FLUKE networks

MultiFiber™ Pro

Optical Power Meter and Fiber Test Kits

Getting Started Guide

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Contents

Accessing the Users Manual

This guide provides basic information to help you get started using the MultiFiber™ Pro meter and source. For additional information, see the *MultiFiber Pro Users Manual* on the Fluke Networks website.

⚠Safety

⚠Warning

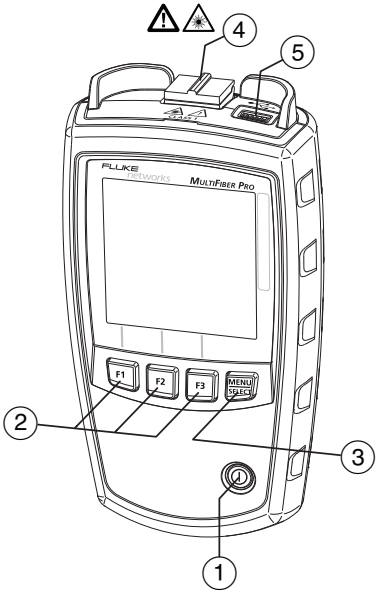
To prevent possible eye damage caused by hazardous radiation, do not look directly into optical connectors (see page 2). Some sources produce invisible radiation that can permanently damage your eyes.

⚠Caution

To prevent damage to fiber connectors, to prevent data loss, and to ensure maximum accuracy of test results, use proper cleaning procedures to clean all fiber connectors before every use. Cover all connectors with protective caps when not in use.

Read the additional safety information in the *MultiFiber Pro Users Manual* before you use the meter or source.

Meter and Source Features



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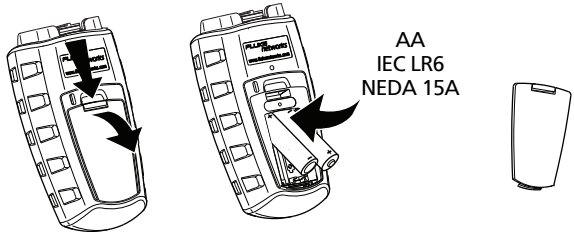
Battery Installation, Life, and Status



Note: Fluke Networks recommends alkaline batteries.

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The batteries operate for 30 hours minimum in the meter and source.

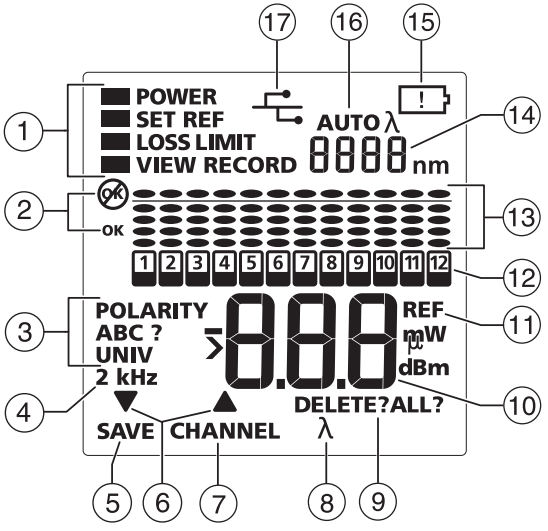
1. ⏻: On/off key.
2. F1 F2 F3: Softkeys. The function for each key shows above the key.
3. MENU SELECT: Meter: Press MENU SELECT to select power measurement or loss measurement mode. For access to a menu of test settings and the **VIEW RECORD** mode, hold down MENU SELECT for 2.5 seconds.

   Source: To see modes for the source, hold down MENU SELECT for 2.5 seconds.
4. MTP/MPO connector with self-closing, protective cover.

   ⚠ Caution

   For correct measurements, connect only APC connectors to the singlemode sources. Connect only non-APC connectors to the multimode source. You can connect APC or non-APC connectors to the meter.
5. USB port for uploading test records to a PC. You can also use the port to install software updates.

