

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

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Find the *AFL / Noyes OPM-4* at our website: ***Click HERE***

AFL

Test and Inspection

OLS Series Light Sources, OPM Series Optical Power Meters, and Related Test Kits User's Guide

NOYES®

www.AFLglobal.com/go/NOYES or 1-800-321-5298/1-603-528-7780

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Warranty

All NOYES test equipment products are warranted for a period of (1) one year from the date of delivery to the end user. Extended warranties start at the end of the standard (1) one year warranty period.

1 year, 2 year, and 4 year extended warranties are available for NOYES products with or without annual calibration included. Any product that is found defective within the warranty period will, at the discretion of AFL, be repaired or replaced. Warranty will be voided if the product has been repaired or altered by other than an authorized NOYES product repair facility, if the void sticker has been compromised, or which have been subject to misuse, negligence, or accident.

In no case shall AFL liabilities exceed the original purchase price.

Exclusions

The warranty on your equipment shall not apply to defects resulting from the following:

- Unauthorized repair or modification
- Misuse, negligence, or accident

CE Information

CE

These instruments have been designed and tested to comply with the relevant sections of any applicable specifications including full compliance with all essential requirements of all applicable EU Directives.

Returning Equipment

To return equipment, please contact NOYES to obtain additional information and a Service Request (S.R.) number. To allow us to serve you more efficiently, please include a brief description specifying the reasons for the return of the equipment.

AFL

NOYES Test and Inspection

16 Eastgate Park Road

Belmont, NH 03220

Tel: 800-321-5298

603-528-7780

Fax: 603-528-2025

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Specifications are subject to change without notice.

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Table of Contents

Safety Information....4
General Information....5
OPM-Series Optical Power Meters....6
OPM4 Models....6
Ports and Display....6
Dual Function Keys....7
Test Mode: To Set Reference....8
Test Mode: To View Reference....8
Display Readings - Splash and Auto Off Screen....8
Display Readings in Test Mode....9
OPM5 Models....10
New Feature....10
Ports and Display....10
Dual Function Keys....11
Display Readings - Splash and Auto Off Screen....12
Display Readings in Test Mode....13
File Manager: To Select Current File....14
File Manager: To Select Current Fiber....14
Test Mode: To Set Reference....14
Test Mode: To View Reference....15
Recall Mode: To View Stored Records....16
To Edit Stored Records....17
Clear Mode: To Erase Stored File....17
Clear Mode: To Erase Stored Fiber....17
OLS-Series Light Sources....18
OLS1-Dual LED Light Source....18
OLS4 Integrated LED and Laser Light Source....23
OLS7-3 Triple Wavelength Laser Source....25
OLS7-FTTH Triple Wavelength Laser Source....27
Measuring Optical Power....29
Testing Multimode Links....30
Testing Single-mode Links....33
Maintenance Tips....36
Cleaning Optical Ports....36
Repair and Calibration....37
Battery Replacement....37

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Safety Information

WARNING! Use of controls or adjustments other than those specified herein may result in hazardous radiation exposure.



The OLS1 optical light source is a **CLASS I LED PRODUCT.**

The OLS2 optical light source is a registered **CLASS I LASER PRODUCT.**

The OLS4 optical light source is a registered **CLASS I LED and LASER PRODUCT.**

The OLS7 optical light source is a registered **CLASS I LASER PRODUCT.**

WARNING! To avoid the danger of fire and electrical shock:

- Never use a voltage that is different from that for which the AC adapter is rated.
- Do not plug the unit into a power outlet that is shared by other devices.
- Never modify the power cord or excessively bend, twist, or pull it.
- Do not allow the power cord to become damaged. Do not place heavy objects on the power cord or expose it to heat.
- Never touch the AC adapter while your hands are wet.
- Should the power cord become seriously damaged (internal wiring exposed or shorted), contact the manufacturer to request servicing.

WARNING! Use only the specified AC adapter. Use of another type of AC adapter can damage the instrument and create the danger of fire and electrical shock.

CAUTION! To avoid serious eye injury, never look directly into the optical outputs of fiber optic network equipment, test equipment, patch cords, or test jumpers. Always assume that optical outputs are on.

CAUTION!
- Observe the polarity markings on the bottom of the battery box when installing AA batteries
- Do NOT insert a 9V battery into unit. It is designed to operate from 2xAA batteries only

NOTICE! NOYES power meters and light sources contain no user serviceable parts. Except for changing batteries and cleaning optical ports, these units must be returned to NOYES or authorized agents for repair and calibration.

IMPORTANT! Proper care in handling should be taken when using any precision optical test equipment. Scratched or contaminated optical connectors can impact the performance of the instrument. It is important to keep the dust caps in place when the unit is not being used.

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General Information

Introduction

The purpose of this User's Guide is to explain how to use and maintain NOYES test equipment. Please check our web site at **www.AFLglobal.com/go/NOYES** for updates to this manual, software updates, and additional application information. If you have any questions about your instruments and recommended accessories, or if you need technical or sales support, please contact NOYES Customer Service.

Contacting NOYES Customer Service

You may call NOYES Customer Service between 8 a.m. and 5 p.m., United States Eastern Time, as follows:

Phone: 800-321-5298 • 603-528-7780

Fax: 603-528-2025

Email: NOYESTechSupport@AFLglobal.com

Unpacking and Inspection

These instruments have been carefully packed in accordance with standard shipping procedures. Examine the equipment for damage that may have occurred during shipment. If you find any damage, please contact NOYES.

Recommended Accessories

You will need fiber optic test jumpers to connect instruments to the fiber optic system under test. A test jumper must have the same core and cladding size as the fiber under test. The connector at one end of the test jumper must mate with the optical port on each instrument. The connector on the other end must mate with the fiber optic system under test.

A Connector adapter is required to mate fiber optic test jumpers.

An OPM optical port must be equipped with an adapter cap. A variety of adapter caps, connector adapters, and test jumpers with a variety of lengths and connector styles are available from AFL - NOYES.

Optical ports and connector end faces must be kept free from dirt or other contaminates to ensure accurate measurements and operation.

For cleaning connector end faces on OLS light sources, test jumpers, and in fiber frames or adapters, use optical quality cleaning fluid such as AFL FCC2 connector cleaning fluid and AFL CCT molded cleaning tips.

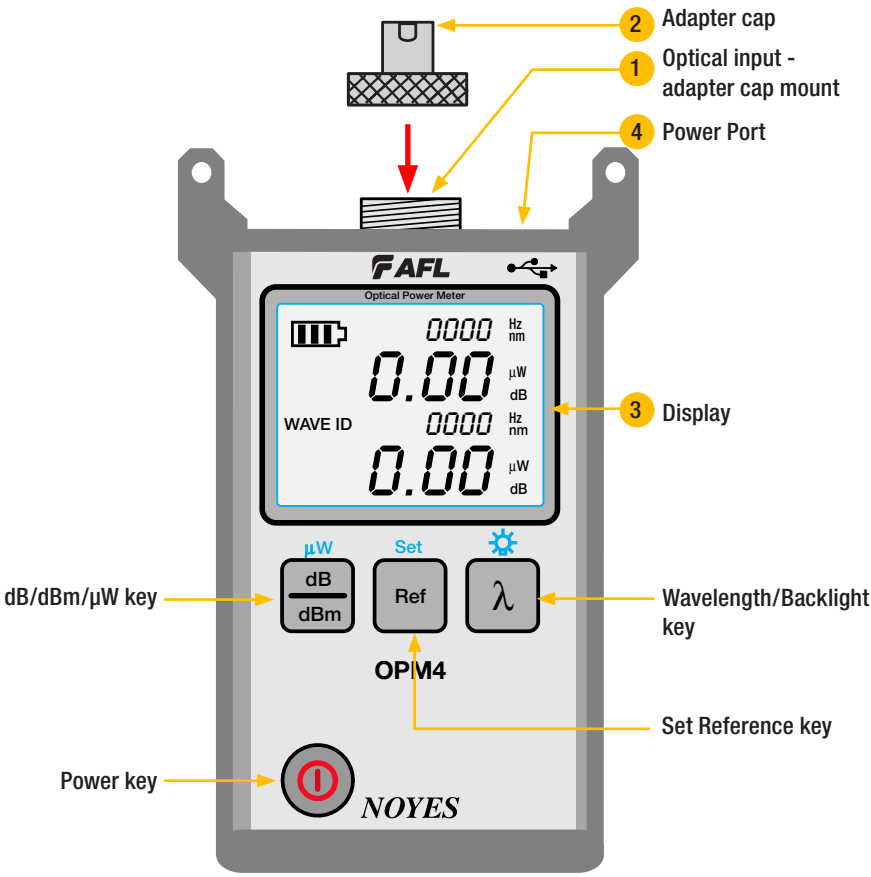
For cleaning OPM optical ports and adapter caps, use lint-free optical cleaning wipes such as AFL FiberWipes and optical quality cleaning fluid such as AFL FCC2 connector cleaning fluid (or IPA - Reagent Grade Isopropyl Alcohol 99% or better) and a can of filtered compressed air.

Visit our web at **www.AFLglobal.com/go/Clean** for more information.

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OPM-Series Optical Power Meters

OPM4 Models



Ports and Display

REF #	DESCRIPTION
1	Optical input (adapter cap mount) - accepts NOYES thread-on adapter caps.
2	Adapter cap - the OPM4 optical input must be equipped with an adapter cap.
3	Display - depending on the selected mode, shows measured power dBm or µW or insertion loss dB, calibrated wavelengths, tone signal Hz, wavelength ID, references, and battery charge status.
4	Power Port - mini-USB connection for AC power adapter or PC connection (powers unit only - no data functionality)

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Dual Function Keys

YY ← Secondary function of a key → Press and hold to activate

XX ← Primary function of a key → Press and release to activate

Power key

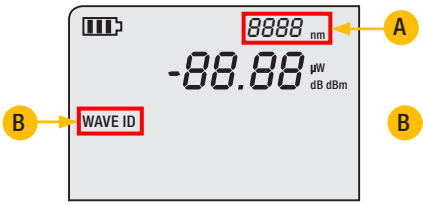
Provides two functions:

- Press the key to turn the OPM4 on/off. The unit will turn off automatically five minutes after the last key press.
- Press and hold the key to disable/enable the Auto Off feature.
  Auto power down will occur after 5 minutes of inactivity.
  - to disable the Auto Off feature, press and hold the power key until “HELD P on” appears.
  - to enable the Auto Off feature, press and hold the power key until “HELD AOFF” appears.

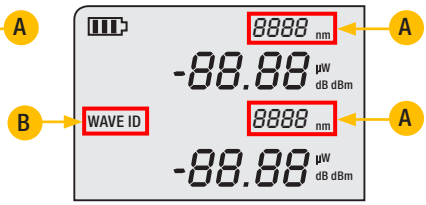
Wavelength/Backlight key

Provides two functions:

- Press and hold to toggle the Backlight on or off.
- Press to cycle through the calibrated wavelengths A.
  Note: When the OPM4 is receiving a wavelength ID’d light, it automatically switches to the ID wavelengths. WAVE ID indicator B appears on the display.



