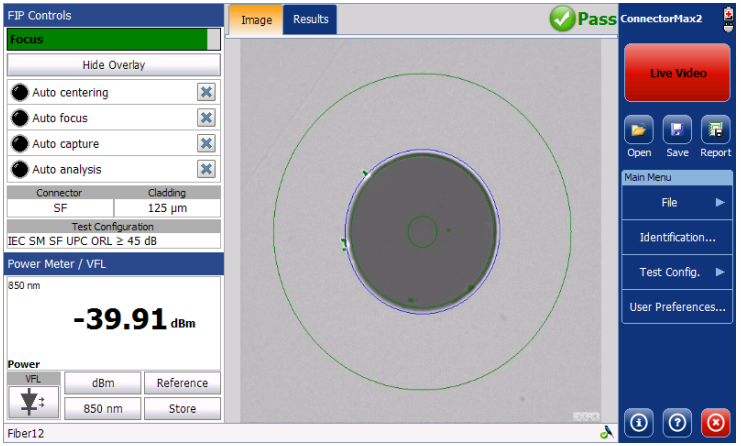
User Guide

FIP-400B

Fiber Inspection Probe and ConnectorMax2



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EXPERTISE REACHING OUT

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Trademarks

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Units of Measurement

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

Patents

The design patent is pending for this product.

Version number: 5.0.2

Contents

Certification Information

North America Regulatory Statement

This unit was certified by an agency approved in both Canada and the United States of America. It has been evaluated according to applicable North American approved standards for product safety for use in Canada and the United States.

Electronic test and measurement equipment is exempt from FCC part 15, subpart B compliance in the United States of America and from ICES-003 compliance in Canada. 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 guide, 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.

European Community Declaration of Conformity

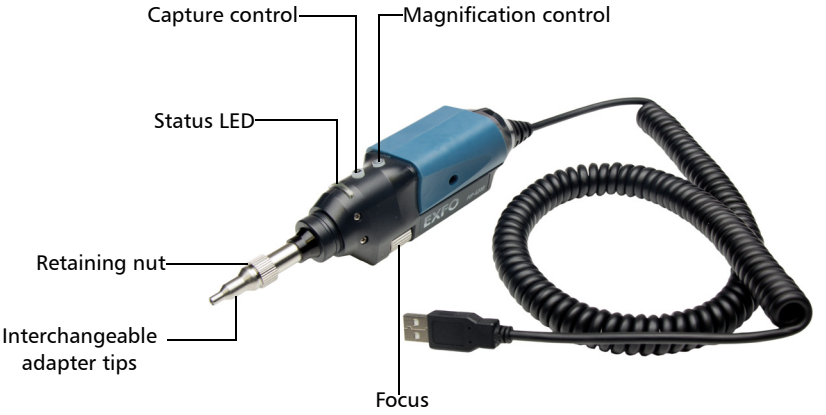
An electronic version of the declaration of conformity for your product is available on our website at **www.exfo.com**. Refer to the product's page on the Web site for details.

1 Introducing the FIP-400B Fiber Inspection Probe and ConnectorMax2

The FIP-400B Fiber Inspection Probe is a portable video microscope used to inspect fiber ends. Unlike traditional microscopes, the FIP-400B facilitates the examination of patchcord connectors and also hard-to-reach connectors on the back of patch panels and bulkhead adapters.

Probe

The FIP-400B is designed to be an intuitive, easy-to-use piece of equipment. This video microscope is used for inspecting fiber ends.



- The focus knob can be turned in either direction to focus the image.
- The magnification control button allows you to shift between three levels of magnification. When pressed for one second, it activates the auto focus.
- The capture control button allows you to capture an image, perform an analysis, or return to the Live video mode.

- The retaining nut holds tips securely in place, ensuring they are always fastened in the correct position.
- The status LED gives you information about the probe or the analysis results.
- The interchangeable adapter tips give you the possibility to use various tips depending on the type of connector you are inspecting.

The probe comes equipped with a protective cap that fits over basic tips; therefore, you do not need to remove the tip before putting the cap on.

Available Models

The features available for your probe are automatically detected when you connect it to your unit. The table below shows which feature is available for each model.

Models	Inspection	Auto analysis	Auto centering	Auto focus	Auto capture
FIP-410B	X	-	-	-	-
FIP-420B	X	X	X	-	-
FIP-430B	X	X	X	X	X

Note: *The auto capture is not available in multifiber mode.*

Note: *When the internal temperature of the FIP-430B is too low, the probe performs a warm-up that can last up to a minute.*

Probe Tips

The FIP-400B comes with two interchangeable tips included in two different packages (UPC or APC). Additional models are also available.

- UPC package:
  - FIPT-400-FC-SC: FC-SC Bulkhead tip
  - FIPT-400-U25M: Universal patchcord tip (2.5 mm ferrule)
- APC package:
  - FIPT-400-SC-APC: SC APC tip for bulkhead adapter
  - FIPT-400-U25MA: Universal patchcord tip for 2.5 mm ferrules

Other tip models are available for various bulkhead adapters and patchcord connectors. For more information about tips and their use, see the *Fiber Inspection Probe Tip Compatibility Chart* on page 95, or visit the EXFO Web site.

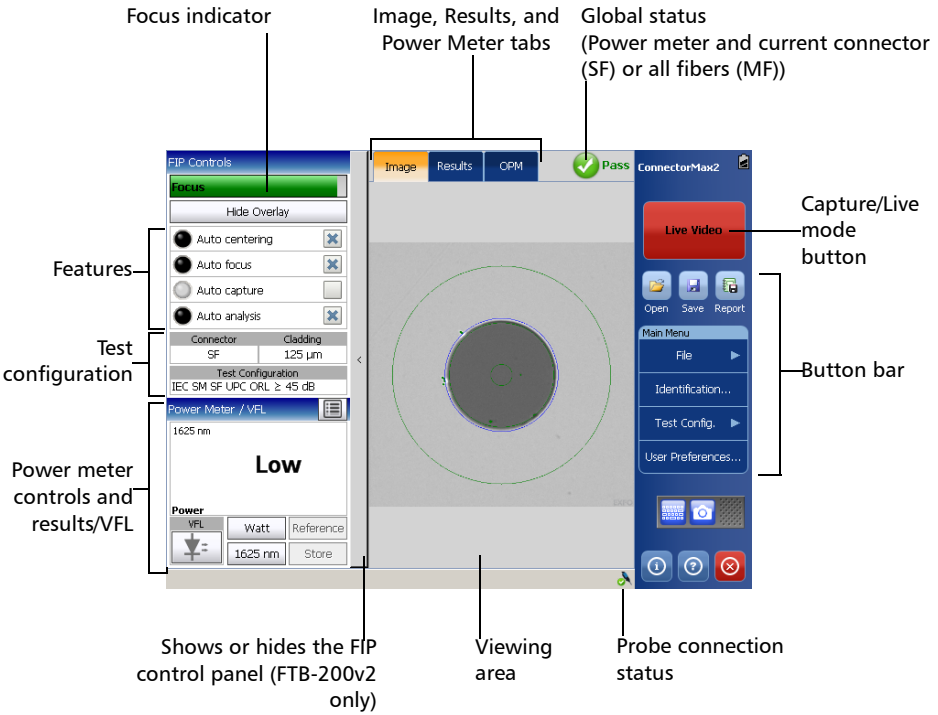
LED Indicator

The LED located on the probe gives you information about the probe or the analysis results.

