MPY-RS Pyroelectric Detector

Description

MPY-RS is a fast and compact pyroelectric detector for sensitive radiation measurements from the UV to THz range. Due to it's extended electronic bandwidth it can be used without a chopper for sources with up to 5kHz repetition rate.

Physical Properties

Detection principle	Pyroelectric
Detector material	Black coated $LiTaO_3$
Weight	80 g
Operating Temperature	−20 °°C - 50 °°C
Dimensions (H x B x T)	59.8 mm × 45.3 mm × 21.0 mm
Detector window dimensions	$(5,0 \times 5,0)\,mm^2$
Active detector area	$(3,0 \times 3,0)\,mm^2$
Thread of detector cap	SM05 (compatible to Thorlabs components)

Electrical Properties

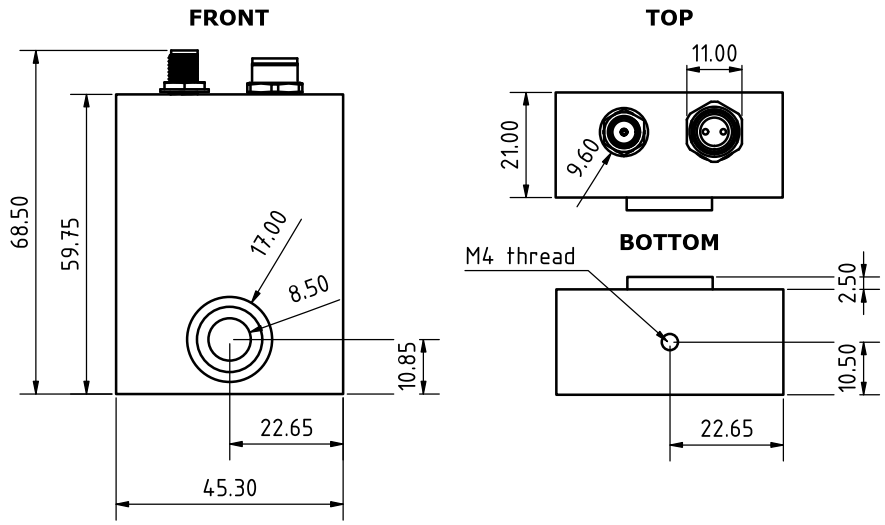
Power supply	±12 V Linear low noise power supply (Thorlabs LDS12B)
Power socket	3-pole, M8
Output socket	SMA
Output signal	Analog
Output signal level	−8 V - 8 V

Measuring Properties

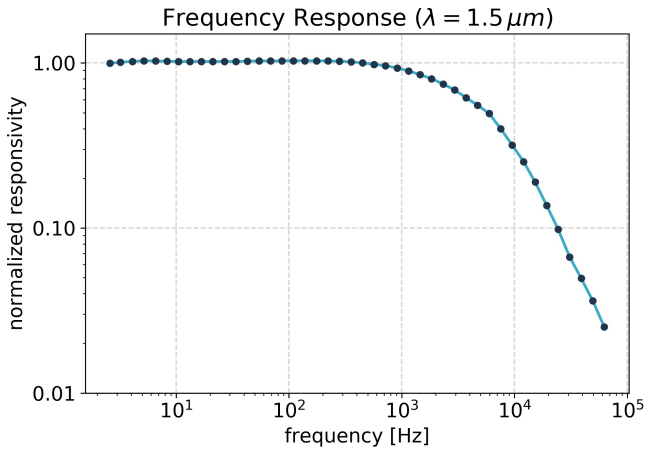
Voltage responsivity	25 000 $^{V}/_{W}$ (λ = 1.5 µm); f = 500 Hz
Response time (0-100%)	typ. 200 ms (corresponds to thermal time constant)
Frequency range	5 Hz - 5 kHz *
Noise equivalent power (NEP)	750 $^{pW}/_{\sqrt{Hz}}$ (λ = 1.5 µm, f = 20 Hz, 20 °°C)
Noise density	21 $^{\mu V}/_{\sqrt{Hz}}$ (rms, f = 20 Hz, BW = 1 Hz, 20 °°C)
Detectivity	typ. 4×10^8 $^{cm\sqrt{Hz}}/_{W}$
Maximum measurable power	500 µW (f = 500 Hz, Si window)
Damage threshold (max. avg. power density)	60 $^{mW}/_{cm^2}$
Spectral bandwidth	UV - THz (real bandwidth depends on the window used)
• KBr-window	λ = 200 nm - 30 µm
• Si-window	λ = 1 µm - 1000 µm
• Teflon-window	λ = 60 µm - 1000 µm
• Without window	λ = 10 nm - 1000 µm
Further window materials on request.	

