

Operating Instructions for LCM-T diode-pumped laser modules

Introduction

The LCM-T module is a diode-pumped solid state laser with CW mode of operation and stabilized output power. The module consists of laser head and power supply encapsulated into a single tube. Several versions of this product exist. See table below for individual specifications. Please note that lasers with IR wavelengths or with output powers exceeding 5mW are not intended for surveying, leveling, or alignment applications.

Available configurations are listed below. A check mark indicates your model.

Model	Wavelength	Power	V in	Max Iop	IEC Class
LCM-T-01ccs	532nm	0.5mW	3.3VDC	0.5A	2
LCM-T-01ccs	532nm	1mW	3.3VDC	0.6A	3R
LCM-T-11ccs	532nm	3mW	3.3VDC	1.1A	3R
LCM-T-11ccs	532nm	10mW	3.3VDC	1.1A	3B
LCM-T-02ccs	1064nm	10mW	3.3VDC	0.5A	3B
LCM-T-12ccs	1064nm	50mW	3.3VDC	1.1A	3B
LCM-T-111-0.5	532nm	0.5mW	3.3VDC	0.8A	2
LCM-T-111-1	532nm	1mW	3.3VDC	1.4A	3R
LCM-T-111-3	532nm	3mW	3.3VDC	1.4A	3R
LCM-T-111-10	532nm	10mW	3.3VDC	1.4A	3B
LCM-T-111-20	532nm	20mW	3.3VDC	1.4A	3B
LCM-T-112-10	1064nm	10mW	3.3VDC	0.8A	3B
LCM-T-112-50	1064nm	50mW	3.3VDC	0.9A	3B
LCM-T-112-100	1064nm	100mW	3.3VDC	1.4A	3B

Installation

Do not mount the laser in a thermal insulating material, such as foam plastic. A metal heat sink is always recommended. Heat can have an adverse effect on laser diodes, including decreased output power. Temperature of the laser case must be maintained within $25 \pm 10^\circ\text{C}$.

The optimal operating voltage for this laser module is 3.3VDC; however, it will operate on 3.2 to 3.5VDC. Positive power should be applied to the module's red wire, and the black wire should be connected to ground.

If the label attached to the laser module reads "This product complies with 21CFR 1040.10 and 1040.11, IEC60825-1 AM2:2001," a permanently installed switch at the power source is required to retain the module's certification as a laser system. This certification is void if the unit is enclosed or otherwise inaccessible, if the labels are modified or removed, or if the system is permanently connected (i.e. soldered, etc.) directly to the power source without the required switch. Modifying the laser will void the certification. If the distance between the laser head and the power source switch exceeds two meters, an emissions indicator must be mounted near the switch. If the laser's label reads "This module is designed for use as a component," then the CDRH requirements must be met.

Operating Procedure & Control Description

This product has no adjustable controls.

Normally, the LCM-T is case-isolated. However, for design purposes, users should consider the case to be positive. The external DC source must be electrically isolated from the case of the laser. Be sure that this condition is satisfied while testing, setting, and using the laser. Otherwise, the laser diode can be destroyed. Confirm that the DC supply is rated for the current requirement for your model. See table above for current requirements.

To turn the laser on, switch on the external DC source.

The LED located on the rear of the laser has two different colors of operation. Green indicates that input voltage is applied and laser light is being emitted. When the green LED changes to red, the laser is overheated. The laser switches off automatically to protect the laser diode.



Maintenance & Service

This laser module contains no user servicable parts. Depending on environmental conditions, the optics may require occasional cleaning. Clean, compressed air is recommended to blow the optics free of dust and dirt. If compressed air fails, clean lens carefully with alcohol and a lint-free rag or cotton swab.

Laser Safety

Class 3B LCM-T series laser modules are designated solely as OEM components for incorporation into your product. Therefore, they do not comply with the appropriate safety requirements for complete laser products. The complete laser product manufacturer is responsible for complying with these requirements and filing the appropriate forms with the CDRH.







Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Caution: The use of optical instruments with this product will increase eye hazard.







Do not shine laser in the direction of other people or at reflective surfaces that might cause exposure to the human eye. Do not unintentionally mount the laser at eye level.

Modifications that affect any aspect of the product's performance or intended functions will require re-certification and re-identification of the product in accordance with the provisions of 21CFR 1040.10 and 1040.11. A copy of 21CFR 1040.10 and 1040.11 can be downloaded from www.powertechnology.com.

The product labels shown below can typically be found near the output optics.

<p style="text-align: center;">Class 1 Laser: Class 1 Laser Product</p> <p><input type="checkbox"/> Component</p>  <p><input type="checkbox"/> System</p>  <p style="text-align: center;">One of the above labels is attached to the laser head.</p>	<p style="text-align: center;">Class 1M Laser: Laser Radiation, Do not view directly with optical instruments</p> <p><input type="checkbox"/> Component</p>  <p><input type="checkbox"/> System</p>  <p style="text-align: center;">One of the above labels is attached to the laser head.</p>	<p style="text-align: center;">Class 2 Laser: Laser Radiation, Do not stare into beam</p> <p><input type="checkbox"/> Component</p>  <p><input type="checkbox"/> System</p>  <p style="text-align: center;">One of the above labels is attached to the laser head.</p>
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<p align="center">Class 2M Laser: Laser Radiation, Do not stare into the beam or view directly with optical instruments</p> <p><input type="checkbox"/> Component</p>  <p><input type="checkbox"/> System</p>  <p align="center">One of the above labels is attached to the laser head.</p>	<p align="center">Class 3R Laser: Laser Radiation, Avoid direct eye exposure</p> <p><input type="checkbox"/> Component</p>  <p><input type="checkbox"/> System</p>  <p align="center">One of the above labels is attached to the laser head.</p>	<p align="center">Class 3B Laser: Laser Radiation, Avoid exposure to beam</p> <p><input type="checkbox"/> Component</p>  <p><input type="checkbox"/> System</p>  <p align="center">One of the above labels is attached to the laser head.</p>
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Warranty and Repair Return Policy

This product carries a one (1) year warranty. No return of merchandise will be accepted by PTI without an RMA (Return Material Authorization) number, issued by the factory and prominently displayed on the return package. No return shipments will be accepted “collect” or “COD.”

On warranty returns, PTI will pay for shipping charges on return of merchandise to the customer. When contacting the factory for an RMA number, please have the following information available: model number, serial numbers, and a description of the problem.



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