User Guide

FIP-200

Fiber Inspection Tool

www.EXFO.com

EXFO

EXFO's Commerce And Government Entities (CAGE) code under the North Atlantic Treaty Organization (NATO) is 0L8C3.

The information contained in this publication is subject to change without notice.

Trademarks

EXFO's trademarks have been identified as such. However, the presence or absence of such identification does not affect the legal status of any trademark.

Where applicable, the Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by EXFO Inc. is under license. Where applicable, the MTP® mark is a registered trademark of US Conec Ltd. Other third party trademarks and trade names are those of their respective owners.

Units of Measurement

Units of measurement in this publication conform to SI standards and practices.

Patents

The exhaustive list of patents is available at EXFO.com/patent.

Version number: 1.0.0.2

Contents

Regulatory Information

USA Electromagnetic Interference Regulatory Statement

Electronic test and measurement equipment is exempt from FCC part 15, subpart B compliance in the United States of America. However, EXFO Inc. makes reasonable efforts to ensure compliance to the applicable standards.

The limits set by these standards are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user documentation, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Canada Electromagnetic Interference Regulatory Statement

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference.

Cet équipement génère, utilise et peut émettre de l'énergie radio-fréquence et, s'il n'est pas installé et utilisé conformément à la documentation de l'utilisateur, il peut occasionner une interférence néfaste aux communications radio. L'utilisation de cet équipement dans une zone résidentielle est susceptible d'occasionner une interférence néfaste.

Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

Attention : Cet appareil n'est pas destiné à être utilisé dans des environnements résidentiels et peut ne pas assurer la protection adéquate à la réception radioélectrique dans ce type d'environnements.

This is a class A, group 1 product.

Ceci est un produit de classe A, groupe 1.

- Class A equipment: Equipment that is, by virtue of its characteristics, highly unlikely to be used in a residential environment, including a home business shall be classified as class A and shall comply with the class A limits specified in the applicable ICES standard. Characteristics considered in this assessment include price, marketing and advertising methodology, the degree to which the functional design inhibits applications suitable to residential environments, or any combination of features that would effectively preclude the use of such equipment in a residential environment.

  Classe A : Matériel qui, en raison de ses caractéristiques, ne sera fort probablement pas utilisé dans un milieu domiciliaire ni par des entreprises établies à domicile. Parmi les caractéristiques considérées dans cette évaluation, il y a le prix, les méthodes de commercialisation et de publicité, la mesure dans laquelle les fonctions de l'appareil font qu'il ne se prête pas à des applications convenant au milieu domiciliaire ou toute combinaison de ces caractéristiques qui aurait pour conséquence d'en prévenir effectivement l'utilisation à domicile. Utilisé également pour indiquer les limites d'émission correspondantes qui s'appliquent à un tel matériel.

- Class B equipment: Equipment that cannot be classified as Class A shall comply with the Class B limits specified in the applicable ICES standard.

  Classe B : Matériel qui ne peut pas être inclus dans la classe A. Utilisé également pour indiquer les limites d'émission correspondantes qui s'appliquent à un tel matériel.

- Group 1 equipment: group 1 contains all equipment which is not classified as group 2 equipment, and includes equipment such as laboratory and scientific equipment, industrial process, measurement and control equipment.

  Group 2 equipment: group 2 contains all 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 locally, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material for inspection/analysis purposes, or for transfer of electromagnetic energy.

  Appareils du groupe 1 : le groupe 1 réunit tous les appareils compris dans le domaine d'application de la présente Norme, qui ne sont pas classés comme étant des appareils du groupe 2. Le groupe 1 inclut les appareils scientifiques et de laboratoire, les processus industriels, appareils de mesure ou de contrôle.

  Appareils du groupe 2 : le groupe 2 réunit tous les appareils ISM à fréquences radioélectriques dans lesquels de l'énergie à fréquences radioélectriques dans la plage de fréquences comprises entre 9 kHz et 400 GHz est produite et utilisée volontairement ou uniquement utilisée localement sous forme de rayonnement électromagnétique, de couplage inductif et/ou capacitif, pour le traitement de la matière, à des fins d'examen ou d'analyse ou pour le transfert d'énergie électromagnétique.

Supplier's Declaration of Conformity (SDoC)

The SDoC for your product is as follows:

CAN ICES-001 (A) / NMB-001 (A)

EU and UK Electromagnetic Compatibility Regulatory Statement

Warning: This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures. Your product is suitable for use in industrial electromagnetic environments.

General Wireless Compliance Related Information

Your unit comes with internal wireless modules for which the information hereafter applies:

This product does not contain any wireless user-serviceable components. Any unauthorized product changes or modifications will invalidate warranty and all applicable regulatory certifications and approvals.

Canada and USA Wireless Compliance Related Information

Your unit comes with internal wireless modules for which the information hereafter applies:

This product does not contain any wireless user-serviceable components. Any unauthorized product changes or modifications will invalidate warranty and all applicable regulatory certifications and approvals.

- This device complies with Part 15 of the FCC Rules.
- This device complies with Innovation, Sciences and Economic Development Canada license-exempt RSS standards.
- 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.

Use in Specific Environments:

- The use of wireless products in hazardous locations is limited by the constraints posed by the safety directors of such environments.
- The use of wireless products on airplanes is governed by the Federal Aviation Administration (FAA).
- The use of wireless products in hospitals is restricted to the limits set forth by each hospital.
- Do not operate a portable transmitter near unshielded blasting caps or in an explosive environment.

Radiation Exposure Statement:

- The product complies with the US/Canada portable RF exposure limit set forth for an uncontrolled environment and is safe for intended operation as described in this user documentation.
- Further RF exposure reduction can be achieved if the device can be kept as far as possible from the user's body.

RF Function and Frequency Range:

Your unit is designed to operate in the Bluetooth and WLAN 2.4 GHz bands, and at 13.56 MHz for NFC/RFID.

The information about the Bluetooth and Wi-Fi frequency bands is as follows:

- Bluetooth: Between the frequencies 2402 MHz - 2480 MHz.
  The output power is 11.7 dBm typical.
- Wi-Fi: Channels 1 through 11 - Between the frequencies 2412 MHz - 2462 MHz.
  The maximum output power is 18.5 dBm.

EU and UK Wireless Compliance Related Information

Your unit is designed to operate in the Bluetooth and WLAN 2.4 GHz bands, and at 13.56 MHz for NFC/RFID.

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- Wi-Fi: Channels 1 through 13 - Between the frequencies 2412 MHz - 2472 MHz.
  The maximum output power is 18.5 dBm typical.

This is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states, United Kingdom, and EFTA countries.

Local Restrictions on 802.11a, 802.11b, 802.11d, 802.11g, 802.11n, and 802.11ac Radio Usage

Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11d, 802.11g, 802.11n, and 802.11ac wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, 802.11d, 802.11g, 802.11n, and 802.11ac products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use.

Simplified EU and UK Declaration of Conformity

Hereby, EXFO declares that the radio equipment type “FIP-200” is in compliance with European Directive 2014/53/EU and the UK legislation S.I. 2017/1206 Radio Equipment Regulations 2017.

The full text of the declaration of conformity is available at the following Internet address: *www.exfo.com/en/resources/legal-documentation*.

EU Economic Operator

EXFO Solutions SAS
2, rue Jacqueline Auriol,
Saint-Jacques-de-la-Lande,
35091 Rennes Cedex 9
FRANCE

Japanese Technical Conformity Mark for Radio Law

This equipment contains specified radio equipment that has been certified to the Technical Regulation Conformity Certification for Japan, under the Radio Law.

R 201-135370

Japan Wireless Compliance Related Information

Your unit is designed to operate in the Bluetooth and WLAN 2.4 GHz bands.

The information about the Bluetooth and Wi-Fi frequency bands is as follows:

- Bluetooth: Channels 1 through 13 - Between the frequencies 2412 MHz - 2472 MHz.
  The output power is 11.7 dBm typical.
- Wi-Fi: Channels 1 through 13 - Between the frequencies 2412 MHz - 2472 MHz.
  The maximum output power is 18.5 dBm.

1 Introducing the FIP-200

The FIP-200 is a portable tool for inspecting optical fiber and cable ends. Its built-in five rating LED (light emitting diode) system provides quick inspection results. You can use the FIP-200 as a standalone unit or with the EXFO Exchange mobile application.

Main Features

Your unit offers the following features:

- Ergonomic design
- Easy to use, no configuration necessary
- Fully automatic focus, centering and analysis
- Audio and visual feedback with five rating LEDs
- Wi-Fi and Bluetooth® connectivity
- EXFO Exchange compatibility

Available Configurations

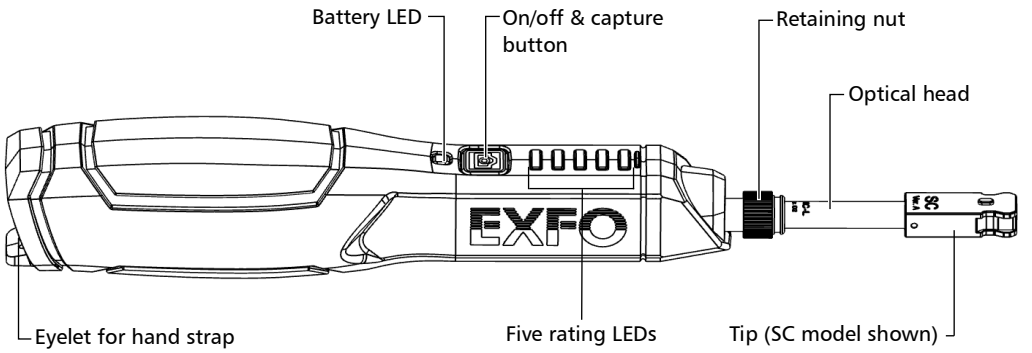
You can use your FIP-200 with either a short-reach or a long-reach optical head. The table below outlines the two possible configurations available for your unit. To change your unit's optical head, see *Changing Your Unit's Optical Head* on page 20.

Configuration	Characteristics
Short-reach optical head	Inspection of SC APC connectors
Long-reach optical head	➤ Quarter turn quick connect tips ➤ Compatible with the following inspection tips: ➤ SC (APC) ➤ LC (APC) ➤ OptiTap® (APC) ➤ Pushlok™ (APC) ➤ DLX® (APC) ➤ Huawei® Mini SC FastConnect (APC)

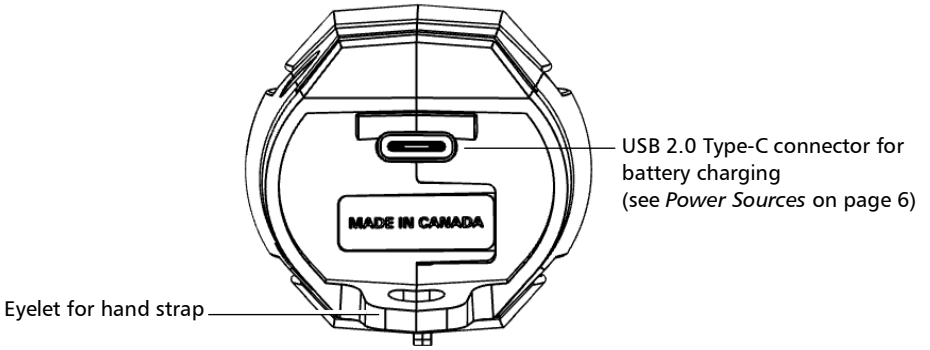
CAUTION

The optical head of your unit contains precision components. To ensure optimum protection when you are not using the unit or during transportation, cover the optical head with the provided protective cap.

Side view (long-reach optical head model shown)



Bottom view



LED Indicators Description

Your unit includes a battery LED and five rating LEDs.

Battery LED

The battery LED, located near the capture button, provides information about the battery status. When your unit is not connected to an external power source, the battery LED turns off.

Note: *The battery LED may remain off if the external power source used to charge your unit's battery is not powerful enough.*

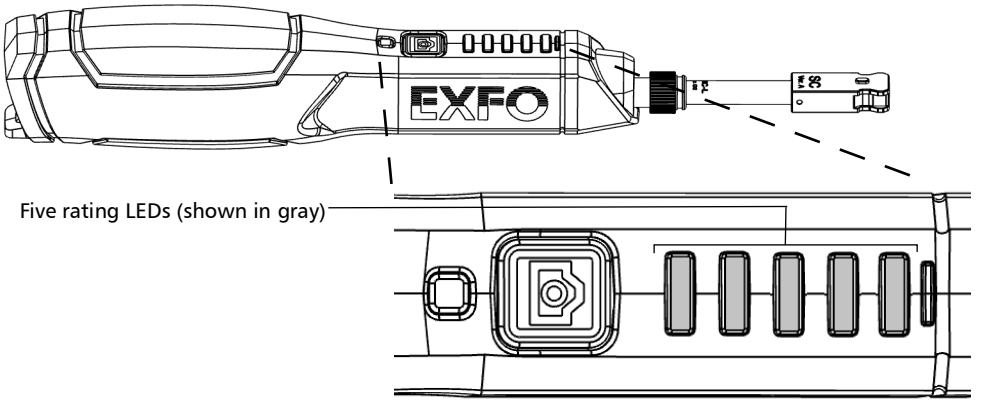
Note: *You can check your unit's current battery level by using the EXFO Exchange mobile application. For more information, see Checking the Battery Level* on page 55.

Unit	Status	Meaning
Connected to an external power source	Off	The external power source does not provide sufficient power to charge the battery.
	Blue, steady	The battery is fully charged.
	Blue, blinking – long pulses	The battery is charging.
	Blue, fast blinking	The battery charge has been interrupted, possibly because the unit may not be within the recommended charging temperatures. For more information, see *Equipment Ratings* on page 13.
	Red, steady	The battery level is too low to start the unit.
	Magenta, steady	The battery is either missing or not properly connected.

Unit	Status	Meaning
Not connected to an external power source	Off	The unit is not connected to an external power source.
	Red, steady	The battery level is low, and the unit will shut down unless it is connected to an external power source.
	Red, fast blinking	The internal temperature is too high or too low for the unit to operate.
	White	The unit is starting up.

Five Rating LEDs

Your unit uses five rating LEDs to communicate information such as startup, wireless communications, inspection results, and shutdown using various colors and animations.



For a detailed list of the five rating LED behaviors and their meanings, see *Interpreting LED Colors and Behaviors* on page 99.

Power Sources

The FIP-200 operates with the following power sources:

- Indoor use only: USB power adapter connected to a power outlet (fastest way to charge the battery).

Note: *Connecting your unit to a USB-A port with the proper cable may still consume battery power. If the unit is off when connected to a USB-A port, it will charge slowly. However, if connected to a USB-C port with the appropriate cable, it will charge at full speed.*

Note: *If you have a vehicle equipped with dedicated USB charging ports, you could connect your unit to one of these ports to charge the battery. The actual results will vary with each vehicle. You could also use a certified USB power bank (portable charger) to charge your unit.*

- Indoor and outdoor use: One lithium-ion (Li-ion) rechargeable battery (a battery that automatically takes over if you disconnect the unit from its external power source).

