

1.2.3 High Energy Pyroelectric Sensors

100μJ to 40J

Features

- Sensors with diffuser for high energies and high energy densities
- BF coating for highest damage threshold
- BB coating for spectral flatness
- Wide spectral range. Measure YAG and harmonics and many more.
- Rep rates up to 250Hz
- Measure lasers with pulse widths up to 20ms
- PE50BF-DIFH-C sensor - highest damage threshold

PE50BF-DIF-C / PE50BF-DIFH-C



PE50BB-DIF-C

DIFFUSER IN

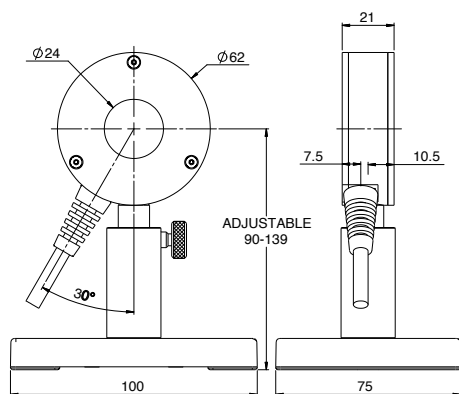
DIFFUSER OUT



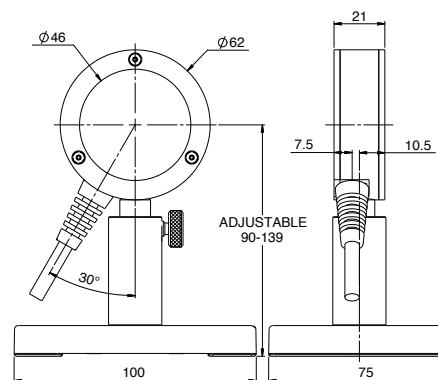
Model	PE50BF-DIF-C / PE50BF-DIFH-C					PE50BB-DIF-C					
Use	Complete calibration curve. Highest damage threshold					Removable diffuser. Spectrally flat					
Diffuser	Fixed					Diffuser out			Diffuser in		
Aperture mm	Ø35					Ø46			Ø33		
Absorber Type	BF with diffuser					BB			BB with diffuser		
Spectral Range μm ^(a)	0.19 – 2.2, 2.94					0.19 – 20			0.4 – 2.5		
Surface Reflectivity % approx.	25					5			15		
Calibration Accuracy +/- % ^(a)	3					3			3		
Max Pulse Width Setting ^(d)	1ms	2ms	5ms	10ms	20ms	3ms	10ms	20ms	3ms	10ms	20ms
Energy Scales	10J to 2mJ	10J to 2mJ	10J to 20mJ	10J to 20mJ	10J to 20mJ	10J to 2mJ	10J to 20mJ	10J to 20mJ	40J to 8mJ	40J to 8mJ	40J to 8mJ
Lowest Measurable Energy mJ ^(c)	0.2	0.4	0.8	0.8	0.8	0.1	0.1	0.2	0.5	5	5
Max Pulse Width ms	1	2	5	10	20	3	10	20	3	10	20
Maximum Pulse Rate pps	250Hz	100Hz	50Hz	40Hz	20Hz	40Hz	10Hz	5Hz	40Hz	10Hz	5Hz
Noise on Lowest Range μJ	40	80	200	200	200	15	15	20	40	60	80
Additional Error with Frequency %	±1%	±1%	±1%	±2%	±2%	±1%	±1%	±1%	±1%	±1%	±1%
Linearity with Energy for >7% of full scale ^(c)	±2%					±2%					
Damage Threshold J/cm² ^(b)	PE50BF-DIF-C		PE50BF-DIFH-C			Diffuser out			Diffuser in		
<100ns	4		6			0.3			3		
1μs	5		8			0.3			3		
300μs	20		30			1			10		
2ms	60		90			2			20		
Maximum Average Power W	25, 40 with optional heat sink					10, 15 with optional heat sink			30, 50 with optional heat sink		
Maximum Average Power Density W/cm²	200					10			500		
Uniformity over surface	±2.5% over central 20mm					±2% over 70% of diameter			±2.5% over central 20mm		
Weight kg	0.25					0.25					
Compliance	CE, China RoHS		CE, China RoHS			CE, China RoHS					
Version											
Part Number	7Z02940		7Z02943			7Z02947					
Notes: (a) Calibration accuracy at various wavelengths as specified here.	Specified wavelengths: 355nm, 532nm, 1064nm and 2100nm.		Specified wavelengths: 193nm, 248-266nm, 355nm, 532nm, 1064nm and 2100nm.			Calibrated at 1064nm			Calibrated at 1064nm, 532nm and 2100nm only. Calibration accuracy at 2100nm, ±5%.		
At other wavelengths, there may be an additional error up to the value given.	Max additional error at other wavelengths not specified above: ±2%.		Max additional error at 193nm ±4%. Max additional error at other wavelengths not specified above: ±2%.			Max additional error at other wavelengths is ±2%					
Notes: (b)	For wavelengths >2.1μm, derate to 10% of above values. For wavelengths below 600nm, derate to 60% of given values (for DIFH 50% of given values). For wavelengths below 240nm, derate to 1J/cm². For beam size ≤5mm. For 10mm beam, derate DIF to 80% and DIFH to 70% of above.										
Notes: (c) With the "user threshold" setting set to minimum. For other settings, the spec is for >7% of full scale or greater than twice the "user threshold", whichever is greater. The user threshold is not available with LaserStar, Nova/Orion, Pulsar, USBI and Quasar. For these meters, the threshold is set to minimum and the linearity spec is >10% of full scale. The PE-C series will only operate with Nova or Orion meters with an additional adapter Ophir P/N 7Z08272 (see page 105). The adapter can introduce up to 1% additional measurement error. The user threshold feature allows adjustment of the internal threshold up to 25% of full scale if desired to avoid false triggering in noisy environments. For further information, see the FAQs on our Website.											
Notes: (d) With the LaserStar, Pulsar, USBI, Quasar and Nova/Orion with adapter only 2 of the pulse width settings are available. For the PE-BF models the 1ms and 10ms settings and for the PE-BB model the 3ms and 10ms settings. Furthermore, with the diffuser mounted, the sensor may saturate at lower than the maximum energy in some cases. Therefore it is recommended to use these sensors with the newer meters/PC interfaces.											

