



PS-1.5K

POWER DETECTORS

High Power – Water Cooled



- **High Damage Threshold for Industrial Lasers**
- **Rugged Construction**
- **Full NIST-Traceability**
- **High Sensitivity to Power**
- **Smart Interface**



PS-1.5K and PS-3K

These are your heavy duty solutions for accurate power measurement from a few watts to 3 kW of continuous average power (4.5 kW intermittent). Both models have a special broadband coating with an impressive range from far UV to far IR. The ridged absorber surface captures some of the initially reflected energy to provide extremely high absorption. The ridges also increase the effective surface area to provide a tolerance to maximum average power densities as high as 5 kW/cm² at 1 kW. The large apertures and stable water cooling make these detectors the ideal choice for a wide range of industrial applications. You can read these detectors with any Gentec-EO power/energy meter.

PS-6K

This heavy weight was designed for the highest power industrial CO₂ laser applications. The PS-6K provides up to 6 kW of continuous average power (and 9 kW intermittent) in the same compact package as the PS-3K. The specially engineered disk thermopile is coated with a proprietary absorber in order to handle this much power in the same package and provide the same tough damage threshold. It has the same water cooling system and monitor compatibility as its siblings.

Water Cooling

A flowing liquid coolant removes the heat to enable these detectors to absorb high average power from lasers. The flow requirements are as low as 4 litres/min. for the PS-1.5K and up to 8 litres/min. for the PS-6K. The quick connects are made to join with semi-rigid tubing, 8 mm tubing for the PS-1.5K and 10 mm tubing for the others. These connectors are made from stainless steel and chrome/ nickel plated brass components to prevent corrosion. The internal cooling system is made of anodized aluminum for great heat transfer. At the same time the pigmented anodization is sealed with a crystal salt for superior corrosion resistance. This detector also comes with a heavy duty stand that allows both vertical and horizontal positioning.

PS-1.5K, PS-3K AND PS-6K SPECIFICATIONS

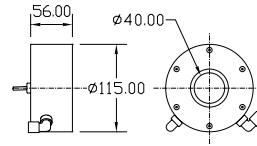
TYPICAL LASERS

- Large beams
- High power CW
- CO₂ (pulse & CW)
- YAG
- Diode Lasers

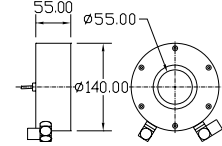
COMMON APPLICATIONS

- Industrial use
- Bulk material cutting, drilling, engraving
- Cutting plastics & wood

PS-1.5K



PS-3K & PS-6K



All dimensions in mm

PS-1.5K

PS-3K

PS-6K

MEASUREMENT CAPABILITY

	PS-1.5K	PS-3K	PS-6K
Spectral Range	0.2 – 11 μm	0.25 – 11 μm	0.8 – 1.5 μm, 10.6 μm
Maximum Measurable Power	1.5 kW	3 kW	6 kW
Noise Equivalent Power^a	1 W	1 W	10 W
Rise Time (nominal)^b	5 sec	6 sec	5 sec
Sensitivity^{c,d}	26 μV/W	23 μV/W	6 μV/W
Calibration Uncertainty^e	±5%	±5%	±5%
Repeatability	±0.5%	±0.5%	±0.5%

DAMAGE THRESHOLDS

	PS-1.5K	PS-3K	PS-6K
Max. Average Power (continuous)	1.5 kW	3 kW	6 kW
Max. Average Power (2 minutes)	2.25 kW	4.5 kW	9 kW
Maximum Average Power Density^f	4 kW/cm ²	4 kW/cm ²	6 kW/cm ²
Pulsed Laser Damage Thresholds			
10.6 μm, 1 ms, 40 Hz	Max. Energy Density: 150 J/cm ² Max. Peak Power Density: 0.15 MW/cm ²	Max. Energy Density: 150 J/cm ² Max. Peak Power Density: 0.15 MW/cm ²	Max. Energy Density: 150 J/cm ² Max. Peak Power Density: 0.15 MW/cm ²
1.064 μm, 7 ns, 10 Hz	Max. Energy Density: 0.5 J/cm ² Max. Peak Power Density: 70 MW/cm ²	Max. Energy Density: 0.5 J/cm ² Max. Peak Power Density: 70 MW/cm ²	Max. Energy Density: 0.5 J/cm ² Max. Peak Power Density: 70 MW/cm ²
248 nm, 16 ns, 200 Hz	Max. Energy Density: 0.3 J/cm ² Max. Peak Power Density: 20 MW/cm ²	Max. Energy Density: 0.3 J/cm ² Max. Peak Power Density: 20 MW/cm ²	Max. Energy Density: 0.3 J/cm ² Max. Peak Power Density: 20 MW/cm ²
Required Cooling Flow (litres/min)^g	4	5	8
Quick Connects for Semi-rigid Tubing	8 mm O.D.	10 mm O.D.	10 mm O.D.

PHYSICAL CHARACTERISTICS

	PS-1.5K	PS-3K	PS-6K
Effective Aperture Diameter	40 mm Ø	55 mm Ø	55 mm Ø
Absorber	High Power HPB	High Power HPB	High Power HPI
Dimensions	56 x Ø115 mm	55 x Ø140 mm	55 x Ø140 mm
Weight (head only)	1.3 kg	2.0 kg	3.6 kg
Effective Area	12.6 cm ²	23.8 cm ²	23.8 cm ²

a. Nominal value, actual value depends on electrical noise in the measurement system.
 b. With Gentec-EO TPM-300CE, DUO or SOLO monitor.
 c. Typical into 100k Ω load.
 d. Maximum output voltage = sensitivity x maximum power.

e. At 1064 nm. Includes linearity with power.
 f. 10.6 μm, 1000 W, μs pulses and 1.064 μm, 70W CW. PS-6K at 1.064 μm, 960W, 24J pulses.
 g. Water temperature ≤ 22°C.

Specifications subject to change without notice.



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