



# Datasheet

## C154 - Laser Diode Controller 250mA, for Nanoplus Butterfly Lasers

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and supported  
in the USA by*



**LASER LAB SOURCE**  
marketplace for **Scientists & Engineers**

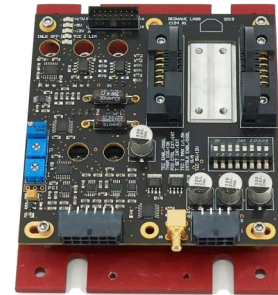
[contact@LaserLabSource.com](mailto:contact@LaserLabSource.com)

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**800.877.5065**

## Introduction

Redwave Labs Laser Controller C154 comes with integrated temperature driver and laser driver in one package. Temperature control is fully linear and has capability to use separate power supply for laser TEC. TEC control can be done via built-in PI loop or external signal. Laser driver has analog bandwidth of 250 kHz and separate fast TTL compatible switching provided via SMB connector. Laser current has a hardware limit of 250 mA which cannot be exceeded in any case. Custom version has current limit set by customer request. In this case name will reflect maximum current limit like C154-70. 70 stands for maximum current.



## Specification

Features	Laser Controller C154 provides full control for semiconductor laser including laser diode control and integrated temperature control.	
Applications	Spectroscopy, Laser, Precision Instrument, OEM applications	
Specifications	Parameter	Value
Power	Dual	+12 V, 2 A or +12 V/0.5A and +5V/1.5A; -12 V, 0.5 A
	Laser current	0 - 250 mA. Hardware limit. Can be modified for customized versions. For example C154-70 has 70 mA maximum current limit.
Laser Current Control	Compliance voltage	> 4.0 V
	Setting accuracy	2 % fs
	Noise (RMS)	< 2 $\mu$ A
	Drift	< 20 $\mu$ A
	Temperature coefficient	50 ppm/C
	Current limit	250 mA
	Setting accuracy of current limit	2 % fs
	Voltage range	0 to 10 V
Laser External Control	Input impedance	10 kOhm
	Modulation coefficient (I const)	20 mA/V It is constant for all custom models.
	3dB Bandwidth	DC ... 250 kHz
	TTL modulation, rise / fall-time	250 ns
	Interlock	Yes
	TEC current	0 ... $\pm$ 1.0 A /1.5 A
	TEC voltage	> 8.0 V
TEC control	Max output power	12 W
	Current limit	1 A or 1.5 A
	Input sensor	Thermistor 10 kOhm or 100 kOhm at 25 C
	PID control	Internal PI control or External direct TEC current control
Connectors	Laser	Integrated Azimuth Electronics 14 pin connector with heat sink.
	Power	Molex MicroFit 8 pin.
	Control	Molex MicroFit 12 pin.
Dimensions (WxHxD)	120 x 92 x 30 mm	
Weight	350 g	
Storage Temp	-55 to 100 C	
Operating Temp	-40 to 85 C	

RedWave Labs Ltd keeps improving its products and therefore some specifications can vary.

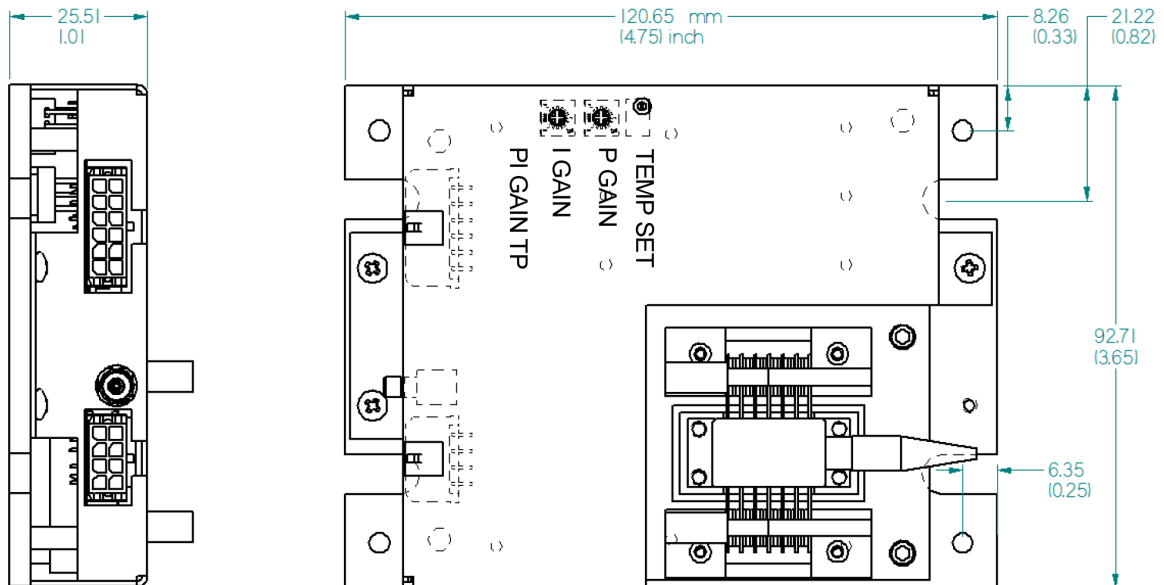
## Training and support

Remote training and support are available. Please contact info@redwavelabs.com for more information.

## Absolute Maximum Ratings

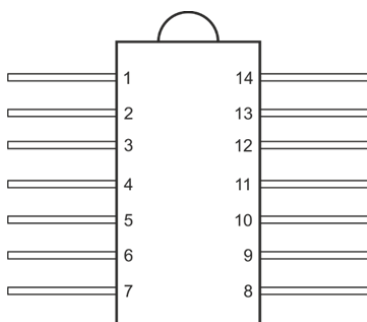
Symbol	Parameter	Ratings	Unit
V <sub>dd1</sub>	Supply positive voltage / Laser driver and TEC	+12±10%	Volt
V <sub>dd2</sub>	Supply positive voltage / Separate TEC rail	+5;+10%;-0%	Volt
V <sub>ee</sub>	Supply negative voltage / Laser driver and TEC	-12 ± 10%	Volt
T <sub>op</sub>	Operational Temperature	-40 to 85	Deg C
T <sub>st</sub>	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	1.01 (25.1)	Inch (mm)
Weight	350	gram

## Pin Layout



1	TEC +	14	TEC -
2	TH +	13	Ground
3	Not in use	12	Not in use
4	Not in use	11	Not in use
5	TH -	10	LD +
6	Not in use	9	LD -
7	Not in use	8	Not in use