XLE4

# ENERGY DETECTOR

## Low Energy

CE

- **Very Low Noise Level**
- **kHz Repetition Rate**
- **Compact**
- **NIST-traceable**
- **Broadband**

## eXtreme Low Energy

e**X**treme **L**ow **E**nergy measurement: this is what the XLE4 stands for. From nJ's to mJ's, the XLE4 offers accurate NIST measurements in all conditions. It is a nice complement to our series of QE energy detectors to read even lower energies.

## Low Noise Level

The XLE4 low noise equivalent energy of 30 nJ with an amplifier or 100 nJ with a SOLO sets it apart from the competition. This pyroelectric detector thus extends in the nJ's the measurement range of QE series joulemeters. Its high sensitivity of 1100 V/J makes it ideal for measurement in noisy laser environments.

## Compact

Whether you are a service technician on the road or a scientist in a laboratory, we know you like to have compact products. This is exactly what we had in mind when we designed the XLE4. It will easily slide in between optical components, or fit in tight spaces inside a machine.

## kHz Repetition Rate

The metallic coating of the XLE4 makes it an excellent choice for pulsed lasers up to 2000 Hz. It can detect pulses of duration up to 10 µs. Moreover, it can be used with many different types of lasers due to its broad spectral range.

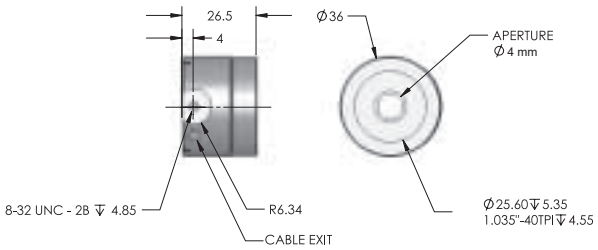
# XLE4 SPECIFICATIONS

## TYPICAL LASERS

- Low energy YAG
- High repetition rate pulsed lasers
- Pulsed diode lasers

## COMMON APPLICATIONS

- Low energy OEM
- Semiconductor
- Via Drilling




| | XLE4 |
|---|---|
| **MEASUREMENT CAPABILITY** | |
| **Spectral Range** | 0.19 - 2.5 µm |
| **Maximum Measurable Energy**[a] | |
| 1064 nm | 4 mJ |
| **Noise Equivalent Energy**[b] | 30 nJ with amplifier or oscilloscope – 100 nJ with SOLO |
| **Sensitivity (typical)**[c,d] | 1100 V/J |
| **Maximum Repetition Frequency**[e] | 2 kHz |
| **Maximum Pulse Width (typical)** | 5 µs |
| **Rise Time (0-100%)** | 10 µs |
| **Calibration Uncertainty**[f] | ± 4% |
| **Repeatability** | < 0.5% |
| **DAMAGE THRESHOLDS** | |
| **Max Average Power** | 0.4 W |
| **Max Average Energy Density** | |
| 1.064 µm, 7 ns, 10 Hz | 0.09 J/cm$^2$ |
| **PHYSICAL CHARACTERISTICS** | |
| **Effective Aperture** | 4 mm Ø[g] |
| **Absorber** | MT |
| **Dimensions** | 36 mm Ø x 26.5 mm |
| **Weight (head only)** | 130 g |
| **Effective Area** | 0.125 cm$^2$ |

a. Increasing pulse width increases the maximum measurable energy.
b. Nominal value, actual value depends on electrical noise in the measurement system.
c. Load: 1 MΩ and ≤ 130 pF.
d. Maximum output voltage = sensitivity x maximum energy
e. 2 kHz with oscilloscope; 1.2 kHz with SOLO. Contact Gentec-EO for higher repetition rates.
f. Not including linearity with power.
g. For beams up to 4 mm.

Specifications subject to change without notice.

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## Calibration centers

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