O.W.L. MANUFACTURER OF QUALITY OPTICAL FIBER TEST EQUIPMENT

OPTICAL WAVELENGTH LABORATORIES

Dual OWL Dual Wavelength Fiber Optic LED Source For Multi-mode Fiber Testing

Operations Manual
Version 1.0
September 13, 2001
OWL Part DO-1

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GENERAL

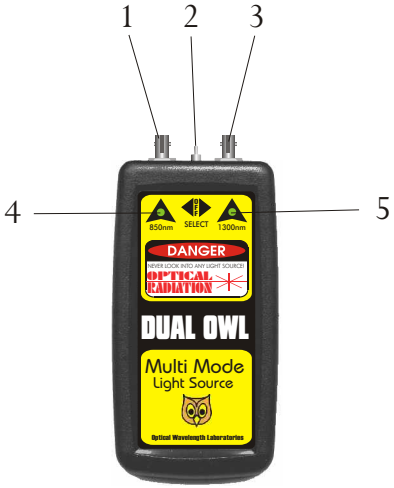
This manual describes the operation of the Dual OWL Dual Wavelength Fiber Optic Light Source.

The Dual OWL provides high output and stability. The LEDs use temperature compensated outputs, and are calibrated to couple -20dBm of optical power into multi-mode fiber. The source is simple to operate with a single switch controlling power and selecting the output wavelength. LED indicators highlight the selected source and verify that battery power is sufficient to maintain the calibrated output power.

The Dual OWL is an LED based light source designed to test multi-mode fiber optic links. The LED indicator shows whether the unit is ON or OFF, and whether the battery has enough power to maintain its calibrated output power. Dual 850 and 1300nm light sources provide dual wavelength testing that conforms to international testing standards.

If your light source has only one wavelength, it can be upgraded to include the other. Call 262-473-0643 for more information about upgrading your light source.

FUNCTIONAL DIAGRAM



(1) 850nm LED Light Source Connector
This port houses an LED that emits a continuous beam of 850nm light that couples -20 dBm into a multi- mode fiber.

(2) Power/Wavelength Selector Switch
This switch toggles to 3 positions. Center position is OFF, the left position powers on the 850nm LED, and the right position powers on the 1300nm LED.

(3) 1300nm LED Light Source Connector
This port houses an LED that emits a continuous beam of 1300nm light that couples into -20 dBm into a multi-mode fiber.

(4) 850nm Indicator LED
This LED indicates the ON/OFF status of the 850nm LED source.

(5) 1300nm Indicator LED
This LED indicates the ON/OFF status of the 1300nm LED source.

OPERATION

PRECAUTIONS

Safety - Caution must be exercised when operating the Dual OWL multi-mode light source. LEDs such as the ones in the Dual OWL produce intense beams of infrared optical energy that are invisible to the eye.

NEVER LOOK INTO A LIGHT SOURCE OR THE END OF A FIBER THAT MAY BE ENERGIZED BY A SOURCE!

Prolonged exposure to direct optical energy from an LED can cause serious and permanent retina damage.

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

REQUIRED ACCESSORIES

Cleaning Supplies - Fiber ferrules should be cleaned before each insertion with 99% or better isopropyl alcohol and a lint free cloth. A can of compressed air should be available to dry off the connector after wiping, and to blow out dust from bulkheads.

Patch Cords - A single mode patch cord is required to connect the Dual OWL to the system under test. The connector styles on the patch cord must match the type on the Dual OWL and the type of the system under test.

APPLICATIONS

Fiber Attenuation Testing - The Dual OWL emits a stable -20dBm beam of infrared light into multi-mode fibers for the purpose of testing the fiber for attenuation. An optical power meter is required for this type of test.

Typical systems able to be tested include telecommunications networks, data networks, and industrial equipment control.

FIBER ATTENUATION MEASUREMENT

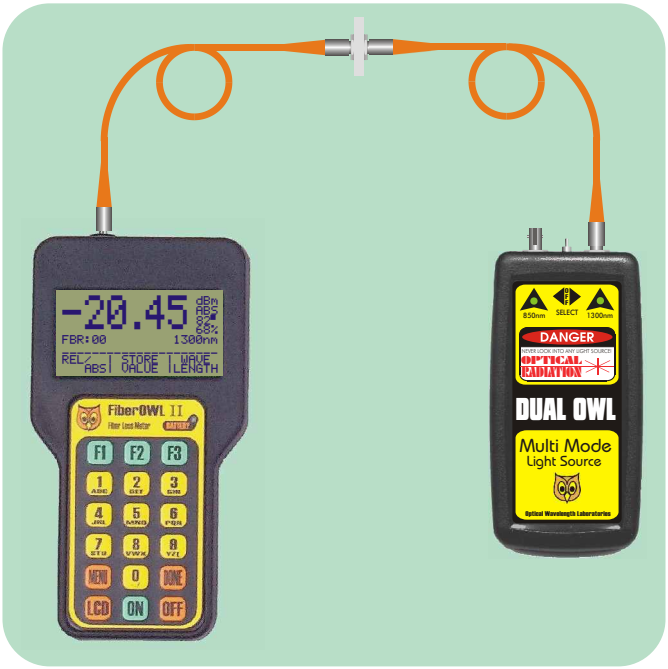


Figure 1 - Setting a reference

Setting a Reference - The following steps demonstrate how to set a reference using the Dual OWL. A power meter such as the Fiber OWL II shown in Figure 1 is necessary for setting the reference value.
Follow these steps for each wavelength you wish to set a reference for.

