

STA-OPTS

STA-OPTS Optoelectronic Detection System

A modular characterisation platform for photodetectors, photovoltaic cells and semiconductor thin films. Combine controlled monochromatic illumination with low-current acquisition to measure I-V, I-T, responsivity, quantum efficiency, transient response and noise.

Measurement method

A computer controls the light source and monochromator while electrical bias and current acquisition track the device response. The system includes a vibration-isolated platform, microscope, current amplifier, digitiser and measurement software.

Features

- Automated monochromatic wavelength scans
- Dark-current, photocurrent, output and transfer curves
- I(R)-T, dual-axis pulse I-V and repeat overlays
- Responsivity and quantum-efficiency workflows
- Low-frequency, ultra-low-frequency and 1/f noise analysis
- DC/AC switching; RMS, vector and peak processing; up to 500 averages
- BMP image and XLS data export
- Selectable amplifiers; listed response below 100 ns with suitable module
- Laser-diode drive option with listed current rise time below 50 ns
- Time-domain selection, bandwidth fitting and bad-point removal

Applications

- Physics and materials science
- Sensors and photovoltaic devices
- Perovskite and semiconductor-device research

Optical and electrical specifications

Parameter	Specification
Model	STA-OPTS
Wavelength range	300-2500 nm
Spectral resolution	1 nm
Bias voltage	± 10 V
Current resolution	< 10 fA
Data sampling rate	2 MS/s
High-speed current gain	10^3 - 10^{11}
Low-speed current gain	10^2 - 10^{14}
Low-frequency baseline noise	2×10^{-29} A ² /Hz
Ultra-low-frequency baseline noise	1×10^{-31} A ² /Hz
Low-frequency noise band	1 Hz - 100 kHz
Ultra-low-frequency noise band	0.01-10 Hz

Conditions and configuration notes

Noise floor, resolution and transient response depend on the selected amplifier, gain, bandwidth, shielding and device. They are not guaranteed simultaneously in every module configuration.

The source calls 300-2500 nm a frequency band; it is presented here as a wavelength range.

Specify your measurement

- Device geometry, electrodes and two-/three-terminal needs
- Wavelength span, required optical power and calibration
- Bias, current range, amplifier module and measurement bandwidth

Prepared by Precisometer. Technical review: 24 October 2026. Confirm the supplied configuration, measurement conditions, accessories and warranty with the quotation.

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