



# Round Module User Manual



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## 1 Safety Precautions

This instruction manual explains how to use the Round Laser Diode Module.

Before use, please read this manual thoroughly. After reading, keep it together with the product for reference when necessary. Please retain packaging material in the event the unit is stored or shipped in the future.

Caution – use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Body of the unit contains labels specifying wavelength and maximum emitted power.

Recommend following user requirements for Class 3B products according to latest ANSI Z136.1 Standard for the Safe Use of Lasers. Use protective eyewear when engineering or other procedural and administrative controls are inadequate to eliminate potential exposure in excess of the MPE.

Avoid un-intended reflections from mirror-like surfaces.

### 1.1 Explanation of Warning Symbols

The meaning of the symbols used in this manual and attached to the product follows.

Warning messages are intended to prevent accidents to operating personnel such as burns and electrical shocks.

Some caution messages are intended to prevent damage to the module.



Precaution for handling electrostatic sensitive devices.



Visible and/or invisible Class 3B laser radiation. Avoid direct exposure to beam. Wear suitable protective eyewear whenever laser is in operation.

**Laser Aperture**

Laser output location warning.



### Warning

To prevent permanent damage, observe these precautions:

1. Protect against electrostatic discharge.
2. Avoid external damage to the enclosure.
3. Use supplied power supply or power supply meeting specifications.
4. Do not drop the module or operate it at extreme temperatures or humidity.
5. Beware of optical feedback from reflective surfaces. Permanent damage to the laser diode is possible.

## 2 Application and Features

### 2.1 Applications

This device is a Round Laser Diode Module with integrated laser diode current driver and temperature control for high precision equipment and instrumentation. It plays a pivotal role in testing or manufacturing, and can be used in various applications such as Raman Spectroscopy, Flow Cytometry, Data Storage, metrology, graphic arts, bio-instrumentation, analytical instrumentation and sensing.

### 2.2 Standard Features

- Plug & Play Operation
- ESD Protection
- Remote Key Switch with Remote Interlock (Optional for OEM customers)
- Constant Current Driver
- Temperature Stabilized

## 3 Specifications

### OPTICAL

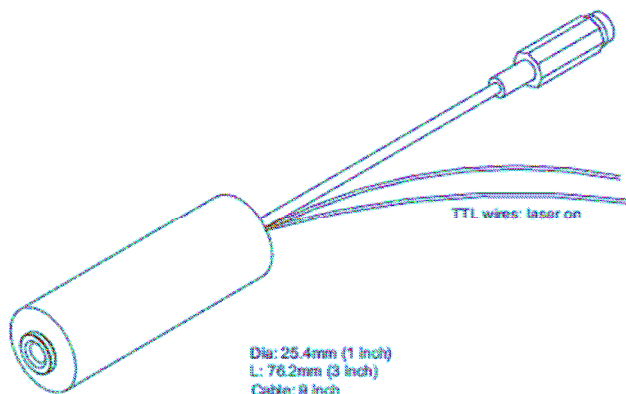
Power Stability (over 1 hr)	< 0.5%
Laser Noise ( 10 to 1Mhz) RMS	< 0.5%
Laser Class	Class 3B (Maximum power and wavelength labeled on safety labels of the unit)
Laser Operation	CW
Spatial Mode	TEM <sub>00</sub>
Beam Divergence (full)	< 1 mrad Typical
Beam Size at Aperture (FWHM)	< 1 mm
Beam Pointing Stability	< $\pm 10 \mu\text{rad}$
Polarization (typical)	> 100:1, vertical or horizontal
Warm-up Time	< 5 min

### ELECTRICAL

Operating Voltage	3.3 V DC (5V DC for 405nm Modules)
Operating Current	1.5 A max

### MECHANICAL

Laser Dimension	25.4 mm x 76.2 mm
Power Connector	2.1mm Power Jack
Weight	< 1 lb
Operating Temperature	+10°C to +40°C
Storage Temperature	-40°C to +80°C



**Supplied with connector with flying leads for TTL laser On/Off:**

**Default Open: Laser On**

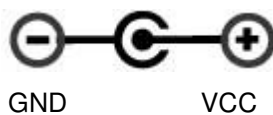
**To Turn Laser Off: Connect TTL, white wire, to ground, black wire.**

**Figure 2: Mechanical Dimensions**

Pins	Definition	Description
1		No Connection
2		No Connection
3	GND	Ground
4	TEMP	Temperature Reading (UNSUPPORTED)
5	TTL	TTL Modulation (Laser On/Off)

