



# High-Sensitivity Thermopile USB and RS-232 Sensors to 2 W

## Amplified and Thermally Stabilized Thermopiles Sensors with a Wide, Flat Spectral Range for Low Power Laser Measurement with USB and RS-232 Direct Interfaces

The PS10 and PS19 sensors are thermally stabilized, amplified thermopile sensors with a broad spectral response, high sensitivity, and a large active area. These sensors are ideal for measuring small laser diodes and HeNe lasers and small ion lasers. Unlike semiconductor detectors, these sensors have a flat broadband output and will not saturate above 1 mW/cm<sup>2</sup>.

USB and RS-232 sensor models plug directly into a PC or industrial controller. Communication with these models can be performed directly via host commands between host and sensor or through our PC software application (included).

### FEATURES & BENEFITS

- Thermally stabilized designs
- Power measurement from 100  $\mu$ W to 1 W
- 10  $\mu$ W resolution
- 10 mm and 19 mm apertures
- Direct USB and RS-232 interfaces
- FC and SMA fiber adapters (optional for PS10, see accessories section of datasheet)
- RoHS compliant



## High-Sensitivity Thermopile USB and RS-232 Sensors to 2 W Datasheet

SPECIFICATIONS	PS10	PS10Q	PS19Q	PS19
Wavelength Range (nm)	190 <sup>3</sup> to 11,000	300 to 2100	300 to 2100	190 <sup>3</sup> to 11,000
Power Range	100 μW to 1 W	100 μW to 1 W	100 μW to 1 W	100 μW to 1 W
Max. Intermittent Power (<5 min.) (W)	3			
Long-Pulse Joules (J)	0.001 to 1			
Noise Equivalent Power (μW)	3	3	3	5
Maximum Thermal Drift <sup>1</sup> (μW)	±40	±25	±25	±400
Maximum Power Density (W/cm <sup>2</sup> )	500			
Maximum Energy Density (mJ/cm <sup>2</sup> )	50 (10 ns, 1064 nm)			
Response Time (sec.) (0% to 95%)	3			
Speed-up On				
Speed-up Off				
Detector Coating	Black			
Detector Element	Thermopile			
Optic	None	Quartz	Quartz	None
Detector Diameter (mm)	10	10	19	19
Calibration Uncertainty (%) (k=2)	±1			
Power Linearity (%)	±1			
Spectral Compensation Accuracy (%)	±1.5			
Long-Pulse Joules Accuracy (%)	±3			
Calibration Wavelength (nm)	514			
Cooling Method	Air			
Cable Type	USB and RS			
Cable Length (m)	2.5 (USB)/0.3 (RS)			
Part Number <sup>2</sup>	1174260 (USB)	1287077 (USB) 1288992 (RS)	1168343 (USB) 1179504 (RS)	1174261 (USB)**

<sup>1</sup> Power stability over 30 minutes in typical lab environment.

<sup>2</sup> Software and post stand included.

<sup>3</sup> 190 nm to 300 nm operation restricted to <100 mW average power and <250 W/cm<sup>2</sup> power density.

