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PowerMax-Pro USB and RS Sensors

200 mW to 150 W

PowerMax-Pro USB and RS sensors incorporate LabMax-Pro instrumentation directly within the sensor cable. Similar to other Coherent USB and RS sensors, this configuration offers a smaller form factor for use inside laser processing systems or production lines. Additionally, the cost of annual calibration is half that of a separate meter and sensor system. The PowerMax-Pro USB and RS sensors operate with LabMax-Pro PC applications software (included).

PowerMax-Pro (Patent #9,012,848) represents a dramatic technological advancement in laser power sensing that utilizes a thin-film detector only microns thick which rapidly senses thermal changes due to incident laser energy. The result is a measurement response time below 10 µs, as compared to over 1 second for traditional thermopiles. These detectors can operate at high power over a spectral range as broad as 400 nm to 11 µm, and incorporate a large 30 mm x 30 mm active area.

FEATURES & BENEFITS

- Includes USB and RS-232 instrumentation in cable
- Measures power in tens of microseconds
- Capable of tracing pulse shape of modulated and long pulse lasers
- High power up to 150 W
- Large 30 x 30 mm active area

APPLICATIONS

- Laser Processing including Cutting, Drilling, and Welding
- Medical Systems including Long Pulse Aesthetic applications
- Diode LIV Testing - increase resolution and shorten test time
- Scientific and Engineering
- Production and QA Testing

COHERENT®
Superior Reliability & Performance

SPECIFICATIONS	PowerMax-Pro USB/RS 150 HD	PowerMax-Pro USB/RS 150 HD Nano[1]	PowerMax-Pro USB/RS 150F HD	PowerMax-Pro USB/RS 150F HD Nano[1]
Wavelength Range	400 nm to 1100 nm; 9 µm to 11 µm			
Power Range for Continuous Usage Water-cooled[2] Air-cooled	 200 mW to 150 W 200 mW to 17 W	 200 mW to 150 W 200 mW to 17 W	 – 200 mW to 150 W	 – 200 mW to 150 W
Maximum Peak Power (W) (use for >1 µsec pulses up to CW)	200[3]			
Maximum Intermittent Power (W) (<5 min.)	65 (air-cooled)	65 (air-cooled)	150 (maximum)	150 (maximum)
Noise Equivalent Power (mW) Standard Mode High Speed Mode Snapshot Mode	 <4 <8 <16			
Maximum Power Density (kW/cm^2)	0.2 (150 W)			
Maximum Peak Power Density (kW/cm^2)	14			
Maximum Energy Density (J/cm^2)	33 (10 ns; 1064 nm)			
Rise & Fall Time (µs)	≤10	≤350	≤10	≤350
Detector Coating	HD			
Active Area (mm)	30 x 30			
Minimum Beam Size (mm)	2.0 (1.0 mm - up to 3% error)			
Calibration Uncertainty (%) (k=2)	±2			
Power Linearity (%)	±5			
Spectral Compensation Accuracy (%)	±3			
Spatial Uniformity (%) (center 75% of aperture; 2.5 mm beam)	±5			
Calibration Wavelength (nm)	810			
Cooling Method	Water/Air (intermittent)		Fan	
External Trigger Input	SMB connector, 3 to 5 V_{in}, 2 to 10 mA, 50 ohm AC, 300 ohm DC impedance			
Power Input	5 VDC, center positive[4]			
Cable Type	USB/RS-232			
Cable Length	4.2 m (13.8 ft.)			
Part Number USB RS-232	 1295921 1295923	 1330510 1330545	 1295920 1295922	 1330544 1330546

1 Choose a "Nano" model PowerMax-Pro sensor when measuring the average power of industrial short pulsed (nanosecond and picosecond) lasers. The amplifier in the "Nano" is adjusted to account for the high peak impulse powers associated with those types of lasers. Lasers of this type within the Coherent portfolio include the Matrix QS, Avia NX, Flare NX, Helios (the regular "HD" models are not appropriate for these short pulsed, high energy lasers).

2 Water flow rate for water-cooled sensors must be >0.5 GPM (>2 LPM).

3 For pulses shorter than 1 µsec, use the maximum pulse energy density and average power specifications instead of peak power.

