

# 919P Series Thermopile Sensors



- Broadband flat spectral response from 0.19–11  $\mu\text{m}$
- NIST-traceable calibration included
- Insensitive to beam position
- Compatible with the new 843-R power meter
- Calibrated at 532 nm, 1.06 and 10.6  $\mu\text{m}$  (1.06 and 10.6  $\mu\text{m}$  only for 919P-5kW-50)

Newport's new 919P Thermopile Detector Series provide a full range of sensors to meet the power measurement needs for CW or pulsed lasers. They offer broadband, spectrally flat response, with the maximum power range up to 5000 Watts. These sensors are compatible with Newport power meter models 1936-R/2936-R, 1928-C, 1918-R, and the all new 843-R.

Each 919P thermopile sensor include a DB15 connector and internal EEPROM for storing factory calibration data. When using with Newport's legacy 1835-C and 2835-C Series Optical Meters, use the adapter cable 818P-DIN (ordered separately). All sensors have a 1/4-20 tapped hole for post or plate mounting and a post comes along with a sensor, except for Model 919P-020-12, which has an 8-32 tapped hole. Calibration of the thermopile detectors is recommended annually to assure NIST traceability.

## Compatible Power Meters (sold separately)

**Optical Power and Energy Meters, 1936-C/R and 2936-C/R**



**Benchtop Optical Meter, 1928-C**



**Optical Power Meter, High-Performance Hand-Held, 1918-R**



**Economic Handheld Optical Power Meter, 843-R**



# 919P Series Thermopile Sensors

## 919P Specifications

Model	919P-003-10	919P-010-16	919P-020-12	919P-030-18	919P-040-50
Spectral Range (μm)	0.19 to 11				
Max. Measurable Power (W)	3	10	20	30	35
Power Noise Level (mW) <sup>(1)</sup>	2 μW	1	0.5	1	5
Rise Time (s) <sup>(2)</sup>	1.8	0.8	0.8	0.8	2.5
Calibration Uncertainty (nm)	±3				
Repeatability (%)	±0.5				
Linearity (%)	±1.5		±1		
Uniformity (%)	±2				
Maximum Average Power (W)	(continuous) 3	10	20 <sup>(3)</sup>	30	35
Power Density, Maximum Average (kW/cm <sup>2</sup> )	1	28	23	20	12
Max Energy Density (J/cm <sup>2</sup> )	<100 ns, 0.3 J/cm <sup>2</sup> 0.5 ms, 1 J/cm <sup>2</sup> 2 ms, 2 J/cm <sup>2</sup> 10 ms, 4 J/cm <sup>2</sup>	<100 ns, 0.3 J/cm <sup>2</sup> 0.5 ms, 2 J/cm <sup>2</sup> 2 ms, 2 J/cm <sup>2</sup> 10 ms, 2 J/cm <sup>2</sup>	<100 ns, 0.3 J/cm <sup>2</sup> 0.5 ms, 5 J/cm <sup>2</sup> 2 ms, 10 J/cm <sup>2</sup> 10 ms, 30 J/cm <sup>2</sup> (4)		
Active Diameter (mm)	9.5	16	12	17.5	50
Active Area (cm <sup>2</sup> )	0.71	2.01	1.13	2.40	19.63
Cooling Method	Heat Sink				
Dimensions (L x W x D) [in. (mm)]	[in. 2.76 x 2.76 x 2.56 x 2.56 x 1.50 x 1.50 x 2.52 x 2.52 x 3.54 x 3.54 x 1.18 (70 x 70 x 30) 1.32 (65 x 65 x 33.5) 0.55 (38 x 38 x 14) 1.93 (64 x 64 x 49) 1.30 (90 x 90 x 33)]				
Weight [lb (kg)]	0.44 (0.2)		0.66 (0.3)		1.32 (0.6)

Notes:

- 1) See Tech Note 4 - *Minimum Measurable Power of Power Meters* - on [www.newport.com](http://www.newport.com)
- 2) Measured with 843-R power meter.
- 3) 4 W free standing, 20 W heat sunked to chassis.
- 4) Measured at 1064 nm. Derate 80 % at 532 nm, 60 % at 355 nm, 40 % at 266 nm.
- 5) Calibrated at 1.064 and 10.6 μm only.

