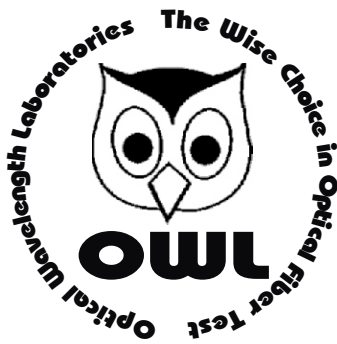


# Dual OWL Series Operations Guide Multimode Light Sources



Optical Wavelength Laboratories

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## 1.0 GENERAL

Thank you for your purchase of an Optical Wavelength Labs (OWL) Dual OWL series multimode light source. The source is simple to operate with two buttons: one for controlling power and one for selecting the output wavelength. LED indicators highlight the selected source and verify that battery power is sufficient to maintain the calibrated output power.

Dual OWL series light sources are LED-based light sources designed to test multimode fiber optic links. The LED outputs are temperature compensated and are calibrated to couple -20dBm of optical power into multimode fiber. The LED indicators show whether the unit is ON or OFF, and whether the battery has enough power to maintain its calibrated output power. Dual OWL series light sources contain stabilized 850 and/or 1300nm LEDs that conforms to international testing standards.

Each Dual OWL series light source comes with a protective rubber boot, carrying strap, CD-ROM based operations manual, and a 9-volt battery.

Typical uses include telecommunications networks, data networks, cable television, and industrial equipment control.

## 2.0 FUNCTIONAL DESCRIPTIONS



Figure 1 - Dual OWL Multimode Light Source

1. 850nm Port - Houses a 850nm multimode source and can be either a ST or SC connector.
2. Charger Port - Allows for charging of re-chargable 9-volt batteries, as well as wall power operation. **NOTE: DO NOT USE BATTERY CHARGING PORT WITH NON-RECHARGEABLE BATTERIES. THERE IS THE POTENTIAL FOR EXPLOSION AND DAMAGE MAY OCCUR TO THE UNIT AND/OR THE USER.**
3. 1300nm Port - Houses a 1300nm multimode source and can be either a ST or SC connector.
4. 850nm Indicator LED - Indicates the ON/OFF status of the 850nm LED source.
5. 1300nm Indicator LED - Indicates the ON/OFF status of the 1300nm LED source.
6. Charger Indicator LED - Indicates the status of the charger port.
7. Power Button - Powers the unit ON or OFF.
8. Wavelength Select Button - Switches the unit between 850nm and 1300nm.

NOTE: During normal operation, if the indicator LEDs are not lit, this indicates that the battery has insufficient power to provide accurate readings and must be replaced.

NOTE: Single wavelength versions (850nm only or 1300nm only) will only have a single optical port.

## 3.0 APPLICATIONS

### 3.1 PRECAUTIONS

3.1.1 Safety - Caution must be exercised when working with optical equipment. Most transmission equipment and light sources use light that is invisible to the human eye. High energy light is potentially dangerous, and can cause serious, irreparable damage to the eye. Thus, it is recommended to **NEVER** look into the connector port of a light source or the end of a fiber.

3.1.2 Operational - In order to ensure accurate and reliable readings, it is vitally important to clean ferrules containing optical fibers and optical connector ports. If dirt, dust, and oil is allowed to build up inside connector ports, this may scratch the surface of the LED diode, producing erroneous results. Replace dust caps after each use.

3.1.3 Connector - Do NOT insert APC (Angled Physical Contact) connectors into the optical ports on the Dual OWL as this may damage the light source inside the port.

### 3.2 REQUIRED ACCESSORIES

3.2.1 Cleaning Supplies - It is recommended to clean fiber ferrules before each insertion with 99% or better isopropyl alcohol and a lint free cloth, or a special in-adapter ferrule cleaner. A can of compressed air should be available to dry off the connector after wiping, and to blow out dust from bulkheads.

3.2.2 Patch Cords - Patch cords may be needed to connect the Dual OWL series light source to the system under test. The connector styles on the patch cord must match the type on the light source and the type of the system under test.

3.2.3 Optical Fiber Adapters - Optical fiber adapters are used to connect two connectorized fibers together, and may be necessary to adapt your patch cords to the system under test.

### 3.3 TYPICAL APPLICATIONS

Dual OWL series multimode light sources can be used as diagnostic and measurement tools of optical transmission systems and fiber optic links. These applications can be found in several industries, including premise, LAN, CATV, and Telco.

Dual OWL series multimode light sources are designed to emit a temperature-stabilized source of light to be used for optical loss measurement. The optical power emitted by the light source serves as an optical reference, which is otherwise known as the “zero” point when a power meter is “zeroed”. Optical loss measurements are useful for measuring the attenuation, or loss, of a fiber link. The loss value can then be compared to a pre-calculated link budget, which is used to determine if the fiber link will operate within the parameters of the transmission equipment.

The formula for calculating loss in a fiber link is:

$$L = P_a - P_r$$

where **L** is the amount of optical loss in dB, **P<sub>a</sub>** is the absolute power in dbm, and **P<sub>r</sub>** is the reference power in dBm.

Optical loss measurements can also be used for fiber optic link certification. Link certification is a process where optical loss measurements are compared to a link budget calculated using fiber optic cabling standards.

## 4.0 MAINTENANCE / CALIBRATION

4.0.1 Repair of this unit by unauthorized personnel is prohibited, and will void any warranty associated with the unit.

4.0.2 The battery compartment is covered by a sliding plate on the back of the unit. Remove the rubber boot to expose the back of the unit. One 9v battery is required for operation.

4.0.3 For accurate readings, the optical connectors on Dual OWL series light sources and the connectors on the patch cords should be cleaned prior to attaching them to each other. Minimize dust and dirt buildup by replacing the dust caps after each use.

4.0.4 It is recommended to have Optical Wavelength Laboratories calibrate Dual OWL series light sources once per year.

## 5.0 WARRANTY

5.0.1 Optical Wavelength Labs products have a **two-year** factory warranty, which covers manufacturer defect and workmanship only, valid from the date of shipment to the original customer.

5.0.2 Products found to be defective within the warranty will be either repaired or replaced, at the option of Optical Wavelength Labs.

5.0.3 This warranty does not apply to units that have been repaired or altered by anyone other than Optical Wavelength Labs, or have been subjected to misuse, negligence, or accident.

5.0.4 In no way will Optical Wavelength Labs liabilities exceed the original purchase price of the unit.

5.0.5 To return equipment under warranty, please contact Optical Wavelength Labs for a RMA number. To ensure quick turnaround, please include a short description of the problem and a phone number where you can be reached during normal business hours.

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## 6.0 SPECIFICATIONS

Launch Method	LED
Connector	ST or SC
Center Wavelength (850nm)	850 ± 20nm
Center Wavelength (1300nm)	1290nm min 1350nm max
Spectral Width (FWHM; 850 nm)	35 nm
Spectral Width(FWHM; 1300nm)	170nm
Output Power	-20.0 dBm
Initial Accuracy	0.1 dB
Fiber Type	multimode
Battery Life	up to 30 hrs (9v battery)
Battery Capacity Display	Yes
Operating Temperature	0 to 55° C
Storage Temperature	0 to 75° C
Dimensions	2.75" x 4.94" x 1.28"
Weight	154g

Conforms to the Harmonized European Standards EN 61326-1 and EN 61010-1.