KEITHLEY

2510-AT

The Keithley 2510-AT Autotuning TEC SourceMeter is a specialized 50W temperature control instrument designed for testing laser diode modules. It combines thermoelectric cooler (TEC) control, temperature measurement, and automated PID parameter selection.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488.2), RS-232, Trigger Link (8-pin micro-DIN), Digital I/O (DB-9)
Display	12-character vacuum fluorescent display (VFD) with status indicators

Physical

Power Supply	100V to 240V AC, 50Hz or 60Hz, 120 VA maximum
Operating Temperature	0°C to 50°C °C
Dimensions (W×H×D)	213 mm × 89 mm × 370 mm mm
Weight	3.2 kg kg
Form Factor	Half-rack width, 2U height

TEC Output & Control

Maximum Output Power	50 W
Current Limit Range	0 to 5.25 A
Voltage Limit Range	0 to 10.5 V
Control Algorithm	Proportional-Integral-Derivative (PID) with Autotuning capability
Temperature Stability (1 Hour)	±0.005 °C
Temperature Stability (24 Hours)	±0.01 °C

Temperature Sensor Compatibility

Thermistor Compatibility	100 Ω to 100 kΩ (2-wire or 4-wire)
RTD Compatibility	100 Ω Platinum (3-wire or 4-wire)
IC Sensor Compatibility	AD590, LM335
Temperature Display Resolution	0.001 °C

System & Interfaces

Analog Output Voltage Range	0 to ±10 V (proportional to temperature)
Command Language Support	SCPI (Standard Commands for Programmable Instruments)

Environmental & Compliance

Storage Temperature	-25°C to 65°C
Operating Humidity Range	70% RH non-condensing at 35°C

TEC Output

Output Current Range	-5.00 A to +5.00 A DC
Output Voltage Range	-10.0 V to +10.0 V DC
Current Source Accuracy	±(0.4% + 16 mA)

Measurements

Voltage Measure Accuracy	±(0.1% + 1 mV)
Current Measure Accuracy	±(0.4% + 16 mA)
Voltage Measure Resolution	300 µV (16-bit)
Current Measure Resolution	150 µA (16-bit)

Sensor Interface

Thermistor Measurement Range	100 Ω to 100 kΩ
RTD Resistance Range	100 Ω to 1 kΩ
Maximum Source Lead Resistance	0.1 Ω per lead (4-wire source)
Maximum Sense Lead Resistance	10 Ω per lead (4-wire sense)
Thermistor Excitation Current	10 µA, 100 µA, 1 mA (range dependent)
RTD Excitation Current	1 mA
RTD Types Supported	100 Ω Platinum (Alpha = 0.00385, 0.003916, 0.00392)
IC Sensors Supported	AD590 (1 µA/K), LM335 (10 mV/K)

Control & Autotuning

Tuning Mode	Autotuning PID or Manual PID

Protection & Safety

Protective Limits	Voltage limit, Current limit, High temperature limit, Low temperature limit, Open sensor detection

Connectivity

Trigger Link Connector	8-pin micro-DIN
Digital I/O Port	4 open-collector outputs, 1 TTL input

Output Specifications

TEC Output Ripple and Noise (0.1 Hz to 10 Hz)	< 500 µA rms (typical)
TEC Output Ripple and Noise (10 Hz to 10 MHz)	< 1.5 mA rms (typical)
TEC Output Resolution	16-bit
Analog Output Resolution	16-bit

Measurement Performance

Thermistor Measurement Accuracy	±(0.04% of reading + 1.5 Ω) (90-day, on 10 kΩ range)
RTD Measurement Accuracy	±(0.06% of reading + 0.05 Ω) (90-day)
Analog Output Accuracy	±(0.15% of output + 10 mV) (90-day)

Control Performance

Autotuning Method	Ziegler-Nichols (Z-N) / Modified Z-N

General Specifications

Warm-up Time	1 hour

Power Specifications

Mains Power Frequency	50 Hz / 60 Hz
Maximum Power Consumption	120 VA

TECHNOLOGY

Thermoelectric Cooler (TEC) Source & Measure with Automated PID Tuning

APPLICATIONS

Laser diode module characterization and temperature stabilization

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.