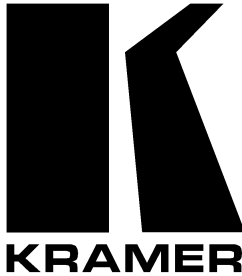


Kramer Electronics, Ltd.



USER MANUAL

Models:

TP-41, Component – S/PDIF Line Transmitter

TP-42, Component – S/PDIF Line 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 Groups¹, which are clearly defined by function. Congratulations on purchasing your Kramer TOOLS **TP-41 Component – S/PDIF Line Transmitter** and Kramer TOOLS **TP-42 Component – S/PDIF Line Receiver**, which are particularly ideal for high quality home cinema.

The **TP-41** and **TP-42** are also suitable for utilizing existing UTP cabling that results in an efficient, fast and uncluttered environment for:

- Studios, airports, offices and hospitals
- Security and military applications

The package includes the following items:

- **TP-41** and/or **TP-42**
- Power supply², and this user manual³

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 cables⁴

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. As an option, you can purchase the Kramer VA-50P 6 Port Universal 12-Volt Power Supply, enabling you to supply power to up to 6 Kramer devices that require 12VDC

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>

3 Overview

This section describes:

- The power connect feature, see section 3.1
- Using shielded twisted pair (STP) / unshielded twisted pair (UTP), see section 3.2
- A summary of the **TP-41 / TP-42**, see section 3.3
- Recommendations for achieving the best performance, see section 3.4

3.1 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 used¹.

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

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

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

It is recommended that in applications with high interference, shielded twisted pair (STP) cable 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.

3.3 About the TP-41 / TP-42

Using the **TP-41 Component – S/PDIF Line Transmitter** with the **TP-42 Component – S/PDIF Line Receiver** constitutes a *Component – S/PDIF Line* transmitter / receiver system. The **TP-42** receives the CAT5 signal, decodes it and simultaneously distributes it to the YUV output.

¹ CAT5 cable is still suitable for the video/audio transmission, but not for feeding the power at these distances

The **TP-41 Component – S/PDIF Line Transmitter** includes:

- A YUV¹ input on 3 RCA connectors
- A digital audio input (S/PDIF)
- A CAT5 output for signal transmission to the **TP-42**
- Individual level controls for the Y, U, and V signals
- Audio level control

The **TP-42 Component – S/PDIF Line Receiver** includes:

- A YUV¹ output on 3 RCA connectors
- A digital audio output (S/PDIF)
- A CAT5 input for signal reception from the **TP-41**
- Individual level and EQ. controls for the Y, U, and V signals
- Audio level and EQ. controls

Kramer twisted pair adapters are an excellent way to solve remote monitoring requirements without using more costly coaxial cable or fiber, or wireless transmission systems.

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 **TP-41** and/or **TP-42** in a location free from moisture and away from excessive sunlight and dust

¹ Also known as Y, B-Y, R-Y, or Y, Pb, Pr

4 Your Component – S/PDIF Line Transmitter and Line Receiver

This section describes the:

- **TP-41 Component – S/PDIF Line Transmitter**, see section 4.1
- **TP-42 Component – S/PDIF Line Receiver**, see section 4.2

4.1 Your TP-41 Component – S/PDIF Line Transmitter

For a description of the **TP-41**:

- Topside, see section 4.1.1
- Underside, see section 4.1.2

4.1.1 Your TP-41 Component – S/PDIF Line Transmitter Topside

Figure 1, Figure 2, Figure 3 and Table 1 define the **TP-41**:

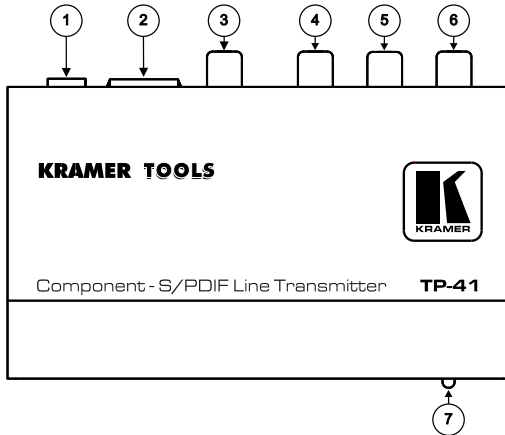


Figure 1: TP-41 Component – S/PDIF Line Transmitter

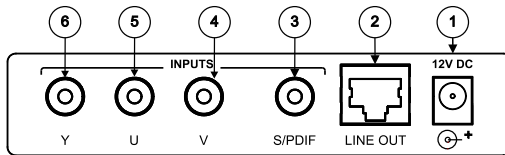


Figure 2: TP-41 Component – S/PDIF Line Transmitter (Top Side Panel)