  Possible to switch from an external power source to battery power or vice versa without affecting operation.

  The battery recharges automatically when the unit is connected to an external power source.

Note: *When the unit's internal temperature is below 5 °C (41 °F) or when it reaches or exceeds about 45 °C (113 °F), the battery can either charge more slowly than usual, or not charge at all, depending on the internal temperature of your unit.*

Note: *You can replace the battery yourself (see Replacing the Battery* on page 74*).*

For more information, see *Electrical Safety Information* on page 12.

EXFO License Agreement

To obtain the EXFO license agreement, visit the EXFO Web site at *www.exfo.com/en/how-to-buy/sales-terms-conditions*.

The EXFO license agreement is also available in other languages.

Open Source License Agreement

To obtain the open source license agreement, visit the EXFO Web site at *www.exfo.com/en/support*.

Technical Specifications

To obtain this product's technical specifications, visit the EXFO website at *www.exfo.com*.

Conventions

Before using the product described in this guide, you should understand the following conventions:

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in *death or serious injury*. Do not proceed unless you understand and meet the required conditions.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *minor or moderate injury*. Do not proceed unless you understand and meet the required conditions.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *component damage*. Do not proceed unless you understand and meet the required conditions.

IMPORTANT

Refers to information about this product you should not overlook.

2 Safety Information

General Safety Information

WARNING

Do not install or terminate fibers while a light source is active. Never look directly into a live fiber and ensure that your eyes are protected at all times.

WARNING

The use of controls, adjustments and procedures, namely for operation and maintenance, other than those specified herein may result in hazardous radiation exposure or impair the protection provided by this unit.

WARNING

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

WARNING

Use only accessories designed for your unit and approved by EXFO. For a complete list of accessories available for your unit, refer to its technical specifications or contact EXFO.

IMPORTANT

Refer to the documentation provided by the manufacturers of any accessories used with your EXFO product. It may contain environmental and/or operating conditions limiting their use.

IMPORTANT

When you see the following symbol on your unit  , make sure that you refer to the instructions provided in your user documentation. Ensure that you understand and meet the required conditions before using your product.

IMPORTANT

When you see the following symbol on your unit  , it indicates that the unit is equipped with a laser source, or that it can be used with instruments equipped with a laser source. These instruments include, but are not limited to, modules and external optical units.

IMPORTANT

Other safety instructions relevant for your product are located throughout this documentation, depending on the action to perform. Make sure to read them carefully when they apply to your situation.

CAUTION

Do not use the fiber inspection tool outdoors in wet locations.

Other Safety Symbols on Your Unit

One or more of the following symbols may also appear on your unit.

Symbol	Meaning
	Direct current
	Alternating current
	The unit is equipped with an earth (ground) terminal.
	The unit is equipped with a protective conductor terminal.
	The unit is equipped with a frame or chassis terminal.
	On (Power)
	Off (Power)
 OR 	On/off (Power)
	Fuse

Electrical Safety Information

WARNING

If you need to ensure that the unit is completely turned off, disconnect the power cable and remove the battery. For more information on how to remove the battery, see the section about replacing the battery in this user documentation.

WARNING

- **Use the external power supply (USB power adapter) indoors only.**
- **Never connect the unit to the AC mains (with the USB power adapter) when it is used outdoors.**
- **Never connect the unit to a computer with the USB cable when it is used outdoors.**
- **To avoid electrical shock, do not operate the unit if any part of the outer surface (covers, panels, etc.) is damaged.**
- **Only authorized personnel should carry out adjustments, maintenance or repair of opened units under voltage. A person qualified in first aid must also be present. Do not replace any components while the USB cable and battery are connected.**
- **Unless otherwise specified, all interfaces are intended for connection to ES1 circuits only.**
- **Use only the listed and certified USB power adapter provided by EXFO with your unit. It provides reinforced insulation between primary and secondary, and is suitably rated for the country where the unit is sold.**
- **Capacitors inside the unit may be charged even if the unit has been disconnected from its electrical supply.**

CAUTION

- **Position the unit so that the air can circulate freely around it.**
- **When you use the unit outdoors, ensure that it is protected from liquids, dust, direct sunlight, precipitation, and full wind pressure.**

CAUTION

The use of voltages higher than those indicated on the label affixed to your unit may damage the unit.

Equipment Ratings	
Temperature	
➤ Operation	➤ unit powered by battery: -10 °C to 40 °C (14 °F to 104 °F)
	➤ unit connected to AC power (with USB power adapter): 0 °C to 40 °C (32 °F to 104 °F)[a]
➤ Storage	➤ unit – short-term storage[b]: –20 °C to 60 °C (–4 °F to 140 °F)
	➤ unit – long-term storage[c]: 10 °C to 35 °C (50 °F to 95 °F)
	➤ unit without battery: –20 °C to 60 °C (–4 °F to 140 °F)
Relative humidity[d]	➤ unit: ≤ 93% non-condensing
	➤ USB power adapter: 10% to 90% non-condensing
Maximum operation altitude	➤ 2300 m (7546 ft) (unit connected to external power source)
	➤ 3000 m (9843 ft) (unit operated from battery)
Pollution degree	➤ 2 (unit connected to external power source)
	➤ 3 (unit operated from battery)[e]

Equipment Ratings	
Overvoltage category	➤ unit: I ➤ USB power adapter: II
Measurement category	Not rated for measurement categories II, III, or IV
Input power[f]	➤ unit: 5 V ⎓; 2 A ➤ USB power adapter: 100 - 240 V ∼; 50/60 Hz; 1 A max

a. When the ambient temperature is below 0 °C (32 °F) or when it reaches or exceeds about 40 °C (104 °F), the battery can either charge more slowly than usual, or not charge at all, depending on the internal temperature of your unit.
b. Short-term storage corresponds to the storage of the unit for a maximum of 48 hours with batteries.
c. Long-term storage corresponds to the storage of the unit for more than three months with batteries.
d. Measured in 0 °C to 40 °C (32 °F to 104 °F) range.
e. Equipment must be normally protected against exposure to direct sunlight, precipitation and full wind pressure.
f. Not exceeding ± 10% of the nominal voltage.

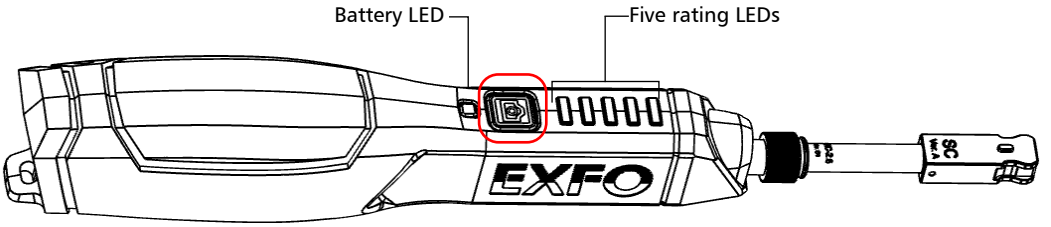
3 Getting Started with Your Unit

Turning on Your Unit

Your unit uses LEDs to communicate specific information such as battery power, inspection results and maintenance operations through various colors and animations (see the section about interpreting the rating LED colors and behaviors for more information).

To turn on the unit:

Press the capture button. The battery LED will light up in white at the very beginning of the startup process. Then, the five rating LEDs will light up sequentially in blue.



Once only the LED next to the optical head is lit in steady blue, you are now ready to start working with your FIP-200. Your unit will remain on as long as you perform captures on a regular basis.

Note: *If the battery LED turns to a steady red color when you turn on the unit, simply connect the unit to a power outlet and let the battery charge for a few minutes.*

Note: *When your unit is turned on, the Bluetooth functionality is always activated and ready to be connected or re-connected to a mobile device. For more information, see the section about establishing or closing a connection with a smart device via the Bluetooth technology.*

Note: *Before performing the very first test with your FIP-200, EXFO recommends connecting your unit to the EXFO Exchange mobile application to synchronize the date, time, and time zone. This synchronization ensures that the timestamps accurately reflect the moment at which the tests will be performed (see the section on working with the EXFO Exchange mobile application for more information).*

Turning off Your Unit

Turning off your unit (shutdown) completely cuts power needed to sustain its operational components. The unit will perform a complete restart routine the next time you use it. You should perform a shutdown if you do not intend to use your unit for several hours.

Note: *Should the unit ever stop responding, even in sleep mode, you can force a hardware reset by pressing and holding down the capture button for at least 15 seconds. To restart your unit, release the capture button, and then press it again as you normally do to start your unit. The last capture may be lost, but the rest of the data will still be available.*

Note: *Your unit will automatically shutdown when it has been in sleep mode for more than 30 minutes and is not connected to an external power source.*

To turn off the unit completely (shutdown):

Press and hold the capture button for at least three seconds to begin the shutdown process. Once the five rating LEDs light up in red, you can release the capture button and your unit will shut down.

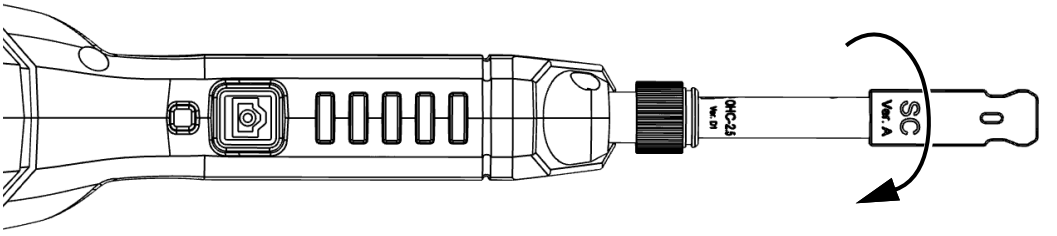
Changing Your Unit's Inspection Tip

You can change the inspection tip of your unit to match the type of connector you need to inspect.

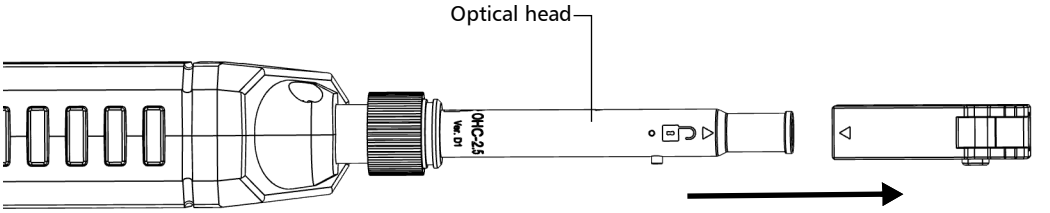
To change your unit's inspection tip:

1. If necessary, remove the protective cap.

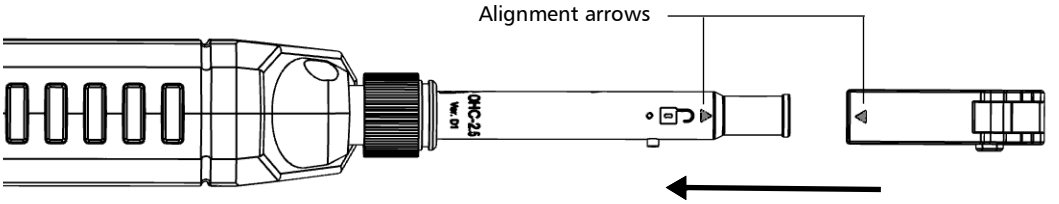
2. Turn the inspection tip counterclockwise by a quarter turn.



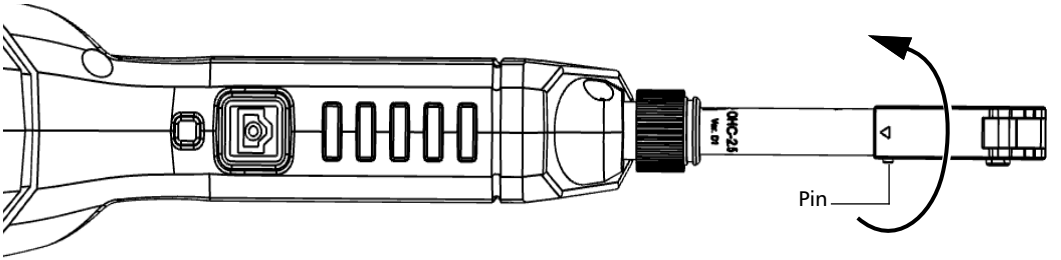
3. Pull the inspection tip away from the optical head to remove it.



4. Align the arrow on the new inspection tip with the arrow on the optical head. Slide the inspection tip towards the optical head and over the unsecured lock.  until it stops.



5. Turn the tip clockwise by a quarter turn until it clicks into place over the pin on the optical head. The alignment arrow will then line up with the secured lock  on the optical head.



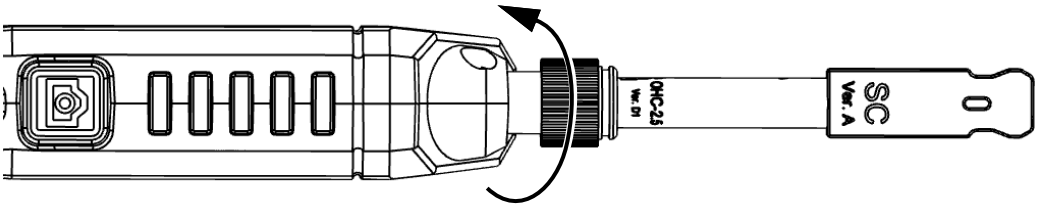
The new inspection tip is ready to use.

Changing Your Unit's Optical Head

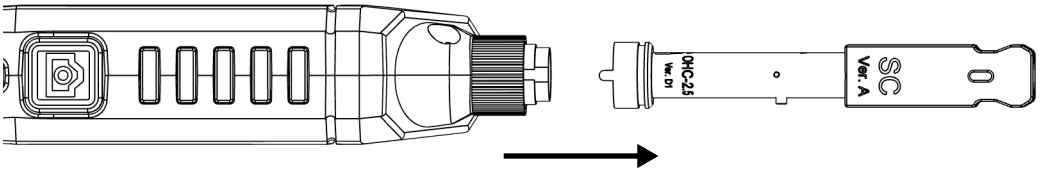
You can change the optical head on your unit based on the type of inspection needed, such as switching from a short-reach to a long-reach configuration. There is no need to remove the inspection tip before changing the optical head.

