

LPM Series



LPM Series User's Manual



Newport®

Experience | Solutions

Warranty

Newport Corporation warrants that this product will be free from defects in material and workmanship and will comply with Newport's published specifications at the time of sale for a period of one year from date of shipment. If found to be defective during the warranty period, the product will either be repaired or replaced at Newport's option.

To exercise this warranty, write or call your local Newport office or representative, or contact Newport headquarters in Irvine, California. You will be given prompt assistance and return instructions. Send the product, freight prepaid, to the indicated service facility. Repairs will be made and the instrument returned freight prepaid. Repaired products are warranted for the remainder of the original warranty period or 90 days, whichever is longer.

Limitation of Warranty

The above warranties do not apply to products which have been repaired or modified without Newport's written approval, or products subjected to unusual physical, thermal or electrical stress, improper installation, misuse, abuse, accident or negligence in use, storage, transportation or handling. This warranty also does not apply to fuses, batteries, or damage from battery leakage.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. NEWPORT CORPORATION SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE PURCHASE OR USE OF ITS PRODUCTS.

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This manual has been provided for information only and product specifications are subject to change without notice. Any change will be reflected in future printings.

Newport Corporation
1791 Deere Avenue
Irvine, CA, 92606 USA
P/N 41318-01 Rev. B

EU Declaration of Conformity

We declare that the accompanying product, identified with the **CE** mark, complies with requirements of the Electromagnetic Compatibility Directive, 89/336/EEC and the Low Voltage Directive 73/23/EEC.

Model Number: LPM Series, a Laser Source Module

Year **CE mark affixed: 2004**

Type of Equipment:

Electrical equipment for measurement, control and laboratory use

Standards Applied:

Compliance was demonstrated to the following standards to the extent applicable:

BS EN61326-1:1997+A1+A2 “Electrical equipment for measurement, control and laboratory use – EMC requirements”

This equipment meets the Class A radiated and conducted emission limits.

BS EN 61000-3-2:2001, Harmonic current emissions, Class A

BS EN 61000-3-3:2002, Voltage fluctuations and flicker

BS EN 61010-1:1993, A1+A2 “Safety requirements for electrical equipment for measurement, control and laboratory use”



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Newport Corporation Calling Procedure

If there are any defects in material or workmanship or a failure to meet specifications, promptly notify Newport's Returns Department by calling 1-800-222-6440 or by visiting our website at www.newport.com/returns within the warranty period to obtain a **Return Material Authorization Number (RMA#)**. Return the product to Newport Corporation, freight prepaid, clearly marked with the RMA# and we will either repair or replace it at our discretion. Newport is not responsible for damage occurring in transit and is not obligated to accept products returned without an RMA#.

E-mail: rma.service@newport.com

When calling Newport Corporation, please provide the customer care representative with the following information:

- Your Contact Information
- Serial number or original order number
- Description of problem (i.e., hardware or software)

To help our Technical Support Representatives diagnose your problem, please note the following conditions:

- Is the system used for manufacturing or research and development?
- What was the state of the system right before the problem?
- Have you seen this problem before? If so, how often?
- Can the system continue to operate with this problem? Or is the system non-operational?
- Can you identify anything that was different before this problem occurred?

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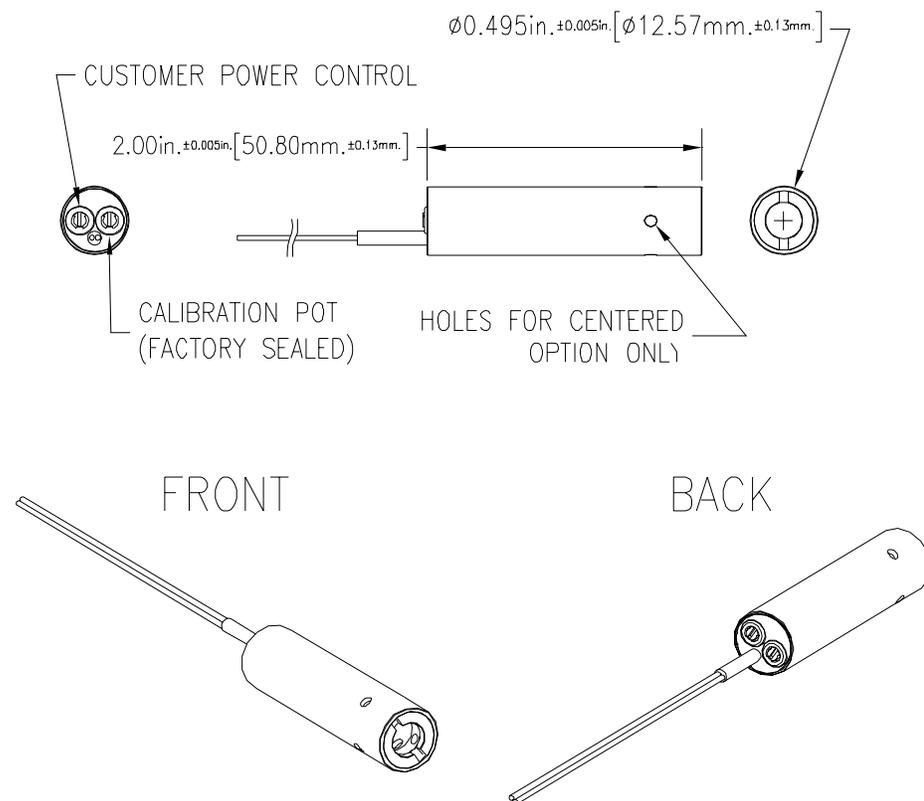
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1 General Information

