FLUKE networks

FI-3000 FiberInspector™ Pro

Video Probe

Users Manual

March 2019 BC

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Fluke Networks authorized resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Fluke Networks. Warranty support is available only if product is purchased through a Fluke Networks authorized sales outlet or Buyer has paid the applicable international price. To the extent permitted by law, Fluke Networks reserves the right to invoice Buyer for repair/replacement when a product purchased in one country is submitted for repair in another country.

For a list of authorized resellers, visit **www.flukenetworks.com/wheretobuy**.

Fluke Networks warranty obligation is limited, at Fluke Networks option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke Networks authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke Networks authorized service center to obtain return authorization information, then send the product to that service center, with a description of the difficulty, postage and insurance prepaid (FOB destination). Fluke Networks assumes no risk for damage in transit. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB destination). If Fluke Networks determines that failure was caused by neglect, misuse, contamination, alteration, accident or abnormal condition of operation or handling, or normal wear and tear of mechanical components, Fluke Networks will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping point).

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Fluke Networks
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FI-3000 FiberInspector™ Pro

Video Probe

Users Manual

The FI-3000 FiberInspector Pro is hand-held probe used to inspect fiber optic endfaces on MPO connectors. You use the probe with your mobile device and the Fi-In application to view and analyze endfaces and share and save test results.

Register Your Product

Registering your product with Fluke Networks gives you access to valuable information on product updates, troubleshooting tips, and other support services. If you purchased a Gold Support plan, registration also activates your plan.

To register, fill out the online registration form on the Fluke Networks website at **www.flukenetworks.com/register**.

Kit Contents

For a list of the contents of your FI-3000 kit, see the list that came in the product's box or see the lists of models and accessories on the Fluke Networks website. If something is damaged or missing, contact the place of purchase immediately.

Symbols

Table 1 shows the symbols used on the probe or in this manual.

Table 1. Symbols

	Warning: Risk of fire, electric shock, or personal injury.
	Warning or Caution: Risk of damage or destruction to equipment or software. See explanations in the manuals.
	Consult the user documentation.
	40 year Environment Friendly Use Period (EFUP) under China Regulation - Administrative Measure on the Control of Pollution Caused by Electronic Information Products. This is the period of time before any of the identified hazardous substances are likely to leak out, causing possible harm to health and the environment.
	Conforms to the Appliance Efficiency Regulation (California Code of Regulations, Title 20, Sections 1601 through 1608), for small battery charging systems.
	Conformite Europeene. Conforms to requirements of European Union directives. Safety requirements for electrical equipment for measurement, control, and laboratory use.
	This Product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste. To return unwanted products, contact the manufacturer's web site shown on the product or your local sales office or distributor. This Product contains a lithium-ion battery. Do not mix with the solid waste stream. Spent batteries should be disposed of by a qualified recycler or hazardous materials handler per local regulations. Contact your authorized Fluke Service Center for recycling information.
	Conforms to relevant North American standards.
	Conforms to relevant Australian standards.

	EMC approval for Korea. Class A Equipment (Industrial Broadcasting & Communication Equipment). This product meets requirements for industrial (Class A) electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and is not to be used in homes.
	This key turns the Product on and off.

Safety Information

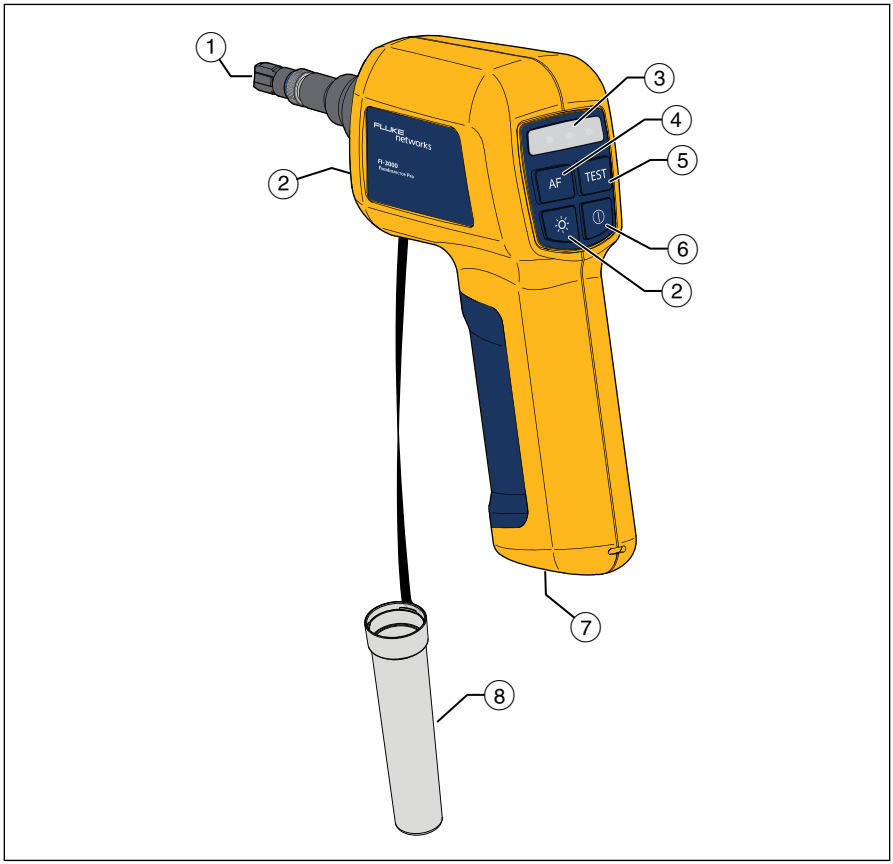
Warning

To prevent possible fire, electric shock, or personal injury:

