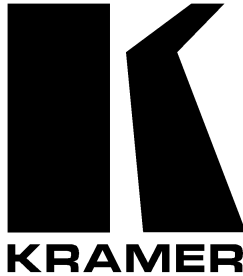


**Kramer Electronics, Ltd.**



# **USER MANUAL**

## **Models:**

**WP-27, *Component/CV/YC – S/PDIF/Analog Transmitter***

**WP-28, *Component/CV/YC – S/PDIF/Analog Receiver***

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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 Groups<sup>1</sup>, which are clearly defined by function.

Congratulations on purchasing your Kramer **WP-27** and **WP-28** wall plates, which are suitable for the following applications:

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

The package includes the following items:

- **WP-27** and/or **WP-28**
- Power supply<sup>2</sup>, and this user manual<sup>3</sup>

## 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<sup>4</sup>

### 2.1 Quick Start

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

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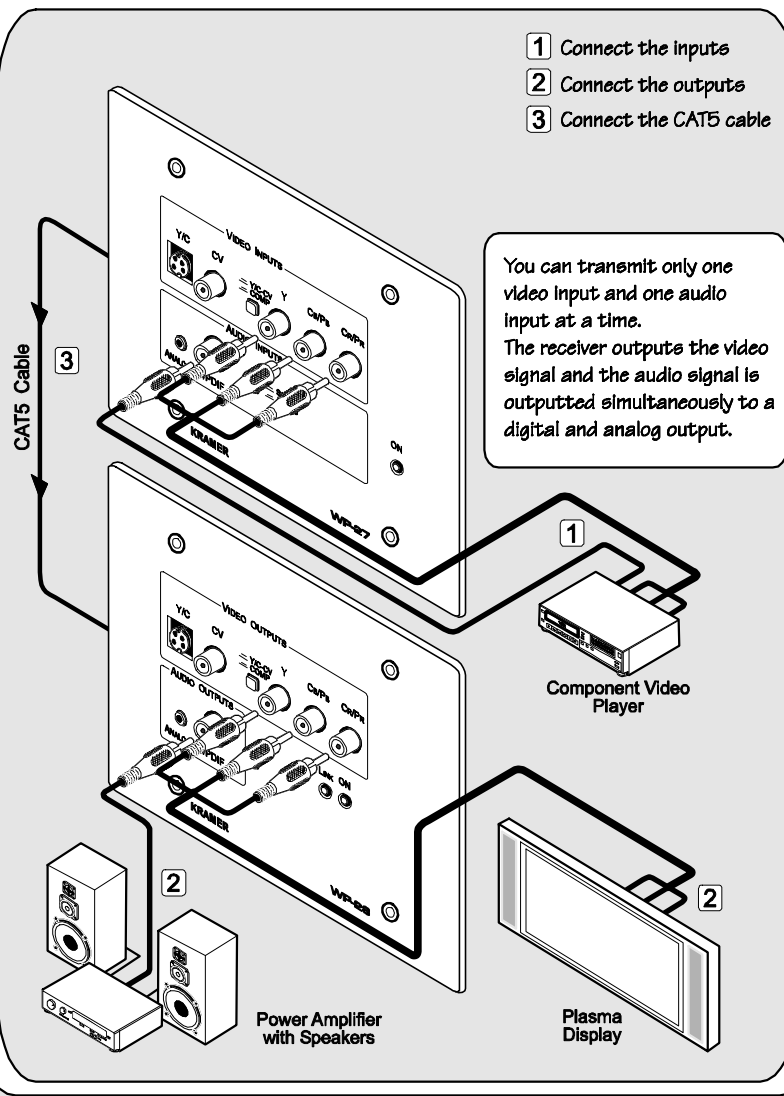
1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Sealers; and GROUP 8: Cables and Connectors

2 A separate power supply is included with each product

3 Download up-to-date Kramer user manuals from the Internet at this URL: <http://www.kramerelectronics.com>

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

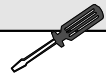
**Step 1: Connect the WP-27 / WP-28 Transmitter Receiver System**