Figure 3: TP-41 Component – S/PDIF Line Transmitter (Lower Side Panel)

Table 1: TP-41 Component – S/PDIF Line Transmitter Features

| # | Feature | Function |
|---|--------------------------|-------------------------------------------------------------|
| 1 | 12V DC | +12V DC connector for powering the unit |
| 2 | LINE OUT RJ-45 Connector | Connects to the LINE IN connector on the TP-42 ¹ |
| 3 | INPUTS | S/PDIF RCA Connector |
| 4 | | V RCA Connector |
| 5 | | U RCA Connector |
| 6 | | Y RCA Connector |
| 7 | ON LED | Illuminates when receiving power |

4.1.2 Your TP-41 Component – S/PDIF Line Transmitter Underside

Figure 4 and Table 2 define the underside of the TP-41:

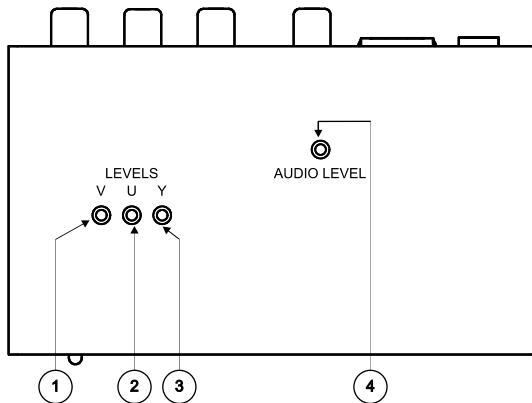


Figure 4: TP-41 Component – S/PDIF Line Transmitter Underside

Table 2: TP-41 Component – S/PDIF Line Transmitter Underside Features

| # | Feature | Function |
|---|---------------------|------------------------------------------------|
| 1 | V LEVEL Trimmer | Adjusts ² the V output signal level |
| 2 | U LEVEL Trimmer | Adjusts ² the U output signal level |
| 3 | Y LEVEL Trimmer | Adjusts ² the Y output signal level |
| 4 | AUDIO LEVEL Trimmer | Adjusts ² the volume |

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

2 Insert a screwdriver into the small hole and carefully rotate it, trimming the level

4.2 Your TP-42 Component – S/PDIF Line Receiver

For a description of the **TP-42**:

- Topside, see section 4.2.1
- Underside, see section 4.2.2

4.2.1 Your TP-42 Component – S/PDIF Line Receiver Topside

Figure 5, Figure 6, Figure 7 and Table 3 define the **TP-42**:

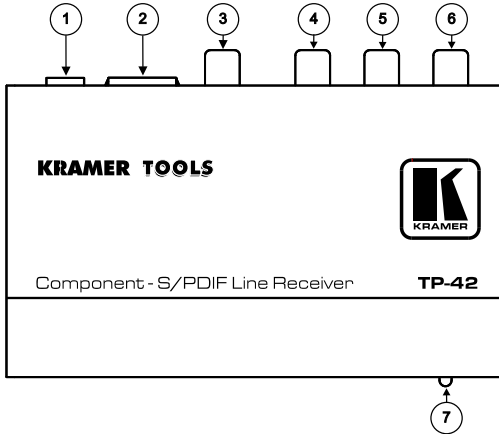


Figure 5: TP-42 Component – S/PDIF Line Receiver

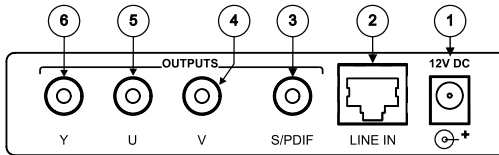


Figure 6: TP-42 Component – S/PDIF Line Receiver (Top Side Panel)

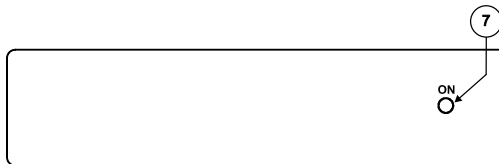


Figure 7: TP-42 Component – S/PDIF Line Receiver (Lower Side Panel)

