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 350-plus different models now appear in 8 Groups[1], 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** *Component – S/PDIF Line Transmitter* and/or **TP-42** *Component – S/PDIF Line Receiver*
- Power supply[2]
- This user manual[3] and the Kramer concise product catalog/CD

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[4]

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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 Scalers; 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/manuals.html

4 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com (click "Cables and Connectors" in the Products section)

3   Overview

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.

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

- A YUV[1] 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 YUV[1] 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.

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

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

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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 and Table 1 define the topside of the **TP-41**:
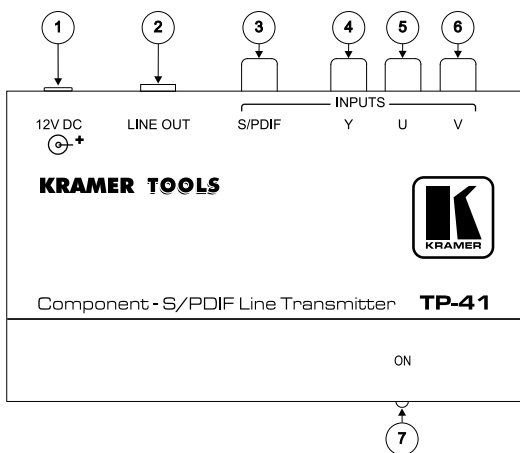
Figure 1: TP-41 Component – S/PDIF Line Transmitter Topside

Table 1: TP-41 Component – S/PDIF Line Transmitter Topside 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		*S/PDIF* RCA Connector	Connects to the digital audio source
4	INPUTS	*Y* RCA Connector	
5		*U* RCA Connector	Connects to the component video source
6		*V* RCA Connector	
7		*ON LED*	Illuminates when receiving power

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 6)

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

Figure 2 and Table 2 define the underside of the **TP-41**:
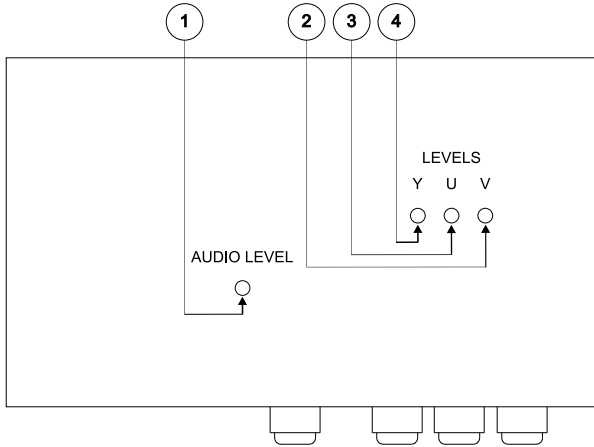
Figure 2: TP-41 Component – S/PDIF Line Transmitter Underside

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

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

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1 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 3 and Table 3 define the topside of the **TP-42**:
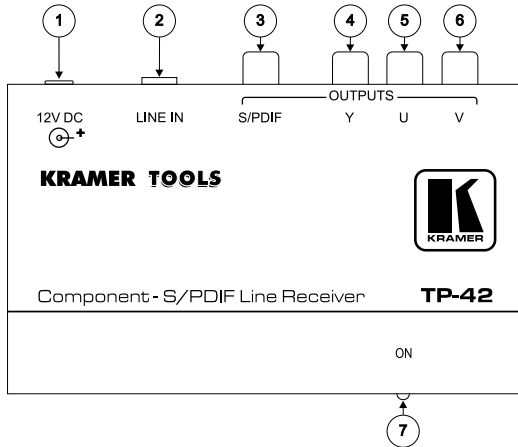
Figure 3: TP-42 Component – S/PDIF Line Receiver Topside

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 *LINE OUT* connector on the **TP-41**[1]
3	OUTPUTS	*S/PDIF* RCA Connector	Connects to the digital audio acceptor
4		*Y* RCA Connector	
5		*U* RCA Connector	Connects to the component video acceptor
6		*V* RCA Connector	
7	*ON LED*		Illuminates when receiving power

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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 6)