- **Read all safety information before you use the Product.**
- **Carefully read all instructions.**
- **Do not open the case. You cannot repair or replace parts in the case.**
- **Do not modify the Product.**
- **Use only replacement parts that are approved by Fluke Networks.**
- **Do not use the Product around explosive gas, vapor, or in damp or wet environments.**
- **Charge the battery indoors.**
- **Use the Product only as specified, or the protection supplied by the Product can be compromised.**
- **Do not use and disable the Product if it is damaged.**
- **Do not use the Product if it operates incorrectly.**
- **Batteries contain hazardous chemicals that can cause burns or explode. If exposure to chemicals occurs, clean with water and get medical aid.**

- **Replace the rechargeable battery after 5 years of moderate use or 2 years of heavy use. Moderate use is defined as recharged twice a week. Heavy use is defined as discharged to cutoff and recharged daily. To replace the battery, send the product to an authorized Fluke Networks Service Center.**
- **Disconnect the battery charger and move the Product or battery to a cool, non-flammable location if the rechargeable battery becomes hot (>50 °C, >122 °F) during the charge period.**
- **Repair the Product before use if the battery leaks.**
- **Recharge the batteries when the low battery indicator shows to prevent incorrect measurements.**
- **Do not disassemble or crush battery cells and battery packs.**
- **Do not put battery cells and battery packs near heat or fire. Do not put in direct sunlight.**
- **Have an approved technician repair the Product.**
- **Use only AC adapters approved by Fluke Networks for use with the Product to supply power to the Product and charge the battery.**
- **Do not look directly into optical connectors. Some optical equipment emits invisible radiation that can cause permanent damage to your eyes.**

Features of the Probe



CL05.EPS

Figure 1. Features

① Removable tip for different types of connectors.

② Press to turn the PortBright™ LED on and off. The LED turns off automatically after the time period you select in the Fi-In application's settings.

③ Status LEDs:

Blue LED	• **Two short blinks periodically**: The probe is on but not connected to the mobile device. • **One short blink periodically**: The probe is connected to the mobile device, but the app is not active. • **On**: The probe is connected to the mobile device and the app is active.

Red LED 	The test failed.
Green LED 	The test passed.

④ When the mobile app shows a live image, you can press AF (**Auto Focus**) to automatically focus the image.

⑤ Press TEST (TEST) to analyze and transmit an endface image to the FI-IN application on your mobile device. The application and the probe's green and red LEDs show a pass or fail result. Press again to return to the **Live View** screen.

⑥ Hold down ⏻ for 2 seconds to turn the probe on and off.

⑦ Connector and status LED for the AC adapter/charger (see Figure 2).

⑧ Dust cap.

Charge the Battery

Before you use the battery for the first time, charge the battery for about 2 hours with the tester turned off (Figure 2).

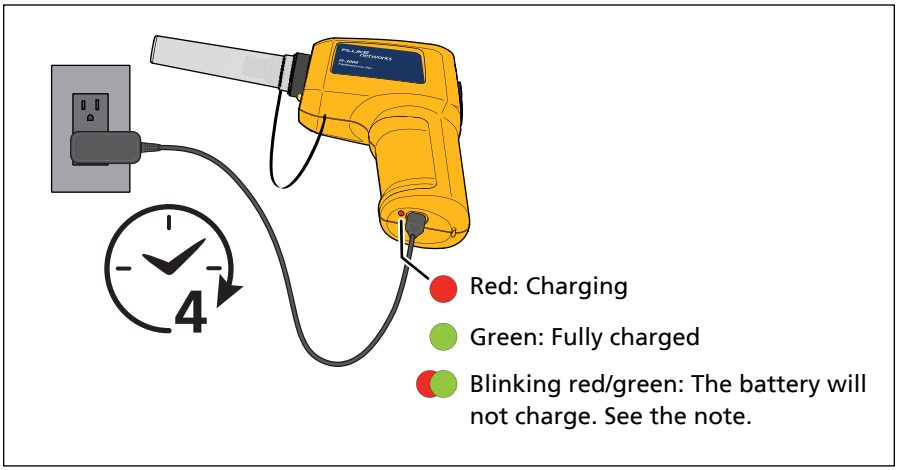
The battery takes approximately 5 hours to fully charge when the probe is turned off.

A fully-charged battery operates for approximately 10.8 hours of typical use. You can use the **Auto Power Off** setting in the app to reduce battery usage. See page 21.

Note

You do not need to fully discharge the battery before you recharge it.

The battery will not charge if its temperature is outside the range of 32 °F to 113 °F (0 °C to 45 °C) or if it has a fault and must be replaced. The LED blinks red and green if the battery will not charge.



