure 9 and *Table 9* define the underside of the **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor*:

1 Insert a screwdriver into the hole and carefully rotate it, to trim the level

2 Using a UTP CAT 5 cable with RJ-45 connectors at both ends (the PINOUT is defined in *Table 10* and *Figure 13*)

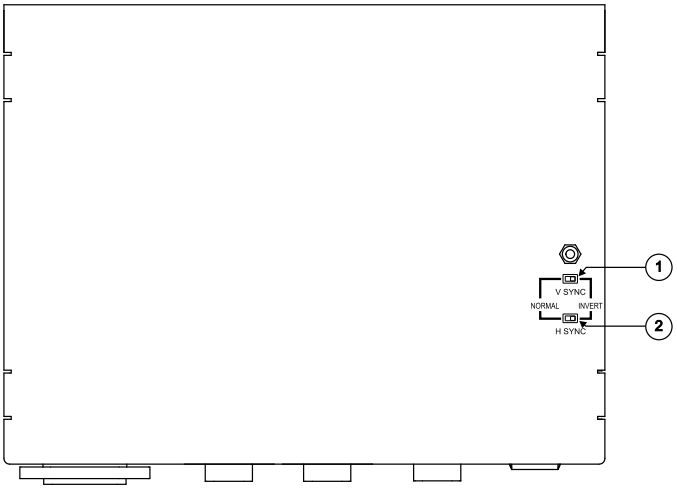


Figure 9: VP-5R CAT 5 Receiver / 1:5 VGA/UXGA Distributor (Underside)

Table 9: VP-5R CAT 5 Receiver / 1:5 VGA/UXGA Distributor (Underside) Features

#	Feature	Function
1	*V SYNC* Switch	Slide the switch to the right[1] to change the V SYNC polarity; slide the switch to the left to retain the polarity
2	*H SYNC* Switch	Slide the switch to the right[1] to change the H SYNC polarity; slide the switch to the left to retain the polarity

9 Connecting the VP-200XLT[2]

You can use the **VP-200XLT** and, for example, the **TP-120** to configure an *XGA Line*-to-Twisted Pair Transmitter and Receiver system.

To connect the **VP-200XLT** with the **TP-120**, as the example in *Figure 10* illustrates, do the following:

1. On the **VP-200XLT** *XGA Line Amp / CAT 5 Transmitter*, connect the:
   - Computer graphics (XGA) source (for example, a computer) to the INPUT 15-pin HD connector
   - XGA OUT 15-pin HD connector to the acceptor (for example, to a projector)
2. On the **TP-120** *XGA Line Receiver*, connect the XGA OUT 15-pin HD connector to the XGA acceptor (for example, a display).

1 By default, both switches are set to the left

2 This section also applies to the VP-200XLTHD

3. Connect the LINE OUT RJ-45 connector on the **VP-200XLT** to the LINE IN RJ-45 connector on the **TP-120**, via UTP cabling (with a range of more than 300ft (more than 100m)), see section 11.1.
4. Connect the 12V DC power adapter to the power socket on the **VP-200XLT**, and plug the adapter into the mains electricity socket. Similarly, connect the other 12V DC power adapter to the power socket on the **TP-120**, and plug that adapter into the mains electricity socket.
5. On the **VP-200XLT**, if required, rotate the appropriate control knob to adjust the:
   - Video output signal level
   - Cable compensation equalization level
6. On the **TP-120**, if required:
   - Adjust[1] the video output signal level and/or cable compensation equalization level
   - Set the H SYNC and V SYNC switches[2], on the underside

