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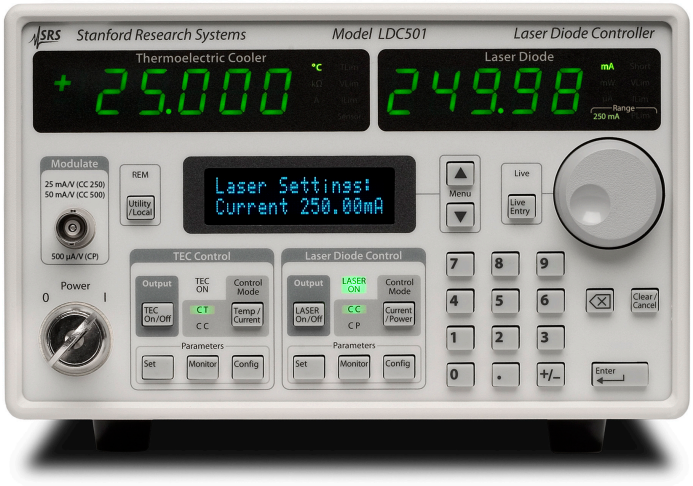
Data Sheet
August 13, 2026

STANFORD RESEARCH

Stanford Research LDC502 â€“ Laser Diode Controller

Stanford Research Systems LDC502 Laser Diode Controller The SRS LDC502 is the 2 A member of the LDC500 Series laser-diode controllers. It provides 0 to 2 A (high) and 0 to 1 A (low) current ranges with 0.1 mA setpoint resolution, the same less than 10 ppm/C thermal drift as LDC500/LDC501, and an integrated 36 W TEC controller. Current noise is 25 uA rms (high range, high bandwidth) down to 3.5 uA rms (low range, low bandwidth) from 10 Hz to 1 MHz. Constant-current and constant-power LD modes and constant-temperature/constant-current TEC modes switch dynamically. The SRS LDC502 is the 2 A member of the LDC500 Series laser-diode controllers. It provides 0 to 2 A (high) and 0 to 1 A (low) current ranges with 0.1 mA setpoint resolution, the same less than 10 ppm/C thermal drift as LDC500/LDC501, and an integrated 36 W TEC controller. Current noise is 25 uA rms (high range, high bandwidth) down to 3.5 uA rms (low range, low bandwidth) from 10 Hz to 1 MHz. Constant-current and constant-power LD modes and constant-temperature/constant-current TEC modes switch dynamically. Higher-current pump and Fabry-Perot laser diodes; TEC-stabilized high-power modules; constant-power photodiode servo to 10 mA PD current; analog modulation to 0.8 MHz (CC high bandwidth); automated LD characterization.



MODEL	CALIBRATION
Stanford Research LDC502	Available on request
CONDITION	**STATUS**
Used	In stock
RFQ / SKU	**LISTING**
LDC502	https://aumictechlabs.com/products/ldc502-2/

NIST-traceable cal · SAM registered · 30-day returns

NAICS 423690 · 811210 · 541380

This unit

The Stanford Research LDC502 is a precision laser diode controller delivering simultaneous current and temperature regulation for laboratory and industrial laser systems. It combines a low-noise current source with a high-precision TEC controller, enabling stable operation across demanding applications requiring microradian-level wavelength stability and sub-milliamp current resolution.Technical Specifications Laser Diode Current Source Output: 0 to 2 A (2000 mA maximum) with selectable 0 to 1 A sub-range Setpoint resolution: 0.1 mA Accuracy: ±0.02% of full scale Thermal stability: <10 ppm/°C Short-term stability (1 hr): <5 ppm of full scale Long-term stability (24 hr): 1 MΩ (DC) Operating modes: Constant Current (CC) and Constant Power (CP) with dynamic mode switching Modulation bandwidth: Up to 1 MHz (CC mode) or 10 kHz (CP mode) Temperature Controller (TEC) Output power: 36 W Control range: −55 °C to +150 °C (IC sensors); −150 °C to +250 °C (resistor sensors, 10 Ω to 500 kΩ) Setpoint resolution: 0.001 °C Accuracy: 0.01 °C (calibrated sensor) Stability: 0.0005 °C/°C typical Sensor types: Thermistor, RTD, and IC sensors supported Auto-tuning for PID loop optimization Additional Outputs Compliance voltage: 0 to 10 V programmable (10 mV resolution, ±0.2 V accuracy) Photodiode monitor: 0 to 5 V bias, 0 to 10,000 µA range Rise/fall time: <20 µsKey Features Slow-start turn-on with adjustable current limits and compliance voltage Multi-voltage AC input: 100 V, 120 V, 220 V, or 240 V nominal (50/60 Hz) Fast clamping protection for laser diode safeguardingTypical Applications Fiber optics, telecommunications, spectroscopy, laser metrology, and precision optical instrument calibration.Compatibility & Integration Supports standard thermistor, RTD, and integrated-circuit temperature sensors over extended operating ranges.

