



KRAMER ELECTRONICS LTD.

USER MANUAL

MODELS:

670T
HDMI Optical Transmitter

670RN
HDMI Optical Receiver

P/N: 2900-300330 Rev 2

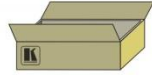


670T, 670RN Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- 670T** or **670RN** HDMI Optical Transmitter/Receiver
- 4 Rubber feet
- 1 Power supply (5V DC)
- 1 Quick Start sheet



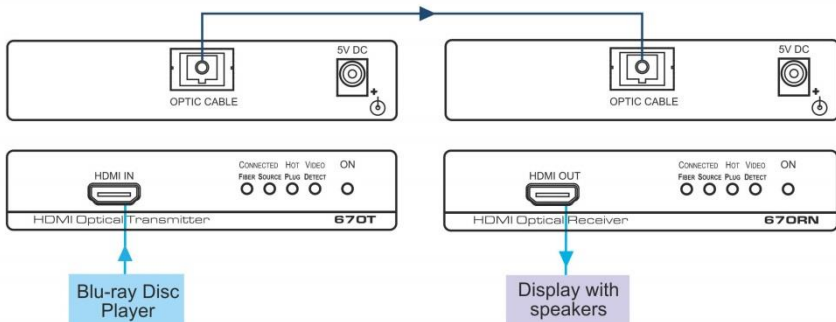
Save the original box and packing materials should you need to return your **670T**, **670RN** for service.

Step 2: Install the 670T, 670RN

Attach the rubber feet and place on a table or mount the **670T**, **670RN** in a rack (using an optional RK-3T rack mount).

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **670T**, **670RN**.



Always use Kramer high-performance cables for connecting AV equipment to the **670T**, **670RN**.

Step 4: Connect the power

Connect the 5V DC power adapter to the **670T**, **670RN** and plug the adapter into the mains electricity.



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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 video, audio, presentation, and broadcasting professionals 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 that are clearly defined by function: 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.

Congratulations on purchasing your Kramer **670T** and/or **670RN HDMI Optical Transmitter/Receiver**, which is ideal for the following typical applications:

- Home theater, presentation and multimedia applications
- Long range multimedia distribution for cinemas, stores, and entertainment centers
- Video production and broadcast facilities
- Retail stores and other point-of-sale systems

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



Go to http://www.kramerelectronics.com/support/product_downloads.asp to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **670T**, **670RN** away from moisture, excessive sunlight and dust



This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions



Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

Warning: Avoid direct eye exposure into the optic connectors when powered, although this product is regulated strictly enough to operate under the Laser Class 3R for eye safety

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at <http://www.kramerelectronics.com/support/recycling/>.

3 Overview

The **670T** converts the HDMI signal to an optical signal, and the **670RN** converts the optical signal back into an HDMI signal. Together, the **670T** and **670RN** form an HDMI transmitter/receiver over multimode fiber system.

The **670T** and **670RN** pair features:

- A transmission range of 1700m (more than 5570ft) at 1080p @60Hz 12bit over an optical cable
- A transmission range of up to 400m (1300ft) at 4K x 2K
- Regulation in accordance with Class 3R Laser Eye Safety in compliance with channel for passing HDCP, EDID and a Hot Plug Detect (HPD) signal over one multimode fiber
- Compatibility with optional F670 input and output cards of the VS-1616D and VS-3232DN
- A maximum data rate of 10.2Gbps (3.4Gbps per graphic channel) suitable for resolutions up to 4K at 30Hz, and for all HD resolutions
When connected to the F670 input and/or output cards, 4K is not supported due to limitations of the VS-1616D and VS-3232DN.
- HDCP compliance
- 5V DC power adapters
- Kramer DigiTOOLS® enclosures

3.1 Defining the 670T, 670RN HDMI Optical Transmitter/Receiver

This section describes the:

- **670T** *HDMI Optical Transmitter*, see [Section 3.1.1](#)
- **670RN** *HDMI Optical Receiver*, see [Section 3.1.2](#)

3.1.1 Your 670T HDMI Optical Transmitter

Figure 1 defines the **670T HDMI Optical Transmitter**.

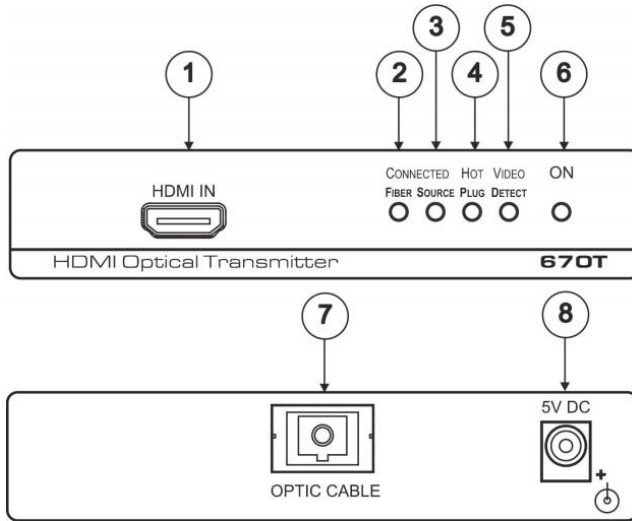


Figure 1: 670T HDMI Optical Transmitter

#	Feature	Function
1	HDMI IN Connector	Connects to the HDMI source
2	CONNECTED FIBER SOURCE LEDs	Illuminates when the fiber optic cable is connected
3	HOT PLUG LED	Illuminates when a source is connected
4	VIDEO DETECT LED	Indicates a connected display on the receiver side
5	ON LED	Indicates a valid video signal on the transmitter side
6	ON LED	Illuminates when receiving power
7	OPTIC CABLE Connector	Connect to the optical connector on the 670RN (remove dust cap prior to use)
8	5V DC	+5V DC connector for powering the unit

3.1.2 Your 670RN HDMI Optical Receiver

Figure 2 defines the **670RN HDMI Optical Receiver**.