Single WAVE mode, or
Tri WAVE mode - second page

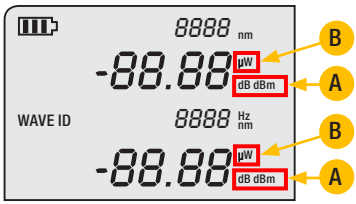


Dual WAVE mode, or
Tri WAVE mode - first page

dB/dBm/µW key

Provides two functions:

- Press to toggle test readings between insertion loss in dB and power in dBm A.
- Press and hold to view power in µW B.



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Set
Ref

Ref/Set key

Provides two functions:

- To set Reference
- To display Reference

Test Mode: To Set Reference

1. Set your OPM4 to the desired measurement mode (dB, dBm, µW).
2. To store the currently measured level or multiple levels as the new reference levels, press and hold the Ref key until the label HELD SET is displayed.
3. Once the new reference is set, the OPM4 switches to the dB measurement mode.

   Note: When setting references from multiple wavelength ID'd sources, allow several seconds prior to setting the references for wavelengths to be ID'd and measured.

Test Mode: To View Reference

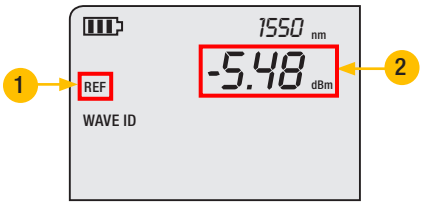
1. Press the Ref key to display the stored reference level for the currently selected wavelength or detected WAVE ID wavelength(s). The reference indicator REF 1 and reference value(s) will be briefly (for about 2-3 seconds) displayed as follows:

CW mode - the reference value will be displayed in the field 2

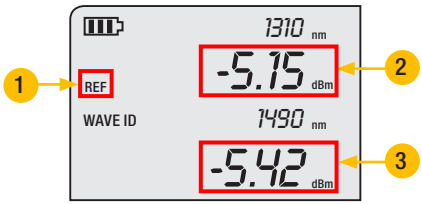
Single WAVE mode - the reference value will be displayed in the field 2

Dual WAVE mode - the reference values will be displayed in the fields 2 and 3

Tri WAVE mode - The reference value will be displayed in the fields 2 and 3 on the first page and in the field 2 on the second page (replaces first page automatically in ~ 2 seconds).

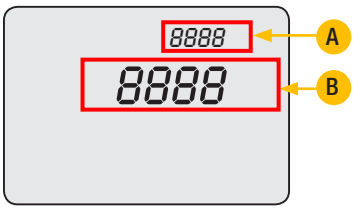


Single WAVE mode, or
Tri WAVE mode - second page



Dual WAVE mode, or
Tri WAVE mode - first page

Display Readings - Splash and Auto Off Screen



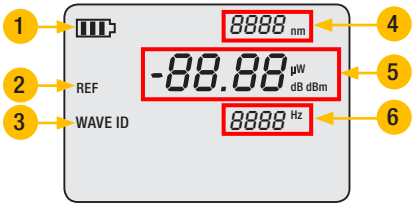
Splash (Version) screen: During power up, the OPM4 software version is shown on the top line A. The OPM type and detector type are shown on the next line B. The Splash screen will be automatically replaced by the Test screen after ~ 2 seconds.

Auto Off screen: When the unit is about to power off due to inactivity, then display will show "OFF" B and count down the number of seconds until power will be shut off.

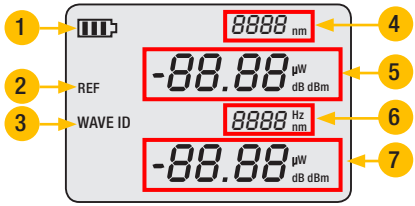
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OPM4 Models

Display Readings in Test Mode



Single WAVE mode, or
Tri WAVE mode - second page

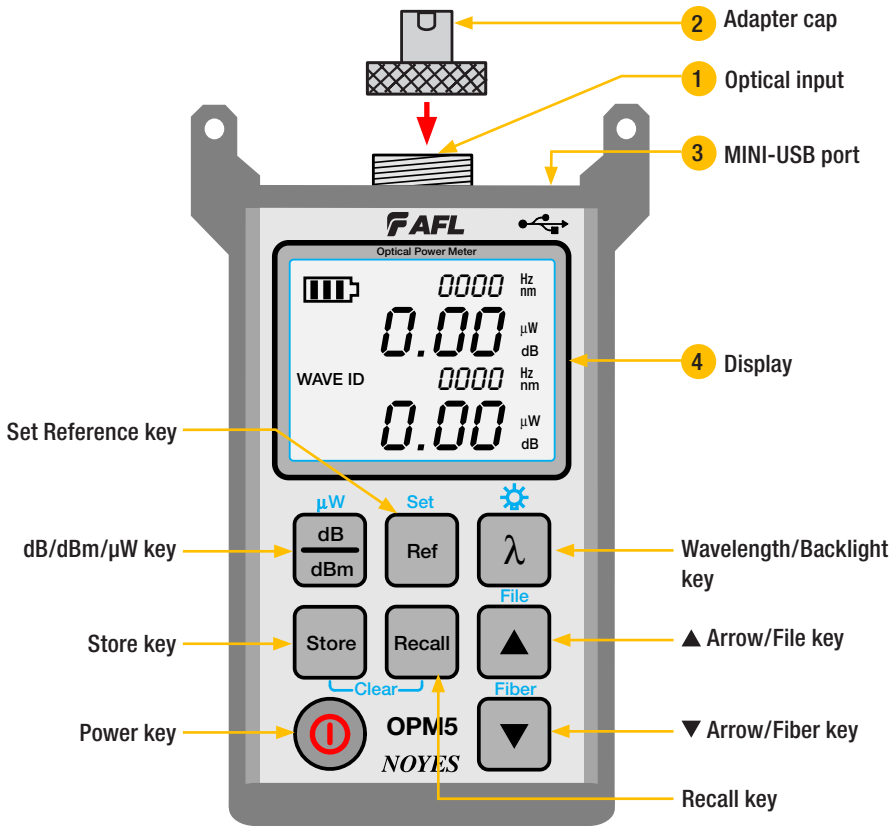


Dual WAVE mode, or
Tri WAVE mode - first page

REF. #	DESCRIPTION
1	**Battery status indicator** - displays estimated battery life remaining. The 3 bars indicate the charge level. When the battery is low, the battery indicator will flash.
2	**REF indicator** - appears to indicate previously stored reference value(s). On the Ref key press, the reference indicator REF 2 and reference value(s) for the currently selected wavelength or detected WAVE ID wavelength(s) will be displayed briefly (for about 2-3 seconds). **CW mode** - the reference value will be displayed in the field 5. **Single WAVE mode** - The reference value will be displayed in the field 5. **Dual WAVE mode -** The reference values will be displayed in the fields 5 and 7. **Tri WAVE mode -** The reference value will be displayed in the field 5 and 7 on the first page and in the field 5 on the second page (replaces first page automatically in ~ 2 seconds).
3	**WAVE ID indicator** - Will be displayed if the OPM4 is receiving a wavelength ID'd light.
4	**CW mode** - This field displays the currently enabled wavelength. **Single WAVE mode** - This field displays the detected WAVE ID wavelength. **Dual WAVE mode** - This field displays the first detected WAVE ID wavelength. **Tri WAVE mode** - This field displays the first WAVE ID wavelength and the third WAVE ID wavelength that is shown on a second page (replaces first page automatically in ~ 2 seconds).
5	This field displays measured power dBm or µW or insertion loss dB at the wavelength displayed in the field 4. If power or loss is too high or low for the OPM4 to measure, this field will display HI or LO.
6	**CW mode** - This field displays modulation frequency if detected. **Dual WAVE mode** - This field displays the second wavelength.
7	**Dual WAVE mode** - This field displays measured power dBm or µW or insertion loss dB at the wavelength displayed in the field 6. If power or loss is too high or low for the OPM4 to measure, this field will show HI or LO.

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OPM5 Models



New Feature

File Management system allows simple organization of power or insertion loss measurements into multiple files. Using the supplied Test Results Management - TRM software (Windows® compatible) and USB connection, test records are transferred to a PC for analyzing, generating professional test reports, and printing. For more information, refer to the TRM software User's Guide (available on supplied CD and **www.AFLglobal.com/go/Software**).

Ports and Display

REF #	DESCRIPTION
1	Optical input (adapter cap mount) - accepts NOYES thread-on adapter caps.
2	Adapter cap - the OPM5 optical input must be equipped with an adapter cap.
3	Mini-USB type B port: - allows connection to a PC for downloading stored test results - interface for AC power adapter
4	Display - depending on the selected mode, shows measured power dBm or µW or insertion loss dB, calibrated wavelengths, tone signal Hz, wavelength ID, references, file and fiber number, and battery charge status.

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Dual Function Keys

YY ← Secondary function of a key → Press and hold to activate

XX ← Primary function of a key → Press and release to activate

Power key

Provides two functions:

- Press the key to turn the OPM5 on/off. The unit will turn off automatically five minutes after the last key press.
- Press and hold the key to disable/enable the Auto Off feature.
  Auto power down will occur after 5 minutes of inactivity.
  - to disable the Auto Off feature, press and hold the power key until “HELD P on” appears.
  - to enable the Auto Off feature, press and hold the power key until “HELD AOFF” appears.

File

▲ Arrow/File key

Provides several functions:

- Testing mode: press and hold to enter the File Manager - File mode screen.
- File mode: press to increment the File number.
- Fiber and Recall mode: press to increment the Fiber number.

Fiber

▼ Arrow/Fiber key

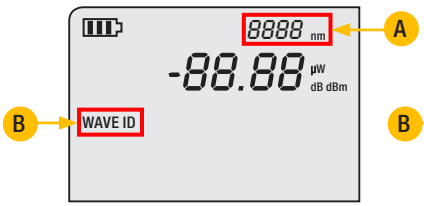
Provides several functions:

- Testing mode: press and hold to enter the File Manager - Fiber mode screen.
- Fiber mode: press to decrement the Fiber number.
- File and Recall mode: press to decrement the File number.

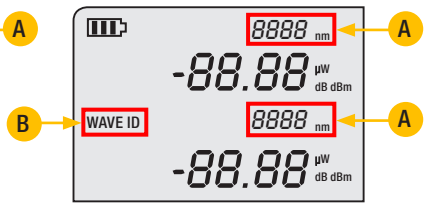
Wavelength/Backlight key

Provides two functions:

- Press and hold to toggle the Backlight on or off.
- Press to cycle through the calibrated wavelengths (A).
  Note: When the OPM5 is receiving a wavelength ID’d light, it automatically switches to the ID wavelengths. WAVE ID indicator (B) appears on the display.