Features & description

From manufacturer datasheet

Features

• 2 A / 1 A dual ranges with programmable 0 to 10 V compliance • Photodiode current range 0 to 10000 uA (twice LDC500/LDC501) • CC modulation gain 200 mA/V (high) and 100 mA/V (low) • 36 W bipolar TEC, +/-4.5 A, auto-tuned PID • GPIB, RS-232, and Ethernet • Slow-start, current limit, and fast clamp/shutdown protection

LDC502 Characteristics / Specifications

PARAMETER	VALUE
Model	LDC502
Manufacturer	Stanford Research Systems
Instrument Type	Laser Diode Controller with TEC
Series	LDC500
Alias	LDC502; SRS LDC502
LD Current High Range	0 to 2 A
LD Current Low Range	0 to 1 A
LD Setpoint Resolution	0.1 mA
LD Accuracy	+/-0.02 % of full scale
LD Output Impedance	greater than 1 MOhm (DC)
Thermal Stability	less than 10 ppm/C
Short Term Stability	less than 5 ppm full scale (1 hr)
Long Term Stability	less than 15 ppm full scale (24 hr)
Noise High Range High BW	25 uA rms (10 Hz to 1 MHz)
Noise High Range Low BW	5.0 uA rms
Noise Low Range High BW	10 uA rms
Noise Low Range Low BW	3.5 uA rms
Compliance Voltage Range	0 to 10 V, programmable
Compliance Voltage Resolution	10 mV
Compliance Voltage Accuracy	0.2 V
Current Limit Resolution	0.1 mA
Current Limit Accuracy	+/-0.4 mA
Analog Modulation Input Range	-10 V to +10 V
Analog Modulation Input Impedance	2 kOhm typical
CC Modulation Gain High Range	200 mA/V

PARAMETER	VALUE
CC Modulation Gain Low Range	100 mA/V
CP Modulation Gain	1000 uA/V (photodiode current)
CC Bandwidth High	DC to 0.8 MHz
CC Bandwidth Low	DC to 10 kHz
CP Bandwidth High	DC to 5 kHz
CP Bandwidth Low	DC to 100 Hz
Photodiode Bias Voltage	0 to 5 V, programmable
Photodiode Current Range	0 to 10000 uA
CP Setpoint Resolution	0.1 uA
CP Setpoint Accuracy	+/-4 uA
LD Current Display Resolution	0.1 mA
LD Forward Voltage Resolution	1 mV
TEC Control Range IC Sensor	-55 C to +150 C
TEC Control Range Resistor Sensor	-150 C to +250 C (10 ohm to 500 kOhm)
TEC Temperature Setpoint Resolution	0.001 C
TEC Thermal Stability	0.0005 C/C versus ambient typical (10 kOhm NTC)
TEC Current Range	-4.5 A to +4.5 A
TEC Maximum Power	36 W
TEC Compliance Voltage	greater than 8 VDC
TEC Current Limit Range	0 to 4.5 A
TEC Current Limit Accuracy	+/-5 mA
Thermistor Range	10 ohm to 500 kOhm (10 uA, 100 uA, 1000 uA excitation)
RTD Types	Pt-100 and Pt-1000 (1 mA excitation)
IC Voltage Sensors	LM335 and equivalent
IC Current Sensors	AD590 and equivalent
Interfaces	GPIB IEEE-488.2, RS-232, Ethernet
Line Power	100 W, 100/120 VAC or 220/240 VAC, 50/60 Hz