Meter Display Features



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① Modes for the meter and settings for tests. To select the **POWER**, **SET REF**, or **LOSS** measurement modes, press MENU SELECT. To change settings for measurements or to view records, hold down MENU SELECT for 2.5 seconds, then use ▼▲ and MENU SELECT to make selections.

- **POWER**: Use this mode to measure optical power. See "How to Measure Optical Power" on page 10.
- **SET REF**: Use this mode to set the reference for loss measurements. See "Set the Reference" on page 11.
- **LOSS**: Use this mode to measure loss. See "Measure Loss" on page 14.
- **LOSS LIMIT**: Use this mode to set the limit for loss measurements. See "Set the Limit" on page 13.
- **VIEW RECORD**: Use this mode to see and delete saved results. See "Memory Functions" on page 16.

② ⊗: There is a problem with a measurement, or you tried to save a measurement, but the memory is full.

OK: All measurements are satisfactory, or the meter saved the results.

③ **POLARITY**: The polarity of the connections between the meter and source:

- **A**, **B**, **C**: The connections use a standard method, A, B, or C. See the Users Manual.
- **POLARITY ?**: The connections do not use a standard method, one or more fibers are not connected, or **SCAN ALL** is off on the source.
- **UNIV**: Shows when modules have the Corning Plug & Play™ Universal Systems method of polarity management.

④ **2 kHz**: The meter detects a 2 kHz modulated optical signal. This function helps you identify fibers at patch panels.

⑤ **SAVE**: When **SAVE** shows, you can press F1 to save the power or loss measurement or the reference value.

⑥ ▼▲: The arrow icons show when you can use F1 ▼ or F2 ▲ to scroll through selections or change settings.

⑦ **CHANNEL**: When you measure power or loss, press F2 to scroll through the measurements for the channels.

⑧ λ: When the source is not in auto wavelength mode, press F2 λto change the wavelength.

⑨ **DELETE**: In **VIEW RECORD** mode, use F3 **DELETE** to delete the selected record or all records. See "Memory Functions" on page 16.

⑩ Numeric display with units for loss (**dB**) and power measurements (**mW, µW, dBm)**.

⑪ **REF** (reference): Shows when you save the reference level. See "Set the Reference" on page 11.

⑫ 12: Channel indicator. When the source's **SCAN ALL** function is on, the channel indicator is on the channel that you select. When the source's **SCAN ALL** function is off, the indicator stays on the channel you select on the source. The numbers for the channels flash in sequence when the meter measures power or loss.

⑬ The bargraphs show relative value of the loss or power measurement for each channel. For power measurements, see 10. For loss measurements, see page 15.

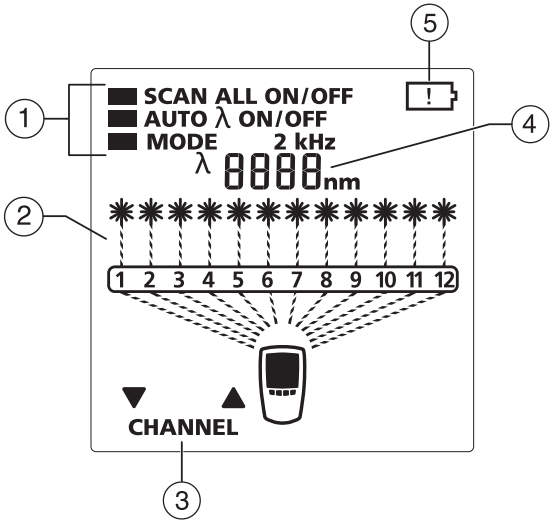
⑭ Numeric display for the wavelength.

⑮ [!]: When the batteries are low, the low battery icon flashes.

⑯ **AUTO** λ shows when the source transmits a wavelength identifier, and the meter changes its wavelength setting to agree with the source. When only λ shows, you must press [F3] λ on the meter to select the correct wavelength. See page "Polarity Detection" on page 9.

⑰ : This icon shows when the meter is connected to a PC through the USB port.