Single WAVE mode, or
Tri WAVE mode - second page



Dual WAVE mode, or
Tri WAVE mode - first page

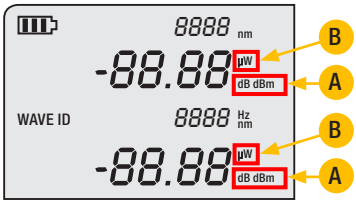
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µW
dB
dBm

dB/dBm/µW key

Provides two functions:

- Press to toggle test readings between insertion loss in dB and power in dBm A.
- Press and hold to view power in µW B.



Set
Ref

Ref/Set key

Provides two functions:

- Press to display the stored reference level for the currently selected wavelength or multiple wavelengths.
- Press and hold until HELD SET is displayed to store the currently measured level or multiple levels as the new reference levels. Once the new reference is set, the OPM5 switches to the dB measurement mode.

Store

Store key

Provides two functions :

- Test mode: press this key to save the currently displayed measured data in the next available memory location (next Fiber) of the current File.
- File/Fiber/Recall/Clear mode: press this key to return to the Test mode.

Recall

Recall key

Press this key to enter the Recall mode that allows viewing and deleting stored test records. Press again to exit the Recall mode.

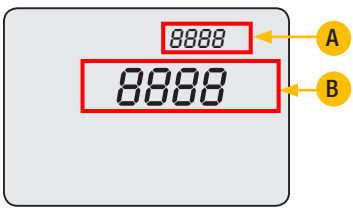
Store + Recall
Clear

Clear

The Clear mode screen may be accessed and used as follows:

- From the File mode screen to delete a file
- From the Recall mode screen to delete a fiber

Display Readings - Splash and Auto Off Screen

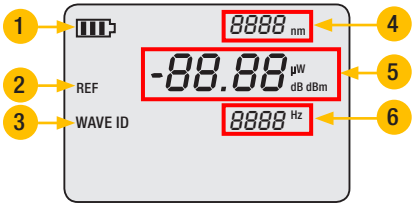


Splash (Version) screen: During power up, the OPM5 software version is shown on the top line A. The OPM type and detector type are shown on the next line B. The Splash screen will be automatically replaced by the Test screen after ~ 2 seconds.

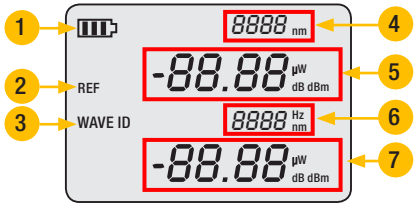
Auto Off screen: When the unit is about to power off due to inactivity, then display will show "OFF" B and count down the number of seconds until power will be shut off.

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Display Readings in Test Mode



Single WAVE mode, or
Tri WAVE mode - second page



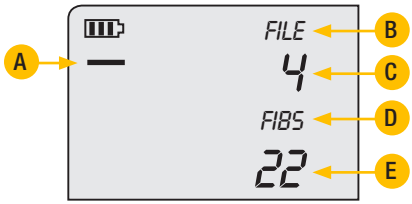
Dual WAVE mode, or
Tri WAVE mode - first page

REF. #	DESCRIPTION
1	**Battery status indicator** - displays estimated battery life remaining. The 3 bars indicate the charge level. When the battery is low, the battery indicator will flash.
2	**REF indicator** - appears to indicate previously stored reference value(s). On the Ref key press, the reference indicator REF 2 and reference value(s) for the currently selected wavelength or detected WAVE ID wavelength(s) will be displayed briefly (for about 2-3 seconds). **CW mode** - the reference value will be displayed in the field 5. **Single WAVE mode** - The reference value will be displayed in the field 5. **Dual WAVE mode -** The reference values will be displayed in the fields 5 and 7. **Tri WAVE mode -** The reference value will be displayed in the field 5 and 7 on the first page and in the field 5 on the second page (replaces first page automatically in ~ 2 seconds).
3	**WAVE ID indicator** - Will be displayed if the OPM5 is receiving a wavelength ID'd light.
4	**CW mode** - This field displays the currently enabled wavelength. **Single WAVE mode** - This field displays the detected WAVE ID wavelength. **Dual WAVE mode** - This field displays the first detected WAVE ID wavelength. **Tri WAVE mode** - This field displays the first WAVE ID wavelength and the third WAVE ID wavelength that is shown on a second page (replaces first page automatically in ~ 2 seconds).
5	This field displays measured power dBm or µW or insertion loss dB at the wavelength displayed in the field 4. If power or loss is too high or low for the OPM5 to measure, this field will display HI or LO.
6	**CW mode** - This field displays modulation frequency if detected. **Dual WAVE mode** - This field displays the second wavelength.
7	**Dual WAVE mode** - This field displays measured power dBm or µW or insertion loss dB at the wavelength displayed in the field 6. If power or loss is too high or low for the OPM5 to measure, this field will show HI or LO.

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File Manager: To Select Current File

1. Press and hold the ▲ Arrow/File key to enter the File Manager - File mode screen.
2. A blinking cursor A to the left of FILE indicates that you are in the File mode.

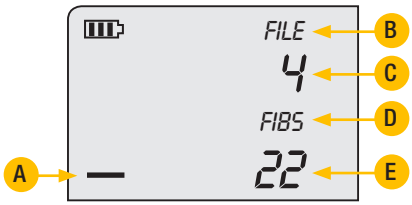


B - File indicator C - File number D - Fiber indicator E - Number of fibers in the selected file

3. Use the ▲ / ▼ arrow keys to increment/decrement the File number.
   - Press and hold ▼ arrow key to go to the first file.
   - Press and hold ▲ arrow key to go the last file.
4. Press the Store key to make the selected file current and exit the File mode.
5. The indicator FILE blinks for ~ 1.5 seconds before the OPM5 returns to test measuring screen.

File Manager: To Select Current Fiber

1. Press and hold the ▼ Arrow/Fiber key to enter the File Manager - Fiber mode screen.
2. A blinking cursor A to the left of Fiber indicates that you are in the Fiber mode.



3. Use the ▲ / ▼ arrow keys to increment/decrement the Fiber number.
   - Press and hold ▲ arrow key to increment by 10 fibers.
   - Press and hold ▼ arrow key to decrement by 10 fibers.
4. Press the Store key to make the selected Fiber number current and exit the Fiber mode.

Test Mode: To Set Reference

1. Set your OPM5 to the desired measurement mode (dB, dBm, µW).
2. To store the currently measured level or multiple levels as the new reference levels, press and hold the Ref key until the label HELD SET is displayed.
3. Once the new reference is set, the OPM5 switches to the dB measurement mode.

Note: When setting references from multiple wavelength ID'd sources, allow several seconds prior to setting the references for wavelengths to be ID'd and measured.

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Test Mode: To View Reference

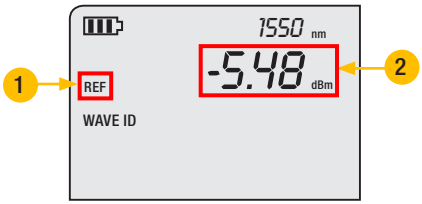
1. Press the Ref key to display the stored reference level for the currently selected wavelength or detected WAVE ID wavelength(s). The reference indicator REF 1 and reference value(s) will be briefly (for about 2-3 seconds) displayed as follows:

CW mode - the reference value will be displayed in the field 2

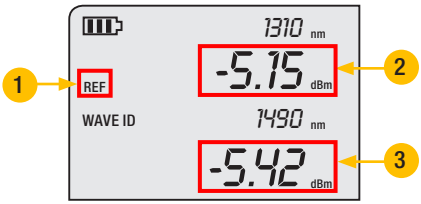
Single WAVE mode - the reference value will be displayed in the field 2

Dual WAVE mode - the reference values will be displayed in the fields 2 and 3

Tri WAVE mode - The reference value will be displayed in the fields 2 and 3 on the first page and in the field 2 on the second page (replaces first page automatically in ~ 2 seconds).



Single WAVE mode, or
Tri WAVE mode - second page



Dual WAVE mode, or
Tri WAVE mode - first page

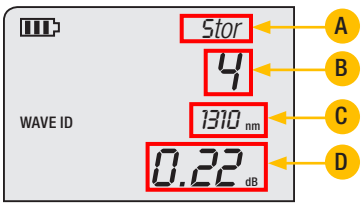
Test Mode: To Store Measurements

File Management system allows simple organization of power or insertion loss measurements into multiple files. Using the supplied Test Results Management - TRM software (Windows® compatible) and USB connection, test records are transferred to a PC for analyzing, generating professional test reports, and printing. For more information, refer to the TRM software User's Guide (available on the supplied CD and from the AFL - NOYES web at **www.AFLglobal.com/go/Software**).

1. Set your OPM5 to the desired measurement mode (dB, dBm, µW) and wavelengths.

   Note: When the OPM5 is receiving wavelength ID, measured data is saved at all currently received ID'd wavelengths.

2. Test the fiber.
3. Press the Store key to save the currently displayed measured data.
4. The OPM5 will briefly display the following screen:



A - Blinking label Stor, B - File number, C - Tested wavelength, D - Stored result

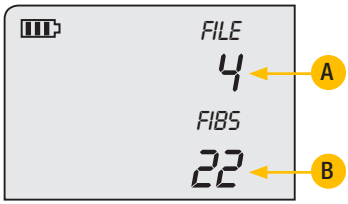
Note: For dual/tri-wavelength testing, the stored result for a subsequent wavelength will be shown on the second/third page that automatically changes in ~ 2 seconds.

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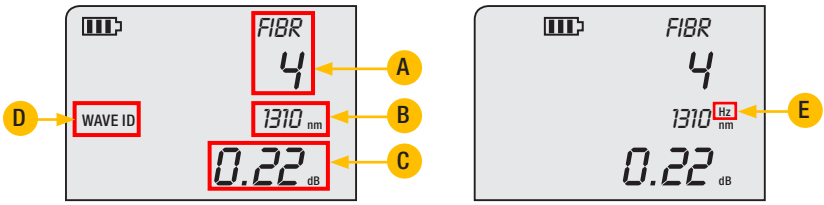
5. The current measurements are stored in the next available memory location (next Fiber) of the current File.

Recall Mode: To View Stored Records

1. Press and hold the ▲ Arrow/File key to enter File mode and select the desired File to view.
2. Press the Recall key to display the Recall mode screen.
3. Once the Recall key is pressed and before entering the Recall mode screen, the number of currently open file **A** and number of fibers **B** stored in the current file will flash for ~ 1.5 seconds.



4. Once in the Recall mode screen, the display changes to show the following data:



A - Fiber number, **B** - Wavelength, **C** - Stored test result,
D - WAVE ID icon if WAVE ID was active when the measurement was taken,
E - Hz icon, if Tone was active when the measurement was taken.

5. Use the ▲ / ▼ arrow keys to increment/decrement the fiber number and view the test result stored in this location.
   - Press and hold the ▲ arrow key to go to the last fiber.
   - Press and hold the ▼ arrow key to go to the first fiber.
   - For multiple-Wave test results, press the wavelength λ key to change wavelengths.
6. Press the Recall key to exit.
7. Press the Store key to exit the File mode.

