PM10K+ AND PM15K+ LASER POWER SENSORS

Large Area Water-Cooled kW Sensors

These high-power water-cooled laser power sensors offer precise and reliable measurement for demanding industrial applications. The series includes the standard PM10K+, the PM10K+ with Backscatter Shield, and the PM15K+. The PM10K+ features a 65 mm x 65 mm sensor with BB+ coating, handling power densities from 6 kW/cm^2 (at 1 kW) to 2.6 kW/cm^2 (at 10 kW). The PM10K+ with Backscatter Shield integrates a specialized water-cooled light trap with 65 mm diameter input port that captures 99% of backscattered laser energy, minimizing reflections and preventing heat from being radiated off of the detector. The PM15K+ expands power handling up to 15 kW continuously at up to 2.0 kW/cm^2 and 20 kW intermittently, with a larger 100 x 100 mm active area, making it ideal for higher-power and larger-sized laser beams. All models support DB-25 + USB or RS-232 communication and deliver fast, 3- to 5-second measurement speed.

FEATURES

- Power handling up to 10 kW (PM10K+), 12 kW intermittent (PM10K+), 15 kW (PM15K+), and 20 kW intermittent (PM15K+)
- Fast 3- to 5-second measurement speed
- BB+ Coating with high power density threshold
- Broadband coating to 11 microns
- Large active area: 65 x 65 mm (PM10K+), 100 x 100 mm (PM15K+)
- Optional Backscatter Shield on PM10K+ with 65 mm input port to minimize reflections
- Flexible dovetail mount
- DB25 + USB and RS-232 configurations
- Safety interlock monitors temperature and water flow conditions

APPLICATIONS

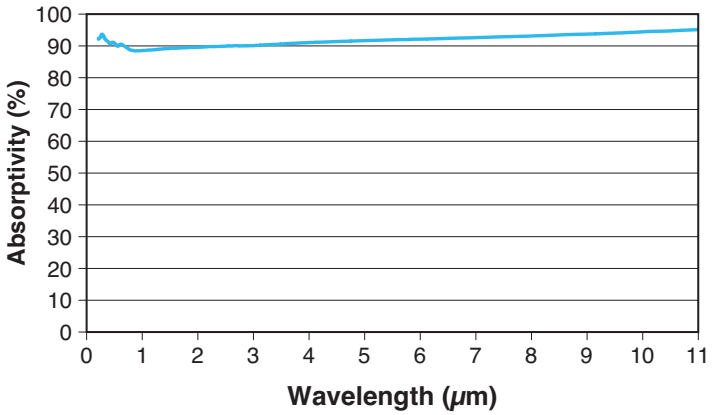
- Laser Power Monitoring of CW or Modulated Lasers
- Manufacturing, QA, and Engineering Applications
- Commercial OEM Integration
- Laser Welding, Cutting, and Brazing Processes

COHERENT

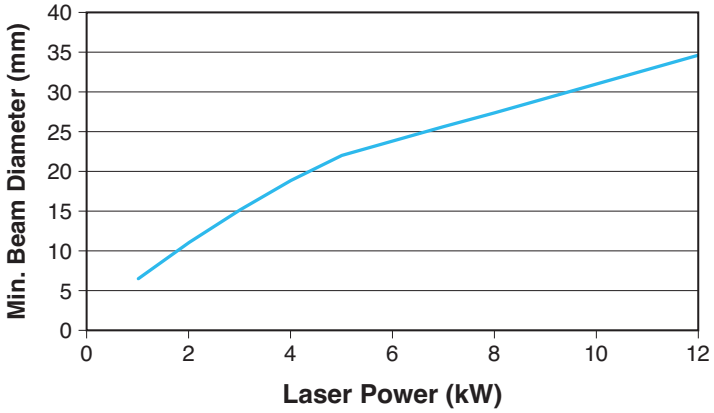
Specifications	PM10K+	PM10K+ with Backscatter Shield	PM15K+
Wavelength Range (µm)	0.19 to 11		
Power Range (W)	100 to 10,000		100 to 15,000
Maximum Intermittent Power (kW) (<5 min.)	12		20
Noise Equivalent Power (W) (typical)	0.2 (USB and RS-232) 1 (DB-25 with meter)		0.3 (USB and RS-232) 3 (DB-25 with meter)
Maximum Power Density (kW/cm^2)	6.0 at 1 kW 2.6 at 5 kW 2.7 at 10 kW 2.5 at 12 kW		3.2 at 5 kW 2.3 at 10 kW 2.0 at 15 kW 1.9 at 20 kW
Recommended Minimum Beam Size (mm)	6.5 at 1 kW 22 at 5 kW 31 at 10 kW 35 at 12 kW		20 at 5 kW 33 at 10 kW 44 at 15 kW 52 at 20 kW
Minimum Water Flow Rate (lpm)	6 (~10 PSI)		8 (~7 PSI)
Water Temperature Range (°C)	10 to 25		
Response Time (0 to 99%) (seconds) (typical)	3 (Speed-up On) 10 (Speed-up Off)		4.5 (Speed-up On) 14 (Speed-up Off)
Maximum Energy Density (mJ/cm^2) (1064 nm, 10 ns)	600		
Detector Coating	BB+		
Detector Dimensions (mm)	65 x 65	65 dia.	100 x 100
Calibration Uncertainty (%)	±2		
Power Linearity (%)	±1.5		
Spectral Compensation Accuracy (%)	±1.5		
Calibration Wavelength (nm)	1080		
Cooling Method	Water		
Interface Type	DB-25 + USB, RS-232		
Cable Length (m)	2.0 (DB-25)		
Part Number DB-25 + USB RS-232	 2293937 2293938	 2293940 2293941	 2311240 2311244