For Gaussian beams multiply power and energy density by a factor of 2 when comparing to online damage threshold specifications. For beams with hot spots multiply power and energy density by a factor of 3 when comparing to online damage threshold specifications.

Model	919P-050-18HP	919P-050-26	919P-150-26	919P-250-35	919P-500-65	919P-5KW-50
Spectral Range (μm)	0.24 to 2.2		0.19 to 11			0.19 to 11 <sup>(5)</sup>
Max. Measurable Power (W)	50	50	150	250	500	5000
Power Noise Level (mW) <sup>(1)</sup>	7	2	3	15	25	1 W
Rise Time (s) <sup>(2)</sup>	2	1.5	1.5	2.0	2.8	3.0
Calibration Uncertainty (%)	±5		±3			±5
Repeatability (%)	±1		±0.5			±1
Resolution (%)	±0.5					
Linearity (%)	±1.5		±1		±1.5	
Uniformity (%)	±2					
Maximum Average Power (W)	(continuous) 50	50	150	250	500	5000
	(1.5 minutes)	N / A	150	N / A		
Power Density, Maximum Average (kW/cm <sup>2</sup> ) (1064 nm, CW)	0.5	12	12	10	7	3
Max Energy Density (J/cm <sup>2</sup> )	<100 ns, 4 J/cm <sup>2</sup> 0.5 ms, 15 J/cm <sup>2</sup> 2 ms, 25 J/cm <sup>2</sup> 10 ms, 50 J/cm <sup>2</sup>	<100 ns, 0.3 J/cm <sup>2</sup> 0.5 ms, 5 J/cm <sup>2</sup> 2 ms, 10 J/cm <sup>2</sup> 10 ms, 30 J/cm <sup>2</sup>				
Active Diameter (mm)	17.5	26	26	35	65	50
Active Area (cm <sup>2</sup> )	2.40	5.31	5.31	9.62	33.17	19.63
Cooling Method	Heat Sink			Fan	Water	
Dimensions (L x W x D) [in. (mm)]	2.52 x 2.52 x 2.95 (64 x x 64 x 75)		2.52 x 2.52 x 2.52 (64 x x 64 x 64)		2.52 x 2.52 x 4.7 (120 x 120 x 52)	
Weight [lb (kg)]	0.77 (0.35)	0.66 (0.3)	0.77 (0.35)	0.88 (0.4)	5.94 (2.7)	6.16 (2.8)

## Ordering Information

Model	Description
919P-003-10	Thermopile Sensor, 3 W, 10 mm Diameter, 0.19-10.6 μm
919P-010-16	Thermopile Sensor, 10 W, 16 mm Diameter, 0.19-10.6 μm, Newport Compatible
919P-020-12	Thermopile Sensor, 20 W, 12 mm Diameter, 0.19-10.6 μm, Newport Compatible
919P-030-18	Thermopile Sensor, 30 W, 18 mm Diameter, 0.19-10.6 μm, Newport Compatible
919P-040-50	Thermopile Sensor, 35 W cw, 50 mm Diameter, 0.19-10.6 μm, Newport Compatible
919P-050-18HP	High Peak Power Thermopile Sensor, 50 W, 17.5 mm Diameter, 0.24-2.2 μm
919P-050-26	Thermopile Sensor, 50 W, 26 mm Diameter, 0.19-10.6 μm, Newport Compatible
919P-150-26	Thermopile Sensor, 150 W, 26 mm Diameter, 0.19-10.6 μm, Newport Compatible
919P-250-35	Thermopile Sensor, 250 W, 35 mm Diameter, 0.19-10.6 μm, Newport Compatible
919P-500-65	Thermopile Sensor, 500 W, 65 mm Diameter, 0.19-10.6 μm, Newport Compatible
919P-5KW-50	Thermopile Sensor, 5 kW, 50 mm Diameter, 0.19- 10.6 μm Newport Compatible



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