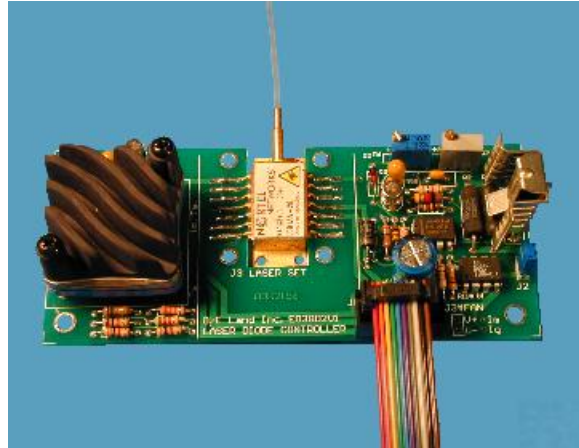


USER MANUAL

OELDC-500BF/OELDC-800BF Laser Diode Controller

Description

OELDC Laser Diode Controller combines ultra-stable temperature controller and accurate constant current driver. It is ideal to drive laser diode module (transmission laser diode, pump laser diode, etc.), semiconductor optical amplifier (SOA), super luminescent diode (SLD) and light emitting diode (LED). Two PI loops monitor and control both laser diode current and temperature. Double +/-5V power supply provides 20~500mA / 50~800mA laser diode current and 1.2A / 2.0A thermoelectric cooler (TEC) control current. With on-board Butterfly solder pads, mounting Butterfly packaged module is easy and reliable. Adjustable current limitation and slow-start can protect the module.



Features

- On-board Butterfly Solder Pads for Butterfly Packaged Module.
- Up to 500mA (OELDC-500BF) or 800mA (OELDC-800BF) Laser Diode Current Drive Capacity.
- 0.03% Driving Current Accuracy.
- Adjustable Laser Current Limitation.
- Slow Start Circuitry.
- Laser Diode Enable Switch and LED Indicator.
- High TEC Drive Capacity: 1.2A (OELDC-500BF) or 2.0A (OELDC-800BF).
- 0.005°C Temperature Stability.
- Temperature Stabilization Point: +25°C/10Kohms (Others on Request)
- Temperature Control Always-On Function.
- +/-5V Double Power Supply.

OELDC-500BF Parameters

	Min.	Typ.	Max.
Laser Diode Output Current	500mA (max), 20mA (min)		
Output Current Accuracy @500mA	0.01%	0.03%	0.05%
Output Current Stability @250mA, 24hrs	0.1% or 0.3mA		
TEC Output Current	1.2A (max)		
Temperature Stability @25°C, 1hr	0.002°C	0.005°C	0.01°C
Temperature Stability @25°C, 24hrs	0.003°C	0.008°C	0.03°C
External temperature sensor	10K@25°C Thermistor (others on request)		
Slow-Start Delay Time	1.8s	2.0s	2.5s
Laser Diode Working Mode	Continuous Constant Current Driving		
Power Supply	+5V/2.0A, -5V/1.0A		
Operation Temperature	0 to 35°C		
Storage Temperature	-20 to 70°C		
Size	115mm×50mm×30mm (W×L×D)		

OELDC-800BF Parameters

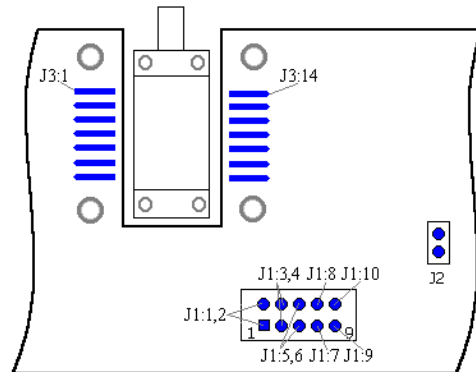
	Min.	Typ.	Max.
Laser Diode Output Current	800mA (max), 50mA (min)		
Output Current Accuracy @500mA	0.01%	0.03%	0.05%
Output Current Stability @250mA, 24hrs	0.12% or 0.5mA		
TEC Output Current	2.0A (max)		
Temperature Stability @25°C, 1hr	0.002°C	0.005°C	0.02°C
Temperature Stability @25°C, 24hrs	0.005°C	0.01°C	0.05°C
External temperature sensor	10K@25°C Thermistor (others on request)		
Slow-Start Delay Time	1.8s	2.0s	2.5s
Laser Diode Working Mode	Continuous Constant Current Driving		
Power Supply	+5V/3.0A, -5V/1.0A		
Operation Temperature	0 to 35°C		
Storage Temperature	-20 to 70°C		
Size	115mm×50mm×40mm (W×L×D)		

Electrical Connection

PIN No.	FUNCTION
J1:1	Power +5V
J1:2	Power +5V
J1:3	Power Ground
J1:4	Power Ground
J1:5	Power -5V
J1:6	Power -5V
J1:7	Laser Enable Switch
J1:8	Laser Enable Switch
J1:9	Laser Working LED Anode (+)
J1:10	Laser Working LED Cathode (-)

J2: Jumper for Laser Diode Current Measurement.