**Step 2: Connect the power**

**If required:**

- Adjust the EQ. and LEVEL on the WP-28



### 3 Overview

This section describes:

- A summary of the **WP-27 / WP-28**, see section 3.1
- The power connect feature, see section 3.2
- Using shielded twisted pair (STP) / unshielded twisted pair (UTP), see section 3.3
- Recommendations for achieving the best performance, see section 3.4

#### 3.1 About the WP-27 / WP-28

The Kramer **WP-27** and the **WP-28** constitute a twisted pair transmitter and receiver system for component/composite<sup>1</sup> or Y/C video, as well as stereo analog / S/PDIF audio signals. Each unit can power or be powered by the other unit over the same CAT5 cable.

The **WP-27** transmitter converts the selected<sup>2</sup> video and audio signals into a twisted pair signal and the **WP-28** receiver decodes that signal back to its initial stage. The **WP-27** accepts either a component video, composite video or s-Video source. The selected video source, as well as the selected audio source<sup>3</sup> is transmitted to the **WP-28**, which outputs that source accordingly<sup>4</sup>.

- If CV-Y/C is selected, the **WP-27** accepts a CV<sup>5</sup> or Y/C<sup>6</sup> signal<sup>7</sup> and transmits it over the CAT5 cable to the CV or Y/C output on the **WP-28** receiver
- If component video is selected<sup>8</sup>, the component video signal<sup>7</sup> is transmitted over the CAT5 cable to the COMP output on the **WP-28** receiver
- If the ANALOG stereo audio source is selected via the AUDIO button, the **WP-27** converts it to a digital 48kHz 24 bit signal which is transmitted, together with the video signal, over the CAT5 cable to the **WP-28** receiver
- If S/PDIF (digital audio) is selected via the AUDIO button, it is transmitted together with the video signal over the CAT5 cable to the **WP-28** receiver

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1 Either s-Video or composite video (both inputs cannot be connected simultaneously)

2 Via two INPUT select buttons letting you choose the video signal input and the audio signal input

3 The audio signal is outputted to both outputs simultaneously

4 The WP-27 and WP-28 do not perform any video signal format conversion. A composite video source would need to be routed to a composite video output or an s-Video source would need to be routed to an s-Video output. Similarly, a component video source would need to be routed to a component video output

5 By connecting only a CV input and releasing the Y/C-CV COMP VIDEO INPUT button

6 By connecting only a Y/C input and releasing the Y/C-CV COMP VIDEO INPUT button

7 And audio signal

8 By pressing the Y/C-CV COMP VIDEO INPUT button

The **WP-27** Transmitter includes:

- An s-Video (Y/C) input on a 4p connector
- A composite video (CV) input on an RCA connector
- A component video (Y, Cb/Pb, Cr/Pr)<sup>1</sup> input on three RCA connectors
- A VIDEO INPUT selector button
- An analog audio input
- A digital audio input (S/PDIF)
- An AUDIO INPUT selector button
- A CAT5 output for signal transmission to the **WP-28**

The **WP-28** Receiver includes:

- An s-Video (Y/C) output on a 4p connector
- A composite video (CV) output on an RCA connector
- A component video (Y, Cb/Pb, Cr/Pr)<sup>1</sup> output on 3 RCA connectors
- A video output selector button
- An analog audio output
- A digital audio output (S/PDIF)
- EQ. and LEVEL video output controls
- A CAT5 input for receiving the signal from the **WP-27**
- An ON LED and a LINK LED

### 3.2 About the 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 used<sup>2</sup>.

For a CAT5 cable exceeding a distance of 50 meters, separate power supplies should be connected to the transmitter and to the receiver simultaneously.

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<sup>1</sup> Also known as Y, B-Y, R-Y or YUV

<sup>2</sup> CAT5 cable is still suitable for the video/audio transmission, but not for feeding the power at these distances

### 3.3 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 is used. 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 and so on, which are prone to create electrical interference.

