



**Test & Inspection**

**MFIS Multi-Fiber Identification System**

**MFT Multi-Fiber Tracer**

**MFI Multi-Fiber Identifier**

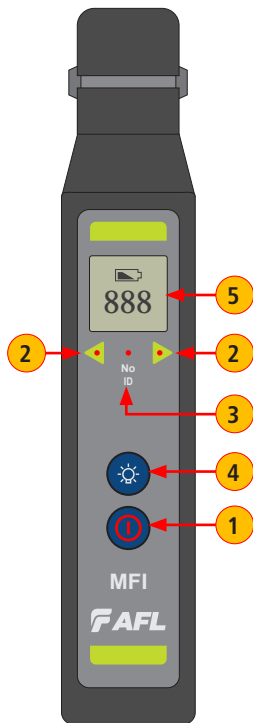
**MFP Multi-Fiber Power Meter**

**Quick Reference Guide**

[www.AFLglobal.com](http://www.AFLglobal.com) or (800) 321-5298, (603) 528-7780

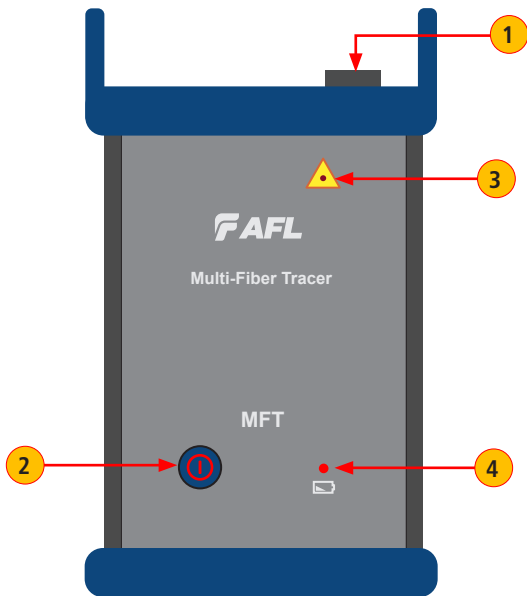
## MFI Controls and Interfaces

- 1 Power Button** provides two functions as follows:
  - Press and release the Power button to turn the MFI identifier On or Off (optionally pull the trigger to activate the MFI). MFI automatically turns Off after four (4) minutes of inactivity.
  - Press and hold the Power button during power up until the letter “P” is displayed to disable the Auto Off feature.**Note:** MFI identifier will stay powered up until the Power button is pressed to turn it Off.
- 2 Signal Detect Indicators.** If valid signal detected, both lights will flash and beeper will sound once every 3 seconds.
- 3 No ID Indicator** illuminates to indicate absence of a valid optical signal.
- 4 Backlight Button.** When the MFI identifier is turned On, press this button to toggle the Backlight feature On or Off.
- 5 LCD Display**
  - The Battery icon appears on the MFI display to indicate a “low battery” condition. The discharged alkaline batteries require replacement
  - Will display Fiber Number if detected
  - Will display “- - -” if no signal. (No signal LED will illuminate as well).

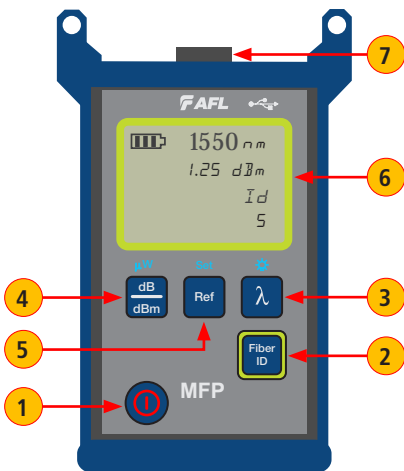


## MFT Controls and Interfaces

- 1 **MTP Connector:** To plug in MTP cable.
- 2 **Power Button:** Press this button to turn the MFT ON or OFF.
- 3 **Lasers Active Indicator** illuminates to indicate that light source is turned On.
- 4 **Low Battery Indicator** illuminates to indicate a 'low battery' condition.