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

2 By default, both switches are set down (for normal V SYNC and H SYNC polarity)

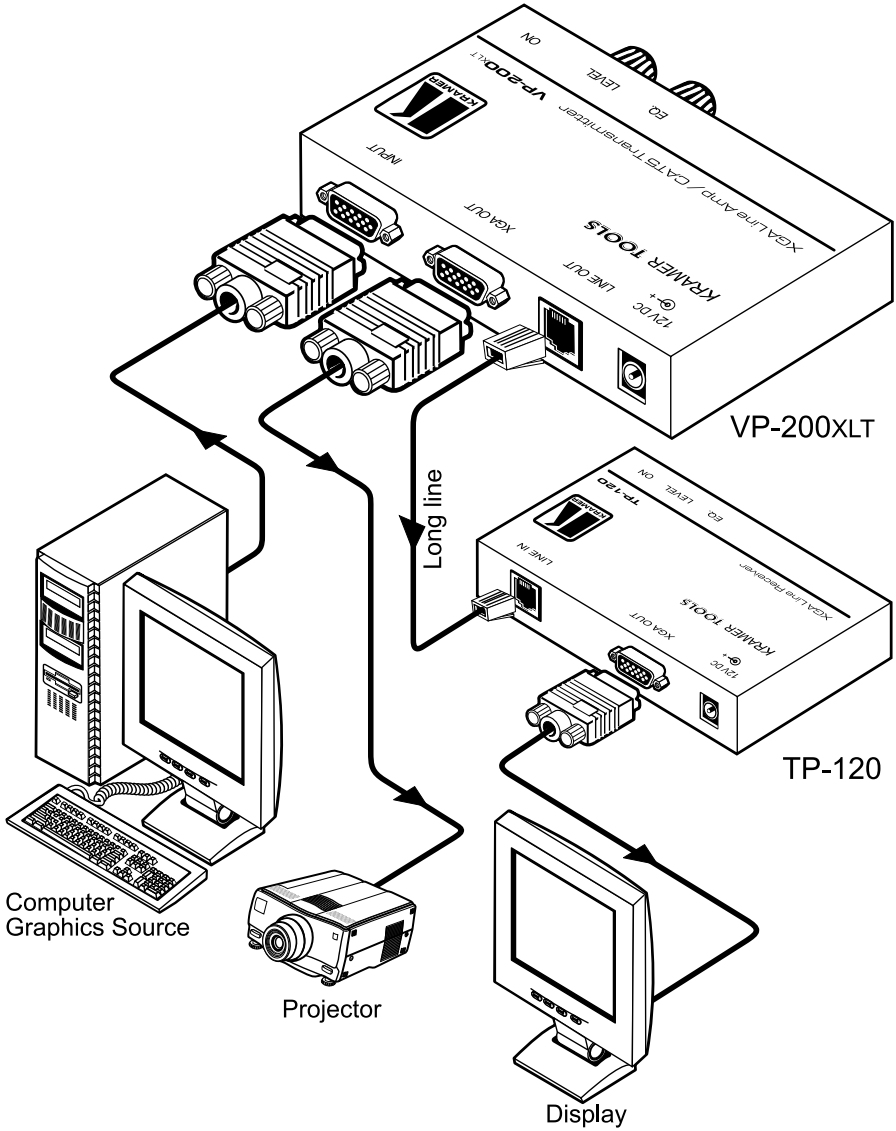


Figure 10: Connecting the VP-200XLT

10 Connecting the VP-300T

You can use the **VP-300T** and, for example, the **TP-120** to configure an *XGA Line*-to-Twisted Pair Transmitter and Receiver system.

To connect the **VP-300T** with the **TP-120**, as the example in *Figure 11* illustrates, do the following:

1. On the **VP-300T** *1:2 XGA DA/ CAT 5 Transmitter*, connect the:
   - Computer graphics (XGA) source (for example, a computer) to the INPUT 15-pin HD connector
   - OUTPUT 1 and OUTPUT 2 15-pin HD connectors to up to[1] two acceptors (for example, to a display and to a projector, respectively)
2. On the **TP-120** *XGA Line Receiver*, connect the XGA OUT 15-pin HD connector to the XGA acceptor (for example, a display).
3. Connect the LINE OUT RJ-45 connector on the **VP-300T** to the LINE IN RJ-45 connector on the **TP-120**, via UTP cabling (with a range of more than 300ft (more than 100m)), see section 11.1.
4. Connect the 12V DC power adapter to the power socket on the **VP-300T**, and plug the adapter into the mains electricity socket. Similarly, connect the other 12V DC power adapter to the power socket on the **TP-120**, and plug that adapter into the mains electricity socket.
5. On the **VP-300T**, if required:
   - Set the ID Bit switch
6. On the **TP-120**, if required:
   - Adjust[2] the video output signal level and/or cable compensation equalization level
   - Set the H SYNC and V SYNC switches[3], on the underside

