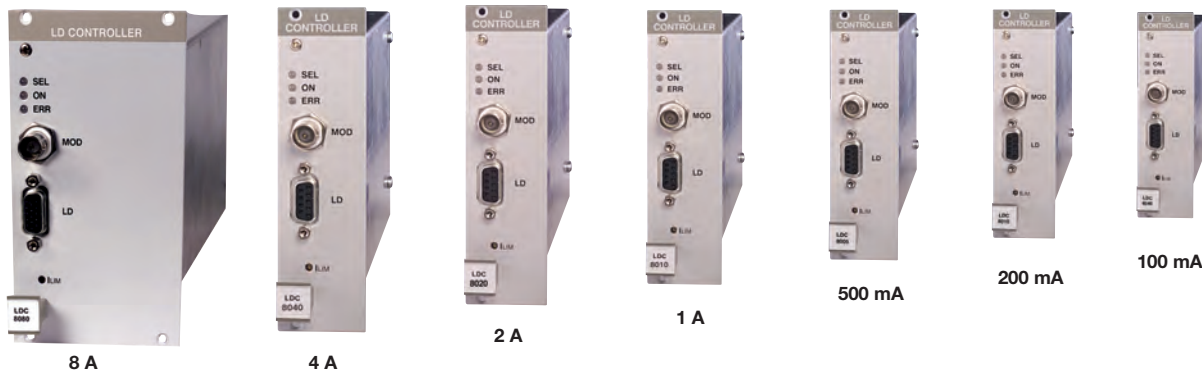


PRO8 Laser Controller Modules (Page 1 of 2)



Highlights

- 100 mA, 200 mA, 500 mA, 1 A, 2 A, 4 A, and 8 A Modules
- Ultra-Stable Current Control with 16-Bit Resolution
- Extensive Laser Diode Protection Features
- Switchable Photodiode Bias for Improved Sensor Linearity
- Easily Configured Self-Identifying Modules
- External Modulation of Laser Output

Introduction

The modular laser diode current controllers of the LDC8 series provide optimal performance. All of these current controller modules offer extremely low noise and drift, resulting in exceptional laser stability.

Seven Current Ranges

Seven different current controller modules are available, with maximum output currents ranging from 100 mA up to 8 A (10 A upon request). The drive current can be set precisely with 16-bit resolution (i.e., one part in 65,000). An analog control input allows all current modules to be operated in either constant current (CC) or constant power (CP) mode. The maximum modulation frequency is dependent on the mode used.

User-Friendly Controls

After installing a new module into a PRO8 chassis, the front-panel control screen is used to configure the plug in. The softkeys are used to scroll through the slot location to access the basic settings. The operational settings are easily accessed; displayed mnemonic symbols and simple prompts provide for user-friendly operation. All settings are retained in memory and automatically recalled upon powering the mainframe.

Laser Diode Protection Features

The LDC8000 Series current modules incorporate laser protection features to safeguard sensitive laser diodes. An advanced circuit design ensures that AC power line transients or power outage, as well as RF pickup, cannot affect the laser diode.

For each current module, three independent limits can be set to safeguard the laser. Two of the limits are programmable, which prevent the laser current and the laser power from exceeding the user-defined maximum values.

The third limit is set via a recessed front panel trim pot that sets a “hardware” current limit and protects against programming errors and accidental adjustment of the front panel knob. Even while externally modulating the laser, it is not possible to exceed the hard or soft limits.

After activating the laser diode, a soft-start function slowly increases the laser current without voltage overshoots.

Even in the case of AC power fluctuation, the laser current remains transient free. Voltage peaks on the AC line are effectively suppressed by electronic filters, shielding of the transformer, and careful grounding of the modules and chassis. The LDC8000 series meets the international requirements regarding laser protection (e.g., CDRH US21, CFR 1040.10). Furthermore, the module’s operation is protected by the PRO8 system’s key-operated power switch, its interlock, and a delay of the output current, plus many additional features.

Protection Features

- Soft Start Slowly Increases Laser Drive Current
- Programmable Limits for Current and Optical Power
- Hardware Current Limit for Protection Against Errors Through Programming, Modulation, and Wrong Settings
- Extensive AC Power Filtering Eliminates Transients
- Temperature Window Protection with TED8000 Card
- Meets Applicable CDRH and CE Regulations

External Modulation of Laser Output

An analog control input enables the modulation of the laser diode in constant current or constant power mode. The maximum modulation frequency depends on the current module used. See the specifications table on the next page.

