

Optical to Electrical Converter

TIA-527

Features:

- Matched InGaAs detectors
- DC to 125 MHz Analog Bandwidth
- Selectable Gain Settings
- Operates from Battery or Line Power
- Capability to drive 50 Ohm output loads
- Low Noise - 3.6 pW/root-Hz

Applications:

- Coherent Heterodyne Detection
- Polarization-Shift-Keying Modulation
- Spectroscopy
- Binary Differential Phase-Shift Keying (2-DPSK)



The TIA-527 balanced optical to electrical converter operates by subtracting the photo currents from two well-matched Indium Gallium Arsenide detectors. The result is then amplified and presented to the output port. Each of the optical signals causes the output to move with a different sense. Common mode signals (e.g. laser RIN noise) are effectively cancelled out.

With selectable gain settings and a bandwidth of DC to 125 MHz this receiver is useful for coherent heterodyne detection applications, differential polarization or phase shifted keying modulation systems, spectroscopy, and similar applications for which the ability to discern small variations in signal strength in two optical paths is critical.

Use of this converter can greatly simplify signal processing requirements downstream from the experiment. Gains of 1400 V/W, 14 000 V/W and 140 000 V/W may be selected as well as selectable AC inter-stage coupling.

The unit is designed to be conveniently mounted on an oscilloscope input BNC connector and may be powered by its internal battery or with the universal wall-mount supply that is provided with each unit.

TIA-527 Specifications

Detector Type	Matched InGaAs
Analog Signal Bandwidth (-3 dB)	DC to 125 MHz (Tr = 1.4 K), DC to 35 MHz (Tr = 14 K)
Selectable Trans impedance settings	1.4 K Ohms, 14 K Ohms
Gain Selections	X 1 or X 10
Maximum Linear Input Power	1.2 mW
Maximum Input power without damage	10 mW
Spectral Response	850 - 1700 nm
Output Impedance	50 Ohms
Output Connector	Male BNC
Fiber Optic Connector	FC
Input Numerical Aperture	0.29
Inter-stage Coupling	DC or AC (100 Hz Low Frequency Cutoff)
Output Offset Voltage	+/- 0.1 Volt
Noise Level	3.6 pW/ root-Hz
Maximum Output Voltage	4 V pk-pk, no load, 2 V pk-pk with 50 Ohm Load
Power Requirements	Power Requirements 9 V Battery or supplied universal wall-mount power supply
Battery Life	Approximately 30 hours, (no load)
Wall-mount Supply Power Requirements	95-260VAC, 50 - 60 Hz, 16 VA Max.
Mains Connectors Supplied	North America, British, Continental Europe, Australian
Dimensions (mm)	63 L x 30.5 W x 30 H
Weight	5.6 oz (0.16 Kg)
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, 9 V ULTRALIFE Lithium Battery, Manual