

# LDY Series CW/QCW Laser Diode Drivers



The LDY series is a new family of OEM laser diode drivers with all the performance of Lumina's flagship LDD line of laser diode drivers, as well as additional functions including pulsing capability, over-temperature sensing and crowbar shorting of the output.

The LDY series is ideal for high power applications where economy is important and performance cannot be compromised. Compact size is possible due to the low-loss Zero Voltage Switching inverter and incorporation of planar magnetics. The LDY is virtually wire free.

Power factor is greater than 0.99 and conducted emissions meet stringent European regulations. No additional line filter is required to meet EN 55011 emission requirements.

The LDY family has been designed with the knowledge that a high power laser diode is an expensive device. Rise and fall times are strictly controlled to reduce high voltage transients which could damage the laser diode.



## ADVANTAGES

- 400 $\mu$ s. rise/fall times available
- Safe turn-on/turn-off
- Compact design
- Power factor correction
- Auxiliary +15V/-15V/+5V
- Low conducted emissions, low leakage
- ROHS Compliant

## CONFIGURATIONS:

- Output current up to 150A
- Maximum output voltage to 100V
- Analog interface
- Universal input for all world voltages
- CE and safety agency approved

# LDY Series CW/QCW Laser Diode Drivers

Model	Pout <sub>max</sub>	Iout <sub>max</sub>	Input Voltage	Size (L x W x H)
LDY-600-XX-YY	600 Watts	100 amps	100 to 240VAC ± 10%	9.9" x 7.3" x 2.6" 25.1 x 18.5 x 6.6 cm
LDY-1000-XX-YY	1000 Watts			
LDY-1500-XX-YY	1500 Watts			
LDY-2500-XX-YY	2500 Watts	150 amps	200 to 240VAC ± 10%	13.0" x 8.5" x 3.43" 32.9 x 21.6 x 8.7cm

Note: XX = maximum required output current, YY= maximum required compliance voltage

## Specifications

### INPUT

Voltage: See table above  
 Frequency: 47 to 63 Hz  
 Power Factor: >.98

### INTERFACE

Connector: 15 Pin "D" Sub Female  
 Current Program: 0-10V for 0-Max Current  
 Current Monitor: 0-10V for 0-Max Current  
 Voltage Monitor: 0-10V for 0-Max Voltage

### PERFORMANCE

Rise/Fall Time: ~1msec. (see Page 4)  
 Current Regulation: <0.5% of Maximum output current  
 Current Ripple: <0.5% of maximum output current  
 Current Overshoot: <1% of maximum output current  
 Power Limit: Limited to maximum power with power fold-back circuit

### ENVIRONMENT

Operating Temp: 0 to 40°C  
 Storage: -20 to 85°C  
 Humidity: 0 to 90% non-condensing  
 Cooling: Forced air

### REGULATORY

Safety: LDY-600/1000/1500: UL60950 (Industrial), UL60601-1 (medical) Emissions/Immunity: FCC 47 CFR Class A Emissions, EN55011:1998 Group 1 Class A Emissions, EN61000-3-2, EN61000-3-3, EN60601-1-2:2001

### AUXILIARY OUTPUTS

+5V @ 200mA  
 +15V @ 200mA  
 -15V @ 200mA

Note: The LDY series has the capability to be configured for output voltages to 200 volts. Consult Customer service for details.