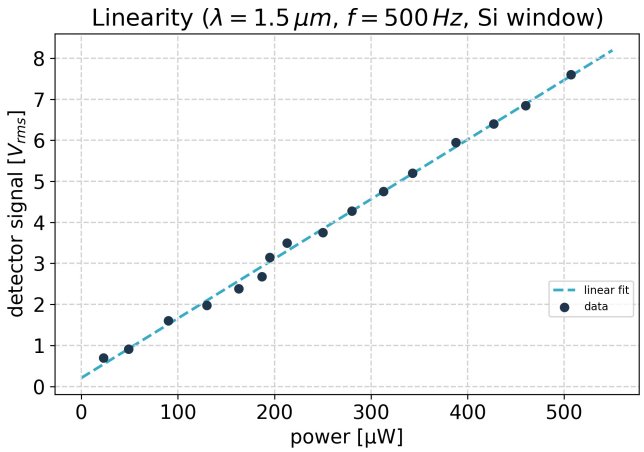
* Detector only sees signal changes – a chopper is required for CW applications!

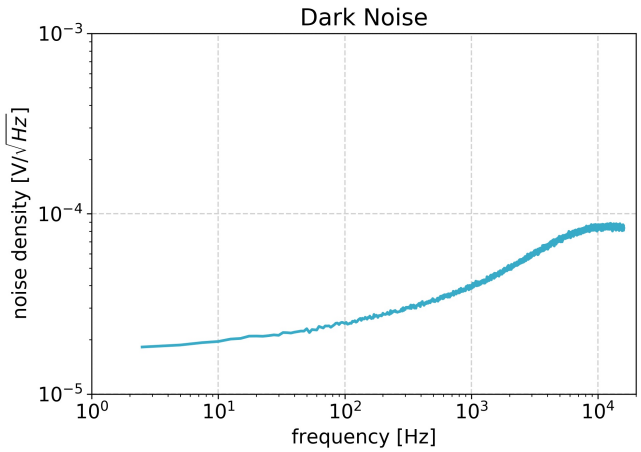
Geometric Dimensions

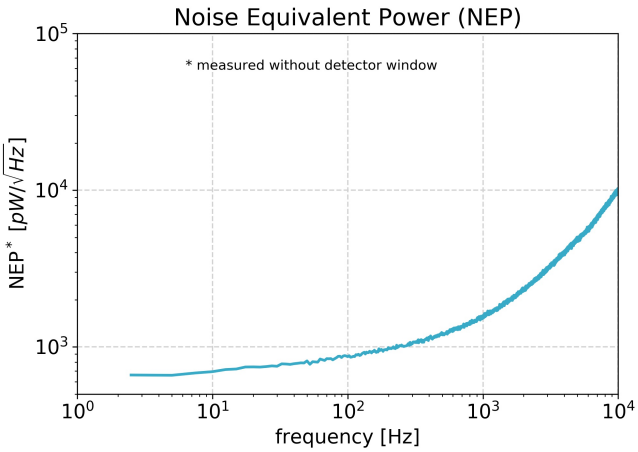


Typical Performance









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Information in this document is subject to change without notice.

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