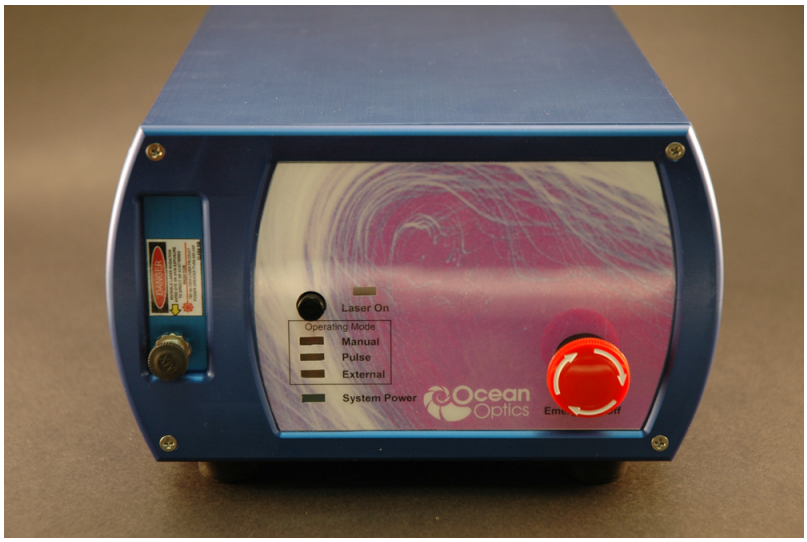
Multimode Laser-532
Installation and Operation Manual



For Products: Model LASER-532-IP-LAB
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WARNING

Protective Eye Wear Should Be Worn When Using This Instrument - Intense Radiation Present

See Important Safety Notices inside.

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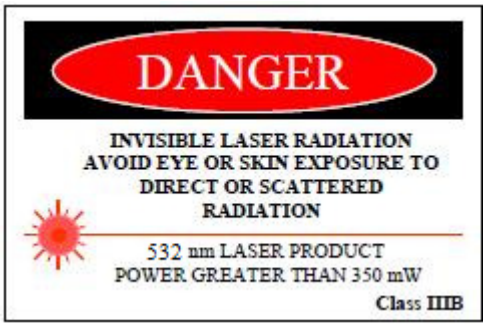
Important Safety Notices

The Class IIIB laser described here produces a laser emission of 532 nm with output power levels exceeding 350 mW. All models except the –S are designed to be used in a fiber-coupled configuration (-S is designed for SMA coupling); any other configuration may expose the user to hazardous radiation.



This laser is safe to operate, provided the user pays attention to all safety warnings:

1. Post warnings in the area of the laser beam to alert those present.

2. Keep all unauthorized personnel out of the area where the laser is operated to avoid potentially hazardous exposure to eyes and skin.

3. Whenever the laser is running and the beam is not in use, it is good operating practice to mechanically block the path.

4. Never look directly into the laser source or scattering laser light from any reflective surface. Never sight down the beam into the source.

5. Maintain experimental setup at low heights to prevent inadvertent beam-eye contact.

6. As a precaution against accidental exposures to the output beam or its reflection, operators should wear laser safety glasses attenuated to the wavelength being generated.

Sources for additional information and assistance on laser safety are the following:

Center for Device and Radiological Health
Office of Compliance
2098 Gaither Rd.
Rockville, MD 20850
Tel: 301 594 4654
Fax: 301 594 4672

Laser Institute of America
12424 Research Parkway, Suite 125
Orlando, FL 32826
Tel: 407 380 1553
Fax: 407 380 5588

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About This Manual

Document Purpose and Intended Audience

This document provides you with information to get your laser set up and operating.

Document Summary

Chapter	Description
Chapter 1: *Introduction*	Contains a list of product features and package contents.
Chapter 2: *Set-up and Operation*	Provides instructions for setting up and operating the laser.
Appendix A: *Specifications*	Lists product specifications.

Product-Related Documentation

You can access documentation for Ocean Optics products by visiting our website at **http://www.oceanoptics.com**. Select *Technical Operating Instructions*, then choose the appropriate document from the available drop-down lists.