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## LDY-INTERFACE CONNECTOR TYPE: 15 PIN D-SUB FEMALE

Pin #	Pin Name	Functional Voltage Level	Description
1	Enable (input) (Note: 1)	High = RUN = +5V to +15V Low = OFF = 0V	The Enable function turns the output section of the power supply ON and OFF. When the power supply is enabled, current is delivered to load as programmed via Iprogram(+), Pin 7. Rise times resulting from Enable are approximately 25msec.
2	Crowbar Status (output)  (LDY-600/1000/1500 Only)	High = Crowbar ON = 0V Low = Crowbar OFF = +5V  (More information on page 4)	The Crowbar Status reports the status of the shorting crowbar clamp across the output. The crowbar will short the output when the output is not ENABLED via Pin 1, or if the output is ENABLED via pin 1 but the control circuitry has detected a no- load condition or a voltage requirement on the output that exceeds the maximum voltage rating of the unit.
3	Interlock (Input)	Open = OFF Connect to GND = RUN	The Interlock function can be connected to external interlock switches such as door or overtemp switches.
4,9, 15	GND		Interface Return
5	Vout Monitor (output)	0-10V = 0-Voutmax (note:2)	The output voltage of the supply can be monitored by Vout Monitor. See note below
6	Iout Monitor (output)	0-10V = 0-Ioutmax	The output current of the supply can be monitored by Iout Monitor.
7	Iprogram (input)	0-10V = 0-Ioutmax	The power supply output current is set by applying a 0-10V analog signal to Iprogram(+).
8	Pulse Control (input)	TTL High = On TTL Low = Off Default = Off	The output of the LDY power supply may be pulsed by applying a TTL signal to Pulse Control, pin 8. The amplitude of the output current pulse is determined by the current level programmed via Pin 7, Iprogram(+). Rise fall times of 400µsec. are possible. (see "Pulsed Operation" Page 4)
10	+5V (output)		Auxiliary 200mA
11	Over-temp Warning	TTL High = High Temp TTL Low = Temp OK	When temperature of main heat sink exceeds 65 Deg C, Pin 11, the Over-Temp Warning, will go to a TTL High to indicate unit is in danger of shutting down due to over-temperature condition. When temperature of main heat sink exceeds 75 Deg C, unit will shut down.
12	-15V (output)		Auxiliary 200mA
13,14	+15V (output)		Auxiliary 200mA

1. Upon application of AC input voltage output current will be 0 regardless of Pin 1 setting. Enable (or toggle) pin 1 to output current.
2. Pin 5 If maximum compliance voltage is less than 10V, Vout Monitor will read output voltage directly. If maximum compliance voltage is greater than 10V, then Vout Monitor will be scaled such that 0-10V = 0-Voutmax. Applying a program voltage to pin 7 greater than 10.5 volts will latch power supply. Output current will not exceed 105% of rating.

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## Pulsed Operation:

The LDY series power supplies can be pulsed using the Pulse Pin # 8 (see the interface descriptions on page 3). The standard rise time of ~1ms can be shortened to 400us depending upon the maximum compliance voltage selected. When ordering please specify the "FR" option in the part number.  
Example: LDY-1000-XX-YY-FR.

The graph (figure 1) shows typical rise times for compliance voltages from 2 volts to 60 volts.

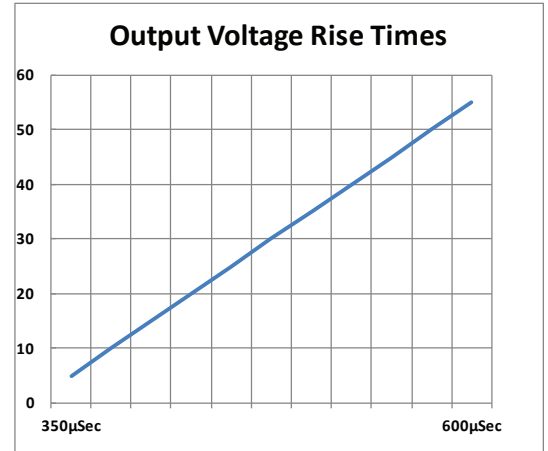


figure 1

## Adjustable Output Current:

The LDY-600/1000/1500 power supplies include an internal DIP switch array which may be set to limit the maximum current. This is useful when an OEM customer would like to use a single model for a variety of systems, but has a laser diode system which does not require the maximum output current. In this type of situation, it is important to protect the laser diode from an over-program error which could damage the laser diode. The selection chart below shows the various DIP switch setting to reduce the output current from I out max.

