Terahertz pyroelectric sensor

TeraPyro

A high-performance solution for THz sensing

High responsivity (up to 2 kV/W) and low NEP

Broad spectral range from 0.1 - 30 THz

Interchangeable pre-aligned optics

High quality THz integrated optics

Responsivity and bandwidth switch

The TeraPyro sensor is a compact and highly sensitive device, based on the combination of a high-quality absorbing black coating, paired with a $LiTaO_3$ pyroelectric crystal. The broad absorption range of the coating allows the use of this sensor over a large spectral range (from 0.1 to 30 THz). The high sensitivity and low NEP offer no compromise on performances. The integrated, prealigned, high quality THz optics based on AR coated Si-lenses ensures maximized optical coupling to the sensor. The highly modular optics allow three configurations: bare sensor, collimated input or focused input with 50 mm working distance. A responsivity switch allows to gain in response time for faster measurements. A BNC output ensures fast and standard connectivity for data recovery. The sensor operates on a common +/-12 V DC power supply.

Connection:

- ✓ BNC output connection
- ✓ +12/-12 V DC Power supply

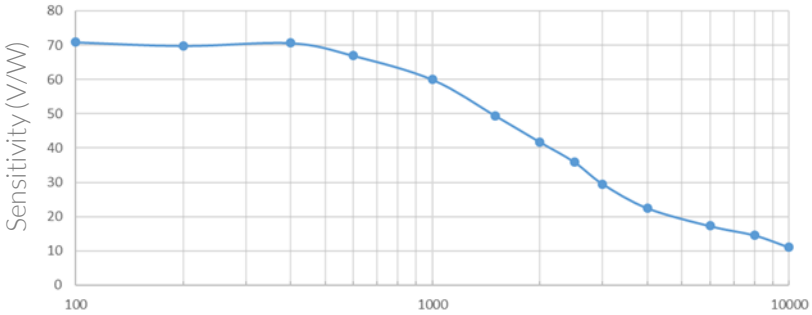
Plus

- ✓ Interchangeable optics
- ✓ Sensitivity selection switch
  - >3 positions: High, Medium, Low

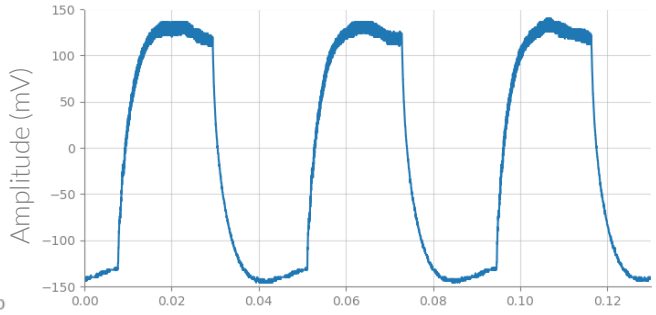
Performances

- ✓ Stability: <1% over 1h
- ✓ SNR on lock in: > 300
- ✓ Detection up to 2.5 kHz mod.

Sensitivity on low gain channel



Typical waveform



Features :

- 3 responsivity switch for optimized gain and response time
- High quality HRFZ-Si THz optics with AR coating or boradband Zoenex polymer optics
- Modular optics
  - ➢ Bare sensor
  - ➢ Collimated input
  - ➢ Focused input with 50mm working distance
- Standard M4 optical post assembly

Applications :

- THz sensing
- High definition imaging
- Optical sources characterization
- Power measurements

Specifications	TeraPyro		
Optical data			
Frequency range	From 0.1 to 30 THz		
Wavelength	From 10 to 3000 um		
Maximum power density	50 mW/cm^2		
Noise equivalent power	1.6 nW/ (Hz)$^{1/2}$		
Responsivity switch	**High**	**Medium**	**Low**
Sensitivity at *2.5 THz	1.8 kV/W	390 V/W	70 V/W
Rise time	80 ms	10 ms	1.5 ms
Maximum chopper frequency	15 Hz	150 Hz	2.5 kHz
Options			
Calibration service		✓	
Optical collection lenses		✓	
Power supply connector		✓	
Optical post assembly		✓	
Dimension and weight			
Working distance	50 mm		
Sensor area	Ø 5 mm		
Diameter	67 mm		
Length	125 mm		
Weight	300 g		

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