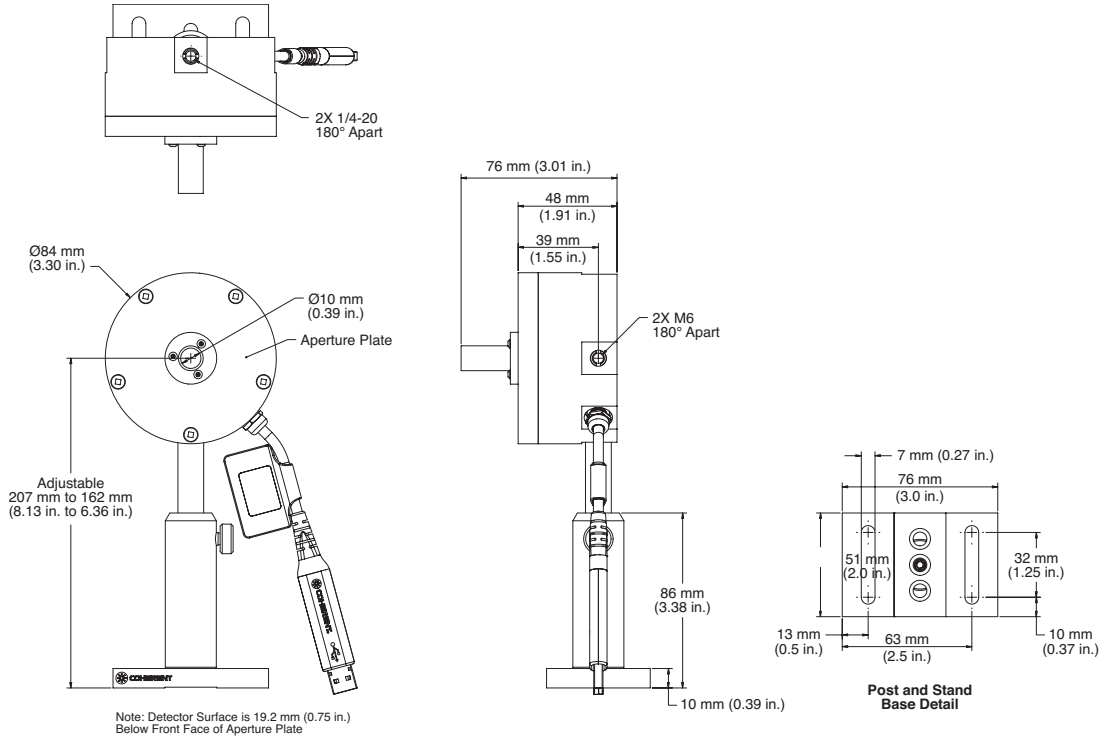
\*\* C24 Quick Ship program: eligible for next business day shipment.

The PS10 model includes a light tube mounted to the front of the housing, which minimizes the effects of background radiation and narrows the field of view. Alternatively, the light tube can be removed and replaced by a fiber adapter accessory.

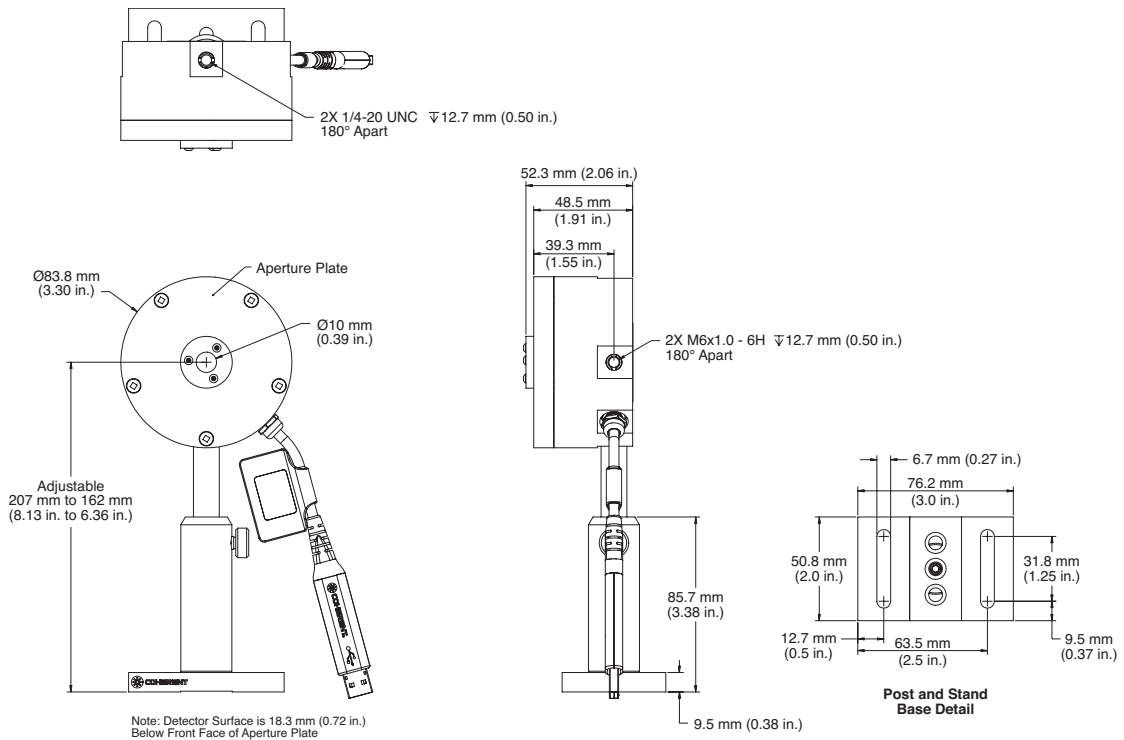
Where optimum stability is required, the PS10Q or PS19Q include a wedged quartz window, for applications from 0.3 to 2.0 μm. The quartz window more effectively eliminates thermal background radiation and the effects of air currents.