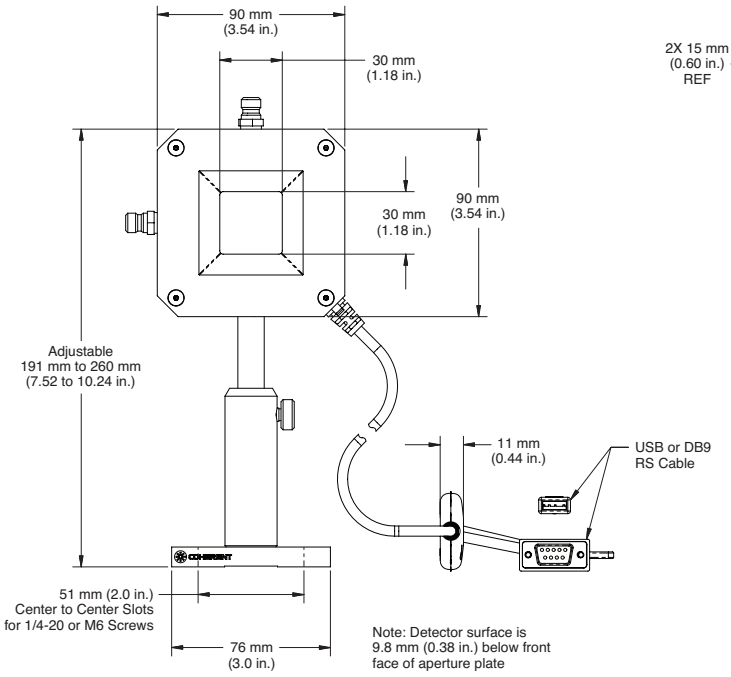
4 Use of 5 VDC input on USB models is optional; for PCs that do not provide 5 VDC out when on battery or power save mode.

SPECIFICATIONS	PowerMax-Pro USB/RS 150 BB	PowerMax-Pro USB/RS 150F BB
Wavelength Range	400 nm to 11 µm	
Power Range for Continuous Usage Water-cooled[1] Air-cooled (65W max air-cooled, 5 min.)	 200 mW to 150 W 200 mW to 50 W	 – 200 mW to 150 W
Maximum Peak Power (W) (use for >1 µsec pulses up to CW)	200[2]	
Maximum Intermittent Power (W) (<5 min.)	65 (air-cooled)	150 (maximum)
Noise Equivalent Power (mW) Standard Mode High Speed Mode Snapshot Mode	 <4 <8 <16	
Maximum Power Density (kW/cm^2)	0.2 (150 W)	
Maximum Peak Power Density (kW/cm^2)	14	
Maximum Energy Density (J/cm^2)	33 (10 ns; 1064 nm)	
Rise & Fall Time (µs)	≤50	
Detector Coating	BB	
Active Area (mm)	30 x 30	
Minimum Beam Size (mm)	2.0 (1.0 mm - up to 3% error)	
Calibration Uncertainty (%) (k=2)	±2	
Power Linearity (%)	±5	
Spectral Compensation Accuracy (%)	±3	
Spatial Uniformity (%) (center 75% of aperture; 2.5 mm beam)	±5	
Calibration Wavelength (nm)	810	
Cooling Method	Water/Air (intermittent)	
External Trigger Input	SMB connector, 3 to 5 V_{in}, 2 to 10 mA, 50 ohm AC, 300 ohm DC impedance	
Power Input	5 VDC, center positive[3]	
Cable Type	USB/RS-232	
Cable Length	4.2 m (13.8 ft.)	
Part Number USB RS-232	 1342379 1342381	 1342380 1342382

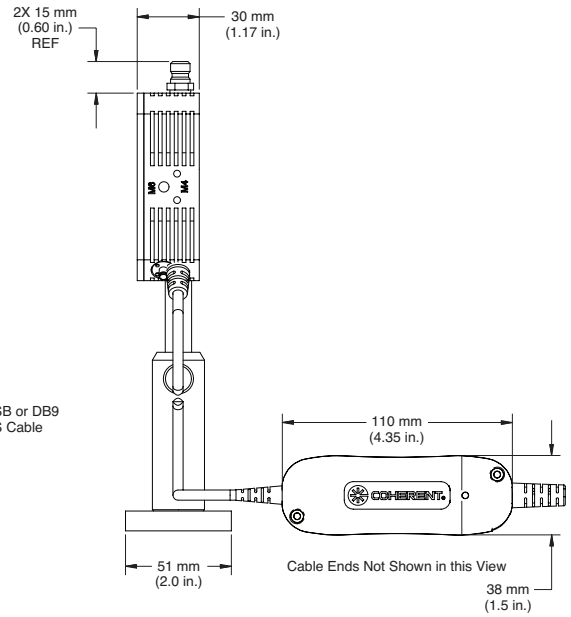
1 Water flow rate for water-cooled sensors must be >0.5 GPM (>2 LPM).
2 For pulses shorter than 1 µsec, use the maximum pulse energy density and average power specifications instead of peak power.
3 Use of 5 VDC input on USB models is optional; for PCs that do not provide 5 VDC out when on battery or power save mode.

