For current pricing, please see our website.

Laser Diode Controllers, 5 A and 20 A (Page 1 of 2)

LDC4020

Includes Power Cord, Connection Cable for our Laser Mounts, Sub-D Connector Kit, Software CD-ROM, and USB Cable.

Features

- Two Models for 5 A or 20 A Laser Diode Currents
- 10 V Compliance Voltage
- Operate with Anode- or Cathode-Grounded Laser Diodes and Photodiodes
- Constant Current (CC) and Constant Power (CP) Control Modes
- Continuous Wave (CW) or Quasi-Continuous Wave (QCW) Operation
- Internal Function Generator for Analog Modulation
- External Modulation Input
- Analog Monitor Output for the Laser Current
- Compatible Optical Detectors: Photodiodes, Thermopiles, Common Sensor Amplifiers and Power Meters with Voltage Output
- Laser Diode Voltage Measurement
- Enable Key Switch and Interlock
- SCPI-Compliant USB Interface and Driver Set
- Power Efficient by Active Power Management

The LDC4000 Series of Laser Diode Current Controllers provide precise and stable current for driving high-power laser diodes with injection currents up to 20 A. This series supports all laser diode and monitor diode pin configurations and features a constant current (CC) or constant power (CP) mode. These benchtop controllers are designed for stand-alone operation and are controlled via front panel keys and intuitive operation menus on a large, easy-to-read graphic LCD display. Additionally, the LDC4000 series can be fully remote controlled via an SCPI-compatible USB Interface. A higher setting and measurement resolution is offered via remote control.

Compared to the LDC200C series, the LDC4000 series offers higher injection currents plus additional features like the Quasi-Continuous Wave (QCW) operation mode, an internal modulation generator, a thermopile input, laser voltage measurement, and an optical power limit. These features enable silent and efficient operation, making the LDC4000 series of controllers ideal for most applications.

Constant Current and Constant Power Modes

The laser diodes can be driven in either constant current (CC) or constant power (CP) mode. In CC mode, the laser current is held precisely at the level set by the user. The CC mode is ideal when the lowest noise and highest response speed is required. In CP mode, the monitoring optical sensor is used to actively stabilize the output power of the laser. A feedback circuit controls the output power of the laser. A power limit can be set to restrict the control loop to a maximum laser output power. To ensure the best possible performance, laser diodes are driven with respect to ground, offering significant advantages with respect to noise, transient suppression, and stability.

Photodiode and Thermopile Monitor Input

The LDC4000 series allows the user to select photodiodes or thermopiles as the sensor for monitoring the laser diode power output. For each, a monitor input is provided. The photodiode input provides two ranges: 0 to 2 mA or 0 to 20 mA. An adjustable-bias voltage can be applied to the photodiode to improve the linearity. The thermopile input provides four ranges: 0 to 10 mV, 0 to 100 mV, 0 to 1 V, or 0 to 10 V. As an alternative to bare thermopile sensors, sensor amplifiers or power meters with analog voltage output can also be used. Both monitor inputs can be calibrated by a sensor response parameter to directly display the optical power in milliwatts.