To change your unit's optical head:

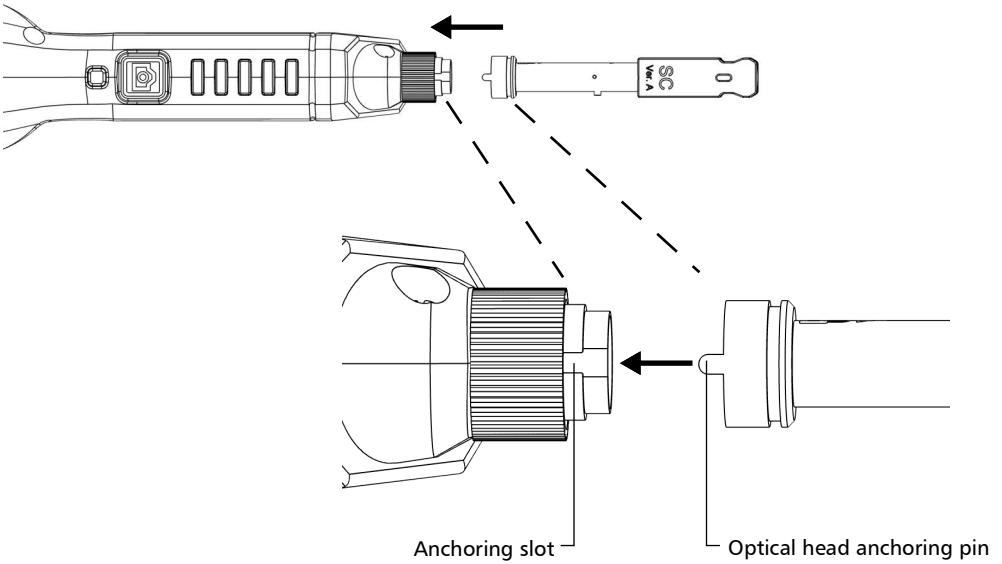
1. Turn the optical head retaining nut clockwise until it stops.



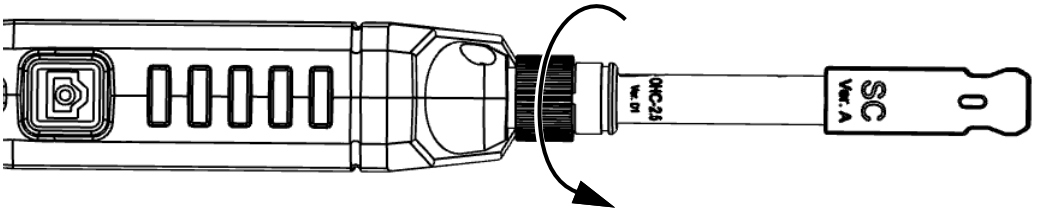
2. Gently pull on the optical head to remove it.



3. Align the anchoring pin on the new optical head with the slot on your unit, then gently place the optical head back in position.



4. Turn the optical head retaining nut counterclockwise to secure it in place.



Your unit is now ready to use.

IMPORTANT

When changing the optical head type (e.g., from long reach to short reach or vice versa), specify the new type using the EXFO Exchange mobile application. For more information, see *Selecting the Optical Head Type* on page 53.

Cleaning Fiber Ends

CAUTION

To avoid permanent damage to the connectors and degradation in measurements:

Always inspect fiber ends and make sure that they are clean as explained below before inserting them into any optical port. If you need to clean the optical ports on your test units, refer to their user documentation.

EXFO is not responsible for damage or errors caused by bad fiber cleaning or handling.

To clean fiber ends:

1. Inspect the fiber end using your FIP-200.

- ➤ If the fiber is clean, proceed with connection as desired. Always carefully align the connector and port to prevent the fiber end from touching the outside of the port or rubbing against other surfaces.
- ➤ If the fiber is dirty, clean it as explained below.

2. Clean the fiber end as follows:

2a. Gently wipe the fiber end with a lint-free swab dipped in optical-grade liquid cleaner.

2b. Use a dry swab to dry the connector completely.

2c. Re-inspect the fiber end to ensure its cleanliness.

Temperature Management

The internal temperature of your unit will vary with the ambient temperature, but also with the type of tests you perform and their intensity. In high-temperature conditions, your unit could cancel the startup process or stop working.

When the internal temperature of your unit is too high or too low, the five rating LEDs will blink red quickly for a few seconds.

For information on how temperature affects your unit's functionality, see *Power Sources* on page 6 and *Equipment Ratings* on page 13.

IMPORTANT

For optimum performance of your unit:

- **Ensure that it remains within the recommended operation and storage temperatures (see *Equipment Ratings* on page 13).**
- **Avoid leaving your unit in an overheated vehicle. You may have to let your unit cool down before being able to use it.**
- **If the unit was left in a vehicle during cold weather, you will have to let your unit warm up before using it.**
- **Ensure that your unit is normally protected from direct sunlight (during use and storage).**

4 Inspecting Fiber Ends

You can inspect fiber ends with your FIP-200 as a standalone unit or with the EXFO Exchange mobile application.

Important Notices and Safety Guidelines

WARNING

- **Never look directly into a live fiber. It could cause serious eye damage. Always use your FIP-200 Fiber Inspection Tool.**
- **To protect your eyes, do not stare into the blue light that comes out of your unit.**

IMPORTANT

When inspecting fiber ends, keep your FIP-200 steady and aligned with the connector. Holding the unit incorrectly can cause autofocus or capture issues, faulty connections, and may require you to redo the capture.

IMPORTANT

Connect your unit only to Wi-Fi access points with Internet access for optimal security and performance. This helps protect sensitive data and reduce safety risks from unauthorized access.

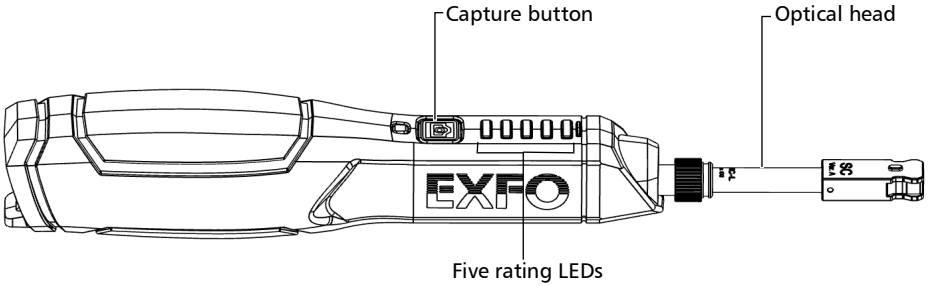
Inspecting Single-Fiber Connectors

Your unit allows you to inspect single-fiber connectors with automatic focusing and centering. For more information on inspection configurations, see *Available Configurations* on page 2.

Note: *You cannot perform captures when the battery LED is blinking in red.*

To inspect single-fiber connectors:

1. If you have not already done so, remove the protective cap.
2. If applicable, ensure that the proper optical head is installed on your unit. For more information, see *.Changing Your Unit's Optical Head* on page 20.
3. If applicable, ensure that the proper inspection tip is installed on your unit. For more information, see *Changing Your Unit's Inspection Tip* on page 18.



4. Insert the inspection tip in a connector or bulkhead adapter.
5. Ensure the LED closest to the optical head is lit steady blue, indicating that your unit is ready to take a capture and not in sleep mode. To exit sleep mode, quickly press the capture button. (see *Configuring the Sleep Mode* on page 50 for more information).
6. To begin the inspection, press the capture button. The unit emits a short beep and starts the capture process, performing autofocus at the start. During this process, the five rating LEDs will light up blue and perform an animation. A sound indicates the end of the capture process.

Note: *To cancel the capture process, press the capture button during the blue animation. The first LED near the optical head will then turn steady blue, indicating that your unit is ready for a new capture.*

7. After the capture process, all five rating LEDs will blink white once, signaling the start of the analysis process. You may then remove the connector or bulkhead. Once the analysis is complete, your unit will display one of five ratings shown in the table below.

LED	Color/Behavior	Meaning
	Green, 5 LEDs, steady	Pass status. The connector is clean and in good condition.
	Green, 4 LEDs, steady	Pass status. The connector is clean and in good condition.
	Green, 3 LEDs, steady	Pass status. The connector is in good condition. Try cleaning it to improve its condition.
	Red, 2 LEDs, steady	Fail status. Consider replacing the connector after multiple cleaning attempts.
	Red, 1 LED, steady	Fail status. Consider replacing the connector after multiple cleaning attempts.

After a few seconds, the LED closest to the optical head will turn steady blue, indicating that your unit is ready for a new capture.

Note: *You can view the synchronized inspection results on the EXFO Exchange application. For more information on viewing results with a smart device, see Viewing Test Results With the Smart Device* on page 41.

The table below outlines other possible LED colors and behaviors during the inspection process. For a complete list of other colors and behaviors, see *Interpreting LED Colors and Behaviors* on page 99.

LED	Color/Behavior	Meaning
	Blue, 1 LED, steady	The unit is ready to take a capture.
	Blue, 1 LED, circling	The autofocus or the analysis process is in progress.
	White, 5 LEDs, quick blink	The capture process is complete and the unit is transitioning to the analysis process.
	Red, 5 LEDs, blinking	The autofocus has timed out, the unit is unable to find the center of the fiber or an error has occurred during the analysis process. Ensure the connector/tip is inserted correctly.
	Red, 4 LEDs, blinking	The FIP-200 is positioned at an angle that prevents it from providing a rating. Hold the FIP-200 straight and retry.
	Red, 3 LEDs, blinking	The focus quality level is too low to provide an EXFO rating.
	Red, yellow, 5 LEDs, alternate color blinking	A hardware error has occurred. Contact the EXFO Technical Support Group for assistance (see *Contacting the Technical Support Group* on page 91.

5 Working with the EXFO Exchange Application

You can use your FIP-200 with a smart device using the EXFO Exchange application to perform tasks, such as configuring Wi-Fi networks, retrieving software updates, resetting settings, and viewing or sending captures to EXFO for technical support.

Note: *The appearance of the EXFO Exchange application may vary slightly from the illustrations presented in this documentation depending on the type of smart device you are using. Unless otherwise specified, the information applies both to the Android- and iOS-based smart devices.*

Installing the EXFO Exchange Application on Your Smart Device

Before you start working, if you intend to retrieve the software updates for your unit, you will need to install the EXFO Exchange application on your smart device.

To install the EXFO Exchange application:

1. Ensure that you have access to an Internet connection.
2. From your Android-based smart device, open the Google Play Store (usually **Play Store** or **Play** icon).

   OR

   From your iOS-based smart device, open the App Store (usually **App Store** icon).
3. From the Play Store or the App Store, search for *EXFO* or *EXFO Exchange* to localize the EXFO Exchange mobile application.
4. Start the installation and follow the on-screen instructions.

Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology

When you want to configure Wi-Fi networks to receive updates for your unit, interactions are necessary between the unit and a smart device equipped with the EXFO Exchange application. These interactions are accomplished using the Bluetooth Low Energy technology. When your unit is turned on, the Bluetooth functionality is always activated and ready to be connected or re-connected to a mobile device.

If the mobile device you are using does not match the last one that successfully connected, your unit will initiate a confirmation process. During this process, the five rating LEDs will blink quickly in blue. Press the capture button to confirm the connection with the new device. If you do not press the button within 10 seconds, the connection will be refused.

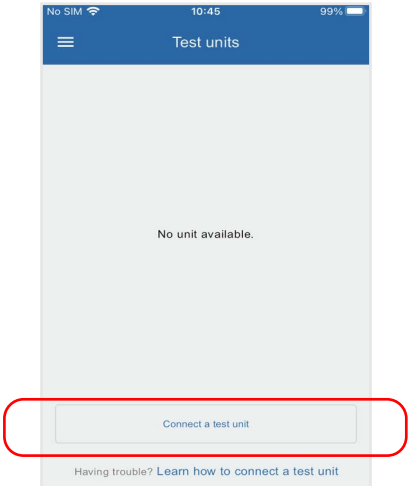
Note: *If the unit you are connecting to has existing test results, you have the option of transferring them to the EXFO Exchange application.*

To establish a connection via the Bluetooth technology:

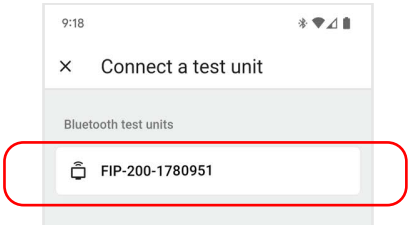
1. If it is not already done, install the EXFO Exchange application on your smart device (see *Installing the EXFO Exchange Application on Your Smart Device* on page 29).
2. On the smart device, establish the connection as follows.
   2a. Open the EXFO Exchange application.

2b. From the main menu, tap **Test units**.

2c. From the **Test units** screen, tap the **Connect a test unit** button.



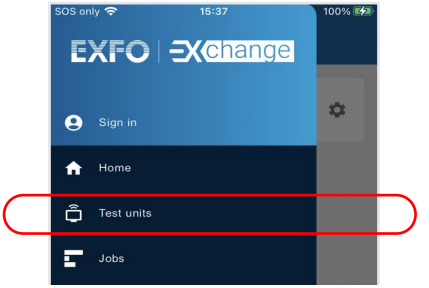
2d. From the list of available nearby FIP-200 units, tap the item corresponding to the serial number of the desired unit.



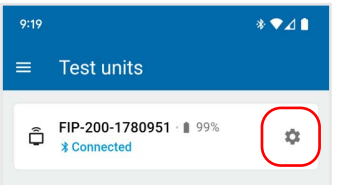
Note: *If the FIP-200 unit is already connected to another smart device, first close that connection. It will then appear in the list of nearby FIP-200 units.*

To delete the connection with an FIP-200 from a smart device:

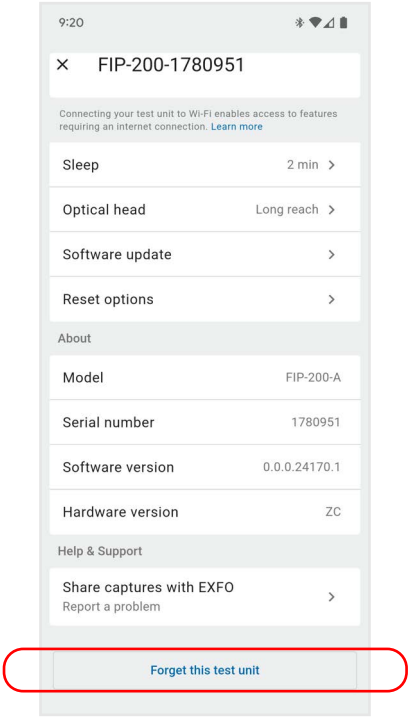
1. From the main menu, tap **Test units**.



2. From the **Test units** screen, tap the settings icon corresponding to your FIP-200 unit.



3. Tap **Forget this test unit**.



The smart device has disconnected from the FIP-200 and is ready to connect to another unit.

Manually Enabling or Disabling the Wi-Fi Communication from the Smart Device

The interactions between your unit and a smart device are accomplished using the Bluetooth Low Energy technology.

The interactions between your unit and the EXFO update services (to retrieve software updates) are accomplished using a connection to a wireless network.

By default, the Bluetooth communication is enabled on your unit, but the Wi-Fi is not.

