

# RjP-485 InGaAs Energy Probe



The RjP-485 is the first InGaAs Probe designed specifically for pulsed laser energy measurements. The custom InGaAs detector is 5 mm in diameter (0.2 cm<sup>2</sup> active area) - over six times larger than the typical InGaAs detector - making it very easy to use for “real world” measurements. Picojoule sensitivity, 200 Hz speed, and superior thermal stability make it the probe of choice for mid-IR energy measurements.

Use the probe with Nd:YAG, Er:YAG, Ti:Sapphire, Optical Parametric Oscillator, laser diode, and other mid-IR sources. All the major fiber optic wavelengths are covered, making the RjP-485 well suited for testing and calibrating fiber power meters, loss test sets, and other fiber test instrumentation.

Take the RjP-485 probe and Rm-3700 Universal Radiometer to the test range to characterize the far-field performance of eye-safe laser rangefinders, target designators, and fire-control systems. Couple it with a Pyroelectric probe and the Rm-6600 Dual Channel Universal Radiometer to ratiometrically measure the transmission of laser goggles, filters, and other optical components over 6 decades of dynamic range. Other applications include Raman spectroscopy, non-linear optical materials, and laser induced fluorescence studies.

The compact size and modular design make the 400 Series ideal for OEM applications as well. Incorporate the detector and preamplifier into mid-IR lasers, LIDAR systems, or fire-control systems for real-time diagnostics, output stabilization, and process control.

- **First Large Area InGaAs Energy Probe**
- **Ideal for Eye-Safe Laser Applications**
- **Measure Energy Per Pulse at 200 Hz**
- **pJ Sensitivity at 1.5  $\mu$ m**

**LaserProbe** inc.

# SPECIFICATIONS

Spectral response (see curve)	0.7 - 1.8 $\mu\text{m}$
Maximum total energy	250 nJ
Maximum energy density	1.25 $\mu\text{J}/\text{cm}^2$
Max. peak pulse power density (30 ns pulse)	100 $\text{mW}/\text{cm}^2$
Max. average power density	5.0 $\text{mW}/\text{cm}^2$
Minimum detectable energy	500 fJ
Maximum pulse rep rate	200 Hz
Maximum pulse width	200 $\mu\text{s}$
Calibration accuracy	$\pm 5\%$
Linearity	$\pm 0.5\%$
Detector active area dimensions	5 mm (0.196 $\text{cm}^2$ )
Full scale ranges	6; 3 pJ - 300 nJ
Head dimensions (dia x depth)	6.0 cm x 4.6 cm (2.4" x 1.8")
Preamplifier dimensions (l x w x h)	11.5 cm x 7.7 cm x 5.1 cm (4.5" x 3.0" x 2.0")
Probe weight (head and preamp)	0.5 kg (1.0 lb)

InGaAs has distinct advantages over other semiconductor detectors. For example, it is more sensitive than silicon at 1064 nm, and its spectral response in the region about 1064 nm is much flatter. Therefore small fluctuations in source wavelength have far less impact on the measured energy. In addition, InGaAs has a lower temperature coefficient than both silicon and germanium - over most of its spectral response range, the RjP-485's responsivity varies less than 2% from  $-30^\circ$  to  $+25^\circ\text{C}$  - insuring repeatable results without expensive temperature stabilization.

As a member of the 400 Series Probe family, the RjP-485 uses the same detector housing and preamplifier enclosure as all other 400 Series probes. In addition, most 400 Series probes are designed so the detector plane is the same distance from the mounting post plane, allowing for easy interchange of probes in an experiment.

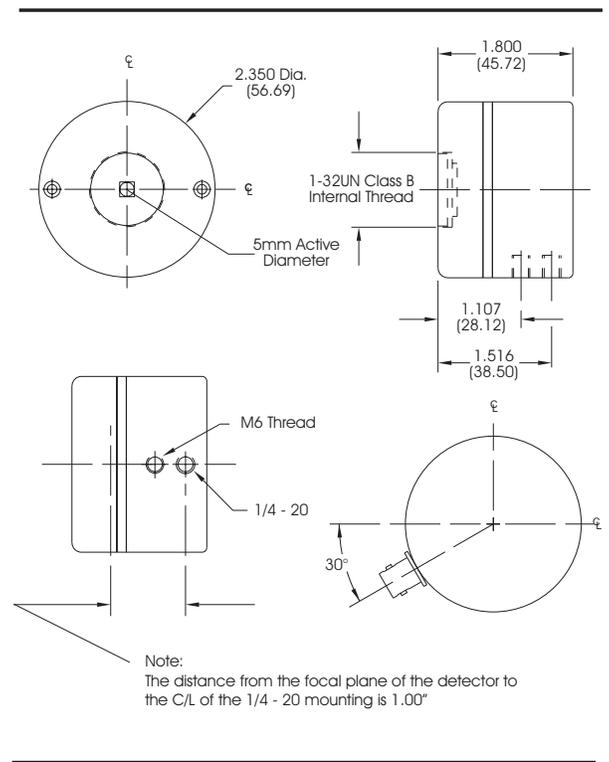
The compact 400 Series detector housing measures 2.35" in diameter by 1.8" deep. The side-mounted BNC connector requires no additional clearance in the beam path. Standard metric and English mounting holes and a 1" (25 mm) filter holder facilitate use, while the black anodized finish reduces unwanted back-reflection.

A separate enclosure houses the preamplifier. Probe parameters, including wavelength correction factors and calibration date, are stored in memory for access by Laser Probe's Universal Radiometers. Carefully

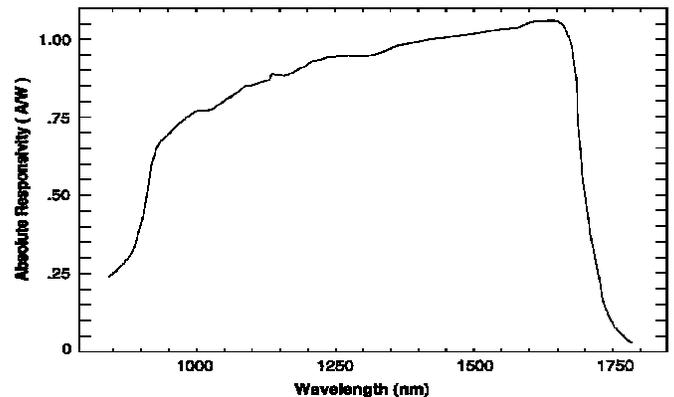
designed gain stages insure excellent linearity and S/N ratio over 6 decades of dynamic range.

There are many options and accessories available for the RjP-400 Series probes, including a precision aperture, light baffle, and the kTA-141 support stand. The options and accessories are detailed in a separate data sheet.

All 400 Series Probes are provided with a certificate of calibration showing traceability to the National Institute of Standards and Technology (NIST) and compliance with MIL-45662 and ANSI-Z540 Sections 7-18.



RjP-485 Spectral Curve



As a result of our ongoing commitment to product improvement specifications are subject to change without notice. REV 019801js