LED	Status
Flashing blue	➤ Detection of the probe in progress ➤ Analysis in progress ➤ Waiting mode. The auto focus process starts automatically when you insert an optical fiber connector (FIP-430B only) ➤ Auto focus in progress (FIP-430B only) ➤ Probe is initializing
Flashing red	There is a major problem preventing the probe from functioning properly
Blue	➤ Probe detected and ready ➤ On a computer, the USB port is in suspend mode
Red	In Capture mode, current FIP result status is Fail (FIP-420B and FIP-430B)
Green	In Capture mode, current FIP result status is Pass (FIP-420B and FIP-430B)

ConnectorMax2 Software

ConnectorMax2 is the application used to view the fiber inspections. You can also use specific test configurations and analyze the fibers automatically upon capturing a picture. This application is available on the MAX-FIP Viewer.



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.

Note: *The appearance of the application may vary for other operating systems and units.*

Note: *In this documentation, the words "tap" and "double-tap" (related to the use of a touchscreen) replace the words "click" and "double-click".*

2 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.

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

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 probe outdoors in wet locations.

Equipment Ratings	
Temperature ➤ Operation ➤ Storage	 -10 °C to 50 °C (14 °F to 122 °F) -40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity	0 % to 95 % non-condensing
Maximum operation altitude	2000 m (6562 ft)
Pollution degree	3 [a]
Overvoltage category	I

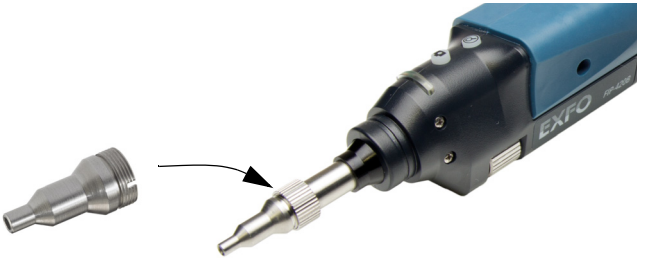
a. Equipment should be normally protected against exposure to direct sunlight, precipitations and full wind pressure.

3 Setting up Your Fiber Inspection Probe and ConnectorMax2

You can change various settings in ConnectorMax2 such as the default storage location or the automated file name. These settings are stored for each user and kept for future work sessions.

Changing the Fiber Inspection Probe Tip

You can use various tips depending on the type of connector you are inspecting. For more information about tips you can use, see the *Fiber Inspection Probe Tip Compatibility Chart* on page 95, or contact your vendor for additional information.



To change a tip:

1. Untighten the tip's retaining nut.
2. Remove the tip.
3. Insert a new tip.
4. Adjust the tip to the notch.
5. Retighten the retaining nut.

Adjusting Brightness

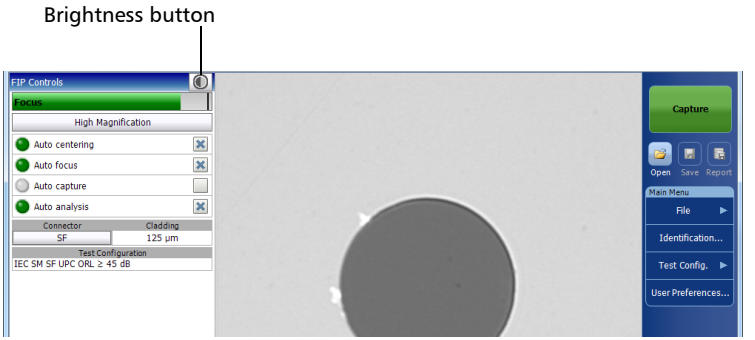
Once the probe is connected to a fiber, you can adjust brightness in order to better view the fiber under inspection.

The default brightness value is 50 %. This corresponds to the automatic brightness mode. The brightness automatically returns to 50 %:

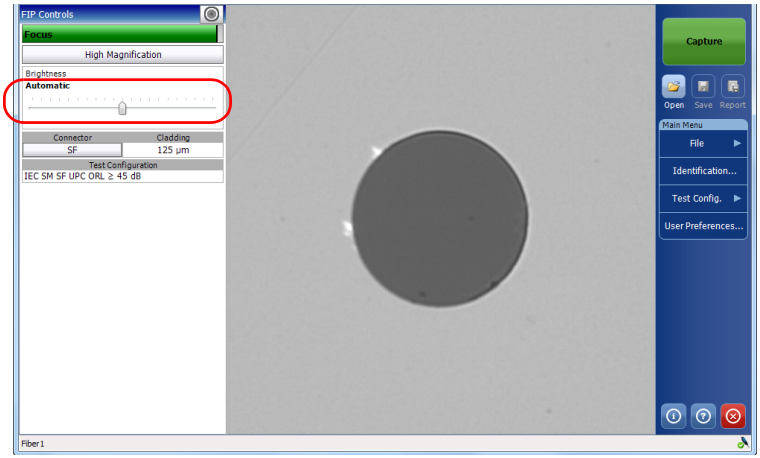
- when you exit the application and the probe is still connected
- when the application is open and you plug and unplug the probe
- when the platform is in suspend or resume mode
- when you lock or unlock a session (except on a MAX-700B)
- when you log in or log out of a session (except on a MAX-700B)

To adjust brightness:

1. In Live video mode, tap the button to switch to video settings mode.



2. Use the brightness slider to set the levels to suit your needs.



Note: *The application returns to the FIP controls default mode after 10 seconds of inactivity.*

Note: *To optimize the analysis of the connector, EXFO recommends to set the brightness to Auto most of the time.*

When the brightness level is different than 50 %, the **Automatic** button appears. Tapping on the **Automatic** button resets the brightness value to 50 %. The **Automatic** button disappears when the brightness level equals 50 %.

Setting up Autonaming

The autonaming feature is useful to make a relevant naming scheme for your tests. This also ensures that you do not overwrite files by mistake. You can select which item goes in the file name (appears at the bottom of the window), as well as the type of separator you want to use in between.

A preview is available to show you the final output of the file name.

The file name is made of one or more static parts (alphanumeric) and one or more variable parts (numeric) that will be incremented or decremented, according to your selection, as follows:

If you choose incrementation...	If you choose decrementation...
Variable part increases until it reaches the *highest possible value* with the selected number of digits, then restarts at 1.	Variable part decreases until it reaches 1, then restarts at the *highest possible value* with the selected number of digits.