Typical Performance Data

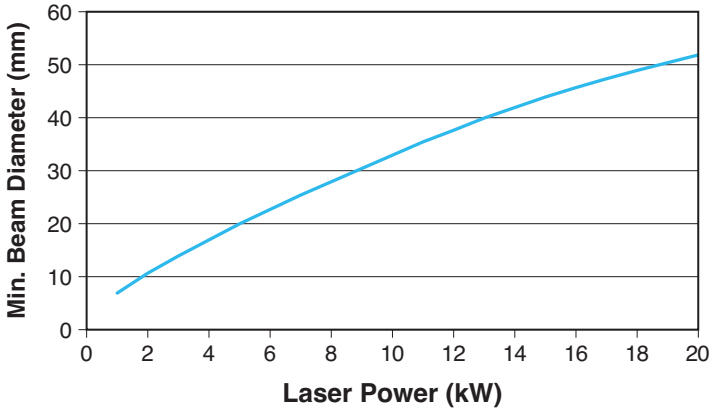
BB+ Absorber Coating Optical Absorptivity



PM10K+ and PM10K+ with Backscatter Shield
Minimum Beam Diameter vs Power

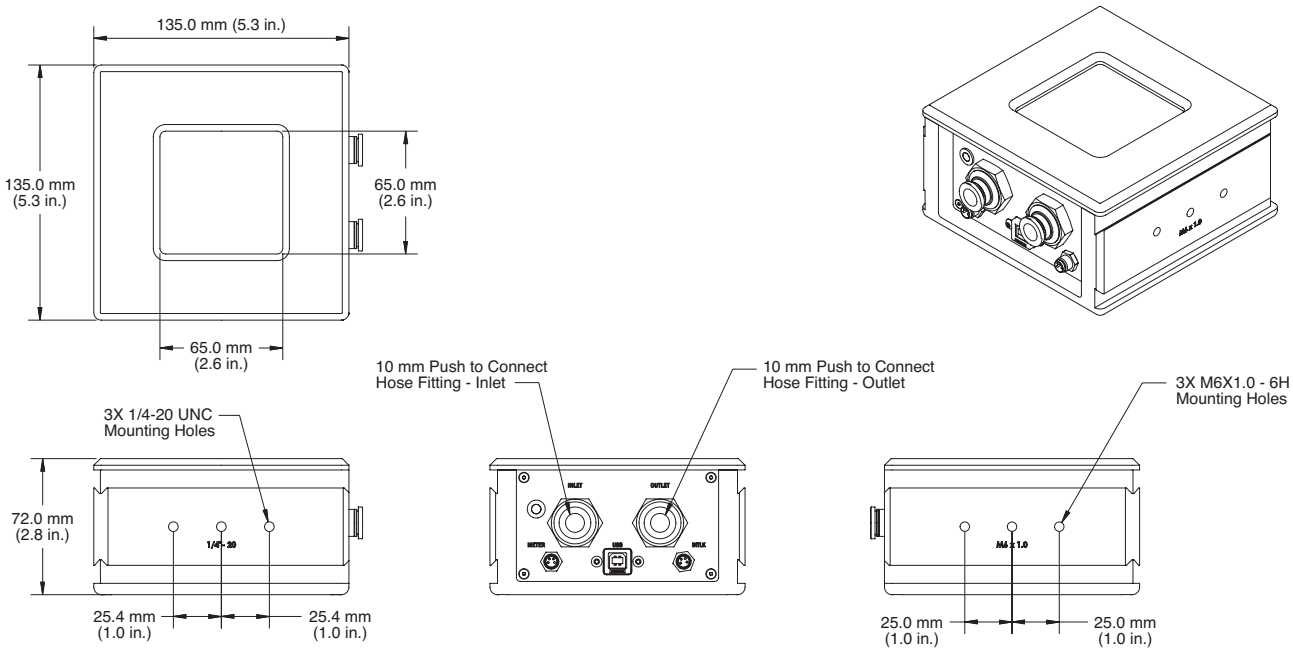


PM15K+ Minimum Beam Diameter vs. Power

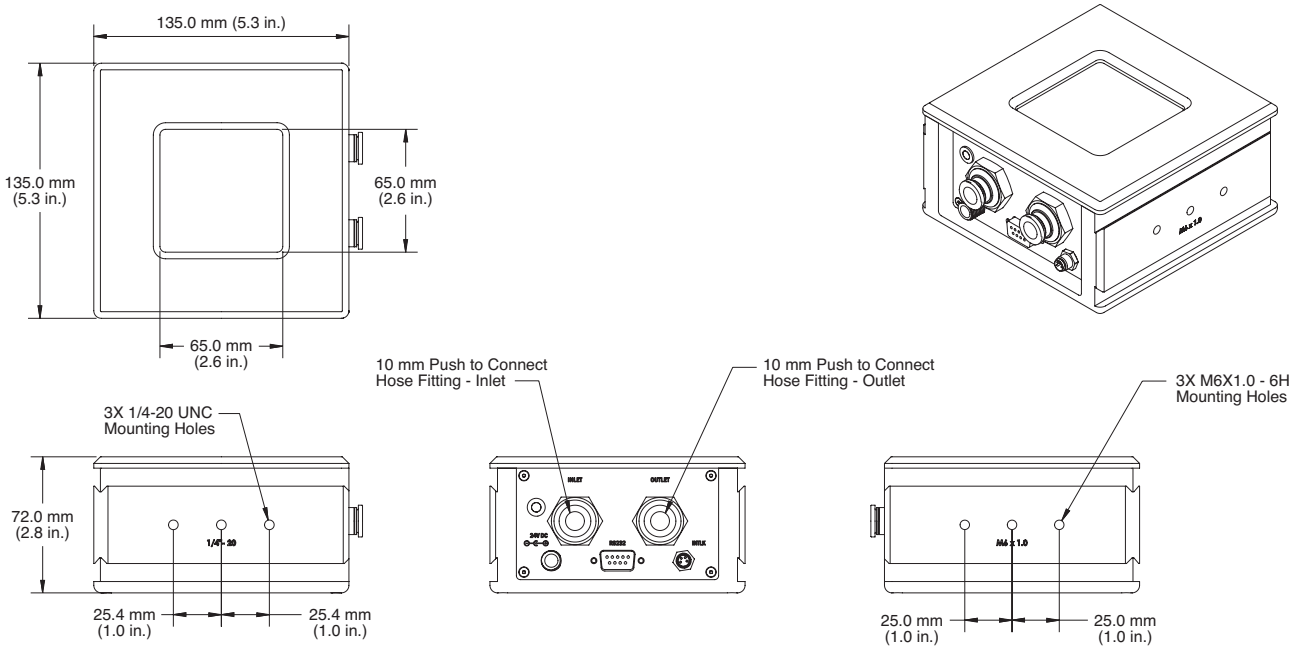


Mechanical Specifications

