

MPO Series

Operations Guide

Fiber Optic Light Sources



Optical Wavelength Laboratories

CONTENTS **PAGE**

1.0	GENERAL	2
2.0	FUNCTIONAL DESCRIPTIONS	3
2.0.1	WAVESOURCE CONNECTIONS	3
2.0.2	WAVESOURCE INDICATOR LEDs	3
2.0.3	WAVESOURCE BUTTONS	3
3.0	APPLICATIONS	4
3.1	PRECAUTIONS	4
3.1.1	Safety	4
3.1.2	Operational	4
3.1.3	Connector	4
3.2	REQUIRED ACCESSORIES	4
3.2.1	Cleaning Supplies	4
3.2.2	Patch Cords	4
3.2.3	Optical Fiber Adapters	4
3.3	TYPICAL APPLICATIONS	4
4.0	MAINTENANCE / CALIBRATION	5
5.0	WARRANTY	5
6.0	SPECIFICATIONS	6
7.0	WAVESOURCE CONFIGURATIONS	6

FIGURES

Figure 1 - WaveSource Fiber Optic Light Source	3
--	---

1.0 GENERAL

Thank you for your purchase of an Optical Wavelength Labs (OWL) MPO Series fiber optic light source.

The various models of MPO light sources contain stabilized multimode and singlemode sources designed for accurate optical power and loss measurements, as well as polarity, in MPO fiber optic cables and links. Each MPO light source comes with a protective rubber boot, operations manual on USB flash drive, and a USB charger and cable.

MPO light sources are designed for testing 12-fiber MPO/MTP cabling, with versions for multimode @ 850 and/or 1300 nm, and singlemode @ 1310 and/or 1550 nm. Please see the section at the end of this guide for a complete list of configurations.

MPO light sources can be configured to automatically cycle through all 12 fibers, or manually switch via intuitive push-buttons.

MPO light sources also include a SC port for single fiber power/loss measurement, which is helpful when testing MPO cabling attached to MPO cassettes.

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

2.0 FUNCTIONAL DESCRIPTIONS



Figure 1 - MPO Series
Fiber Optic Light Source

2.0.1 CONNECTIONS

1. **Single-fiber Port** - Enables single-fiber testing.
2. **USB Charger Port** - Allows for charging internal Lithium Polymer battery.
3. **12-fiber MPO Port** - 12-fiber MPO test port.

2.0.2 INDICATOR LEDS

4. **Single-fiber Port Indicator LED** - This LED will either be **RED** or **GREEN** depending upon which wavelength is selected.
5. **Charger Indicator LED** - indicates the status of the charger port.
6. **12-fiber MPO Port B Indicator LED** - This LED will either be **RED** or **GREEN** depending upon which wavelength is selected.
7. **Wavelength/channel display** - briefly shows the currently selected output wavelength, AUTO mode, and currently selected channel. Channel 1-12 refer to the MPO channels, and channel 13 refers to the single-fiber port.

2.0.3 BUTTONS

8. **Next channel button** - switches the source to the next channel.
9. **Previous channel button** - switches the source to the previous channel.
10. **Power button** - Power the unit on or off.
11. **λ / AUTO button** - Pressing this button will toggle the unit between wavelengths in the selected port when there are two wavelengths in the same port. Holding this button will place the source into AUTO mode, where the source automatically switches wavelengths for automatic dual-wavelength testing.

3.0 APPLICATIONS

3.1 PRECAUTIONS

3.1.1 Safety - Exercise caution 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 emitting surface of the light source, producing erroneous results. Replace dust caps after each use.

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. 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 MPO light source to the system under test. The connector styles on the patch cord must match the type on the MPO 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

MPO 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.

MPO light sources are designed to emit a temperature-stabilized source of light to be used for optical loss measurement. The MPO 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_a** is the absolute power in dbm, and **P_r** 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 For accurate readings, the optical connectors on the MPO Source 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.

4.0.3 It is recommended to have Optical Wavelength Laboratories calibrate the MPO Source 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.

Optical Wavelength Labs
N9623 Old Highway 12
Whitewater, WI 53190
Internet: owl-inc.com
Phone: 262-473-0643
Fax: 262-473-8737

6.0 SPECIFICATIONS

Optical Specifications	Multimode	Singlemode
Source Type	LED	Laser
Calibrated Wavelengths	850, 1300nm	1310, 1550nm
Output Power (CW)	-20 dBm (into MM fiber)	-10 dBm (into SM fiber)
Channel Precision	±1.0 dB	±1.0 dB
Spectral Width (FWHM)	50nm (850nm) 180nm (1300nm)	2nm (1310nm) 3nm (1550nm)
Channel Switching	Manual / Automatic	

General Specifications

Battery Life	up to 10 hours (Lithium Polymer)
Optical Connector	varies with model
Operating Temperature	0°C to +55°C
Storage Temperature	0°C to +75°C
Dimensions	2.87 x 4.42 x 1.25 in (72.9 x 112.3 x 31.8mm)
Weight (with battery)	10 ounces (284g)
Connector type	MPO Port: 12-fiber MPO // Single-fiber port: SC

7.0 CONFIGURATIONS

Model	Description	Fiber Type		MPO Type
		Multimode	Singlemode	
MPO-OLS-M83	850/1300nm Multimode MPO Source	•		12-fiber
MPO-OLS-M85	850nm Multimode MPO Source	•		12-fiber
MPO-OLS-S35	1310/1550nm Singlemode MPO Source		•	12-fiber
MPO-OLS-S13	1310nm Singlemode MPO Source		•	12-fiber
MPO-OLS-S15	1550nm Singlemode MPO Source		•	12-fiber