Upgrades

Occasionally, you may find that you need Ocean Optics to make a change or an upgrade to your system. To facilitate these changes, you must first contact Customer Support and obtain a Return Merchandise Authorization (RMA) number. Please contact Ocean Optics for specific instructions when returning a product.

Chapter 1

Introduction

Overview

The Multimode Spectrum Stabilized Laser features an internal 50 mW spectrum stabilized laser module that contains an integral Thermo-Electric Cooler (TEC) and thermistor for monitoring the internal temperature of the laser platform. The laser has narrow spectral lines, is compact and features a hermetically sealed laser component, making it optimal for industrial and medical applications.

The unit comes complete with a laser-enable switch for safety, a safety key lockout, and an emergency shut-off switch.

Multimode Spectrum Stabilized Laser

Lab Version Model

This document covers the installation and operation of the following laser models:

- LASER-532-IP-LAB – 532 nm spectrum stabilized multi-mode laser with > 50mW of fiber-coupled output power

Features

The laser provides the following features:

- >50 mW Fiber Coupled or SMA-coupled (-S model) Output Power
- Narrow Spectral Line width of only 0.2 nm
- Thermo-Electric Cooler (TEC)
- Low Power consumption (< 5.5 W)
- Remote Interlock, Safety Key Lock-out and Emergency shut-off

Package Contents

- ❑ One (1) Ocean Optics Multimode Stabilized Laser with internal TEC and thermistor
- ❑ One (1) power cord
- ❑ Two (2) master power keys
- ❑ One (1) remote interlock plug

Additional Equipment Required

The following equipment, available from Ocean Optics, is also required to use your laser:

- ❑ Safety goggles (R-2001-GL goggles from Ocean Optics are recommended)