CL01.EPS

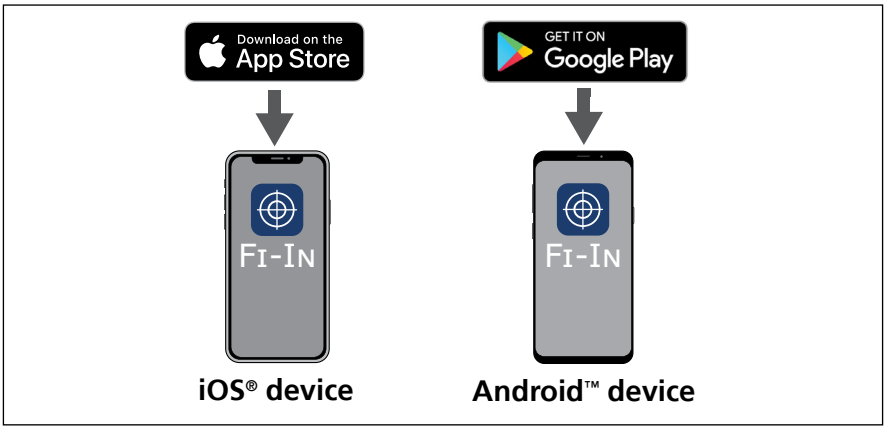
Figure 2. Charge the Battery

Get the Fi-In Application

Download the Fluke Networks Fi-In application at no charge from the Apple® App Store® or from the Google Play™ store to your iOS® or Android™ mobile device. You can use the app on smart phones and tablets.

Note

For a list of mobile devices that fully support the Fi-In application, visit the Fluke Networks website.



CL01.EPS

Figure 3. Get the FI-In Application

Connect the Probe to Your Mobile Device

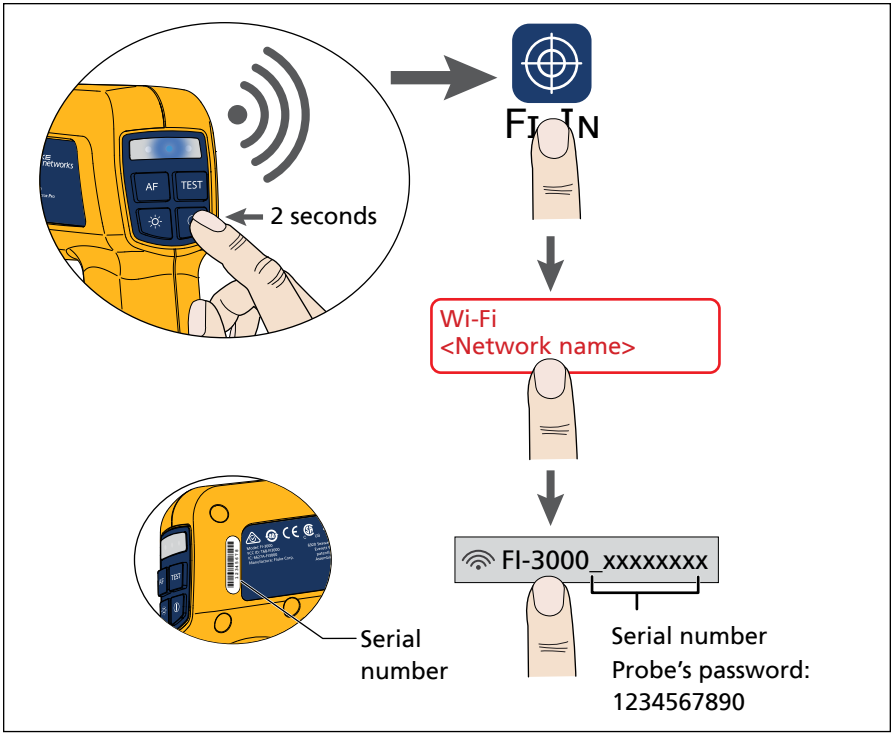
See Figure 4.

1. Hold down ⏻ for 2 seconds to turn the probe on.
2. Open the FI-IN app on your mobile device.
3. On the **Live View** screen, tap the **Wi-Fi** button.
4. In the list of Wi-Fi hotspots, tap "FI-3000_xxxxxxxx", where "xxxxxxxx" is the serial number of the probe.
5. Enter the probe's password: 1234567890.
6. When the probe is connected, the probe's SSID shows in green text on the **Wi-Fi** button.

Note

The password is the same (1234567890) for all probes. You cannot change the password.

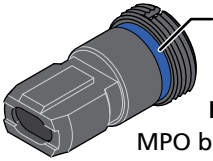
If your mobile device shows a message about no internet access, choose to stay connected to the probe.