1 When both outputs are not required, connect only the output that is required and leave the other output unconnected

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

3 By default, both switches are set down (for normal V SYNC and H SYNC polarity)

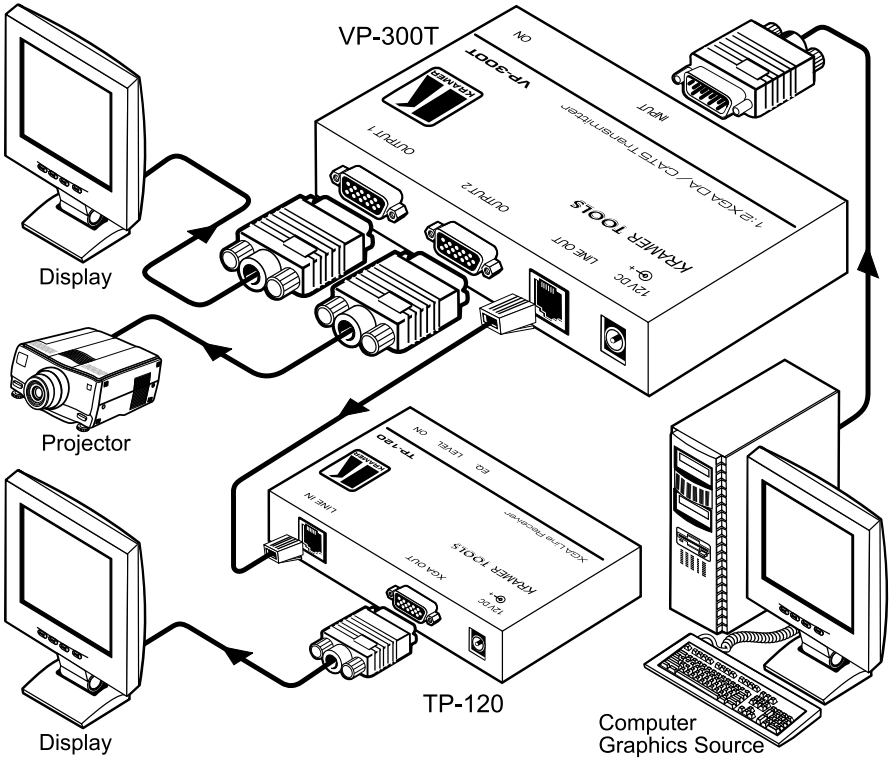


Figure 11: Connecting the VP-300T

11 Connecting the VP-5T/VP-5THD and the VP-5R

You can use the **VP-5T/VP-5THD** *1:4 VGA/UXGA Distributor / CAT 5 Transmitter* and the **VP-5R** *CAT 5 Receiver / 1:5 VGA/UXGA Distributor* to configure an *XGA Line*-to-Twisted Pair Transmitter and Receiver system.

To connect the **VP-5T/VP-5THD** with the **VP-5R**, as the example in *Figure 12* illustrates, do the following:

1. On the **VP-5T/VP-5THD** , connect the computer graphics source (for example, a computer) to the INPUT 15-pin HD connector, and connect up to[1] 4 acceptors (for example, local displays) to the OUTPUT 15-pin HD connectors 1 to 4.
2. On the **VP-5R**, connect up to[1] 5 acceptors (for example, displays) to the OUTPUT 15-pin HD connectors 1 to 5.
3. Connect the CAT 5 OUT RJ-45 connector on the **VP-5T/VP-5THD** to the CAT 5 LINE IN RJ-45 connector on the **VP-5R**, via UTP cabling (with a range of more than 300ft (more than 100m)), see section 11.1.
4. Connect the power cord[2] (not illustrated in *Figure 12*) to the **VP-5T/VP-5THD** , and connect the other power cord[2] to the **VP-5R**.
5. On the **VP-5T**, if required:
   - Adjust[3] the front panel cable ompensation equalization level
   - Set the underside ID BIT Control switches
6. On the **VP-5THD**, if required:
   - Set the H SYNC and V SYNC switches[4] on the underside
7. On the **VP-5R**, if required:
   - Adjust[3] the front panel *LINE INPUT* signal level and/or cable compensation equalization level, and/or *OUTPUT* compensation equalization level
   - Set the V SYNC and H SYNC switches[4], on the underside