PIN No.	FUNCTION
J3:1	Cooler Anode (+)
J3:2	Thermistor 1
J3:3	N/A
J3:4	N/A
J3:5	Thermistor 2 (connected to GND)
J3:6	N/A
J3:7	N/A
J3:8	N/A
J3:9	N/A
J3:10	Laser Diode Anode (+) (connected to GND)
J3:11	Laser Diode Cathode (-)
J3:12	N/A
J3:13	Case (connected to GND)
J3:14	Cooler Cathode (-)

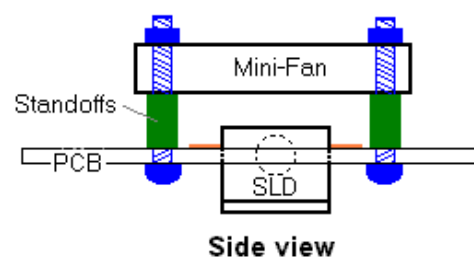
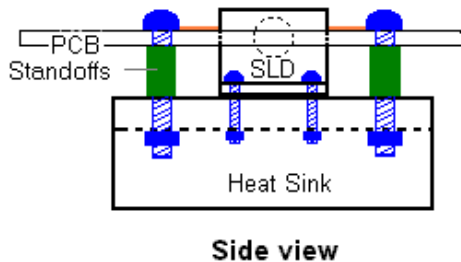
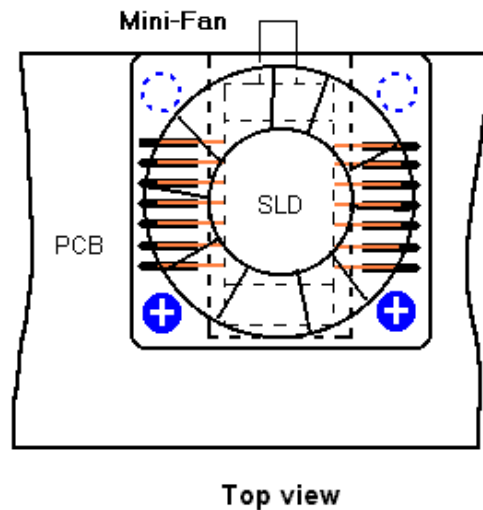
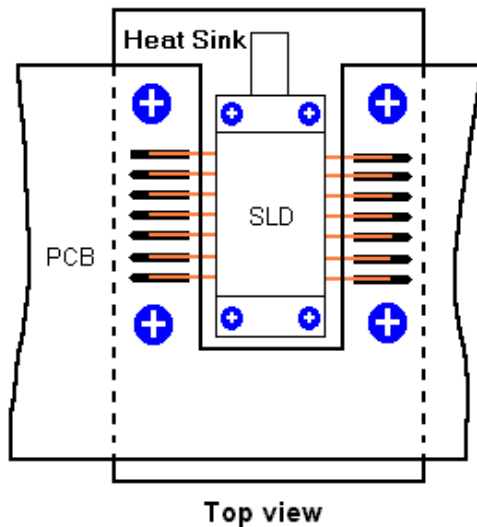


Top view of connectors layout

Note: Must check the laser diode module electrical pin description before installation.

Heat Sink Requirement

If laser diode driving current is larger than 200mA, a heat sink or a mini-fan is required to cool the laser diode module. The installation methods are shown as below.



Operational Steps

1. Solder Laser Diode Module in J3. Mount the heat sink if necessary.
2. Connect DC power supply, a switch, and a LED to J1. Using the same power wires in parallel.
3. **Move** the Jumper from J2, connect a current-meter across two pins of J2.
4. Adjust potentiometer R7 (ADJUST) clockwise to minimize the laser driving current. (Toward the "-" direction on the board).
5. Turn on power supply, then turn on the Laser Diode Enable Switch.
6. Adjust potentiometer R7, measure the laser driving current by current-meter.
7. Adjust current limitation potentiometer R6 (LIMIT) until the laser current begins to decrease.
8. Turn R6 one circle toward "+" direction to let LIMIT disable in regular use.
9. Turn off Laser Diode Enable Switch, then turn off power supply,
10. **Insert** the jumper to J2.

Note: If the maximum laser diode driving current cannot be achieved, user can increase the minus power supply voltage. For example, from -5V to -6V.

PCB Mechanical Specifications

