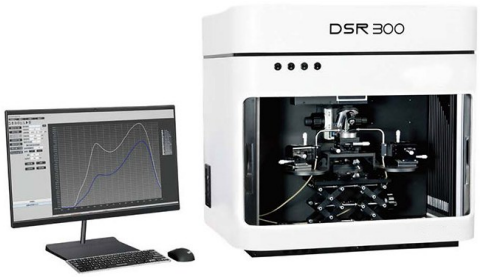
DSR300 Micro-Nano Device Spectral Response System, 40 µm Spot, LBIC Mapping

Model DSR300 Series · waveqvanta.com/products/dsr300-micro-nano-device-spectral-response-system

Spectral response and photocurrent mapping of micro- and nano-scale devices and low-dimensional materials.



The DSR300 series is designed for low-dimensional materials and micro-nano devices, combining spectral scanning with photocurrent scanning under a microscope. A 40 µm probe spot allows samples as small as 100 µm to be measured, and xenon, supercontinuum, CW laser and picosecond pulsed laser sources can be integrated to test different detector types. The instruments are operated automatically from the control software.

Key features

- Spectral responsivity, external quantum efficiency, bias-voltage I-t curves, LBIC mapping and response linearity tests
- 40 µm spot at 550 nm (50× objective, 200 µm fiber); 5 µm spot with a 375 nm picosecond laser and 40× objective
- Four light paths: three built-in plus one external path for tunable broadband monochromatic light
- Light source options: xenon (250–1800 nm), supercontinuum (400–2400 nm), CW lasers and picosecond pulsed lasers
- Lock-in amplifier or Keithley 2612B / 2636B source meters, with current resolution down to 10 fA
- Probe station with four XYZ probe holders, 2 m triaxial cables (< 1 pA leakage) and vacuum sample stage
- Cryostat from −196 to 600 °C and LBIC mapping stage with 1 µm scanning spatial resolution

Specifications

Detection Spot	40 µm (550 nm, 50× objective, 200 µm fiber)
Other Spot Sizes	70 µm (400 µm fiber); 5 µm (375 nm ps laser, 40×); 80 µm (40× reflective objective)
Minimum Sample Size	100 µm
Light Paths	4 (3 built-in, 1 external for tunable broadband monochromatic light)
Xenon Light Source	250–1800 nm, instability < 1%
Supercontinuum Source	400–2400 nm, 0.01–200 MHz, 100 ps pulse width
CW Laser Options	405, 532, 633, 808 or 980 nm; instability < 1%
Pulsed Laser Options	375, 405, 488, 785 or 976 nm; 100 ps pulse width; 1–20 MHz
Objective 10× (Standard)	WD > 17 mm, NA 0.42, 350–800 nm
Objective 50×	WD > 17 mm, NA 0.42, 480–1800 nm
Objective 50× UV	WD > 12 mm, NA 0.42, 240–500 nm
Objective 40× Reflective	WD > 7.8 mm, NA 0.5, 200 nm–20 µm
Lock-in Amplifier	20 Hz–1 kHz, 1 nV–1 V full-scale sensitivity, dynamic reserve > 100 dB
Lock-in Details	Voltage or current input, current gain 10^6 or 10^8 V/A, drift < 0.1°/°C, X/Y/R/θ display
Keithley 2612B	Current range 100 nA / 1 A, min. signal 1 nA, noise 100 pA, resolution 100 fA, 2 channels

Keithley 2636B	Current range 1 nA / 1 A, min. signal 10 pA, noise 1 pA, resolution 10 fA, 2 channels
Cryostat Temperature	−196 to 600 °C, resolution 0.1 °C
Cryostat Optics	Clear aperture 24 mm, sample area Φ22 mm, working distance 4.5–12.5 mm
Cryostat Chamber	Air-tight, can be filled with protective gas, independent temperature control
Probe Holders	4, with 20 or 10 μm tips; XYZ adjustable, 12 mm travel, 0.75 μm resolution
Cabling	2 m triaxial cable, leakage current < 1 pA
Sample Stage	Vacuum adsorption
LBIC Mapping Stage	XY travel 50 mm, resolution 5 μm, scanning spatial resolution 1 μm

Typical applications

- 2D and low-dimensional material photodetectors
- Micro-nano optoelectronic device characterization
- Photocurrent (LBIC) mapping
- Response time (rise and fall) and linearity tests
- Temperature-dependent photoresponse studies