Table 3: TP-42 Component – S/PDIF Line Receiver Topside Features

| # | Feature | Function |
|---|-------------------------|---------------------------------------------------------------------|
| 1 | 12V DC | +12V DC connector for powering the unit |
| 2 | LINE IN RJ-45 Connector | Connects to the <i>LINE OUT</i> connector on the TP-41 ¹ |
| 3 | OUTPUTS | S/PDIF RCA Connector |
| 4 | | V RCA Connector |
| 5 | | U RCA Connector |
| 6 | | Y RCA Connector |
| 7 | ON LED | Illuminates when receiving power |

4.2.2 Your TP-42 Component – S/PDIF Line Receiver Underside

Figure 8 and Table 4 define the underside of the TP-42:

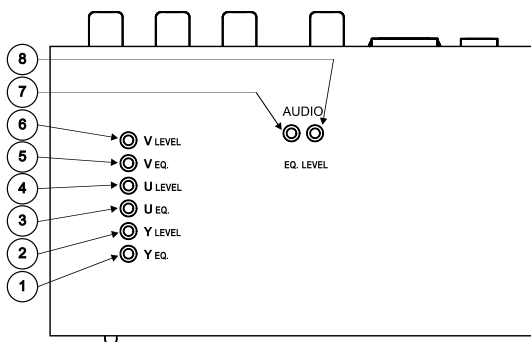


Figure 8: TP-42 Component – S/PDIF Line Receiver Underside

Table 4: TP-42 Component – S/PDIF Line Receiver Underside Features

| # | Feature | Function |
|---|---------------------|-----------------------------------------------------------------------------|
| 1 | Y EQ. Trimmer | Adjusts ² the cable compensation equalization level for output Y |
| 2 | Y LEVEL Trimmer | Adjusts ² the Y output signal level |
| 3 | U EQ. Trimmer | Adjusts ² the cable compensation equalization level for output U |
| 4 | U LEVEL Trimmer | Adjusts ² the U output signal level |
| 5 | V EQ. Trimmer | Adjusts ² the cable compensation equalization level for output V |
| 6 | V LEVEL Trimmer | Adjusts ² the V output signal level |
| 7 | AUDIO EQ. Trimmer | Adjusts ² the audio equalization level |
| 8 | AUDIO LEVEL Trimmer | Adjusts ² the volume |

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

2 Insert a screwdriver into the small hole and carefully rotate it, trimming the level

5 Connecting a Component – S/PDIF Distribution System

To configure a **TP-41 / TP-42** Component – S/PDIF distribution system (for example, for high quality home cinema), as Figure 9 illustrates, do the following:

1. On the **TP-41**, connect a component video source (for example, a DVD player) to the:
 - Y, U, and V RCA (component video) INPUT connectors
 - S/PDIF (digital audio) RCA INPUT connector
2. On the **TP-42**, connect the:
 - Y, U, and V RCA (component video) OUTPUT connectors to a component acceptor (for example, a plasma monitor)
 - S/PDIF (digital audio) RCA OUTPUT connector to an AV-Receiver
3. Connect the *LINE OUT* connector of the **TP-41** to the *LINE IN* connector of the **TP-42**, via UTP cabling (maximum range of up to 300ft (100m)).
4. On each **TP-41 / TP-42** unit:
 - Connect a 12V DC power adapter to the power socket and connect the adapter to the mains electricity
 - If necessary, adjust¹ the appropriate level(s), by inserting a screwdriver into the small hole and carefully rotating it

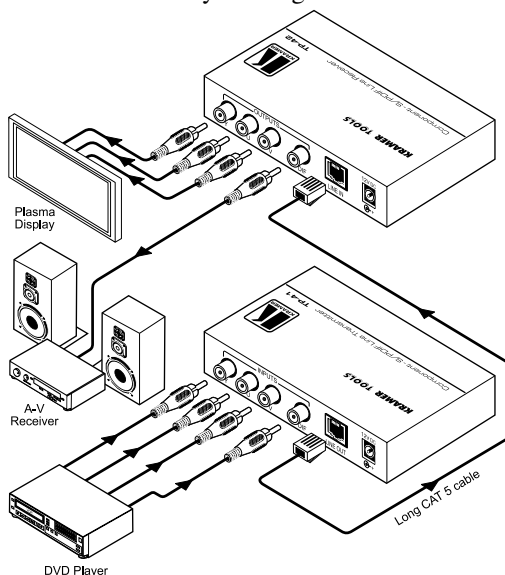


Figure 9: Component – S/PDIF Distribution System up to 300ft (100m) UTP Cable

¹ On the TP-41, adjust the audio level and/or the Y, U, and V levels. On the TP-42, adjust the audio level, the audio EQ., the Y, U, and V levels, and/or the Y, U, and V EQ.