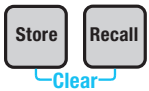
Note: you can go directly to the Recall mode for the current file by pressing the Recall key from the Test screen.

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To Edit Stored Records

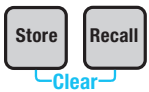
1. If needed, press and hold the ▲ Arrow/File key to enter File mode and select the desired File. Press the Store key to exit the File mode.
2. Press and hold the ▼ arrow key to enter the Fiber mode and select the fiber to edit.
   - Press and hold ▲ arrow key to increment by 10 fibers.
   - Press and hold ▼ arrow key to decrement by 10 fibers.
3. Press the Store key to return to measuring mode.
4. Retest the fiber.
5. Press the Store key to save new measurements in the selected memory location.

Clear Mode: To Erase Stored File

1. Press and hold the ▲ Arrow/File key to enter File mode and select the desired File to erase.
2. Press and hold the 

keys to erase the current file.
3. The message “Stor to clr FILE” appears on the display.
4. Press the Store key to delete all fibers for the current file. While clearing (may take a while for many fibers stored in a file) the display will show “Clr”.
5. When complete, the display will briefly show “FILE Clr”.

Clear Mode: To Erase Stored Fiber

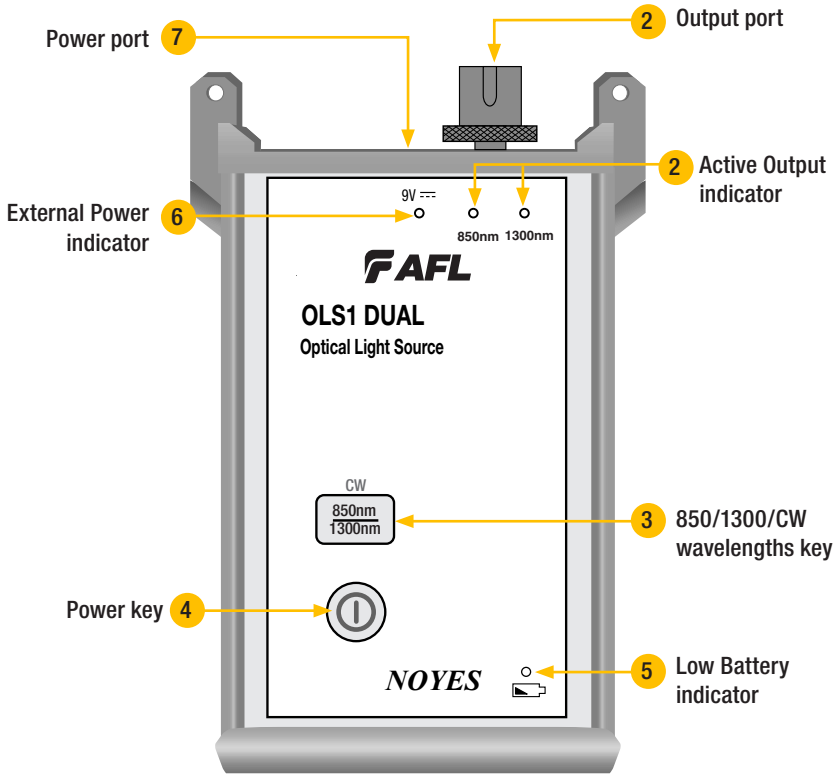
1. Press the Recall key to enter the Recall mode (recall records stored in the current file).
2. Use the ▲ / ▼ arrow keys to select the desired fiber to erase.
3. Press and hold the 

keys to erase the current fiber information (all wavelengths).
4. The message “Stor to clr Fibr” appears on the screen.
5. Press the Store key to erase the current fiber.
6. When complete, the display will briefly show “Fibr Clr”.

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OLS-Series Light Sources

OLS1-Dual LED Light Source



OLS1-Dual Features

1. **Output port** - Universal Connector Interface (UCI). Accepts swappable SC connector (ST, FC, and LC connector styles are available).
2. **Active Output indicators** (illuminated when the corresponding output port is ON) - The Active Output indicators light up as follows:

Test Mode	Active Output indicator status
WAVE ID dual Wave	850 and 1300 indicator - ON continuous light
WAVE ID single Wave	corresponding indicator - ON continuous light
CW	corresponding indicator - ON blinking light

3. **850/1300/CW key** - Wavelengths select key provides several functions.

   WAVE ID Mode

   - Press the key to select wavelengths in the following sequence:

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Dual 850/ 1300 nm → 850 nm → 1300 nm → Dual 850/ 1300 nm → ...

- Press and hold the key to switch to the CW mode at the currently selected wavelength.

  Note: If the OLS1 operates in the Dual WAVE ID mode, it will switch the output port to the next wavelength in a sequence as follows:

  Dual 850/1300 nm WAVE ID → key Press and hold → 850 nm CW

CW Mode

- Press and hold the key to select wavelengths in the following sequence:

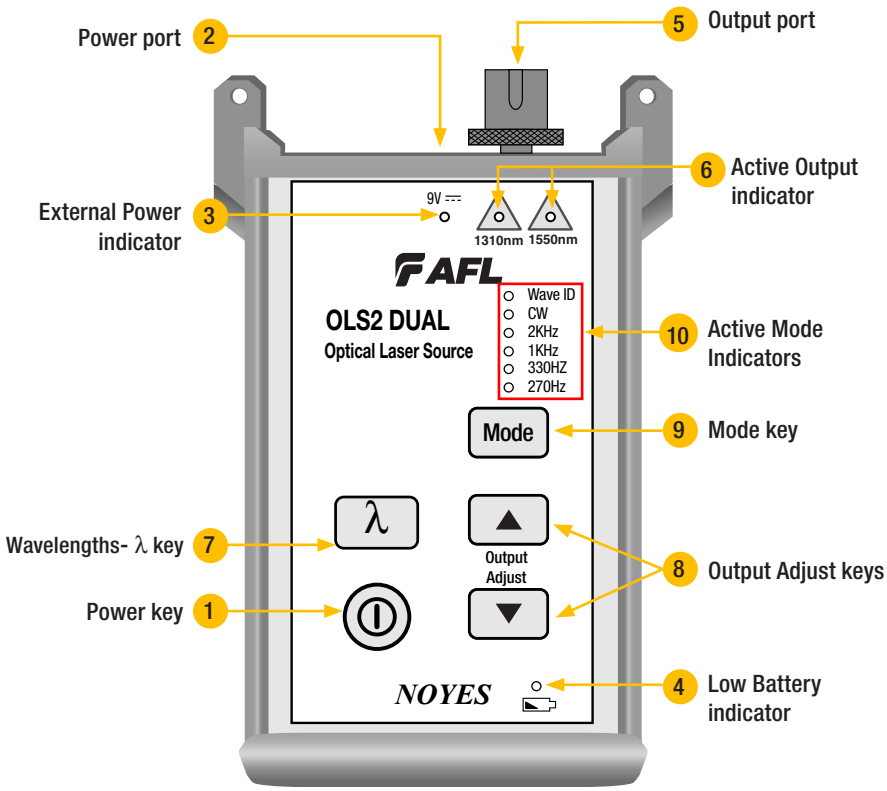
  850 nm → 1300 nm → 850 nm → ...

- Press the key to return to the WAVE ID mode at the currently selected wavelength.

4. **Power key** - Press and hold the key until all indicators light up to turn the OLS1-Dual on or off. The instrument turns on in its default condition: 850/1300 nm Dual mode sending Wavelength ID.
5. **Low Battery indicator** - Lights up when a Low Battery condition exists; batteries require replacement.
6. **External Power indicator** - Lights up, whether the unit is on or off, when the correct AC power adapter is connected.
7. **Power port** (located on the top panel) - This is the interface for an AC power adapter.

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OLS2-Dual Laser Source



OLS2-Dual features

1. **Power key -** Press and hold the key until all indicators light up to turn the OLS2-Dual On or Off. The instrument turns on in its last operating condition it was in prior to being turned off.
2. **Power port (located on the top panel)** - This is the interface for an AC power adapter.
3. **External Power indicator** - Lights up, whether the unit is on or off, when the correct AC power adapter is connected.
4. **Low Battery indicator** - Lights up when a Low Battery condition exists; batteries require replacement.
5. **Output port -** Universal Connector Interface (UCI). Accepts swappable SC connector (ST, FC, and LC connector styles are available).
6. **Active Output indicators -** The Active Output indicators light up when the corresponding output port is on.
7. **Wavelengths -λ key** - Wavelength select key changes the active output wavelength(s) as indicated below for each operational mode.

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WAVE ID Mode (WAVE ID indicator on)

- Press the λ key to select wavelengths in the following sequence:

  Dual 1310/ 1550 nm → 1310 nm → 1550 nm → Dual 1310/ 1550 nm → ...

  Note: When a wavelength is selected, the corresponding Active Output indicator on the front panel is illuminated. If the Dual WAVE ID mode is selected, both Active Output indicators are illuminated.

CW Mode or any of the Tone Modes
(WAVE ID indicator off, CW or 2kHz/ 1kHz/ 330Hz/ 270Hz indicator illuminated):

- Press the λ key to select wavelengths in the following sequence:

  1310 nm → 1550 nm → 1310 nm → ...

  Note: When a wavelength is selected, the corresponding Active Output indicator on the front panel is illuminated.

8. **Output Adjust keys -** The Δ and ∇ arrow keys allow entering the Output Adjust mode and changing the power level currently being transmitted at the output port within approximately 3 dB power range between the factory preset maximum and minimum power levels.

   Δ arrow key increases the optical output power up to the allowed maximum level.

   ∇ arrow key decreases the optical output power down to the allowed minimum level.

   Output Adjust Mode Characteristics

   a) The Output Adjust mode is valid in CW and single WAVE ID modes only.

   Note:

   - If the Output Adjust mode is enabled while the OLS2-Dual is transmitting Dual WAVE ID, the unit will switch to the 1310nm WAVE ID mode.
   - If the Output Adjust mode is enabled while the OLS2-Dual is transmitting any of the Tone frequencies, the unit will switch to the CW mode.

   b) To enable the Output Adjust mode and begin power change, perform the following steps:

   - Hold either the Δ or ∇ arrow keys for approximately 4 seconds.
   - An Active Mode indicator of the currently enabled mode (CW or WAVE ID) will turn ON - blinking light at approximately ½ second rate.
   - The optical output will begin to change correspondingly to the currently pressed key. (Δ key - increase output power, ∇ key - decrease output power).

   c) Key functions while in the Output Adjust mode are indicated below:

   - **Mode key** - -toggles between single WAVE ID and CW mode.
   - **Wavelength key** - toggles optical output between 1310 and 1550 nm.
   - Δ or ∇ **arrow key** - increases or decreases the optical output power level.

   d) The Output Adjust Mode is automatically disabled after approximately 8 seconds with no key presses. The OLS2-Dual will return to its previous operating mode it was in prior to entering the Output Adjust mode.