1 When not all the outputs are required, connect only those that are required and leave the other output(s) unconnected

2 We recommend that you use only the power cord that is supplied with each specific machine

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

4 By default, both switches are set down (for negative V SYNC and H SYNC polarity)

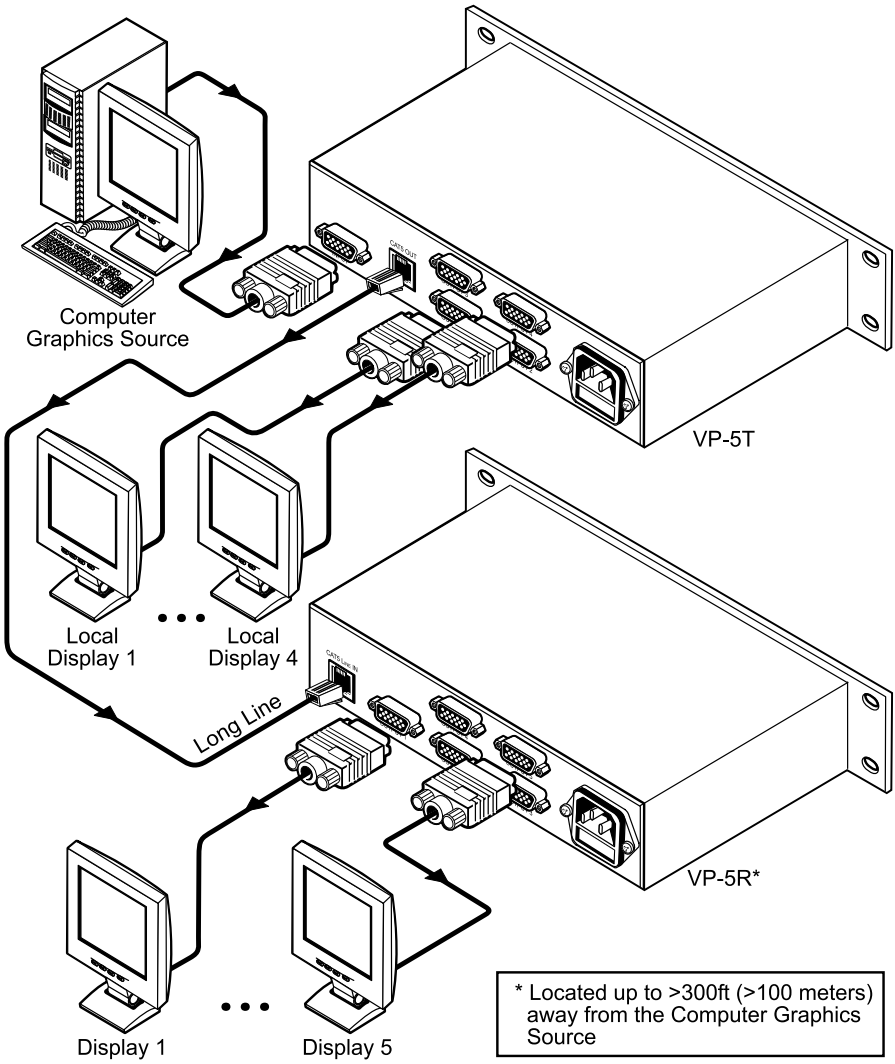


Figure 12: Connecting the VP-5T and the VP-5R

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

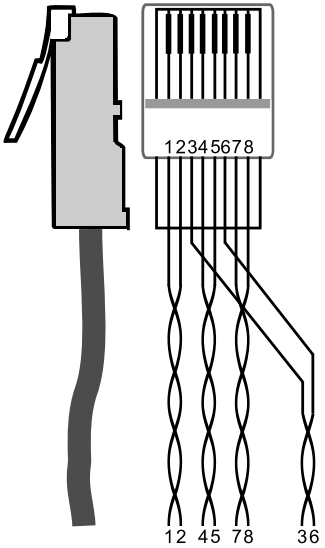
Table 10 and Figure 13 define the UTP CAT 5 PINOUT, using a straight pin to pin cable with RJ-45 connectors:

Table 10: 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
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
Pair 1	4 and 5
Pair 2	1 and 2
Pair 3	3 and 6
Pair 4	7 and 8

Figure 13: CAT 5 PINOUT



12 Technical Specifications

This section includes the technical specifications of the **VP-200XLT** (see *Table 11*), **VP-200XLTHD** (see *Table 12*), the **VP-300T** (see *Table 13*), the **VP-5T/VP-5THD** (see *Table 14*), and the **VP-5R** (see *Table 15*).

Table 11: Technical Specifications[1] of the VP-200XLT (with 30m CAT 5 cable)

INPUTS:	1 XGA on an 15-pin HD connector
OUTPUTS:	1 XGA on an 15-pin HD connector; 1 RJ-45 connector
MAX. OUTPUT LEVEL[2]:	1.9Vpp (XGA), 1.9Vpp (CAT 5)
BANDWIDTH (-3dB):	407MHz (XGA)
RESOLUTION:	Up to UXGA
DIFF. GAIN[2]:	0.03% (XGA), 3.5% (CAT 5)
DIFF. PHASE[2]:	0.03Deg (XGA), 0.51Deg (CAT 5)
K-FACTOR[2]:	<0.05% (XGA and CAT 5)
S/N RATIO[2]:	74dB (XGA), 71dB (CAT 5)
CONTROLS[2]:	LEVEL: –1.5dB to +2.5dB (from VP-200XLT) (XGA); –1dB to +2.5dB (from VP-200XLT); –7.7dB to +9dB (from TP-120) (CAT 5) EQ.: 0 to 4.1dB @50MHz (from VP-200XLT) (XGA); 0 to 4dB (from VP-200XLT), 0 to 30.4dB @50MHz (from TP-120) (CAT 5)
COUPLING[2]:	DC (XGA), AC (CAT 5)
POWER SOURCE:	12 VDC 140mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.3kg (0.67lb) approx.
ACCESSORIES:	Power supply

Table 12: Technical Specifications of the VP-200XLTHD (with 30m CAT 5 cable)

INPUTS:	1 XGA on an 15-pin HD connector
OUTPUTS:	1 XGA on an 15-pin HD connector; 1 RJ-45 connector
MAX. OUTPUT LEVEL[2]:	2.4Vpp (XGA), 1.5Vpp (CAT 5)
BANDWIDTH (-3dB):	405MHz (XGA)
RESOLUTION:	Up to UXGA, up to 1080p
DIFF. GAIN[2]:	0.03% (XGA), 3.3% (CAT 5)
DIFF. PHASE[2]:	0.03Deg (XGA), 0.3Deg (CAT 5)
K-FACTOR[2]:	<0.02% (XGA and CAT 5)
S/N RATIO[2]:	78dB (XGA), 71dB (CAT 5)
CONTROLS[2]:	XGA: LEVEL: –1.6dB to +1.9dB; EQ.: 0 to 4dB @50MHz
COUPLING[2]:	DC (XGA), AC (CAT 5)
POWER SOURCE:	12V DC, 105mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.3kg (0.67lb) approx.
ACCESSORIES:	Power supply

1 Specifications are subject to change without notice

2 For the VP-200XLT to TP-120 SETUP

Table 13: Technical Specifications of the VP-300T (with 30m CAT 5 cable)

