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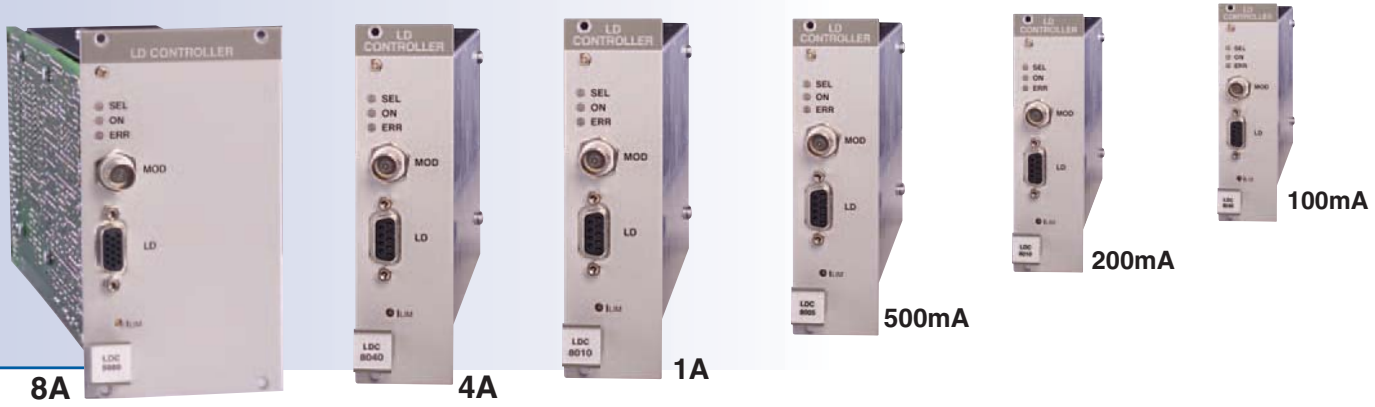
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laser controller modules... page 1 of 2



Introduction - Laser Diode Controller Modules

The modular laser diode current controllers of the LDC8000 series provide “best in class” performance. All of these current control modules have extremely low noise and drift performance, resulting in exceptional laser stability.

Highlights LDC8000 Modules

- 100mA, 200mA, 500mA, 1A, 4A and 8A Modules.
- Ultra-stable Current Control with 16-bit Resolution.
- Extensive Laser Diode Protection Features.
- Photodiode Bias Provides Improved Sensor Linearity.
- Easily Configured Self-Identifying Modules.
- External Modulation of Laser Output.
- Companion Temperature Control Modules, page 370

Six Current Ranges

Six different current controller modules are available, with maximum output currents ranging from 100mA up to 8A. The drive current can be set precisely with 16 bit resolution - one part in 65,000. All current modules can be operated in either constant current, or constant power mode.

User-Friendly Controls

After installing a new module into the PRO8000 chassis, the front panel control screen is used to configure the plug-in. The soft-keys are used to scroll through the slot location to access the basic settings. The operational settings are easily accessed; displayed mneumonic symbols and simple prompts provide for user-friendly operation. All the settings are retained in memory and automatically recalled upon powering the mainframe.

Built-in Laser Diode Protection Features

The LDC8000 series current modules incorporate proven laser protection features to safeguard sensitive laser diodes. Besides common protection functions, such as current limits, soft start and interrupt protection, an advanced circuit design ensures that AC power-line transients or power outage, as well as RF pickup can not 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 “hard” 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 either the hard or soft limits.

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

LDC8000 Series Protection Features

- Soft Start Slowly Increases Laser Drive Current.
- 3 Independent Current Limits.
- Hard Current Limit, Front Panel Trim-Pot.
- Software Current Limits, Power & Current.
- Meets Applicable CDHR & CE Regulations.
- Temperature Threshold Window Protection.
- Extensive AC Power Filtering Eliminates Transients.

Even in the case of an AC power interruption, 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. Our laser diode controllers have all been designed by an engineering team that has a 15 year history of building the high quality, user-friendly instruments. The LDC8000 series meets the international requirements regarding laser protection (e.g. CDRH US21 CFR 1040.10), all models include a key-operated power switch, an interlock, and a delay of the output current, plus many additional features.

