

# TIA-1200

# Optical/Electrical Converter

## Manual



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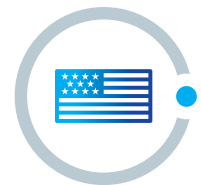
## INTRODUCTION

The TIA-1200 Optical to Electrical Converter is a wide-band detection system for fiber optic applications. With a typical bandwidth of DC to 12 GHz, it accurately provides an electrical replica of the optical signal presented to it. It is intended to drive a 50 Ohm cable terminated in its characteristic impedance. The unit is equipped with an InGaAs/InP detector that is responsive in the wavelength range of 900 - 1700 nm. The TIA-1200 is provided with an FC fiber optic receptacle. Other fiber optic connectors can be provided on request. The output signal is presented to a type K SMA female connector.

Calibration - This is a qualitative measurement device. No calibration is required or necessary.

## FEATURES AND BENEFITS

- Large Area InGaAs detector
- DC to 12GHz Bandwidth
- 900-1700nm
- Universal Power Supply
- Capability to drive 50 Ohm output loads



**MADE IN THE USA**

| <b>Specifications</b>              |                                                                     |
|------------------------------------|---------------------------------------------------------------------|
| Detector Type                      | InGaAs/InP (900-1700nm)                                             |
| Current Responsivity               | 0.7 A/W @1300 nm, 0.8 A/W @ 1550nm Typical                          |
| Maximum Linear Input Power         | 3mw                                                                 |
| Maximum Input Power without Damage | 10mw                                                                |
| Bandwith-(3dB)                     | DC to 12GHz Typical, 10 GHz Minimum                                 |
| Output Impedance                   | 50 Ohms                                                             |
| Output Connector                   | Type K SMA Female                                                   |
| Fiber Optic Input Connector        | FC or FC/APC                                                        |
| Input Numerical Aperture           | 0.11                                                                |
| Optical Return Loss                | >35dB, >52dB with APC Connection                                    |
| Power Requirments                  | 120/240 VAC, 50-60Hz                                                |
| Dimensions                         | 1.2"W x 2.5"L x 1.3"H ( 30.5mm x 63mm x 33mm)                       |
| Weight                             | 2.8 oz (0.08 Kg)                                                    |
| LED Annunciators Provided          | Power On                                                            |
| Operating Temperature Range        | 0 - 40 C                                                            |
| Standard Warranty                  | Two Years, Component and Workmanship, 30 Day Satisfaction Guarantee |
| Accessories Supplied               | Transit/Storage Case, Operating Manual, Universal Power Supply      |