### 3.4 Recommendations for Achieving the Best Performance

Achieving the best performance means:

- Connecting 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)
- Avoiding interference from neighboring electrical appliances that may adversely influence signal quality and positioning your **WP-27** and/or **WP-28** in a location free from moisture and away from 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<sup>1</sup>.

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

## 4 Your WP-27 / WP-28

This section describes the:

- **WP-27** *Component/CV/YC – S/PDIF/Analog Transmitter*, see section 4.1
- **WP-28** *Component/CV/YC – S/PDIF/Analog Receiver*, see section 4.2

<sup>1</sup> For example: model number AD2512C, part number 2535-000251

### 4.1 Your WP-27 Component/CV/YC – S/PDIF/Analog Transmitter

Figure 1<sup>1</sup>, Figure 2, Table 1 and Table 2 define the **WP-27**:

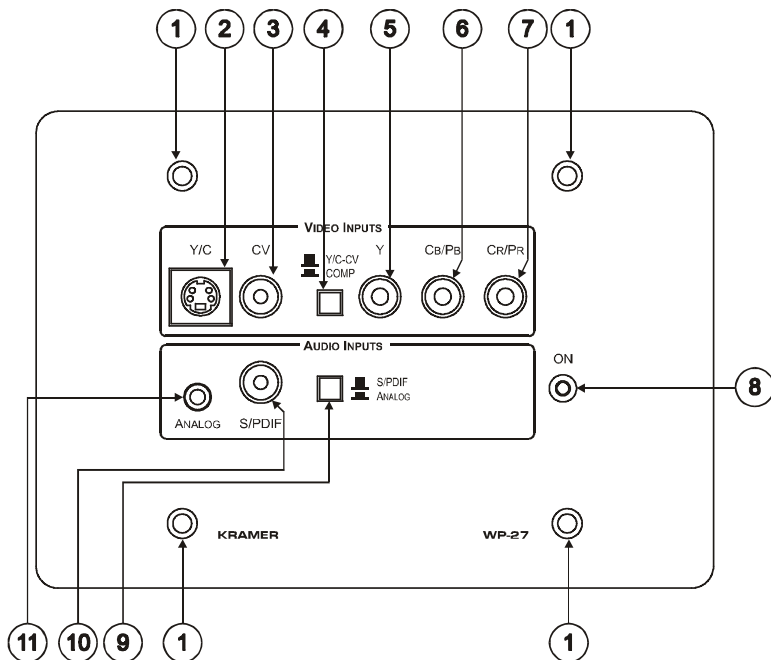


Figure 1: WP-27 Component/CV/YC – S/PDIF/Analog Transmitter Front Panel

Table 1: WP-27 Component/CV/YC – S/PDIF/Analog Transmitter Front Panel Features

#	Feature	Function	
1	Holes (4)	For fastening the wall plate in place	
2	VIDEO INPUTS	Y/C 4p Connector	Connect to the s-Video source
3		CV RCA Connector	Connect to the composite video source
4		Y/C-CV COMP Selector Button	Push in to select COMP (component video); release to select either Y/C (s-Video) or CV (composite video)
5		Y RCA Connector	Connect to the component video source
6		Cb/Pb RCA Connector	
7		Cr/Pr RCA Connector	
8		ON LED	Illuminates when receiving power
9	AUDIO INPUTS	S/PDIF ANALOG Selector Button	Push in to select ANALOG; release to select S/PDIF
10		S/PDIF RCA Connector	Connect to the digital audio source
11		ANALOG 3.5mm Mini Jack Connector	Connect to the analog audio source

<sup>1</sup> Figure 1 illustrates the WP-27 version for the USA. There is also a similar version available for Europe



