LASER DIODE CONTROL ELECTRONICS MODULE – SF6090

LASER DIODE DRIVER MODULE

- Up to 100 Amp Output Current
- Up to 10 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

A Division of Laser Lab Source
LaserDiodeSource.com | LaserDiodeControl.com | LaserDiodeTechnologies.com

800-887-5065

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

The SF6090 is a precision high power, small form factor CW constant current source driver for laser diodes. In addition to multiple laser diode protection circuits, these modules deliver high stability at power levels up to 100 Amps with low ripple. They are offered on a thermally optimized aluminum base plate to assist with efficient heat dissipation. This driver module was designed to be easily mounted onto a thermally conductive surface with enough heat sink capability to dissipate the required waste heat. These 100 Amp, 10 Volt high performance OEM modules are an ideal choice for integration into high power laser systems used for materials processing and medical equipment applications.

Flexible Control Interfaces and Control Software with GUI Included

The model SF6060 offers the user multiple interface methods to set and measure the modules parameters. For simple, fast start-up, the module has trim potentiometers which the user can access on top of the control board. This manual mode of control is typically used to make sure the driver is functioning properly prior to connecting the laser. For complete control of all parameters, the user has the choice of using an analog control signal connector or a digital interface. The 8 pin RS23 / UART digital interface and the 14 pin analog control connector are both described in detail in the attached brochure.

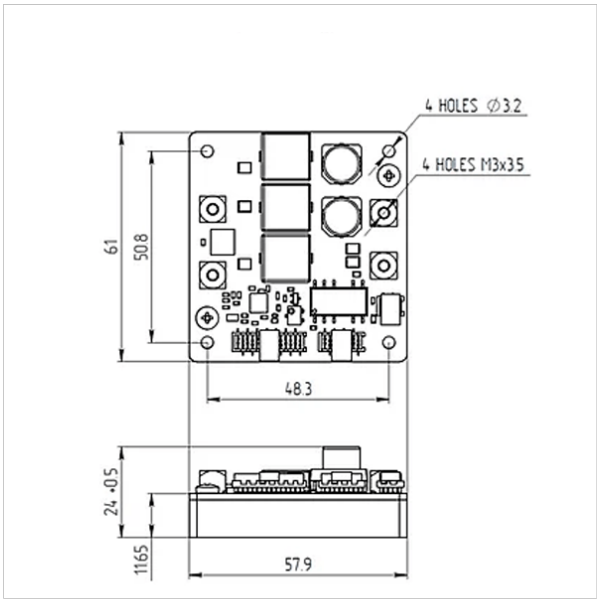
Sourcing Current to your Laser and the Crowbar Clamp Protection

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.

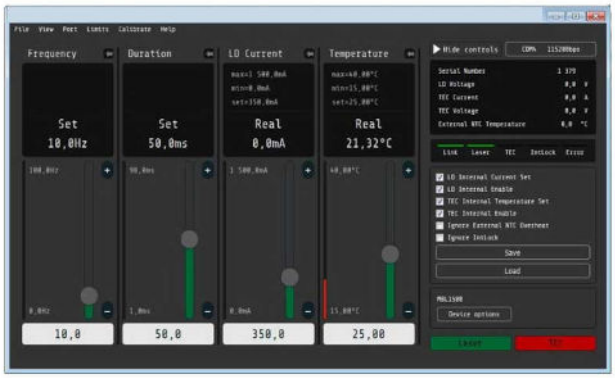
Driver Safety Interlock, Current Monitoring and Voltage Monitoring

These drivers provide many protection features for high compliance voltage devices and laser diodes connected in series. They offer a user-set current limit, an over-temperature protection circuit, protection against forward and reverse current transients and crowbar circuit protection. The crowbar circuit shorts the output during an over-current shutdown or over-temperature shutdown sequence. A reverse diode protects the laser diode from reverse current surges. These integrated protection features allow the SF6060 to safely drive non-linear loads such as laser diodes and LEDs. These current sources offer an analog voltage control input as well as RS232 digital interface.

