Laser Controller C450

www.redwavelabs.com

The C450 combines an integrated temperature driver and laser driver in one package with full digital control. The laser driver has modulation bandwidth of 250 kHz; with separate fast TTL compatible switching. The laser current has variable hardware limit which can be set remotely. All control loops can be configured via USB or Ethernet and all setting are stored on the C450. Analog modulation input can mixed with internal current set point with different mixing ratios. An additional laser plugin PCB allows easy customization for various laser diodes.

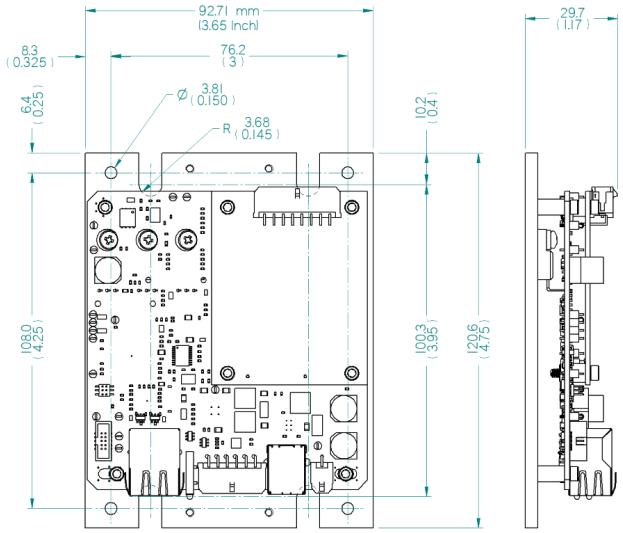
Specification

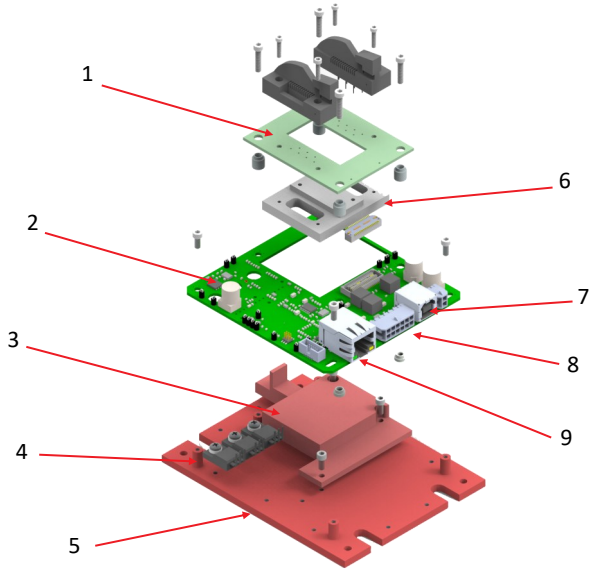
Features	Laser diode control with full digital control of laser current and temperature	
Applications	Spectroscopy; Gas Spectrometry; Precision Instrument; Laser; OEM applications	
Specifications	Parameter	Value
Power	single	+12 V, 5A
Laser Current Control	Laser current	0 - 250 mA. Set in software or using external voltage
	Compliance voltage	> 4.0 V
	Setting accuracy	2 % fs
	Noise (RMS)	< 2μA
	Drift	< 20 μA
	Temperature coefficient	50 ppm/C
	Current limit	Hardware-enforced, set by on-board DAC (software programmable)
	Setting accuracy of current limit	2 % fs
Laser External Control	Voltage range	0 – 7.5 V default, laser dependent
	Input impedance	10 kOhm
	Modulation coefficient (I const)	35 mA/V, laser dependant
	3dB Bandwidth	DC ... 48 kHz
	TTL modulation, rise / fall-time	250 ns
	Modulation	External; Internal; variable External/Internal combination
	External modulation	up to 90 kHz
	Internal modulation	up to 250 kHz
	Interlock	Yes
Photodiode	Gain	100;1k,10k,100k V/A
	Bandwidth	50 kHz
TEC control	Control	digital
	TEC current	0 ... ± 2.0 A
	TEC voltage	> 4.5 V
	Max output power	9 W
	Current limit	0-2.0 A. digitally controlled
	Input sensor	10k Thermistor, 7 excitation current settings 10; 50; 100; 250; 500; 1000; 1500 µA
	PID control	Fully digital. Typical stability 1 mK RMS.
Connectors	Laser	Integrated Azimuth Electronics 14 pin connector with heat sink. Multiple pinouts can be accommodated with different plug-in PCBs. Can be replaced with optional DB15 connector
	Power	Molex MicroFit 2 pin.
	Control	Molex MicroFit 12 pin.
Control		Computer control via USB or Ethernet. Can be programmed to start independently without computer connected
Dimensions (WxHxD)		120.65 x 92.7 x 40.6 mm (4.75 x 3.65 x 1.6 Inch) (Height varies dependent on laser package variant)
Weight		250-290 g (dependent on laser package variant)
Storage Temp		-55 to 100 C
Operating Temp		-40 to 85 C

Absolute Maximum Ratings

Symbol	Parameter	Ratings	Unit
V_{dd1}	Supply positive voltage / Laser driver and TEC	+12±10%	Volt
T_{op}	Operational Temperature	-40 to 85	Deg C
T_{st}	Storage Temperature	-55 to 100	Deg C

Mechanical Information





Parameter	Value	Unit
Length	4.75 (120.65)	Inch (mm)
Width	3.65 (92.7)	Inch (mm)
Height	1.6 (40.6)	Inch (mm)
Weight	250-290	gram

№	Value	№	
1	Laser PCB with optional control	6	Laser Plug-in
2	Main PCB	7	USB
3	Heatsink / electrically isolated	8	Control / Monitor
4	Laser driver power delivery	9	Ethernet
5	Baseplate		

Laser Mounts

Model / Part number	Laser Mount	Compatible Diodes
C450-2	Butterfly Laser mount	Type 2
C450-1	Butterfly Laser mount	Type 1
C450-4	Butterfly Laser mount	ex. NANOPLUS
C450-0	Butterfly Laser mount	ex. Sheaumann
C450-3	Standardized cable connectors	any via DB-9 and DB-15 cables
C450-5	Butterfly Laser mount	