Chapter 2

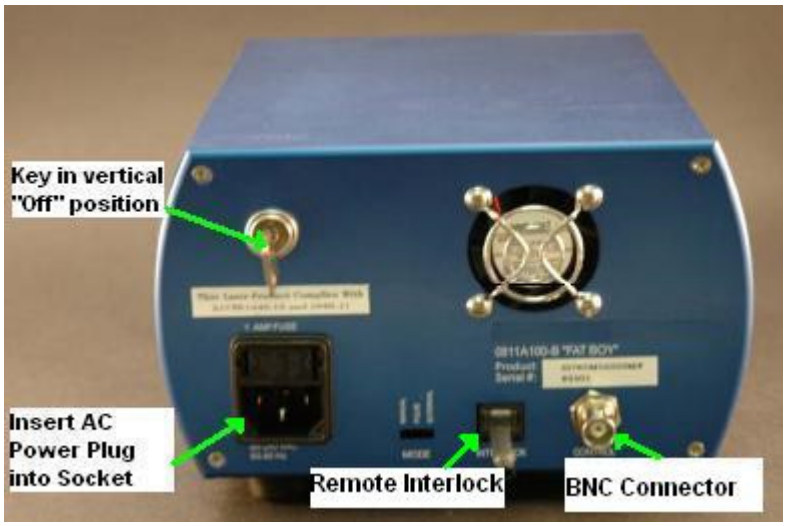
Set-up and Operation

Overview

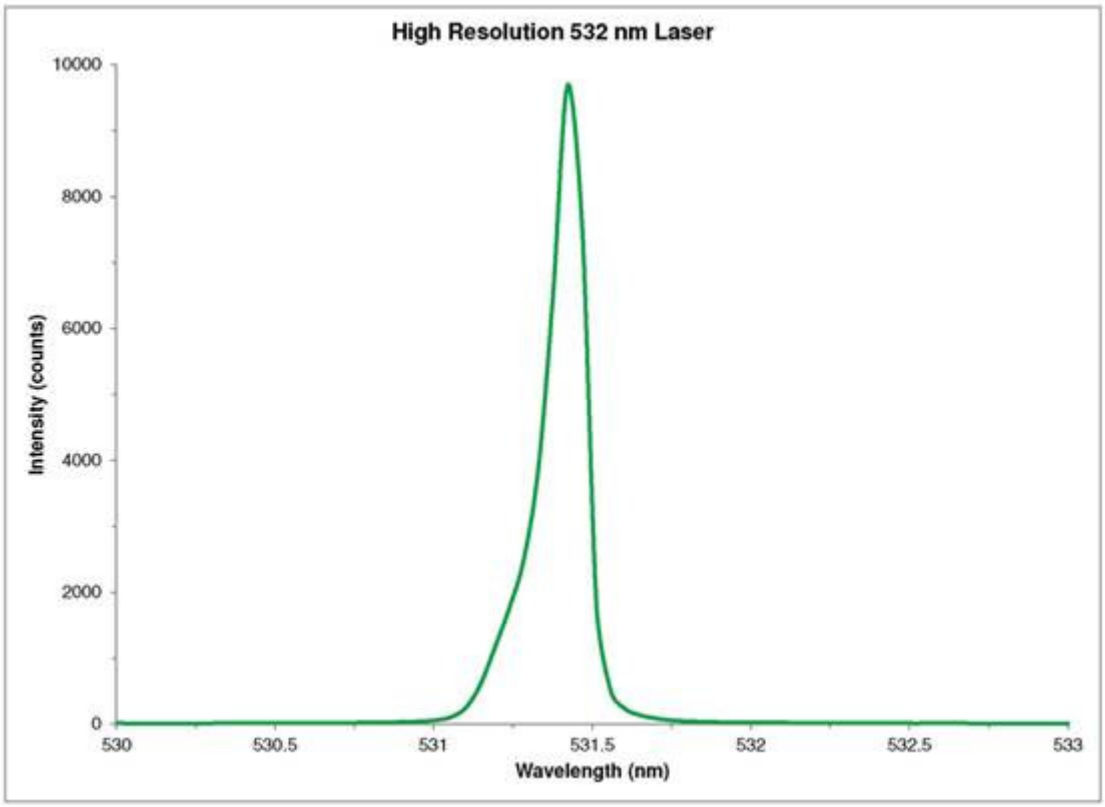
This section provides instructions for setting up and operating the laser. Read all instructions and warnings carefully before attempting to install and operate your laser.

Set-up

The laser set-up procedure for the Model LASER-532-IP-LAB sets up the laser to control the output power automatically via the Internal Preset mode.



Laser Rear Panel View



Set-up for Operation in Internal Power Preset Mode

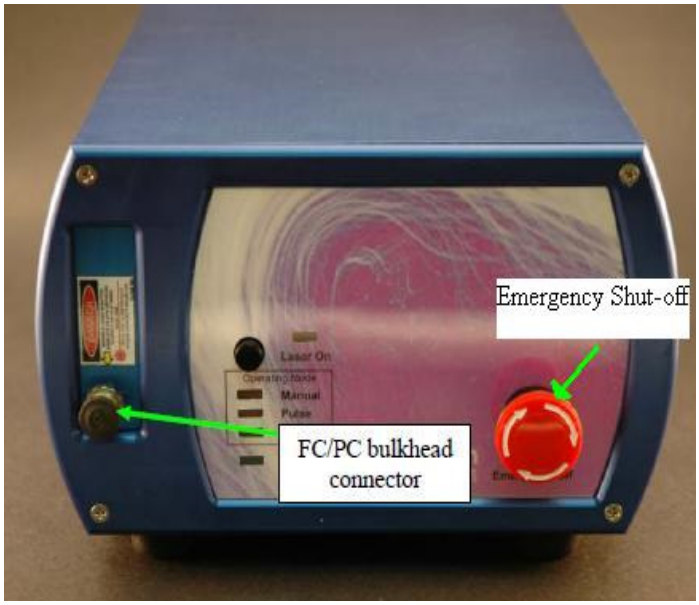
Use these set-up instructions for the Internal Power Preset mode (Model LASER-532-IP-LAB).

