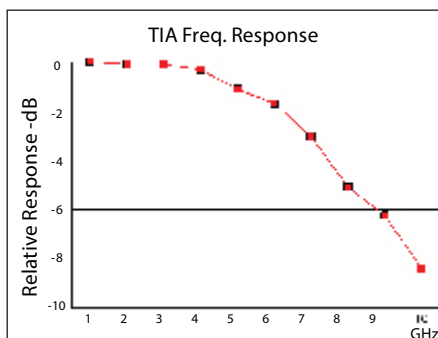
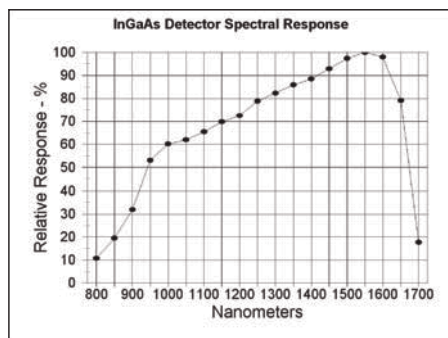


# Optical to Electrical Converter

## TIA-4000

### Features:

- Wavelength Response 950 nm to 1650 nm
- Low Noise, High Gain
- Gain Settings from 2 to 7
- Bandwidth 30 KHz to 7 GHz typical
- SMA type K Output Electrical Connector
- FC/APC Style Fiber Optic Input Connector



The TIA-4000 is comprised of a fiber coupled InGaAs APD detector combined with a variable reverse bias voltage network and fast transimpedance amplifier. The output of the unit 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 transimpedance 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-4000 is 30 microns in diameter. It is coupled to a single mode optical fiber. Typical optical return loss is 52 dB and is caused primarily by the FC/APC connector employed.

The applied bias voltage controls the gain of the APD. This voltage in turn, is controlled by means of the two push buttons on the top panel. The rightmost button increases the gain and the leftmost button decreases the gain. There are 64 discrete gain settings that are retained in non-volatile memory when the power is turned off. Thus the gain setting will be retained even though power is disconnected from the unit.

Pressing a button once causes the unit to advance in the selected direction by one step. Holding the button down causes the unit to advance automatically until a limit is reached.

## TIA-4000 Specifications

Detector Type	InGaAs/InP APD
Bandwidth (-3 dB)	30 KHz to 7 GHz typical
Transimpedance Gain	500 Ohms
Spectral Response	(950-1650) Gain 2 - 7
Maximum Linear Input Power	1 mW Max.
Maximum Input power without damage	5 mW, +3 dBm
Sensitivity	-25 dBm @ 10 <sup>-12</sup> BER, 2 <sup>31</sup> -1 PRBS
Output Impedance	Terminate in 50 Ohms
Output Connector	Type K SMA female
Fiber Optic Connector	FC-APC or FC-PC
Input Numerical Aperture	0.11
Optical Return Loss	Typ. 30dB
Power Requirements	120/240 VAC, 50-60Hz
Wall-mount Supply Power Requirements	95-260VAC, 50 - 60 Hz, 16 VA Max.
Mains Connectors Supplied	North America, British, Continental Europe, Australian
Dimensions	4.0" L, 2.5" W, 1.2" H, (102 , 63 , 31 mm)
Weight	5 oz., 150 g.
LED Annunciators Provided	Power On
Operating Temperature Range	0 - 40 C
Standard Warranty	Two Years, Component and Workmanship, 30 Satisfaction Guarantee
Accessories Supplied	Transit Case, Universal Power Supply, Manual

## Operating Considerations

The TIA-4000 is comprised of a fiber coupled InGaAs APD detector coupled with a variable reverse bias voltage network and fast transimpedance amplifier. The output of the unit 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 transimpedance produces a voltage that is proportional to the light incident on the detector surface.

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