PM10K+ DB-25 + USB

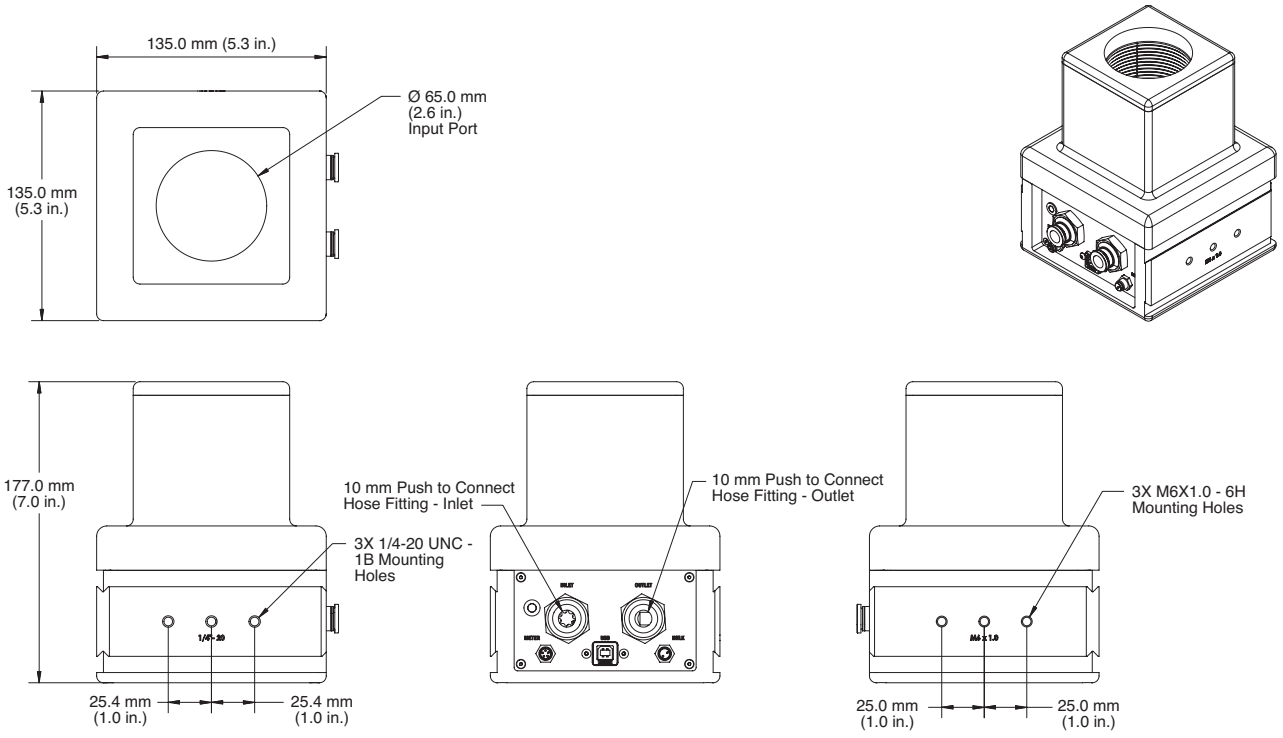


PM10K+ RS-232

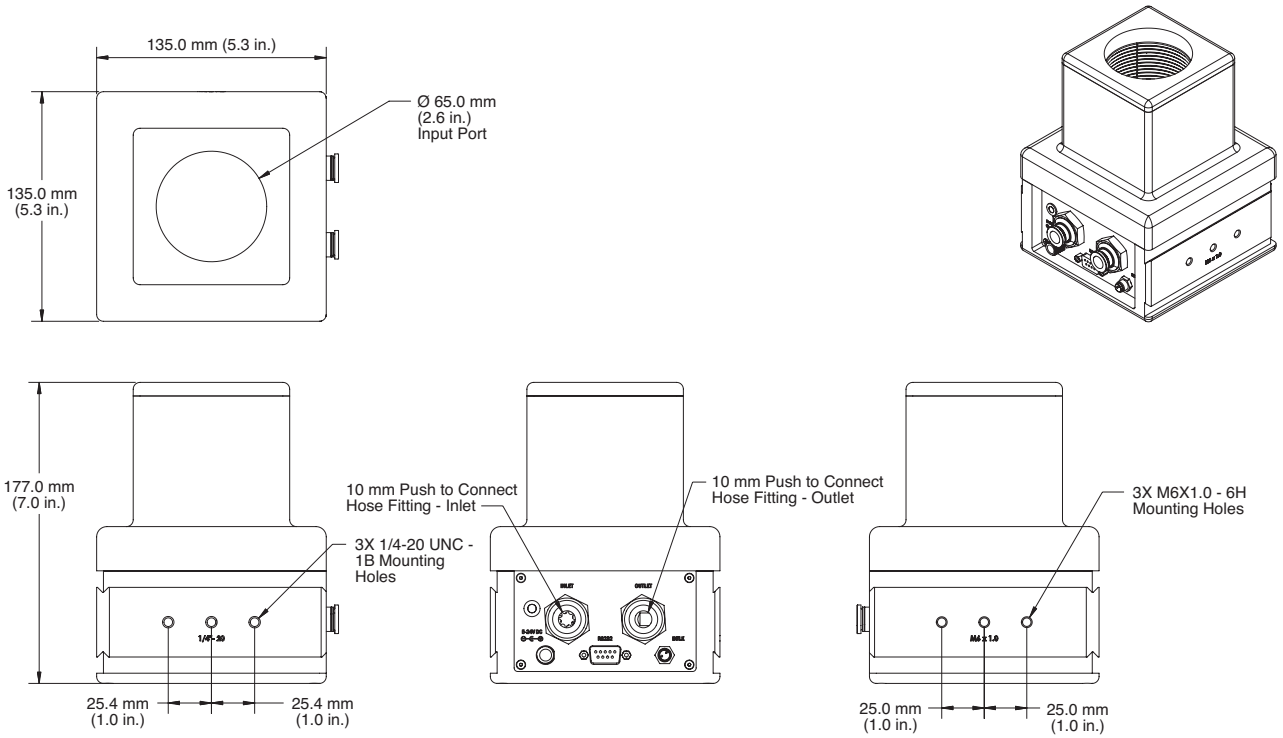


Mechanical Specifications

