

**LDI-830**  
S E R I E S



**LASER  
DRIVE  
INC.**



## 50 Amp CW and QCW laser diode driver.

### Key Features

**50 Amp DC Current**

**Laser Diode Protection  
Circuits/Current Limit**

**Internal Pulse Generator**

**Current Control Mode**

**Analog Modulation Input**

**External Pulse Trigger and Manual  
Trigger**

The LDI-830 is a high current general purpose laboratory laser diode driver. CW or quasi-cw laser diodes or similar devices requiring up to 50 A drive current at up to 6 V may be safely operated and controlled with the LDI-830. Current control mode, transient suppression, diode protection circuits and overcurrent limit are provided.

Adjustable current limit protects the laser diode from accidental overdrive. Individual controls for each electronic function and backlit meter provide ease of use, while turn-on delay and error indicators enhance operator efficiency. Error indicators are provided for current limit, overload, open and short circuit and remote interlock.

An internal pulse generator allows operation of quasi-cw devices or digital modulation of cw laser diodes. External triggering, as well as external analog modulation inputs are provided. Pulse width capability extends from 0.2 to 1000 ms, repetition rate is variable from 5 to 500 Hz. The Replica feature allows one LDI-830 to control the pulse timing of other LDI-830 units connected to the master unit and allows the use of complex digital waveforms.

This driver meets the requirements of 21 CFR 1040.10 laser safety regulations.

### Amplitude

Range	0 to 50 A
Display Resolution	0.1 A
Accuracy	0.2 A + 2% of reading. When the laser is off, the displayed value is the amplitude setpoint (or current limit); when the laser is on, the displayed value is the actual current. The specification only applies to the actual current.
Noise	Typically less than 50 mA p-p

### Current Limit

Range	0 to 50 A
Display Resolution	0.1 A

### Pulse Width

	(Two ranges are provided)
Range 1	10 to 1000 msec
Display Resolution	1 msec
Accuracy	2 msec + 2% of reading. Pulse widths greater than 200 msec are intended for use only with external and single trigger modes.

Range 2	0.15 to 15 msec
Display Resolution	0.01 msec
Accuracy	0.02 msec + 2 % of reading.
Pulse Rise Time (both ranges)	10 µsec (typical)

### Pulse Rate

Range	5 to 500 Hz
Display Resolution	1 Hz
Accuracy	2 Hz + 2 % of reading

### Trigger In

Type	Positive edge trigger
Signal Input	Accepts TTL or 5 V CMOS, 50 µs minimum width
Input Impedance	10 k ohms nominal.
Modes	DC DRIVE (used for cw), INTERNAL (rate and width internal), EXTERNAL (rate external, width internal) and REPLICA (rate and width external)

### Manual Trigger

Type	Front panel push button and rear panel switch input are active in EXTERNAL (width internal) and REPLICA (pulse lasts as long as manual trigger, 50 msec minimum).
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### Trigger Out

Type	Digital form of the drive pulse (high if DC DRIVE)
Output Impedance	100 ohms nominal, one LSTTL or 5 V CMOS load.

### Analog Modulation

Bandwidth	DC to 5 kHz
Scale Factor	10 A/V, 50 A at 5 V

### Compliance

Range	0 to 6 V
Display Resolution	0.1 V
Accuracy	0.1 V + 1% of reading.

### Current Monitor

Type	10 A/V, 5 V at 50 A. Typically within 1% of the displayed actual current.
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### Remote Interlock

Open Circuit Voltage	5 VDC nominal, referenced to safety ground
Short Circuit Current	1 mA nominal
Type	Switch contact closure or TTL or 5 V CMOS compatible.

### General

Operating temperature	10 to 40 °C, noncondensing
Storage temperature	-40 to 75 °C
Power	90-130, 180-250 VAC, 48-66 Hz 750 W maximum @ 120 VAC 1000 VA maximum @ 120 VAC
Size (H x W x D)	6" x 17" x 17" (155 mm x 435 mm x 435 mm)
Weight	22 lbs. (10 kg)

