



LDM405, LDM635, LDM670, LDM785,
LDM850, LDM1550

Laser Diode Module

Operating Manual



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Part 1. Description

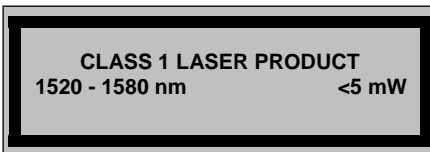
The LDM Series of compact laser sources are well suited to benchtop optical experiments. The LDM Series modules come in six wavelength versions: 405, 635, 670, 785, 850, and 1550 nm. The Ø1.40" by 5.8" housing contains a laser diode, collimating lens, and automatic power control circuit.

Each LDM module includes a built in shutter and SM1 internal thread for mounting with an extensive range of optomechanical devices from lens tubes to lens mounts. The LDM module can easily be mounted to any optical table using one of our C1502, C1503, or VC3 V-groove mounts.

Besides the mechanical shutter, the module also features a remote interlock connection and key-lock power switch. The laser module has an enable/disable toggle switch, laser on indicator LED, and power adjustment pot on the top for easy access. The power can be adjusted from 0 to full power (laser specific, see the specifications section for more information).



LASER RADIATION



Part 2. Operation

CAUTION!

Always observe proper Laser safety when operating this unit.

2.1. Normal Operation and Use

The unit should be located on a solid, dry working surface. If preferred, the unit can be secured to a standard optical breadboard using Thorlabs C1502, C1503, or VC3 V-groove mounts. For best performance, the unit should be oriented with its vent holes and cooling slots facing up.

1. If not already done, move the output shutter lever to the CLOSED position.



Figure 1: Front View of LDM

2. With the key-lock switch set to the 0 (Off) position, connect the power supply to the LDM by plugging the DC Jack into the DC IN socket on the end cap of the module. Plug the AC connector of the power supply into a suitable mains socket.
3. Make sure the interlock shorting screw is in place. If using a remote interlock, see the next section for instructions on how to set up the remote interlock.

- Turn the key-lock switch to the I (ON) position.



Figure 2: Rear Control View of LDM

- Momentarily press the Enable switch. Verify that the Laser On indicator turns on.
- Open the output shutter by moving the shutter lever to the OPEN position.
- The output power can be adjusted from roughly the laser threshold current to the full output power of the laser module by turning the PWR ADJ screw using a small screwdriver. Clockwise rotation increases the output power.

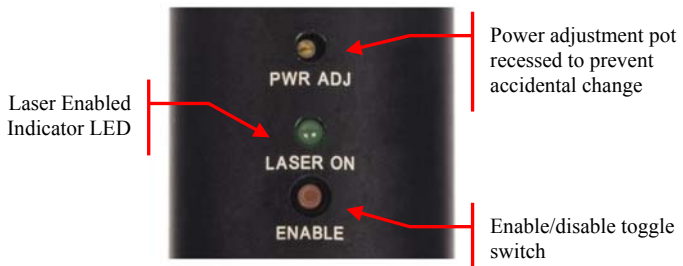


Figure 3: Top View, Close Up of Controls

- Pressing the Enable switch will turn off the laser.
- Turning the Key-lock switch to the 0 (Off) position will also turn off the laser output. The enable button will need to be pressed to enable the laser after the Key-lock is returned to the I (ON) position.

2.2. Making the Safety Interlock Connections:

The LDM Series is equipped with a remote interlock connector located on the end cap. In order to enable the laser driver, a short circuit must be applied across the terminals of the remote interlock connector. In practice this connection is made available to allow the user to connect a remote actuated switch to the connector (i.e. an open door indicator). The switch (which must be normally open) has to be closed in order for the unit to be enabled. Once the switch is in an open state, the laser diode must automatically shutdown.