ITEM #	LDC4005		LDC4020	
Specifications	**Front Panel***	**Remote Control***	**Front Panel***	**Remote Control***
Current Control (Constant Current Mode)				
Control Range	0 to 5 A		0 to 20 A	
Compliance Voltage	>10 V			
Setting/Measurement Resolution	1 mA	80 µA	1 mA	320 µA
Accuracy	±(0.1% + 2 mA)		±(0.1% + 8 mA)	
Noise and Ripple (10 Hz to 10 MHz, rms, Typical)	<500 µA		<10 mA	
Drift, 24 hrs (0-10 Hz, Typical, at Constant Ambient Temperature)	<300 µA		<1 mA	
Temperature Coefficient	<50 ppm/°C			
Current Limit				
Setting Range	5 mA to 5 A		20 mA to 20 A	
Resolution	1 mA	80 µA	1 mA	320 µA
Accuracy	±(0.12% + 3 mA)		±(0.12% + 12 mA)	
Power Monitor Input - Photodiode				
Photocurrent Measurement Ranges	2 mA / 20 mA			
Photocurrent Measurement Resolution	1 µA / 10 µA	32 nA / 320 nA	1 µA / 10 µA	32 nA / 320 nA
Photocurrent Accuracy (2 mA / 20 mA)	±(0.08% + 0.5 µA) / ±(0.08% + 5 µA)			
Photodiode Reverse Bias Voltage	0 to 10 V			
Power Monitor Input - Thermopile**				
Sensor Voltage Measurement Ranges	10 mV / 100 mV / 1 V / 10 V			
Sensor Voltage Measurement Resolution (10 mV / 100 mW / 1 V / 10 V)	1 µV / 10 µV 100 µV / 1 mV	0.16 µV / 1.6 µV 16 µV / 160 µV	1 µV / 10 µV 100 µV / 1 mV	0.16 µV / 1.6 µV 16 µV / 160 µV
Sensor Voltage Measurement Accuracy (10 mV / 100 mW / 1 V / 10 V)	±(0.1% + 10 µV) / ±(0.1% + 100 µV) / ±(0.1% + 1 mV) ±(0.1% + 5 mV)			
Constant Power (CP) Control				
Photocurrent Control Ranges	0 to 2 mA / 0 to 20 mA			
Voltage Control Ranges	1 µV to 10 mV / 10 µV to 100 mV / 100 µV to 1V / 1 mV to 10 V			

*The front panel resolution is limited by the display. A higher setting and measurement resolution is offered via remote control.
**The thermopile power monitor input can also be used for sensor amplifiers and power meters with voltage output.

Laser Diode Controllers, 5 A and 20 A (Page 2 of 2)

External and Internal Analog Modulation

The analog modulation input enables the external modulation of the laser diode in constant current as well as in constant power mode. Alternatively, an internal function generator offers sine, triangle, or square waveform modulation.

Continuous Wave (CW) or Quasi-Continuous Wave (QCW) Operation

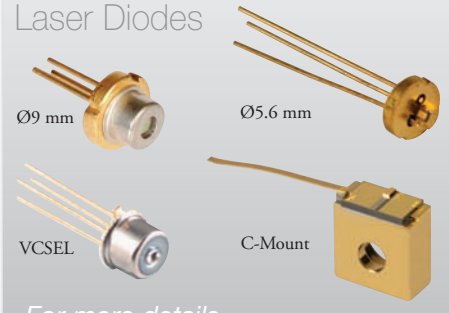
The LDC4000 Series can be operated in continuous wave (CW) or quasi-CW (QCW) mode. An integrated pulse generator can be triggered internally with an adjustable repetition rate or externally via a BNC jack at the rear of the unit.

Enhanced Laser Diode Protection Features

For optimal laser diode protection, the LDC4000 series offers a set of enhanced protection features. Independent of operation mode or compliance voltage, a precisely adjustable current limit ensures that the maximum allowed laser current cannot be exceeded. The controller will return an error signal whenever this pre-set limit is reached via user settings or external modulation. The soft start feature ensures a slow increase of the laser current without voltage peaks after the device is switched on. Voltage peaks on the AC line are effectively suppressed by electrical filters and careful grounding of the chassis. Even in the case of power line failure, the laser current will remain transient free. When the output is disabled, the laser is additionally protected by an electronic output short circuit. If the connection between current source and laser diode is interrupted, or if the laser voltage exceeds the adjustable voltage protection threshold, the laser current is switched off.