Source Display Features



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① Modes for the source (to see the menu, hold down MENU SELECT for 2.5 seconds):

- **SCAN ALL ON**: The source changes the channel automatically.
- **SCAN ALL OFF**: You press F1 ▼ or F2 ▲ to change the channel.
- **AUTO λ ON**: The source transmits a wavelength identifier that a MultiFiber Pro meter can read.
- **AUTO λ OFF**: The source does not transmit a wavelength identifier.
- **MODE 2 kHz**: The output is a 2 kHz modulated optical signal. Use this mode to identify fibers at patch panels.

② Shows the channel that is active.

③ **CHANNEL**: When **SCAN ALL** is **OFF**, press F1 ▼ or F2 ▲ to change the channel.

④ Numeric display for the wavelength.

⑤ [!]: When the batteries are low, the low battery icon flashes.

User Preferences

1. For the meter: Make sure the meter is in power or loss measurement mode.

   For the source: Make sure the source is in signal output mode.
2. Hold down F1 and F3 together for 2.5 seconds.
3. To change a setting, press F2 ▲. Or press F1 if ▼ shows.
4. To see the next setting, press MENU SELECT.
5. To save the settings and exit setup mode, hold down F1 and F3 for 2.5 seconds.

oFF on	Turn the backlight off or on.
-- 10 20 30 60	The meter and source turn off automatically if you do not press any keys for the selected period of minutes. To disable this function, select the dashes (--).

mth dAY yr hr mn	Meter only: Month (mth), day (dAY), year (yr), hour (hr), and minutes (mn). The meter includes the date and time with measurements you save. The hour is in 24-hour format. To see the date and time in saved records, look at the records in LinkWare PC software.
SoF FAC	SoF : The software version number. FAC : Meter only. The factory calibration date.

Polarity Detection

You can use the MultiFiber Pro meter and source to see the polarity of MTP/MPO patch cords and cables. The signals from the source include the channel numbers. The meter compares the transmitted numbers to the numbers of the channels that received the signals. The meter can then show the polarity of the connections. See item ③ on page 5.

Auto Wavelength Function

The signal from the source includes an identifier that tells the meter which wavelength to measure. The source transmits the auto wavelength signal unless it is in **2 kHz** mode. When you select **2 kHz** mode, the source's **AUTO λ** setting automatically changes to **OFF**.

How to Clean MTP/MPO Connectors

Always clean and inspect endfaces in fiber connectors before you make connections. Fluke Networks recommends that you use a mechanical cleaner, such as the Fluke Networks IBC™ OneClick Cleaner, to clean connectors.

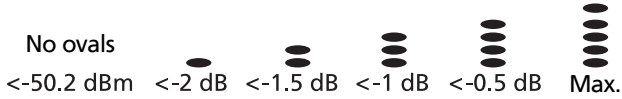
How to Measure Optical Power

A power measurement shows the optical power level from a source such as an optical network interface card or optical test equipment.

To measure power

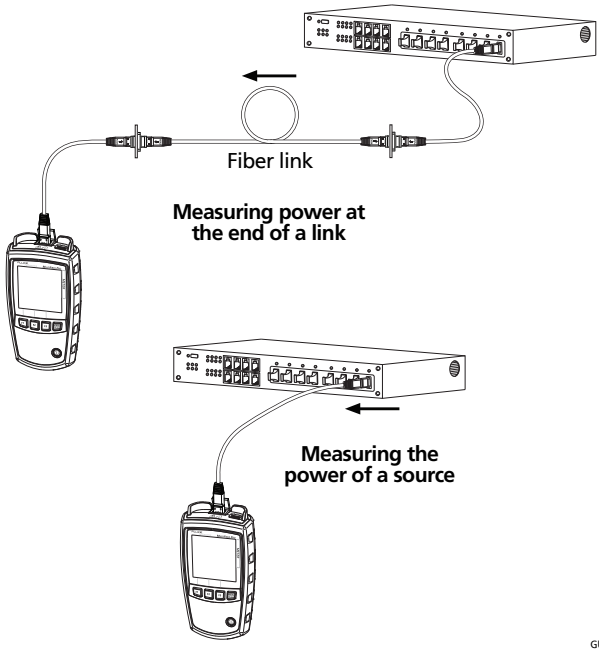
1. Clean and inspect all connectors.
2. On the meter, press MENU SELECT to make **POWER** show.
3. Make the connections shown on page 11.
4. On the meter, press F3 λ to select the wavelength of the source if necessary.
5. To see the power measurement for the next channel, press F2 **CHANNEL**.