PM10K+ DB-25 + USB with Backscatter Shield

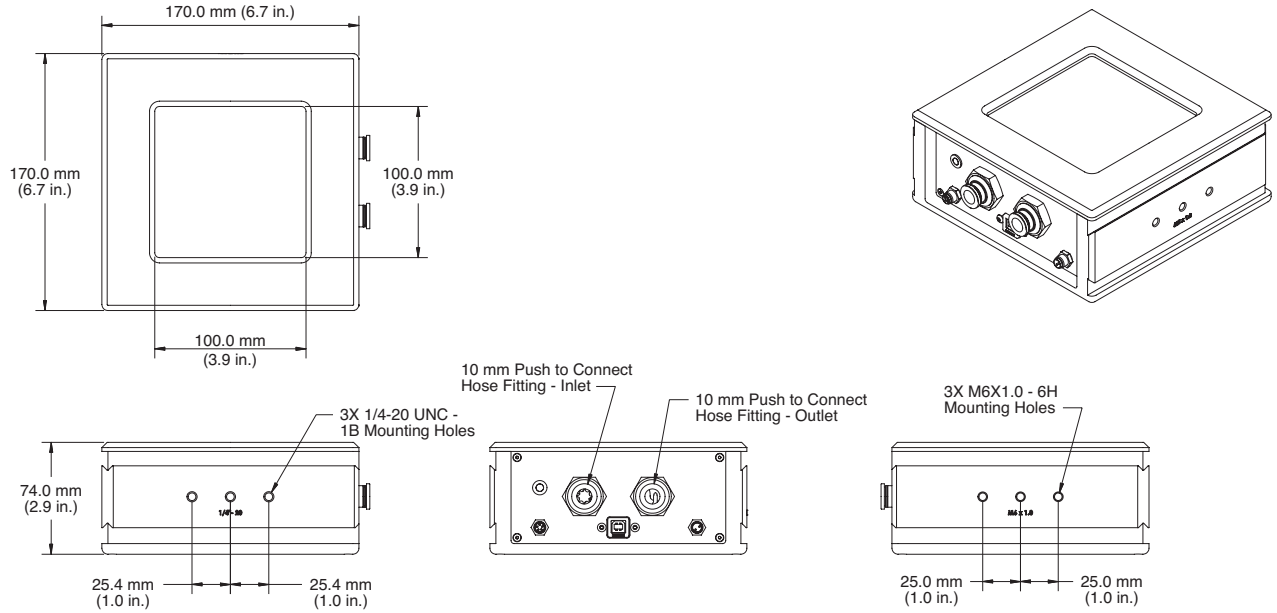


PM10K+ RS-232 with Backscatter Shield



Mechanical Specifications

PM15K+ DB-25 + USB



PM15K+ RS-232