Have you seen our…

Expanded Selection of Laser Diodes



For more details, see pages 1212 - 1266

ITEM #	LDC4005		LDC4020	
Specifications	**Front Panel***	**Remote Control**	**Front Panel***	**Remote Control**
Power Limit				
Photocurrent Limit Ranges	5 µA to 2 mA / 50 µA to 20 mA			
Sensor Voltage Limit Ranges	10 µV to 10 mV / 100 µV to 100 mV / 1 mV to 1 V / 10 mV to 10 V			
Laser Voltage Measurement				
Measurement Principle	4-Wire			
Measurement Resolution	1 mV	160 µV	1 mV	160 µV
Accuracy	±20 mV			
Laser Overvoltage Protection				
Setting Range	1 to 11 V			
Laser Current Monitor Output				
Load Resistance	>10 kΩ			
Transmission Coefficient	2 V/A ±5%		500 mV/A ±5%	
External Modulation Input				
Input Impedance	10 kΩ			
Small Signal 3 dB Bandwidth, CC Mode	DC to 100 kHz		DC to 50 kHz	
Modulation Coefficient, CC Mode	500 mA/V ±5%		2 A/V ±5%	
Internal Modulation				
Waveforms	Sine, Square, Triangle			
Frequency Range	20 Hz to 100 kHz		20 Hz to 50 kHz	
Modulation Depth	0.1 to 100%			
QCW Mode				
Pulse Width Range	100 µs to 1 s			
Pulse Width Resolution	1 µs			
Repetition Rate Range	1 ms to 5 s (0.2 Hz to 1000 Hz)			
Repetition Rate Resolution	10 µs			
Trigger				
Input	Rising Edge Triggered, Starts QCW Pulse with Internal Adjusted Width			
Input Level	TTL or 5 V CMOS			
Output	Active High, Tracks Pulse Width			
Output Level	TTL or 5 V CMOS			
Digital I/O Port				
Number of I/O Lines	4 (Separately Configurable)			
Interface				
USB2.0	According to USBTMC/USBTMC-USB488 Specification Rev. 1.0			
Protocol	SCPI-Compliant Command Set			
Drivers	VISA VXI pnp™, MS Visual Studio™, MS Visual Studio.net™, LabVIEW™, LabWindows/CVI™			
General Data				
Safety Features	Interlock, Inhibit, Keylock Switch, Laser Current Limit, Laser Power Limit, Soft Start, Short Circuit when Laser off, Adjustable Laser Overvoltage Protection, Over Temperature Protection, Temperature Window Protection			
Display	LCD 320 x 240 Pixel			
Connector for Laser, Photodiode, Interlock & Laser On Signal	13W3 Mixed D-Sub Jack (Female)			
Connectors for Control Input / Output	BNC			
Connector for USB-Interface	USB Type B			
Line Voltage / Frequency	100 to 120 VAC and 200 to 240 VAC ±10%, 50 to 60 Hz			
Power Consumption	200 VA (Max)		600 VA (Max)	
Operating Temperature	0 to 40 °C			
Dimensions (W x H x D) without Operating Elements	10.35" x 4.8" x 12.09" (263 mm x 122 mm x 307 mm)			

* Measurement Resolution is limited by display

ITEM #	$	£	€	RMB	DESCRIPTION
LDC4005	$ 2,700.00	£ 1,944.00	€ 2.349,00	¥ 21,519.00	Benchtop Laser Diode Controller, ±5 A
LDC4020	$ 3,200.00	£ 2,304.00	€ 2.784,00	¥ 25,504.00	Benchtop Laser Diode Controller, ±20 A
CAB4005	$ 80.00	£ 57.60	€ 69,60	¥ 637.60	Cable for LDC4000 Series, 5 A, 13W3 to D-Sub-9, 1.5 m Long
CAB4006	$ 80.65	£ 58.07	€ 70,17	¥ 642.78	Cable for LDC4000 Series, 20 A, 13W3 to 13W3, 1.5 m Long
CON4005	$ 14.50	£ 10.44	€ 12,62	¥ 115.57	Connector Kit for LDC4000 Series, 20 A, 13W3 Male

We Also Offer...

Miniature TE-Cooled Laser Diode Mounts

See page 1487