* For drawings please see page 101

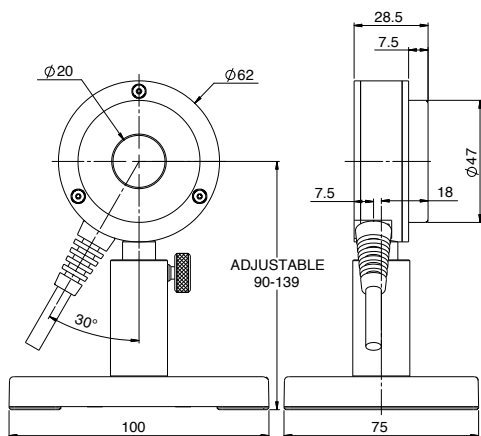
PE25-C / PE25BF-C



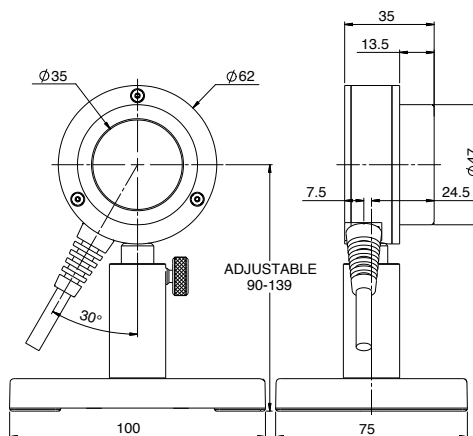
PE50-C / PE50BF-C



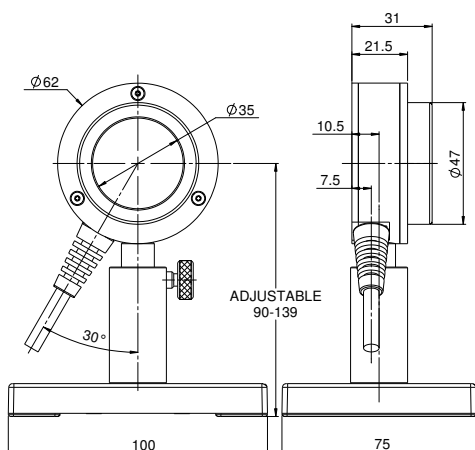
PE25BF-DIF-C



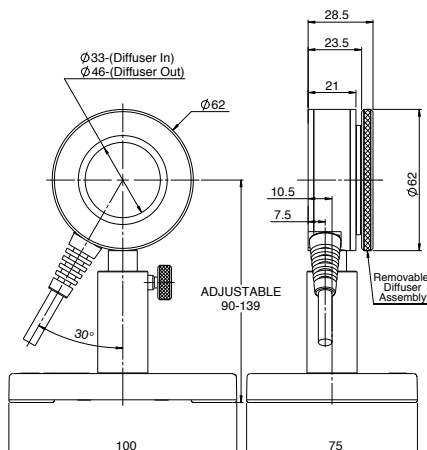
PE50BF-DIF-C / PE50-DIF-C



PE50BF-DIFH-C / PE50U-DIFH-C



PE50BB-DIF-C



1.2.4 Energy Sensors Accessories

1.2.4.1 Accessories for Pyroelectric Sensors

Fiberoptic Adapter for Pyroelectric Sensors



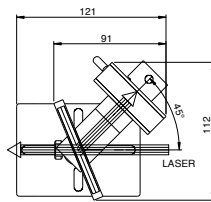
Oscilloscope Adapter for Pyroelectric Sensors



Heat Sink for PE-C Series Sensors



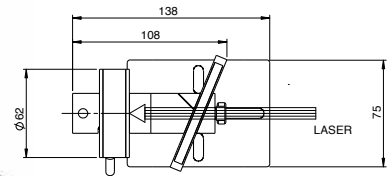
Beam Splitter Assembly



Beam splitter installed – reflected beam on sensor



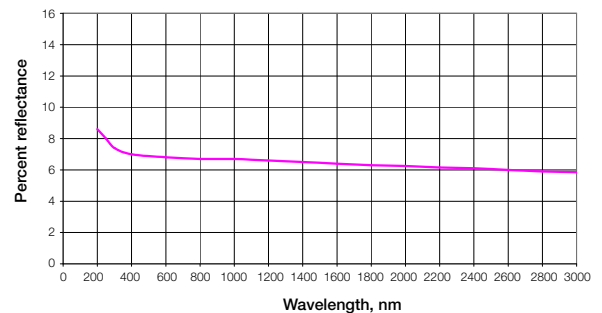
Beam Splitter removed – direct beam on sensor



Beam Splitter Specifications

Material	UV grade fused silica	
Spectral range	0.19 - 2.2 μ m	
Aperture	\varnothing 60mm	
Damage threshold for pulses	< 10ns PW	>300 μ s PW
	5J/cm ²	>200J/cm ²
Fraction split off	See graph	

F.S. Beam Splitter, 2 sided reflection unpolarized light



Accessory	Description	Part number			
Heat Sink	Heat sink that screws onto rear of PE25 and PE50 series sensors and allows working at over 50% higher average powers.	7Z08267			