## MFP Controls and Interfaces



- 1 Power Button** provides two functions as follows:
  - Press the Power button to turn the MFP power meter On or Off.  
**Notes:** MFP will power up in the same mode it was set to when it was powered Off. MFP automatically turns Off after five (5) minutes of inactivity.
  - Press and hold the Power button during power up until “P on” is displayed to disable the Auto Off feature.  
**Note:** MFP stays powered up until the Power button is pressed to turn it Off.
- 2 Fiber ID Button** enables/disables Fiber ID mode.
  - When MFP operates in standard power meter mode, pressing the Fiber ID button will enable Fiber ID mode that allows MFP to report loss and fiber ID from MFT’s signal.
  - Pressing the Fiber ID button again will disable Fiber ID mode and enable standard power meter mode.

## MFP Controls and Interfaces

### 3 Wavelength/Backlight Button

**Note:** the Wavelength button only functions when the MFP is in standard power meter mode. In Fiber ID mode the Wavelength button is disabled, as 1550 nm is the only wavelength available in the Fiber ID test mode.

**In the standard power meter mode the Wavelength/Backlight** provides two functions as follows:

- Press to cycle through the calibrated wavelengths.
- Press and hold to toggle the Backlight On or Off.


### 4 dB/dBm/ $\mu$ W Button provides two functions:

- Press to toggle test readings between insertion loss in dB and power in dBm.
- Press and hold to view power in  $\mu$ W.

### 5 Ref/Set Button works in both Fiber ID mode and standard power meter mode. It 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, an MFP switches to the dB measurement mode.

### 6 LCD Display

-  **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.
- **In Fiber ID mode:** displays loss and Fiber ID if detected or “- - -” if no signal.
- **In standard power meter mode:** displays wavelength and loss or power measurements.

### 7 Optical Port - accepts AFL's thread-on adapter cap.

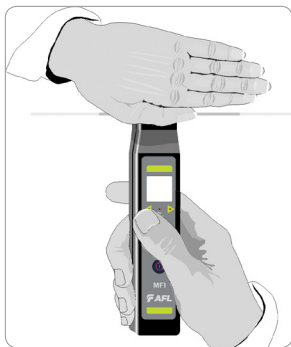
## Safety

**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.

## Precautions

It is important that the precautions given below be followed to ensure operating efficiency and to prevent inducing excessive signal loss during testing.

- The MFI utilizes light collecting optics that must be kept free of dirt, grease and other contaminants.
- The MFI's head is designed to guide the fiber being tested to a precise position relative to the optical assembly. The user should be careful to place fibers gently and in the provided fiber groove. Forcing the fiber into the head assembly or misaligning it may induce optical losses above specifications.
- **Important:** The MFI will not falsely indicate "Fiber ID".
- **Note:** Bright ambient room or outdoor light can cause the MFI to give false "No Signal" indications" when testing. To be sure that the fiber is carrying ID traffic, shield the optical assembly area of the MFI with your hand. Bright ambient light can cause false "No Signal" readings, however, low level traffic signals in color-coated fiber may not be detected.

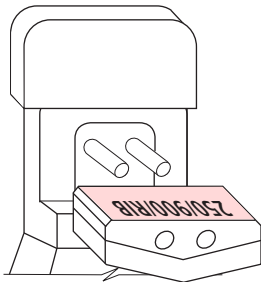


## Ensuring the MFI Proper Plunger Position

It is very important to properly position the MFI plunger for testing 250 & 900  $\mu\text{m}$  coated and ribbon fibers.

- Remove the plunger cover and observe the plunger position.
- Make sure the plunger is oriented correctly for the type of fiber to be tested.
- If not, lift the plunger from the two retaining pins.
- Rotate the plunger such that the correct side is facing out and will be used for the fiber under test alignment.
- Replace the plunger and cover.



### 250 $\mu\text{m}$ , 900 $\mu\text{m}$ , Ribbon Fibers



The "250/900/RIB" side faces out for the 250  $\mu\text{m}$  and 900  $\mu\text{m}$  coated and ribbon fibers testing

## Testing Fibers with MFT and MFI

Prior to testing, make sure the plunger is oriented correctly for the type of fiber to be tested.