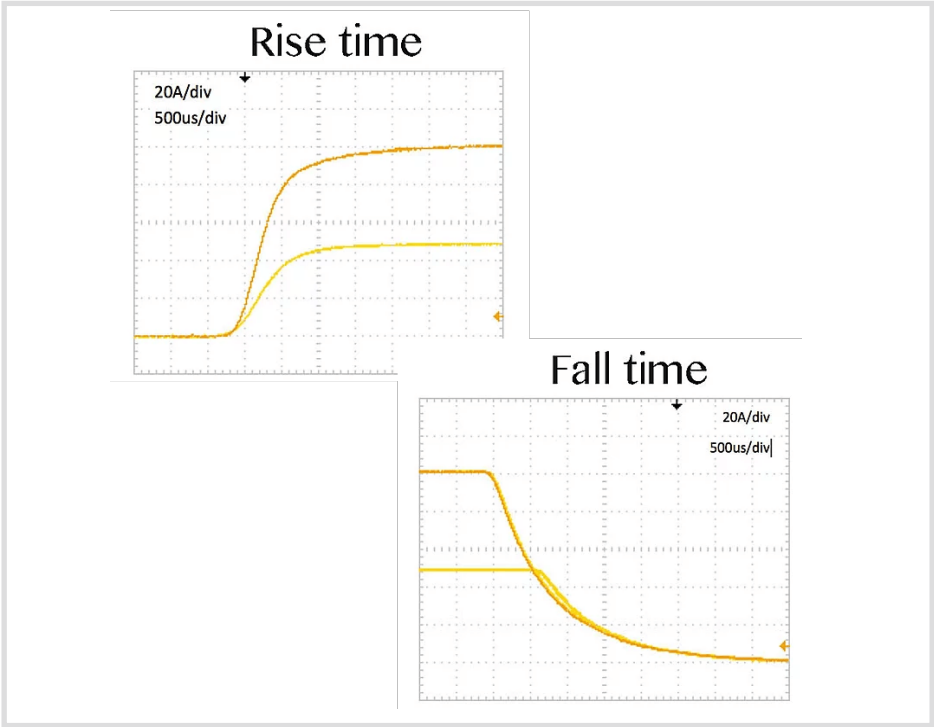
DIMENSIONS (mm)



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



Recommended Switching Power Supply
Mean Well RSP-1000-48 *

* Can be purchased with the Laser Diode Controller

SF6090 SPECIFICATIONS

LASER DIODE CURRENT & VOLTAGE

- CW Output Current Range (I): 0 ~ 100 Amps
- CW Output Voltage (0.75*Vin max) (V): 1 ~ 10 Volts
- Minimum Current Set-Point Step Size: 0.03 Amps
- Rise Time: (Iout = 100A) min - 150µs; max - 300µs
- Rise Time: (Iout = 50A) min - 120µs; max - 400µs
- Fall Time: min - 250µs; max - 500µs
- Current Stability: <0.2 %
- Current Setpoint Absolute Accuracy: <1 %

LASER DIODE PROTECTION

- Soft-Start Current Ramp to User Set-Point
- User Adjustable Current Limit
- Over-Current Protection Shutdown
- Over-Temperature Warning & Shut-Down
- Reverse Current Protection
- Crowbar Circuit Protection
- Disable Input
- Interlock

DIMENSIONS AND WEIGHT

- Dimensions: 61 mm x 57.9 mm x 24 mm
- Weight: 146 g

USER INTERFACE

- Analog Control Signal Connector
- RS-232 / UART Serial Digital Interface
- Enable / Disable Input Signal Input
- User Adjustable Trim Potentiometer Current Limit
- USB Optional: $25.00 (Option UART-USB)

DRIVER INPUT

- Input Voltage Range (Vin): 10 VDC ~ 14 VDC
- Recommended Switching Power Supply: Mean Well RSP-1000-12, available for purchase with this laser diode controller.

PACKAGE SET

- Driver – 1 pcs
- 50 cm ribbon cable with one 8-pin connector – 1 pcs
- 50 cm ribbon cable with one 14-pin connector – 1 pcs
- Wires fixing set – 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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