► *Procedure*

1. Make sure that the master Power key is in the vertical (“Off”) position.
2. Connect the 120V AC power plug to the power connector on the rear of the unit.
3. Plug the other end of the power cord into a standard 110/120V electrical outlet.
4. Connect a FC/PC Multi-mode fiber patch cord to the FC/PC bulkhead connector on the front panel of the unit (also available with an SMA-905 optical output coupling).
5. Note that this laser is configured with a remote interlock on the rear panel. The laser has an RJ-11 (4-pin telephone jack) that is prewired to provide a closed loop connection for the interlock. Removal of the RJ-11 connector or a break in the closed loop circuit provided will result in a laser interrupt and the system will be reset to standby mode. You can reconfigure the RJ-11 connector to provide a closed loop that interactively couples with their system or facility by replacing the short length of wire with longer closed loop connections, if desired.

6. Ensure that the **Emergency Shut-off** switch (EMO) is in the "ready" position by turning the red button clockwise until it pops out slightly.

7. You are now ready to turn on the laser module. Go to *Operation in Internal Power Preset Mode*.



Model LASER-532-IP-LAB

Operation

Read the following warning before attempting to use the laser:

WARNINGS

DO NOT LOOK DIRECTLY INTO THE LASER. LASER RADIATION IS HAZARDOUS TO THE EYES.

AVOID DIRECT EXPOSURE TO THE BEAM.

Operation in Internal Power Preset Mode

Use this procedure to operate the Model LASER-532-IP-LAB laser in the Internal Power Preset mode.

► *Procedure*

1. Turn the master Power key (on the rear panel) 90 degrees clockwise to the horizontal "ON" position. The green **System Power** LED (on the front panel) lights indicating that system power is on.

2. Push the **Laser On** switch (on the front panel). The red LED on the front panel lights to indicate that the laser is in operation. The laser turns on approximately 2 seconds after the switch is pressed.

Note

Note that the switch returns to the center position after you press it. At this point, it can function as a manual reset.

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3. In the event of a power interruption, power failure or interlock break, the laser is automatically disabled. To re-enable it, toggle the **Laser On** switch to back to the ON position.

Using the Remote Interlock Feature

The Remote Interlock is a safety feature that automatically shuts down the laser when a trigger such as a door or an enclosure opening occurs. You may decide to enable a remote interlock mechanism when integrating the laser into a laboratory or system environment.

The interlock is located on the rear panel and uses an RJ-11 plug. The Remote Interlock is normally an open circuit, so the provided RJ-11 connector or a user-configured closed loop interconnect MUST be in place for proper function of the laser module. To enable the Remote Interlock, you must obtain an RJ-11 plug (or modify the plug provided) and create a closed circuit between the two signal terminals of the plug and insert the closed-circuit RJ-11 plug into the Interlock jack.

The laser functions normally when is senses a closed circuit, but it will disable laser output when it detects an open circuit. To re-enable the laser function, you must make sure that the interlock is a closed circuit, and then manually reset the laser by toggling the **Laser On** switch on the front panel to the ON position.

Shutting Down the Laser

Use the following procedure when you are finished using the laser and need to shut it down.

► *Procedure*

1. Push the **Laser On** toggle switch (on the front panel) to turn the laser off. Make sure that the **Laser On** LED goes off.

2. Turn the master Power key (on the rear panel) 90 degrees to the vertical “off” position. The green **System Power** LED (on the front panel) goes off indicating that system power is off.

3. Disconnect the fiber or SMA cords and power cable as needed.

Appendix A

Specifications

Specifications	Criteria
Optical	
Power Output (CW)	> 50mW
Peak Wavelengths	532 +/- 0.3nm
Spectral Line Width	<0.5nm (FWHM)
Output Fiber	100 μm@ 0.22NA (or Free Space output)
Connector	SMA 905 or FC
Expected Lifetimes	> 10,000 hours
Electrical	
Input Power	Max. 3.0 A @ 5VDC
Warm-up Time	10 – 15 min.
Mechanical	
Physical Dimensions	115 x 175 x 245 mm (4.5 in. x 6.8 in. x 9.6 in.)
Cooling	Internal Thermoelectric cooler
Weight	1.6 kg (3.4lbs)
Environmental	
Ambient Temperature	
Humidity	5 – 95%, non-condensing
Specifications	**Criteria**
Optical	
Power Output (CW)	
Peak Wavelengths	532 +/- 0.3nm
Spectral Line Width	<0.5nm (FWHM)

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