PowerMax-Pro 15 mm Sensor Developer's Kits

High-Speed and Large-Area Power Detector for Integration Inside Laser Systems

PowerMax-Pro thin-film transverse thermoelectric power sensing technology (Patent #9,012,848) offers the broad wavelength sensitivity and large dynamic range of a thermopile with the fast response speed of small infrared detectors. The microsecond response time enables nearly instant power measurement without any overshoot, and can provide pulse energy, peak power, and rise/fall time with modulated sources.

These detectors are designed for integration into laser systems for real-time QC monitoring and in-line control. PowerMax-Pro sensors alleviate issues common to semiconductor and infrared detectors that have smaller active areas and steeper spectral response curves.

FEATURES & BENEFITS

- High-speed 10 microsecond response time
- High-power handling to 9 W
- Supports lasers from 400 nm to 11 microns
- Broadband coating available with flat spectral response
- Large 15 mm square active area

APPLICATIONS

- Laser power monitoring of CW or modulated laser systems
- Active feedback control within laser processing systems

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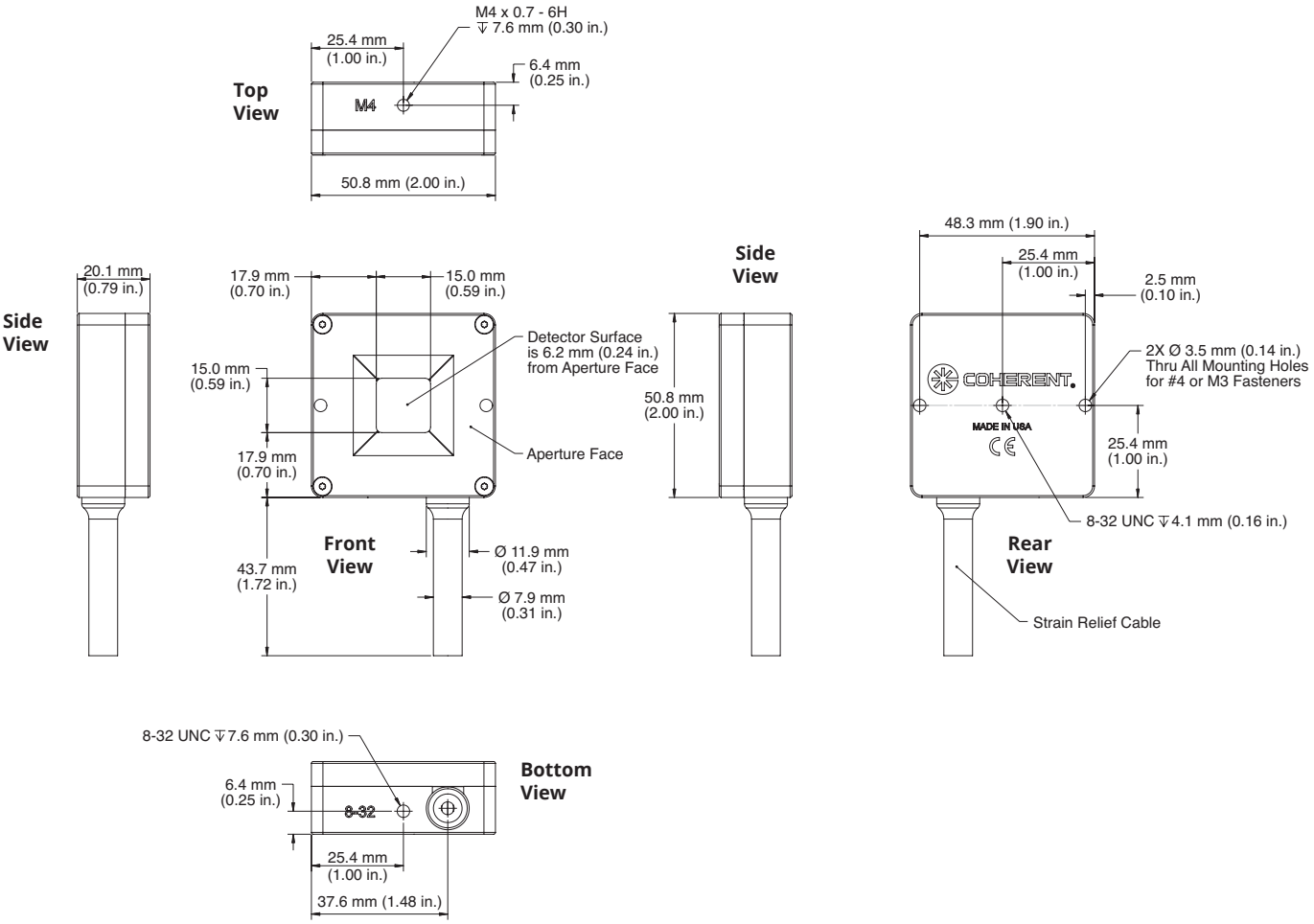
SPECIFICATIONS	PowerMax-Pro 15 mm HD Developer's Kit	PowerMax-Pro 15 mm BB Developer's Kit	PowerMax-Pro 15 mm UP Developer's Kit
Wavelength Range	400 nm to 1100 nm 9 µm to 11 µm	400 nm to 11 µm	400 nm to 1100 nm 9 µm to 11 µm
Average Power Range (continuous)	2.5 mW to 5 W Up to 9 W with heat sink (optional)		
Maximum Modulated Peak Power[1] (W) (use for >1 usec pulses up to CW)	9		
Max. Intermittent Avg. Power (W) (<5 min.; with no Heat Sink)	9		
Noise Equivalent Power Standard Mode (10 Hz) High Speed Mode (20 kHz) Snapshot Mode (625 kHz)	 <50 µW <550 µW <6 mW		
Maximum Average Power Density (W/cm^2) with no Heat Sink with Heat Sink with Water-cooled Heat Sink[2]	 25 50 300		
Maximum Peak Power Density (kW/cm^2)	14		
Maximum Energy Density (mJ/cm^2)	33 (10 ns; 1064 nm)		
Rise & Fall Time (µs)	≤10	≤75 (typical 30 to 70)	≤10
Detector Coating	HD	BB	UP
Active Area (mm)	15 x 15		
Minimum Beam Size[3] (mm)	2	2	Damage threshold dependent
Calibration Uncertainty (%) (k=2)	±2.5		
Power Linearity (%)	±2		
Spectral Compensation Accuracy (%)	±3		
Spatial Uniformity[3] (%) (center 70% of aperture; 2.5 mm beam)	±5 ±3 typical	±5 ±3 typical	±3 (within 5 mm x 5 mm central area; 2.5 mm beam)
Calibration Wavelength (nm)	1064		
Cooling Method	Air (convective)		
Cable Type	DB25		
Cable Length	2.5 m (8.2 ft)		
Part Number	1342383	1382766	1342384

