

TEC – Thermo Electric Controlled Laser



Characteristics:

- Supply Voltage: 6..24V
- Wide variation of available Diodes /Wavelengths
- Output power up to 10mW
- TTL and analogue modulation
- Excellent Wavelength stability
- Factory set wavelength fine adjustment
- Time to stability <20sec (LED indicator)
- Protected against high voltage and wrong polarity
- Circuit cut off when overheating

Short description

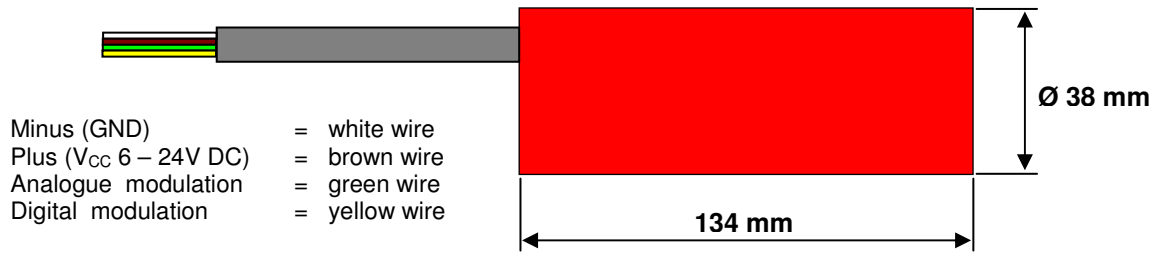
TEC Lasers are used when the stability of the laser source is a critical element for the accuracy of a measurement process. In those circumstances the stability of the wavelength (i.e. Interferometer) or the pointing stability (Position measurement) are important considerations. The TEC Laser has driver electronics suitable for laser diodes in the TO-18 housing for many wavelengths and power settings. The thermo-electrical temperature control maintains a very constant temperature of the diode and achieves excellent stability values. Due to the compact design and the efficient air cooler the operational stability is achieved after a very short start up period and maintained in many environments.

Technical Data

Supply Voltage:	6 ... 24V
Operating current @ 12V:	max. 600mA at ambient temperature (depending on laser diode used)
Wavelength stability:	< 0.05nm (20°C...30°C); < 0.3nm (10°C...40°C); < 0.45nm (5°C...45°C)
Temperature stability:	± 0.15K between 20°C...30°C, ± 0.6K between 10°C...40°C
Wavelength adjustment	±1nm of nominal LD- wavelength at 25°C (Factory set)
Modulation:	TTL: 2MHz Analogue 0...+4V: 500kHz
Optical output:	Subject to diode up to 10mW (limited to ≤ 250mA current consumption)
Monitor diode:	Adjustment range from 10 µA to 2.5 mA
Laser housing:	Ø 5.6mm (TO-18)
Laser class (to IEC60825-1:2007):	2, 3R or 3B, subject to effective optical output
Operating temperature:	5°C...45°C

Warning: Laser can be harmful to your eyes. The laser output power is adjusted in accordance to your instructions. The user is responsible for the observation of the applicable safety regulations.

Electrical connections and Dimensions



Control characteristics

In case of an abrupt or continuous substantial change of the ambient temperature the control loop to stabilise the laser diode requires a short compensation period. The duration of this build up cycle is less than 20 seconds and it's typical characteristics are shown in the graph below.

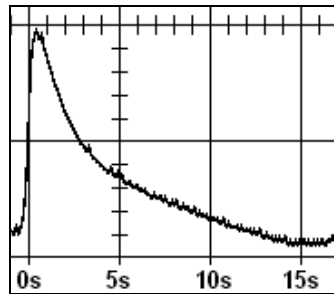


Fig. 1 Typical build up cycle after abrupt change of the ambient temperature (5 Sec./Div.)

A minimal deviation of the effective to the required laser diode temperature is unavoidable for conceptual reasons. The graph below shows the resulting worst case deviation of the wavelength $\Delta\lambda$:

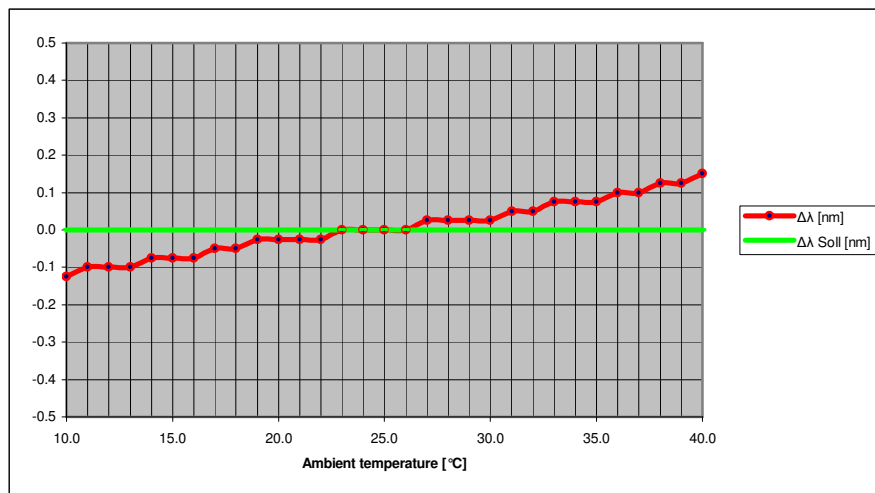


Fig. 2 Worst case deviation of the wavelength for the temperature range of 10°C - 40°C