MECHANICAL SPECIFICATIONS

PowerMax-Pro USB/RS 150 HD and BB

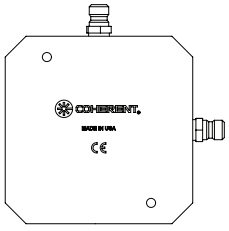


Front View



Side View

Rear View



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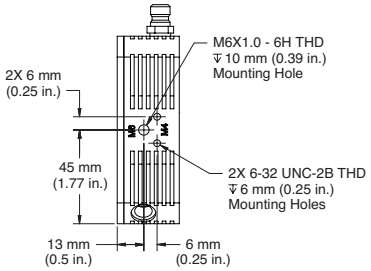
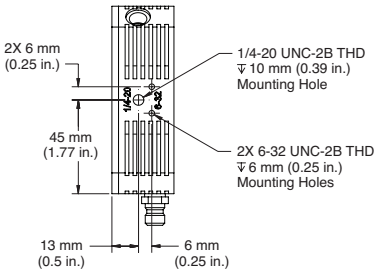


Bottom View



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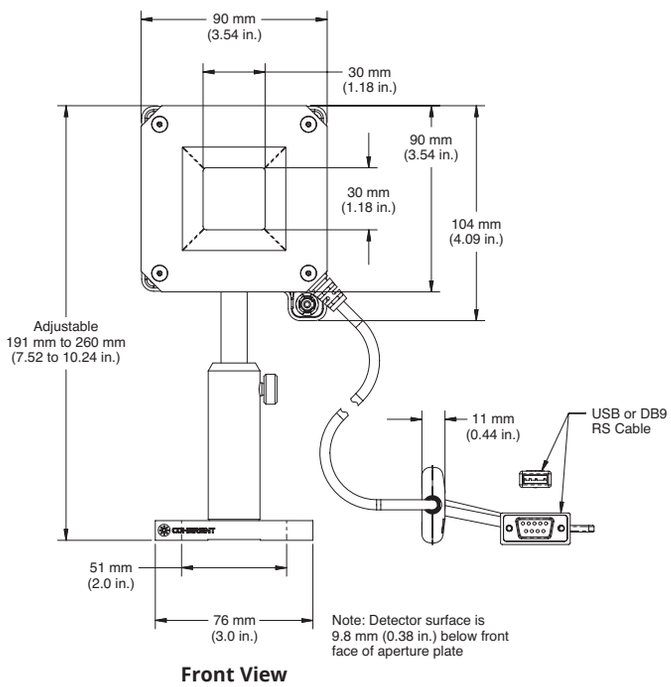
MECHANICAL SPECIFICATIONS

PowerMax-Pro USB/RS 150F HD and BB



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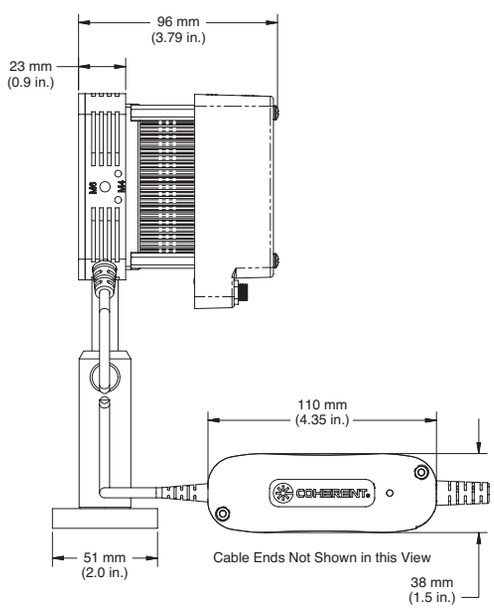
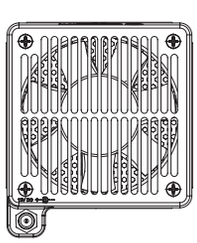


Side View

Rear View



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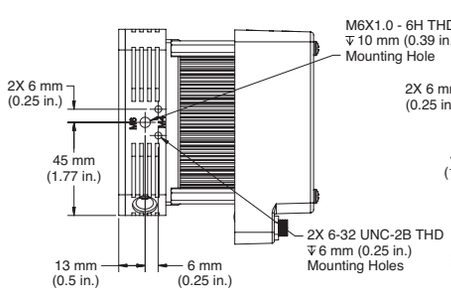

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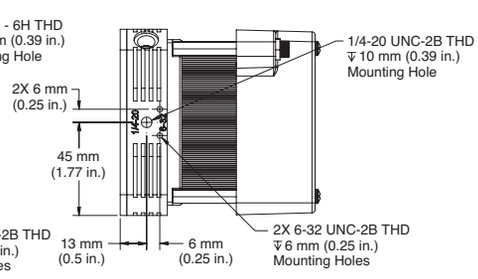

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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered 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 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.
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