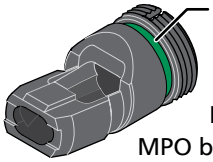
CL03.PDF

Figure 4. How to Connect the Probe to Your Mobile Device

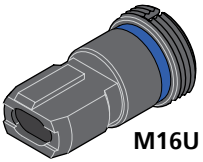
Attach the Correct Tip



M12U
MPO bulkhead tip,
12 to 24 fibers, UPC

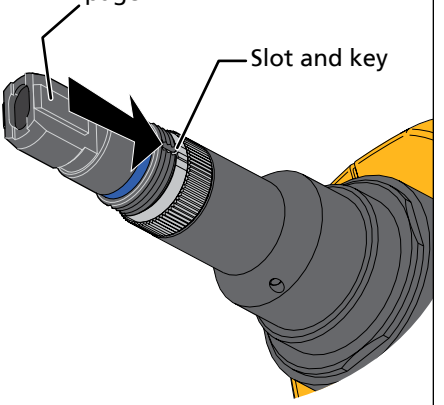


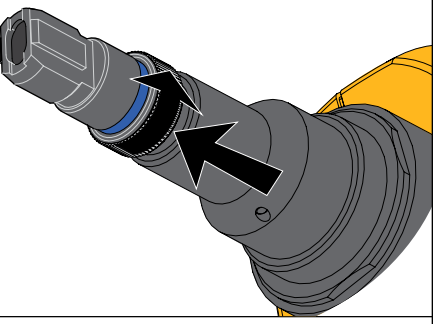
M12A
MPO bulkhead tip,
12 to 24 fibers, APC



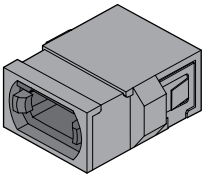
M16U (optional)
MPO bulkhead tip,
16 to 32 fibers, UPC

You can put the MPO key on either side. Be sure to set the **Key Position** in the app. See "Set the Key Position"on page 12.

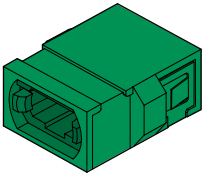




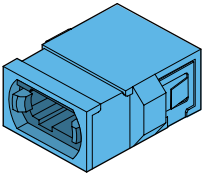
MPO Adapters
Attach an adapter to a tip to inspect MPO patch cord connectors.



Gray, Aligned Keys
12 to 24 fibers, UPC



Green, Opposed Keys
12 to 24 fibers,
UPC or APC



Blue, Opposed Keys (optional)
16 to 32 fibers,
UPC or APC

CL07.EPS

Figure 5. Examples of Tips and How to Attach Them

Set Up a Project

You can set up a maximum of 100 projects.

Select project settings

- To change settings in the active project, on the **Live View** screen tap ☰ then tap the active project.
- To create a new project, tap **Manage Projects** then tap **Add** on the **Projects** screen.
- To change settings in a different project, tap **Manage Projects**, tap a checkbox to select one project on the **Projects** screen, then tap **Edit**.

Table 2. Project Settings

Project Name	Enter a name for your project. A project name can have a maximum of 30 characters.
Operator	Enter the name of the technician who will use the probe. An operator name can have a maximum of 30 characters.
Test Limit	Select the correct test limit for the job.
Fiber End Type	Select the end type with the correct number of fibers.
Cable ID Set	To create a list of sequential cable IDs, enter the **First ID** and **Last ID** for the list.

Make a project the active project

On the **Projects** screen, tap the right side of the project's panel so that a checkmark shows on that side.

About cable ID sets

- An ID can have a maximum of 60 characters.
- A project can have a maximum of 5000 IDs.
- Only alphanumeric characters increment.
- The characters in each position in the **First ID** and **Last ID** must have the same format:
    - The IDs must be the same length.
    - The characters in each position must be the same type (letters, numbers, or symbols).
    - The characters in each position must be the same case.
    - The IDs show in red text if the formats do not match.

Set the Key Position

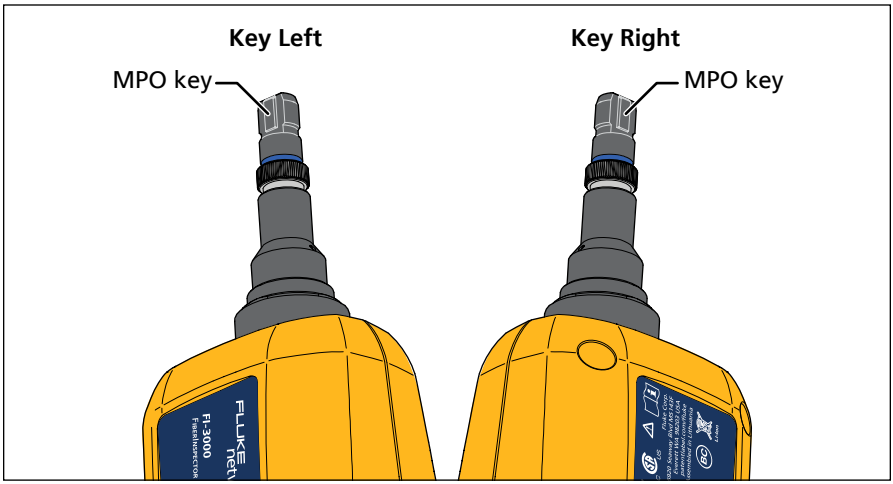
You can attach the MPO inspection tips to the probe with the MPO key on the left or right, as shown in Figure 6. This lets you rotate the probe when a cabinet door or other surface is in the way of the probe's handle (Figure 7).

The **Key Position** setting at the bottom of the **Live View** screen lets you make the fiber numbers on endface diagrams agree with the numbers on the connector.