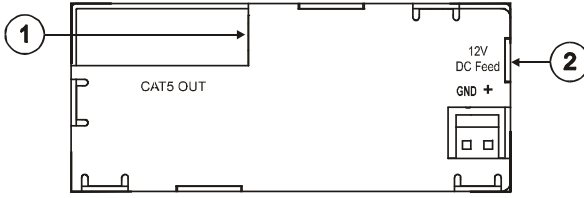


Figure 2: WP-27 Component/CV/YC – S/PDIF Line Transmitter Rear Panel

Table 2: WP-27 Component/CV/YC – S/PDIF/Analog Transmitter Rear Panel Features

#	Feature	Function	
1	CAT5 OUT RJ-45 Connector	Connects to the CAT5 IN connector on the WP-28	
2	12V DC FEED	GND PIN	Connects (-) to the Ground
		+ PIN	Connects (+) to the connector for powering the unit

## 4.2 Your WP-28 Component/CV/YC – S/PDIF/Analog Receiver

Figure 3<sup>1</sup>, Figure 4, Table 3 and Table 4 define the WP-28:

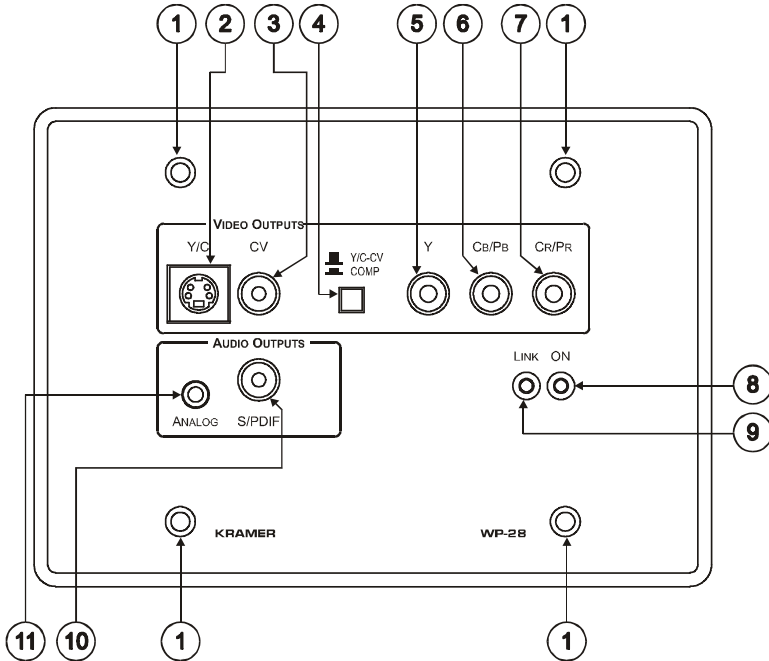


Figure 3: WP-28 Component/CV/YC – S/PDIF/Analog Receiver Front Panel

<sup>1</sup> Figure 3 illustrates the WP-28 version for the USA. There is also a similar version available for Europe

Table 3: WP-28 Component/CV/YC – S/PDIF/Analog Receiver Front panel Features

#	Feature	Function	
1	Holes (4)	For fastening the wall plate in place	
2	VIDEO OUTPUTS	Y/C 4p Connector	Connect to the s-Video acceptor
3		CV RCA Connector	Connect to the composite video acceptor
4		Y/C-CV COMP Selector Button	Push in to select COMP (component video); release to select either Y/C (s-Video) or CV (composite video)
5		Y RCA Connector	Connect to the component video acceptor
6		CB/PB RCA Connector	
7	CR/PR RCA Connector		
8	ON LED	Illuminates when receiving power	
9	LINK LED	Illuminates when receiving the correct input signal	
10	AUDIO OUTPUTS	S/PDIF RCA Connector	Connect to the digital audio source
11		ANALOG 3.5mm Mini Jack Connector	Connect to the analog audio source

