

TEC Modules: Elliptical Beam



The elliptical beam thermoelectrically cooled (TEC) laser diode modules can be specified to produce an elliptical output beam in the range 405nm to 830nm and output powers from 0.9mW to 27mW.

The TEC laser diode module incorporates microprocessor based temperature control electronics, thermo electric cooler, heatsink and fan that enable the laser diode temperature to be controlled to a set point temperature between +18°C to +25°C, (user adjustable), and with a stability of $\pm 0.05^\circ\text{C}$.

This accurate temperature control, together with user adjustment of the laser diode drive current, enables the laser to be tuned to a region where mode hopping and RMS noise are significantly reduced or eliminated. Accurate temperature control also produces excellent wavelength and power stability and cooling the laser diode to 18°C significantly increases laser diode lifetime.

All red, infrared, blue, violet and UV TEC laser diode modules in the range offer low and high temperature automatic shut-off protection, analogue and digital modulation capability and safety interlock as standard.

Key Features

- Elliptical beam
- Protective glass window
- Exceptional wavelength & power stability
- Active temperature control
- Increased laser diode lifetime
- User adjustable optics

Key Applications

- Machine vision
- Alignment
- Industrial inspection
- Medical instrumentation

General Specifications

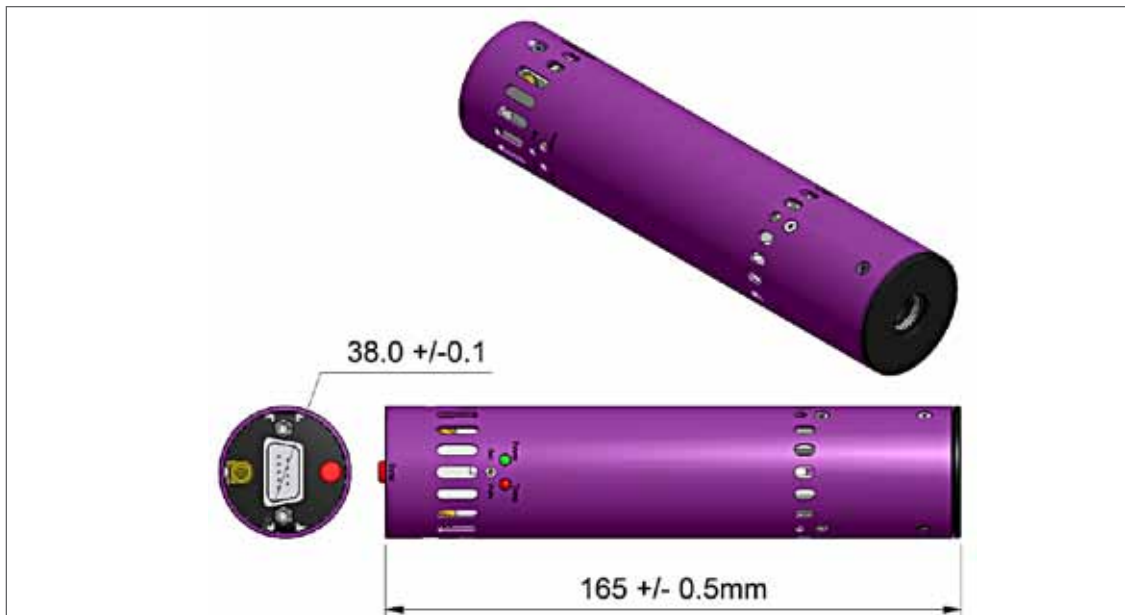
Power Stability	<1%
Beam Size ¹	6 x 2.2 mm
Beam Divergence	0.2 x 0.4 mrad
RMS Noise	<1%
Operating Voltage	+5V ± 0.1V DC
Operating Current	2.5A maximum (laser diode 500mA maximum)
Ambient Temp. Range	+10°C to +30°C (non-condensing)
Temperature Stability	±0.05°C
Setpoint Temp. Range ²	+18 to +25°C
Analogue Modulation	0 to 10kHz, low = 100%, high = approx 0%
Digital Modulation (TTL input)	ON/OFF DC to 5MHz
Mechanical	38mm ± 0.1mm diameter, 165mm length

1. Output beam is user adjustable but is factory set for collimation. Adjustment is made using tool provided.
2. Setpoint temperature is user adjustable and laser diode temperature can be set anywhere in the range +18°C to +25°C. Setpoint temperature is factory set to 18°C

Wavelength (nm)	Output Power ¹ (mW)
405	4, 25, 50
635	0.9, 3, 6, 10, 12, 20, 27
785	50
808	120
830	20

1. Output power is user adjustable from maximum figure indicated above down to 0mW. Adjustment is made via trim pot accessed through module housing.

Dimensional Diagram



Custom Solutions

ProPhotonix specializes in the provision of custom solutions and can provide other wavelengths, diode powers and optics if required.

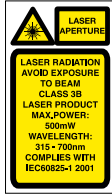
Part Numbers

To order your TEC Laser Diode Module use the product Code TEC - Select Wavelength(XXX) - Select Power (XX) - Select Beam Shape (E - Elliptical/C - Circular)

e.g TEC - 635 - 4 - E



Laser Safety



The light emitted from these devices has been set in accordance with IEC60825. However, staring into the beam, whether directly or indirectly, must be avoided. IEC60825 classifies laser products into three different categories depending on light emitted, wavelength and eye safety.

CLASS II

“Caution”, visible laser light less than 1.0mW. Considered eye safe, normal exposure to this type of beam will not cause permanent damage to the retina.

CLASS III R

“Danger”, visible laser light between 1.0mW and 5.0mW. Considered eye safe with caution. Focusing of this light into the eye could cause some damage.

CLASS IIIB

“Danger”, infrared (IR), and high power visible lasers considered dangerous to the retina if exposed.

NB: It is important to note that while complying with the above classifications, unless otherwise stated, our laser diode products are not certified and are designed solely for use in OEM products. The way in which the device is used in the final product may alter its original design classification, and it is the responsibility of the OEM to ensure compliance with the relevant standards.

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Heat Sinking

If the case temperature of the laser diode exceeds its maximum specification, premature or catastrophic failure may occur. To ensure the maximum life of the laser diode, it is recommended that an additional electrically insulated heatsink, of at least 35 sq. cm. be used. Thermal transfer cream can be used to improve contact and heat dissipation.

Do not restrict air circulation around the device. Specifications subject to change without notice. E&OE

180111

North/South America Sales

sales@prophotonix.com

Tel: +1 800-472-4633

Fax: +1 603-898-8851

LED Solutions

ledsales@prophotonix.com

Tel: +353-21-5001313

Fax: +353-21-4297749

Laser Solutions

lasersales@prophotonix.com

Tel: +44-1279-717170

Fax: +44-1279-717171

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