1 Power is adjustable by changing amplifier gain.
2 Customer supplied.
3 Unpatterned detectors are recommended for small beams <2 mm diameter in fixed installations with minimal beam movement.

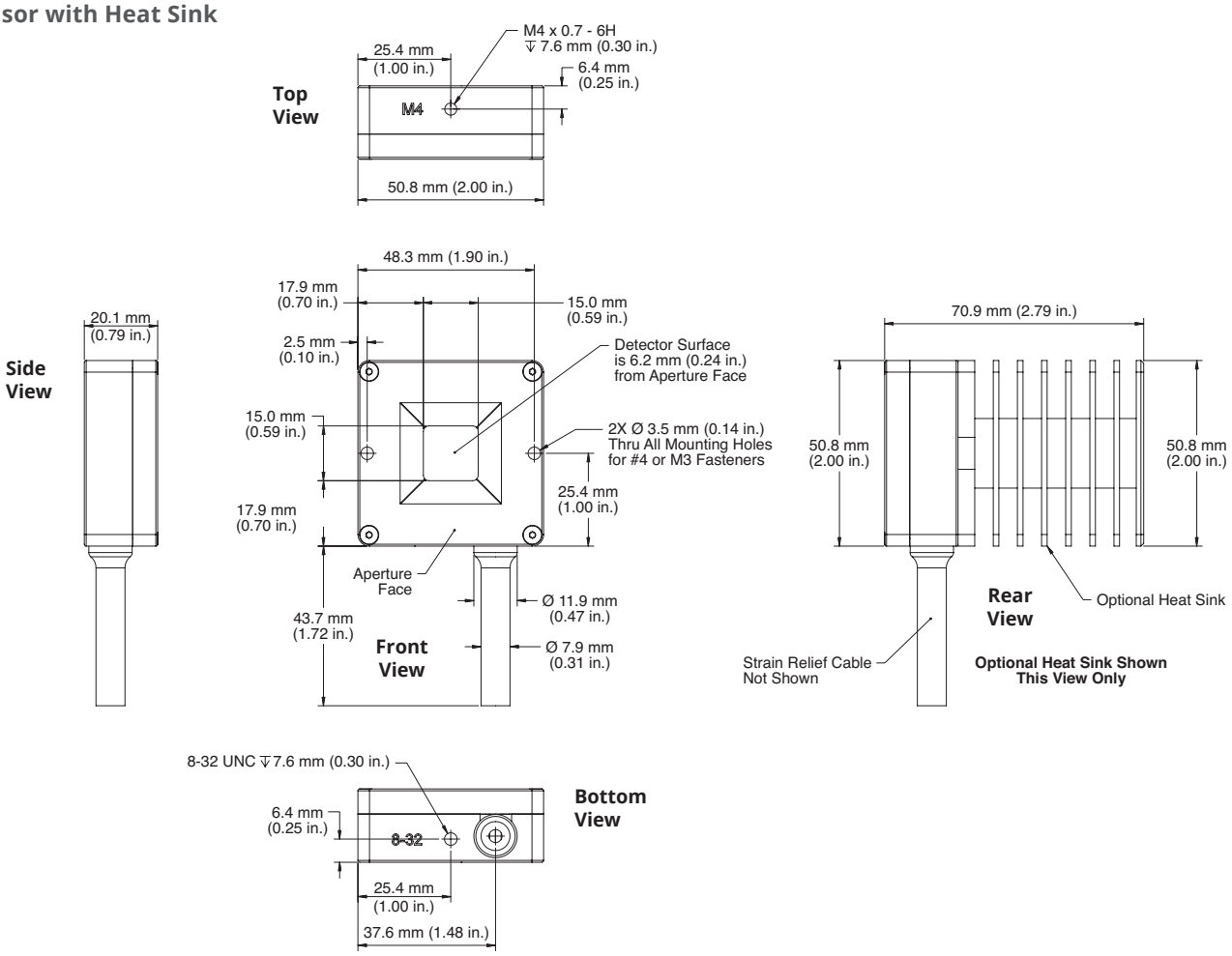
MECHANICAL SPECIFICATIONS

PowerMax-Pro 15 mm Sensor



MECHANICAL SPECIFICATIONS

PowerMax-Pro 15 mm Sensor with Heat Sink



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all PowerMax-Pro 15 mm Sensors. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative. MC-017-19-0M0619 Copyright ©2019 Coherent, Inc.