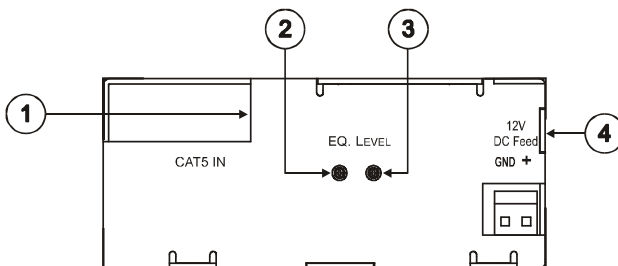


Figure 4: WP-28 Component/CV/YC – S/PDIF/Analog Receiver Rear Panel

Table 4: WP-28 Component/CV/YC – S/PDIF/Analog Receiver Rear Panel Features

#	Feature	Function	
1	CAT5 IN RJ-45 Connector	Connects to the CAT5 OUT connector on the <b>WP-27</b>	
2	EQ. Trimmer	Adjust <sup>1</sup> the cable compensation equalization output signal level	
3	LEVEL Trimmer	Adjust <sup>1</sup> the output signal level	
4	12V DC FEED	GND PIN	Connects (-) to the Ground
		+ PIN	Connects (+) to the connector for powering the unit

<sup>1</sup> Insert a screwdriver into the small hole and carefully rotate it, trimming the level

## 5 Connecting the WP-27 / WP-28

When configuring the **WP-27 / WP-28** CAT5 Transmitter and Receiver system, you can choose to transmit one of the three video signals to the receiver: a component video signal, or a composite video signal or an s-Video signal. You can connect either a composite video source or an s-Video signal, as well as a component video signal and use the video input selector button to choose the desired signal to transmit to the receiver.

In the example illustrated in Figure 5, the **WP-27 / WP-28** CAT5 Transmitter and Receiver system is set up to transmit a component video signal (for example, for high quality home cinema).

To connect the Transmitter and Receiver system, as shown in the example illustrated in Figure 5, do the following<sup>1</sup>:

1. On the **WP-27**, connect a:
  - Component video source (for example, a component video player), to the Y, CB/PB, and CR/PR RCA VIDEO INPUT connectors
  - A digital audio source<sup>2</sup> (for example, the audio signal of the component video player), to the S/PDIF AUDIO INPUT RCA connector
2. On the **WP-27**, press<sup>3</sup> the VIDEO INPUT selector button and release<sup>4</sup> the AUDIO INPUT selector button.
3. On the **WP-28**, connect the:
  - Y, CB/PB, and CR/PR RCA VIDEO INPUT connectors to a component video acceptor (for example, a plasma display)
  - S/PDIF AUDIO INPUT RCA connector to a digital audio acceptor (for example, a receiver and speakers)
4. On the **WP-28**, press<sup>5</sup> the VIDEO OUTPUT selector button.
5. Connect the CAT5 OUT connector of the **WP-27** to the CAT5 IN connector of the **WP-28**, via UTP cabling (maximum range of up to 300ft (100m)).
6. On both<sup>6</sup> the **WP-27** and the **WP-28**, connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 5).

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1 You can transmit one of three video signals to the receiver: a component video signal, a composite video signal or an s-Video signal. The receiver outputs this signal only

