# 1.2.2 Pyroelectric Energy Sensors

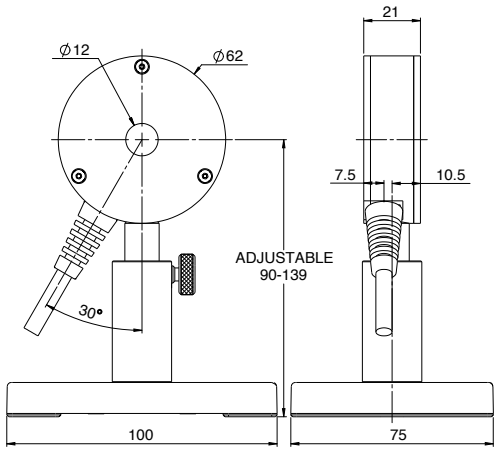
## 1µJ to 10mJ

### Features

- Ø12mm apertures
- Repetition rates up to 25,000Hz
- High sensitivity sensors
- Pulse widths up to 5ms

PE10-C / PE10BF-C

| Model | PE10-C | | PE10BF-C | |
|---|---|---|---|---|
| **Use** | **Sensitive** | | **High damage threshold** | |
| Aperture mm | Ø12 | | Ø12 | |
| Absorber Type | metallic | | BF | |
| Spectral Range µm [a] | 0.15 - 12 | | 0.15 - 3, 10.6 [d] | |
| Surface Reflectivity % approx. | 50 | | 20 | |
| Calibration Uncertainty ±% [a] | 4 | | 3 | |
| Max Pulse Width Setting [e] | 1µs | 30µs | 1ms | 5ms |
| Energy Scales | 10mJ to 2µJ | 10mJ to 20µJ | 10mJ to 20µJ | 10mJ to 200µJ |
| Lowest Measurable Energy µJ [c] | 1 | 1 | 7 | 20 |
| Max Pulse Width µs | 1 | 30 | 1000 | 5000 |
| Maximum Pulse Rate pps | 25kHz | 5kHz | 250Hz | 50Hz |
| Noise on Lowest Range µJ | 0.1 | 0.15 | 1 | 5 |
| Additional Error with Frequency % | ±2% to 15kHz<br>±3% to 25kHz | ±1% to 5kHz | ±1% to 100Hz<br>±4.5% to 250Hz | ±1% |
| Damage Threshold J/cm² | | | | |
| <100ns | 0.1 | | 0.8 [b] | |
| 1µs | 0.2 | | 1 [b] | |
| 300µs | 3 | | 4 [b] | |
| Linearity with Energy for >7% of full scale [c] | ±1.5% | | ±2% | |
| Maximum Average Power W | 2 | | 3 | |
| Maximum Average Power Density W/cm² | 50 | | 50 | |
| Fiber Adapters Available (see page 147) | ST, FC, SMA, SC | | ST, FC, SMA, SC | |
| Weight kg | 0.25 | | 0.25 | |
| Compliance | CE, UKCA, China RoHS | | CE, UKCA, China RoHS | |
| Version | | | | |
| **Part Number**: Standard Sensor | **7Z02932 (1.5m cable)** | | **7Z02938 (1.5m cable)** | |
| Sensor with different cable length | **7Z02932B (5m cable)** | | **7Z02938C (10m cable)** | |
| Note: (a) Calibrated curve is checked and adjusted at the following wavelengths (µm)<br>For other wavelengths in the curve there is additional calibration error as stated | 1.064, 0.355<br><br>240 - 800nm add ±4%, 2-3µm add ±8%, 10.6µm add ±15%.<br><240nm not calibrated<br><br>In order to avoid measurement degradation at UV wavelengths extra care must be taken to protect sensor from contaminants | | 0.193, 0.248, 0.355, 0.532, 1.064<br><br>0.2-3µm ±2%, 10.6µm ±5% | |

Note: (b) For wavelengths below 600nm, derate damage threshold to 60% of given values. Below 300nm, derate to 40% of given values.
Note: (c) With "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, 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 meter with an additional adapter Ophir P/N 7Z08272 (see page 148). 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.
Note: (d) The absorption at 675nm is approximately the same as at 10.6µm. Therefore, to measure a $CO_2$ laser, set to the 675nm setting. The additional error for measuring 10.6µm is ±5%.
Note: (e) With the LaserStar, Pulsar, USBI, Quasar and Nova with adapter, for the PE10-C model the 1µs pulse width setting is displayed as "10µs".

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