ITC8000 Combination Laser Diode and TEC Controllers



$I_{LD} = \pm 200 \text{ mA}, \pm 500 \text{ mA}, \text{ and } \pm 1 \text{ A}$
 $I_{TEC} = \pm 2 \text{ A}/16 \text{ W}$
See Page 1208

PRO8 Laser Controller Modules (Page 2 of 2)

Laser Diode Controllers Specifications

	LDC8001	LDC8002	LDC8005	LDC8010	LDC8020	LDC8040	LDC8080
Current Control							
Control Range (Continuous)	0 to ±100 mA	0 to ±200 mA	0 to ±500 mA	0 to ±1 A	0 to ±2 A	0 to ±4 A	0 to ±8 A ^a
Compliance Voltage	>2.5 V	>5 V	>5 V	>5 V	>5 V	>5 V	>5 V
Resolution	1.5 µA	3 µA	7.5 µA	15 µA	30 µA	70 µA	130 µA
Accuracy (Full Scale)	±0.05%	±0.05%	±0.05%	±0.1%	±0.1%	±0.1%	±0.3%
Noise Without Ripple (10 Hz to 10 MHz, RMS, Typ.)	<1 µA	<3 µA	<5 µA	<10 µA	<20 µA	<50 µA	<100 µA
Ripple (50/60 Hz, RMS, Typ.)	<0.8 µA	<1 µA	<1 µA	<1.5 µA	<3 µA	<4 µA	<8 µA
Transients (Processor, Typ.)	<10 µA	<15 µA	<30 µA	<50 µA	<80 µA	<120 µA	<200 µA
Transients (Other, Typical)	<100 µA	<200 µA	<500 µA	<1 mA	<2 mA	<4 mA	<8 mA
Drift 60 min/24 hr (Typ., 0-10 Hz, at Constant Ambient Temp)	<0.5 µA/<1.5 µA	<0.5 µA/<1.5 µA	<2 µA/<4 µA	<5 µA/<20 µA	<15 µA/<100 µA	<25 µA/<150 µA	<100 µA/<200 µA
Temperature Coefficient	<50 ppm/°C						
Power Control							
Control Range of Photocurrent	10 µA to 5 mA (Other Ranges Available upon Request)						
Reverse Bias Voltage	5 V (Can be Switched Off)						
Resolution	100 nA						
Accuracy (Full Scale)	±0.05%						
Current Limit							
Setting Range (20-Turn Trim Pot)	0 to ≥100 mA	0 to ≥200 mA	0 to ≥500 mA	0 to ≥1 A	0 to ≥2 A	0 to ≥4 A	0 to ≥8 A
Resolution	3 µA	6 µA	15 µA	30 µA	60 µA	130 µA	250 µA
Accuracy	±100 µA	±200 µA	±500 µA	±2 mA	±4 mA	±8 mA	±50 mA
Power Limit							
Photocurrent Range	0 to 5 mA						
Resolution	1.25 µA						
Accuracy	±50 µA						
Laser Voltage Measurement							
Measurement Principle	4-Wire (Improves Accuracy by Compensating for Cable Resistance)						
Measurement Range	0 to 5 V						
Resolution	0.2 mV						
Accuracy	±5 mV						
Analog Modulation Input							
Input Resistance	10 kΩ						
3 dB-Bandwidth, CC ^b	DC to 2.5 kHz	DC to 200 kHz	DC to 100 kHz	DC to 50 kHz	DC to 30 kHz	DC to 20 kHz	DC to 10 kHz
Modulation Coefficient, CC	10 mA/V ± 5%	20 mA/V ± 5%	50 mA/V ± 5%	100 mA/V ± 5%	200 mA/V ± 5%	400 mA/V ± 5%	800 mA/V ± 5%
Modulation Coefficient, CP	0.5 mA/V ± 5%						
Rise and Fall Time, Typical ^c	<100 µs	<2 µs	<4 µs	<5 µs	<6 µs	<9 µs	<15 µs
General Data							
Card Width	1 Slot						2 Slots
Connector	9-Pin D-Sub (f)						15-Pin HD D-Sub (f)
Weight	< 300 g		< 500 g			< 750 g	
Operating Temperature	0 to +40 °C						
Storage Temperature	-40 to +70 °C						

^a 10 A Available upon request^b External TTL Modulation synchronous for all current cards^c Small signal bandwidth

All data valid at 23 ± 5 °C and 45 ± 15% relative humidity

Drive up to 64 Lasers from 1 Chassis – See Next Page

ITEM#	\$	£	€	RMB	DESCRIPTION
LDC8001	\$ 1,100.40	£ 762.90	€ 977.00	¥ 9,291.90	PRO8000 LD Control Module, 100 mA
LDC8002	\$ 1,039.20	£ 720.40	€ 922.70	¥ 8,775.10	PRO8000 LD Control Module, 200 mA
LDC8005	\$ 1,063.70	£ 737.40	€ 944.40	¥ 8,982.00	PRO8000 LD Control Module, 500 mA
LDC8010	\$ 1,075.90	£ 745.90	€ 955.20	¥ 9,085.00	PRO8000 LD Control Module, 1 A
LDC8020	\$ 1,160.40	£ 804.50	€ 1,030.30	¥ 9,798.50	PRO8000 LD Control Module, 2 A
LDC8040	\$ 1,170.20	£ 811.30	€ 1,039.90	¥ 9,881.20	PRO8000 LD Control Module, 4 A
LDC8080	\$ 1,215.50	£ 842.70	€ 1,079.20	¥ 10,264.00	PRO8000 LD Control Module, 8 A, 2 Slots
CAB400	\$ 66.00	£ 45.80	€ 58.60	¥ 557.40	DB9 Cable, LDC8000 Module to LD Mount