2 Alternatively, you can also connect an analog audio signal and select it via the AUDIO INPUT selector button

3 Thus selecting the component video input

4 Thus selecting the digital audio input

5 Thus selecting the component video output

6 If you cannot connect the power to both the WP-27 and WP-28, you can just connect the power to the WP-28

7. If required, on the **WP-28**, adjust<sup>1</sup> the equalization and audio level.

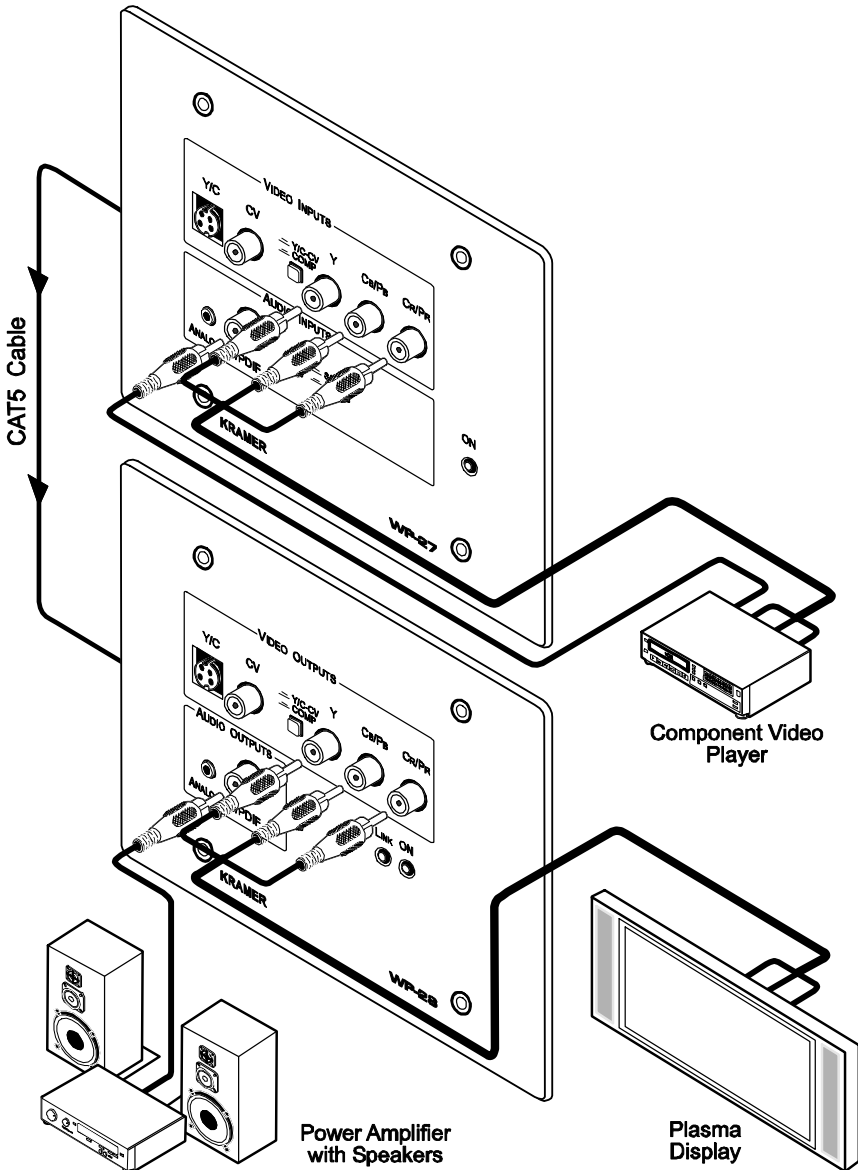


Figure 5: Connecting the WP-27 / WP-28

<sup>1</sup> Use a screwdriver to carefully rotate the trimmer, adjusting the appropriate level

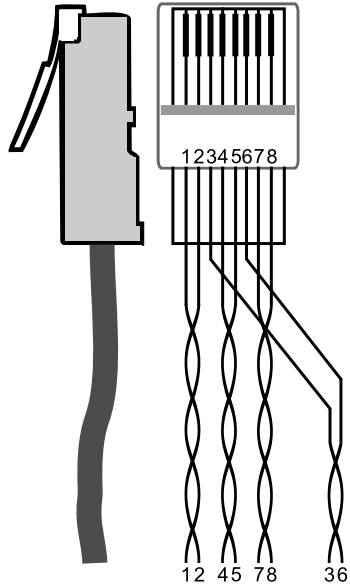
## 5.1 Wiring the CAT 5 LINE IN / LINE OUT RJ-45 Connectors

Table 5 and Figure 6 define the CAT 5 PINOUT, using a straight pin to pin cable with RJ-45 connectors:

Table 5: CAT 5 PINOUT

EIA /TIA 568A		EIA /TIA 568B	
PIN	Wire Color	PIN	Wire Color
1	Green / White	1	Orange / White
2	Green	2	Orange
3	Orange / White	3	Green / White
4	Blue	4	Blue
5	Blue / White	5	Blue / White
6	Orange	6	Green
7	Brown / White	7	Brown / White
8	Brown	8	Brown
<b>Pair 1</b>		<b>Pair 1</b>	
Pair 1	4 and 5	Pair 1	4 and 5
<b>Pair 2</b>		<b>Pair 2</b>	
Pair 2	3 and 6	Pair 2	1 and 2
<b>Pair 3</b>		<b>Pair 3</b>	
Pair 3	1 and 2	Pair 3	3 and 6
<b>Pair 4</b>		<b>Pair 4</b>	
Pair 4	7 and 8	Pair 4	7 and 8

Figure 6: CAT 5 PINOUT



## 6 Technical Specifications

Table 6 defines the technical specifications<sup>1</sup>:

*Table 6: Technical Specifications<sup>2</sup> of the WP-27 / WP-28*

INPUTS:	<b>WP-27:</b> 1 s-Video (Y/C) 1Vpp/75Ω (Y), 0.3Vpp/75Ω (C) on a 4p connector 1 composite video (CV) 1Vpp/75Ω on an RCA connector 1 component 1Vpp/75Ω (Y,Pb,Pr) on 3 RCA connectors 1 S/PDIF (digital audio) on an RCA connector 1 audio ANALOG on a 3.5mm mini jack
	<b>WP-28:</b> 1 RJ-45 CAT-5 shielded connector (CAT5 in)
OUTPUTS:	<b>WP-27:</b> 1 RJ-45 CAT-5 shielded connector (CAT5 out)
	<b>WP-28:</b> 1 s-Video (Y/C) 1Vpp/75Ω (Y), 0.3Vpp/75Ω (C) on a 4p connector 1 composite video (CV) 1Vpp/75Ω on an RCA connector 1 component 1Vpp/75Ω (Y,Pb,Pr) on 3 RCA connectors 1 S/PDIF (digital audio) on an RCA connector 1 audio ANALOG on a 3.5mm mini jack
MAX. OUTPUT LEVEL:	<b>WP-28:</b> VIDEO: 1V AUDIO: 2.5V
RESOLUTION:	Up to UXGA, up to 1080p
CONTROLS:	<b>WP-27:</b> Video input selector button, audio input selector button
	<b>WP-28:</b> Video output selector button, Level: -7.5dB to +4.4dB, EQ.: 0dB to +33dBm (130m) @ 50MHz
BANDWIDTH (-3dB) <sup>3</sup> :	AUDIO: 20Hz – 20kHz@0.5dB
S/N RATIO:	AUDIO: <-80dB
TOTAL GAIN:	AUDIO: Analog/analog: 0dB Analog/SPDIF: -12dBFS
COUPLING:	AC
TND+N:	AUDIO: <0.01%
POWER SOURCE:	<b>WP-27:</b> 12VDC, 200mA
	<b>WP-28:</b> 12VDC, 300mA
DIMENSIONS:	<b>WP-27/ WP-28:</b> 12 cm x 7.5 cm x 2.5 cm (4.7" x 2.95" 0.98", W, D, H)
WEIGHT:	<b>WP-27/ WP-28:</b> 0.3 kg (0.67 lbs.) approx
ACCESSORIES:	Power Supply

<sup>1</sup> Specifications for 100m of CAT5 UTP cable, unless otherwise specified

<sup>2</sup> Specifications are subject to change without notice

<sup>3</sup> For the Transmitter/Receiver pair

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## 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](http://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.





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**For the latest information on our products and a list of Kramer distributors, visit our Web site: [www.kramerelectronics.com](http://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.



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**Kramer Electronics, Ltd.**

Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com)

E-mail: [info@kramereel.com](mailto:info@kramereel.com)

P/N: 2900-000290 REV 1