All units shipped from Thorlabs are configured with a shorting device installed in the Interlock connector. If you are not going to use this feature then you can leave the shorting device installed and the unit will operate normally as described in the procedures in this manual. If you wish to make use of the Interlock feature you will need to acquire the appropriate connector mate and wire it your remote interlock switch. Next, remove the shorting device by unscrewing it from the output and install the connector into the Interlock output.

The Interlock output only accepts a 2.5 mm mono phono jack. This connector is readily available at most electronic supply stores.

The electrical specifications for the Interlock output are as follows:

- Type of Mating Connector: 2.5 mm mono phono jack
- Connector Polarity: Tip is positive, barrel is ground
- Interlock Switch Requirements: Must be N.O. dry contacts



Figure 4: Remote Interlock Connector

CAUTION!

Under no circumstances should any external voltages be applied to the Interlock output

Part 3. Specifications

Item #	LDM405	LDM635	LDM670
Wavelength, Typical	405 nm	635 nm	670 nm
Wavelength, Min/Max	395 - 415 nm	625 - 645 nm	660 - 678 nm
Beam Diameter ¹	3.0 mm x 5.0 mm	3.0 mm x 5.0 mm	3.2 mm x 3.4 mm
Power, Adjustable ²	4.0 mW	4.0 mW	5.5 mW

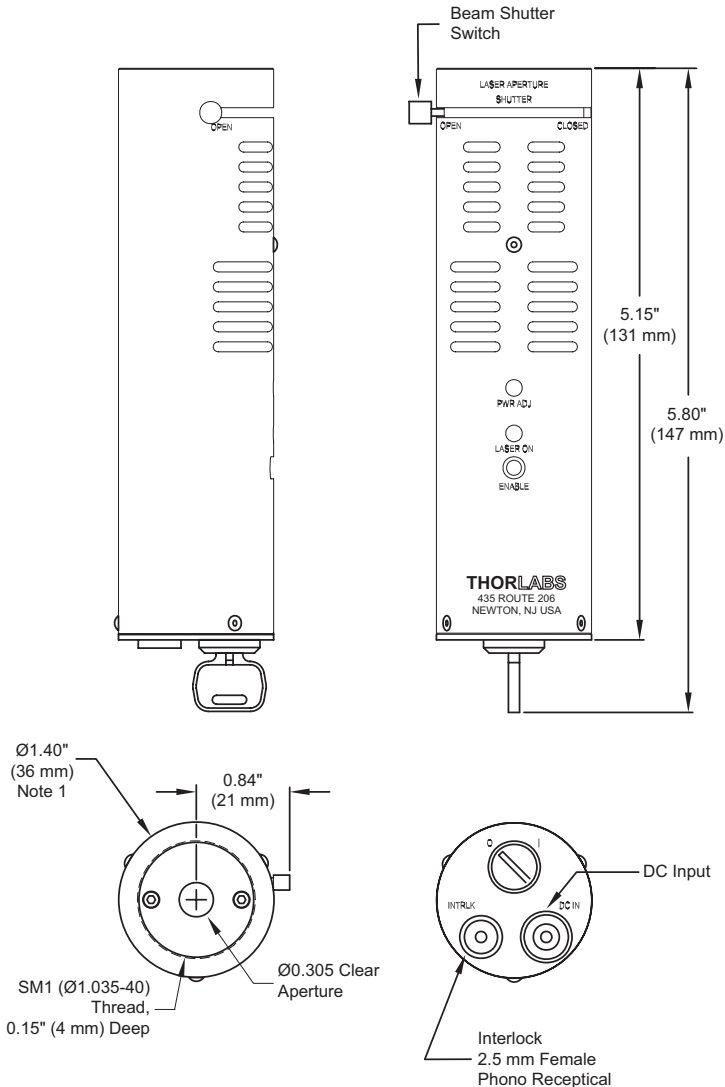
Item #	LDM785	LDM850	LDM1550
Wavelength, Typical	785 nm	850 nm	1550 nm
Wavelength, Min/Max	776 - 800 nm	840 - 860 nm	1520 - 1580 nm
Beam Diameter ¹	2.4 mm x 3.4 mm	3.5 mm x 4.4 mm	2.6 mm x 3.0 mm
Power, Adjustable ²	20 mW	20 mW	4.5 mW

General Specifications	
Stability, Short-Term (30 min)	0.01 dB
Stability, Long-Term Drift (24 hr)	0.1 dB
Operating Temperature	10 - 40 °C
Storage Temperature	5 - 50 °C
Power Supply (Included)	Input: 100 - 240 VAC, Output: 9 VDC @ 0.66 A

¹ Measured 3 m from module. Beam shape is elliptical.