Note: *Bluetooth connectivity is not available when your unit is turned off or is in sleep mode.*

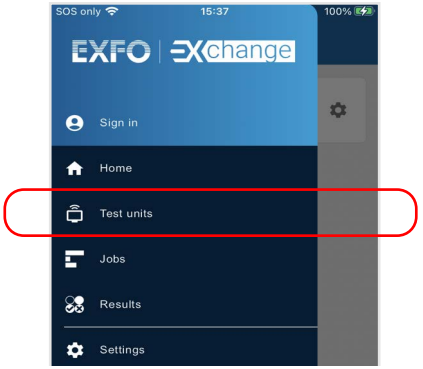
You can enable or disable the Wi-Fi connection from the EXFO Exchange application.

Note: *By default, the Wi-Fi communication deactivates each time you turn on your unit.*

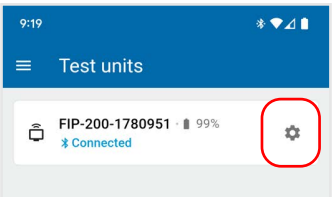
Your unit automatically enables and disables the Wi-Fi when it is required for certain tasks.

To manually enable or disable the Wi-Fi communication from the smart device:

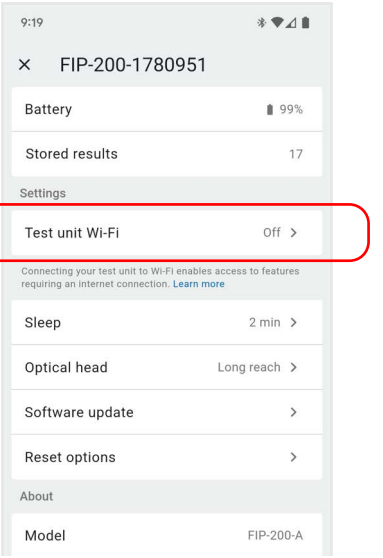
1. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).
2. On the smart device, open the EXFO Exchange application.
3. From the main menu, tap **Test units**.



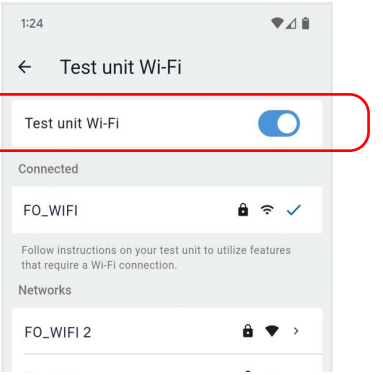
4. From the **Test units** screen, tap the settings icon corresponding to your FIP-200 unit.



5. From your unit's **Settings** page, tap **Test unit Wi-Fi** to configure a Wi-Fi network.



6. Use the **Test unit Wi-Fi** toggle to enable or disable the Wi-Fi communication.



The change is taken into account immediately.

Working With a Wireless Network

Note: *You need a smart device equipped with the EXFO Exchange application to configure wireless networks to which your unit will be able to connect later.*

By connecting your unit to a wireless network, you can check for updates, download these updates and install them (see on page 80).

By default, the Wi-Fi connection is disabled on the FIP-200 unit. You must enable it before trying to connect to a wireless network (see *Manually Enabling or Disabling the Wi-Fi Communication from the Smart Device* on page 34).

A Wi-Fi connection is necessary to send raw data of the latest captures to technical support, if necessary. Before being able to connect your unit to a Wi-Fi network, you must first configure the desired networks with the EXFO Exchange application.

Your unit supports IPv4 wireless routers with the following characteristics:

- With dynamic IPv4 address assignment
- Not secured, or secured with WPA/WPA2-Personal standards (WPA-PSK/WPA2-PSK versions)
- Broadcasting their network names (SSID) or not (SSID visible or hidden)
- Configured with a 2.4 GHz Wi-Fi band (b/g/n frequencies).

Note: *Your unit does not support the WEP and WPS standards.*

Note: *Your unit does not support public Wi-Fi hotspots requiring authentication from a Web page.*

Note: *Every work environment has its own specifications. If you need information about the configuration of your router, contact your network administrator.*

Note: *Your unit can support multiple Wi-Fi networks.*

Configuring a Wireless Network

Before being able to connect your unit to a Wi-Fi network, you must first configure the desired networks with the EXFO Exchange application. Once the configuration and first connection are successful, the configured network is automatically added to the list of possible networks on your unit.

The list of configured networks as well as the last network used are kept in memory for future use even when you turn your unit off.

Note: *If a Wi-Fi network you have already configured is no longer available, your unit will automatically connect to the Wi-Fi network with the strongest signal available from the list of current configured networks.*

Note: *To save battery power, you may wish to disable the wireless communication when you do not use it.*

IMPORTANT

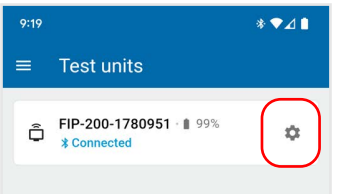
You must first establish a Bluetooth connection between your unit and a smart device before attempting to configure a Wi-Fi network.

To configure a wireless network:

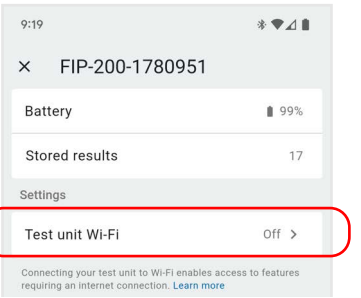
1. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).
2. If necessary, enable the Wi-Fi communication on your unit (see *Manually Enabling or Disabling the Wi-Fi Communication from the Smart Device* on page 34).
3. On the smart device, open the EXFO Exchange application.

4. From the main menu, tap **Test units**.

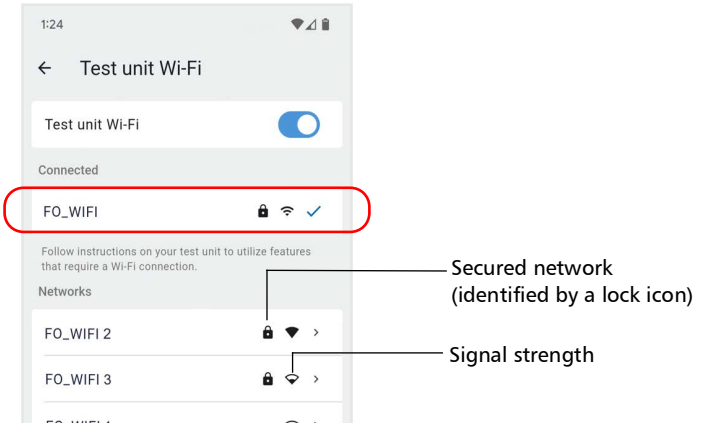
5. From the **Test units** screen, tap the settings icon corresponding to your FIP-200 unit.



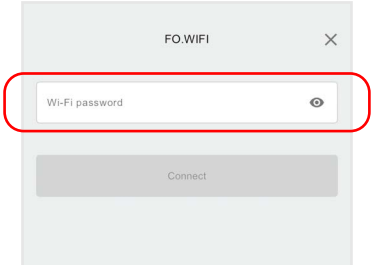
6. Tap **Test unit Wi-Fi**.



7. Tap the item corresponding to the wireless network that you want to configure.



8. If the network is protected by a network security key (password), enter it.



9. Tap **Connect**.

10. Follow the on-screen instructions.

The application establishes the communication automatically.

Viewing Test Results With the Smart Device

You can view the results of your tests using the EXFO Exchange application, which automatically manages them across 100 test points, labeled from FIP-000 to FIP-099. Your unit saves all successful captures automatically.

The synchronization process begins as soon as a Bluetooth connection is established between the EXFO Exchange application and your unit. The test results are sent to the mobile application.

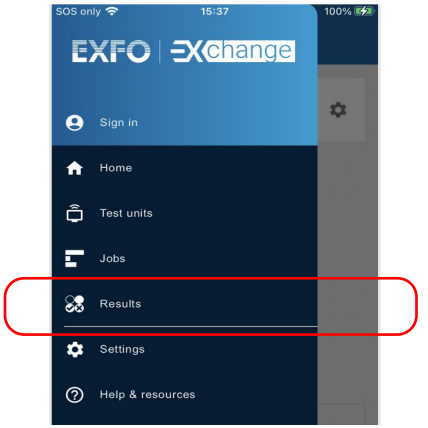
Note: *If a synchronization process is interrupted, your unit will resume syncing from where it left off without losing any data once the connection is re-established.*

Note: *When your unit performs a new capture, it automatically selects the next test point. If results already exist at that test point, your unit will overwrite them.*

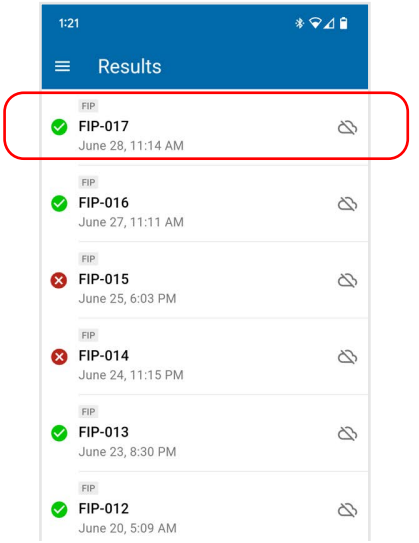
To view test results with the smart device:

1. On the smart device, open the EXFO Exchange application.
2. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).

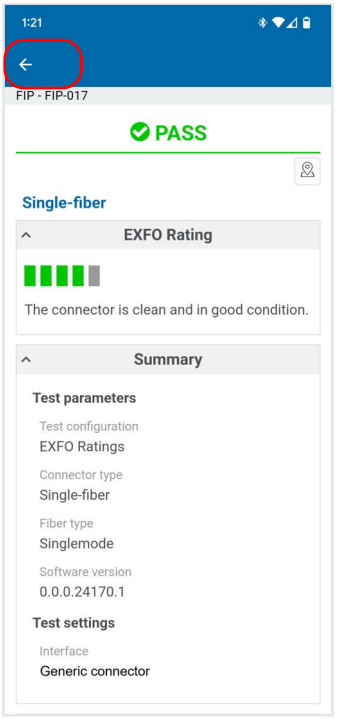
3. From the main menu, tap **Results**.



4. From the list of captures, tap a result for more information.



5. Scroll down the screen for more information. Tap the arrow to return to the **Results** page.



Clearing All Data

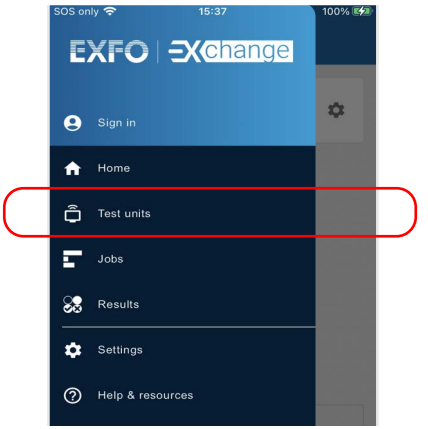
You can delete all of the captures stored on your unit using the EXFO Exchange application.

Prior to clearing all data, you may want to share the captures with EXFO for troubleshooting purposes. For more information, see *Sharing Information With EXFO Technical Support With a Wi-Fi Connection* on page 59.

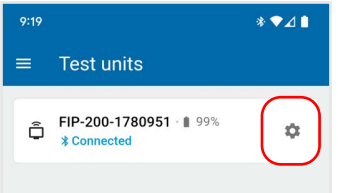
Note: *This operation does not affect your existing settings.*

To clear all data:

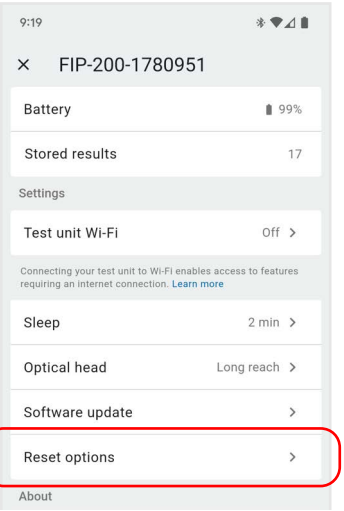
1. On the smart device, open the EXFO Exchange application.
2. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).
3. From the main menu, tap **Test units**.



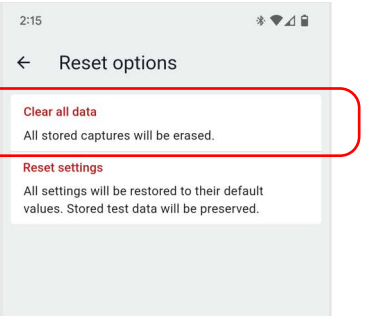
4. From the **Test units** screen, tap the settings icon corresponding to your FIP-200 unit.



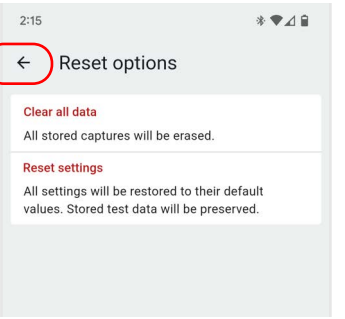
5. From your unit's **Settings** page, tap **Reset options**.



6. Tap the **Clear all data** menu option. Confirm the action when prompted. After clearing the data, the **Stored results** in the **Settings** page resets to zero.



7. Tap the arrow to return to the **Settings** menu.



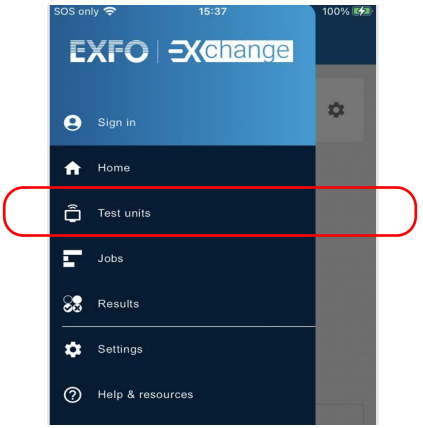
Resetting All Settings

You can reset all settings on your unit to their default values using the EXFO Exchange application.

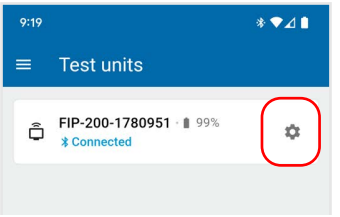
Note: *Resetting your unit's settings will not change the optical head type setting. Stored test data will be preserved.*

To reset all settings:

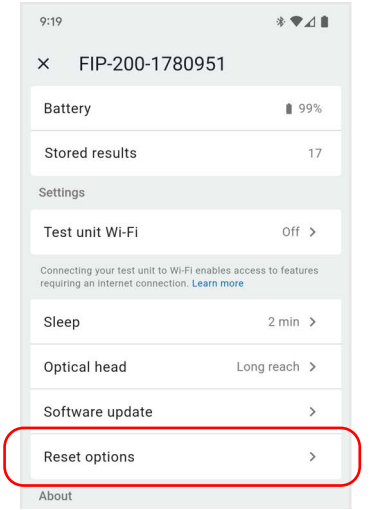
1. On the smart device, open the EXFO Exchange application.
2. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).
3. From the main menu, tap **Test units**.