Note: *To decrement values, the start number must be higher than the stop number.*

The file name can be incremented using one or more identifiers. Selecting a single identifier will follow the incrementation (or decrementation) value you have set.

For single fibers (SF or Transceivers), when selecting more than one identifier, the latter appear sequentially in the order that you have set, and the incrementation will start with the last item in the list (the one with the farthest indentation). For example, if you have a file name with the Location, Cable and Fiber identifiers, in that order, the first item to be incremented is the Fiber identifier, then Cable, then Location:

Location 1, Cable 1, Fiber 1

Location 1, Cable 1, Fiber 2

Location 1, Cable 2, Fiber 1

Location 1, Cable 2, Fiber 2

and so forth.

For multifibers, when several identifiers for the filename are selected, they appear sequentially in the order you have set. However, only one increment can be used to create a multifiber set of captures. If several increments are selected, only the most indented identifier will be used as the increment. If no auto increment is defined, the identifier Frame is used (whether or not it is selected for the file name).

After a result is saved, you have to return to the Live video mode so that the application prepares the next file name by incrementing (or decrementing) the suffix.

Note: *If you choose not to save a particular file, the suggested file name remains available for the next capture. This applies to all type of connectors.*

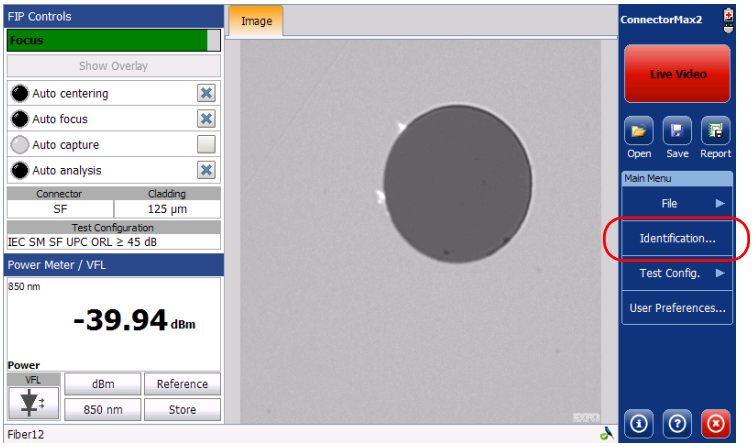
If you deactivate the automatic file naming function, the application displays a **Save As** window and no default file name is suggested.

The autonaming parameters can be set only for files that have not been saved yet. You will only see the parameters for the current and next capture (when the test is done but not saved yet), or for the next capture only (test is not done yet). Otherwise, the parameters will not be displayed.

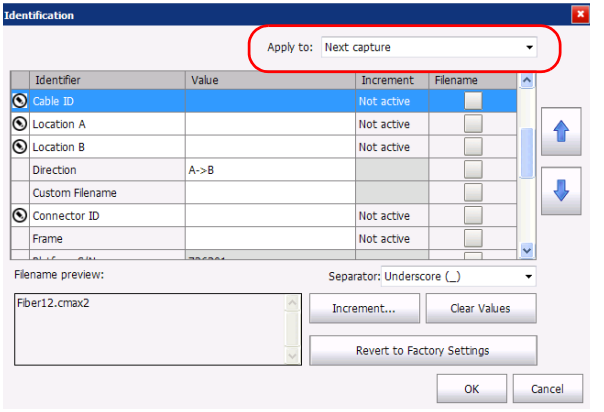
It is also possible to revert the settings to their default values.

To configure the automatic file naming:

1. From the **Main Menu**, tap **Identification**.



2. From the **Apply to** list, ensure that **Next capture** or **Current and Next capture** is selected.



3. Enter all the information as follows:

3a. Locate the row corresponding to the identifier that you want to modify.

If an identifier is marked with an icon, a predefined list with choices is available. If you select None, it disables the field from the list (Next capture and Current and Next capture).

Note: *When in Current capture, the identifiers set to None disappear from the list.*

Note: *The identifiers marked with an icon are fields that can be customized and edited. The name of the identifier and its value can be modified.*

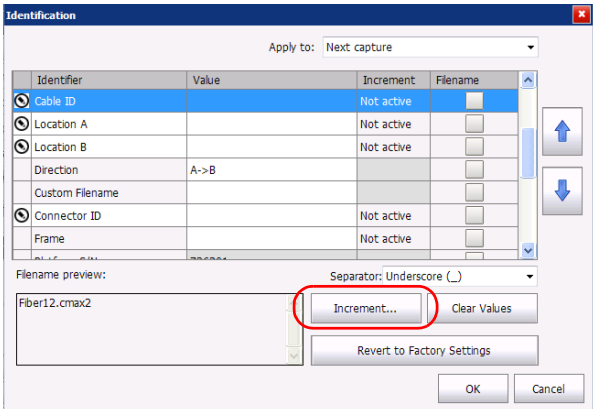
3b. Tap the **Value** column corresponding to the desired identifier.

3c. Enter the information.

Note: *You cannot edit the information in the dark gray boxes.*

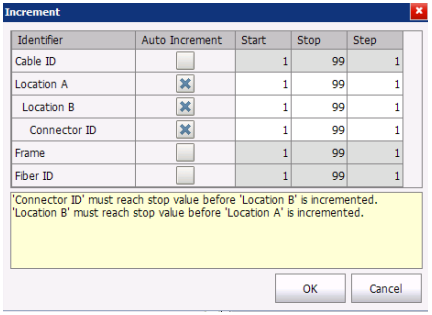
4. If you want to increment automatically the cable ID, the fiber ID, the location (A and/or B), the Connector ID, or the Frame, proceed as follows:

4a. Tap the **Increment** button.



4b. In the **Increment** window, select the **Auto Increment** check box corresponding to the identifier you want to increment.

4c. Enter the start, stop and increment values as desired.



