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LDI-800
SERIES

LASER DRIVE INC.



1.0 and 2.0 Amp. Laser Diode Drivers

Key Features

- Laser Diode Protection Circuits and Current Limit
- Set-up and Operate Modes
- TEC Controller/Driver (LDI-800)
- Current & Power Control Modes
- 100 kHz Bandwidth
- A/D Modulation Input
- Useful for Most CW Laser Diodes

The LDI-800 laser diode driver is a general purpose laboratory power supply and laser diode driver useful for any cw laser diode. Designed specifically for safe and fault-free operation of laser diodes, the LDI-800 includes transient suppression and diode protective circuits, a feedback amplifier, set-up mode with a dummy load, overcurrent limit, and full TE cooler control.

The driver provides 3.5 digit display of six key operating functions, and requires operator command for laser turn-on. Embedded microprocessor based logic prohibits illegal commands, while highly stabilized analog circuits provide final laser diode drive.

The thermoelectric cooler controller operates the TEC option on SDL-2350 Series laser diodes. It may also be used with Peltier elements up to 1.5 A and 3 V, and 10 kΩ thermistor.

The LDI-800M is a high current version of the model LDI-800 driver. It provides nearly 2 amps of diode operating current and includes many of the operating features of the LDI-800. It was designed to power laser diodes such as the 1.2 W SDL-2360 Series.

The 800M supplies transient-free and stable electrical power. It does not include TE cooling capability, a feature provided in the LDI-800. Devices requiring temperature stabilization may be thermally controlled with a separate TE cooler driver and temperature sensor, or by either the LDI-800 or LDI-820.

These drivers meet the requirements of 21 CFR 1040.10 laser safety regulations.

LDI-800
SERIES

Specifications

	LDI-800	LDI-800M	Notes
Current Control Mode			
Display Mode	Average Current	Average Current	
Range	0 to 1000 mA	0 to 1999 mA	
Resolution (Accuracy)	1 mA (± 5 mA + 0.5% of reading)	1 mA (± 5 mA + 2% of reading)	
Bias Level Range	10 to 1000 mA	10 to 1985 mA	
Analog Input Range[1]	0 to 1000 mA	0 to >2000 mA	
Scale Factor (Accuracy)	1 mA/mV (± 10 mA + 3% of reading)	1 mA/mV (±10 mA + 3% of reading)	
Bandwidth (Typical)	100 kHz	50 kHz	
Stability, Short Term (Typical)	100 PPM + 1µA/°C or 5 µA p-p	100 PPM + 1µA/°C or 5 µA p-p	
Noise	0.2 mA p-p	0.2 mA p-p	
Optical Power Control Mode			
Display Mode	Average Power	Average Power	
Range	0 to 200 mW	0 to >500 mW	
Resolution (Accuracy)	1 mW (± 1 mW + 5% of reading)	1 mW (± 1 mW + 5% of reading)	
Display Mode	Peak Power	Peak Power	
Range	0 to 200 mW	0 to >500 mW	
Resolution (Accuracy)	1 mW (± 4 mW + 5% of reading)	1 mW (± 4 mW + 5% of reading)	
Detector Calibration Range	2 to 20 µA/mW	2 to 20 µA/mW	
Bias Level Range	2 to 200 mW	2 to > 500 mW	
Analog Input Range	0 to 200 mW	0 to 500 mW	
Scale Factor (Accuracy)	0.2 mW/mV (±2 mW + 3% of reading)	0.25 mW/mV (±2 mW + 3% of reading)	
Bandwidth (Typical)	100 kHz	50 kHz	
Stability	100 PPM + 1 µW/°C	100 PPM + 1 µW/°C	
Current Limit			
Display Mode	Current Limit	Current Limit	
Range	25 to 1000 mA	< 50 mA to at least 1995	
Resolution (Accuracy[2])	1 mA (± 5 mA + 0.5% of reading)	1 mA (± 5 mA + 2% of reading)	
Temperature Control[3]			
Display Mode	Actual or Setpoint	Not Available	
Range	-20 to 40 °C		
Resolution	0.1 °C		
Accuracy[4]	± 1 °C from -10 to 30 °C ± 2 °C from -20 to 40 °C		
Setpoint Temp. Adjust. Range	-10 °C to 30 °C		
Thermoelectric Cooler Current	0 to 1.5 A continuous		
Ext. TEC Drive (rear panel)			
Range	0 to 3 V		
Scale Factor (Accuracy)	1 V/V (± 10 mV)		
Monitor Outputs			
Output Impedance	1 kΩ	1 kΩ	
Current			
Scale Factor (Accuracy)	1 mV/mA (± 1 mA)	1 mV/mA (± 1 mA)	
Power			
Scale Factor (Accuracy)	1 mV/mW (± 1 mW)	1 mV/mW (± 1 mW)	
Remote Interlock			
Open Circuit Voltage	5 V ± 10%	5 V ± 10%	
Short Circuit Current	< 1 mA	< 1 mA	
Open Interlock	Turns Laser OFF	Turns Laser OFF	
General			
Operating Temperature	10 to 40 °C	10 to 40 °C	
Storage Temperature	-40 to 75 °C	-40 to 75 °C	
Power	100, 120, 220, 240 VAC + 5%, -10% 48 to 66 Hz 45 W maximum @ 120 VAC 50 VA maximum @ 120 VAC	100, 120, 220, 240 VAC + 5%, -10% 48 to 66 Hz 45 W maximum @ 120 VAC 50 VA maximum @ 120 VAC	
Size (H x W x D)	6" x 13" x 12" (150 mm x 330 mm x 300 mm)	6" x 13" x 12" (150 mm x 330 mm x 300 mm)	
Weight	8 lb. (4 kg)	8 lb. (4 kg)	

