

Kramer Electronics, Ltd.



USER MANUAL

Model:

TP-300FW

FireWire Range Extender

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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 groups¹ that are clearly defined by function.

Congratulations on purchasing your Kramer TOOLS **TP-300FW** *FireWire Range Extender*, which is ideal for:

- Digital video production, editing studios, and digital video live broadcasting
- PC FireWire[®] port extensions and long cable drivers

The package includes the following items:

- **TP-300FW** *FireWire Range Extender*
- Power adapter (+12V DC input)
- This user manual²

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 cables³

2.1 Quick Start

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

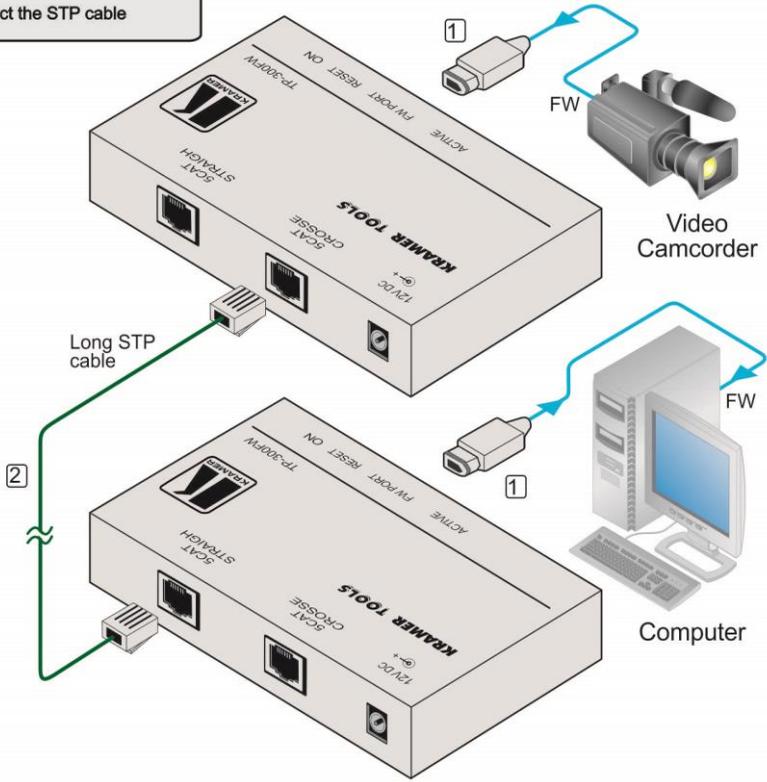
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters and GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from <http://www.kramerelectronics.com>

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

Connect the input, output and link - see section 5

- 1 Connect the FireWire devices
- 2 Connect the STP cable



- 3 Turn on the FireWire devices
- 4 Connect the 12V Power Adapters to the units and to the mains power

3 Overview

The high quality Kramer TOOLS **TP-300FW** *FireWire Range Extender* is a truly unique product that lets you extend the standard 4.5m (13.5ft) FireWire range considerably. For example, a pair of **TP-300FW** units (see [Figure 2](#)) lets you extend the FireWire range to up to 100m (300ft), and connecting three **TP-300FW** units (see [Figure 3](#)) lets you extend the FireWire range to up to 200m (600ft), using common and inexpensive Shielded or Unshielded Twisted Pair cable.

The **TP-300FW** *FireWire Range Extender* is based on FireWire which:

- Is a serial bus standard¹ that enables quick universal interfacing between digital video, audio and data, and computer hardware items²
- Is simple to use and operates independently of the host system letting you connect items for extended distances
- Supports Plug and Play³, hot swapping⁴ and isochronous⁵ and asynchronous applications

In particular, the **TP-300FW**:

- Supports the provisions of the IEEE 1394a-2000 and 1394-1995 Standard for High Performance 1394 Serial Bus
- Supports the provisions of the IEEE 1394b-2002 Standard at S100 signaling rates
- Enables 1394 100Mbps signals to be transmitted and received across an extended range on unshielded twisted pair cable
- Includes built-in protection from electrostatic discharge (ESD)⁶, by suppressing all transient high voltages down to the allowed level. In particular, ESD protection for high-speed data lines to IEC 61000-4-2 (ESD) 15kV (air), 8kV (contact), IEC 61000-4-5 (Lightning) 12A (8/20us), and IEC 61000-4-4 (EFT) 40A (5/50ns)

To achieve the best performance:

- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **TP-300FW** away from moisture, excessive sunlight and dust

1 Originally developed by Apple™ and published as IEEE 1394 by the Institute of Electrical and Electronics Engineers

2 Hardware items include digital cameras, computers, printers, VCRs, CD-ROMs, hard disks, scanners and graphic cards

3 Configures automatically. Whenever a device is added or removed, the 1394 bus re-enumerates

4 You can connect and disconnect inputs and outputs dynamically, without having to restart the PC or cycle power

5 Video/audio applications require constant transfer rates, which the serial bus provides by supporting isochronous transfers

6 Often when connecting a "live" DV source to a receptor, an electrical potential difference or any other element creating a high voltage (such as ESD or a live chassis) may permanently damage one or both of the connected devices. This high voltage may be seen as a spark occurring at the instant of connection, or may not be seen at all, but nevertheless can result in costly damage

3.1 Shielded Twisted Pair Cable

We recommend that you use Shielded Twisted Pair (STP) cable. There are different categories of STP cable available and we advise you to use the best quality STP cable that you can afford. Our non-skew-free cable, Kramer **BC-STP** is intended for digital signals and for analog signals where skewing is not an issue. We advise using STP cables where possible, since the compliance to electromagnetic interference has been tested using STP cables.

3.2 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables¹ to avoid 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 that may adversely influence signal quality, and position your Kramer **TP-300FW** 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 the unit*
	Warning: Disconnect power and unplug unit from wall before installing or removing the device or servicing unit
<small>* For example, P/N 2535-000251 (12V DC), P/N 2535-052002 (5V DC)</small>	

¹ Available from <http://www.kramerelectronics.com>

4 Defining the TP-300FW FireWire Range Extender

[Figure 1](#) and [Table 1](#) define the **TP-300FW FireWire Range Extender**.

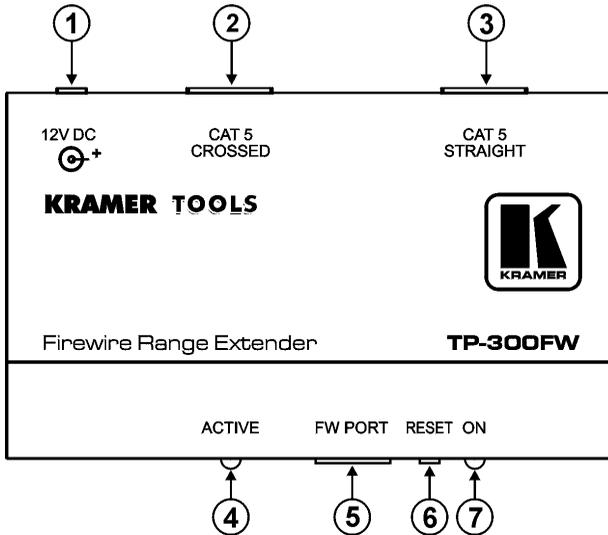


Figure 1: TP-300FW FireWire Range Extender

Table 1: TP-300FW FireWire Range Extender Features

#	Feature	Function
1	12V DC	+12V DC connector for powering the unit, center pin positive
2	CAT 5 CROSSED RJ-45 Connector	Connects to the CAT 5 STRAIGHT connector on another TP-300FW unit
3	CAT 5 STRAIGHT RJ-45 Connector	Connects to the CAT 5 CROSSED connector on another TP-300FW unit
4	ACTIVE LED	Lights green when a powered and fully functioning FireWire device is connected
5	FW PORT	Connects to the FireWire device
6	RESET Button	Reboots the unit (without having to disconnect and reconnect the power)
7	ON LED	Lights red the unit is powered on

5 Using Your TP-300FW FireWire Range Extender

The standard FireWire range between two FireWire devices is limited to 4.5m (13.5ft). The **TP-300FW Range Extender** is used to extend this distance to 100m (300ft).