   The bargraphs show the difference (in dB) between the level of power on each channel and the maximum power of all 12 channels:



   At regular intervals, the meter finds the maximum power level again and adjusts the bargraphs as necessary.

6. To save the measurements, make sure the meter has done a scan through all 12 channels, then press F1 **SAVE**. The meter briefly shows the record number and **OK**. The record number shown is for fiber number 12 in the cable.



Connections for Power Measurements

How to Measure Loss

The loss measurement shows how much optical power is lost in a link's fiber and connectors.

Set the Reference

For the most accurate test results, you should set the reference at these times:

- At the beginning of each day.
- Anytime you reconnect a test cord to the source.
- Anytime you see a negative loss measurement.

To set the reference

⚠ Caution

For correct measurements, connect only APC connectors to the singlemode sources. Connect only non-APC connectors to the multimode source.

For singlemode links with APC connectors, you must use Type A test cords and adapters. Type A components correctly align the angles in the connectors.

1 Clean the connectors on the meter, source, and a test cord.

2 Turn on the meter and source and let them warm up for 10 minutes. Allow more time if the equipment has been stored above or below ambient temperature.

3 Make connections to set the reference. The figure on page 13 shows reference connections for links with unpinned connectors. The Users Manual shows connections for links with other types of connectors and for fiber modules.

4 On the source, hold down MENU SELECT for 2.5 seconds to see the setup menu, then select these settings:

- **SCAN ALL**: **ON**
- **MODE**: **2 kHz** does not show

5 On the meter, press MENU SELECT to make **SET REF** show.

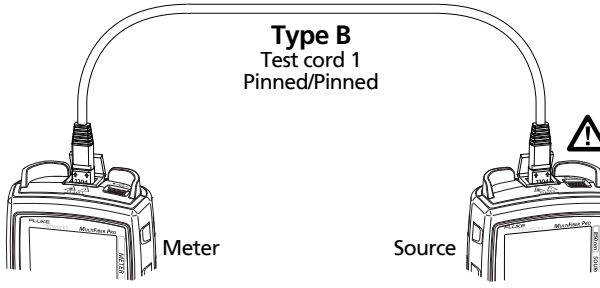
6 If necessary, press F2 **CHANNEL** to see the power measurement for each channel.

7 To save the reference measurements, press F1 **SAVE**. The meter saves the measurements and the display briefly shows rEF, **OK** and **REF**. Then the meter goes into loss measurement mode.

If the display shows Err and ⊗, the power level is too low on one or more channels. This can be caused by a bad connection or incorrect settings on the source. See the Users Manual.

⚠ Caution

Do not disconnect test cord 1 from the source after you set the reference.



Reference Connections for Multimode Permanent Links with Unpinned MTP/MPO Connectors

Set the Limit

The meter compares loss measurements to a limit to give a status of **OK** or ⊗ to the measurements. If a measurement for a channel exceeds the limit, ⊗ flashes, the bargraph for that channel flashes, and the bargraph shows an oval above the limit line on the display.

To set the limit

1 On the meter, hold down MENU/SELECT for 4 seconds to see the setup menu, press F1 to put the cursor next to **LOSS LIMIT**, then press MENU/SELECT to put the meter in the loss limit mode.

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2 While **LOSS LIMIT** shows, press F1 ▼ or F2 ▲ to decrease or increase the limit value. To change the value quickly, hold down the key.

