LASER DIODE CONTROL ELECTRONICS MODULE – SF6040

LASER DIODE DRIVER MODULE

- Up to 10 Amp Output Current
- Up to 40 V Compliance Voltage
- Soft-Start Current Ramp, Current Limit, Reverse Voltage Protection
- NTC Thermistor Input for Laser Over-Temperature Fast Shut-Down
- GUI Control Software Included

ALL-ENCOMPASSING PROTECTION FOR YOUR LASER DIODE

On-Board Component Level Protection Against Input Power Surges and Reverse Voltage Transients:
An integrated on-board zener diode in parallel with the bias current path protects the laser diode from damage which can occur from reverse voltage transients. These transients can occur when a standard DC power supply source is momentarily interrupted due to a black-out or brown-out power outage.

Additional External Over-Temperature Monitor/ Shut-Down Input:
Primarily designed for integration of the module into a laser system, an additional thermistor input is provided to allow the user to monitor the temperature from an external measurement point. This can then be used to shut off the laser diode if the temperature limits for the laser are exceeded.

Soft-Start Current Ramp:
There is an internal 500 millisecond soft-start ramp to the current set-point. This reduces the potential for thermal shock to the laser at power ON and is used to ensure good electrical contact prior to fully applying the current bias the laser diode.

Controller Over-Temperature Protection:
The controller module includes an on-board sensor to prevent over-temperature operation of the controller. The controller issues a warning if the temperature exceeds 60ºC, and shuts down the laser driver if the temperature exceeds 80ºC. Operation resumes when the temperature falls below 58ºC.

Advanced Performance Laser Diode Control Module

These precision driver modules offer up to 10 amps of bias current and up to 40 volts to your laser diode. These small footprint drivers were designed to power the latest generation of high power multi-single emitter pumps in the near infrared range. They are used in laser systems to bias lasers in series and pumps that are based on multiple single emitter designs. These model SF6040 drivers are designed for demanding system integration applications which require the highest levels of reliability. They also offer a very affordable choice for laboratory research applications. The SF6040 model has been updated with an integrated NTC thermistor monitor circuit to provide fast shut-down of the output current to the laser if a maximum temperature limit is reached. They also offer an improved 0.01 amp set-point resolution for precise control of the output current.

Review of SF6xxx Series Laser Diode Protection Features

The SF6xxx Series drivers provide protection features which are simple to set-up and more than adequate to protect your LD. They include an over current protection circuit with a user adjustable limit, a soft-start current ramp, and an over-temperature shutdown. Additional features to protect your high power laser diode include reverse current protection and crowbar circuit protection. The crowbar circuit is a fast shorting clamp which is activated in over-current, open circuit and over-temperature events.

Sourcing Current to your Laser and the Crowbar Clamp Protection

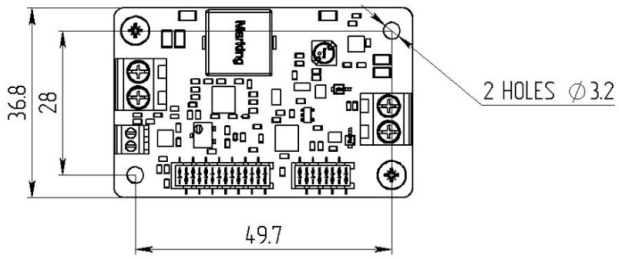
The modules are initially enabled by applying an active high 3.3V ~ 5V DC compatible logic input signal. The driver sources current and begins to operate when the 5V input enable pin is high. To ensure that the current enable is applied without overshoot, a slow start sequence initiates when the enable pin is set high. The enable pin can also be used in the quasi-CW mode. The output current is set by applying an analog signal to the current set pin on the control connector. The current set pin can be used for analog modulation by applying sign wave, square wave or ramp signal. The output may be pulsed by applying a TTL square signal to enable pin. The minimum pulse duration 500 microseconds.

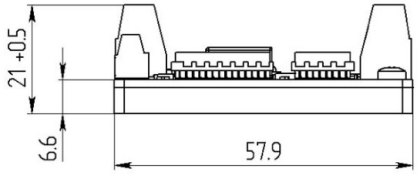
These high power drivers offer a highly reliable crowbar clamp to short the current and disable power to your laser diode. There is a pin on the control connector which shows the crowbar protection circuit status. The crowbar will short the output while the module is in an over-current shutdown or an over-temperature shutdown mode.