² The maximum power is given for an operating temperature of 25 °C. When operated at a temperature other than this, the maximum output will vary.

3.1. Drawing



Notes:

- 1) $\text{\O}1.400"$ does not include screw heads - approx. 0.03" each - and shutter lever - approx. 0.2".

Figure 5: LDM Drawing

Part 4. Regulatory

As required by the WEEE (Waste Electrical and Electronic Equipment Directive) of the European Community and the corresponding national laws, Thorlabs offers all end users in the EC the possibility to return “end of life” units without incurring disposal charges.

- This offer is valid for Thorlabs electrical and electronic equipment:
- Sold after August 13, 2005
- Marked correspondingly with the crossed out “wheelie bin” logo (see right)
- Sold to a company or institute within the EC
- Currently owned by a company or institute within the EC
- Still complete, not disassembled and not contaminated



Wheelie Bin Logo

As the WEEE directive applies to self contained operational electrical and electronic products, this end of life take back service does not refer to other Thorlabs products, such as:

- Pure OEM products, that means assemblies to be built into a unit by the user (e.g. OEM laser driver cards)
- Components
- Mechanics and optics
- Left over parts of units disassembled by the user (PCB's, housings etc.).

If you wish to return a Thorlabs unit for waste recovery, please contact Thorlabs or your nearest dealer for further information.

4.1. **Waste Treatment is Your Own Responsibility**

If you do not return an “end of life” unit to Thorlabs, you must hand it to a company specialized in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site.

4.2. **Ecological Background**

It is well known that WEEE pollutes the environment by releasing toxic products during decomposition. The aim of the European RoHS directive is to reduce the content of toxic substances in electronic products in the future.

The intent of the WEEE directive is to enforce the recycling of WEEE. A controlled recycling of end of live products will thereby avoid negative impacts on the environment.

Part 5. Thorlabs Worldwide Contacts**USA, Canada, and South America**

Thorlabs, Inc.
435 Route 206
Newton, NJ 07860
USA
Tel: 973-579-7227
Fax: 973-300-3600
www.thorlabs.com
email: feedback@thorlabs.com

Europe

Thorlabs GmbH
Hans-Böckler-Str. 6
85221 Dachau
Germany
Tel: +49-(0)8131-5956-0
Fax: +49-(0)8131-5956-99
www.thorlabs.com
email: Europe@thorlabs.com

UK and Ireland

Thorlabs LTD.
1 Saint Thomas Place, Ely
Cambridgeshire CB7 4EX
Great Britain
Tel: +44 (0)1353-654440
Fax: +44 (0)1353-654444
www.thorlabs.com
email: sales.uk@thorlabs.com

Japan and Asia

Thorlabs Japan Inc.
5-17-1, Ohtsuka
Bunkyo-ku, Tokyo 112-0012
Japan
Tel: +81-3-5979-8889
Fax: +81-3-5979-7285
www.thorlabs.jp
email: sales@thorlabs.jp

Scandinavia

Thorlabs Sweden AB
Box 141 94
400 20 Göteborg
Sweden
Tel: +46-31-733-30-00
Fax: +46-31-703-40-45
www.thorlabs.com
email: scandinavia@thorlabs.com



Thorlabs, Inc.
435 Route 206N
Newton, NJ 07860 USA

Phone: (973) 579-7227 ♦ Fax: (973) 300-3600
www.thorlabs.com