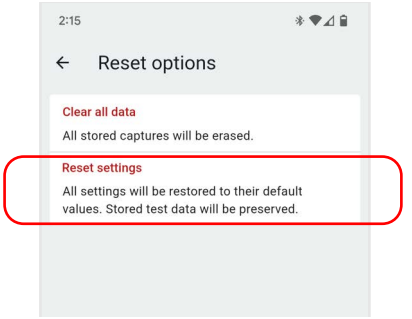
4. From the **Test units** screen, tap the Settings icon corresponding to your FIP-200 unit.



5. From your unit's **Settings** page, tap **Reset options**.



6. Tap the **Reset settings** menu option.



7. A confirmation message will appear. Your unit will then shut down and restart automatically. The following table outlines the possible LED colors and behaviors during the reset process.

LED	Color/Behavior	Meaning
	Red, 5 LEDs, steady, gradual fade	The unit is shutting down.
	Blue, 1 LED, blinking	The unit is starting up.

Configuring the Sleep Mode

To help you get the optimum performance out of your unit, it comes with a predefined set of parameters to manage power.

When you do not use your unit for a while, it will go into sleep mode automatically to save power.

By default, the duration after which the unit goes into sleep mode is two minutes, but you can select another value.

The value that you set is kept in memory even when you turn the unit off.

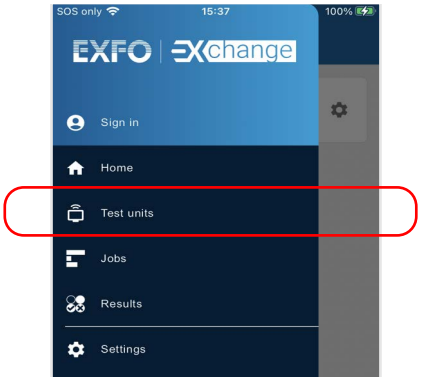
All five rating LEDs are off when your unit is in sleep mode. If you do not plan to work with your unit for a few hours, you should perform a shutdown to save battery power (see *Turning off Your Unit* on page 17).

Note: *While synchronizing data, the unit delays entering sleep mode until the process is complete.*

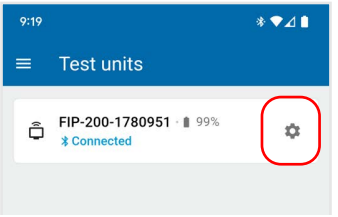
To configure the sleep mode:

1. On the smart device, open the EXFO Exchange application.
2. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).

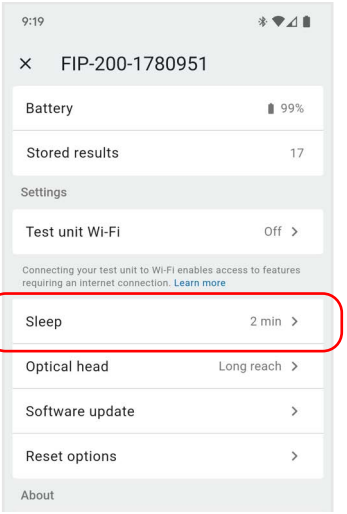
3. From the main menu, tap **Test units**.



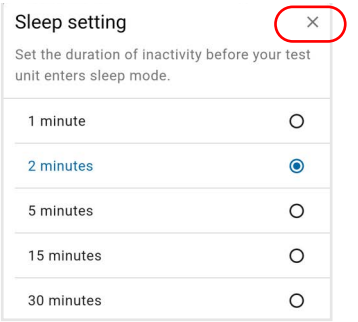
4. From the **Test units** screen, tap the settings icon corresponding to your FIP-200 unit.



5. From your unit's **Settings** page, tap **Sleep**.



6. Select the desired number of minutes, then tap **X** to return to the **Settings** screen.



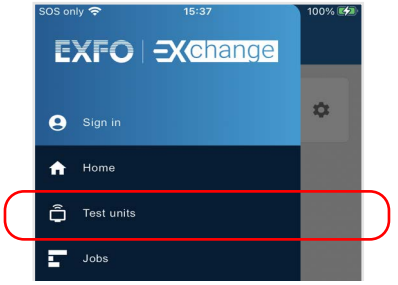
The new value is taken into account immediately.

Selecting the Optical Head Type

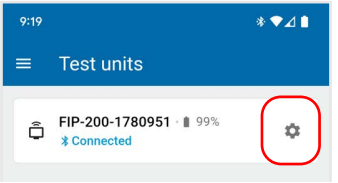
You can perform inspections using either a long reach or short reach optical head. After switching between these optical head types, specify the new type in the EXFO Exchange mobile application.

To select the optical head type:

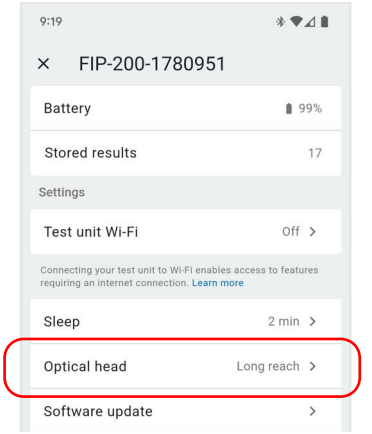
1. On the smart device, open the EXFO Exchange application.
2. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).
3. From the main menu, tap **Test units**.



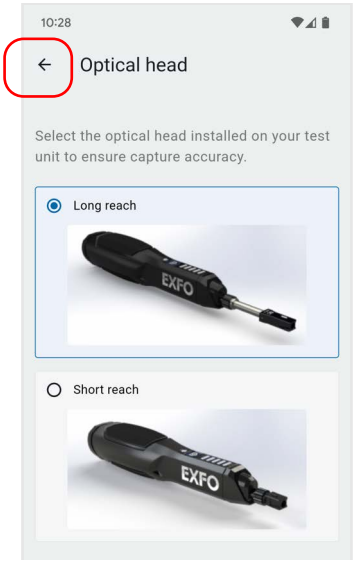
4. From the **Test units** screen, tap the settings icon corresponding to your FIP-200 unit.



5. From your unit's **Settings** page, tap **Optical head**.



6. Select the optical head type, then tap the arrow to return to the settings page.



The new value is taken into account immediately.

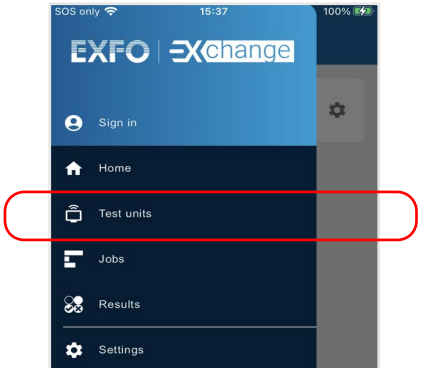
Checking the Battery Level

You can check your unit's current battery level using the EXFO Exchange mobile application.

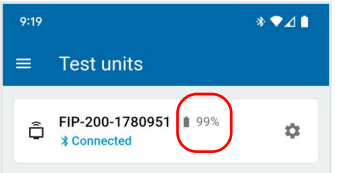
Note: *Turn on your unit and make sure it is not in sleep mode to check the battery level.*

To check the battery level:

1. On the smart device, open the EXFO Exchange application.
2. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).
3. From the main menu, tap **Test units**.



4. From the **Test units** screen, you can check your unit's battery level.



Updating the Software With a Wi-Fi Connection

You need a smart device equipped with the *EXFO Exchange* mobile application to configure a wireless network, connect your unit to it, and then receive the available updates.

Your unit's application has been preinstalled and configured at the factory. However, you may have to update it when new versions become available.

With a smart device, you can check for updates, download these updates and install them on your unit.

Note: *Your unit must have access to an Internet connection (via Wi-Fi) to be able to download updates and install them.*

Note: *During the software download and installation process, your unit will not go into sleep mode and it will not be possible to take new captures.*

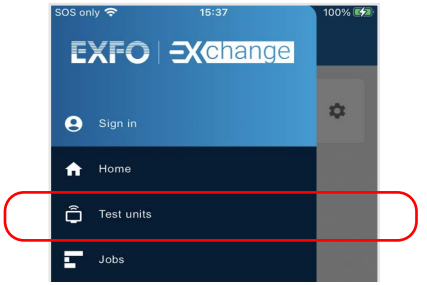
Note: *If an error occurs during the software update, the five rating LEDs will blink in red for a few seconds. The previous software version will remain fully functional. For more information on the error preventing the software update, see the EXFO Exchange mobile application for more information.*

IMPORTANT

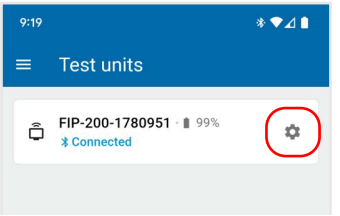
For a trouble-free update, ensure that you connect your unit to a power outlet and that your unit remains on during the entire process.

To update the software:

1. Connect your unit to an external power source with the provided USB power adapter.
2. If it is not already done, turn on your unit.
3. Ensure that your unit has access to the Internet (see *Working With a Wireless Network* on page 37).
4. Open the EXFO Exchange application.
5. From the main menu, tap **Test units**.

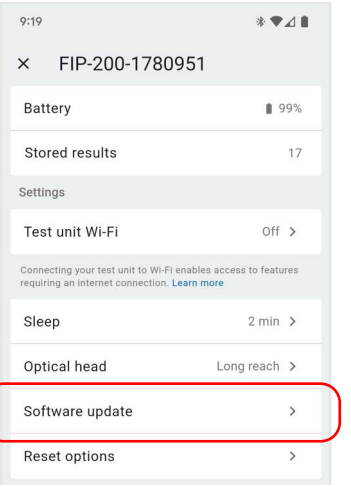


6. From the **Test units** screen, tap the settings icon corresponding to your FIP-200 unit.



7. From your unit's **Settings** page, tap **Software update**.

Note: *If your unit is not already connected to a Wi-Fi network, you are redirected to the Wi-Fi settings page where you can activate or configure a Wi-Fi network. For more information, see Working With a Wireless Network* on page 37.



8. Follow the on-screen instructions. Your unit will restart automatically once the software update is complete.

The table below outlines the possible LED colors and behaviors during the software update process.

LED	Color/Behavior	Meaning
	Orange, 1 LED, circling	The software download and installation process is in progress.
	Red, 5 LEDs, blinking	A software update error has occurred (see the EXFO Exchange mobile application for more information).

Sharing Information With EXFO Technical Support With a Wi-Fi Connection

After contacting EXFO for support, you may need to share captures with the technical support group for further investigation.

The following information of up to the 100 most recent captures is shared with EXFO:

- The unit's serial number
- The connector type
- The fiber type
- The date and time of the capture

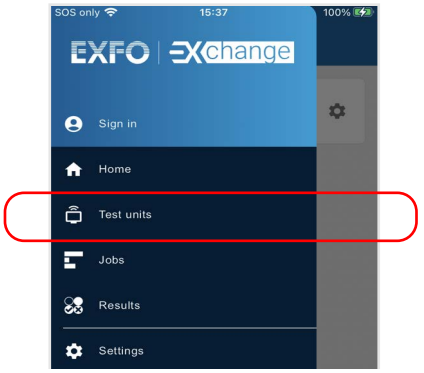
You need to establish a Wi-Fi connection to share captures. If you have not configured any Wi-Fi network yet, see *Working With a Wireless Network* on page 37

Note: *You cannot take new captures during the upload process.*

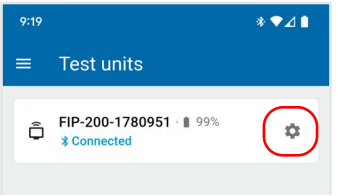
To share information with EXFO technical support with a Wi-Fi connection:

1. On the smart device, open the EXFO Exchange application.
2. Ensure that a Bluetooth connection has already been established between your unit and a smart device (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).
3. Ensure that your unit has access to the Internet. For more information, see *Working With a Wireless Network* on page 37.

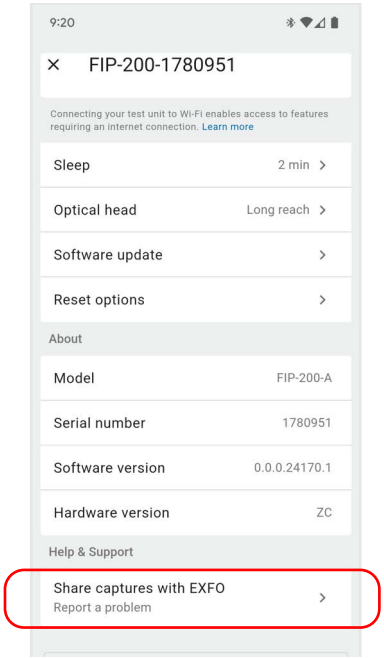
4. From the main menu, tap **Test units**.



5. From the **Test units** screen, tap the settings icon corresponding to your FIP-200 unit.



6. Scroll down to the **Help & Support** section and tap **Share captures with EXFO**.



7. Follow the on-screen instructions to complete the capture sharing process.

The table below outlines the possible LED colors and behaviors when sharing captures with EXFO.

LED	Color/Behavior	Meaning
	Orange, 1 LED, circling	The support package upload is in progress.
	Red, 5 LEDs, blinking	Your unit is offline and requires a Wi-Fi connection to share captures with EXFO.

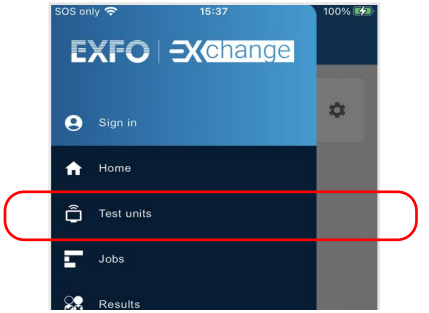
Viewing System Information

With the EXFO Exchange mobile application, you can easily access important information such as your unit's model, serial number, and software and hardware versions. You can also find the contact information if you ever need to reach EXFO.

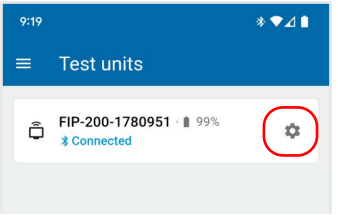
Note: *System information is available whether your unit is on, in sleep mode, or off.*

To view system information:

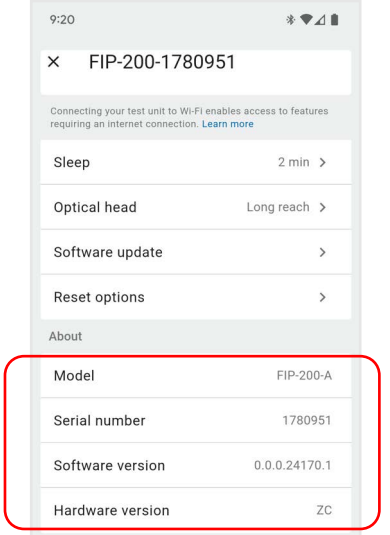
1. On the smart device, open the EXFO Exchange application.
2. From the main menu, tap **Test units**.