PARAMETER	VALUE
Dimensions	7 in x 5 in x 15 in (WHL)
Weight	15 lbs
Stored Configurations	up to 9 Notes Specs from SRS LDC500 Series product page and LDC500c catalog. LDC502 is the 2 A model. Confirm line voltage, LD pinout cable, and TEC sensor type on the installed setup.
Bandwidth	High: DC to 0.8 MHz

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications

Specifications

PARAMETER	VALUE
Model	LDC502
Manufacturer	Stanford Research Systems
Instrument Type	Laser Diode Controller with TEC
Series	LDC500
Alias	LDC502; SRS LDC502
LD Current High Range	0 to 2 A
LD Current Low Range	0 to 1 A
LD Setpoint Resolution	0.1 mA
LD Accuracy	+/-0.02 % of full scale
LD Output Impedance	greater than 1 MOhm (DC)
Thermal Stability	less than 10 ppm/C
Short Term Stability	less than 5 ppm full scale (1 hr)
Long Term Stability	less than 15 ppm full scale (24 hr)
Noise High Range High BW	25 uA rms (10 Hz to 1 MHz)
Noise High Range Low BW	5.0 uA rms
Noise Low Range High BW	10 uA rms
Noise Low Range Low BW	3.5 uA rms
Compliance Voltage Range	0 to 10 V, programmable
Compliance Voltage Resolution	10 mV
Compliance Voltage Accuracy	0.2 V
Current Limit Resolution	0.1 mA
Current Limit Accuracy	+/-0.4 mA
Analog Modulation Input Range	-10 V to +10 V
Analog Modulation Input Impedance	2 kOhm typical
CC Modulation Gain High Range	200 mA/V
CC Modulation Gain Low Range	100 mA/V

PARAMETER	VALUE
CP Modulation Gain	1000 uA/V (photodiode current)
CC Bandwidth High	DC to 0.8 MHz
CC Bandwidth Low	DC to 10 kHz
CP Bandwidth High	DC to 5 kHz
CP Bandwidth Low	DC to 100 Hz
Photodiode Bias Voltage	0 to 5 V, programmable
Photodiode Current Range	0 to 10000 uA
CP Setpoint Resolution	0.1 uA
CP Setpoint Accuracy	+/-4 uA
LD Current Display Resolution	0.1 mA
LD Forward Voltage Resolution	1 mV
TEC Control Range IC Sensor	-55 C to +150 C
TEC Control Range Resistor Sensor	-150 C to +250 C (10 ohm to 500 kOhm)
TEC Temperature Setpoint Resolution	0.001 C
TEC Thermal Stability	0.0005 C/C versus ambient typical (10 kOhm NTC)
TEC Current Range	-4.5 A to +4.5 A
TEC Maximum Power	36 W
TEC Compliance Voltage	greater than 8 VDC
TEC Current Limit Range	0 to 4.5 A
TEC Current Limit Accuracy	+/-5 mA
Thermistor Range	10 ohm to 500 kOhm (10 uA, 100 uA, 1000 uA excitation)
RTD Types	Pt-100 and Pt-1000 (1 mA excitation)
IC Voltage Sensors	LM335 and equivalent
IC Current Sensors	AD590 and equivalent
Interfaces	GPIB IEEE-488.2, RS-232, Ethernet
Line Power	100 W, 100/120 VAC or 220/240 VAC, 50/60 Hz
Dimensions	7 in x 5 in x 15 in (WHL)
Weight	15 lbs
Stored Configurations	up to 9

Notes
Specs from SRS LDC500 Series product page and LDC500c catalog. LDC502 is the 2 A model. Confirm line voltage, LD pinout cable, and TEC sensor type on the installed setup.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: **sales@aumictech.com** · +1 (484) 841-9341

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