Output Adjust Mode Operation

To adjust the output power, perform the following steps:

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a) Press and hold either Δ or ∇ arrow key for ~. 4 seconds to enable the Output Adjust mode.

b) When the OLS2-Dual enters the Output Adjust mode, an Active Mode indicator of the currently enabled mode (CW or WAVE ID) turns ON - blinking light, the Output Adjust mode is enabled. The currently selected output can now be adjusted.

c) Press the Δ or ∇ arrow key to increase or decrease the current power level.

- Press momentarily to adjust the optical output in a small step.
- Press and hold to adjust in small steps for a total of six steps at a rate of ~. 2 steps per second. Continuing to press the same arrow key will cause the unit to increase step size to and continue at the same repetition rate. Releasing the held key at any time resets the step size to small and resets the "step size counter" to zero.

Note: End of adjust range indication - NOYES recommends using an Optical Power Meter to monitor the output when adjusting the OLS2-Dual power level. However, this is not necessary to set the OLS2-Dual to the maximum or minimum output level. When the end of the adjustment range has been reached, the OLS2-Dual will turn off the Active Mode Indicator and blink the Active Output indicator at a rate of approximately 1/4 second. Releasing the arrow key restores the LED Indicators to their previous states.

9. **Mode key** - Press this key to select the desired operating mode

When the OLS2-Dual operates in WAVE ID Mode (WAVE ID indicator on)

Press the Mode key to switch the unit from the WAVE ID to CW mode.

- The WAVE ID indicator will turn off and the CW indicator will turn on.
- If multiple ID wavelengths were being transmitted, the unit will continue to transmit the shortest wavelength - 1310nm.

When the OLS2-Dual operates in CW mode (CW indicator on)

Press the Mode key to switch the unit from the CW mode to 2kHZ Tone mode.

- The CW indicator will turn off and the 2kHz Tone indicator will turn on.
- The unit will start transmitting the selected wavelength with 2kHz modulation.

When the OLS2-Dual operates in 2kHz Tone mode (2kHz indicator on)

Press the Mode key to switch the unit from 2kHz Tone mode to 1kHz Tone mode.

- The 2kHz Tone indicator will turn off and the 1kHz Tone indicator will turn on.
- Press the Mode key again to select the next supported frequency. The unit will cycle through the available frequencies in the following sequence:

  2kHz →1kHz →330 Hz → 270 Hz ...
- The corresponding Tone indicator will turn on.

When the OLS2-Dual operates in 270Hz Tone mode (270 Hz indicator on)

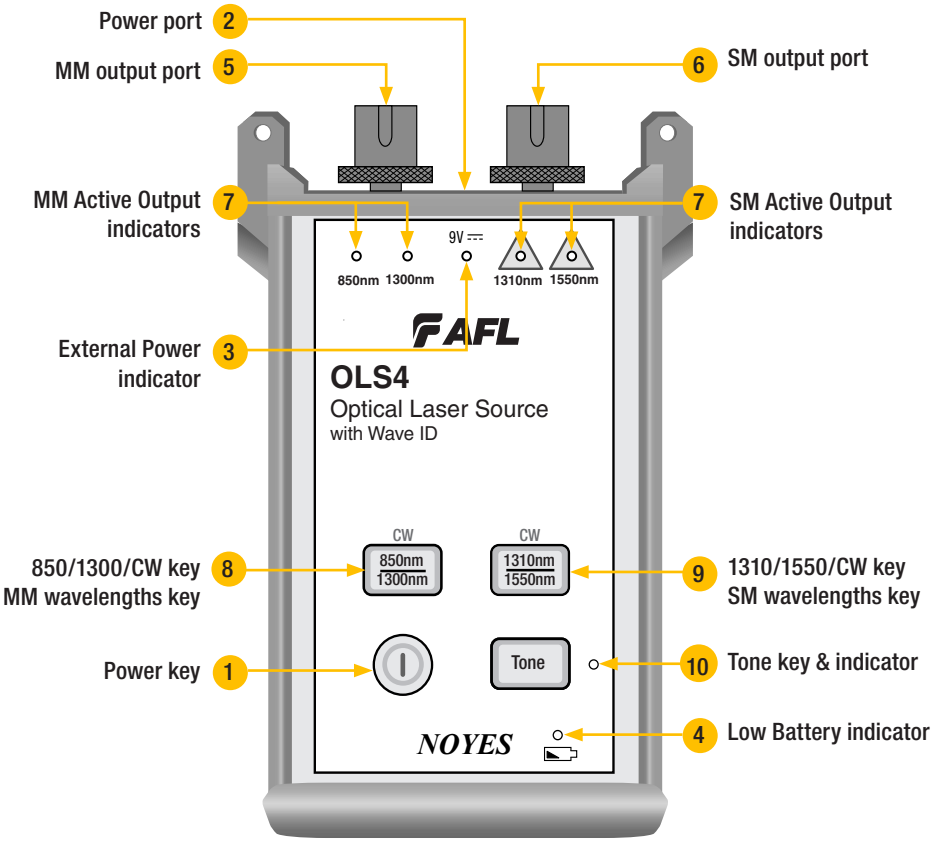
Press the Mode key to switch the unit from the 270Hz Tone mode to WAVE ID mode.

- The 270Hz Tone indicator will turn off and the WAVE ID indicator will turn on.
- The unit will start transmitting the wavelength selected on the embedded wavelength ID.

10. **Active Mode indicators -** The Active Mode indicators light up when the corresponding mode is enabled.

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OLS4 Integrated LED and Laser Light Source



OLS4 Features

1. **Power key** - Press and hold the key until all indicators light up to turn the OLS4 ON or OFF. The OLS4 turns on in its default condition: 850/1300 nm Dual mode sending Wavelength ID.
2. **Power port** (located on the top panel) - This is the interface for an AC power adapter.
3. **External Power indicator** - Lights up, whether the unit is on or off, when the correct AC power adapter is connected.
4. **Low Battery indicator** - Lights up when a Low Battery condition exists; batteries require replacement.
5. **MM output port** - Universal Connector Interface (UCI). Accepts swappable SC connector (ST, FC, and LC connector styles are available).
6. **SM output port** - Universal Connector Interface (UCI). Accepts swappable SC connector (ST, FC, and LC connector styles are available).

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7. **Active Output indicators** (illuminated when the corresponding output port is ON) - The Active Output indicators light up as follows:

Test Mode	Active Output indicator status
WAVE ID dual Wave	corresponding indicators - ON continuous light
WAVE ID single Wave	corresponding indicator - ON continuous light
CW or Tone	corresponding indicator - ON blinking light

8. **850/1300/CW key** - Multimode wavelengths select key provides several functions as follows:

   WAVE ID Mode

   - Press the key to select wavelengths in the following sequence:
   - Dual 850/ 1300 nm → 850 nm → 1300 nm → Dual 850/ 1300 nm → ...
   - Press and hold the key to switch to the CW mode at the currently selected wavelength.

   Note: If the OLS4 operates in the Dual WAVE ID mode, it will switch the MM output port to the next wavelength in a sequence as follows:

   Dual 850/1300 nm WAVE ID → key Press and Hold → 850 nm CW

   CW Mode

   - Press and hold the key to select wavelengths in the following sequence:

     850 nm → 1300 nm → 850 nm → ...
   - Press the key to return to the WAVE ID mode at the currently selected wavelength.

9. **1310/1550/CW key** - Single-mode wavelengths select key provides several functions as follows:

   WAVE ID Mode

   - Press the key to select wavelengths in the following sequence:

     Dual 1310/ 1550 nm → 1310 nm → 1550 nm → Dual 1310/ 1550 nm → ...
   - Press and hold the key to switch to the CW mode at the currently selected wavelength.

     Note: If the OLS4 operates in the Dual WAVE ID mode, it will switch the SM output port to the next wavelength in a sequence as follows:

     Dual 1310/1550 nm WAVE ID → key Press and Hold → 1310 nm CW

   CW Mode

   - Press and hold the key to select wavelengths in the following sequence:

     1310 nm → 1550 nm → 1310 nm → ...
   - Press the key to return to the WAVE ID mode at the currently selected wavelength.

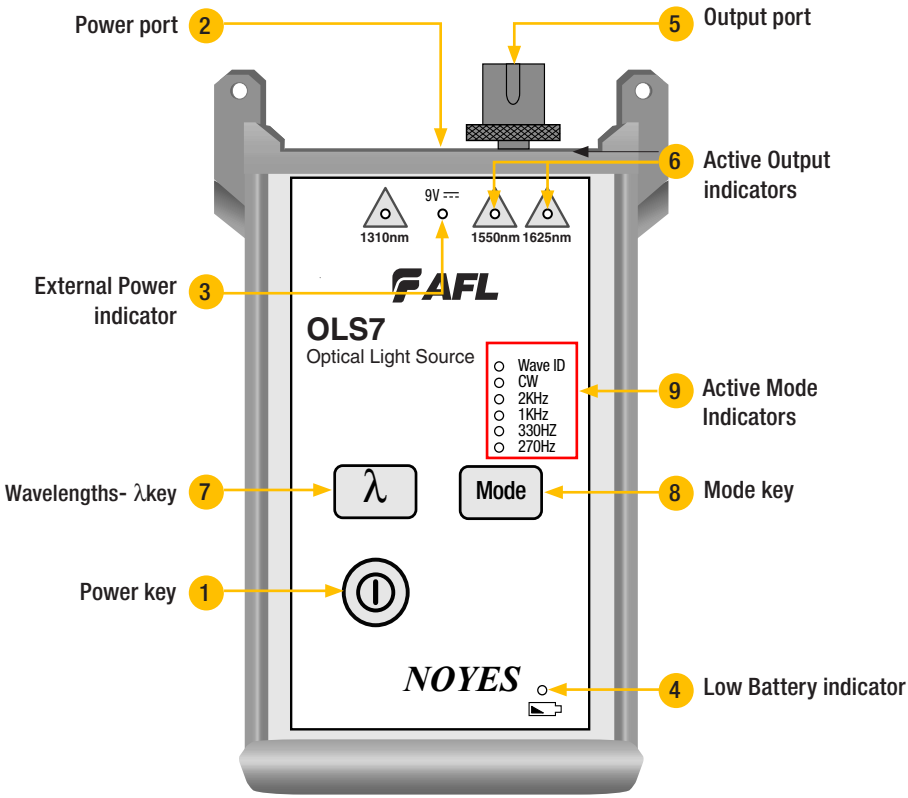
10. **Tone key and Indicator** -

    Tone key - Pressing the Tone key enables or disables the 2kHz Tone mode on the SM port at 1550 nm wavelength. The WAVE ID mode is disabled when the unit is transmitting a Tone signal. When the Tone mode is disabled, the unit returns to the WAVE ID mode at the currently selected wavelength.

    Tone indicator - The Tone indicator is ON-continuous light when the OLS4 is transmitting a Tone signal.