To see the correct numbers for the fibers in your test results

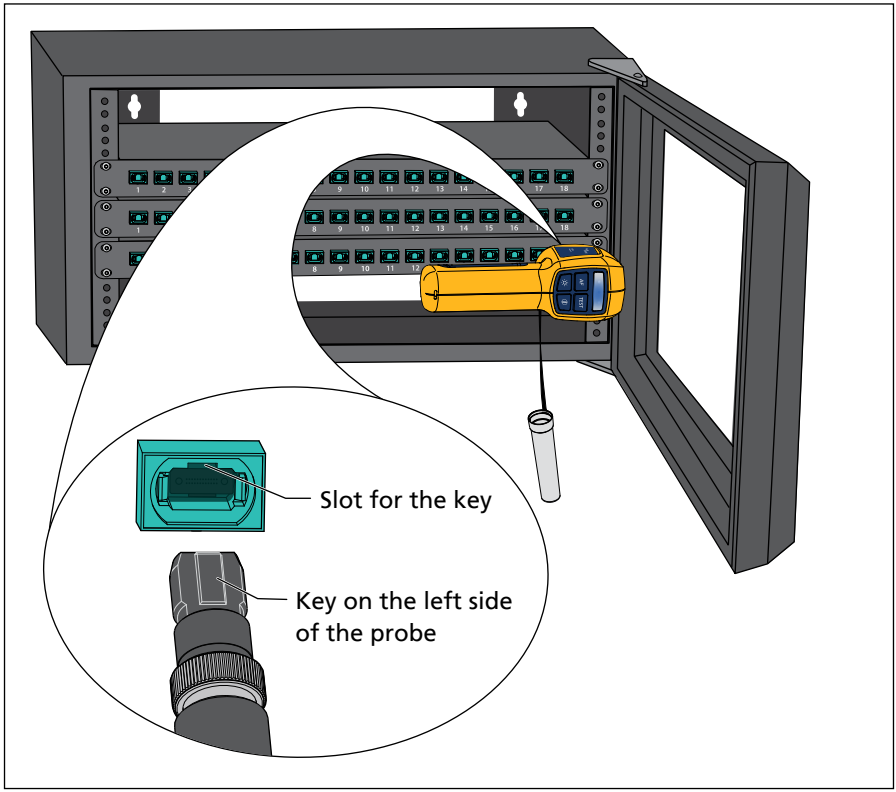
- **For key up/key down adapters:** Set the **Key Position** to the key position you use on the probe.
- **For key up/key up adapters:** Set the **Key Position** to the opposite side from the key position you use on the probe.

When you set the **Key Position** correctly for the type of adapter, fiber number 1 is in the upper-right corner of the endface image.



CL06.EPS

Figure 6. Left and Right Key Positions for the MPO Inspection Tip



CL08.PDF

Figure 7. "Key Left" Position Used for a Patch Panel with Key Up/Key Down Adapters

Inspect an Endface

1. Insert the probe tip into a bulkhead connector, or into an adapter attached to a patch cord (Figure 8).

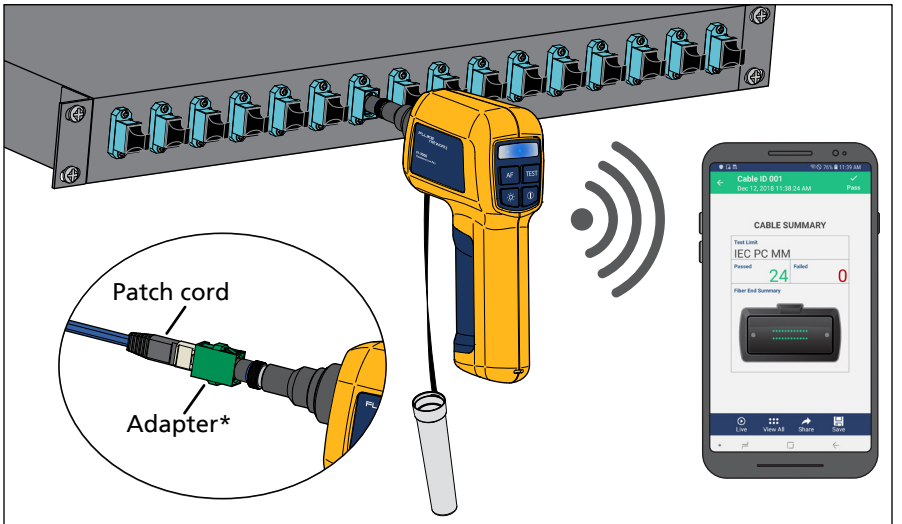
   The app shows a live image of the endface. You can adjust the image as shown in Figure 9.

2. Press AF to focus the image if necessary, then press TEST or tap **Test** on your mobile device.

3. When the LEDs on the probe show the pass (🟢) or fail (🔴) result, you can remove the probe from the connector.

4. After the probe transmits the test results to your device, the app shows the **TEST RESULT SUMMARY** screen. You can then **Save** or **Share** the result or tap the endface graphic to see detailed results. See "Endface Image Screens" on page 16.

