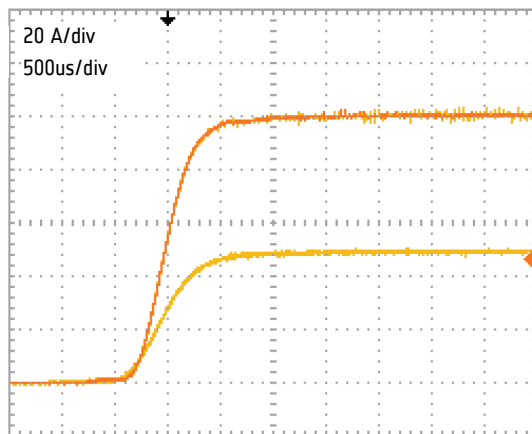
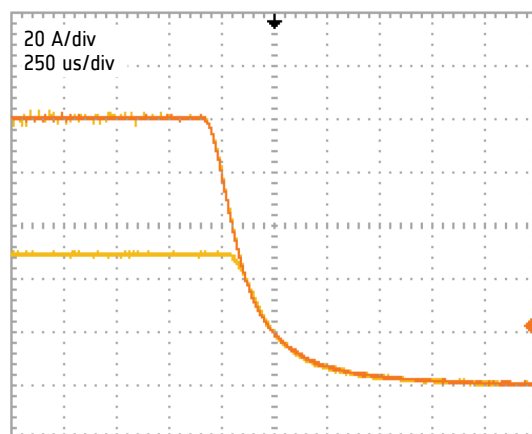


The SF6090 is a non-isolated point-of-load DC/DC constant current laser diode driver for high current diode modules and diode bars. Protection features include an over current protection with adjustable limit, soft-start, thermal warning and shutdown, reverse current protection and crowbar circuit protection. This means the SF6090 can safely drive non-linear and current sensitive loads like laser diodes and LEDs. Short current rise/fall times allow for a wide range of applications as laser soldering, plastic welding or certain LED lighting applications as well as due to the very low <0.1 % current ripple for sophisticated pumping application. The diode driver can be controlled by analog or digital RS232 controls. An extremely compact isolated USB-to-UART converter is optionally available. SF6090 is provided in a thermal enhanced half-brick package with aluminum base plate to aid thermal dissipation. The driver can be mounted on any thermal conductive surface large enough to dissipate driver losses.



Typical startup sequence



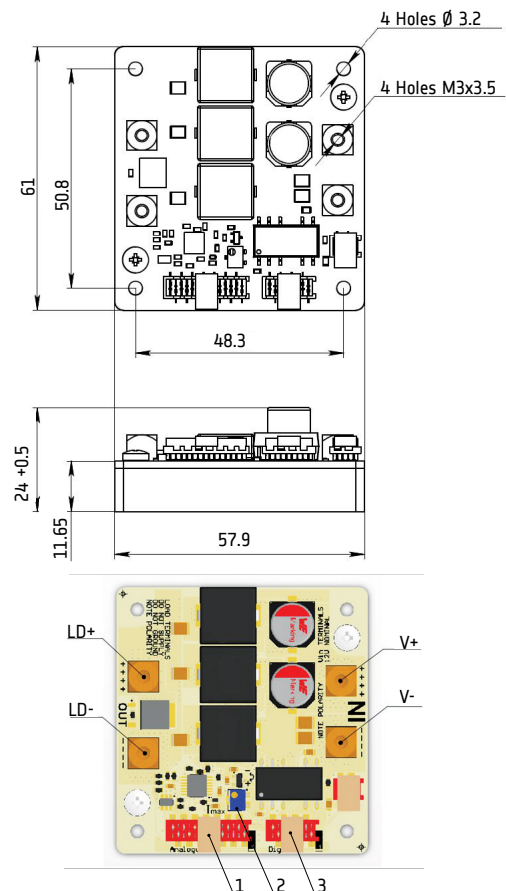
Typical stop sequence

Features:

- Up to 100 A current output
- Very compact 58 x 61 mm
- Highly efficient to 98 %
- Low current ripple <0.1 %
- Crowbar circuit protection
- Adjustable current limit
- Thermal warning & protection
- NTC thermistor input
- Digital and analog controls
- Dedicated user software