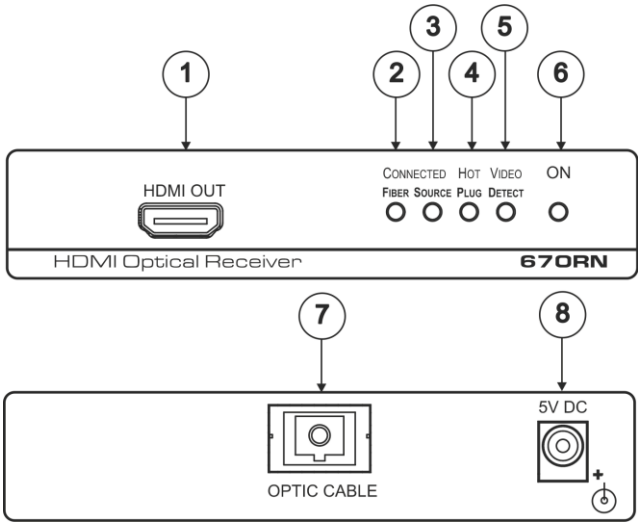


Figure 2: 670RN HDMI Optical Receiver

#	Feature	Function
1	HDMI OUT Connector	Connects to the HDMI acceptor
2	CONNECTED FIBER	Lights when the fiber optic cable is connected
3	SOURCE	Lights when a source is connected
4	HOT PLUG LED	Indicates a connected display on the receiver side
5	VIDEO DETECT LED	Indicates a valid video signal on the transmitter side
6	ON LED	Illuminates when receiving power
7	OPTIC CABLE Connector	Connect to the optical connector on the 670T (remove dust cap prior to use)
8	5V DC	+5V DC connector for powering the unit

4 Connecting the 670T, 670RN



Always switch off the power to each device before connecting it to your **670T, 670RN**. After connecting your **670T, 670RN**, connect its power and then switch on the power to each device.

Avoid direct eye exposure into the optic connectors when powered, although this product is regulated strictly enough to operate under the Laser Class 3R for eye safety

To connect the **670T** and **670RN**, as illustrated in the example in [Figure 3](#), do the following:

1. Connect an HDMI source (for example a Blu-ray disc player) to the HDMI IN connector.
2. Connect the HDMI OUT connector to an HDMI acceptor (for example, an LCD display).
3. Remove the dust caps and connect the OPTIC CABLE connector of the **670T** to the OPTIC CABLE connector of the **670RN**, via optic OM3 cabling with SC connectors (maximum range of 1700m (over 5570ft)).
4. Connect the 5V DC power adapter to the power socket on each unit and connect the adapter to the mains electricity (not shown in [Figure 3](#)).

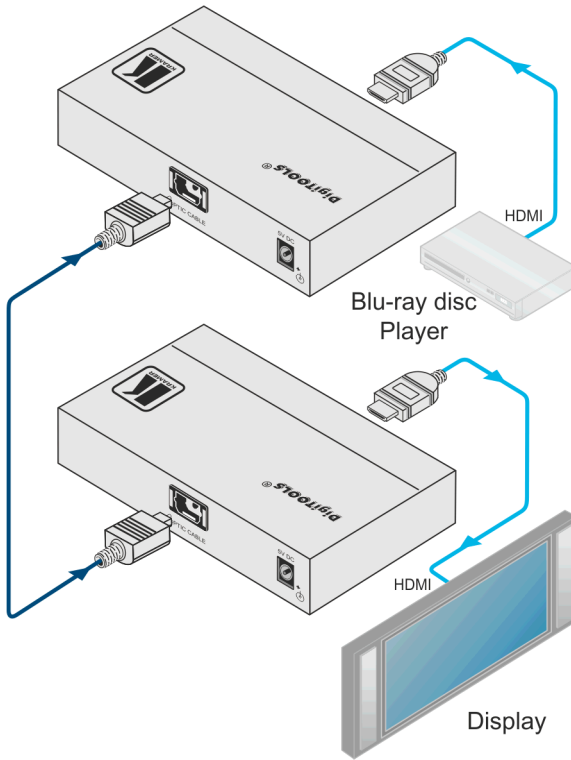


Figure 3: Connecting the 670T/670RN Transmitter/Receiver System

5 Technical Specifications

	670T	670RN
INPUTS:	HDMI Connector	1 optical connector
OUTPUTS:	1 optical connector	HDMI Connector
BANDWIDTH:	Supports up to 10.2Gbps bandwidth	
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI using fiber optic communication links and DDC2B	
EXTENSION LIMIT:	1700m (5570ft) for 1080p/60Hz 400m (1300ft) at 4K	
FIBER-OPTIC CONNECTION:	SC connectors for multimode (OM3) fiber cable (not supplied with the unit)	
INSERTION LOSS FROM TRANSMITTER TO RECEIVER:	Must not exceed 10dB	
INDICATOR LEDs:	Video, source, acceptor fiber and on LEDs	
POWER CONSUMPTION:	5V DC, 300mA	5V DC, 500mA
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)	
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)	
HUMIDITY:	10% to 90%, RHL non-condensing	
DIMENSIONS:	12cm x 7.95cm x 2.76cm (4.7" x 3.1" x 1.08") W, D, H	
WEIGHT:	0.3kg (0.67lbs) approx. each	
ACCESSORIES:	Power supply, bracket installation kit	
Specifications are subject to change without notice at http://www.kramerelectronics.com		

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.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

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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

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

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 where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing



P/N: 2900-300330



Rev: 2