Step 1 - Connect the light source to the power meter via two multi-mode patch cords and a barrel adapter as shown in Figure 1.
Step 2 - Toggle the wavelength selector switch to the wavelength you are setting a reference for.
Step 3 - Power on the power meter, and set it to the wavelength you are setting a reference for.
Step 4 - Press the '0' key on the meter. This sets the reference, or "zeroes" the meter for the wavelength you are setting a reference for.

NOTE: Do not remove the patch cord from the light source until you have completed testing all of the fibers under test. Disconnecting the patch cord from the source before you complete testing will invalidate the reference value you just set.

Taking Power Readings - Once your reference is set, you may test fiber links according to the set reference. Easy PASS/FAIL readings can be taken with the Fiber OWL II optical power meter using REL (relative) mode.

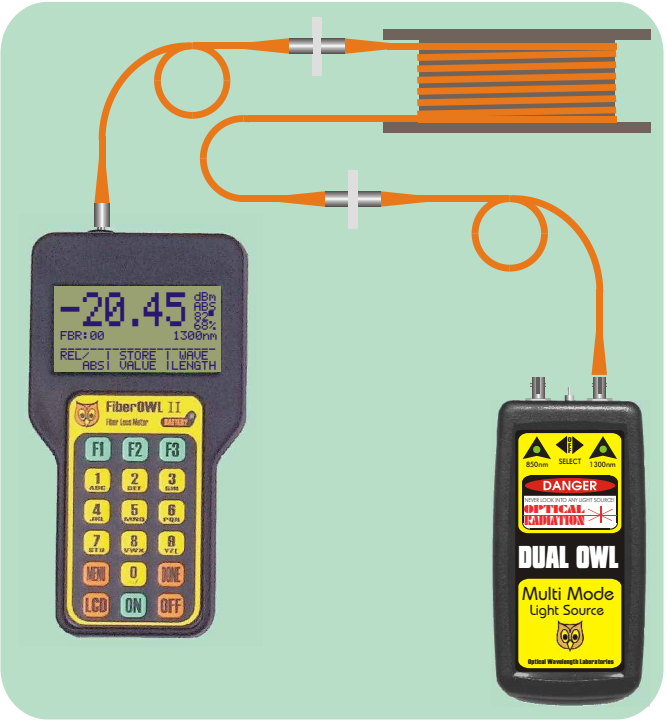


Figure 2 - Testing a link

Step 1 - Without disturbing the connection to the light source, remove both patch cords from the barrel adapter, and attach the power meter and light source to the fiber link as shown in Figure 2.

Step 2 - Press the 'F1' key to set the meter in REL mode. Notice the upper right hand corner of the display. dBm changed to dB, and ABS changed to REL. The display now shows a reading of -1.34 dB. This means that the link is losing 1.34 dB of optical power.

Step 3 - Record the value shown on the display. The reading can be recorded by hand, or can be stored in the meter. Consult the meter manual for instructions on how to store data.

Repeat these steps for all the fibers under test.

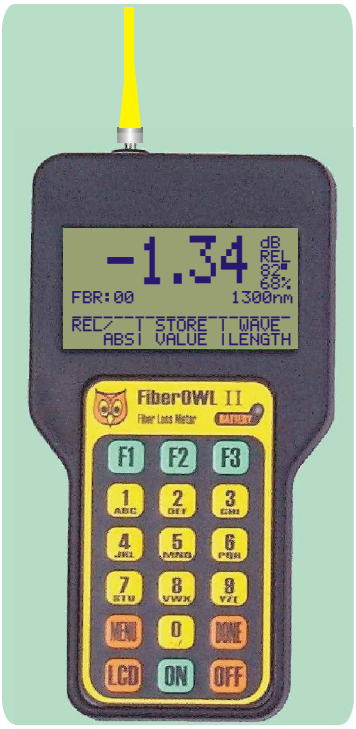


Figure 3 - Using REL mode

MAINTENANCE AND CALIBRATION PROCEDURES

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

Battery Replacement. The battery compartment is covered by a sliding plate on the back of the unit. One 9v battery is required for operation.

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

Calibration. It is recommended to have Optical Wavelength Laboratories calibrate this unit once per year.

Warranty. The Dual OWL comes standard with a one-year factory warranty, which covers manufacturer defect and workmanship only.

CONTACT INFORMATION

Address:
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Whitewater, WI 53190

Phone:
(262) 473-0643

Web:
http://owl-inc.com

SPECIFICATIONS

Launch Method:---------- LED
Center Wavelength (850nm):---------- 850 ±20nm
Center Wavelength (1300nm):---------- 1300nm
1290nm min
1350nm max
Spectral Width(FWHM; 850nm):---------- 35nm
Spectral Width(FWHM; 1300nm):---------- 170nm
Output Power:---------- -20.0 dBm
Initial Accuracy:---------- 0.1 dB@25° C
Fiber Type:---------- multimode
Battery Life:---------- 40 hrs.
Operating Temperature:---------- 0 to 55° C
Storage Temperature:---------- 0 to 75° C
Battery Capacity Display:---------- Yes
Connector(Adapters available call):---------- ST
WIDTH:---------- 2.75”
HEIGHT:---------- 4.94”
DEPTH:---------- 1.28”
Weight with battery:---------- 154g