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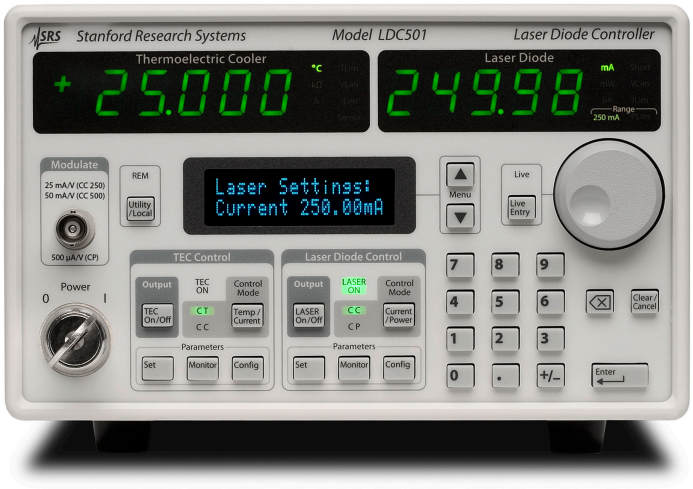
Data Sheet
August 13, 2026

STANFORD RESEARCH

Stanford Research LDC500 â€“ Laser Diode Controller

TEC Current Noise: less than 0.1 mA rms at 1 A; less than 0.2 mA rms at 4 A (10 Hz to 1 MHz) Interfaces: GPIB IEEE-488.2, RS-232, Ethernet Line Power: 100 W, 100/120 VAC or 220/240 VAC, 50/60 Hz Specs from SRS LDC500 Series product page and LDC500c catalog. LDC500 is the 100 mA model (LDC501 500 mA; LDC502 2 A). Confirm line-voltage jumper and installed cables. Interfaces: GPIB IEEE-488.2, RS-232, Ethernet Line Power: 100 W, 100/120 VAC or 220/240 VAC, 50/60 Hz Specs from SRS LDC500 Series product page and LDC500c catalog. LDC500 is the 100 mA model (LDC501 500 mA; LDC502 2 A). Confirm line-voltage jumper and installed cables.



MODEL	CALIBRATION
Stanford Research LDC500	Available on request
CONDITION	**STATUS**
Used	In stock
RFQ / SKU	**LISTING**
LDC500	https://aumictechlabs.com/products/ldc500-2/

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

NAICS 423690 · 811210 · 541380

This unit

The Stanford Research LDC500 is a precision laser diode controller combining low-noise current sourcing with high-stability temperature control in a single instrument. It delivers current outputs to 100 mA with 1 µA resolution and ±0.02% full-scale accuracy, while the integrated TEC controller maintains temperature stability to 0.0005 °C/°C with 0.001 °C setpoint resolution. Designed for scientific and industrial laser systems requiring exceptional stability and low noise across DC to 1 MHz modulation frequencies.Technical Specifications Current Source Output

range: 0–100 mA (0–50 mA option available) Setpoint resolution: 1 µA Accuracy: ±0.02% of full scale Output impedance: >1 MΩ (DC) Noise floor (10 Hz–1 MHz): 0.3–0.9 µA rms depending on bandwidth and range selection Thermal stability: <10 ppm/°C Short-term stability (1 hour): <5 ppm full scale Long-term stability (24 hours): <15 ppm full scale Temperature Controller Output power: 36 W Temperature stability: 0.0005 °C/°C Setpoint resolution: 0.001 °C Measurement accuracy: 0.01 °C (with calibrated sensor) Supported sensor types: Thermistor, RTD, IC sensors Power & Electrical AC line voltage: 100V, 120V, 220V, or 240V nominal (50–60 Hz) Fuses: 5 × 20 mm fast-blow (4 A for 100V/120V; 2 A for 220V/240V)Key Features Dual-mode current operation: Constant Current (CC) and Constant Power (CP) with dynamic bumpless transfer Temperature control modes: Constant Temperature (CT) and Constant Current (CC) with automatic mode switching Auto-tuning of temperature loop parameters Analog modulation input supporting up to 1 MHz current modulation RF injection capability for higher-frequency modulation Adjustable current limits and compliance voltage Slow-start turn-on with fast clamping and shutdown protection Front-panel two-line blue alphanumeric display and dual 5-digit green LED readoutsTypical Applications Advanced laser systems, quantum optics, spectroscopy, and precision metrology requiring synchronized current and thermal stabilization.Compatibility & Integration GPIB, RS-232, and Ethernet interfaces for remote instrument control and data logging.