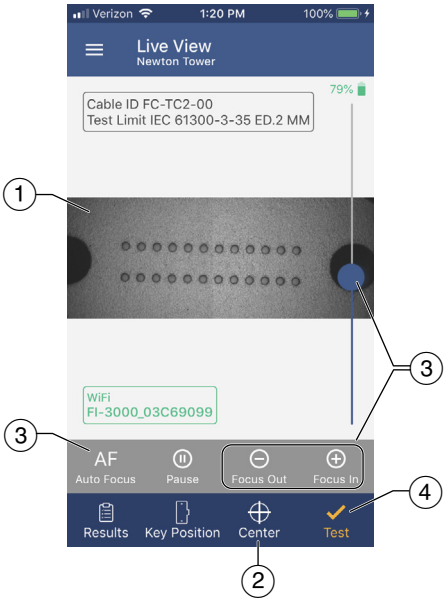
   To see the live image again, tap ← or **Live**.



* The adapter's key position affects the fiber numbers in your test results. See "Set the Key Position" on page 12.

CL04.PDF

Figure 8. Inspect an Endface



1. To zoom in or out or to move the image, use the finger gestures supported by your device.

2. To quickly go back to 1:1 magnification, tap **Center**.

3. To focus the live image, press AF on the probe, tap **AF Auto Focus** on your mobile device, or use the focus controls.

   If you turn on the **Auto Focus before Test** setting, the probe focuses the image when you press TEST or tap **Test**. To change the setting, tap ☰ then tap **Settings**.

4. To see the high-resolution image that the probe analyzes for test results, tap **Test**.

Note

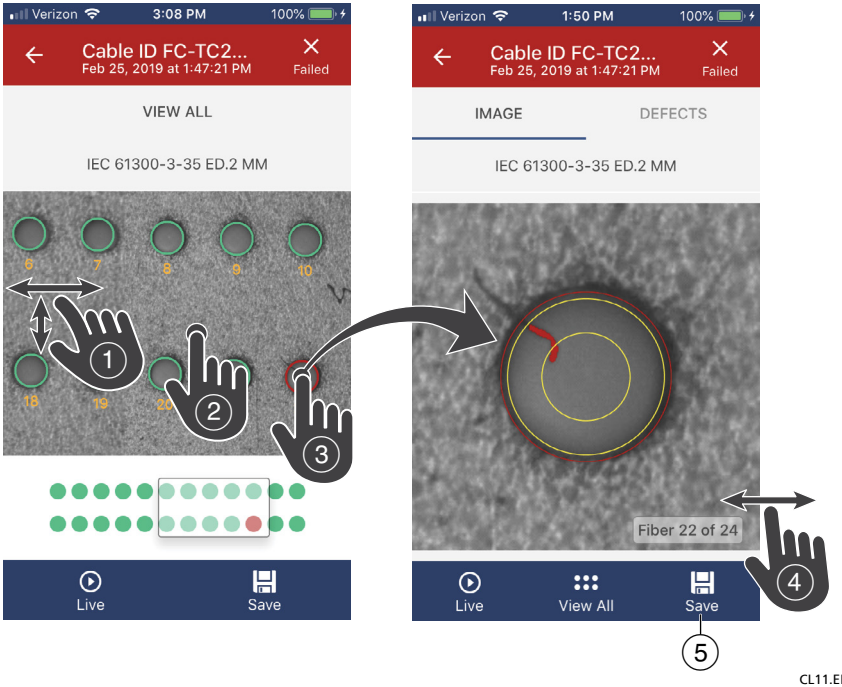
The image will be too dark to analyze if you use a UPC tip on the probe to inspect an APC endface.

CL09.EPS

Figure 9. How to Adjust the Image

Endface Image Screens

To see a high-resolution image of the endface in a test result (Figure 10), tap the endface graphic on the **TEST RESULT SUMMARY** screen.



(1) To zoom in or out or to move the image, use the finger gestures supported by your device.

(2) To hide or see the overlay, tap the image where there is no endface.

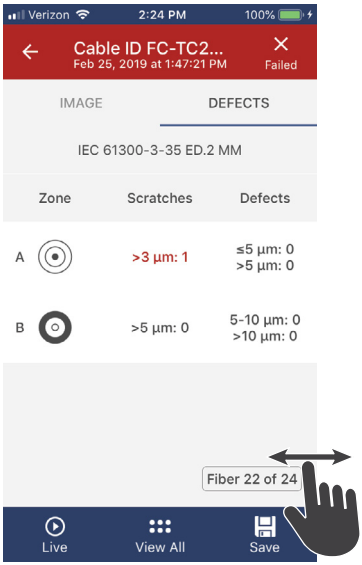
(3) To see details about the defects on a fiber endface, zoom in slightly on the endface on the **VIEW ALL** screen, then tap the endface.

- The **IMAGE** tab shows endface with defects highlighted.
- Tap the **DEFECTS** tab to see more details. See Figure 11.

(4) You can swipe the screen to scroll through the endfaces.

(5) Tap **Save** to save the result in the active project.