# LDI-830

S E R I E S

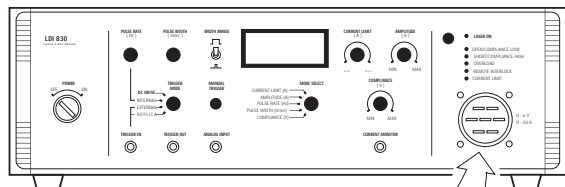
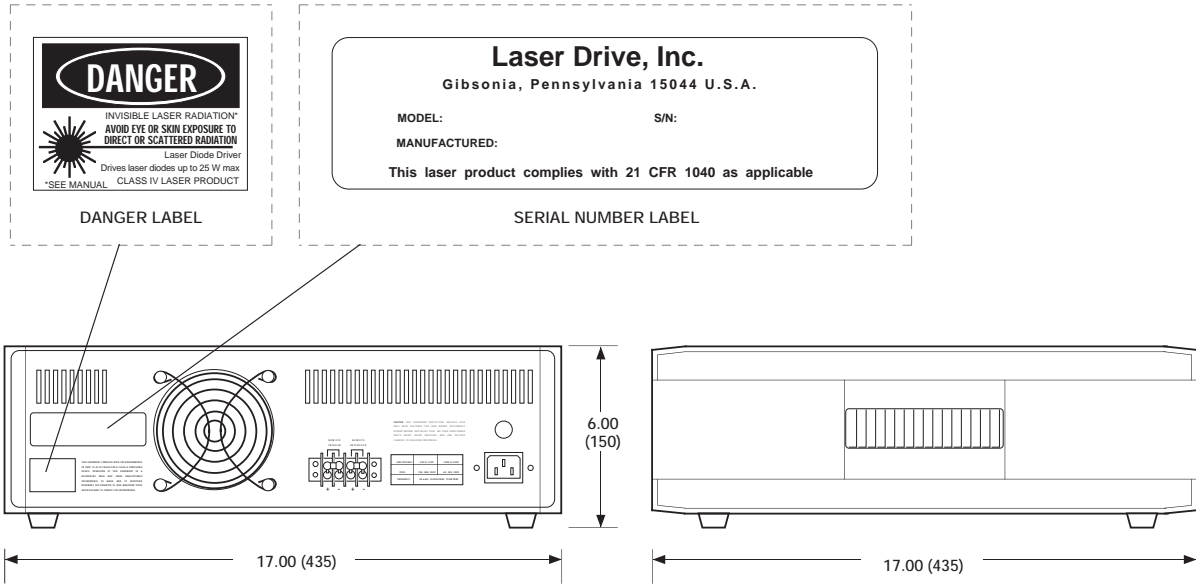
## Driver Enclosure

Dimensions in inches (mm) except where indicated

### Standard Tolerances

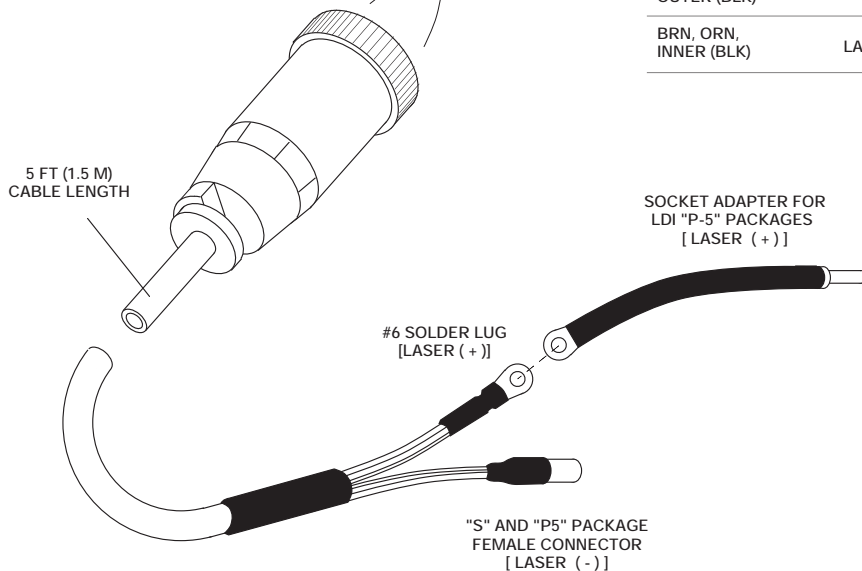
inches: x.xx = ±0.02  
x.xxx = ±0.010

mm: x.x = ±0.5  
x.xx = ±0.25



### Output Cable Supplied with LDI-830 Driver

WIRE COLOR	WIRE FUNCTION	WIRE GAUGE
BLK, RED, OUTER (BLK)	LASER (+)	2 x 12 SHIELD
BRN, ORN, INNER (BLK)	LASER (-)	2 x 12 COAX



## 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/W for increased reliability.

The LDI-830 driver is 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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