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Benchtop Laser Diode Controllers (Page 1 of 2)



LDC205C

Includes Power Cord
and Mount Connection
Cable (CAB400)

Highlights

- Seven Models Offering Currents from 20 mA to 4 A
- 10 V Compliance Voltage on LDC202C, LDC205C, and LDC210C for Blue Laser Diodes
- Extremely Low Noise (LDC201CU Offers 0.2 μ A RMS)
- 5-Digit Display
- Analog Control Input and Output
- Reliable Laser Diode Protection
- Operates with All Laser Diode and Photodiode Polarities

The LDC200C Series of Laser Diode Controllers features seven models with different current ranges from 20 mA to 4 A, each configured to provide optimal performance for its particular intended laser application. Please refer to the specifications table on the following page and the typical applications table below for an overview of the product range.

Modes

Using the laser diode controllers in the LDC200C series, laser diodes can be driven in constant current (CC) or constant power (CP) mode. All laser diode and photodiode configuration types are supported. The laser diode is always driven with respect to ground. In comparison to driver designs that require a floating ground, this grounded operation of the laser diode offers advantages regarding noise, transient suppression, and stability.

In CC mode, the current to the laser is held precisely at the desired set level. This mode is used when the lowest noise and highest response speed are required. Most applications in this mode require a stable temperature as well; see page 1449 for our temperature controllers.

In CP mode, a feedback circuit uses the signal generated by the internal photodiode integrated into most laser diode packages or an external photodiode to actively stabilize the laser's output power. An adjustment of the full scale photodiode current in CP mode is provided in order to compensate for the differences in the photodiode currents between different laser diodes.

Controller Outputs

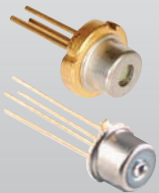
Independent of the selected operating mode, the 5-digit LED display can show the laser current, photodiode monitor current, or laser current limit. It can also display the optical power in milliwatts. The power readout can be calibrated to the responsivity of the monitor photodiode by adjusting a front panel trim potentiometer. In many applications, the aforementioned benefits eliminate the need for a separate optical power meter. A TTL input for remote laser on/off, a modulation input for laser current or power, and a control output proportional to the laser diode current are all available from the rear of the unit.

Protection Features

Current Limit: A precisely adjustable current limit ensures that the maximum laser current cannot be exceeded. Thorlabs has intentionally provided limited access to this feature to prevent accidental adjustment. An attempt to increase the laser drive current above the preset limit will result in visible and short audible indicators. Even when utilizing the external modulation feature, the current limit setpoint cannot be exceeded.

Current Source: If the connection between the laser diode controller output and laser diode is interrupted, the current source automatically switches off. The open current circuit condition is indicated by the "OPEN" indicator on the controller and a short acoustic warning.

TYPICAL APPLICATIONS	LDC200CV	LDC201CU	LDC202C	LDC205C	LDC210C	LDC220C	LDC240C
Low-Current VCSEL	✓						
Low-Power Lasers	✓	✓	✓				
Medium-Power Lasers			✓	✓	✓		
Higher-Power Lasers					✓	✓	✓
Blue Lasers High-Compliance Voltage			✓	✓	✓		
Low-Noise Operation	✓	✓	✓	✓	✓	✓	✓
Ultra-Low-Noise Operation		✓					

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Current Source (cont.)

The separate laser ON key switches the laser current on and off. When switched off, an electronic switch within the LDC200C short circuits the laser diode for added protection. After being switched on, a soft start ensures a slow increase of the laser current without voltage peaks. Even in the case of line failure, the laser current remains transient free. Voltage peaks on the AC line are effectively suppressed by electrical filters, shielding of the transformer, and careful grounding of the chassis.