Design Note LDC8000 Modules

Our controller design can accommodate all the various laser/photodiode pin configurations, while driving the laser with respect to ground. This ensures maximum protection for the laser diode. This approach offers considerable advantages in comparison with floating operation. By having the drive current tied to ground prevents electro-static disturbances from effecting the laser current.

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.

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... Drive up to 64 Lasers from 1 Chassis, See the Next Page

Laser Diode Controllers Specifications	LDC8001	LDC8002	LDC8005	LDC8010	LDC8040	LDC8080
Current control Control range (continuous)	0 to ± 100mA	0 to ± 200mA	0 to ± 500mA	0 to ± 1A	0 to ± 4A	0 to ± 8A
Compliance voltage	> 2.5V	> 5 V				
Resolution	1.5µA	3µA	7.5µA	15µA	70µA	130µA
Accuracy (full scale)	± 0.05 %			± 0.1 %		± 0.3 %
Noise without ripple (10Hz to 10MHz, rms, typ.)	< 1µA	< 3µA	< 5µA	< 10µA	< 50µA	< 100µA
Ripple (50/60Hz, rms, typ.)	< 0.8µA	< 1µA	< 1µA	< 1.5µA	< 4µA	<8µA
Transients (processor, typ.)	< 10µA	< 15µA	< 30µA	< 50µA	< 120µA	< 200µA
Transients (other, typ.)	< 100µA	< 200µA	< 500µA	< 1mA	< 4mA	< 8mA
Drift 30 min / 24 h (typ.,0-10Hz, at constant ambient temperature)	< 5µA / <1.5µA		< 1µA / < 2µA	< 2µA / < 5MA	< 25µA / < 200µA	< 100µA / < 400µA
Temperature coefficient	<50ppm/°C					
Power control Control range of photo current	10µA to 5mA (Other Ranges Available)					
Reverse bias voltage	5V (can be switched off)					
Resolution	100nA					
Accuracy (full scale)	± 0.05 %					
Current limit Setting range (20-turn trim-pot)	0 to ≥100mA	0 to ≥ 200mA	0 to ≥ 500 mA	0 to ≥ 1A	0 to ≥ 4A	0 to ≥ 8A
Resolution	3µA	6µA	15µA	30µA	130µA	250µA
Accuracy	± 100µA	± 200µA	± 500µA	±2mA	± 8mA	± 50mA
Power limit Setting range of photo current limit	0 to 5mA					
Resolution	1.25µA					
Accuracy	>50µA					
Laser-voltage measurement Measurement principle	4-wire					
Measurement range	0 to 5V					
Resolution	0.2mV					
Accuracy	± 5mV					
Analog Modulation Input Input resistance	10kΩ					
3 dB-bandwidth, CC	DC to 2.5kHz	DC to 200kHz	DC to 100kHz	DC to 50kHz	DC to 20kHz	DC to 10kHz
Modulation coefficient, CC	10mA/V±5 %	20mA/V±5 %	50mA/V±5 %	100mA/V±5 %	400mA/V±5 %	800mA/V±5 %
Modulation coefficient, CP	0.5 mA/V ± 5 %					
Rise & fall time, typical	< 100µs	< 2µs	< 4µs	< 5µs	< 9µs	< 15µs
General data Card width	1 slot					2 slots
Connector	9-pin D-Sub (f)					15-pin HD D-Sub (f)
Weight	< 300g		< 500g			< 750g
Operating temperature	0 to +40 °C					
Storage temperature	– 40 to +70 °C					

The technical data are valid at 23 ± 5°C and 45 ±15% relative humidity

ITEM#	$	£	€	¥	DESCRIPTION
LDC8001	$1,092.50	£665.00	€ 950,00	¥152,000	PRO8000 LD control module, 100mA
LDC8002	$1,035.00	£630.00	€ 900,00	¥144,000	PRO8000 LD control module, 200mA
LDC8005	$1,058.00	£644.00	€ 920,00	¥147,200	PRO8000 LD control module, 500mA
LDC8010	$1,115.50	£679.00	€ 970,00	¥155,200	PRO8000 LD control module, 1A
LDC8040	$1,358.50	£833.00	€1.190,00	¥190,400	PRO8000 LD control module, 4A
LDC8080	$1,610.00	£980.00	€1.400,00	¥224,000	PRO8000 LD control module, 8A, 2 slots

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