Applications:

- Supplying high current laser diode bars and small stacks
- Direct diode material processing
- Solid state laser and fiber pumping
- Supplying high power LEDs



Vin+ 10 to 14 V from DC power supply ^{*)}

Vin- Negative terminal of power supply

LD+ To positive input of laser diode ^{**)}

LD- From negative terminal of laser diode ^{**)}

1. Analog Control Connector

2. Current Limit Adjustment (0 to Max = 12 turns)

3. Digital Control Connector

^{*)} The driver requires a DC power supply with line regulation $\pm 1\%$. The power supply must be able to cover the driver output power and losses. Nominal input voltage 12 V.

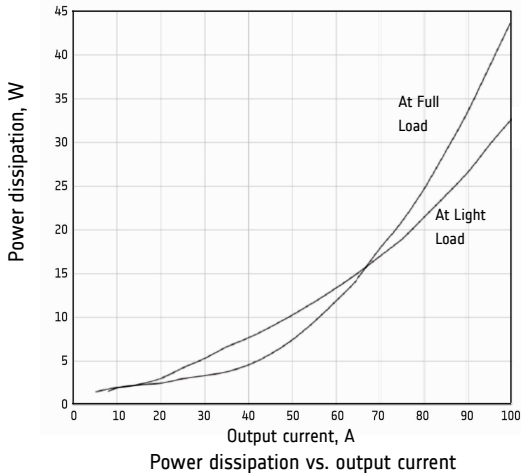
^{**)} Grounding either of these terminals may cause permanent damage to the driver or the laser diode.

Recommended Operating Conditions

	Min	Max	Unit
Input Voltage (Vin) ¹	10	14	V
Operating Temperature	-10	40	°C
Analog control pins to GND	0	5	V

Electrical Characteristics

PARAMETER	MIN	TYP	MAX	UNIT
OUTPUT				
Output voltage (Vout)	1		0.75*Vin	V
Output Current (Iout)	0		100	A
Current Ripple		20	50	mA
Pulse Rate, (QCW mode)	0.1		100	Hz
Rise Time (Soft Start time)				
I out =100 A	150	200	300	us
I out =50 A	120	250	400	
Fall-time (stop time)	250	350	500	us
Output Capacitance		150		uF
CONTROLS				
Current set pin voltage vs. output current		20		A/V
Current set step				
Set by RS232 or UART		0.03		A
Current set accuracy				
30 A <Iout <75 A		±5		%
75 A <Iout <100 A		±1		
Current Set Calibration	-5		+5	%
AUXILIARY SUPPLY				
±15 V output current		20	30	mA
+5 V output current		200	300	mA
INTERNAL MEASUREMENTS				
Internal Measurement accuracy		±2		%
Current monitor pin voltage vs. output voltage		20		A/V
Voltage monitor pin vs. output voltage		1		V/V
External sensor temperature				
NTC 10K	-10		150	°C
POWER DISSIPATION				
Driver Losses				
Vin = 12 V, Iout +100 A	30	45	50	W



SF6090
DC/DC Laser Diode Driver

Analog Interface

PIN	I/O	NAME	DESCRIPTION
1	I	Enable	High = operates; Low = stop. Internally pulled down. TTL or CMOS signals only.
2		GND	Connected to Vin- terminal.
3	O	Crowbar status	High = fault; Low = normal operation. Internally pulled down.
4		+5 V	Auxiliary +5 V power supply. Up to 200mA output current capability.
5	I	Interlock	Open = locked; Low = operates. Internally pulled up.
6	O	Over-temperature warning	High = T > 67 °C; Low = T < 65 °C. Internally pulled down.
7		GND	Connected to Vin- terminal.
8		-15 V	Auxiliary -15 V power supply. Up to 20mA output current capability.
9	O	Voltage monitor	0-10 V = 0 - 10 V at the output.
10		+15 V	Auxiliary +15 V power supply. Up to 20 mA output current capability.
11	O	Current monitor	0-5V = 0-100% at the output.
12		GND	Connected to Vin- terminal.
13	I	Current set	0-5 V = 0-100% at the output.
14		NTC Interlock	Connect NTC thermistor 10k between this pin and GND.