Figure 10. Image Details



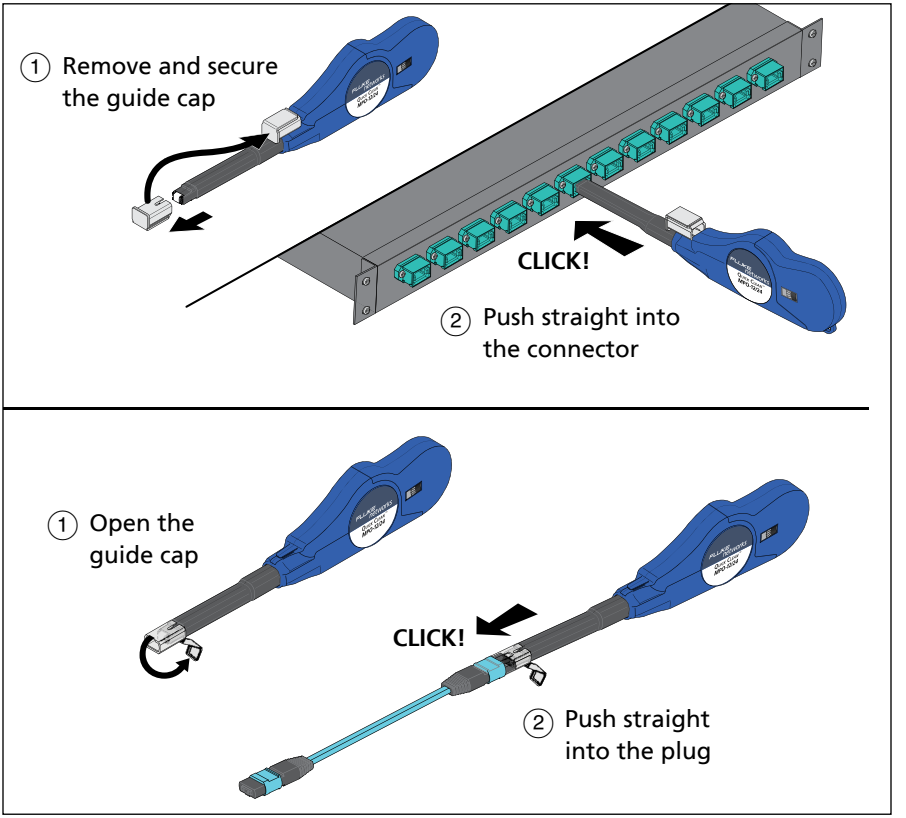
- The **DEFECTS** tab shows the number and size of the **Scratches** and **Defects** in and around the fiber's core.
- Scratches and defects in zones that fail show in red.
- You can swipe the screen to scroll through the endfaces.

CL12.EPS

Figure 11. DEFECTS tab

How to Clean MPO Connectors

Fluke Networks recommends that you use a mechanical cleaner such as the Quick Clean™ fiber endface cleaner. Figure 12 shows how to use a Quick Clean cleaner to clean MPO connectors. For details, see the documentation included with the cleaner.



CL10.EPS

Figure 12. How to Clean Endfaces

Share Results

You can send the endface image or test report for a saved result to an email recipient or social media account.

Share a result immediately after you save it

1. Tap **Share** on any results screen.
2. In the **Share Results** window, select **Endface Image** or **PDF Report**, then tap **Select**.

   If you selected **Endface Image**, the **Share Results** window shows the details you can select to include.
3. Select a destination for the result.

Share one or more saved results

1. On the **Live View** screen, tap **Results**.
2. On the **Results** screen, select the results you want to share, then tap **Share**.
3. In the **Share Results** window, select **Endface Image** or **PDF Report**, then tap **Select**.

   If you selected **Endface Image**, the **Share Results** window shows the details you can select to include.
4. Select a destination for the result.

Share all the results in a project

1. On the **Live View** screen, tap ☰ then tap **Manage Projects**.
2. On the **Projects** screen, tap the project you want to share, then tap **Share**.
3. In the **Share Results** window, select **Endface Image** or **PDF Report**, then tap **Select**.

   If you selected **Endface Image**, the **Share Results** window shows the details you can select to include.
4. Select a destination for the result.

Note

Images you share from some Android devices might have lower resolution than the images from the probe.

View and Manage Saved Results

You can view complete results, rename or delete results, and delete projects.

Manage results in the active project

On the **Live View** screen, tap **Results**, then select one or more results or tap one result. The **Delete** and **Rename** buttons are at the bottom of the screens.

Manage results in any project

1. On the **Live View** screen, tap ☰ then tap **Manage Projects**.
2. On the **Projects** screen, tap a project.
3. On the **PROJECT SUMMARY** screen, tap a result.

   The **Delete** and **Rename** buttons are at the bottom of the screen.

Delete a project

1. On the **Live View** screen, tap ☰ then tap **Manage Projects**.
2. On the **Projects** screen, select one or more projects, then tap **Delete**.

Auto Power Off

- The Fi-In app can turn off the probe after you do nothing with the probe for 5, 10, 15, or 20 minutes.
- If you turn off the **Auto Power Off** function, the probe stays on while it is connected to the app.
- If the probe is not connected to the app, it turns off after you do nothing with the probe for 10 minutes.

To select an Auto Power Off setting

1. In the Fi-In app, tap ☰ then tap **Settings**.
2. If necessary, tap the **Auto Power Off** slider to turn it on.
3. Tap **Auto Power Off**, tap a time period, then tap **Select**.

Learn More

The Fluke Networks Knowledge Base answers common questions about Fluke Networks products and provides articles on cable testing techniques and technology.

To access the Knowledge Base, log on to **www.flukenetworks.com**, then click **SUPPORT** > **Knowledge Base**.