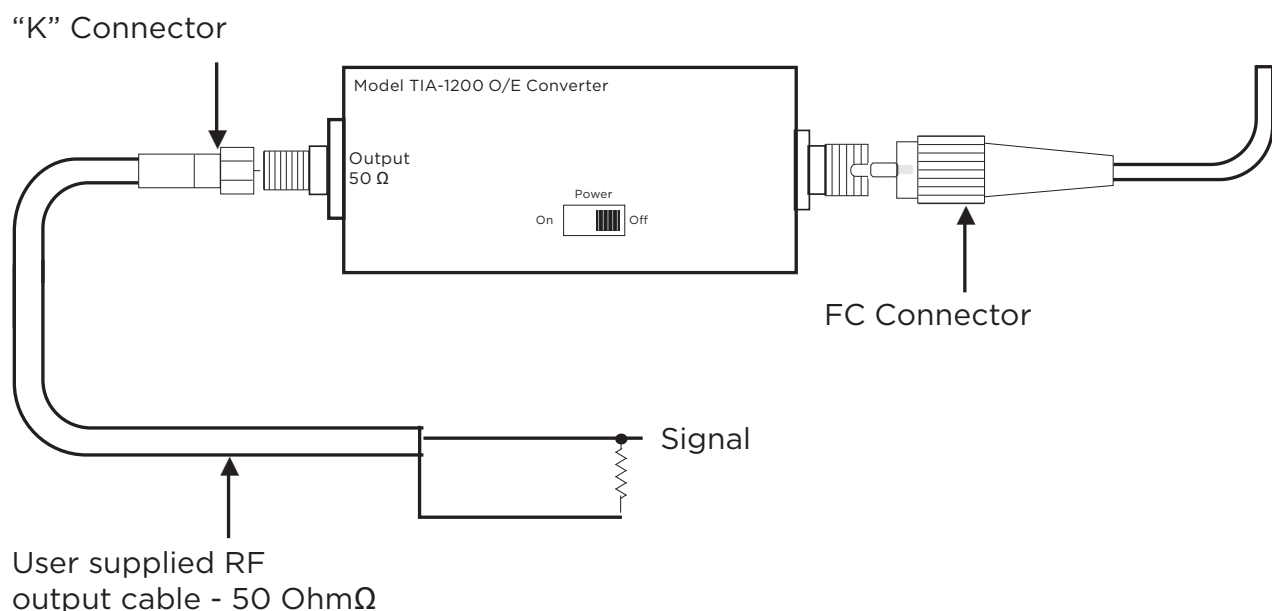
## UNPACKING AND INSPECTION

Prior to shipment this instrument was inspected and found to be free of mechanical and electrical defects. Upon acceptance by the carrier he assumes responsibility for its safe arrival. After unpacking, examine the unit for any evidence of shipping damage. Should you receive this instrument in a damaged condition, apparent or concealed, it must be noted on the freight bill or express receipt and signed by the carrier's agent. Failure to do so could result in the carrier refusing to honor the claim. Upon filing a claim TREND Networks should be notified.

## POWER SUPPLY

Each unit comes equipped with a 9 V regulated power supply that provides power to the unit. Simply plug the power supply output cable into the receptacle located beneath the FC fiber optic connector. It is recommended that the user never attempt substitution of this unit with any other power supply. Reverse polarity or voltages other than 9 Volts may irreparably damage the unit. The power supply can be used with mains of either 120 or 240 VAC, 50-60 Hz. Several replaceable power plug adaptors are supplied for use in various countries.

## TYPICAL SETUP



## OPERATIONAL CONSIDERATIONS

The TIA-1200 is comprised of a fiber coupled InGaAs detector coupled with a reverse bias voltage network. The output of the diode is brought out to a type K female SMA connector. Light falling on the detector generates a positive-going proportional current. This current, multiplied by the load impedance produces a voltage that is proportional to the light incident on the detector surface.

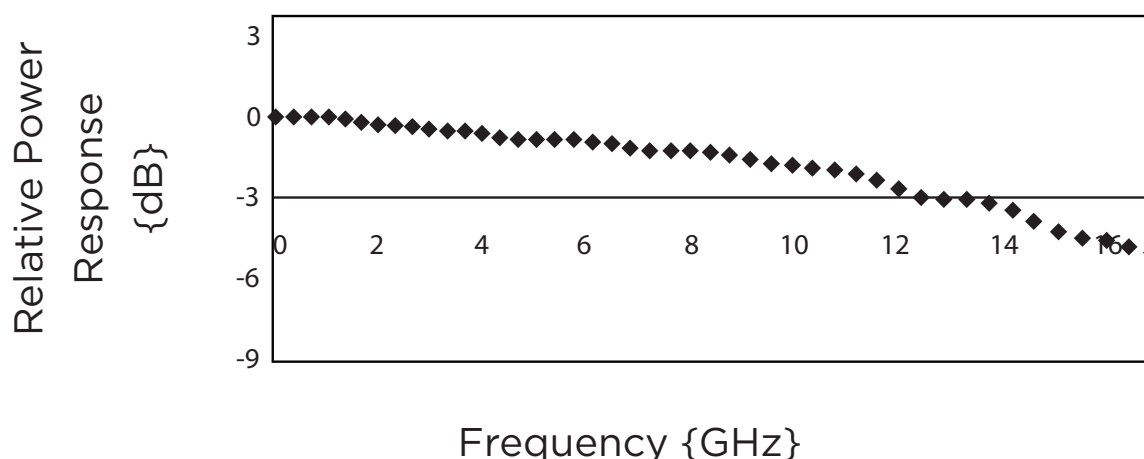
Normally the unit is used to drive a coaxial cable, this cable should have a 50 ohm characteristic impedance and be terminated with a 50 ohm load at the oscilloscope or other measuring device to be used.

The active area of the TIA-1200 is 50 microns in diameter. With the optional 50 micron fiber both singlemode and multimode sources may be tested without incurring excessive coupling losses.

Typical optical return loss is 35 dB and is caused primarily by the FC/PC connector employed. If higher return loss is needed, The unit may be optionally equipped with singlemode angled PC connectors for ORLs of around 52 dB.

## TYPICAL FREQUENCY RESPONSE

The bandwidth of the TIA-1200 is from DC to typically 12 GHz (-3 dB ). Refer to the following Bode plot



## SPECTRAL RESPONSE

The approximate relative response curves of the detectors employed is as shown below. Note that these are representative curves and do not necessarily correspond to the exact response of the particular detector in use.

The approximate power at the detector surface is given by:

### InGaAs Detector Spectral Response