Features & description

From manufacturer datasheet

Features

• Dual LD ranges 100 mA / 50 mA with 1 uA setpoint resolution • Independent linear supplies for LD and TEC; magnetically shielded toroid • Slow-start, adjustable current limit, programmable 0 to 10 V compliance • Photodiode bias 0 to 5 V; CP setpoint 0.1 uA resolution • TEC +/-4.5 A, 36 W, greater than 8 V compliance • Nine stored instrument configurations; TTL trigger output

LDC500 Characteristics / Specifications

PARAMETER	VALUE
Model	LDC500
Manufacturer	Stanford Research Systems
Instrument Type	Laser Diode Controller with TEC
Series	LDC500
Alias	LDC500; SRS LDC500
LD Current High Range	0 to 100 mA
LD Current Low Range	0 to 50 mA
LD Setpoint Resolution	1 uA
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	0.9 uA rms (10 Hz to 1 MHz)
Noise High Range Low BW	0.6 uA rms
Noise Low Range High BW	0.5 uA rms
Noise Low Range Low BW	0.3 uA rms
Compliance Voltage Range	0 to 10 V, programmable
Compliance Voltage Resolution	10 mV
Compliance Voltage Accuracy	0.2 V
Current Limit Resolution	10 uA
Current Limit Accuracy	+/-0.1 mA
Analog Modulation Input Range	-10 V to +10 V
Analog Modulation Input Impedance	2 kOhm typical
CC Modulation Gain High Range	10 mA/V

PARAMETER	VALUE
CC Modulation Gain Low Range	5 mA/V
CP Modulation Gain	500 uA/V (photodiode current)
CC Bandwidth High	DC to 1.0 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 5000 uA
CP Setpoint Resolution	0.1 uA
CP Setpoint Accuracy	+/-2 uA
LD Forward Voltage Resolution	1 mV
LD Forward Voltage Accuracy	+/-0.02 % FS (4-wire)
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 Temperature Setpoint Accuracy	+/-0.01 C (sensor dependent)
TEC Thermal Stability	0.0005 C/C versus ambient typical (10 kOhm NTC)
TEC Short Term Stability	+/-0.001 C (1 hr, typical)
TEC Long Term Stability	+/-0.002 C (24 hr, typical)
TEC Current Range	-4.5 A to +4.5 A
TEC Maximum Power	36 W
TEC Compliance Voltage	greater than 8 VDC
TEC Current Noise	less than 0.1 mA rms at 1 A; less than 0.2 mA rms at 4 A (10 Hz to 1 MHz)
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

PARAMETER	VALUE
LD Connector	DB9-F
TEC Connector	DB15-F Notes Specs from SRS LDC500 Series product page and LDC500c catalog. LDC500 is the 100 mA model (LDC501 500 mA; LDC502 2 A). Confirm line-voltage jumper and installed cables.
Bandwidth	High: DC to 1.0 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	LDC500
Manufacturer	Stanford Research Systems
Instrument Type	Laser Diode Controller with TEC
Series	LDC500
Alias	LDC500; SRS LDC500
LD Current High Range	0 to 100 mA
LD Current Low Range	0 to 50 mA
LD Setpoint Resolution	1 uA
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	0.9 uA rms (10 Hz to 1 MHz)
Noise High Range Low BW	0.6 uA rms
Noise Low Range High BW	0.5 uA rms
Noise Low Range Low BW	0.3 uA rms
Compliance Voltage Range	0 to 10 V, programmable
Compliance Voltage Resolution	10 mV
Compliance Voltage Accuracy	0.2 V
Current Limit Resolution	10 uA
Current Limit Accuracy	+/-0.1 mA
Analog Modulation Input Range	-10 V to +10 V
Analog Modulation Input Impedance	2 kOhm typical
CC Modulation Gain High Range	10 mA/V
CC Modulation Gain Low Range	5 mA/V

PARAMETER	VALUE
CP Modulation Gain	500 uA/V (photodiode current)
CC Bandwidth High	DC to 1.0 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 5000 uA
CP Setpoint Resolution	0.1 uA
CP Setpoint Accuracy	+/-2 uA
LD Forward Voltage Resolution	1 mV
LD Forward Voltage Accuracy	+/-0.02 % FS (4-wire)
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 Temperature Setpoint Accuracy	+/-0.01 C (sensor dependent)
TEC Thermal Stability	0.0005 C/C versus ambient typical (10 kOhm NTC)
TEC Short Term Stability	+/-0.001 C (1 hr, typical)
TEC Long Term Stability	+/-0.002 C (24 hr, typical)
TEC Current Range	-4.5 A to +4.5 A
TEC Maximum Power	36 W
TEC Compliance Voltage	greater than 8 VDC
TEC Current Noise	less than 0.1 mA rms at 1 A; less than 0.2 mA rms at 4 A (10 Hz to 1 MHz)
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
LD Connector	DB9-F
TEC Connector	DB15-F

Notes
Specs from SRS LDC500 Series product page and LDC500c catalog. LDC500 is the 100 mA model (LDC501 500 mA; LDC502 2 A). Confirm line-voltage jumper and installed cables.

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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