**MECHANICAL SPECIFICATIONS**

**PS10**

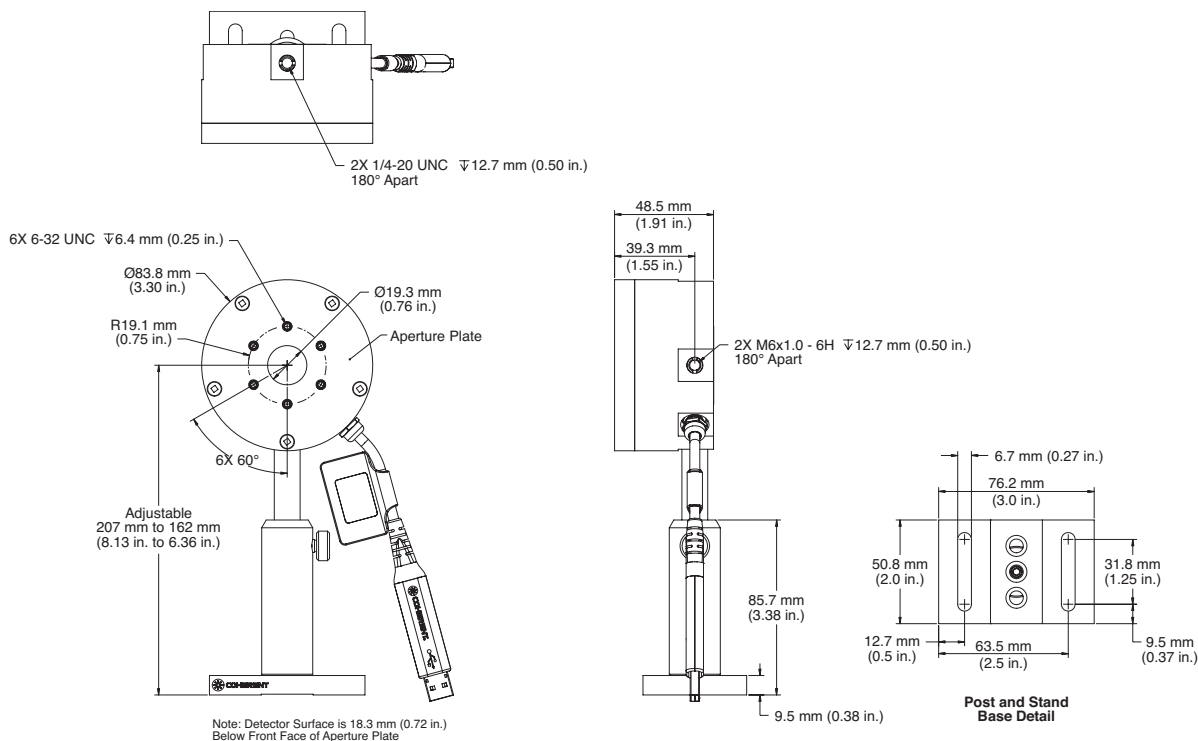


**PS10Q**

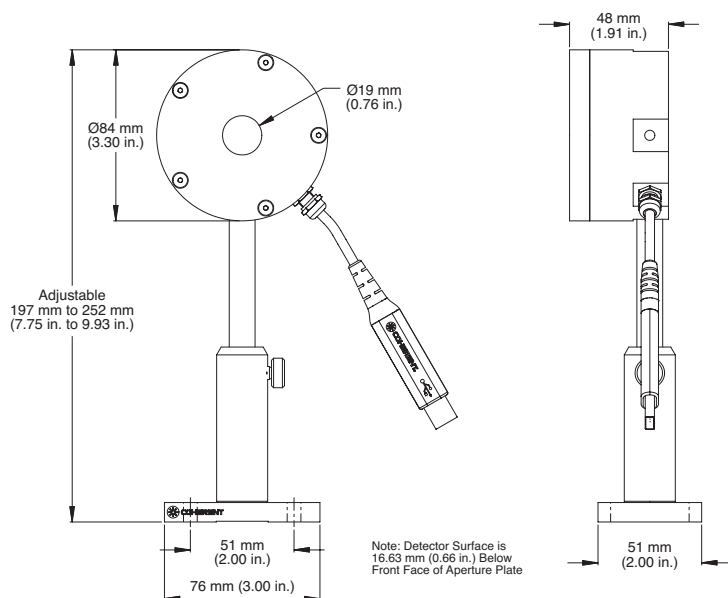


**MECHANICAL SPECIFICATIONS**

**PS19**



**PS19Q**



## High-Sensitivity Thermopile USB and RS-232 Sensors to 2 W Datasheet

SPECIFICATIONS	PM3	PM3Q
Wavelength Range (nm)	190 <sup>3</sup> to 11,000	300 to 2000
Power Range	500 $\mu$ W to 2 W	
Max. Intermittent Power (<5 min.) (W)	3	
Long-Pulse Joules (J)	0.001 to 1	
Noise Equivalent Power ( $\mu$ W)	20	
Maximum Thermal Drift <sup>1</sup> ( $\mu$ W)	$\pm$ 1000	$\pm$ 500
Maximum Power Density (W/cm <sup>2</sup> )	500	
Maximum Energy Density (mJ/cm <sup>2</sup> )	50 (10 ns, 1064 nm)	