1. The sum of bias and analog currents will limit at the current limit setting

2. Total error between displayed current limit and displayed average current in current limit mode may be as high as the sum of the accuracies for these two values.

3. Temperature control is unipolar for cooling

4. The thermistor presently used has a ±5% tolerance at 25°C, ±8% at -10°C, and ±6% at 30°C. Corresponding temperature errors are ±1.2, ±1.5, and ± 1.5 °C.

5. Both drivers are designed to apply a negative bias to the laser diode Cathode Lead while the Anode Lead is at ground.

LDI-800
S E R I E S

Driver Enclosure

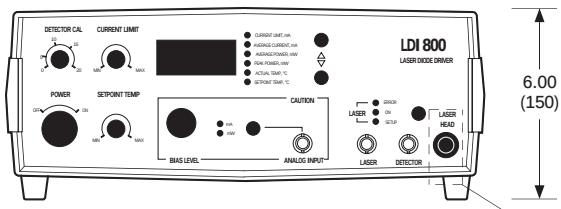
Dimensions in inches (mm) except where indicated

Standard Tolerances

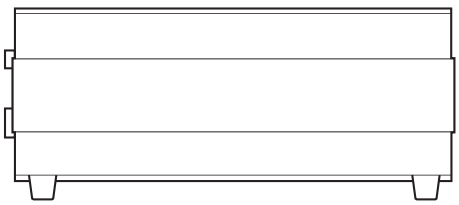
inches: x.xx = ±0.02 mm: x.x = ±0.5

x.xxx = ±0.010 x.xx = ±0.25

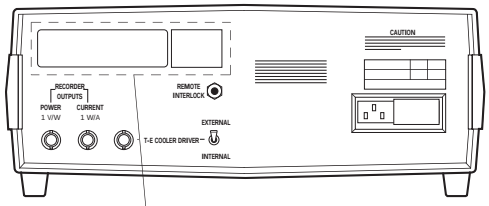
FRONT



SIDE



REAR





OUTPUT CABLE SUPPLIED WITH
LDI-800 DRIVER
[5 FT. (1.5 M) CABLE LENGTH]

WIRE FUNCTION

BLK	- THERMISTOR (1)
BRN	- THERMISTOR (2)
RED	- LASER (ANODE)
ORN	- LASER (CATHODE)
YEL	- TEC (+)
GRN	- TEC (-)
BLU	- MPD (ANODE)
VIO	- MPD (CATHODE)

21 CFR 1040.10 SAFETY LABELS

Laser Drive, Inc.

Gibsonia, Pennsylvania 15044 U.S.A.

MODEL: **S/N:**

MANUFACTURED:

This laser product complies with 21 CFR 1040 as applicable

SERIAL NUMBER LABEL



DANGER LABEL

Safety and Operating Considerations

Laser light emitted from laser diodes is visible or invisible and may be harmful to the human eye. Avoid looking directly into the laser diode, into the beam along its optical axis, or directly into the fiber when the device is in operation.

Operating the laser diode outside of its maximum ratings may cause diode failure or a safety hazard. Power supplies used with the laser diode must be employed such that the maximum peak optical power cannot be exceeded. Laser diodes may be damaged by excessive drive current or switching transients.

A proper heatsink for the laser diode on a finned thermal radiator will greatly enhance laser life. Firmly mount the laser on a finned radiator, having a thermal impedance of less than 5°C/Watt for increased reliability.

The LDI-800 Series drivers are designed to prevent transients. To prevent excessive drive current and possible safety hazard, the current limit control must be properly set for each individual laser diode.

CAUTION – USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.



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