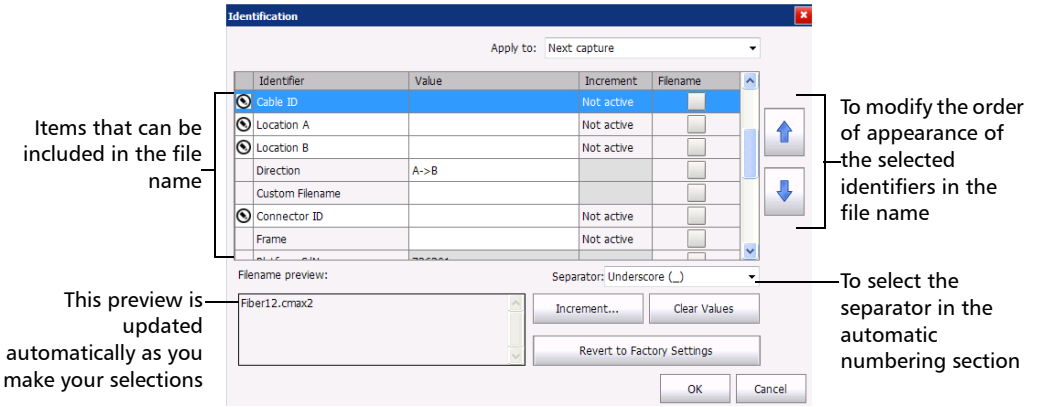
Note: *The identifiers are processed in order, from the one with the largest indentation to the one with the smallest. For a given identifier, when the increment value reaches the stop value, the incrementation automatically switches to the next identifier. The order of the identifiers in the increment window (and thereby the order of increment) follows the order of the identification window.*

Note: *An identifier set to None will not appear in the increment window.*

Note: *To decrement values, the start number must be higher than the stop number.*

4d. Tap **OK** to return to the **Identification** window.

5. Select the desired identifiers to include in the file name. You can change the order of appearance of the highlighted component with the up and down arrow buttons.

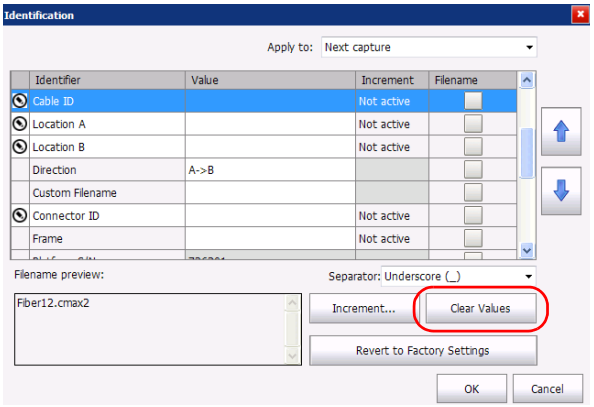


6. Tap **OK** to confirm your new settings and to return to the main window.

The new settings will apply the next time you perform a capture.

To clear the values:

1. From the **Main Menu**, tap **Identification**.
2. In the **Apply to** list, select **Next capture**.
3. Tap the **Clear Values** button.



4. Tap **OK** to return to the main window.

All values in the **Value** column are erased from the white boxes.

Managing and Selecting Test Configurations

You can create and select specific test configurations according to the type of fiber you are analyzing, the connector type or the type of anomaly you are looking for.

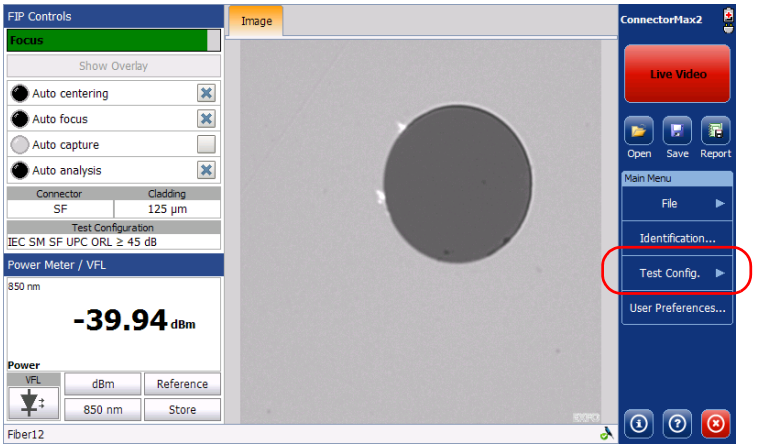
Note: *If you have the FIP-420B or FIP-430B probe, some test configurations as per IEC 61300-3-35 and IPC 8497-1 standards, and other configurations with an enlarged adhesive C zone are available by default.*

Creating custom test configurations is done through duplicating an existing configuration, and then modifying the desired criteria.

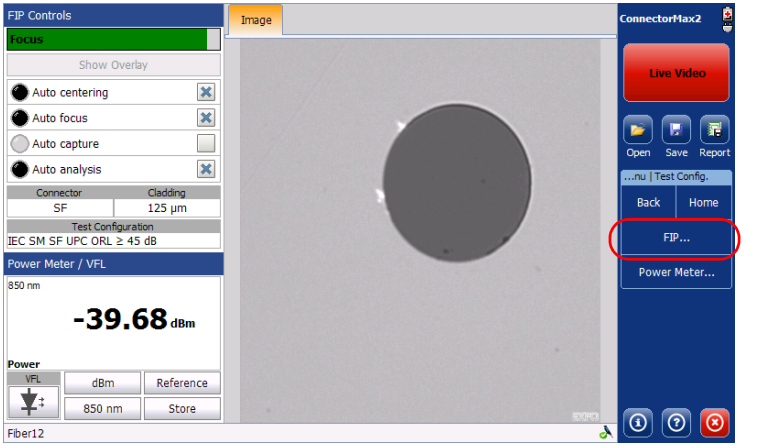
If you create configurations on one unit or computer, and want to transfer them to another unit or computer, you can do so.

To select a test configuration:

1. From the **Main Menu**, select **Test Config.**

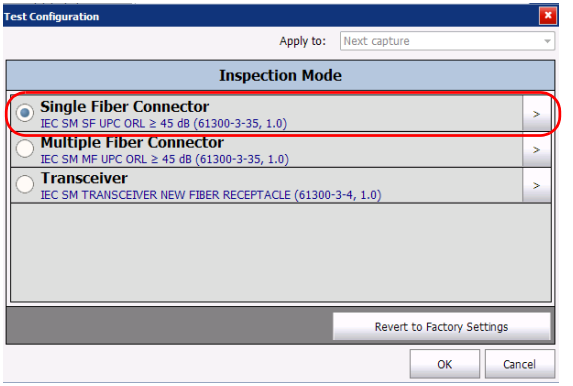


2. Select **FIP**.

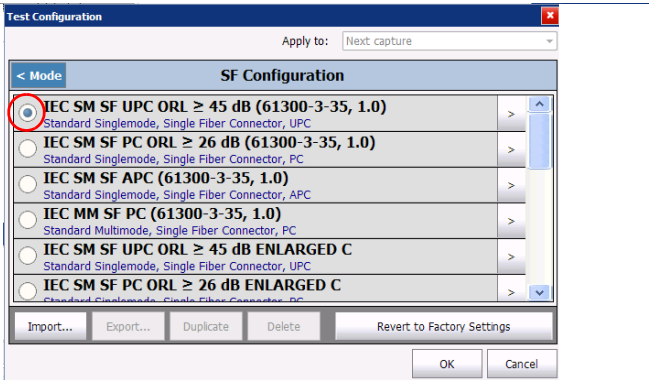


3. If necessary, in the **Apply to** list, select **Next capture**.

4. Choose the type of connector you want to use and tap the > button at the end of the row.

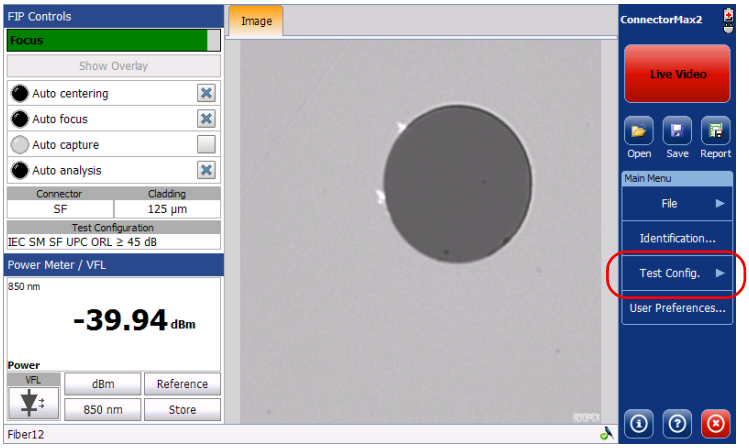


5. In the list of available test configurations, select the configuration you want to use and tap **OK**.

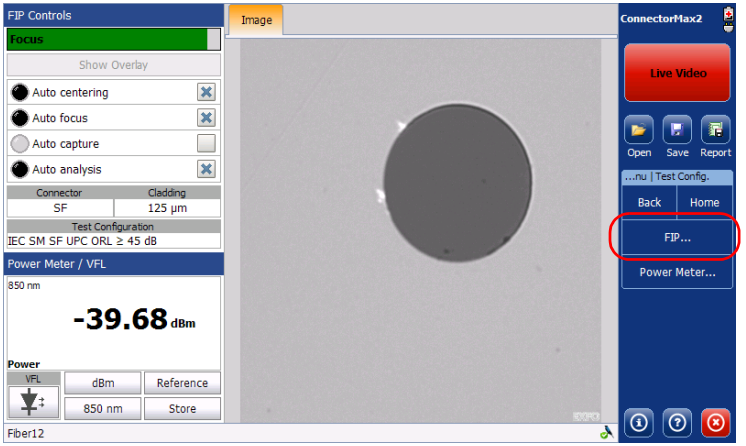


To create a test configuration:

1. From the **Main Menu**, select **Test Config**.

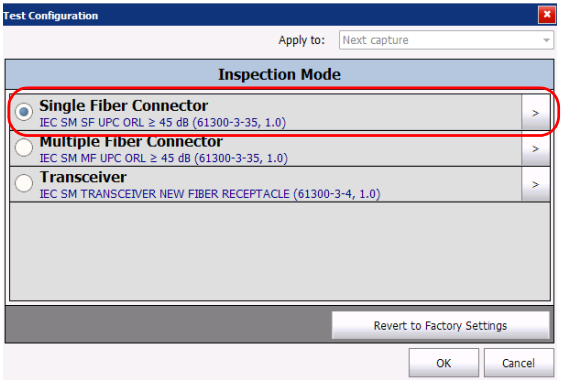


2. Select **FIP**.

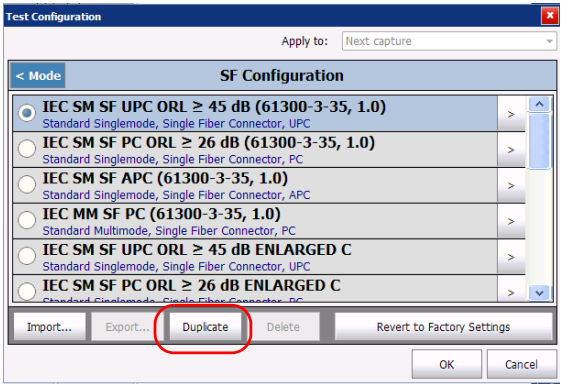


3. If necessary, in the **Apply to** list, select **Next capture**.

4. Choose the type of connector you want to use and tap the > button at the end of the row.



5. Select the row corresponding to the configuration that is the closest to the one you want to create, then tap **Duplicate**.



6. If you want to modify the general information, proceed as follows:

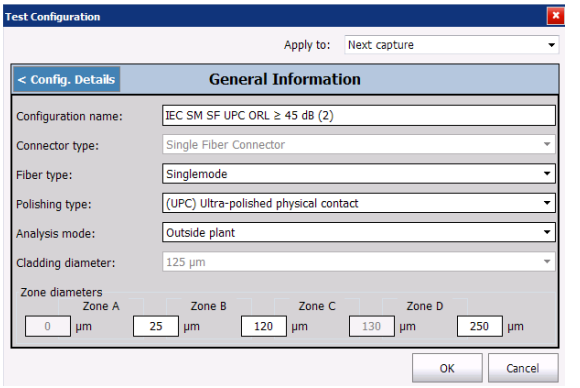
6a. In the **Configuration Details** window, tap the > button at the end of the **Properties** row.

6b. Modify the parameters as needed.

- *Configuration name:* the application suggests a name for the configuration. You can change it as needed (maximum 256 characters), but if you select a name that already exists, a suffix will automatically be added so as not to overwrite files.
- *Connector type:* Select which type of connector you are using for your inspection.
- *Fiber type:* Select whether you are inspecting singlemode or multimode fibers.
- *Polishing type:* Select the type of polishing for the fibers between APC, PC or UPC.

- *Analysis mode*: Select the type of analysis between Outside plant (selected by default) and Manufacturing. The manufacturing mode is more sensitive for scratches and defects detection.
- *Cladding diameter:* This value is set at 125 µm by default.
- *Zone diameters*: You can change the zone dimension for single fiber connectors and Transceiver fiber receptacles.

Note: *Zone C (adhesive) cannot be removed and the superior diameter of zone D cannot exceed 280 µm.*



Note: *When a multifiber connector is selected, zone D is not available.*

Note: *When you duplicate and edit a test configuration, you cannot change the connector type field.*

6c. Tap **OK** to confirm your choice and close the window.

OR

Use the **Config. Details** arrow to go back to the **Configuration Details** window and configure other parameters.

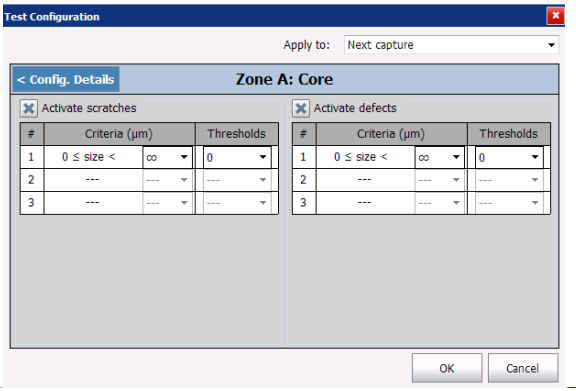
7. If you want to modify the information about the inspection zones, proceed as follows:

7a. Tap the > button corresponding to the desired inspection zones.