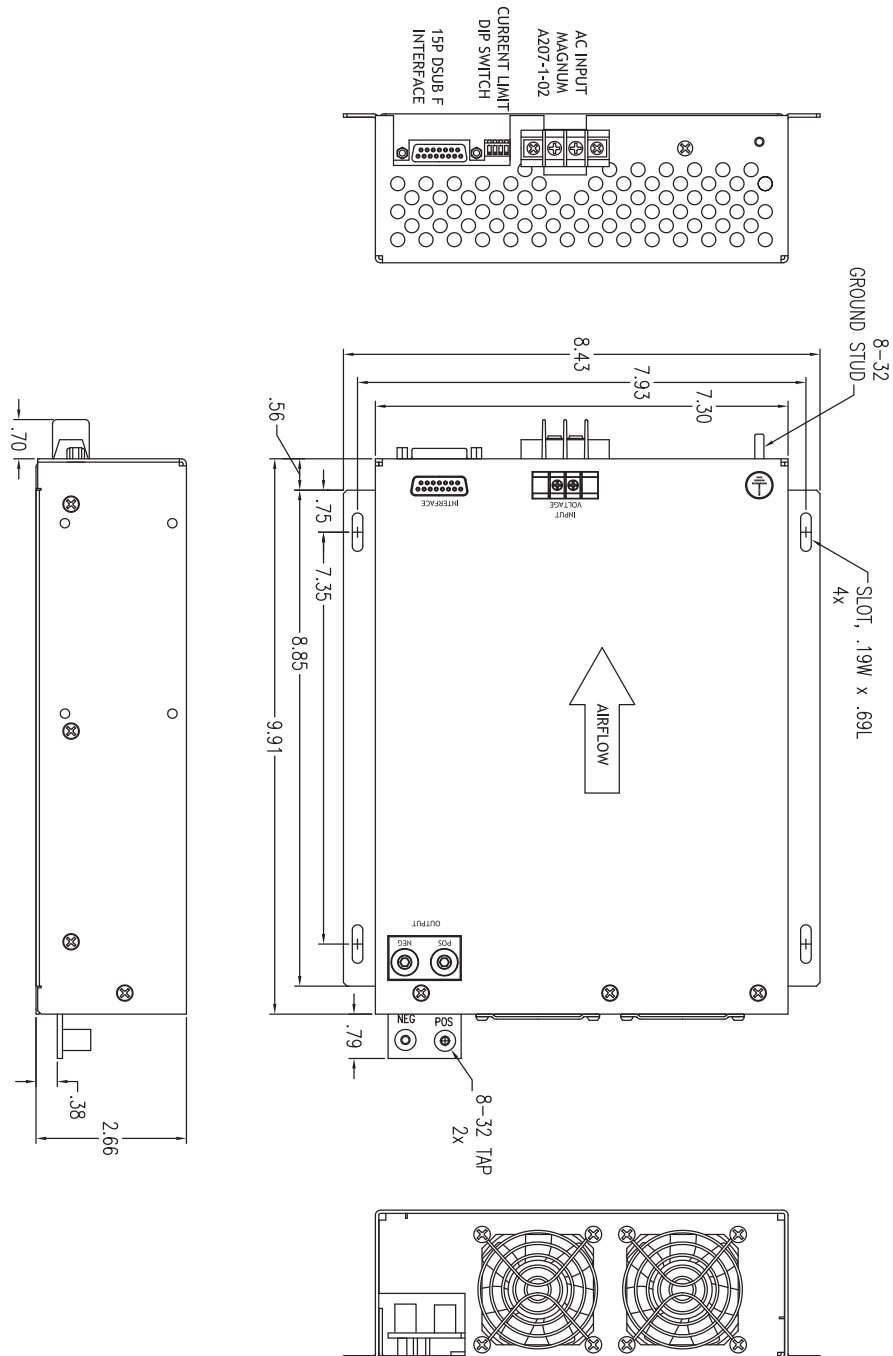
The LDY-2500 uses pin 2 as the current limit. The default if left unconnected is 105% of maximum rated output current. Applying 0 to 10 volts adjusts the maximum output current from 0 to 105%

Note: When using the dip switches on the LDY-600/1000/1500 or pin 2 on the LDY-2500 to reduce the output current, the scaling factor of the program pin (7) does not change. Example: If you reduce the maximum output current of an LDY-1000-100-10 to 74% or 74 amps voltages above 7.4volts applied to pin 7 will not change the output current.