1.1 Introduction

The LPM is a rugged laser module with a variety of options and accessories. This product can be configured with a variety of laser diodes at various output powers and operating wavelengths. Products having above 5mW output power or having IR output are not intended for surveying, leveling, and alignment applications. Visible units less than 5mW are CDRH certified as laser systems.

The module operates in Constant Optical Output Power Mode only. This means that if there is a change in temperature, focus, or any other dynamic that changes the output of the laser, the power supply will automatically adjust current output to compensate. This maintains a constant and stable output power.



1.2 Installation

Do not mount the laser in a thermal insulating material, such as foam plastic. Heat can have adverse effect on laser diodes including decreased output power and large shifts in wavelengths. The lifetime of the laser can also be shortened. Lasers below 5mW may not need a heat sink. For best heat dissipation, use a metal mounting fixture. If the system is to be run at or near the maximum rated input voltage, the use of a heat sink is recommended. A heat sink is always recommended for operating temperatures above 25°C. Mounting brackets are available for LPM laser modules. Simply ask your sales person for more information.

The operating voltage for this laser module is from 3.3 VDC to 9 VDC. 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", a permanently installed switch at the power source will be required to retain the modules 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 the system is permanently connected (i.e. soldered, etc.) directly to the power source without the required switch. Modifying the laser will void the CDRH 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.

1.3 Operation

1.3.1 Operation and Control Procedure

The LPM laser module features two user adjustments. The optical output power can be adjusted from zero up to 100% via the Customer Power Control potentiometer located on the rear of the unit. When looking at the rear of the laser module, rotate the module until the wire is on the bottom. The potentiometer located on the left is the Customer Power Control potentiometer. Turning this potentiometer clockwise will increase the power. Turning the potentiometer counter-clockwise will decrease the power. It is not possible to overdrive the diode using this potentiometer. The potentiometer on the right is for factory calibration and is sealed to prevent usage. Breaking this seal will void the warranty. The laser can be focused to a spot at various distances using the spanner wrench included with the unit. Care should be taken when focusing or cleaning the optics to prevent damage.

Reflections onto the internal photodiode from the lens are a vital part of the feedback loop. This photodiode is very sensitive to these reflections. Any adjustment of the lens outside the normal focusing range (beam divergence to beam convergence) will change the amount of reflections, thereby changing feedback characteristics. Therefore, adjusting the focus with the module at full power will destroy the laser diode. Also, reducing the amount of reflections (i.e., removing the lens) may result in destruction of the laser diode due to excessive drive current.

1.3.2 Preventative Maintenance

This laser module contains no user serviceable parts. Occasionally the optics may need cleaning depending on environmental conditions. When cleaning is required, the use of clean, compressed air is recommended to blow the optics clean. If compressed air fails, clean lens carefully with alcohol and a lint free rag or Q-tip.

1.3.3 Laser Safety

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 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 II Laser: Visible Laser Radiation Do Not Stare Into Beam</p> <p style="text-align: center;"> <input type="checkbox"/> Component <input type="checkbox"/> System </p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="font-size: small;">Avoid exposure. Laser light is emitted from this aperture. ↑</p> <p style="font-size: x-small;">WAVELENGTH: nm OUTPUT POWER: mW MODEL: SERIAL: DATE OF MFG:</p> <p style="background-color: yellow; text-align: center; font-weight: bold; font-size: large;">CAUTION</p> <p style="font-size: x-small;">Visible Laser Radiation Do not stare into beam.</p> <p style="font-size: x-small;">This module is designed for use as a component and, therefore, does not comply with 21 CFR 1040.10 and 1040.11</p> <p style="font-size: x-small;">1mW MAX OUTPUT CLASS II LASER PRODUCT</p> <p style="font-size: x-small;">Power Technology, Inc - 16302 Alexander Rd - Alexander, AR 72002</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="font-size: small;">Avoid exposure. 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Laser light is emitted from this aperture. ↑</p> <p style="font-size: x-small;">WAVELENGTH: nm OUTPUT POWER: mW MODEL: SERIAL: DATE OF MFG:</p> <p style="background-color: red; color: white; text-align: center; font-weight: bold; font-size: large;">DANGER</p> <p style="font-size: x-small;">Visible Laser Radiation Avoid direct eye exposure.</p> <p style="font-size: x-small;">This module is designed for use as a component and, therefore, does not comply with 21 CFR 1040.10 and 1040.11</p> <p style="font-size: x-small;">5mW MAX OUTPUT CLASS IIIa LASER PRODUCT</p> <p style="font-size: x-small;">Power Technology, Inc - 16302 Alexander Rd - Alexander, AR 72002</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="font-size: small;">Avoid exposure. 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