

1.1.2.2 High Sensitivity Thermal Sensors

10μW to 3W

Features

- Very low noise and drift for measurement of very low powers and energies
- PF absorber has high damage threshold for CW and pulses
- Up to 3W



Model	2A-BB-9	3A	3A-P	3A-PF-12
Use	General purpose	General purpose	Short pulses	Short Pulses UV
Absorber Type	Low power broadband	Low power broadband	P type	PF type
Spectral Range μm	0.19 - 20	0.19 - 20	0.15 - 8	0.15 - 20
Aperture mm	Ø9.5mm	Ø9.5mm	Ø12mm	Ø12mm
Maximum Beam Divergence	NA	NA	NA	NA
Power Mode				
Power Range ^(a)	20μW - 2W	10μW - 3W	15μW - 3W	15μW - 3W
Power Scales	2W to 200μW	3W to 300μW	3W to 300μW	3W to 300μW
Power Noise Level	1μW	1μW	3μW	3μW
Thermal Drift (30min) ^(a)	5 - 20μW	5 - 20μW	5 - 30μW	5 - 30μW
Maximum Average Power Density kW/cm ²	1	1	0.05	3
Response Time with Meter (0-95%) typ. s	1.8	1.8	2.5	2.5
Calibration Uncertainty ±%	1.9	1.9	1.9	1.9
Power Accuracy ±% ^(d)	3	3	3	3 ^(c)
Linearity with Power ±%	1	1	1	1
Energy Mode				
Energy Range	20μJ - 2J	20μJ - 2J	20μJ - 2J	20μJ - 2J
Energy Scales	2J to 200μJ	2J to 200μJ	2J to 200μJ	2J to 200μJ
Minimum Energy	20μJ	20μJ	20μJ	20μJ
Maximum Energy Density J/cm ² ^(b)				
<100ns	0.3	0.3	1	1.5
0.5ms	1	1	1	7
2ms	2	2	1	15
10ms	4	4	1	40
Cooling	convection	convection	convection	convection
Weight kg	0.2	0.2	0.2	0.2
Fiber Adapters Available (see page 91)	ST, FC, SMA, SC	ST, FC, SMA, SC	ST, FC, SMA, SC	ST, FC, SMA, SC
Compliance	CE, UKCA, China RoHS	CE, UKCA, China RoHS	CE, UKCA, China RoHS	CE, UKCA, China RoHS
Version			V1	
Part number: Standard Sensor	7Z02767	7Z02621	7Z02622	7Z02720
BeamTrack Sensor: Beam Position & Size (p. 50)		7Z07934	7Z07935	

Note: (a) Depending on room airflow and temperature variations. Lowest measurable powers are achieved by thermally quiet room conditions, using removable snout (for 3A, 3A-P, 3A-PF-12 sensors), averaging and offset subtraction.

Note: (b) For P and PF types and shorter wavelengths derate maximum energy density as follows:	Wavelength	P type	PF type
	1064nm	Derate to value	Derate to value
	532nm	Not derated	Not derated
	355nm	Not derated	Not derated
	266nm	40% of stated value	70% of stated value
	193nm	5% of stated value	15% of stated value
		10% of stated value	5% of stated value

Note: (c) Calibrated from 193nm to 2.2μm and at 10.6μm. There is an additional error of ±1% from 450nm to 650nm.

Note: (d) The 3A and 2A-BB-9 sensors have a relatively large spectral variation in absorption and has a calibrated spectral curve at all wavelengths in its spectral range to the above specified accuracy. Nova, Orion and LaserStar meters do not support this feature and when used with those meters, the accuracy will be ±3% as above for 532nm, 905nm, 1064nm and 10.6μm but there will be an additional error of up to 3% at other wavelengths in the spectral range 190 – 3000nm.