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

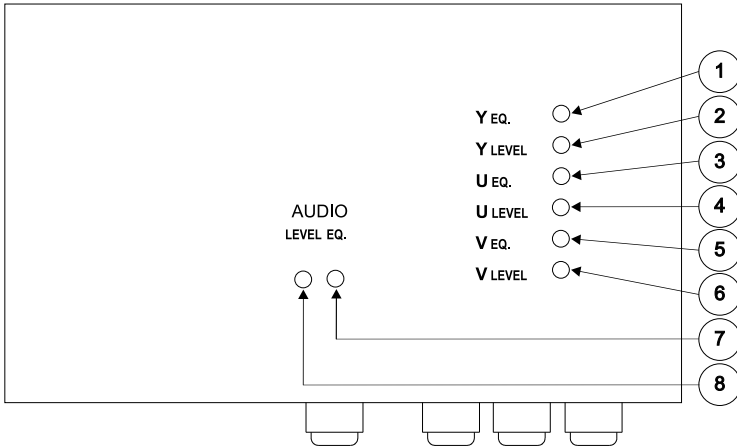Figure 4 and Table 4 define the underside of the **TP-42**:

Figure 4: 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[1] the cable compensation equalization level for output Y
2	Y LEVEL Trimmer	Adjusts[1] the Y output signal level
3	U EQ. Trimmer	Adjusts[1] the cable compensation equalization level for output U
4	U LEVEL Trimmer	Adjusts[1] the U output signal level
5	V EQ. Trimmer	Adjusts[1] the cable compensation equalization level for output V
6	V LEVEL Trimmer	Adjusts[1] the V output signal level
7	AUDIO EQ. Trimmer	Adjusts[1] the audio equalization level
8	AUDIO LEVEL Trimmer	Adjusts[1] the volume

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

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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 5 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, adjust[1] the appropriate level(s), by inserting a screwdriver into the small hole and carefully rotating it
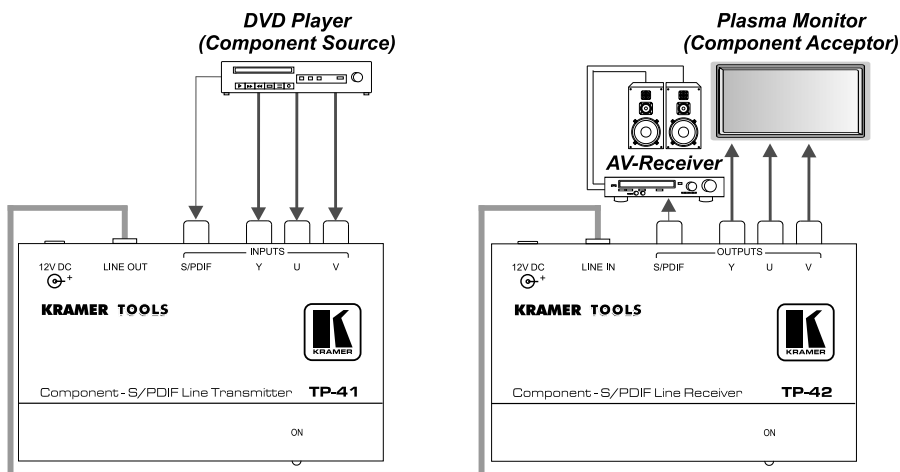

Figure 5: Component – S/PDIF Distribution System up to 300ft (100m) UTP Cable

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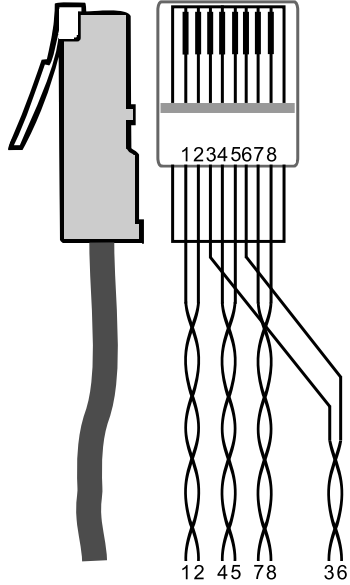
5.1 Wiring the CAT 5 LINE IN / LINE OUT RJ-45 Connectors

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

Figure 6: CAT 5 PINOUT

Table 5: 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

6   Technical Specifications

Table 6 defines the technical specifications[1]:

Table 6: Technical Specifications[2] 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		

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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 three 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.

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