

TIA-3000 Measurement Systems



 **GAMMA SCIENTIFIC**
Light Measurement Solutions



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About Gamma Scientific

With over 50 years of experience in developing light measurement instruments, Gamma Scientific is trusted by the world's leading organizations to provide accurate results.

Based in San Diego, Gamma Scientific manufactures laboratory grade spectroradiometers, spectrometers, spectrophotometers and integrating spheres.

Gamma Scientific also operates an ISO 17025, NVLAP accredited laboratory performing ENERGY STAR, LM-79 and LM-80 tests for LEDs.

About UDT Instruments

UDT Instruments, a Gamma Scientific company, manufactures precision photometers, radiometers, colorimeters and photosensors for optical measurement applications.

Gamma Scientific
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San Diego, CA 92131
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www.gamma-sci.com

The TIA-3000 Measurement Systems are detector-based absolute standards for various measurements. Off-the-shelf configurations include thermo-electrically cooled silicon and indium gallium arsenide (InGaAs) detectors.

Options include high-accuracy photometric correction filters (f1' ~0.8%), flat response filters, trap detectors and ANVIS compatibility filters with field-of-view lenses making the TIA-3000 the standard for any light measurement requirement.

The heart of the TIA-3000 is its transimpedance amplifier. The state-of-the-art design of the transimpedance amplifier allows for extremely low dark current levels (3 femptoamps, 3×10^{-15} amps, at room temperature with the silicon detector) and excellent stability.

This stability and sensitivity is 10 times more sensitive than anything else previously available, making it the ultimate tool for any standards lab.

The TIA-3000 incorporates 8 different ranges with a 0-to-10 volt output for each range.

Standard calibrations are available for any configuration of the TIA-3000 from Gamma Scientific's NVLAP accredited testing laboratory.





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Features

- Temperature stabilized silicon and InGaAs detectors available covering 200 – 2600 nm
- Temperature stabilized correction filters available
- High accuracy photopic correction $f_l \sim 0.8\%$
- ANVIS compatibility filters and lenses
- High sensitivity down to 10-15 Watts or 10-8 Lux
- 8 decades of dynamic range
- 0-to-10 volt output for each decade
- RS-232 computer control

Applications

- Display measurement photometry
- LED radiometry
- Night-vision compatibility measurements
- Metrology lab primary standard detector
- Customized optics available for any application





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TIA-3000 Measurement Systems Specifications

Gain	10 ¹⁰ to 10 ⁴ volts/amp
Range	Eight decades; automatic or manual dial control
Output	0 to 10 VDC for each gain setting
Linearity	<0.25% non-linearity for all ranges
Temperature Variation	<5 ppm (parts -per-million) per degree Celsius
Noise	<20 microvolts on the 10 ¹⁰ range
Frequency Roll -Off	<10 Hz on 10 ¹⁰ range for output >1 volt
Length (Amplifier)	4.15 inches (10.5 cm)
Diameter (Amplifier)	2.5 inches (6.4 cm)
Length (TE Cooler control box)	12 inches (30.5 cm)
Width (TE Cooler control box)	11.3 inches (28.7 cm)
Height (TE Cooler control box)	4.5 inches (11.4 cm)
Temperature Stability	Short term (1 hr.) <0.001 °C, long term (24 hr.) <0.003 °C
Bipolar Output Current	+ 1.5 amp max
Maximum TEC Output Power	12 watts
Power	100-240 VAC, 50-60 Hz

*Standard Operating Range for Gamma Scientific Instruments- Temperature: Minimum: 0°C (32°F) - Maximum: 35°C (95°F); Relative Humidity (Non-Condensing): Minimum: 20% - Maximum 70%

**The information contained in this data sheet is based on Gamma Scientific's internal evaluation and is subject to change at any time without notice

***Revised on April 14, 2015