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OLS7-3 Triple Wavelength Laser Source



OLS7-3 Features

1. **Power key** - Press this key to turn the OLS7-3 on or off. When the unit is turned on, it returns to the last operating condition it was in prior to being turned off.
2. **Power port** (located on the top panel) - This is the interface for an AC power adapter.
3. **External Power indicator** - Lights up, whether the unit is on or off, when the correct AC power adapter is connected.
4. **Low Battery indicator** - Lights up when a Low Battery condition exists; batteries require replacement.
5. **Output port** - Universal Connector Interface (UCI). Accepts swappable SC connector (ST, FC, and LC connector styles are available).
6. **Active Output indicators -** The Active Output indicators light up when the corresponding output port is on.
7. **Wavelength** - **λ key** - Wavelength select key changes the active output wavelength(s) as indicated below for each operational mode.

   WAVE ID Mode (WAVE ID indicator on)

   - Press the λ key to select wavelengths in the following sequence:

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Triple 1310/ 1550/ 1625 nm → 1310 nm → 1550 nm → 1625 nm →
Dual 1310/ 1550 nm → Dual 1550/ 1625 nm → Triple 1310/ 1550/ 1625 nm → ...

Note: When a wavelength is selected, the corresponding Active Output indicator on the front panel is illuminated. If the Triple WAVE ID mode is selected, all three Active Output indicators are illuminated.

CW Mode or any of the Tone Modes
(WAVE ID indicator off, CW or 2kHz/ 1kHz/ 330Hz/ 270Hz indicator illuminated):

- Press the λ key to select wavelengths in the following sequence:

  1310 nm → 1550 nm → 1625 nm → 1310 nm → ...

  Note: When a wavelength is selected, the corresponding Active Output indicator on the front panel is illuminated.

8. **Mode key** - Press this key to select the desired operating mode

   When the OLS7-3 operates in WAVE ID Mode (WAVE ID indicator on)

   Press the Mode key to switch the unit from the WAVE ID to CW mode.

   - The WAVE ID indicator will turn off and the CW indicator will turn on.
   - If multiple ID wavelengths were being transmitted, the unit will continue to transmit the shortest wavelength.

   When the OLS7-3 operates in CW mode (CW indicator on)

   Press the Mode key to switch the unit from the CW mode to 2kHZ Tone mode.

   - The CW indicator will turn off and the 2kHz Tone indicator will turn on.
   - The unit will start transmitting the selected wavelength with 2kHz modulation.

   When the OLS7-3 operates in 2kHz Tone mode (2kHz indicator on)

   Press the Mode key to switch the unit from 2kHz Tone mode to 1kHz Tone mode.

   - he 2kHz Tone indicator will turn off and the 1kHz Tone indicator will turn on.
   - Press the Mode key again to select the next supported frequency. The unit will cycle through the available frequencies in the following sequence:

     2kHz →1kHz →330 Hz → 270 Hz ...
   - The corresponding Tone indicator will turn on.

   When the OLS7-3 operates in 270Hz Tone mode (270 Hz indicator on)

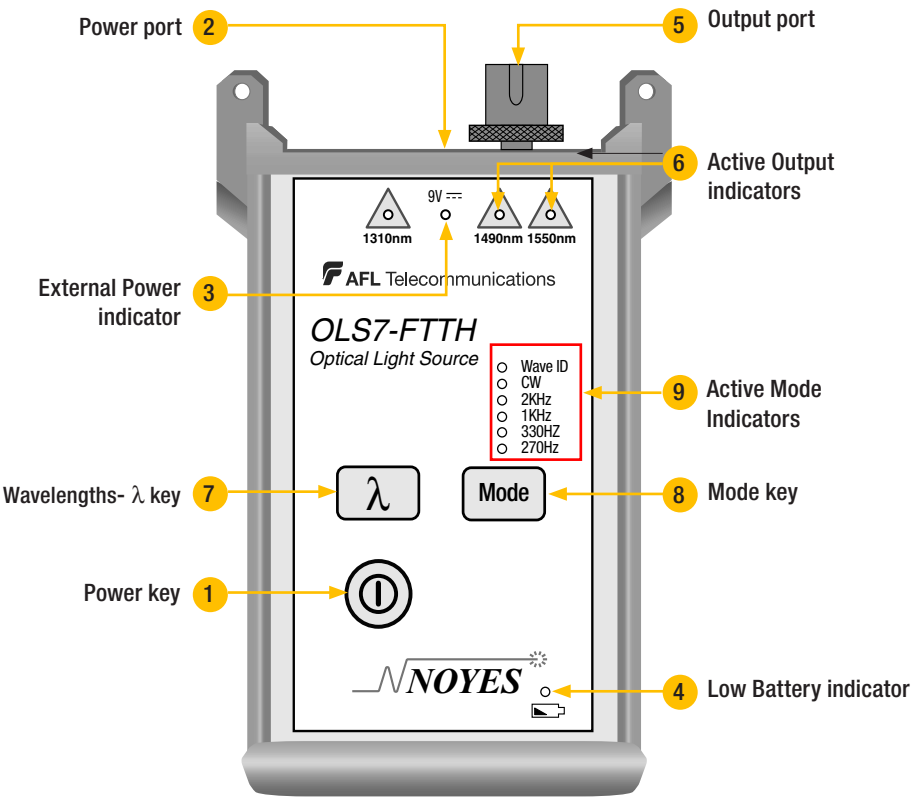
   Press the Mode key to switch the unit from the 270Hz Tone mode to WAVE ID mode.

   - The 270Hz Tone indicator will turn off and the WAVE ID indicator will turn on.
   - The unit will start transmitting the wavelength selected on the embedded wavelength ID.

9. **Active Mode indicators -** The Active Mode indicators light up when the corresponding mode is enabled.

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OLS7-FTTH Triple Wavelength Laser Source



OLS7-FTTH Features

1. **Power key** - Press this key to turn the OLS7-FTTH on or off. When the unit is turned on, it returns to the last operating condition it was in prior to being turned off.
2. **Power port** (located on the top panel) - This is the interface for an AC power adapter.
3. **External Power indicator** - Lights up, whether the unit is on or off, when the correct AC power adapter is connected.
4. **Low Battery indicator** - Lights up when a Low Battery condition exists; batteries require replacement.
5. **Output port** - Universal Connector Interface (UCI). Accepts swappable SC connector (ST, FC, and LC connector styles are available).
6. **Active Output indicators -** The Active Output indicators light up when the corresponding output port is on.
7. **Wavelength - λ key** - Wavelength select key changes the active output wavelength(s) as indicated below for each operational mode.

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WAVE ID Mode (WAVE ID indicator on)

- Press the λ key to select wavelengths in the following sequence:

  Dual 1490/ 1550 nm → 1310 nm → Triple 1310/1490 / 1550 nm → ...

  Note: When a wavelength is selected the corresponding Active Output indicator on the front panel is illuminated. If the Triple WAVE ID mode is selected all three Active Output indicators are illuminated.

CW Mode or any of the Tone Modes
(WAVE ID indicator off, CW or 270 Hz / 330 Hz / 1 kHz/ 2 kHz indicator illuminated):

- Press the λ key to select wavelengths in the following sequence:

  1310 nm → 1490 nm → 1550 nm → 1310 nm → ...

  Note: When a wavelength is selected the corresponding Active Output indicator on the front panel is illuminated.

8. **Mode key** - Press this key to select the desired operation mode

   When the OLS7-FTTH operates in WAVE ID Mode (WAVE ID indicator on)

   Press the Mode key to switch the unit from the WAVE ID to CW mode.

   - The WAVE ID indicator will turn off and the CW indicator will turn on.
   - If multiple ID wavelengths were being transmitted, the unit will continue to transmit the shortest wavelength.

   When the OLS7-FTTH operates in CW mode (CW indicator on)

   Press the Mode key to switch the unit from the CW mode to 2kHZ Tone mode.

   - The CW indicator will turn off and the 2kHz Tone indicator will turn on.
   - The unit will start transmitting the selected wavelength with 2kHz modulation.

   When the OLS7-FTTH operates in 2kHz Tone mode (2kHz indicator on)

   Press the Mode key to switch the unit from 2kHz Tone mode to 1kHz Tone mode.

   - The 2kHz Tone indicator will turn off and the 1kHz Tone indicator will turn on.
   - Press the Mode key again to select the next supported frequency. The unit will cycle through the available frequencies in the following sequence:

     2kHz →1kHz →330 Hz → 270 Hz ...

   - The corresponding Tone indicator will turn on.

   When the OLS7-FTTH operates in 270Hz Tone mode (270 Hz indicator on)

Press the Mode key to switch the unit from the 270Hz Tone mode to WAVE ID mode.

- The 270Hz Tone indicator will turn off and the WAVE ID indicator will turn on.
- The unit will start transmitting the wavelength selected on the embedded wavelength ID.

9. **Active Mode indicators -** The Active Output indicators light up when the corresponding mode is enabled.

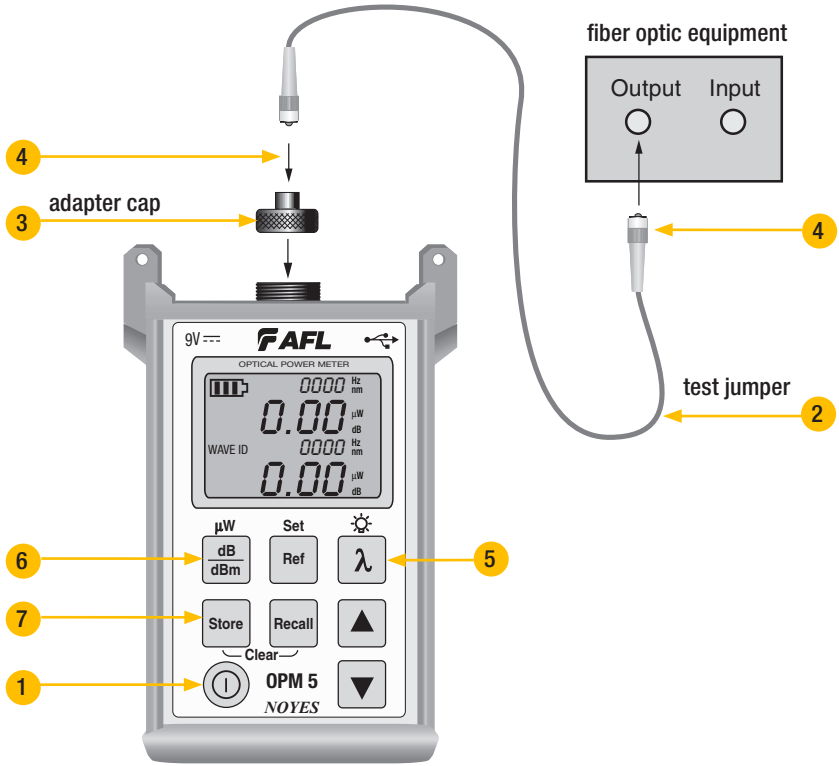
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Measuring Optical Power

It is important to keep all optical connections and surfaces free from dirt, oils, or other contaminants to ensure proper operation. Always clean all test jumpers before conducting the test procedures outlined in this Guide (see Section 5: “Maintenance” for details).