5.1 Extending the Distance Between Two FireWire Devices to 100m

To connect a pair of TP-300FW units via STP cable to extend the FireWire range as illustrated in the example in [Figure 2](#):

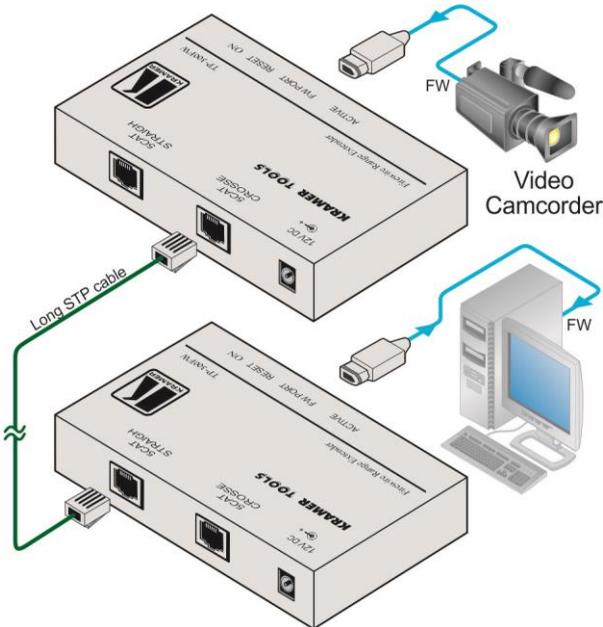


Figure 2: Extending the Distance Between Two FireWire Devices to 100m

1. Connect a FireWire device (for example, a video camcorder) to the FW PORT on the first **TP-300FW** unit, and a FireWire device (for example, a PC) to the FW PORT on the second **TP-300FW** unit.
2. When using a straight pin-to-pin STP cable, connect the CAT 5 STRAIGHT RJ-45 connector on the first **TP-300FW** unit to the CAT 5 CROSSED RJ-45 connector on the second **TP-300FW** unit¹.
When using a crossover STP cable, connect the CAT 5 STRAIGHT RJ-45 connector on the first **TP-300FW** unit to the CAT 5 STRAIGHT RJ-45

¹ Alternatively, connect the CAT 5 CROSSED RJ-45 connector on the first TP-300FW unit to the CAT 5 STRAIGHT RJ-45 connector on the second TP-300FW unit

connector on the second **TP-300FW** unit¹.

3. Be sure that the power on each FireWire device is turned ON.
On each **TP-300FW** unit, the ACTIVE green LED lights indicating that a cable from an external powered and fully functioning FireWire device is connected.
4. On each **TP-300FW** unit, connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.
The red ON LED lights.

5.2 Connecting Three TP-300FW Units to Extend the Distance to 200m

You can daisy-chain three **TP-300FW** units to extend the FireWire range to 200m.

To connect three TP-300FW units (using straight pin-to-pin STP cables) to extend the FireWire distance to 200m, as illustrated in [Figure 3](#):

¹ Alternatively, connect the CAT 5 CROSSED RJ-45 connector on the first TP-300FW unit to the CAT 5 CROSSED RJ-45 connector on the second TP-300FW unit