S1	S2	S3	S4	I <sub>max</sub> Out
OFF	OFF	OFF	OFF	110%
OFF	OFF	OFF	ON	103%
OFF	OFF	ON	OFF	98%
OFF	OFF	ON	ON	92%
OFF	ON	OFF	OFF	88%
OFF	ON	OFF	ON	84%
OFF	ON	ON	OFF	80%
OFF	ON	ON	ON	77%
ON	OFF	OFF	OFF	74%
ON	OFF	OFF	ON	70%
ON	OFF	ON	OFF	68%
ON	OFF	ON	ON	65%
ON	ON	OFF	OFF	63%
ON	ON	OFF	ON	60%
ON	ON	ON	OFF	58%
ON	ON	ON	ON	56%

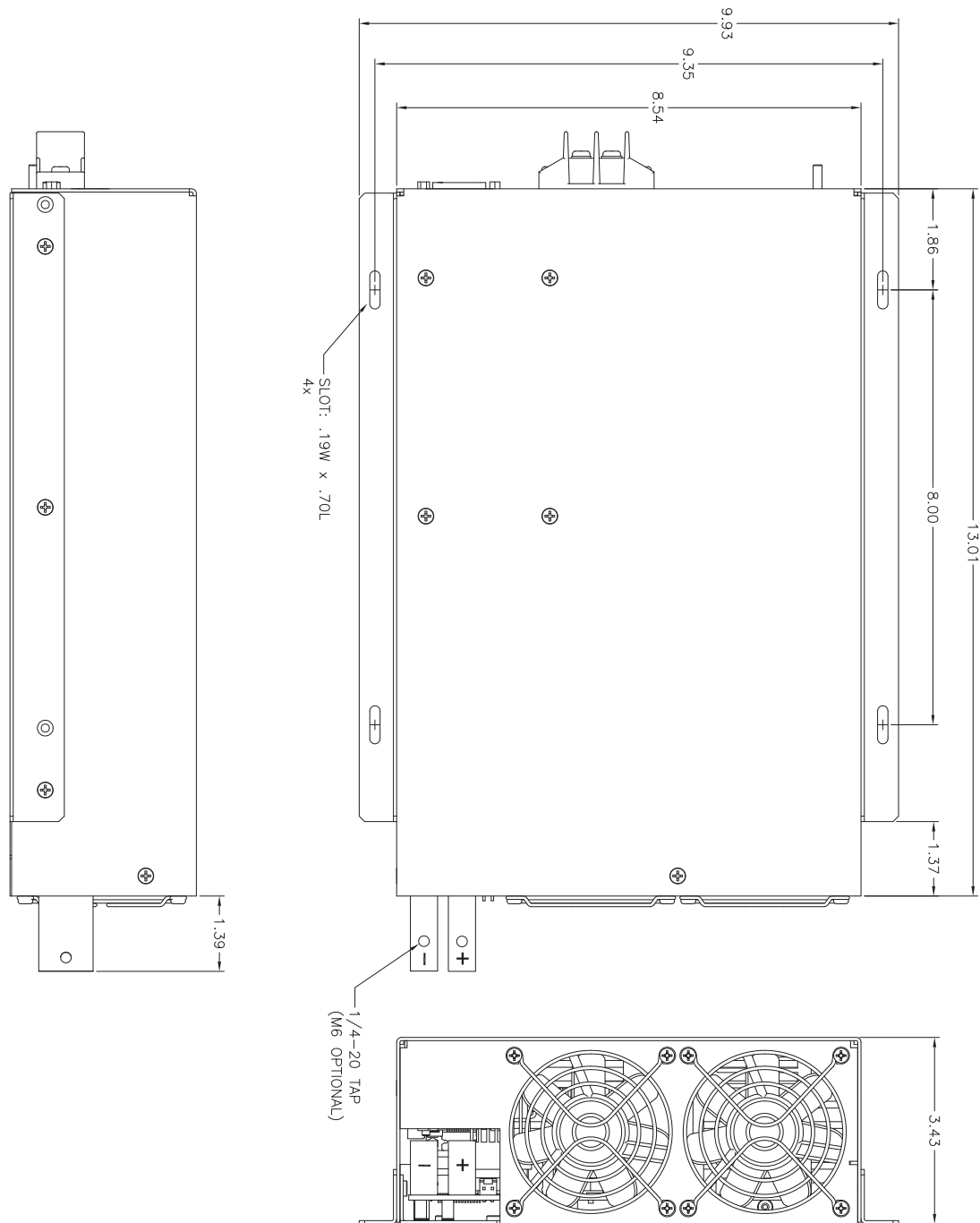
# LDY Series CWQCW Laser Diode Drivers

## LDY-600/1000/1500 Outline Drawing



# LDY Series CW/QCW Laser Diode Drivers

## LDY-2500 Outline Drawing



Lumina Power reserves the right to change the specifications of this product without notice or liability. Contact customer service for latest specifications.

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