

Laser Pen with Variable Focus

CPS196

Description

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Operational Hazard Semiconductor Laser Diode

This laser pen emits radiation that is visible to the human eye. When in use, do not look directly into the device. Direct viewing of laser diode emission at close range may cause eye damage, especially in conjunction with collimating lenses. Extreme care must be taken to prevent the beam from being viewed directly or through external optics or mirrors.

Properties:

Housing: Anodized Aluminum
Lens: Glass
Type of laser: N-type



Features:

Operating temperature: -10 to 40 °C
Storage temperature: -40 to 85 °C
Application: Test & Measurement Alignment

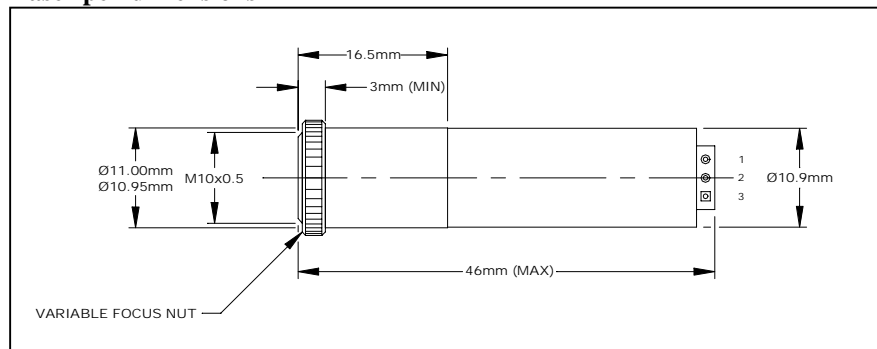
This product conforms to all applicable standards of FDA regulations (DHHS 21 CFR subchapter J). In combination with a power supply the laser module falls within Safety Class 3R. Due to the small size of these devices, the required warning is affixed to the box containing the laser modules.

Quick reference data

Tcase=(25 ± 2) °C Po=4.0mW collimated beam, unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	unit
λ	Wavelength			635	640	nm
Po	Optical output power				4.5	mW
θ_{Lx} $\theta_{//}$	Beam divergence (including natural divergence)	When collimated			0.6 1.8	mrad
FR	Focal range		50		∞	mm
S \perp xS//	Beam diameter (FWHM)	Focus at 400mm		75x300		μ m
S \perp xS//	Beam diameter (FWHM)	Collimated beam		2.45x0.54		mm
α_{om}	Optical-mechanical axis deviation			7	15	mrad
dca	Clear aperture			4		mm
lop	Operating current laser pen			55		mA
Vop	Operating voltage	With reference to ground	-4.5	-5	-5.5	V

Laser pen dimensions



Pinning

- 1=-5V
- 2=Not connected
- 3=Ground

Dimensions in mm (unless otherwise stated)

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Operating and handling precautions

Semiconductor laser diodes in general are easily damaged by overdriving and by electrical transients. The laser diode is highly susceptible to damage because of the extremely high optical flux density passing through both facets while in operation. In case of overdriving or of transients the optical flux density can rise to unacceptable values, causing catastrophic failure or gradual damage of the laser diode facets. Current transients should therefore be carefully avoided since they may destroy the laser or substantially decrease the laser diode lifetime. Before connecting the laser diode to the supply circuit, make sure that there are no transients that could make the laser diode output exceed the maximum rating for radiant flux or forward current.

The following precautions should be taken to avoid failure of the device:

- Workers and workbenches should be grounded to a common stable earth at all times when working with laser diodes.
- All equipment, including power supplies, soldering irons, etc. must be grounded to a common stable earth.
- Power supplies should be well regulated and free of transients.
- Drive circuit connections should be made either by soldering or by high reliability connectors. Clip leads such as alligator clips are not recommended. Mechanically unreliable contacts cause transients and destroy the laser diode.
- Maximum soldering temperature is 250°C for a maximum of 5 seconds.
- Drive circuits should include a 'slow start and stop' feature to suppress turn-on/turn-off transients.
- High quality and high reliability components should be used throughout the drive circuits.
- It is recommended that the laser diodes be driven by an Automatic Power Control (APC) circuit, using the built-in monitor photodiode in a feedback loop to maintain constant optical power output over the full operating temperature range and throughout the life of the device.
- Always store laser diodes in static-free containers and use a short-circuit connector.
- Never connect or disconnect any components or external equipment such as voltmeters, to or from the device circuit while the power is on.
- Avoid touching the glass window. If necessary, clean gently with a cotton swab dampened with alcohol.
- Leads have to be soldered to their environment without mechanical stress. Any force during and after mounting must be avoided.
- Mechanical clamping should take place along the cylinder without any mechanical deformation of the housing (advised maximum force: 20 N).
- Do not look into the operating laser diode through a microscope!

Further questions regarding this or any Thorlabs products should be addressed to Technical Support at techsupport@thorlabs.com or by phone at (973)579-7227 or on the Thorlabs Web Site at www.thorlabs.com.

435 Route 206
P.O. Box 366
Newton, NJ 07860
Sales: (973) 579-7227
Fax: (973)383-8406
Website: www.thorlabs.com