Accessories

For a complete list of options and accessories visit the Fluke Networks website at **www.flukenetworks.com**.

Maintenance

⚠Warning⚠

To prevent possible fire, electrical shock, or personal injury:

- **Do not operate the Product with covers removed or the case open. Hazardous voltage exposure is possible.**
- **Do not open the case. You cannot repair or replace parts in the case.**
- **Use only specified replacement parts.**
- **Have an approved technician repair the Product.**

Cleaning

- Clean the case with a soft cloth dampened with water or a mild soap. Do not use solvents or abrasive cleansers.
- If the probe's lens is dirty, remove the tip then clean the lens with optical-grade cleaning supplies.

Battery replacement

⚠Warning⚠

To prevent possible electrical shock, fire, or personal injury:

- **Replace the rechargeable battery after 5 years of moderate use or 2 years of heavy use. Moderate use is defined as recharged twice a week. Heavy use is defined as discharged to cutoff and recharged daily.**
- **To replace the battery, send the product to an authorized Fluke Networks Service Center.**

How to get service

Contact Fluke Networks for information on authorized Fluke Networks Service Centers.

Open Source Software Disk

This product uses freeRTOS and FatFS software. The software license statements and files that contain the binary and source code for the open source software are on the disk supplied with the product. These files are provided to meet legal requirements. You do not need these files to use the probe. For more information, go to **http://www.freertos.org** and **http://elm-chan.org/fsw_e.html**.

Contact Fluke Networks


www.flukenetworks.com/support


info@flukenetworks.com


1-800-283-5853, +1-425-446-5500


Fluke Networks
6920 Seaway Boulevard, MS 143F
Everett WA 98203 USA

Fluke Networks operates in more than 50 countries worldwide. For more contact information, visit our website.

Specifications

Temperature range	Operating: -10 °C to +45 °C (+14 °F to +113 °F Storage: -10 °C to +60 °C (+14 °F to +140 °F)
Humidity range	Operating: 0 % to 95 % (32° F to 95° F, 0° C to 35°C) RH non-condensing Storage: 0 % to 95 % (95° F to 113° F, 35° C to 45°C) RH non-condensing
Altitude	Operating: 4,000 m (13,123 ft) (3,200 m (10,499 ft) with AC adapter) Storage: 12,000 m (39,370 ft)
Vibration and shock	2 g, 5 Hz to 500 Hz, 30 g shock
Live image frame size	~ 1200 x 400, 10 frames per second
Live image field of view	Low magnification: ≥ 4800 µm x 1600 µm High magnification: 680 µm x 510 µm
Endface illumination	Coaxial blue LED
Autofocus time	≤ 3 seconds

Connectors inspected	1 x 8 (8 fibers), 1 x 12 (8, 10, or 12 fibers), 1 x 16 (16 fibers), 2 x 12 (16, 20, or 24 fibers), 2 x 16 (32 fibers)
Test Time	Less than 2 seconds per fiber
Camera type	5 Megapixel 1/4-inch CMOS sensor
Field of view	610 µm x 460 µm
Resolution	1 µm
Light source	LED, >100,000 hour life
Endface illumination	Coaxial blue LED
PortBright™ illumination	White LED
Battery	Type: Lithium-ion, 3.6 V, 6400 mAh Life: 10.8 hours typical Charge time: 4.5 hours Charging temperature range: 0 °C to +40 °C (+32 °F to +104 °F)
Power adapter	Input: 100 to 240 VAC ±10%, 50/60Hz Output: 15 VDC, 2 A maximum Class II
Wireless transmission*	Frequency ranges: 2.4 GHz (2412 MHz to 2462 MHz) Output power: <100 mW
Wi-Fi radio	SimpleLink™ Wi-Fi® CC3220MOD Wireless Microcontroller Module (IEEE 802.11 b/g/n) Brand: Texas Instruments Model: CC3220MODSF12MOB FCC ID: Z64-CC3220MOD Band: 2400 MHz to 2483.5 MHz Output: 0.1074 W Manufacturer: Texas Instruments Incorporated Address: 12500 TI BLVD., Dallas Texas, 75243
Safety	IEC 61010-1: Pollution Degree 2

EMC	IEC 61326-1: Controlled Electromagnetic Environment; IEC 61326-2-1 CISPR 11: Group 2, Class A Group 2: Equipment contains ISM RF equipment in which radio-frequency energy in the frequency range 9 kHz to 400 GHz is intentionally generated and used or only used, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material or inspection/analysis purposes. Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted and radiated disturbances. USA (FCC): 47 CFR 15 Intentional Radiators: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. (15.19). Changes or modifications not expressly approved by Fluke could void the user's authority to operate the equipment. (15.21) Emissions which exceed the levels required by CISPR 11 can occur when the Product is connected to a test object.
Dimensions	168 mm x 137 mm x 54 mm (6.625 in x 5.375 in x 2.125 in) (with no dust cap or adapter tip) Length with dust cap: 191 mm (7.5 in)
Weight	326 gm (11.5 oz) (with dust cap and no adapter tip)
* For more information, go to www.flukenetworks.com/support/manuals, select the product name, then find “Radio Frequency Data for Class A” in the list of manuals.	