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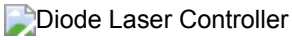
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Find the *CVI Melles Griot 06 DLD 105* at our website: *Click HERE*

Lasers

Diode Laser Controllers


Diode Laser Controller

- Up to 3 A of low-noise drive current
- 1 MHz modulation capability
- Complete diode laser characterization
- Integral thermoelectric cooler controller
- IEEE 488.2 interface
- CE compliant

The model 06 DLD 103A and 06 DLD 105 diode laser controllers are sophisticated current sources, thermoelectric cooler (TEC) controllers, and diagnostic instruments, combined in a single package. In addition to providing highly stable current, they have data acquisition and graphic display capabilities. The standard IEEE-488.2 interface bus and external laser power input permit integration into automated test and data-acquisition systems. A battery-backed memory stores up to eight individual setup configurations for easy recall.

The 06 DLD 103A will provide up to 500 mA of stable, noise-free drive current; the 06 DLD 105 will provide up to 3.0 A of drive current.

Product Description Detailed Specifications

Product Description

Innovative User Interface

The controllers feature a large 240 X 128 element backlit liquid crystal display (LCD). A user-friendly, menu-driven operating system allows an operator to input current and temperature values and display operating parameters and graphs representing the laser's performance.

Characterization and Diagnostic Capability

In the Diode Plot mode, both the 06 DLD 103A and the 06 DLD 105 have the capability to characterize a diode laser's operating current, photocurrent, voltage, and power output graphically. In the Time Plot mode, the operator can study the temporal characteristics of those parameters, along with the temperature, TEC current, and voltage. The time interval between samples is user selectable between 1 millisecond and 3500 seconds.

External analog signals from current amplifiers and power meters can also be collected and analyzed in both Time Plot and Diode Plot modes.

Modes of Operation

Melles Griot diode laser controllers operate in three distinct modes: constant current, constant current with high-frequency modulation, and constant power.

Constant-Current Mode: In this mode, the current source is configured to deliver highly stable, clean current to the diode laser. An external modulation signal can be applied to the unit's front-panel input for remote linear control of the operating current. The current resulting from this modulation signal is summed with the operating current, which is set from the unit's front panel. For the 06 DLD 103A, two analog modulation bandwidth settings are available: dc to 500 Hz and dc to 1.0 MHz (700 msec and 350 nsec minimum rise/fall times, respectively). Together with the current range selection, this enables the user to operate the 06 DLD 103A so that the output current is as noise free as possible. For the 06 DLD 105, the bandwidth is 250 kHz.

Constant-Current Mode with High-Frequency Modulation: These diode laser controllers are capable of digitally modulating a diode laser with current pulses whose rise and fall times are

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< 20 nsec (06 DLD 103A). Digital modulation refers to switching between low and high operating current levels in response to an input signal's logic level state. The user can select the value for each current level.

An internal square wave generator is also provided in the unit for digital modulation purposes. The period can be set from 0.49 msec to 16 msec (60 Hz to 2 MHz), with a continuously adjustable duty cycle (to 1 Mb/sec for the 06 DLD 105).

Constant-Power Mode: These drivers can be used to stabilize diode laser output power. Current from the diode laser's internal monitor photodiode (if so equipped) is used as the feedback signal in the power control loop. Since the diode laser's photomonitor current is kept constant, its output power is also kept constant. Two user-selectable gain settings are available to permit using diode lasers with photomonitor currents from 1 mA to 2 mA (photo-low setting) and 10 mA to 10 mA (photo-high setting).

The 06 DLD 103A and 06 DLD 105 can also display the optical output power of the diode laser. The instrument allows the user to enter the diode laser's photodiode responsivity. It then automatically calculates and displays the actual output power.