3. From the **Test units** screen, tap the Settings icon corresponding to your FIP-200 unit.



4. Scroll down to the **About** section to view the system information.

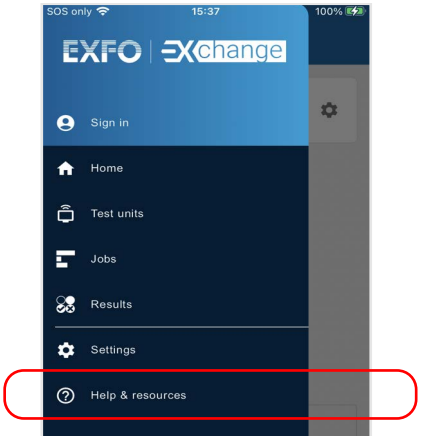


Accessing the User Documentation for the EXFO Exchange Mobile Application

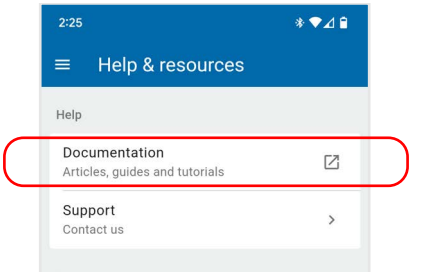
Access the user documentation for the EXFO Exchange mobile application directly from the app.

To access the user documentation for the EXFO Exchange mobile application:

1. On the smart device, open the EXFO Exchange application.
2. From the main menu, tap **Help & Resources**.



3. Tap on **Documentation**.



6 Maintenance

To help ensure long, trouble-free operation:

- Always inspect fiber-optic connectors before using them and clean them if necessary.
- Keep the unit free of dust.
- Clean the unit casing and front panel with a cloth slightly dampened with water.
- Store unit at room temperature in a clean and dry area. Keep the unit out of direct sunlight.
- Avoid high humidity or significant temperature fluctuations.
- Avoid unnecessary shocks and vibrations.
- If any liquids are spilled on or into the unit, turn off the power immediately, disconnect from any external power source, remove the batteries and let the unit dry completely.

WARNING

The use of controls, adjustments and procedures, namely for operation and maintenance, other than those specified herein may result in hazardous radiation exposure or impair the protection provided by this unit.

Cleaning Lenses

Keeping your unit's lenses clean and free of contaminants such as dust particles, greasy substances and fingerprints will ensure that you get the optimum performance out of your unit.

The proper operation of your unit is particularly sensitive to the presence of greasy substances and fingerprints on lenses of optical heads. These contaminants are harder to detect than dust particles.

The following recommendations will help you with the cleaning process:

- With a filtered air blower or a soft bristled brush, remove as much dust and dirt as possible.
- Apply a few drops of cleaning solution, which is used to clean camera lenses, on a lens tissue, a cleaning cloth or a lint-free swab. The lens cleaning solution especially manufactured by camera lens manufacturers can be used safely. Reagent grade isopropyl alcohol as well as deionized water can also be used safely.
- Gently remove oil, fingerprints and grime from the lens surface, using a circular motion from the center outwards.

IMPORTANT

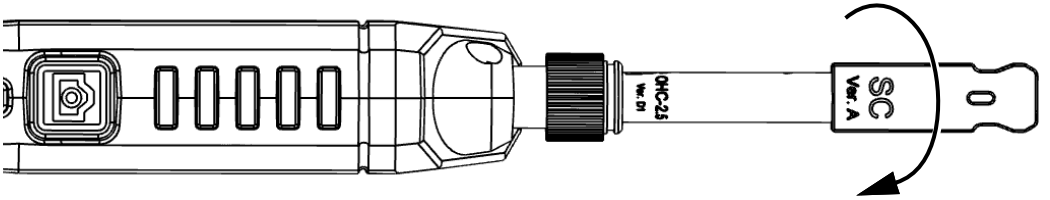
EXFO recommends to clean the lenses only when necessary, beginning with the parts that are the most exposed to dust and dirt. For example, the lens that is located at the end of the optical head (just behind the SmarTip) can need cleaning, but not the other lenses.

Attempting to clean lenses that do not need cleaning, especially without the right tools or method, can worsen a situation.

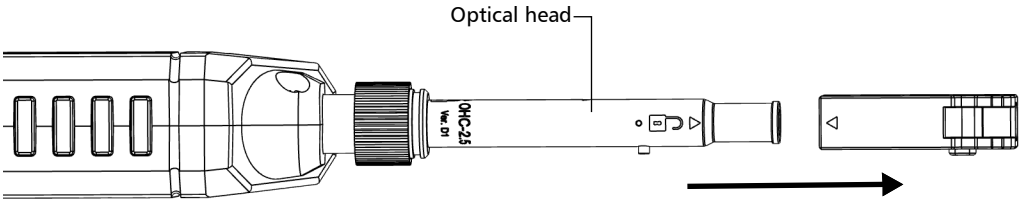
To clean lenses:

1. If necessary, remove the protective cap.

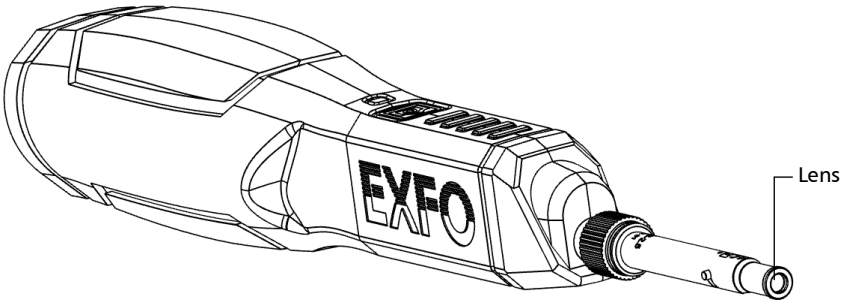
2. Turn the inspection tip counterclockwise by a quarter turn.



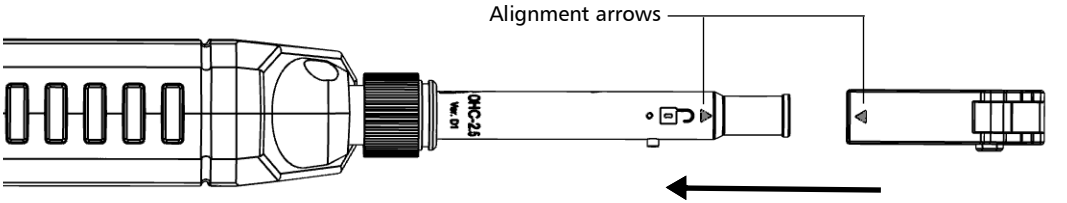
3. Pull the inspection tip away from the optical head to remove it.



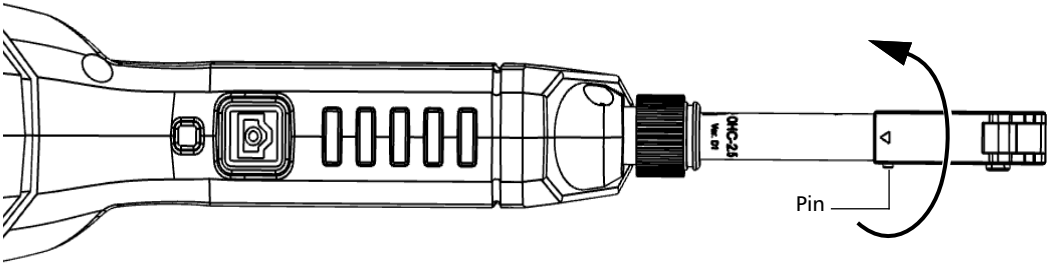
4. Clean the lens at the end of the optical head.



5. Align the arrow on the inspection tip with the arrow on the optical head. Slide the inspection tip towards the optical head and over the unsecured lock. until it stops.



6. Turn the tip clockwise by a quarter turn until it clicks into place over the pin on the optical head. The alignment arrow will then line up with the secured lock on the optical head.



Your unit is now ready to use.

Battery Maintenance Recommendations

WARNING

Your unit uses the following type of batteries: Lithium-ion (Li-ion).

These are batteries with built-in protection that have been especially designed for EXFO. For this reason, you can only replace them with EXFO-approved batteries of the same type and model.

WARNING

The use of unapproved batteries may result in the batteries expanding or igniting (that is, catching fire).

WARNING

Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the manufacturer's instructions.

WARNING

Do not throw batteries into fire or water and do not short-circuit their electrical contacts. Do not disassemble.

IMPORTANT

Recycle or dispose of used batteries properly, in accordance with local regulations. Do not dispose of them in ordinary garbage receptacles. For more information, see the section about recycling and disposal in this user documentation.

- At EXFO, we take the safety of our customers very seriously and want to make sure any battery replacement is done properly.

  The batteries of all EXFO-branded products are tested, certified, and in compliance with these international safety standards:

  - United Nations (UN) Transport Regulations UN38.3: Covers battery safety during air transport.
  - UL 61010-1, CAN/CSA C22.2 61010-1 and International Standard IEC/EN 61010-1: Covers the use of batteries for test and measurement equipment.
  - International Standard IEC 62133: Covers secondary cells and batteries containing alkaline or other non-acid electrolytes.
  - In some countries, when required, EXFO-approved batteries have been certified and are marked as per local regulation.

- To get pricing and correct part number for replacement batteries for your products, please contact (via email):

  - For Americas: Isales.us@exfo.com
  - For Europe: Isales.emea@exfo.com
  - For APAC: Isales.apac@exfo.com
  - For China: Isales.China@exfo.com

- You may also obtain replacement batteries for your products by contacting your local distributor:

  https://www.exfo.com/en/how-to-buy/find-distributor

- You may return your unit for service at your local service center:

  https://www.exfo.com/en/services/field-network-testing/exfo-service-centers/

Recharging the Battery

Your unit uses one lithium-ion (Li-ion) battery.

WARNING

Use only the listed and certified USB power adapter provided by EXFO with your unit. It provides reinforced insulation between primary and secondary, and is suitably rated for the country where the unit is sold.

IMPORTANT

- **The battery is not charged at the factory. You must fully charge it before using the unit for the first time. The battery is fully charged after a few hours or when the battery LED indicator is steady blue.**
- **The time required to charge the battery depends on various factors such as the type of tests currently performed and the ambient temperature.**
- **To ensure that the battery functions properly, keep it in temperatures between –10 °C and 40 °C (14 °F and 104 °F). Store it between 10 °C to 35 °C (50 °F to 95 °F).**
  When the ambient temperature is below 0 °C (32 °F) or when it reaches or exceeds about 40 °C (104 °F), the battery can either charge more slowly than usual, or not charge at all, depending on the internal temperature of your unit.
- **Do not leave a battery discharged for several days.**

To recharge the battery:

Connect the unit to a power outlet using the USB power adapter (fastest way to charge the battery).

Note: *If you connect your unit to a USB-A port with the proper USB cable, the unit will still consume battery power. If the unit is off when you connect it to the USB-A port of a computer, its battery will charge, but slowly. If your unit is off and you connect it to a USB-C port of a computer using the appropriate USB cable, your unit will charge at full speed.*

Note: *If you have a vehicle equipped with dedicated USB charging ports, you could connect your unit to one of these ports to charge the battery. The actual results will vary with each vehicle. You could also use a certified USB power bank (portable charger) to charge your unit.*

The charge cycle will start and end automatically.

Replacing the Battery

You can power your unit either by battery or through an appropriate power outlet using the provided USB power adapter.

WARNING

- **Your unit uses a lithium-ion (Li-ion) battery with built-in protection that has been especially designed for EXFO. For this reason, you can only replace it with batteries of the same type and model. The use of other batteries may damage your unit and compromise your safety.**
  You can purchase new batteries from EXFO.
- **Battery replacement should only be done by a qualified technician with the appropriate tools on an electronic bench or similar environment.**

For more information on the available power sources for your unit, as well as their characteristics, refer to the *Technical Specifications* of your product.

CAUTION

Always turn off your unit completely, not just in sleep mode, and disconnect all USB/power supply connections before replacing the battery. Failure to do so may result in irreversible damage to the unit.

CAUTION

Electrostatic discharge (ESD) damage can cause complete or intermittent equipment failures.

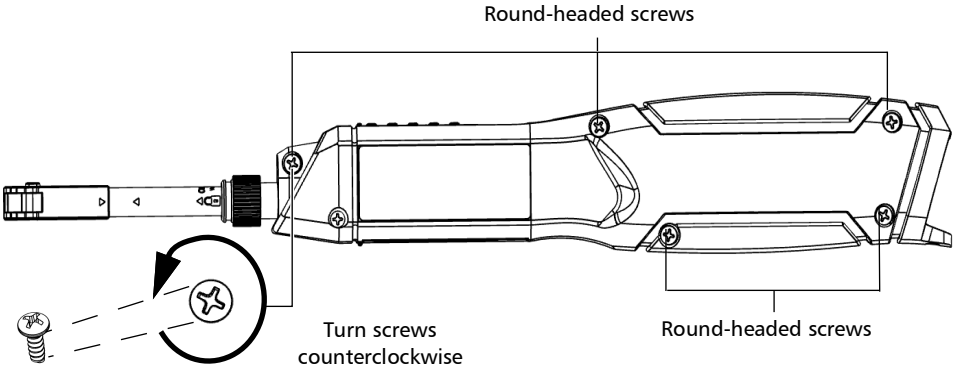
- **Always use an ESD-preventive wrist or ankle strap when replacing the battery. Ensure that the antistatic strap makes good skin contact and that the end of its wire is grounded properly.**
- **Never touch any component inside the unit other than those identified in the procedure hereafter, either with tools or your fingers.**

To replace the battery:

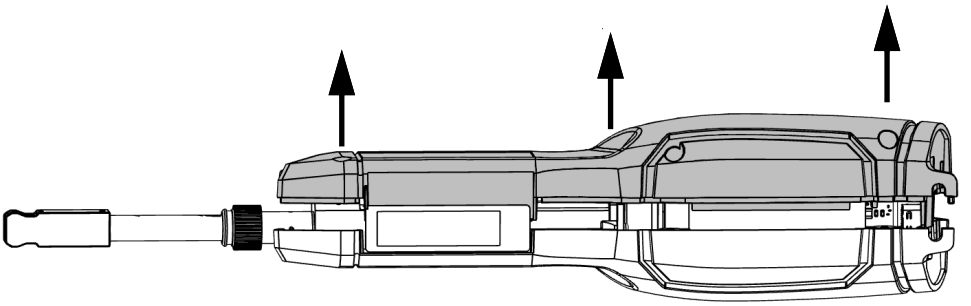
1. Turn off the unit by pressing and holding the capture button. Release the button when the five rating LEDs blink in red for about one second.
2. If necessary, disconnect the USB cable.
3. If necessary, remove the protective cap.