7b. Modify the parameters as needed to indicate whether you want to be notified of scratches, defects or both for each zone in the fiber, then set thresholds for each item you select.

You can set up to 3 criteria per zone, and per anomaly type (scratches or defects). The thresholds are divided into three categories:

- Any: this enables the next criterion, which requires a specific value.
- 1 to 10: the next criterion is automatically filled out to show the infinity symbol (∞) and 0 as a threshold.
- 0: the criterion definition is complete.



7c. Tap **OK** to confirm your choice and close the window.

OR

Use the **Config. Details** arrow to go back to the **Configuration Details** window and configure other parameters.

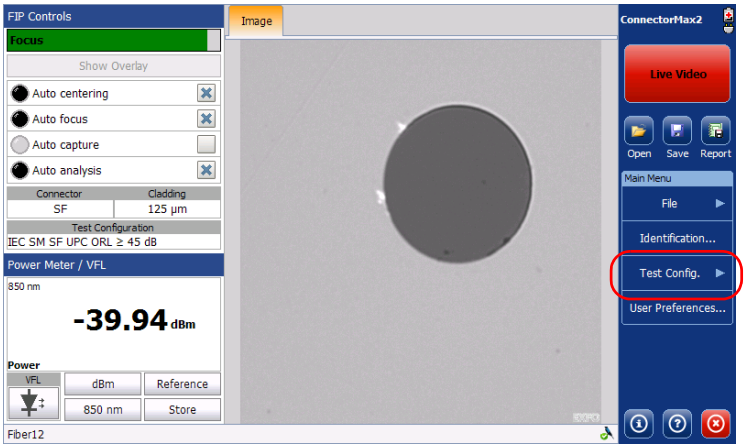
8. If necessary, use the **Config. Details** arrow to go back to the **Configuration Details** window and tap **OK** to close the window.

OR

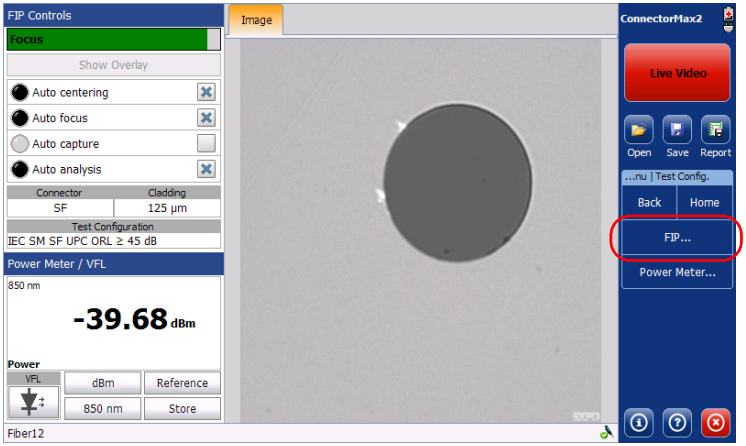
Use the **FIP Config.** arrow to go back to the FIP configuration list.

To edit a test configuration:

1. From the **Main Menu**, select **Test Config**.

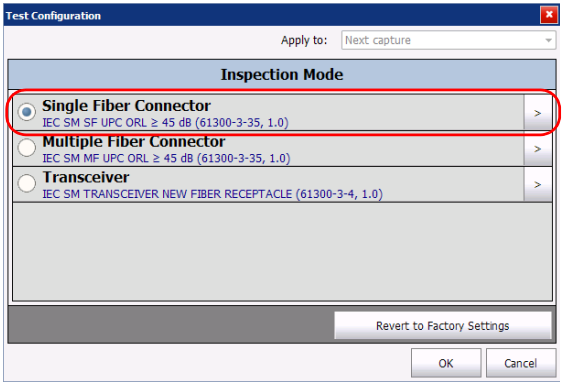


2. Select **FIP**.



3. If necessary, in the **Apply to** list, select **Next capture**.

4. Choose the type of connector you want to use and tap the > button at the end of the row.



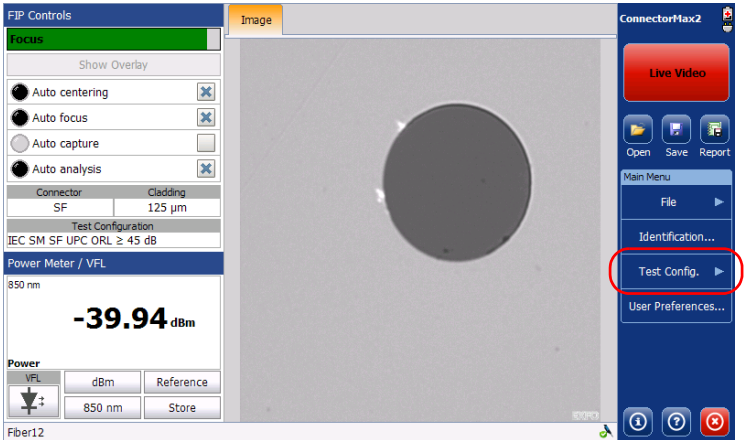
5. Select the configuration you want to edit and tap the > button at the end of the row.

Note: *You cannot edit standard test configurations.*

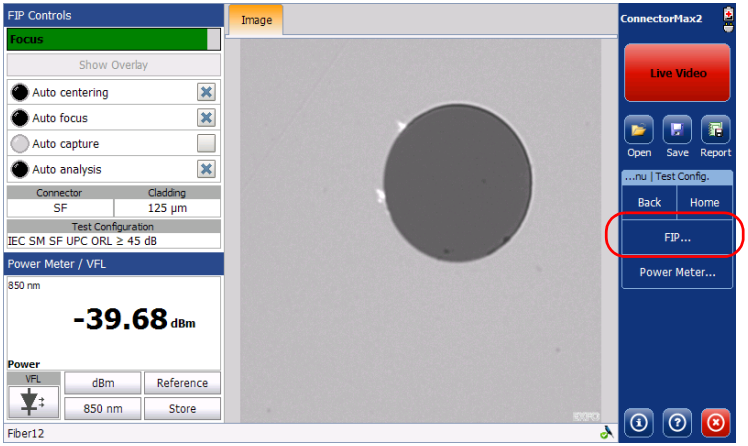
6. Change the criteria as required. For details, see the section on creating a test configuration.

