

Kramer Electronics, Ltd.



USER MANUAL

Models:

613T, *3G-SDI Mini Optical Transmitter*

613R, *3G-SDI Mini Optical Receiver*

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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 **613T** *3G-SDI Mini Optical Transmitter* and **613R** *3G-SDI Mini Optical Receiver*, which are ideal for:

- EFP (electronic field production) and ENG (electronic news gathering) broadcasting
- Stadium to studio 3G-SDI digital video extension broadcasting
- Medical, military, government and security applications

The package includes the following items:

- **613T** *3G-SDI Mini Optical Transmitter* and **613R** *3G-SDI Mini Optical Receiver*
- Two Power adapters (5V DC Input) and 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

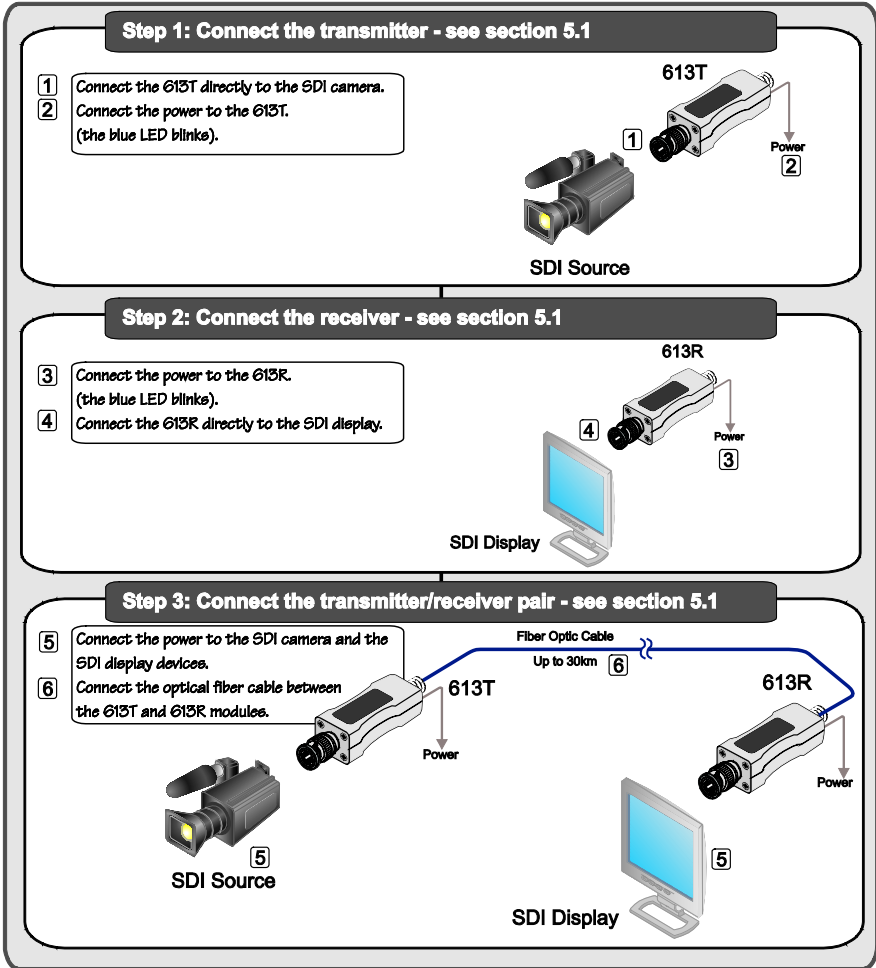
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity;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

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

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

2.1 Quick Start

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



3 Overview

The **613T** converts 3G-SDI, HD-SDI and DVB-ASI¹ digital video signals to optical signals. It transmits them over fiber optic cable (single mode as well as multi-mode) to the **613R** that decodes the optical signals back to electrical 3G-SDI, HD-SDI and DVB-ASI digital video signals.

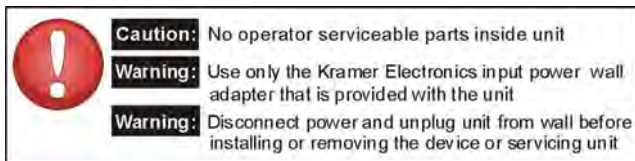
The **613T** and **613R** transmitter/receiver pair:

- Supports up to 3G-SDI digital video signals over fiber optic cable
- Supports 1080p, 3G-SDI format
- Is designed to transport one-channel SMPTE-424M 3G-SDI, SMPTE 292M HD-SDI or SMPTE-259M serial digital video signal over long distance through either single-mode or multi-mode optical fiber
- Features signal equalizing and re-clocking
- Has a transmission range of up to 19 miles (30 km) at 3Gbps
- Handles SDI, DVB-ASI, HD-SDI, 3G-SDI
- Includes a latch locking mechanism for the power supply to prevent the power from disconnecting due to misuse
- Includes power and status blue LEDs
- Does not require any special memory size, CPU speed and chipsets, when using a computer

Both the **613T** and **613R** come in a very small standalone, metal die-cast enclosure suitable for rugged applications.