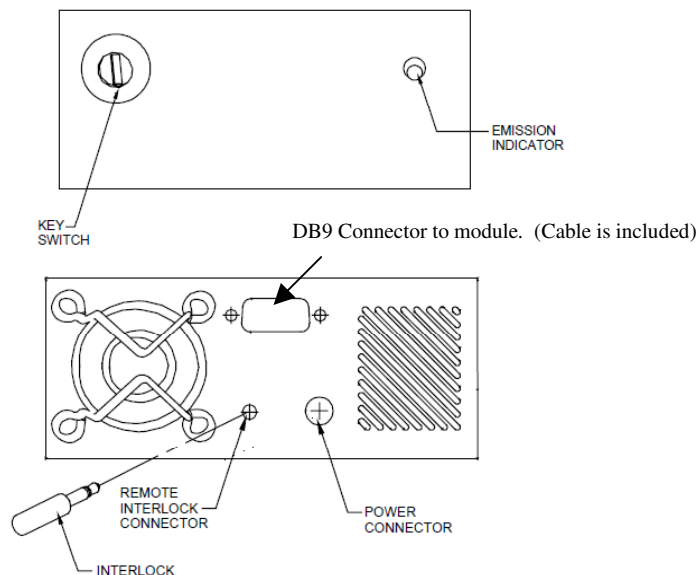
**Note:** Connector with flying leads is included.

2.1 x 5.5mm Center Positive Standard Jack for supplying operating voltage and current



**Figure 2 – Electrical Connections**

## Remote Key Switch (Optional Only for OEM customers)



1. **Power on/off key switch**—Located on the front panel of the Remote Key Switch, this switch enables users to power the unit on with the turn of a key. The unit is inoperable when key is removed.
2. **Emission indicator**—This red LED, located to the upper right of the front panel, lights up when the unit is on to warn of eminent laser emission.
3. **5-second activation delay**—The unit does not apply power to the laser module until five seconds after a user has turned the key switch to the “on” position.
4. **Remote interlock & connector**— This feature is located on the rear panel of the Key Switch. The unit will not operate without the interlock intact. Interlock needs to be shorted for power to be available for laser diode module.

## 4 Operating Procedures

### 4.1 Standard CW Operation

#### User Startup Procedure:

- Properly mount laser module on a heat sink
- Connect power connector to power adapter or Remote Key Switch power cable
- Plug power adapter or Remote Key Switch to wall plug

#### Remote Key Switch Procedure:

- Use key to activate and deactivate power to the laser module. A 5 second delay will begin after key switch is turned to “on” position.
- Emission warning light will light up
- Laser system is “off” when key is in vertical position.
- Interlock must be “shorted” for power to be applied to laser module

## **Laser Module Startup Process:**

- . Upon receiving power from either power supply or remote key switch:
  - LED will turn on which signal possible laser emission.
  - Laser module will begin to temperature stabilize.
  - Laser diode will not emit light for 20 seconds after power has been applied.
  - Use of TTL line does not affect temperature control

## **5 Maintenance**

### **5.1 Maintenance and Inspection**

Routine maintenance is not required. If the unit appears to be operating incorrectly or with low output power, check the following:

- Inspect the enclosure for scratches, dings, dents, or other signs of damage due to handling.
- Verify that the module enclosure has not been opened and the factory seal is intact.
- Verify power source connections to the laser module.
- Ensure that the operating environment is within specifications.

## **6 Service**

### **6.1 Repair**

There are no user-serviceable parts inside and do not attempt to open housing. Warranty would not be valid if housing has been opened. If the module fails during use, check the items in section 5.1 before requesting an RMA.

Defective modules that are beyond the warranty period will be repaired at cost, if possible. An RMA must be requested before sending it to Ondax. When shipping, please use a box at least five times as large as the module with enough packaging material to prevent any movement of the module within the box.

### **6.2 For Information or Enquiries**

If you need information regarding purchase or repair, or for any other Sales related questions, please contact the distributor or selling agent from whom the module was purchased.

### **6.3 Ondax Limited Warranty**

Ondax warrants that all **SureLock™** integrated laser modules (RO, FCLM, LM) will be free from defects in material and workmanship for 12 months from the date of shipment. This limited warranty covers only those defects that arise as a result of normal use of the product, and does not cover any other problems, including those that arise as a result of: (i) improper handling, maintenance or modification, (ii) operation outside the product's specifications; or (iii) unauthorized modification or misuse.

If Ondax receives, during the applicable warranty period, notice of a defect in any product which is covered by this warranty, Ondax shall either repair or replace the product, at Ondax's option. Ondax shall have no obligation to repair, replace or refund until the customer returns the defective product to Ondax. Any replacement product may be either new or like-new, provided that it has functionality at least equal to that of the product being replaced. Ondax products may contain remanufactured parts, components, or materials equivalent to new in performance.

Limitations of Liability

1. TO THE EXTENT ALLOWED BY LOCAL LAW, NEITHER ONDAX NOR ITS THIRD PARTY SUPPLIERS MAKES ANY OTHER WARRANTY OR CONDITION OF ANY KIND, WHETHER EXPRESS OR IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE.
2. TO THE EXTENT ALLOWED BY LOCAL LAW, EXCEPT FOR THE OBLIGATIONS SPECIFICALLY SET FORTH IN THIS WARRANTY STATEMENT, IN NO EVENT SHALL ONDAX OR ITS THIRD PARTY SUPPLIERS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY AND WHETHER ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.
3. To the extent allowed by local law, the remedies provided in this Limited Warranty Statement are the customer's sole and exclusive remedies.

## **6.4 Contacting Ondax**

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