- Power On the MFI identifier by pressing the Power button . Alternatively the MFI may be activated by pulling down the trigger. An audible tone generator will “beep” when the unit is energized.
- Gently insert the fiber to be tested into the fiber groove located at the top of the MFI’s head.
- Pull down and hold the trigger to depress the fiber being tested against the optical assembly.
- The MFI will start looking for Fiber ID bursts when the plunger has closed and the fiber is in the appropriate position.  
Once the trigger is completely retracted, the MFI will discriminate transmitted optical signals as follows:
  - If the fiber under test is active, the MFI display will show fiber number if signal is detected. Both arrows  will alternately flash, and an audible tone will beep every 3 seconds.
  - When no signal is present, the MFI will illuminate the “No Signal” indicator and show “ - - - ” (no fiber) on the display.

### Additional Information for Ribbon Fibers Testing

Ribbon fiber is typically comprised of 4, 8, or 12 fibers with a 250 µm coating attached together. The MFI will test ribbon fibers, however, the user should be aware of some limitations.

Warning: Can not be used on live fiber network!

- The MFI will not isolate a specific fiber from the group in a ribbon. If the ribbon under test is carrying more than one MFT data burst signal, the MFI will not function properly.
- Ribbon identification on fibers 5,6,7,or 8 is the best since they are more centrally located.

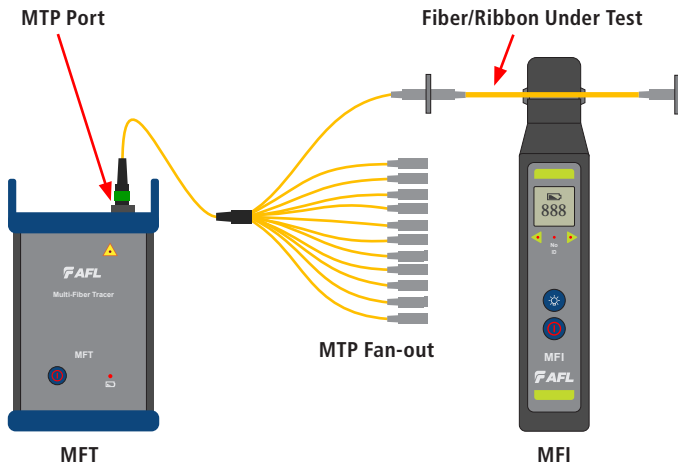


## Identifying a Specific Fiber with MFT and MFI

During network installation, verification, and routing it is often necessary to verify and reinstall mislabeled fibers or repair broken links.

When used in conjunction with an MFT, an MFI will detect if the fiber under test carry a signal emitted from MFT. An MFI will also display the ID of fiber under test.

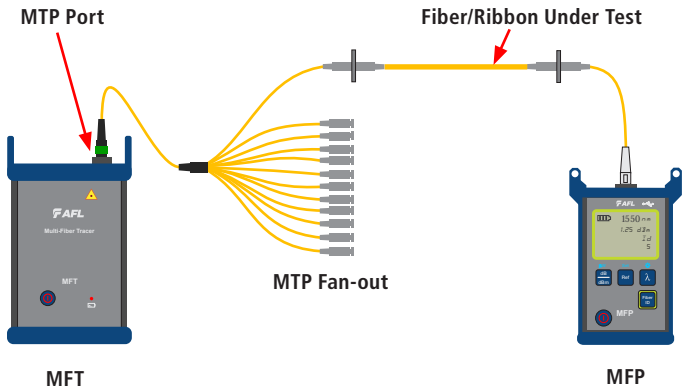
- Connect the MFT to the fiber network to be tested.
- Turn On the MFT.
- Turn On the MFI and insert the fiber to be tested in the fiber groove.
- Pull down and hold the clamping trigger to depress the fiber under test into the optical assembly.
- When the MFT signal is detected, fiber ID will display on the MFI. Verify if the fiber ID on display is matching fiber under test.



## Identifying a Specific Fiber with MFP

When used in conjunction with an MFT, an MFP will detect if the fiber under test carry a signal emitted from MFT. An MFP will also display the Fiber ID and loss of the fiber under test.