Driver Safety Interlock, Current Monitoring and Voltage Monitoring

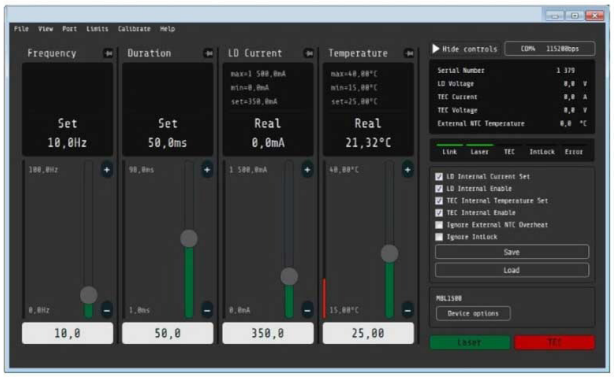
These SF6xxx units have an interlock pin which must be connected to the ground order for output current to be enabled. The safety interlock is used to shut-down the module with a logic high signal triggered by and external interlock trigger such as a door to the lab or an external over-temperature circuit. These modules also have an on-board temperature sensor which will shut-down the output when the temperature exceeds a pre-set temperature. The output voltage of the driver can be monitored by a linear scaled voltage monitor output, 0~1V. The voltage is measured between LD+ terminal and GND. The current can be monitored by a linear voltage output, 0~1V = 0~3A also with +/-2%.

Dimensions



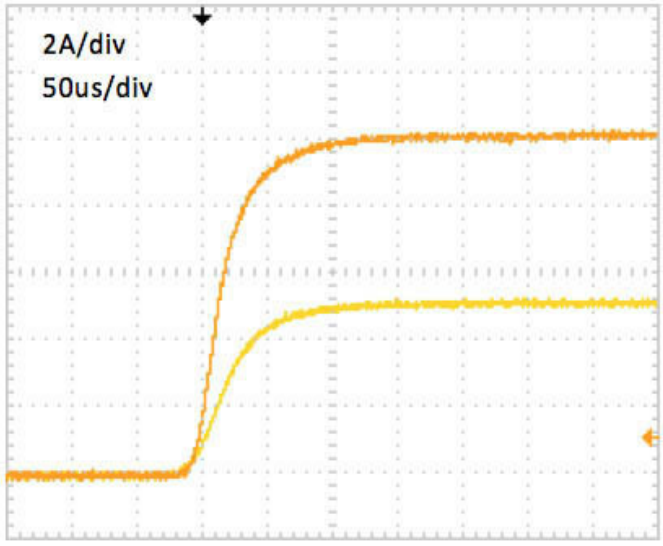


Product includes control software GUI for simple set-up and monitoring of your laser diode; alternately - you can use the trim pots on the board or the analog control connector



Software opens when you connect the USB adapter board; USB adapter board is included with shipment

Rise time



Recommended Switching Power Supply

Mean Well RSP-500-48 *

* Can be purchased with the Laser Diode Controller

SF6040 SPECIFICATIONS

LASER DIODE CURRENT & VOLTAGE

- Output Current Range (I): 0 ~ 10 Amps
- Output Voltage (V): 5 ~ 40 Volts
- Current Set-Point Step Size: 0.01 Amps
- Rise Time: (Iout = 5A) min - 60µs; max - 100µs
- Rise Time: (Iout = 10A) min - 60µs; max - 100µs
- Fall Time: min - 20µs; max - 80µs
- Current Stability: <0.2 %
- Current Setpoint Absolute Accuracy: <1 %

LASER DIODE PROTECTION

- Soft-Start Ramp to Current Setpoint
- User Adjustable Current Limit
- Over-Current Protection Fast Shutdown
- Over-Temperature Thermal Warning and Shutdown
- Reverse Current Protection
- Crowbar Circuit Protection
- Disable Input
- Interlock

DIMENSIONS AND WEIGHT

- Dimensions: 37 mm x 58 mm x 21 mm
- Weight: 50 g

USER INTERFACE

- Analog Control Signal Connector
- RS232/UART Digital Interface
- Enable / Disable Input Signal Input
- User Adjustable Trim Potentiometer Current Limit
- USB Optional: $25.00 (Option UART-USB)

INPUT

- Input Voltage Range (Vin): 12V to 55V
- Recommended Switching Power Supply: Mean Well RSP-500-48, available for purchase with this laser diode controller.

SHIPPING KIT (INCLUDED PARTS)

- Laser Diode Driver
- 50 cm ribbon cable with one 8-pin connector – 1 pcs
- 50 cm ribbon cable with one 14-pin connector – 1 pcs
- Datasheet & User Manual – 1 pcs

WARRANTY PERIOD

- 1-year manufacturer's warranty

PRODUCT WARRANTY:

This product is sold with a full one year warranty. The warranty includes all parts and labor. It is warrantied to be free from defects in material and workmanship for a period of one year from the date of shipment. The warranty does not include damage to the product due to customer mishandling or use of the product outside of its specified maximum ratings.

INSTALLATION SUPPORT OR TECHNICAL SUPPORT FOR THIS PRODUCT:
800-887-5065 extension 1
contact@laserdiodesource.com

LASER DIODE TECHNOLOGIES

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