To delete a test configuration:

1. From the **Main Menu**, select **Test Config**.

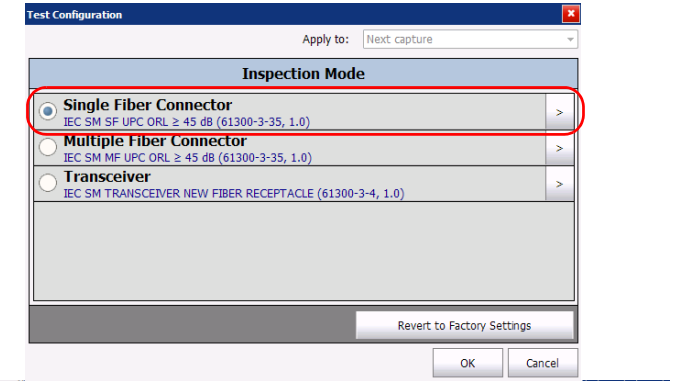


2. Select **FIP**.



3. If necessary, in the **Apply to** list, select **Next capture**.

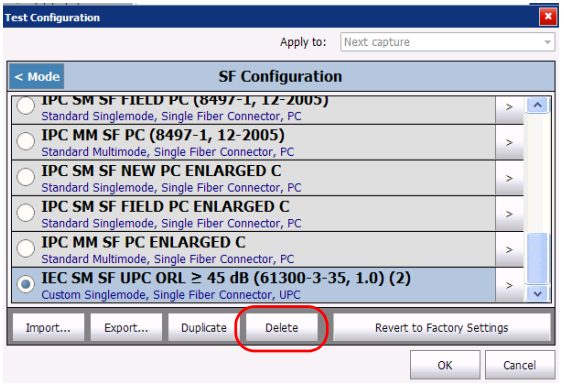
4. Choose the type of connector you want to use and tap the > button at the end of the row.



IMPORTANT

The application will not prompt you for confirmation before deleting a configuration.

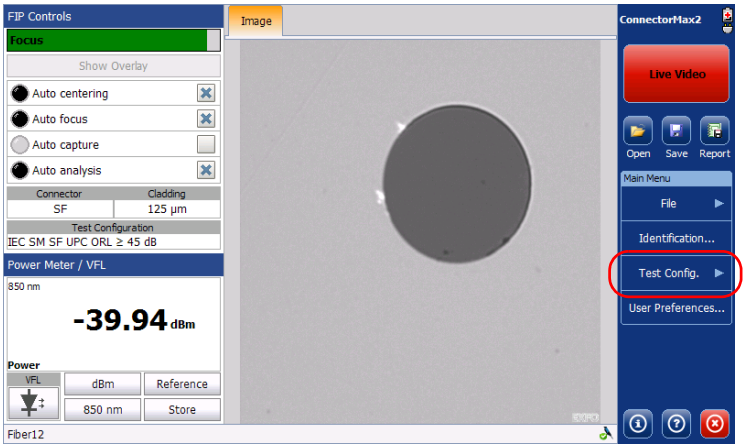
5. Select the row corresponding to the configuration you want to remove, then tap **Delete**.



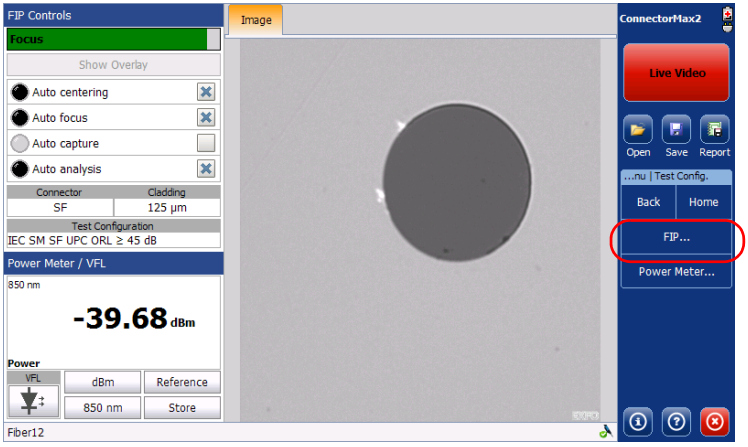
Note: *You cannot delete standard test configurations.*

To import test configurations:

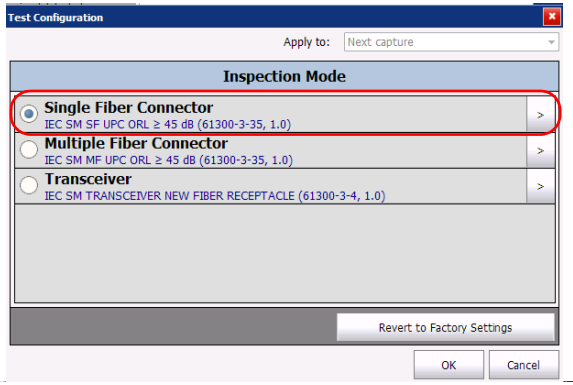
1. From the **Main Menu**, select **Test Config**.



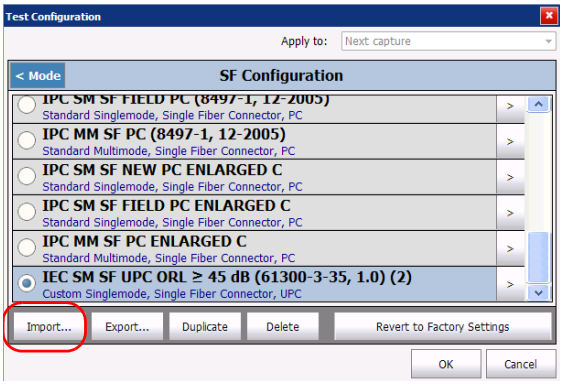
2. Select **FIP**.



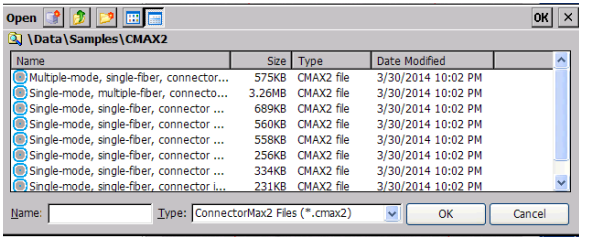
3. Choose the type of connector you want to use and tap the > button at the end of the row.



4. From the **FIP Configuration** window, tap **Import**.



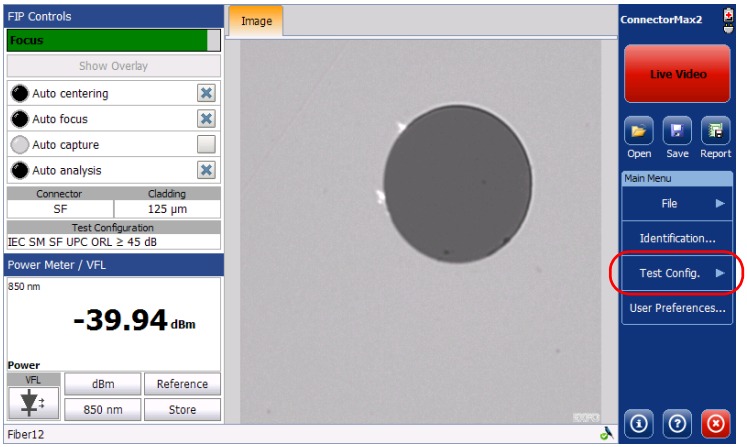
5. From the **Open** dialog box, select the file you want to import.