Response Time (sec.) (0% to 95%)		
Speed-up On	2	
Speed-up Off	4	
Detector Coating	Black	
Detector Element	Thermopile	
Optic	None	Quartz
Detector Diameter (mm)	19	10
Calibration Uncertainty (%) (k=2)	$\pm$ 1	
Power Linearity (%)	$\pm$ 1	
Spectral Compensation Accuracy (%)	$\pm$ 1.5	
Long-Pulse Joules Accuracy (%)	$\pm$ 3	
Calibration Wavelength (nm)	10,600	514
Cooling Method	Air	
Cable Type	USB	
Cable Length (m)	2.5	
Part Number <sup>2</sup>	1174263 (USB)	1191133 (USB)

<sup>1</sup> Power stability over 30 minutes in typical lab environment.

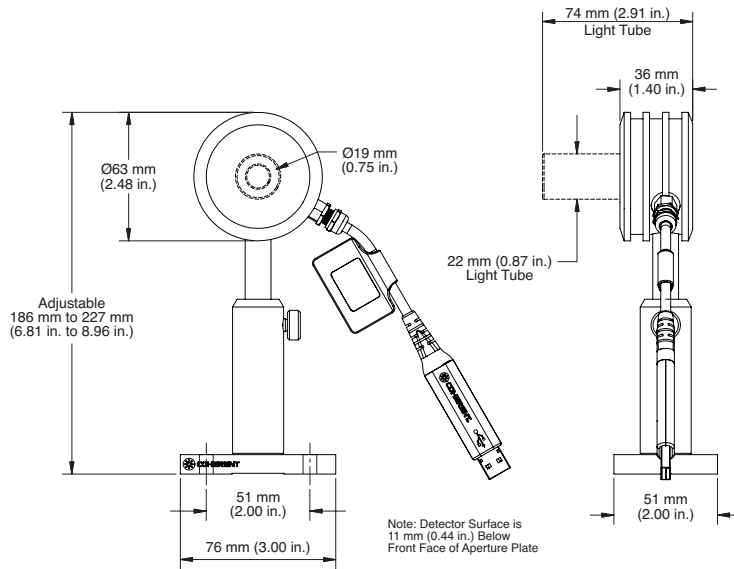
<sup>2</sup> Software and post stand included.