4. Place the unit on a flat surface, like a table, with the side panel containing the five Phillips screws facing up.
5. Locate the five round-headed screws on the unit's case. Use a Phillips-head screwdriver to turn the screws counterclockwise until they are loose, then remove them.

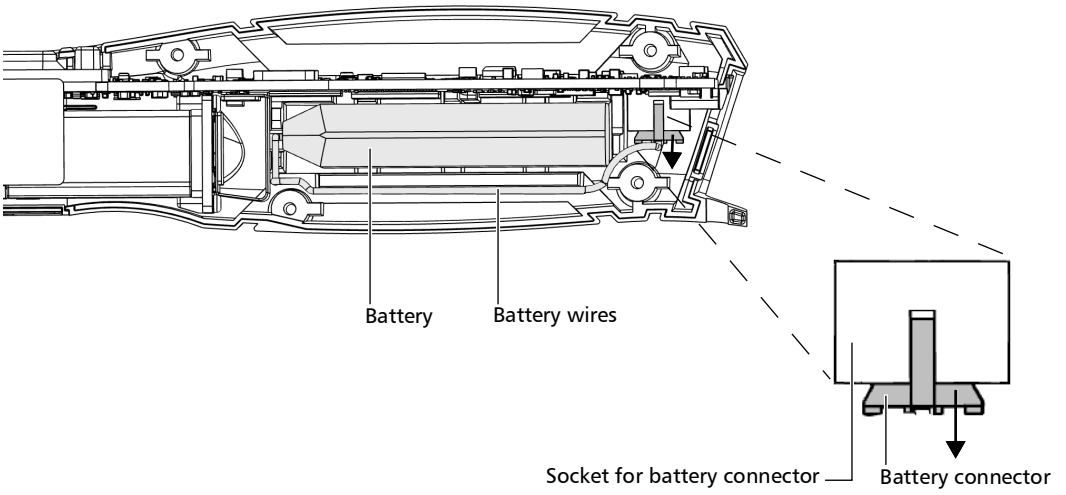
Note: *Your unit has five round-headed screws and one flat-headed screw. You don't need to remove the flat-headed screw to take off the panel and access the battery.*



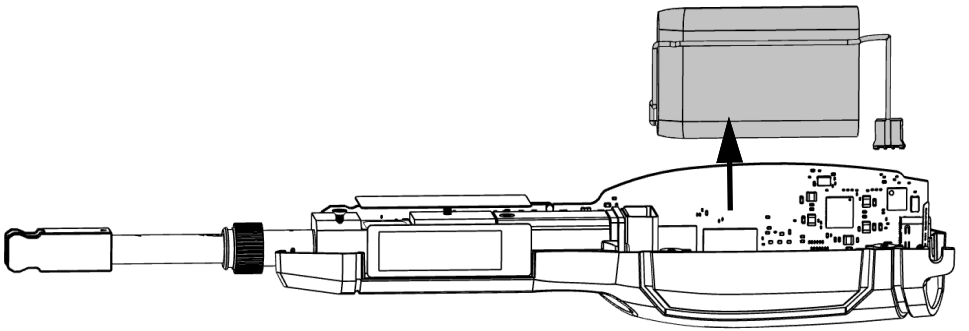
6. Hold the panel by its sides and pull it up to remove it.



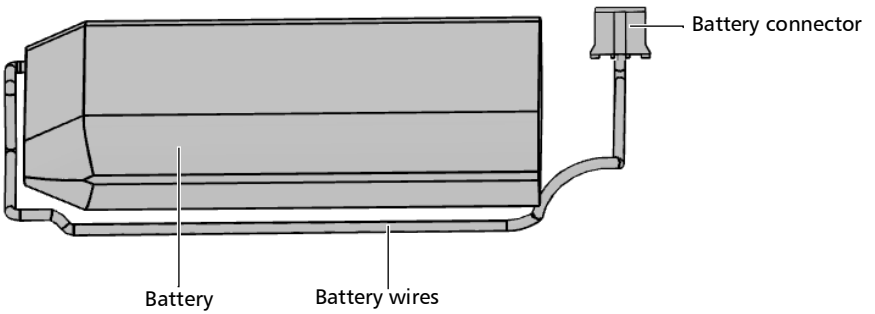
7. Gently pull down on the battery connector to disconnect it from its socket.



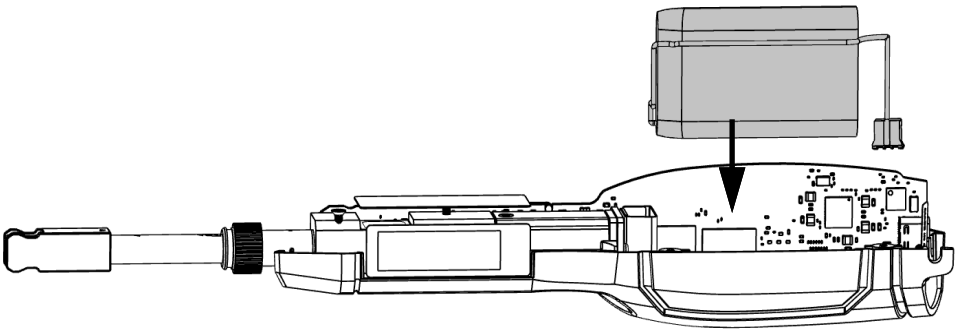
8. Pull the battery up to remove it.



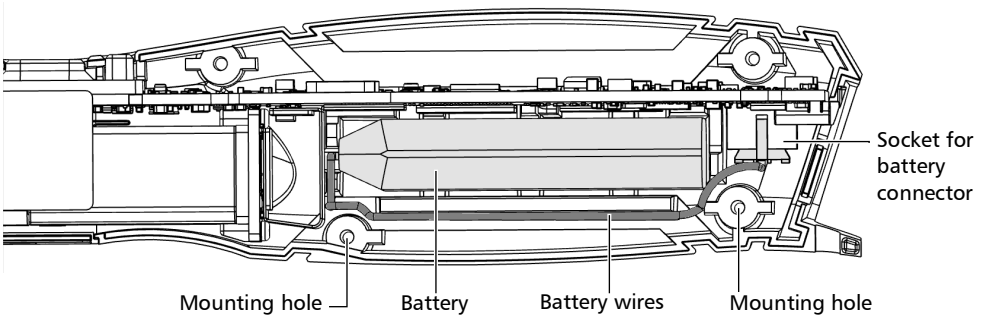
9. Position the new battery with the wire connection on the left side and align the battery connector with the socket in your unit's case.



10. Push the new battery toward the bottom of the case until it stops.



11. Carefully place the battery wires around the two mounting holes and under the battery.

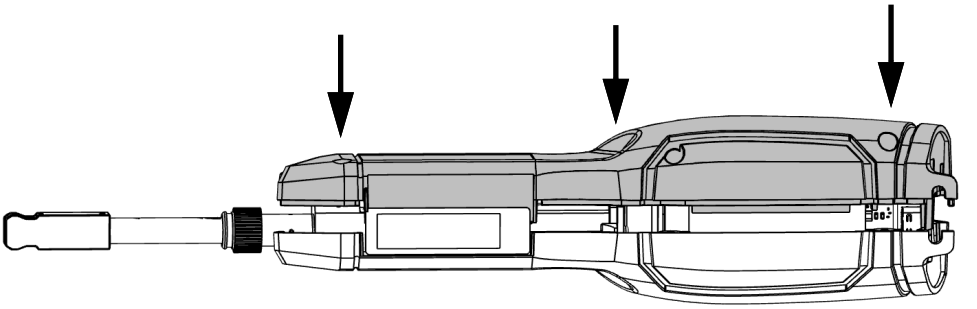


CAUTION

To avoid damaging the battery wires and ensure proper panel closure, keep the wires clear of the mounting holes.

12. Connect the battery connector to the corresponding socket.

13. Carefully place the side panel back on the unit, ensuring it aligns properly with the other side. Adjust the panel slightly if needed to eliminate any gaps between both sides.



14. Use a Phillips-head screwdriver to turn the five screws clockwise until you feel resistance, securing the side panel in place.

CAUTION

Over-tightening the screws may damage the unit or its components. Tighten the screws only until you feel resistance.

IMPORTANT

- **If the battery LED turns red when you turn on the unit, connect it to a power outlet and let the new battery charge for a few minutes.**
- **A few charge/discharge cycles may be needed before the battery LED indicator and the on-screen battery status icon accurately reflect the actual power level of the new battery.**

Recycling and Disposal

This symbol on the product means that you should recycle or dispose of your product (including electric and electronic accessories) properly, in accordance with local regulations. Do not dispose of it in ordinary garbage receptacles.

For complete recycling/disposal information, visit the EXFO Web site at www.exfo.com/recycle.

7 Troubleshooting

Solving Common Problems

Problem	Possible Cause	Solution
My unit does not start.	The battery is completely discharged (if the battery level allows it, the battery LED will remain red for a few seconds when you try to turn on the unit).	Connect the unit to an external power source to recharge the battery. If the battery is no longer charging properly, you may need to replace it with a new one (see *Replacing the Battery* on page 74).
	The system has encountered a problem.	Make sure the unit is not connected to an external power source and press the capture button for at least ten seconds to force a hardware reset on the unit.[a]
	Some files essential to the normal operation of the unit have been corrupted.	Make sure the unit is not connected to an external power source and press the capture button for at least 15 seconds to force a hardware reset on the unit.
My unit is not responding.	The system has encountered a problem.	Make sure the unit is not connected to an external power source and press the capture button for at least ten seconds to force a hardware reset on the unit.

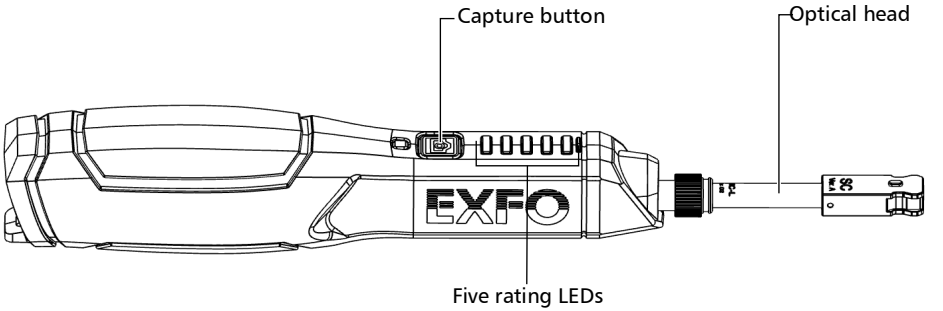
Problem	Possible Cause	Solution
The battery is not recharging.	The USB power adapter is not connected properly.	Make sure that the USB power adapter is connected to the unit and the AC outlet. If the USB power adapter is connected properly and the problem persists, it could mean that the USB power adapter is defective. In this case, try replacing the adapter. You can purchase new USB power adapters from EXFO.
	Ambient temperature is too high or too low.	In this case, the battery LED is blue and blinks quickly. Make sure that the temperature in the location where you recharge the battery is within the specifications (see *Equipment Ratings* on page 13).
I have just replaced the battery and the battery LED turns to red when I turn on the unit.	The unit may take a little time to detect the level of a new battery.	Connect the unit to a power outlet with the provided USB power adapter and let the battery charge for a few minutes. After a short while, the unit should turn on.
I am not able to connect to a wireless network.	No network has been configured yet.	You must first configure the desired networks on your smart device, using in the EXFO Exchange application (see *Working With a Wireless Network* on page 37).

Problem	Possible Cause	Solution
My unit does not connect automatically to the wireless network that I have used during my last work session.	There is a connection problem with the network.	➤ In the case of a secured network, ensure that the password has not changed since the initial configuration of this network. If the password is no longer valid, you will have to update it using the EXFO Exchange application (see *Working With a Wireless Network* on page 37). ➤ Ensure that the network is working normally and that your unit is within the network's range. ➤ If the problem persists, restart your unit to force a new connection to the network.
My unit cannot connect to a Wi-Fi network even though I have configured all parameters correctly.	Since every network has its own specifications, there may be elements that are not compatible with your unit.	Configure a Wi-Fi hotspot on a smart device or a laptop that you will use to give your unit access a wireless network. When it is done, configure this Wi-Fi hotspot as you would with any Wi-Fi network (see *Configuring a Wireless Network* on page 38).
The battery LED blinked quickly in red for a few seconds and then my unit shut down.	There is an internal temperature error.	Let your unit cool down or warm up for a few minutes before turning it back on and performing a capture.

a. Forcing a hardware reset on the unit will not delete any of the data or settings that were already stored. However, the last capture or modifications made to the settings may be lost.

Restoring Your Unit to Normal Operation

If you encounter major issues with your unit, such as unusual behavior, you can restore it to its original state as it was when purchased.



CAUTION

Follow the procedure below carefully and connect your unit to a power outlet using the provided USB adapter.

IMPORTANT

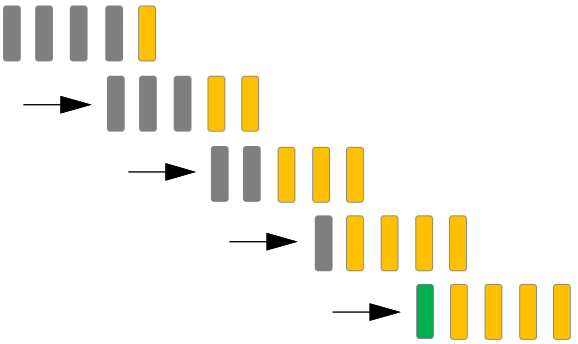
During the recovery operation, your unit will clear all user data including preferences and the last used settings.

To restore your unit to normal operation:

1. Make sure your unit is completely off, not just in sleep mode. If needed, turn it off by pressing and holding the capture button. Release the button once the five rating LEDs blink quickly in red.
2. Connect your unit to a power outlet using the provided USB power adapter to keep it powered on throughout the recovery operation.

Note: *If your unit isn't connected to an external power source and the battery level is too low, the recovery operation will cancel, and all five rating LEDs will blink briefly in red.*

3. To launch the recovery operation, press and hold the capture button.
4. When the rating LED closest to the optical head lights up in steady orange, release the capture button to start the recovery operation confirmation process.
5. During the confirmation process, your unit will light up each rating LED sequentially, starting with the first four LEDs near the optical head in orange and ending with the last LED next to the capture button in green.



When the LED next to the capture button lights up in green, press the capture button again to confirm the recovery operation process.

Note: *If you do not release the capture button, the recovery operation will cancel and all five rating LEDs will blink quickly in red.*

Your unit will briefly light up all five rating LEDs in green, then start the recovery operation.

CAUTION

DO NOT TURN OFF your unit while the recovery operation is underway. Doing so may damage your unit. Damaged units will need to be sent back to EXFO for repair.

6. Wait for the recovery operation to complete. During the process, the five rating LEDs will light up yellow and display an animation. Once the operation succeeds, all five rating LEDs will turn green, and your unit will restart.

Note: *If the recovery operation fails, all five rating LEDs will blink in red for a few seconds.*

7. Perform a software update, if necessary, to keep your unit up to date (see *Updating the Software With a Wi-Fi Connection* on page 56).

