



# OEM – Sensors

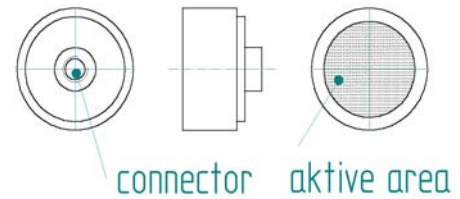
Energy sensors without housing

The main application for this type of sensor is energy monitoring of high repetition rate lasers. The co-axially built sensors have a high sensitivity and can be applied in a wide spectral range.

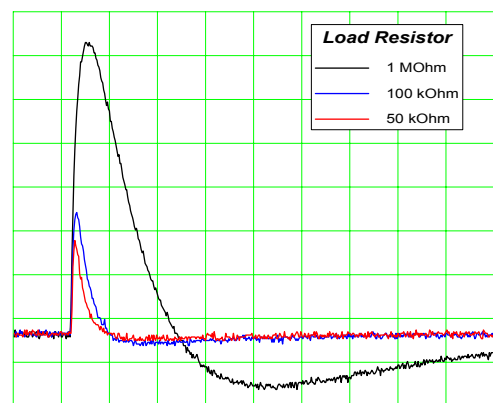
Detector diameters between 4 mm and 34 mm are available. The maximum repetition rate depends on the sensor diameter and the load resistor; values up to 3000 pps. are possible.

Max. energy density: 150 mJ/cm<sup>2</sup>  
 Max. power density: 150 mW/cm<sup>2</sup>  
 Max. average power density: 8 MW/cm<sup>2</sup> (10 ns-pulse)  
 Temperature range: 0 .. 40°C  
 Spectral range 190 nm .. 25 µm  
 Max. pulse duration 2 ms  
 accuracy ±5%

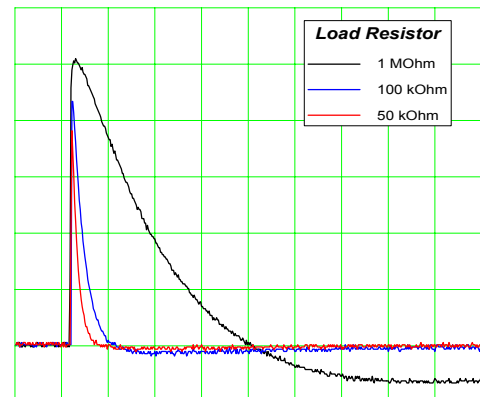
	Sensitivity [V/J]	Rep Rate [Hz]	Dimension (Dia x length Conector)
<b>PES 4</b>	500..1000 at 1 MΩ 130..250 at 100 kΩ	80 Hz at 1 MΩ 120 Hz at 100 kΩ	7 x 9,5 mm <sup>2</sup> M 3
<b>PES 8</b>	200..500 at 1 MΩ 50..200 at 100 kΩ	40 Hz at 1 MΩ 100 Hz at 100 kΩ	11 x 9,5 mm <sup>2</sup> M 3
<b>PES 11</b>	100..400 at 1 MΩ 50..150 at 100 kΩ	40 Hz at 1 MΩ 80 Hz at 100 kΩ	14 x 9,5 mm <sup>2</sup> M 3
<b>PES 21</b>	50..150 at 1 MΩ 30..80 at 100 kΩ	25 Hz at 1 MΩ 50 Hz at 100 kΩ	24 x 9,5 mm <sup>2</sup> M 4
<b>PES 34</b>	40.. 70 at 1 MΩ 10..40 at 100 kΩ	25 Hz at 1 MΩ 80 Hz at 100 kΩ	37 x 10 mm <sup>2</sup> M 4
<b>HR 4</b>	1000..1500 at 1 MΩ 900..1200 at 100 kΩ 900..1100 at 50 kΩ	250 Hz at 1 MΩ 2,5 kHz at 100 kΩ 3,3 kHz at 50 kΩ	7 x 9,5 mm <sup>2</sup> M 3
<b>HR 8</b>	700..900 at 1 MΩ 400..500 at 100 kΩ 300..400 at 50 kΩ	150 Hz at 1 MΩ 2 kHz at 100 kΩ 2,5 kHz at 50 kΩ	11 x 9,5 mm <sup>2</sup> M 3
<b>HR 11</b>	400..600 at 1 MΩ 400..500 at 100 kΩ 300..400 at 50 kΩ	250 Hz at 1 MΩ 1,5 kHz at 100 kΩ 2 kHz at 50 kΩ	14 x 9,5 mm <sup>2</sup> M 3
<b>HR 21</b>	150..250 at 1 MΩ 100..250 at 100 kΩ 100..200 at 50 kΩ	50 Hz at 1 MΩ 200 Hz at 100 kΩ 1,4 kHz at 50 kΩ	24 x 9,5 mm <sup>2</sup> M 4



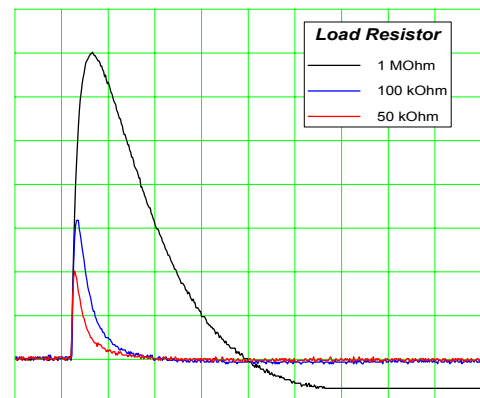
Samples of the output signal of different sensors



PEM 11, 1 ms/div; 5 mV/div; 100 µJ



HR 11, 500 µs/div; 5 mV/div; 100 µJ



HR 4, 200 µs/div; 10 mV/div; 100 µJ