To Measure Optical Power

1. Turn on the OPM optical power meter.
2. Select the appropriate fiber optic test jumper. The fiber type of this jumper must be the same as the fiber type normally connected to the output being measured.
3. Mount the appropriate adapter cap on the OPM optical input. This adapter cap must match the connector on the end of the test jumper you will connect to the OPM.
4. Connect one end of the test jumper to the OPM adapter cap and the other end to the optical output to be measured.
5. Press the λ key to select the calibrated wavelength that matches the nominal wavelength of the source being measured.
6. If the OPM is presently measuring loss dB, press the dB/dBm key to display power in dBm, or press and hold to display power in µW.
7. **OPM5 power meters only:** You may press the Store key to save the displayed measurement in the next available memory location.



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Testing Multimode Links

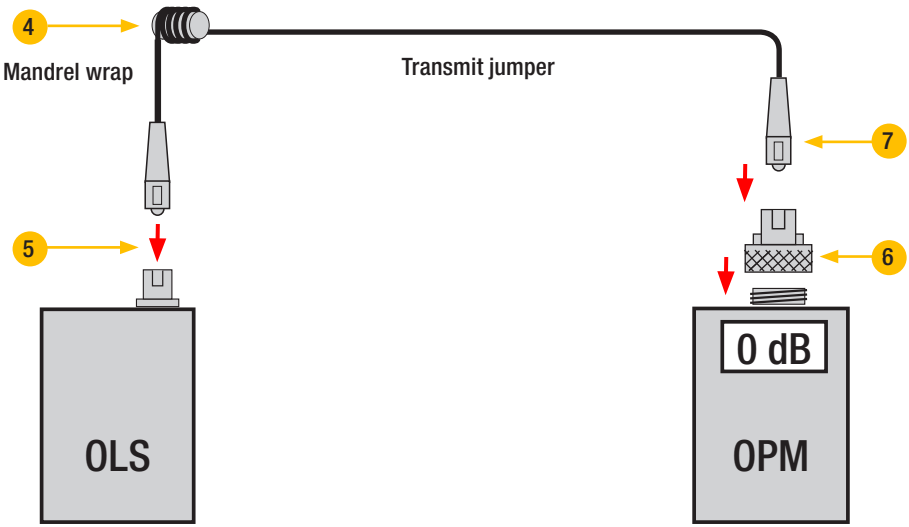
Step I - Set the Reference (One Jumper Method)

1. Turn on the OPM optical power meter and OLS optical light source. Allow the light source to stabilize (minimum of 2 minutes).
2. If not using the WAVE ID feature, set both instruments to the desired test wavelength.
3. Select the appropriate fiber optic transmit and receive test jumpers. The fiber type of these jumpers must match the fiber type of the link to be tested.
4. Wrap and secure the transmit jumper five times around the appropriate diameter mandrel.

   Clean both ends of the transmit jumper!
5. Connect the transmit jumper to the multimode output port of the OLS.
6. Mount an adapter cap on the OPM that matches the free connector on the transmit jumper.
7. Connect the free end of the transmit jumper to the OPM.
   If necessary, press the dB/dBm key to display optical power in dBm.
8. If measured output power is outside of the normal range (specified by manufacturer), clean all fiber connections or replace the transmit jumper. Repeat steps 4 - 7.
9. To set the reference level at the current wavelength(s): on the OPM, press and hold the Ref/Set key until the label HELD SET is displayed to store the currently measured level or pair of levels as the new reference levels.
   Once the new reference is set, the OPM switches to the loss dB measurement mode. The OPM should display 0 dB ± 0.05 dB.

   Note: You may press the Ref/Set key to display the stored reference levels.

   Note: When setting references from multiple wavelength ID'd sources, allow several seconds prior to setting the references for wavelengths to be ID'd and measured.



Set the Reference

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Testing Multimode Links

Step II - Verify Test Jumpers

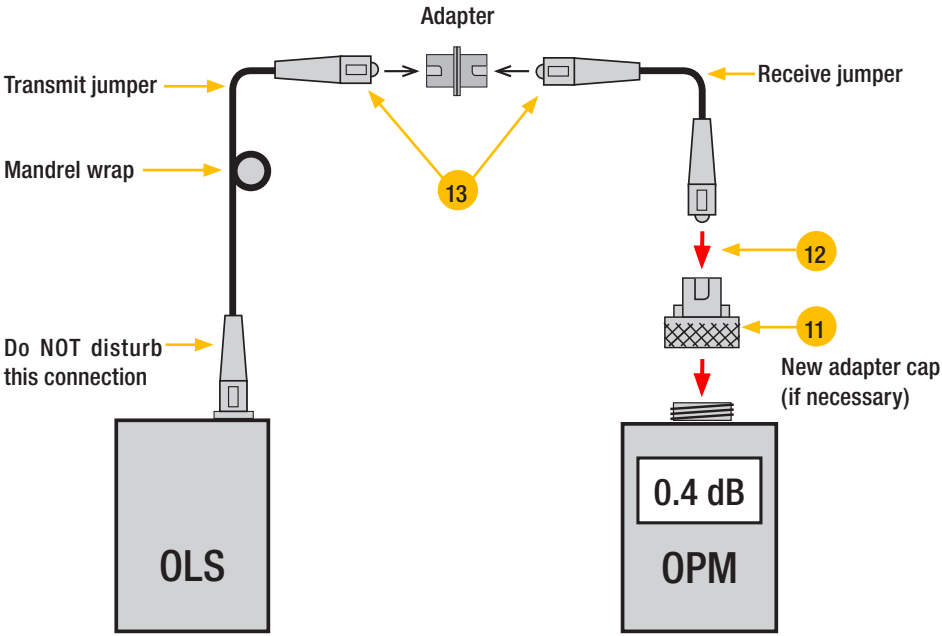
10. Disconnect the transmit jumper from the OPM.

    Do not disturb the transmit jumper at the OLS end!

11. If necessary, change the OPM adapter cap to match the connector on the receive jumper that will be connected to the OPM.

    Clean both ends of the receive jumper!

12. Connect the receive jumper to the OPM.
13. Mate the free ends of the transmit and receive jumpers using the appropriate adapter.
14. Verify that the insertion loss of this mated connector pair is under 0.75 dB, the maximum allowed by the TIA (NOYES recommends 0.4 - 0.5 dB typical), as follows:
    - Observe the displayed power level. This is the mated connector pair insertion loss of the test jumpers in dB.
    - If the insertion loss is not acceptable, disconnect the transmit and receive jumpers at the adapter, clean the free ends of both test jumpers and repeat step 13 and 14.
    - If the insertion loss is still not acceptable, replace test jumpers and repeat steps 1-14.
15. If the insertion loss is acceptable, disconnect the transmit and receive jumpers at the adapter.
16. Move the OPM and OLS to opposite ends of the link to be tested.



Verify Test Jumpers

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Testing Multimode Links

Step III - Measure Multimode Link Insertion Loss

17. Connect the free ends of the transmit and receive jumpers to the multimode link under test.

    Clean jumper end that connects to patch panel prior to every test!

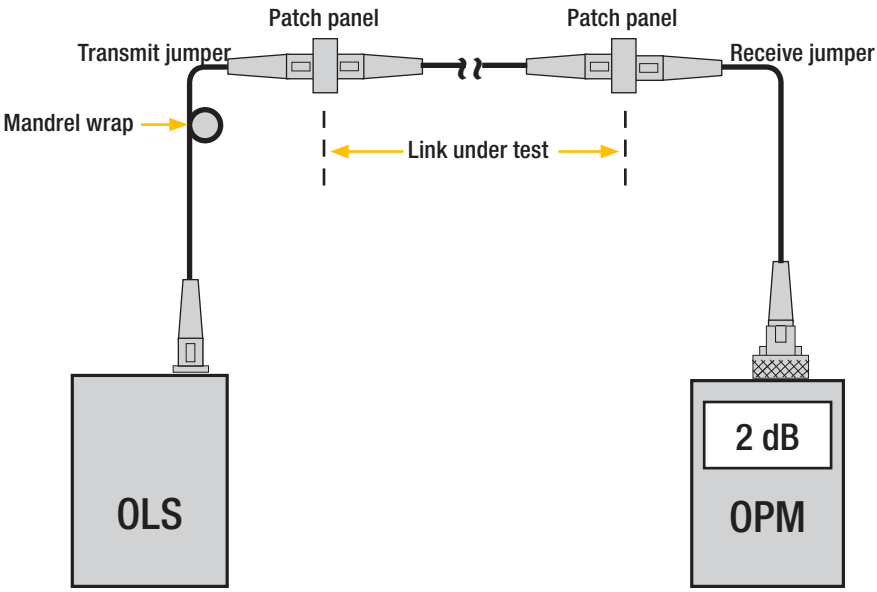
18. OPM will measure and display the insertion loss of the link under test.

19. Perform one of the following:

    If using OPM4: Record link insertion loss at the current test wavelength.

    If using OPM5: Press the Store key on the OPM5 to save the displayed measurement in the next available memory location.

20. Repeat steps 17-19 for all links to be tested at the current wavelength.



Measure Multimode Link Insertion Loss.

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Testing Single-mode Links

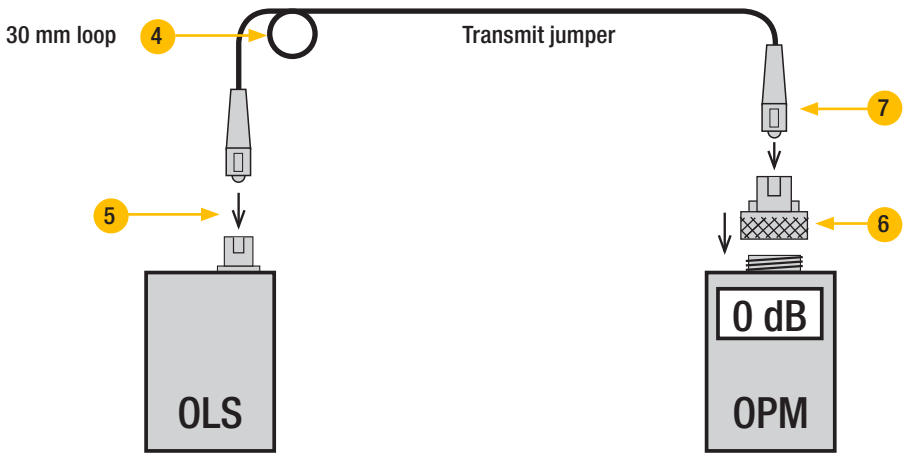
Step I - Set the Reference (One Jumper Method)

1. Turn on the OPM optical power meter and OLS optical light source. Allow the light source to stabilize (minimum of 2 minutes).
2. If not using the WAVE ID feature, set both instruments to the desired test wavelength.
3. Select the appropriate fiber optic transmit and receive test jumpers. The fiber type of these jumpers must match the fiber type of the link to be tested.
4. Make a 30 mm (1.2 in) loop in a transmit jumper and secure it with a piece of tape (TIA testing only). Make sure the loop remains in place during referencing and in all testing steps.