   You are now ready to work with your unit.

The following table outlines the possible LED colors and behaviors during the recovering operation.

LED	Color/Behavior	Meaning
	Orange, 1 LED, steady	The user has held the capture button long enough to launch the recovery operation.
	Green, 1 LED, Orange, 4 LEDs, steady	The recovery operation confirmation is awaiting user action.
	Green, 1 LED, Orange, 4 LEDs, steady	The recovery operation confirmation process is in progress.
	Green, 5 LEDs, steady	The unit confirms the recovery operation launch.
	Orange, 1 LED, circling	The recovery operation is in progress.
	Green, 5 LEDs, steady	The recovery operation has completed successfully.
	Red, 5 LEDs, blinking	The unit failed to perform the recovery operation.
	Red, 5 LEDs, blinking	The recovery operation is canceled.
	Red, 5 LEDs, steady, gradual fade	The unit is shutting down.
	Blue, 1 LED, alternate blinking	The unit is starting up.
	Blue, 5 LEDs, quick blinking	A Bluetooth connection was requested from the EXFO Exchange application.
	Blue, 1 LED, steady	The unit is ready to take a capture.

Accessing the Online Documentation

You can access the user guide anytime from your smart device by scanning the QR code on your unit.

Note: *The user guide is also available from the EXFO Web site (www.exfo.com) for download in PDF format.*

To access the user guide with the QR code:

Scan the QR code on your unit with a smart device to access the user guide from the EXFO support page.

Contacting the Technical Support Group

To obtain after-sales service or technical support for this product, contact EXFO at one of the following numbers. The Technical Support Group is available to take your calls from Monday to Friday, 8:00 a.m. to 7:00 p.m. (Eastern Time in North America).

Technical Support Group
400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)
Tel.: 1 418 683-5498
Fax: 1 418 683-9224
support@exfo.com

For detailed information about technical support, and for a list of other worldwide locations, visit the EXFO Web site at www.exfo.comIf you have comments or suggestions about this user documentation, you can send them to customer.feedback.manual@exfo.com.

To accelerate the process, please have information such as the name and the serial number (see the product identification label), as well as a description of your problem, close at hand.

Transportation

Maintain a temperature range within specifications when transporting the unit. Transportation damage can occur from improper handling. The following steps are recommended to minimize the possibility of damage:

- Pack the unit in its original packing material when shipping.
- Avoid high humidity or large temperature fluctuations.
- Keep the unit out of direct sunlight.
- Avoid unnecessary shocks and vibrations.

IMPORTANT

To prevent the unit from turning on unexpectedly, always turn it off (shutdown) before transporting it.

8 Warranty

General Information

EXFO Inc. (EXFO) warrants this equipment against defects in material and workmanship for a period of one year from the date of original shipment. EXFO also warrants that this equipment will meet applicable specifications under normal use.

During the warranty period, EXFO will, at its discretion, repair, replace, or issue credit for any defective product, as well as verify and adjust the product free of charge should the equipment need to be repaired or if the original calibration is erroneous. If the equipment is sent back for verification of calibration during the warranty period and found to meet all published specifications, EXFO will charge standard calibration fees.

IMPORTANT

The warranty can become null and void if:

- **unit has been tampered with, repaired, or worked upon by unauthorized individuals or non-EXFO personnel.**
- **warranty sticker has been removed.**
- **case screws, other than those specified in this guide, have been removed.**
- **case has been opened, other than as explained in this guide.**
- **unit serial number has been altered, erased, or removed.**
- **unit has been misused, neglected, or damaged by accident.**

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL EXFO BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

Gray Market and Gray Market Products

Gray market is a market where products are traded through distribution channels that are legal but remain unofficial, unauthorized, or unintended by the original manufacturer. Intermediaries using such channels to distribute products are considered to be part of the gray market (hereafter unauthorized intermediary).

EXFO considers that a product originates from the gray market (hereafter gray market product) in the following situations:

- A product is sold by an unauthorized intermediary.
- A product is designed and destined for a particular market and sold on a second market.
- A product is resold, despite being reported lost or stolen.

When products are purchased on the gray market, rather than through an authorized EXFO distribution channel, EXFO is unable to guarantee the source and quality of those products nor the local safety regulations and certifications (CE, UL, etc.).

EXFO will not honor warranty, install, maintain, repair, calibrate, provide technical support nor make any support contracts available for gray market products.

For complete information, refer to EXFO's policy regarding gray market products at www.exfo.com/en/how-to-buy/sales-terms-conditions/gray-market/

Liability

EXFO shall not be liable for damages resulting from the use of the product, nor shall be responsible for any failure in the performance of other items to which the product is connected or the operation of any system of which the product may be a part.

EXFO shall not be liable for damages resulting from improper usage or unauthorized modification of the product, its accompanying accessories and software.

Exclusions

EXFO reserves the right to make changes in the design or construction of any of its products at any time without incurring obligation to make any changes whatsoever on units purchased. Accessories, including but not limited to fuses, pilot lamps, batteries and universal interfaces (EUI) used with EXFO products are not covered by this warranty.

This warranty excludes failure resulting from: improper use or installation, normal wear and tear, accident, abuse, neglect, fire, water, lightning or other acts of nature, causes external to the product or other factors beyond the control of EXFO.

IMPORTANT

In the case of products equipped with optical connectors, EXFO will charge a fee for replacing connectors that were damaged due to misuse or bad cleaning.

Certification

EXFO certifies that this equipment met its published specifications at the time of shipment from the factory.

Service and Repairs

EXFO commits to providing product service and repair for five years following the date of purchase.

To send any equipment for service or repair:

1. Call one of EXFO's authorized service centers (see *EXFO Service Centers Worldwide* on page 97). Support personnel will determine if the equipment requires service, repair, or calibration.
2. If equipment must be returned to EXFO or an authorized service center, support personnel will issue a Return Merchandise Authorization (RMA) number and provide an address for return.
3. If possible, back up your data before sending the unit for repair.
4. Pack the equipment in its original shipping material. Be sure to include a statement or report fully detailing the defect and the conditions under which it was observed.
5. Return the equipment, prepaid, to the address given to you by support personnel. Be sure to write the RMA number on the shipping slip. *EXFO will refuse and return any package that does not bear an RMA number.*

Note: *A test setup fee will apply to any returned unit that, after test, is found to meet the applicable specifications.*

After repair, the equipment will be returned with a repair report. If the equipment is not under warranty, you will be invoiced for the cost appearing on this report. EXFO will pay return-to-customer shipping costs for equipment under warranty. Shipping insurance is at your expense.

Routine recalibration is not included in any of the warranty plans. Since calibrations/verifications are not covered by the basic or extended warranties, you may elect to purchase FlexCare Calibration/Verification Packages for a definite period of time. Contact an authorized service center (see *EXFO Service Centers Worldwide* on page 97).

EXFO Service Centers Worldwide

If your product requires servicing, contact your nearest authorized service center.

EXFO Headquarters Service Center
400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)
Tel.: 1 418 683-5498
Fax: 1 418 683-9224
support@exfo.com

EXFO Europe Service Center
Winchester House, School Lane
Chandlers Ford, Hampshire S053 4DG
ENGLAND

Tel.: +44 2380 246800
Fax: +44 2380 246801
support.europe@exfo.com

EXFO Telecom Equipment (Shenzhen) Ltd.
3rd Floor, Building C,
FuNing Hi-Tech Industrial Park, No. 71-3,
Xintian Avenue,
Fuhai, Bao'An District,
Shenzhen, China, 518103

Tel: +86 (755) 2955 3100
Fax: +86 (755) 2955 3101
support.asia@exfo.com

To view EXFO's network of partner-operated Certified Service Centers nearest you, please consult EXFO's corporate website for the complete list of service partners:
https://www.exfo.com/en/services/field-network-testing/exfo-service-centers.

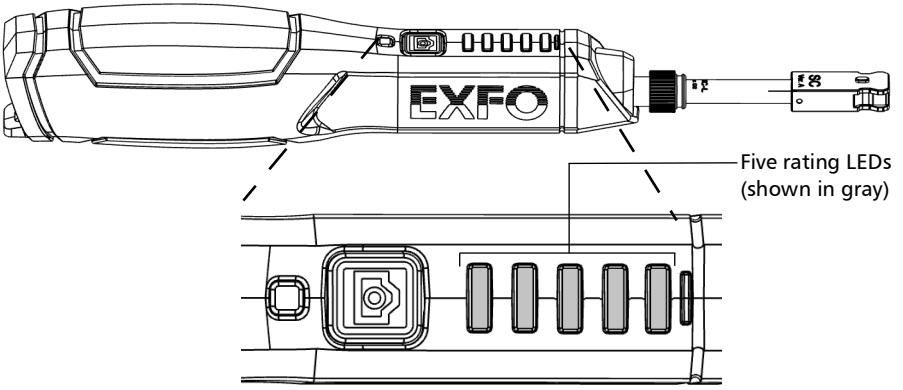
A Interpreting LED Colors and Behaviors

The following tables show the possible colors, behaviors and meanings of the five rating LEDs on the FIP-200.

The possible LED colors and behaviors are categorized as follows:

- Inspections and wireless communications
- Software, hardware and recovery operation errors
- Software update, recovery operation and support package upload

Note: *In the first column of the following tables, the LEDs are listed in the order they appear on the FIP-200, as shown in the following image.*



Inspection and Wireless Communications

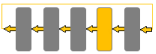
LED	Color/Behavior	Meaning
	Off, 5 LEDs	The unit is powered off or in sleep mode.
	Blue, 1 LED, alternate blinking	The unit is starting up (see *Turning on Your Unit* on page 15).
	Blue, 1 LED, steady	The unit is ready to take a capture (see *Inspecting Single-Fiber Connectors* on page 25).
	White, 5 LEDs, quick blink	The capture process is complete and the unit is transitioning to the analysis process (see *Inspecting Single-Fiber Connectors* on page 25).
	Blue, 1 LED, circling	The autofocus or the analysis process is in progress.
	Red, 1 LED, steady	Fail status. Consider replacing the connector after multiple cleaning attempts (see *Inspecting Single-Fiber Connectors* on page 25).
	Red, 2 LEDs, steady	Fail status. Consider replacing the connector after multiple cleaning attempts (see *Inspecting Single-Fiber Connectors* on page 25).
	Red, 3 LEDs, blinking	The focus quality level is too low to provide an EXFO rating. Hold the FIP-200 and retry.

LED	Color/Behavior	Meaning
	Red, 4 LEDs, blinking	The FIP-200 is positioned at an angle that prevents it from providing a rating. Hold the FIP-200 straight and retry.
	Red, 5 LEDs, blinking	The autofocus has timed out, the unit is unable to find the center of the fiber or an error has occurred during the analysis process. The connector could be too dirty. Try cleaning it before taking a new capture. Ensure the connector/tip is inserted correctly.
	Red, 5 LEDs, steady, gradual fade	The unit is shutting down.
	Green, 3 LEDs, steady	Pass status. The connector is in good condition. Try cleaning it to improve its condition (see *Inspecting Single-Fiber Connectors* on page 25).
	Green, 4 LEDs, steady	Pass status. The connector is clean and in good condition (see *Inspecting Single-Fiber Connectors* on page 25).
	Green, 5 LEDs, steady	Pass status. The connector is clean and in good condition (see *Inspecting Single-Fiber Connectors* on page 25).
	Blue, 5 LEDs, quick blinking	The EXFO Exchange application requests confirmation for a new Bluetooth connection (see *Establishing or Deleting a Connection With a Smart Device Via the Bluetooth Technology* on page 30).

Software, Hardware and Recovery Operation Errors

LED	Color/Behavior	Meaning
	Red and yellow, 5 LEDs, alternate color blinking	A hardware error has occurred. For more information, contact the EXFO Technical Support Group (see *Contacting the Technical Support Group* on page 91).
	Red and yellow, 4 LEDs, alternate color blinking	A hardware error has occurred. For more information, contact the EXFO Technical Support Group (see *Contacting the Technical Support Group* on page 91).
	Red and yellow, 1 LED, alternate color blinking	A hardware error has occurred. For more information, contact the EXFO Technical Support Group (see *Contacting the Technical Support Group* on page 91).
	Red, 5 LEDs, blinking	A software update error has occurred (see the EXFO Exchange mobile application for more information).
	Red, 5 LEDs, blinking	The unit failed to perform the recovery operation.
	Red, 5 LEDs, blinking	The recovery operation is canceled.

Software Update, Recovery Operation and Support Package Upload

LED	Color/Behavior	Meaning
	Orange, 1 LED, steady	The user has held the capture button long enough to launch the recovery operation.
	Green, 1 LED, Orange, 4 LEDs, steady	The recovery operation confirmation is awaiting user input.
	Green, 1 LED, Orange, 4 LEDs, steady	The recovery operation confirmation process is in progress.
	Green, 5 LEDs, steady	The unit confirms the recovery operation launch.
	Orange, 1 LED, circling	The recovery operation is in progress.
	Green, 5 LEDs, steady	The recovery operation has completed successfully.
	Orange, 1 LED, circling	The software download and installation process is in progress.
	Orange, 1 LED, circling	The support package upload process is in progress.

Index

I

L

M

N

O

P

Q

R

S

T

U

V

W

CHINESE REGULATION ON RESTRICTION OF HAZARDOUS SUBSTANCES (RoHS)
中国关于危害物质限制的规定

NAMES AND CONTENTS OF THE TOXIC OR HAZARDOUS SUBSTANCES OR ELEMENTS CONTAINED IN THIS EXFO PRODUCT
包含在本 EXFO 产品中的有毒有害物质或元素的名称及含量

Part Name 部件名称	Lead 铅 （Pb）	Mercury 汞 （Hg）	Cadmium 镉 （Cd）	Hexavalent Chromium 六价铬 （Cr(VI)）	Polybrominated biphenyls 多溴联苯 （PBB）	Polybrominated diphenyl ethers 多溴二苯醚 （PBDE）
Enclosure 外壳	O	O	O	O	O	O
Electronic and electrical sub-assembly 电子和电气组件	X	O	X	O	X	X
Optical sub-assembly[a] 光学组件 [a]	X	O	O	O	O	O
Mechanical sub-assembly[a] 机械组件 [a]	O	O	O	O	O	O

Note:
注：
This table is prepared in accordance with the provisions of SJ/T 11364.
本表依据 SJ/T 11364 的规定编制。
O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.
O：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下。
X: indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572. Due to the limitations in current technologies, parts with the “X” mark cannot eliminate hazardous substances.
X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 标准规定的限量要求。
标记“X”的部件，皆因全球技术发展水平限制而无法实现有害物质的替代。
a. If applicable.
如果适用。

MARKING REQUIREMENTS
标注要求

Product 产品	Environmental protection use period (years) 环境保护使用期限 （年）	Logo 标志
This EXFO product 本 EXFO 产品	10	
Battery[a] 电池	5	

a. If applicable.
如果适用。

P/N: 1.0.0.2

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