Laser Diode Controllers Specifications and Selection Guide*

MODEL NUMBER	LDC200CV	LDC201CU	LDC202C	LDC205C	LDC210C	LDC220C	LDC240C
Current Control							
Control Range (Continuous)	0 to ±20 mA	0 to ±100 mA	0 to ±200 mA	0 to ±500 mA	0 to ±1 A	0 to ±2 A	0 to ±4 A
Compliance Voltage	>6 V	>5 V	>10 V	>10 V	>10 V	>4 V	>5 V
Resolution	1.0 µA	10 µA	10 µA	10 µA	100 µA	100 µA	100 µA
Accuracy (Full Scale)	±20 µA	±50 µA	±100 µA	±0.5 mA	±1.0 mA	±2.0 mA	±4.0 mA
Typical Noise without Ripple (10 Hz to 10 MHz, RMS)	<1.0 µA	<0.2 µA	<1.5 µA	< 3 µA	<5 µA	<15 µA	<50 µA
Typical Ripple (50/60 Hz, RMS)	<0.5 µA	<0.5 µA	<1.5 µA	< 2 µA	<3 µA	<5 µA	<8 µA
Transients (Typical)	<10 µA	<10 µA	<0.2 mA	< 0.5 mA	<1 mA	<2 mA	<4 mA
Typical Drift in 24 hours (0 to 10 Hz at Constant Ambient Temperature)	<1 µA	<2 µA	<3 µA	<10 µA	<20 µA	<100 µA	<200 µA
Temperature Coefficient	<50 ppm/°C						
Current Limit (CP Mode)							
Setting Range (20-Turn Trim Pot)	0 to >20 mA	0 to >100 mA	0 to >200 mA	0 to >500 mA	0 to >1 A	0 to >2 A	0 to >4 A
Resolution	1 µA	10 µA	10 µA	10 µA	100 µA	100 µA	100 µA
Accuracy	±50 µA	±200 µA	±500 µA	±5 mA	±2.5 mA	±5 mA	±10 mA
Power Control (CP Mode)							
Photocurrent Control Range	5 µA to 2 mA	25 µA to 10 mA			50 µA to 20 mA		
Photocurrent Resolution	0.1 µA	1 µA			1 µA		
Photocurrent Accuracy	±2 µA	±10 µA			±20 µA		
Analog Modulation Input							
Input Resistance	10 kΩ						
3 dB Bandwidth, CC**	DC - 100 kHz	DC - 0.2 kHz	DC - 250 kHz	DC - 150 kHz	DC - 100 kHz	DC - 50 kHz	DC - 30 kHz
Modulation Coefficient, CC	2 mA/V ±5%	10 mA/V ±5%	20 mA/V ±5%	50 mA/V ±5%	100 mA/V ±5%	200 mA/V ±5%	400 mA/V ±5%
Modulation Coefficient, CP	0.2 mA/V ±5%	1 mA/V ±5%			2 mA/V ±5%		
General Data							
Safety Features	Soft Start, Interlock, Short Circuit when Laser is Off, Laser Current Limit, Open Circuit Detection, Over-Temperature Protection						
Display	LED, 5 Digits						
Connectors, Back Panel	9-Pin D-Sub Jack, BNC for Remote Laser On/Off/TTL Input, BNC for Modulation, and BNC for Laser Monitor						
Operating Temperature	0 to 40 °C						
Storage Temperature	-40 to 70 °C						
Line Voltage/Frequency	100 VAC, 115 VAC, 230 VAC, +15%/-10% Each; 50 to 60 Hz						
Warm-up Time	10 Minutes						
Dimensions (W x H x D)	5.75" x 2.60" x 11.42" (146 mm x 66 mm x 290 mm) without Operating Elements						
Weight	<3.1 kg						<3.3 kg

*All data valid at 23 ± 5 °C and 45 ± 15% relative humidity **Small signal bandwidth

ITEM #*	\$	£	€	RMB	DESCRIPTION
LDC200CV	\$ 998.00	£ 718.56	€ 868.26	¥ 7,954.06	Laser Diode Controller, 20 mA for VCSEL
LDC201CU	\$ 998.00	£ 718.56	€ 868.26	¥ 7,954.06	Ultra-Low Noise Laser Diode Controller, 100 mA
LDC202C	\$ 950.00	£ 684.00	€ 826.50	¥ 7,571.50	Laser Diode Controller, 200 mA
LDC205C	\$ 950.00	£ 684.00	€ 826.50	¥ 7,571.50	Laser Diode Controller, 500 mA
LDC210C	\$ 998.00	£ 718.56	€ 868.26	¥ 7,954.06	Laser Diode Controller, 1 A
LDC220C	\$ 1,100.00	£ 792.00	€ 957.00	¥ 8,767.00	Laser Diode Controller, 2 A
LDC240C	\$ 1,195.00	£ 860.40	€ 1,039.65	¥ 9,524.15	Laser Diode Controller, 4 A
CAB400	\$ 66.00	£ 47.52	€ 57.42	¥ 526.02	LDC200C Series to LD Mount, 9-Pin D-Sub Connector

*All LDC200C Series Controllers are CE Certified, CSA Approved, and RoHS Compliant

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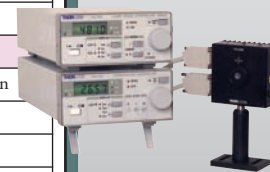
LD Mounts

LED Drivers

LED Mounts

Have you
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Laser and
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Control
System Kits



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