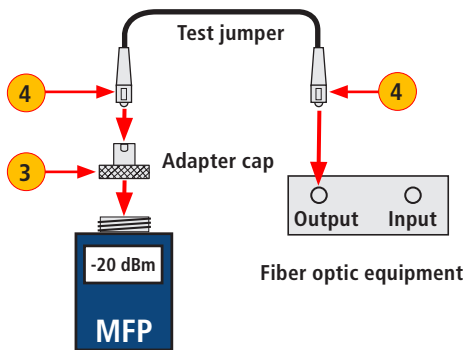
- Connect the MFT to the fiber network to be tested.
- Turn On the MFT.
- Turn On the MFP and verify that it is in the Fiber ID mode. If MFP is in standad power meter mode, press the Fiber ID button to switch to the Fiber ID mode.
- Insert the fiber to be tested in the test port.
- When the MFT signal is detected, fiber ID will be displayed on the MFP along with fiber loss. Verify if the fiber ID number on the MFP display matches the fiber number under test. Also verify if the fiber loss is acceptable to test criteria.



## Measuring Optical Power with MFP

It is important to keep all optical connections and surfaces clean to ensure accurate measurements and operation. Always clean all test jumpers before conducting tests.

1. Turn On the MFP and verify that it is in regular test mode. If MFP is in the Fiber ID mode, press the Fiber ID button to switch to the regular power meter mode.
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 MFP port. This adapter cap must match the connector on the end of the test jumper you will connect to the MFP.
4. Connect one end of the test jumper to the MFP adapter cap and the other end to the optical output to be measured.
5. Press  $[\lambda]$  to select wavelength that matches the nominal wavelength of the source being measured.
6. Press  $[dB/dBm/\mu W]$  to display power in  $[dBm]$  or press and hold to display power in  $[\mu W]$ .



## Testing Multimode or Single-mode Links with MFP

### Step I - Set the Reference (One Jumper Method)

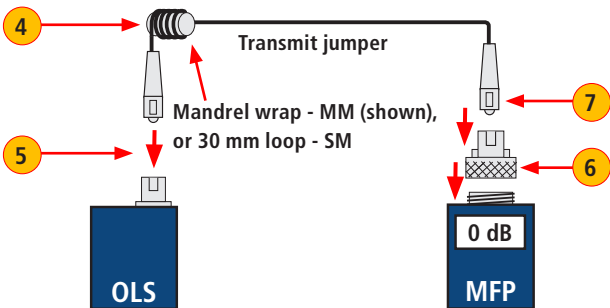
1. Turn on MFP and verify that it is in regular power meter test mode. Turn on OLS and allow it to stabilize (minimum of 2 minutes).
2. Set both instruments to the desired wavelength.
3. Select transmit and receive jumpers (fiber type must match link to be tested).

**MM:** Wrap and secure transmit jumper five times around mandrel.

**SM (TIA testing only):** Make and secure 30 mm loop in a transmit jumper.

#### Clean both ends of the transmit jumper!

4. Connect the transmit jumper to the OLS output port (MM or SM respectively).
5. Mount adapter cap on the MFP (must match free connector on transmit jumper).
6. Connect transmit jumper (free end) to the MFP. Display optical power in [dBm].
7. If measured power is outside of the normal range (specified by manufacturer), clean all fiber connections or replace the transmit jumper. Repeat steps 4 - 7.
8. Set reference level:
  - On MFP, press and hold [Ref/Set] until [HELD SET] is displayed to store currently measured level as the new reference level.
  - Once set, MFP switches to [dB] mode. MFP should display  $[0 \text{ dB}] \pm 0.05 \text{ dB}$ .



## Testing Multimode or Single-mode Links

### Step II - Verify Test Jumpers

9. Disconnect the transmit jumper from the MFP.

**Do not disturb the transmit jumper at the OLS end!**

10. If needed, change MFP adapter cap to match receive jumper connector.

**Clean both ends of the receive jumper!**

11. Connect receive jumper to the MFP.

12. Mate free ends of transmit and receive jumpers using the appropriate adapter.

13. Verify that the insertion loss of this mated connector pair is under 0.75 dB - maximum allowed by TIA (AFL recommends 0.4 - 0.5 dB typical):