3 To save the setting and exit setup mode, press MENU SELECT, then hold down MENU SELECT for 2.5 seconds

Measure Loss

1 Set the reference as described on page 11.

2 Make sure the limit is correct. To see the limit, hold down MENU SELECT for 2.5 seconds, press F1 ▼ to put the cursor next to **LOSS LIMIT**, then press MENU SELECT.

3 Clean and inspect the connectors on the link and on the required test cords.

4 Disconnect the test cord from the meter, then make the appropriate connections. The figure on page 15 shows connections for a link with unpinned connectors. The Users Manual shows connections for other types of links and connectors and for fiber modules.

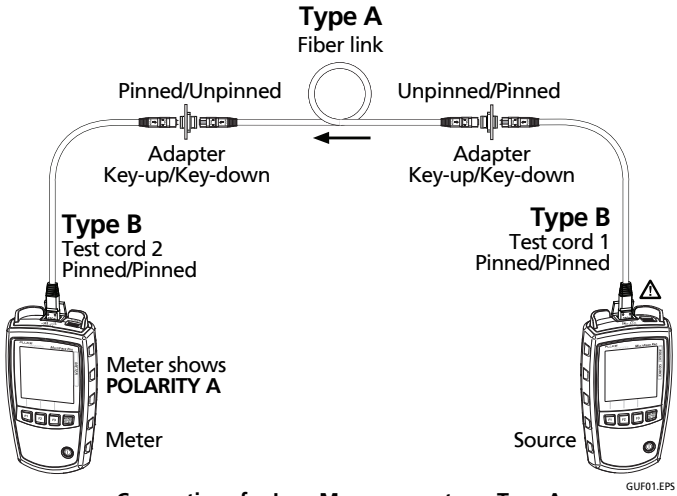
⚠ Caution

Do not disconnect test cord 1 from the source. If you do, you must set the reference again to make sure the loss measurements are reliable.

For singlemode links with APC connectors, you must use Type A test cords and adapters. Type A components correctly align the angles in the connectors.

5 On the source, select these settings:

- **SCAN ALL**: **ON**
- **MODE**: **2 kHz** does not show



Connections for Loss Measurements on Type A Multimode Permanent Links with Unpinned MTP/MPO Connectors

6 On the meter, press MENU/SELECT to make **LOSS** show.

The bargraphs show the level of power loss relative to the limit you set:

- When all ovals are below the line for a channel, the measurement for that channel is below the limit you set.
- If the loss for a channel exceeds the limit, the oval above the line is on, and OK and the bargraph for that channel flashes.
- If the loss is negative by more than -0.09 dB, OK and the measurement flash on the meter. This can occur if there was a bad connection or some other problem when you set the reference. See the Users Manual.

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7 To save the measurements, make sure the meter has done a scan through all 12 channels, then press F1 **SAVE**. The meter briefly shows the record number and **OK**. The record number shown is for the number 12 fiber on the cable.

Memory Functions

- The meter stores the loss or power measurements for up to 250 12-fiber cables.
- If memory is full, the meter shows OK and FULL when you try to save measurements.
- To view records, hold down F3 for 2.5 seconds, press F2 to put the cursor next to **VIEW RECORD**, then press F3.
- To scroll through the measurements for each fiber in a cable, press F1 ▼ or F2 ▲.
- To scroll through the measurements for the same fiber number in each cable, press F1 ▼ or F2 ▲ to select a fiber, then hold down F1 ▼ or F2 ▲. In this mode, the record number increases or decreases by 12.
- To delete a set of 12 records, press F3 **DELETE**, then hold down F3 until **OK** shows.
- To delete all records, hold down F3 until the display shows **DELETE ALL?**, release F3, then hold down F3 until **OK** shows.
- To exit the delete mode and not delete the records, press F1, F2, or MENU SELECT.
- Deleted records show --- in the numeric display.
- To upload records to a PC, use LinkWare™ PC software and the USB cable provided. See the Users Manual. You can download LinkWare PC from the Fluke Networks website.