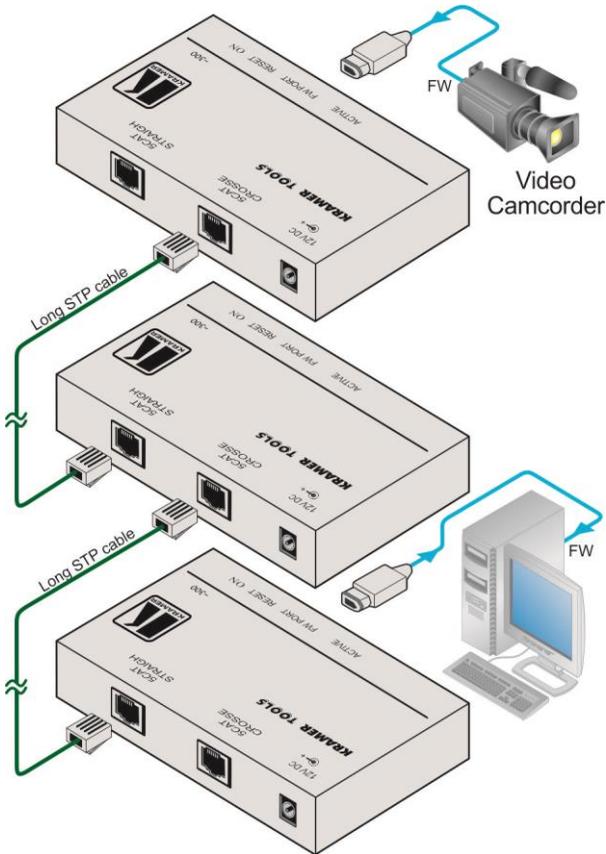


Figure 3: Connecting Three TP-300FW Units to Extend the Distance to 200m

1. Connect a FireWire device (for example, a video camcorder) to the FW PORT on the first **TP-300FW** unit, and a FireWire device (for example, a PC) to the FW PORT on the third **TP-300FW** unit.
2. Connect the CAT 5 STRAIGHT RJ-45 connector on the first **TP-300FW** unit to the CAT 5 CROSSED RJ-45 connector on the second **TP-300FW** unit.
3. Connect the CAT 5 STRAIGHT RJ-45 connector on the second **TP-300FW** unit to the CAT 5 CROSSED RJ-45 connector on the third **TP-300FW** unit¹.
4. Be sure that the power on each FireWire device is turned ON.
On the first and third **TP-300FW** units, the ACTIVE green LED lights

¹ Alternatively, connect the CAT 5 CROSSED RJ-45 connector on the first TP-300FW unit to the CAT 5 STRAIGHT RJ-45 connector on the second TP-300FW unit, and connect the CAT 5 CROSSED RJ-45 connector on the second TP-300FW unit to the CAT 5 STRAIGHT RJ-45 connector on the third TP-300FW unit

indicating that a cable from an external powered and fully functioning FireWire device is connected.

5. On all **TP-300FW** units, connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.
The red ON LED lights.

6 Technical Specifications

[Table 2](#) includes the technical specifications.

Table 2: Technical Specifications¹ of the TP-300FW FireWire Range Extender

PORT:	One 6-pin serial 1394 FireWire port 2 RJ-45 twisted pair ports
TRANSFER RATE:	100Mbps
IEEE-1394 STANDARDS:	IEEE 1394a-2000, IEEE 1394-1995, IEEE 1394b-2002 @ up to 100Mbps
ESD LINE PROTECTION:	IEC 61000-4-2 (ESD) 15kV (air), 8kV (contact), IEC 61000-4-5 (Lightning) 12A (8/20us), and IEC 61000-4-4 (EFT) 40A (5/50ns)
POWER SOURCE:	12 VDC, 60mA
DIMENSIONS:	12.1cm x 7.5cm x 2.5cm (4.76" x 2.95" x 0.98") W, D, H
WEIGHT:	0.3 kg. (0.67 lbs.) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" rack adapter

¹ Specifications are subject to change without notice

LIMITED WARRANTY

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

What is Covered

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

What is Not Covered

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

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

How Long Does this Coverage Last

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

Who is Covered

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

What Kramer Electronics will do

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

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

What Kramer Electronics will not do Under This Limited Warranty

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

How to Obtain a Remedy under this Limited Warranty

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

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

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

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

Other Conditions

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



For the latest information on our products and a list of Kramer distributors, visit our Web site 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.



P/N: 2900-000300



Rev: 3

Kramer Electronics, Ltd.

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P/N: 2900-000300 REV 3