INPUTS:	1 XGA on an 15-pin HD connector
OUTPUTS:	2 XGA on 15-pin HD connectors 1 RJ-45 connector
MAX. OUTPUT LEVEL[1]:	1.9Vpp (XGA), 1.3Vpp (CAT 5)
BANDWIDTH (-3dB):	439MHz (XGA), 152MHz (CAT 5)
DIFF. GAIN[1]:	0.05% (XGA), 3.1% (CAT 5)
DIFF. PHASE[1]:	0.05Deg (XGA), 0.4Deg (CAT 5)
K-FACTOR[1]:	<0.05% (XGA and CAT 5)
S/N RATIO[1]:	76dB (XGA), 71dB (CAT 5)
CONTROLS[1]:	LEVEL: –8.9dB to 3.9dB (CAT 5) EQ.: 0 to 30dB (CAT 5)
COUPLING[1]:	DC (XGA), AC (CAT 5)
POWER SOURCE:	12 VDC 390mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.3kg (0.67lb) approx.
ACCESSORIES:	Power supply

Table 14: Technical Specifications of the VP-5T/VP-5THD (with 60m CAT 5 cable)

INPUTS:	1 XGA on an 15-pin HD connector
OUTPUTS:	4 XGA on 15-pin HD connectors 1 RJ-45 connector
MAX. OUTPUT LEVEL[2]:	1.7Vpp (XGA), 1.7Vpp (CAT 5)
BANDWIDTH (-3dB):	445MHz (XGA), 154MHz (CAT 5)
RESOLUTION:	Up to UXGA, up to 1080p[3]
DIFF. GAIN[2]:	0.8% (XGA), 3.2% (CAT 5)
DIFF. PHASE[2]:	0.08Deg (XGA), 0.06Deg (CAT 5)
K-FACTOR[2]:	0.1% (XGA), <0.05% (CAT 5)
S/N RATIO[2]:	76dB (XGA), 73dB (CAT 5)
CONTROLS[2]:	LEVEL: –7.4dB to 3.5dB (CAT 5) EQ.: 0 to 37.8dB @50MHz (CAT 5)
COUPLING[2]:	DC (XGA), AC (CAT 5)
POWER SOURCE:	230 VAC, 50/60 Hz. (115VAC, U.S.A.) 13VA
DIMENSIONS:	22cm x 18cm x 4.5cm (8.7" x 7" x 1.7") W, D, H (half 19", 1U)
WEIGHT:	1.2kg (2.6 lbs) approx.
ACCESSORIES:	Power cord

1 For the VP-300T to TP-120 SETUP

2 For the VP-5T to TP-120 SETUP

3 The HD resolutions apply to the HD version of the machine

Table 15: Technical Specifications of the VP-5R (with 30m CAT 5 cable)

INPUTS:	1 RJ-45 connector
OUTPUTS:	5 XGA on 15-pin HD connectors
MAX. OUTPUT LEVEL[1]:	1.4Vpp
BANDWIDTH (-3dB):	150MHz
DIFF. GAIN[1]:	3.4%
DIFF. PHASE[1]:	0.05Deg
K-FACTOR[1]:	<0.05%
S/N RATIO[1]:	74dB
CONTROLS[1]:	LEVEL: –8.2dB to 4.3dB LINE EQ.: 0 to 30dB; OUT EQ.: 0 to 8.6dB
COUPLING[1]:	AC
POWER SOURCE:	230V AC, 50/60 Hz. (115V AC, U.S.A.) 9.2VA
DIMENSIONS:	22cm x 18cm x 4.5cm (8.7" x 7" x 1.7") W, D, H (half 19", 1U)
WEIGHT:	1.2kg (2.6 lbs) approx.
ACCESSORIES:	Power cord

1 For the VP-5R to WP-110 SETUP

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)

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.

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

P/N: 2900-000067 Rev: 5

Kramer Electronics, Ltd.
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P/N: 2900-000067 REV 5