Scope Adapter	Plugs in between the PE sensor and power meter. Provides BNC output to scope to see every pulse up to the maximum frequency of the sensor.	7Z11012			
Fiber Adapters	To mount fibers to sensors you need an adapter bracket and fiber adapter. All fiber adapters are compatible with the adapter bracket selected.				
Fiber Adapter Brackets	Mounting brackets to allow mounting fiber adapters to pyroelectric sensors.				
PE Sensor Family Type		Bracket P/N		Distance from fiber to detector	
PD10-C / PD10-IR-C / PD10-pJ-C / PD10-IR-pJ-C		7Z08275		10mm	
PE50-C / PE50BF-C		7Z08270		15mm	
PE9-C / PE9-ES-C / PE10-C / PE10BF-C / PE25-C / PE25BF-C		7Z08269		10mm	
Fiber Adapters	Fiber adapters for mounting to above brackets	SC type	ST type	FC type	SMA type
For all PE sensors above		7Z08227	7Z08226	7Z08229	1G01236A
Beam Splitter Assembly	Beam Splitter Assembly to measure pulsed laser sources too energetic for direct measurement. The reading with the Beam Splitter can be calibrated by setting the laser to a lower energy that will not damage the sensor and then taking a measurement with the beam splitter and without and taking the ratio.	7Z17001			