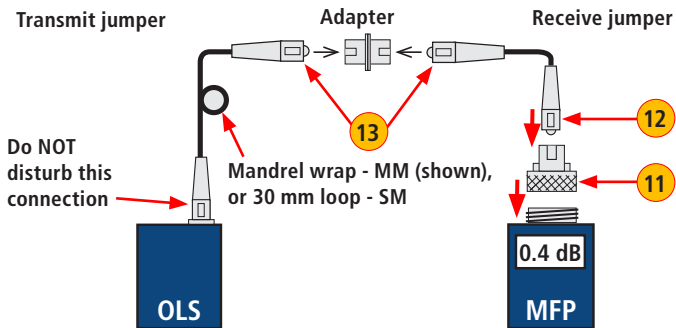
– Observe the displayed value - insertion loss of the test jumpers in [dB].

– If value is not acceptable, disconnect transmit and receive jumpers at the adapter, clean free ends of both test jumpers and repeat steps 13 & 14.

– If value is still not acceptable, replace test jumpers and repeat steps 1-14.

14. If loss value is acceptable, disconnect transmit & receive jumpers at the adapter.

15. Move the MFP and OLS to opposite ends of the link to be tested.



## Testing Multimode or Single-mode Links

### Step III - Measure Multimode Link Insertion Loss

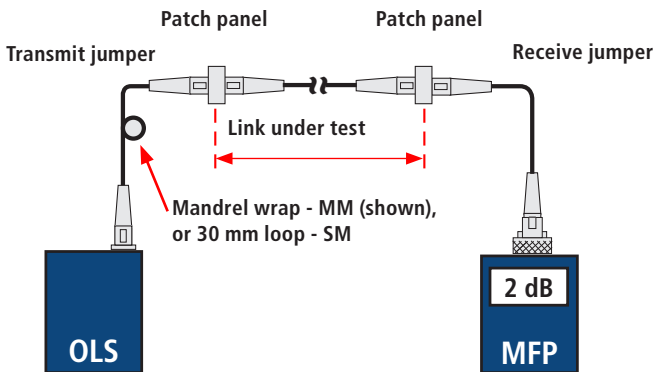
16. Connect free ends of transmit and receive jumpers to the link under test.

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

17. MFP will measure and display the insertion loss of the link under test.

18. Record link insertion loss at the current test wavelength.

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



## Cleaning Optical Assembly

The optics of the MFI must be kept free from dirt or other contaminants to ensure operating efficiency and accurate Fiber ID detection.

Follow your company's approved cleaning procedures.

AFL recommends using lint free FiberWipes™ and FCC2 cleaning fluid.

- Remove the MFI's plunger cover.
- Lift the plunger from the two retaining pins.
- Dampen the wipe with the PPF1 or FCC2 cleaning fluid and gently clean the exposed prism and optical windows.
- Once completed, replace the plunger and plunger cover.

## Battery Replacement

### **MFI**

When a battery icon appears at the top of the MFI display, the 2 x 1.5 V AAA alkaline batteries require replacement. To replace the discharged batteries:

- Remove the retaining screw and slide the battery plate away from the unit.
- Replace the discharged batteries.
- Replace the battery plate and retaining screw.

### **MFT and MFP**

When the battery indicator lights on the MFT/MFP unit, the 2 x AA alkaline batteries require replacement. To replace the discharged batteries:

- Turn the MFT/MFP unit Off.
- Remove any cable connected to the MFT/MFP.
- Remove the protective boot from the MFT/MFP unit.
- Open the battery retaining door located on the back of the unit.
- Replace the discharged batteries.
- Close battery retaining door.
- Insert the MFT/MFP unit back into its protective boot.

## Warranty Terms and Conditions

AFL Test and Inspection products are warranted against defective material and workmanship for a period of (1) one year from the date of delivery to the end user. Optional Extended Warranty starts at the end of the standard (1) one year warranty period. 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 AFL repair facility or when it has been subjected to misuse, negligence, or accident.

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

## Repair and Calibration

All AFL test equipment products are warranted for a period of (1) one year from the date of delivery to the end user. AFL recommends calibrate MFIS system every (3) three years.

**NOTICE!** AFL MFI, MFT, and MFP units contain no user serviceable parts. Except for changing batteries, these units must be returned to AFL or authorized agents for repair and calibration.





**Test & Inspection**

**Thank you for choosing AFL Test & Inspection!**



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