

RkT-150F-CAL

Thermopile Power Probe



- **High Damage Threshold**
- **Handles Up To 150 W**
- **Measure UV to IR**
- **Compact Fan-Cooled Design**

The RkT-150F-CAL is a fan-cooled thermopile probe designed to measure up to 150 Watts of continuous wave or average power, from the UV to far-IR. The spectrally flat absorber material can withstand average power densities to 20 kW/cm^2 and peak pulse power densities of 15 MW/cm^2 . The cooling fan enables the probe to continuously dissipate 150 Watts, despite using a much smaller heatsink than would be required by a passive, convection-cooled design. Electrical substitution calibration with the CAL feature insures maximum measurement accuracy.

The RkT-150F-CAL can be used to measure any light source with output powers ranging from a few Watts to 150 Watts, including Nd:YAG, Nd:YLF, Holmium, Ruby, Copper Vapor, and CO_2 lasers. The broadband wavelength response also lends itself to non-laser applications, such as high-power arc lamps.

The RkT-150F-CAL is perfectly suited for a variety of industrial and medical applications. Use it to quantify laser welding and cutting processes on the shop floor, or for routine maintenance of Nd:YAG, CO_2 , and other industrial lasers. Take advantage of the high power density capability to calibrate surgical and ophthalmic lasers. The large active area makes it easy to measure divergent sources such as high-power laser diode bars and fiber-delivered industrial lasers.

Besides measuring the power of continuous wave sources, the RkT-150F-CAL can be used to measure the average power of sources chopped or pulsed at 5 Hz or more. The high damage threshold enables it to measure the average power of a train of short laser pulses without harming the detector surface. If the pulse

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SPECIFICATIONS

Spectral response (see curve)	0.2 - 20 μm
Maximum total power	150 W
Maximum average power density	20 kW/cm ²
Noise equivalent power	10 mW
Calibration accuracy	$\pm 5\%$
Linearity	$\pm 0.5\%$
Detector active area dimensions	17.5 mm (2.4 cm ²)
Full scale ranges	3; 1.5 W to 150 W
Head dimensions (h x w x d)	8.3 cm x 8.3 cm x 11.5 cm (3.3" x 3.3" x 4.6")
Preamplifier dimensions (h x w x d)	8.9 cm x 3.8 cm x 2.5 cm (3.5" x 1.5" x 1.0")
Probe weight (head and preamp)	1.3 kg (2.8 lb)

Various options and accessories are available for the RkT Series probes. Contact the factory for additional information.

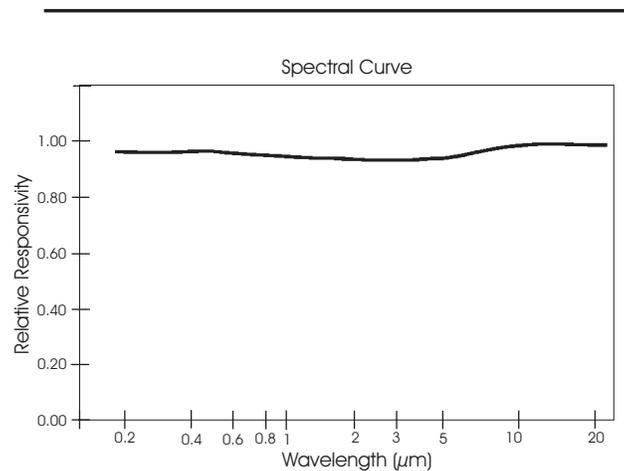
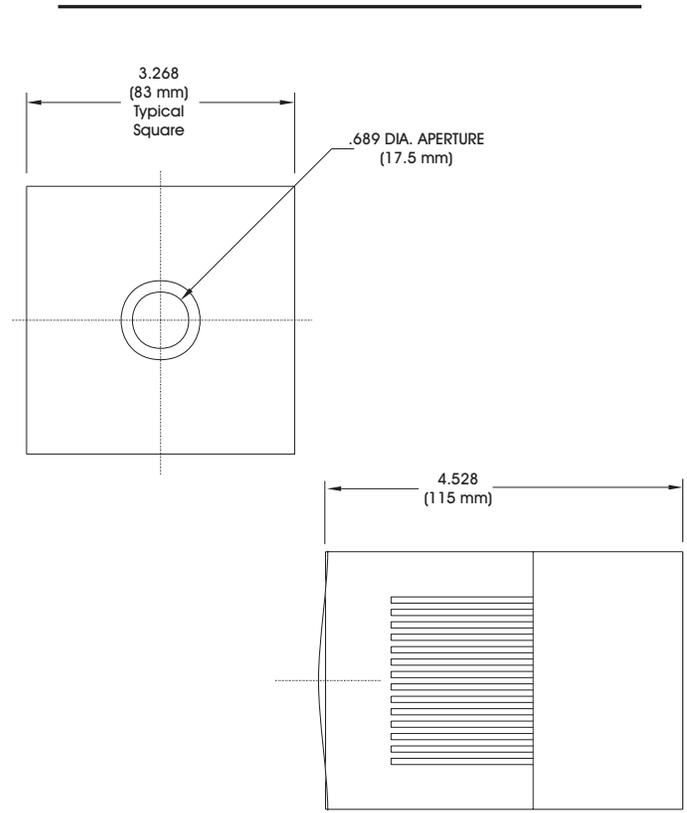
All RkT Series Probes are provided with a certificate of calibration showing traceability to the National Institute of Standards and Technology (NIST) and compliance with MIL-45662 and ANSI-Z540 Sections 7-18.

repetition rate is known the average pulse energy in Joules can be calculated by dividing the average power by the pulse repetition rate.

The RkT-150F-CAL's compact design is achieved by using a fan to actively force large amounts of air over a smaller heat sink, effectively dissipating the same amount of heat as a traditional convection-cooled thermopile with a larger, passively radiating heat sink. The spectrally flat detector can withstand very high power densities, allowing even small diameter beams to be measured without damage.

The "-CAL" feature allows the probe to be calibrated by electrical substitution. Applying a known amount of electrical power to the jacks on the probe's rear plate and then multiplying that power value by the appropriate electro-optical equivalency factor yields the correct optical power; the probe's output is then adjusted to this value. The electro-optical equivalency factor takes into account the various differences between optically and electrically heating the thermopile detector.

The RkT Series Probes consist of the thermopile detector assembly, or "head", and a preamplifier housed in its own enclosure. The preamplifier is attached directly to the probe input connector of the appropriate Laser Probe instrument; the head is then connected to the preamplifier with a BNC cable. The head and preamplifier are calibrated together as set to insure maximum accuracy and linearity over 5 decades of dynamic range. This also allows the RkT-150F-CAL to be used with any compatible Laser Probe instrument without having to enter a responsivity correction factor - the instrument reads the Probe's ID and configures itself accordingly.



As a result of our ongoing commitment to product improvement specifications are subject to change without notice. REV019801js