To achieve the best performance:

- Connect 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)
- Position your Kramer **613R** and **613T** away from moisture, excessive sunlight and dust
- Be sure that the fiber optic cables are always stored and used away from liquid or dirt



¹ Digital Video Broadcasting – Asynchronous Serial Interface

3.1 Powering the 613T and the 613R

Your **613T/613R** pair comes with two 5V DC power adapters. Both units need to be connected to their external power adapter. [Figure 1](#) illustrates the power connector pinout:

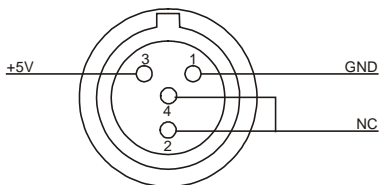


Figure 1: Power Connector Pinout

4 Your 3G-SDI Mini Optical Transmitter/ Receiver

[Figure 2](#) illustrates the **613T** and **613R** 3G-SDI mini optical extension system:

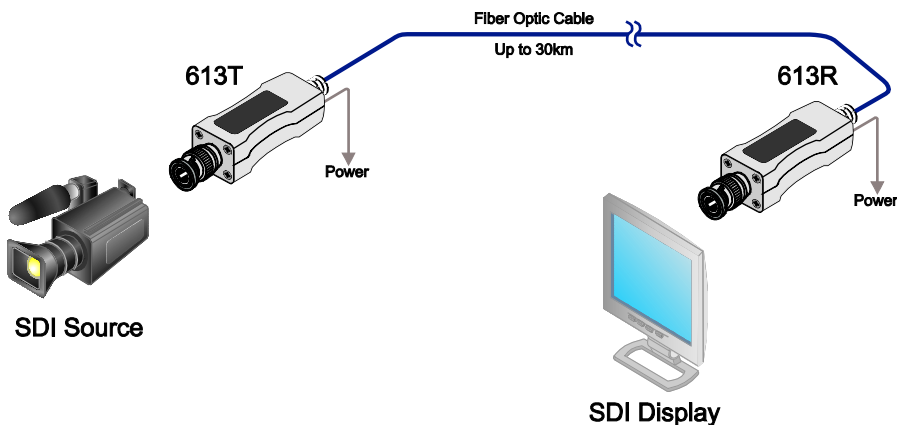


Figure 2: 613 3G-SDI Mini Optical Transmitter and Receiver

5 Using the 3G-SDI Mini Optical Set

This section describes how to:

- Connect the detachable optical 3G-SDI Mini Optical Transmitter/ Receiver (see section [5.1](#))
- Avoid pitfalls when using the **613T** and **613R** (see section [5.2](#))

5.1 Connecting the 3G-SDI Mini Optical Transmitter/Receiver Set

To connect the **613T** *3G-SDI Mini Optical transmitter* with the **613R** *3G-SDI Mini Optical Receiver*, as the example in [Figure 2](#) illustrates, do the following:

1. Connect the BNC connector of the SDI Source (for example, a camera) **directly**¹ to the **613T** BNC connector.
2. Plug the 5V power adapters to the transmitter and to the receiver, and connect the adapters to the mains electricity.
The blue LED lights.
3. Connect the **613R** BNC connector **directly**¹ to the BNC connector of the display device.
4. Remove the protective cover from the optic fiber ST connector on the **613T** and connect to the fiber optic cable²
5. Remove the protective cover from the optic fiber ST connector on the **613R** and connect to the other side of the fiber optic cable.
6. Turn ON the power on the source and the display devices.

¹ Avoid using any intermediate cable which may result in signal quality deterioration

² Use glass single-mode fiber optic cable with 1310, 1550nm bandwidth on ST connectors. You can also use multi-mode fiber optic cable

5.2 Avoiding Pitfalls using the 613T and 613R

If any of these problems occur, we recommend the following solutions:

If the display device shows only a black screen:

- Make sure that all the AC and DC plugs and jacks used by the external power supplies are firmly connected
- Be sure that the BNC connectors are firmly plugged into the SDI source and the display devices, and be sure that the transmitter and receiver modules are correctly plugged into the source and SDI display devices, respectively
- Check if the SDI source and display are powered ON and properly booted
- Reset the system by unplugging and then replugging the transmitter SDI port or receiver SDI port and then reboot the system

If the picture on the screen appears distorted or displays noise, check the quality of the SDI source and the length of the optical fiber cable.

Be sure that the fiber optic cables are always stored and used away from liquid or dirt

6 Technical Specifications

[Table 1](#) includes the technical specifications:

Table 1: Technical Specifications¹ of the 613T/613R

INPUTS:	613T: SDI, HD-SDI, 3G HD-SDI on a 75Ω BNC connector 613R: 1 optical ST connector
OUTPUTS:	613T: 1 optical ST connector 613R: SDI, HD-SDI, 3G HD-SDI on a 75Ω BNC connector
MAXIMUM DATA RATE:	Up to 3Gbps
MAXIMUM LENGTH:	30km (19 Miles) @3G, 1080p 3G-SDI format
FORMAT:	SMPTE 424M, 3G-SDI, SMPTE 292M, HD-SDI or SMPTE 259, SD-SDI, SDI, DVB-ASI
POWER SOURCE:	5V DC, 1.5A
RECOMMENDED FIBER-OPTIC CABLE:	Glass Single-mode fiber with 1310, 1550nm of bandwidth and ST terminated connector
OPERATING TEMPERATURE:	-20 °C to +70 °C
STORAGE TEMPERATURE:	30 °C to 85 °C F ambient
HUMIDITY:	5% to 95% RH
DIMENSIONS:	1.9 cm x 8.3 cm x 1.9 cm (0.7" x 3.3" x 0.7") W, D, H
WEIGHT:	613T and 613R 0.1kg (0.2lbs) approx.
ACCESSORIES:	2 power supplies

¹ Specifications are subject to change without notice. For details of the operating and storage temperature ranges, see the General Operating Conditions on our Web site at <http://www.kramerelectronics.com>

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 one year 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, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with
- 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 your 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
* FCC and CE approved using STP cable (for twisted pair products)



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.



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