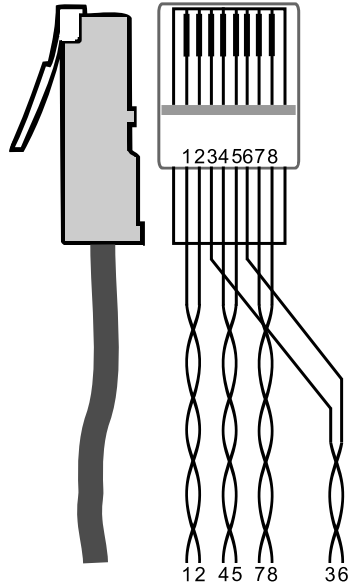
5.1 Wiring the CAT 5 LINE IN / LINE OUT RJ-45 Connectors

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

Figure 10: CAT 5 PINOUT



6 Technical Specifications

Table 6 defines the technical specifications¹:

Table 6: Technical Specifications² of the TP-41 / TP-42

| | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| INPUTS: | TP-41: 1 set of component video (Y, U, V) on RCA connectors 1 S/PDIF (digital audio) on an RCA connector |
| | TP-42: 1 RJ-45 CAT-5 shielded connector (Line In) |
| OUTPUTS: | TP-41: 1 RJ-45 CAT-5 shielded connector (Line Out) |
| | TP-42: 1 set of component video (Y, U, V) on RCA connectors 1 S/PDIF (digital audio) on an RCA connector |
| MAX. OUTPUT LEVEL: | VIDEO: 2.1Vpp AUDIO: 2.1Vpp (S/PDIF) |
| BANDWIDTH (-3dB): | VIDEO: 57MHz ³ , Fully Loaded AUDIO: 53.4MHz ³ |
| DIFF. GAIN: | 0.15% |
| DIFF. PHASE: | 0.68 Deg |
| K-FACTOR: | 0.8% |
| S/N RATIO: | VIDEO: 78.1dB AUDIO: 78.4dB |
| CROSSTALK (all hostile): | VIDEO: -55.5dB AUDIO: -50.5dB |
| CONTROLS: | TP-41: YUV Level: -1.7dB to +0.7dB S/PDIF Level: -1.9dB to +0.4dB |
| | TP-42: YUV Level: -0.7dB to +0.8dB YUV Equalization: 0 to +7.5dB S/PDIF Level: -0.5dB to +1.2dB S/PDIF Equalization: 0 to +7.8dB |
| COUPLING: | VIDEO: DC AUDIO: DC |
| POWER SOURCE: | TP-41: 12VDC, 95mA |
| | TP-42: 12VDC, 82mA |
| DIMENSIONS: | TP-41 / TP-42: 12 cm x 7.5 cm x 2.5 cm (4.7" x 2.95" 0.98", W, D, H) |
| WEIGHT: | TP-41 / TP-42: 0.3 kg (0.67 lbs.) approx |
| ACCESSORIES: | Power Supply |

1 Specifications for 100m of CAT5 UTP cable, unless otherwise specified

2 Specifications are subject to change without notice

3 At 30m

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
 - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
 - ii) Product modification, or failure to follow instructions supplied with the product
 - iii) Repair or attempted repair by anyone not authorized by Kramer
 - iv) Any shipment of the product (claims must be presented to the carrier)
 - v) Removal or installation of the product
 - vi) Any other cause, which does not relate to a product defect
 - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- EN-50081: "Electromagnetic compatibility (EMC);
generic emission standard.
Part 1: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.
Part 1: Residential, commercial and light industry environment".
- CFR-47:
FCC Rules and Regulations:
Part 15: "Radio frequency devices
Subpart B – Unintentional radiators"

CAUTION!

- ☒ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ☒ Use the supplied DC power supply to feed power to the machine.
- ☒ Please use recommended interconnection cables to connect the machine to other components.





For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found. We welcome your questions, comments and feedback.



Caution

Safety Warning:

Disconnect the unit from the power supply before opening/servicing.



Kramer Electronics, Ltd.

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E-mail: info@kramerel.com

P/N: 2900-00041 REV 3