Introduction - MLC8000 Series Multi-Laser Controllers

The MLC8000 series laser diode controllers are designed to control up to eight lasers from a single module. When fully populated, a PRO8000 chassis can simultaneously power up to 64 laser diodes.

Highlights MLC8000 Modules

- Drive 8 Lasers from a Single Module & 64 Lasers from a Single MLC Chassis
- Ranges: 5mA, 10mA, 25mA, 50mA, 100mA, & 200mA
- Ultra-stable Current Control with 12-bit Resolution.
- Extensive Laser Diode Protection Features.
- Photodiode Bias Provides Improved Sensor Linearity.
- Easily Configured Self-identifying Modules.

Designed to support high density laser diode test and burn-in, this series provides eight different maximum drive current ranges. The PRO8000 chassis can support up to a total of 16A of laser diode drive current - the sum of the output drive currents from all the installed cards - and can therefore easily support the demands of driving 64 lasers at 200mA each.

These modules have been field proven in demanding applications for many years. First released in 1998, these instruments have evolved through intensive customer feedback.

Intuitive User-Friendly Controls

Each module provides eight independent outputs in which the laser drive current can be individually set for each output channel. The current range, the current limit and the operating mode (constant current or constant power mode) is set per module; therefore, all eight channels will be operated with the same parameters. The various modules of the MLC series can be mixed and matched, along with modules from other PRO8000 series modules, into any of the three chassis to implement a large variety of systems.

After installing a new module into a 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 settings for the individual modules. The operational parameters are easily accessed using mneumonic symbols and simple prompts provide user-friendly operations. All the settings are retained in memory and automatically recalled upon powering on the mainframe.

The polarity of the laser diodes, either anode or cathode ground, is factory fixed. The eight outputs are switched on together, the current control or power control is independent for each channel.

Built-in Laser Diode Protection

The MLC8000 series modules incorporate proven laser protection features to safeguard sensitive laser diodes. These features include a hardware current limit, a soft start circuit, and an interrupt sensing circuit that can detect a break in the connectors going to the laser diode, and then shut the laser down. Additionally, extensive precautions have been taken to protect the laser diodes during AC power interruptions or outage.

User-Friendly Controls

Configuring a system is as simple as plugging in the modules; each plug-in is automatically identified. A brightly lit 4 x 20 character fluorescence display allows the user to scroll through to select any of the installed modules. When selected, the control parameters can be quickly changed.

The current limit - or power limit, when operating in “constant power mode” - is accessed via a front panel trim-pot. For this industrial driver, the current limit is intentionally adjusted only through the use of this trim-pot to prevent the risk of accidental adjustment. All 8 output channel current limits for an individual card are set in common.

After activating the laser power, a soft-start function slowly increases the laser current, preventing overshoots.

Design Note MLC8000 Modules

The MLC8000 controllers are divided into two groups, one for grounded laser cathodes, and one for grounded anodes - the photodiode polarity can be software selected. Under all conditions, the laser diode is driven with respect to ground, ensuring maximum protection for the laser diode.

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. The MLC8000 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.

Burn-In System Applications

The MLC8000 series modules have been designed for burn-in applications. The high density (64 lasers / chassis) drive capability coupled with the user-friendly advanced control features of the PRO8000 mainframe make this product line an ideal choice for this application.

Our application support engineers are available to work with our customers to ensure appropriate system configurations. Please contact any of the Thorlabs offices listed on the back

Polarimeter PMD/PDL
Laser/TEC Controllers
Laser Mounts
WDM Sources & Switches
Optical Sources & Switches
Detectors & Power Meters
Laser Lab Instruments
TXP Systems Measurement & Control

Burn-In Station: Pictured System Powers 512 Lasers

The MLC 8000 Series modules are designed to simultaneously supply drive current to eight laser diodes per module. Therefore, up to 64 laser diodes can be operated by one PRO 8000 chassis.

Utilize the IEEE-488 interface to add PRO8000 chassis to expand and create an automated a test station. High level software macros speed the process of developing automated burn-in, and final test routines.

Specifications

Laser Diode Controllers	MLC8025-8	MLC8050-8	MLC8100-8	MLC8200-8
Current control Control ranges switchable (8X)	0 to ± 5mA 0 to ± 25mA	0 to ± 10mA 0 to ± 50mA	0 to ± 25mA 0 to ± 100mA	0 to ± 50mA 0 to ± 200mA
Laser diode polarity	Fixed, either anode ground (AG) or cathode ground (CG)			
Compliance voltage	> 4 V			
Accuracy	±15µA / ±75µA	±30µA / ±150µA	±75µA / ±300µA	±150µA / ±600µA
Resolution	1.2µA / 6µA	2.5µA /12µA	6µA / 25µA	12µA / 50µA
Noise without ripple (10Hz to 10MHz), typ.	< 0.5µA / < 0.5µA		0.5µA / < 1µA	< 0.5µA /< 1.5µA
Ripple (50/60Hz, rms), typ.	< 0.5µA / < 0.5µA		< 0.5µA / < 1µA	
Transients (other, typ.)	< 25µA	< 50µA	< 100µA	< 200µA
Drift (30 min, 0 to 10Hz), typ.	< 0.3µA / < 1µA	< 0.5µA /< 1.5µA	< 1µA /< 3µA	< 1.5µA / < 5µA
Temperature coefficient	< 50ppm / °C			
Power control Control range of photo current	5µA to 2mA			
Accuracy	± 6µA			
Resolution photo current	0.5µA			
Reverse bias voltage	0V / 5V			
Current limit Setting range (20-turn pot)	0 to 5mA / 0 to 25mA	0 to 10mA / 0 to 50mA	0 to 25mA / 0 to 100mA	0 to 50mA / 0 to 200mA
Resolution	1.2µA / 6µA	2.5µA /12µA	6µA / 25µA	12µA / 50µA
Accuracy	± 50µA/ ±125µA	± 100µA / ±250µA	± 0.25mA /± 0.5mA	± 0.5mA / ±1mA
General data Connector	44-pin HD D-Sub (f) (for laser diode, photodiode and general interlocks etc.)			
Card width	1 slot			
Weight	< 500g			
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

AG: Laser Anode Grounded
CG: Laser Cathode Grounded

ITEM#	$	£	€	¥	DESCRIPTION
MLC8025-8AG	$1,667.50	£1,015.00	€1.450,00	¥232,000	PRO 8000 multi channel LD controller, 25mA, AG
MLC8025-8CG	$1,667.50	£1,015.00	€1.450,00	¥232,000	PRO 8000 multi channel LD controller, 25mA, CG
MLC8050-8AG	$1,667.50	£1,015.00	€1.450,00	¥232,000	PRO 8000 multi channel LD controller, 50mA, AG
MLC8050-8CG	$1,667.50	£1,015.00	€1.450,00	¥232,000	PRO 8000 multi channel LD controller, 50mA, CG
MLC8100-8AG	$1,667.50	£1,015.00	€1.450,00	¥232,000	PRO 8000 multi channel LD controller, 100mA, AG
MLC8100-8CG	$1,667.50	£1,015.00	€1.450,00	¥232,000	PRO 8000 multi channel LD controller, 100mA, CG
MLC8200-8AG	$1,667.50	£1,015.00	€1.450,00	¥232,000	PRO 8000 multi channel LD controller, 200mA, AG
MLC8200-8CG	$1,667.50	£1,015.00	€1.450,00	¥232,000	PRO 8000 multi channel LD controller, 200mA, CG