<sup>3</sup> 190 nm to 300 nm operation restricted to <100 mW average power and <250 W/cm<sup>2</sup> power density.

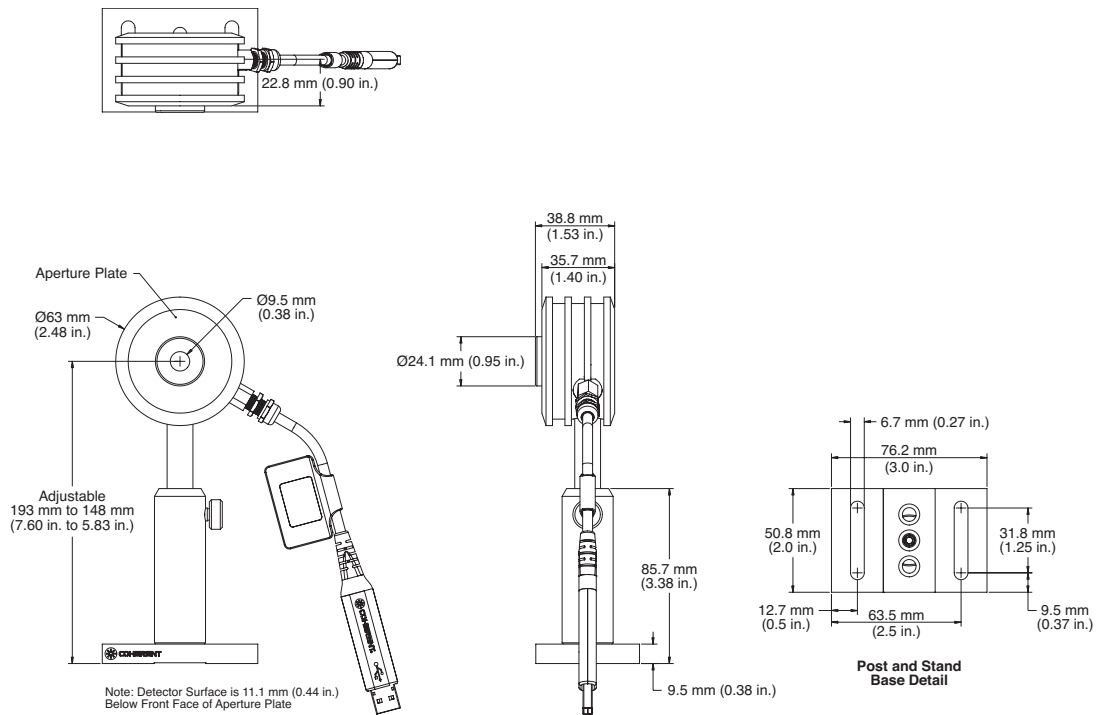
The PM3 sensors are amplified low-power thermopiles, but they do not contain the temperature-stabilization features of the PS series. The PM3 comes with a 10 mm inner diameter light tube to eliminate stray light; however, this can be removed to make use of the entire 19 mm diameter absorbing surface. The PM3Q replaces the light tube with a wedged quartz window to block spurious ambient thermal emissions from reaching the detector.

## MECHANICAL SPECIFICATIONS

### PM3



### PM3Q



## POWER SENSOR ACCESSORIES

### Fiber-Optic Connector Adapters

**Part Number: 0012-3860 (PS-SMA-Type Connector)**  
**0012-3863 (PS-FC-Type Connector)**

The following fiber adapters can be mounted onto the front of the PS10 sensor in place of the removable light tube.



Coherent, Inc.,  
5100 Patrick Henry Drive Santa Clara, CA 95054  
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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 High Power Water-Cooled Thermopile Sensors. For full details of this warranty coverage, please refer to the Service section at [www.coherent.com](http://www.coherent.com) or contact your local Sales or Service Representative. MC-011-20-0M0320 Copyright ©2020 Coherent, Inc.