Temperature Control Capabilities

The large LCD and intuitive software make temperature stabilization of a diode laser easy. The instrument leads the user through temperature sensor, limit, and set point selection. The low-noise output is ideal for driving thermoelectric cooler modules which are routinely used for stabilizing and tuning the wavelength/frequency of a diode laser, as well as for prolonging the laser's lifetime. The instrument is compatible with a wide range of temperature sensors and sensing techniques for flexibility and convenience. These include thermistors, integrated circuit temperature sensors, and diode laser voltage feedback. To prevent accidentally overdriving the thermoelectric cooler module, an adjustable current limit is provided. In addition, a user-selectable high-temperature limit is standard to protect the diode laser from damage caused by thermal runaway.

Specifications

Performance Parameters: Constant Current Mode

	06 DLD 103A	06 DLD 105
Current Range:	1–500 mA	10–3000 mA
Resolution:	100 µA	100 µA
Temperature Coefficient:	<100 ppm/°C	<100 ppm/°C
Drift: (over 1 hour @25°C)	<10 ppm	<10 ppm
Noise (rms) :		
Low Bandwidth:	1–100 mA: <1 µA 2–200 mA: <3 µA 3–300 mA: <5 µA	1–100 mA: <1 µA 2–200 mA: <3 µA 3–300 mA: <5 µA
High Bandwidth:	1–100 mA: <1 µA 2–200 mA: <4 µA 3–300 mA: <10 µA	1–100 mA: <20 µA 2–200 mA: <40 µA 3–300 mA: <60 µA

Performance Parameters: Constant Power Mode

	06 DLD 103A	06 DLD 105
Current Range:	0–10 mA	0–10 mA
Resolution:		
Photo-low:	1 µA	1 µA
Photo-high:	10 µA	10 µA
Temperature Coefficient:	<100 ppm/°C	<100 ppm/°C
Drift: (over 1 hour @25°C)	<100 ppm	<100 ppm
Analog Modulation:	dc–1 MHz	dc–1 MHz

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Modulation*

	06 DLD 103A	06 DLD 105
Internal Modulation:		
Type (Digital):	square wave	square wave
Period (User Selectable):	0.49 µs–16 ms (60 Hz–2 MHz)	0.73 µs–16 ms (60 Hz–1.3 MHz)
Pulse Width (User Selectable:	0.24 µs–16 ms	0.49 µs–16 ms
External Modulation:		
Analog Modulation:		
Frequency:	dc–1 MHz	dc–1 MHz
Input Impedance:	100 kΩ	100 kΩ
Digital Modulation:		
Rise/Fall Time:	100 ns	10 ns
Maximum I_{op}:	<100 mA	<100 mA
Input Impedance:	50 Ω	50 Ω
Overshoot:	10% maximum	10% maximum

*Modulation bandwidth, noise, and temperature coefficient are dependent upon the diode laser type used in power-stabilized mode. Values used are for Sharp Model LT026.

Other Parameters

	06 DLD 103A	06 DLD 105
Voltage Compliance:	0–10 Vdc	0–5 Vdc
Display Accuracy (full scale):	±0.1% (full scale)	±0.1% (full scale)
Current Limit Range:	5–500 mA	30–3000 mA
External Input:		
Range (full scale):	±1 to ±10 Vdc	±1 to ±10 Vdc
Resolution (full scale):	±0.1%	±0.1%

Monitor Output:	Operating current, monitor current, laser voltage, TEC current, and actual temperature

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General Information

Dimensions (W x H x D):	180 x 300 x 105 mm (7.1 x 11.8 x 4.1 in.)
Weight:	7.0 kg (15.5 lb)
Power Requirements:	100, 120, 220, or 240 Vac ± 10%, 50–60 Hz
Operating Temperature Range:	+5°C to +40°C
Storage Temperature Range:	–40°C to +70°C
Safety:	Complies with CDRH US21 CFR 1040.10 CE compliant

	PRODUCT NUMBER
500-mA Diode Laser Controller	06 DLD 103A
3-A Diode Laser Controller	06 DLD 105
Cable, 10-nsec rise time high-frequency	06 DLH 001
Cable, 100-kHz with flying leads	06 DLH 005
Cable, 56 DOL Laser Assemblies	56 DLH 001

Top Product Description

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Tables & Breadboards | Opto-Mechanical Hardware | Photonics Modules | Laser Beam Measurement
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