   Clean both ends of the transmit jumper!
5. Connect the transmit jumper to the single-mode output port of the OLS.
6. Mount an adapter cap on the OPM that matches the free connector on the transmit jumper.
7. Connect the free end of the transmit jumper to the OPM.
   If necessary, press the dB/dBm key to display optical power in dBm.
8. If measured output power is outside of the normal range (specified by manufacturer), clean all fiber connections or replace the transmit jumper. Repeat steps 4 - 7.
9. To set the reference level at the current wavelength(s): on the OPM, press and hold the Ref/Set key until the word HELD SET is displayed to store the currently measured level or pair of levels as the new reference levels.
   Once the new reference is set, the OPM switches to the loss dB measurement mode. The OPM should display 0 dB ±0.05 dB.

   Note: You may press and the Ref/ Set key to display the stored reference level for the currently selected wavelength or pair of wavelengths.

   Note: When setting references from multiple wavelength ID'd sources, allow several seconds prior to setting the references for wavelengths to be ID'd and measured.



Set the Reference

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Testing Single-mode Links

Step II - Verify Test Jumpers

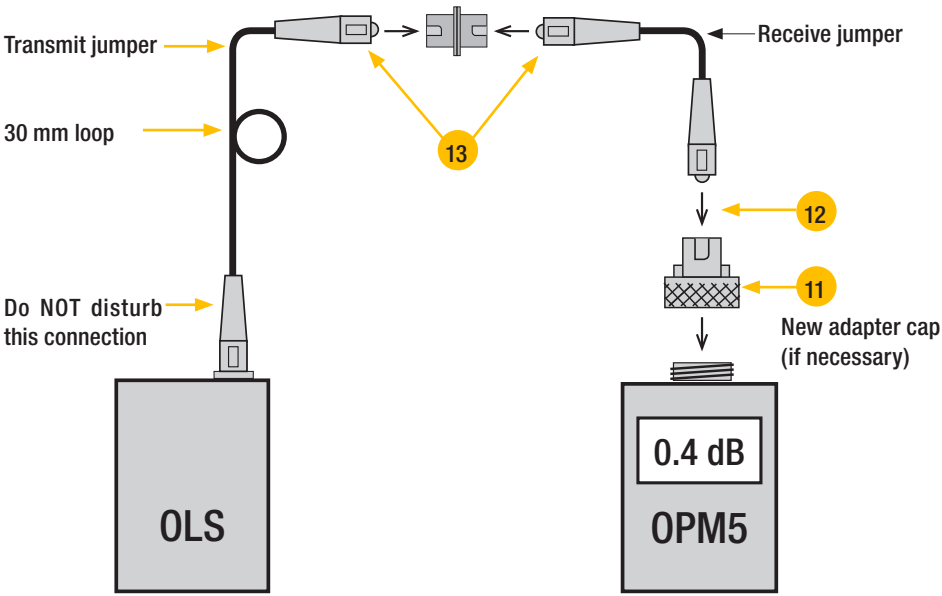
10. Disconnect the transmit jumper from the OPM.

    Do not disturb the transmit jumper at the OLS end!

11. If necessary, change the OPM adapter cap to match the connector on the receive jumper that will be connected to the OPM.

    Clean both ends of the receive jumper!

12. Connect the receive jumper to the OPM.
13. Mate the free ends of the transmit and receive jumpers using the appropriate adapter.
14. Verify that the insertion loss of this mated connector pair is under 0.75 dB, the maximum allowed by the TIA (NOYES recommends 0.4 - 0.5 dB typical), as follows:
    - Observe the displayed power level. This is the mated connector pair insertion loss of the test jumpers in dB.
    - If the insertion loss is not acceptable, disconnect the transmit and receive jumpers at the adapter, clean the free ends of both test jumpers and repeat step 13 and 14.
    - If the insertion loss is still not acceptable, replace test jumpers and repeat steps 1-14.
15. If the insertion loss is acceptable, disconnect the transmit and receive jumpers at the adapter.
16. Move the OPM and OLS to opposite ends of the link to be tested.



Verify Test Jumpers

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Testing Single-mode Links

Step III - Measure Single-mode Link Insertion Loss

17. Connect the free ends of the transmit and receive jumpers to the single-mode link under test.

    Clean jumper end that connects to patch panel prior to every test!

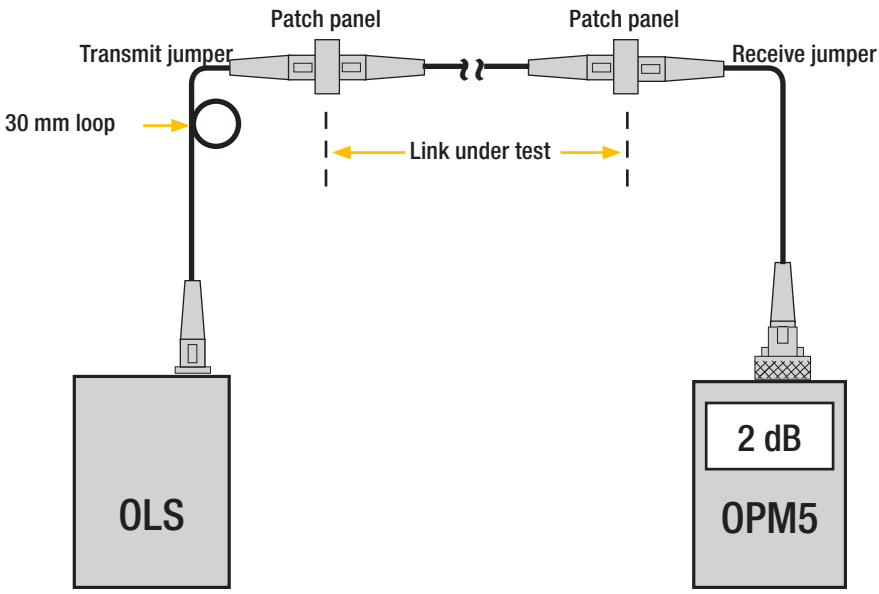
18. OPM will measure and display the insertion loss of the link under test.

19. Perform one of the following:

    If using OPM4: Record link insertion loss at the current test wavelength.

    If using OPM5: Press the Store key on the OPM5 to save the displayed measurement in the next available memory location.

20. Repeat steps 17-19 for all links to be tested at the current wavelength.



Measure Multimode Link Insertion Loss.

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Maintenance Tips

Cleaning Optical Ports

CAUTION! Before conducting the following procedures be sure to have the instruments turned OFF.

Optical ports must be kept free from dirt or other contaminants to ensure accurate measurements and operation. Always clean all test jumpers before conducting the test procedures outlined in this Guide. It is important to keep dust caps in place when instruments are not being used.

For cleaning connector end faces on OLS light sources, test jumpers, and in fiber frames or adapters, use optical quality cleaning fluid such as AFL FCC2 connector cleaning fluid and AFL CCT molded cleaning tips.

For cleaning OPM optical ports and adapter caps, use lint-free optical cleaning wipes such as AFL FiberWipes and optical quality cleaning fluid such as AFL FCC2 connector cleaning fluid (or IPA -Reagent Grade Isopropyl Alcohol 99% or better) and a can of filtered compressed air.

Cleaning OPM Optical Ports

1. Unscrew the adapter cap from the adapter cap mount.
2. Use lint-free optical cleaning wipes such as AFL FiberWipes and optical quality cleaning fluid such as AFL FCC2 connector cleaning fluid.
   Note: if using isopropyl alcohol (IPA), be sure to use 99% pure IPA that has not been contaminated.
   - Dampen a portion of the wipe with the cleaning fluid.
   - Gently wipe the exposed OPM port starting with the wet section of the wipe and pulling it to the dry section.

   Note: Starting with the wet cleaning and finishing in the dry improves cleaning action, reduces static buildup, and finishes with the end-face dry.
3. Using a can of filtered compressed air (held vertically), blow out any contaminants from the adapter cap.
4. Replace the adapter cap once the cleaning is complete.

Cleaning OLS Optical Ports without removing adapters

AFL One-Click Cleaner method

1. Remove the protective dust cover from the tip of the One-Click Cleaner.
2. Insert the tip of the One-Click Cleaner into the optical port adapter and gently press the body of the One-Click Cleaner until an audible “click” is heard.
3. Remove the One-Click Cleaner.

Cleaning OLS Optical Ports with Adapters Removed

1. Rotate the adapter base counterclockwise approximately four times.
2. Pull the adapter directly out away from the adapter mount.
3. Perform one of the following:

   AFL FCC2 fluid and CCT stick method

   - Leaning the FCC2 can back (30°), press the button on the FCC2 to fill the well.
   - Dip the CCTP tip into the well of the FCC2 to dampen the tip with optical cleaning fluid.

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- Place the damp tip over the ferrule to be cleaned.
- Rotate the tip clockwise 10 revolutions while applying varying pressure to create a gentle pumping action where the tip contacts the ferrule.
- Discard the CCTP stick after using both tips.

If using lint-free optical cleaning pads and isopropyl alcohol

- Be sure to use 99% IPA that has not been contaminated.
- Dampen the wipe with the alcohol and gently wipe the exposed ferrule. Then dry the ferrule using a new optical wipe

4. Using a can of filtered compressed air (held vertically), blow out any contaminants from the adapter.
5. Once completed, replace the adapter making sure that the alignment pin on the adapter aligns with the mating hole on the base.

Repair and Calibration

Repair of the NOYES test equipment in the field is NOT recommended.

Calibration is recommended every 12 months. NOYES Calibration Department is in compliance with ANSI/NCSL Z540-1, ISO 10012-1, MIL STD 45662A, ISO Guide 25 and traceability to the National Institute of Standards and Technology. Call Customer Service to obtain a Service Request (S.R.) number before sending units in for calibration.

Battery Replacement

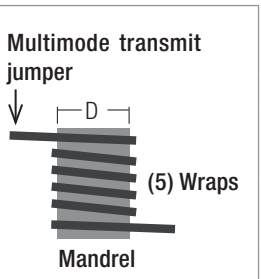
To replace a battery:

1. Remove the protective rubber boot from the instrument.
2. Remove the battery compartment cover located on the back of the instrument.
3. Replace the two discharged AA batteries.
4. Replace the battery compartment cover and rubber boot.

Mandrels for Multimode Transmit Jumpers

When testing multimode links using an overfilled LED source, always wrap the transmit jumper five (5) times around the proper diameter mandrel. This is specified by TIA/EIA-568-B and will improve insertion loss measurement repeatability and accuracy. Do NOT use mandrels on multimode receive jumpers or single-mode jumpers.

Available mandrels for test jumpers with 3 mm jackets		Diameter (D) for other jacket diameters
Fiber type	**Part #**	**(mm)**
62.5µm	5400-00-0201	D = 20 mm minus jacket diameter
50µm	5400-00-0202	D = 25 mm minus jacket diameter
Kit with both mandrels	5400-00-0900	



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