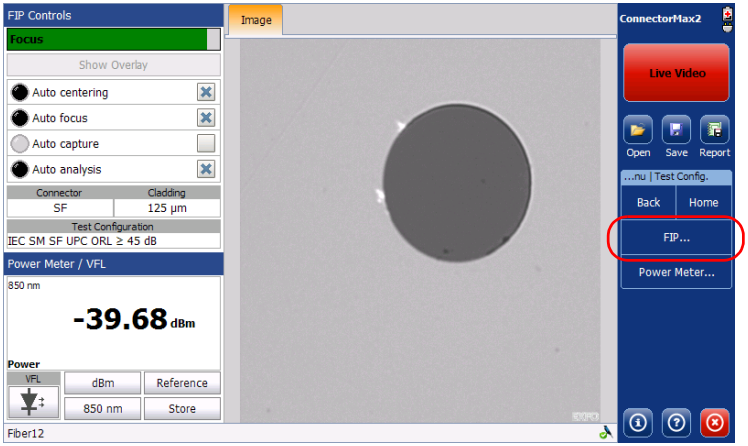
6. Tap **OK** to close the window.

To export test configurations:

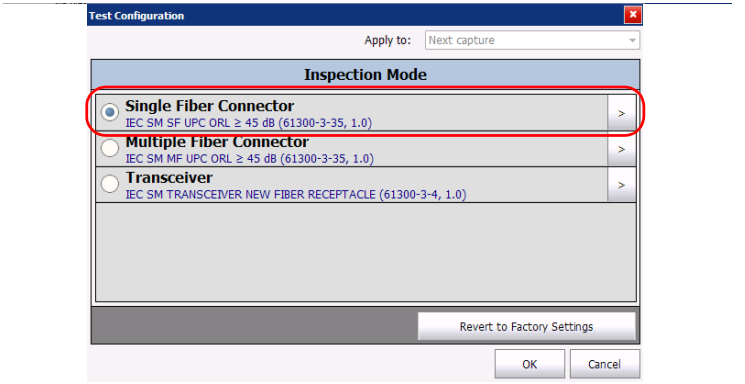
1. From the **Main Menu**, select **Test Config**.



2. Select **FIP**.



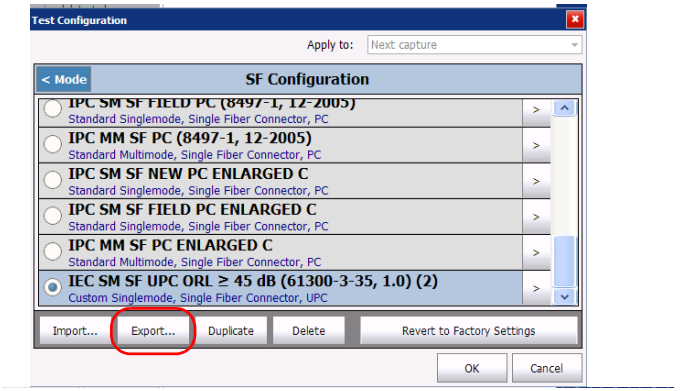
3. Choose the type of connector you want to use and tap the > button at the end of the row.



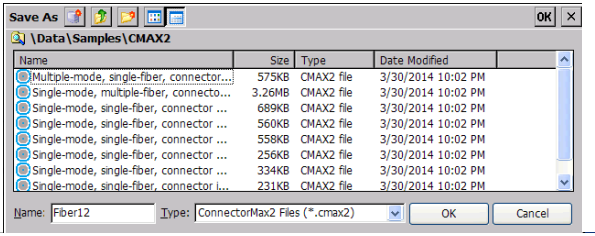
4. From the **FIP Configuration** window, select the row corresponding to the test configuration you want to export.

Note: *You cannot export standard test configurations.*

5. Tap **Export**.



6. From the **Save As** dialog box, select the folder where you want to export your file.



7. If desired, modify the file name.

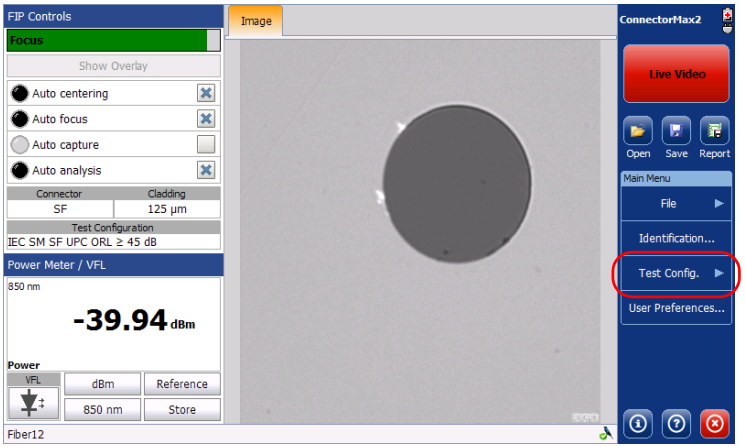
8. Tap **OK** to close the window.

Editing the Power Meter Test Configurations

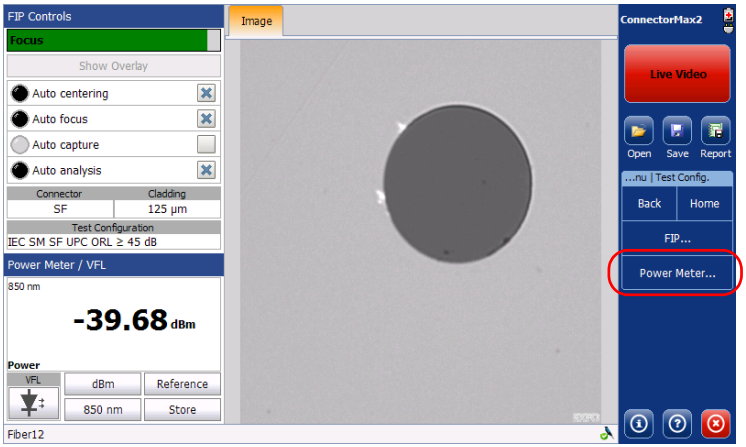
You can activate and set pass/fail threshold parameters for your power meter measurements. You can set thresholds for absolute power and insertion loss. You can set different pass/fail thresholds for each available test wavelength, or apply the same thresholds to all wavelengths. Values that are greater than the predefined thresholds are displayed in white on a red background. Values that are pass are displayed in green.

To edit the power meter test configurations:

1. From the **Main Menu**, select **Test Config.**



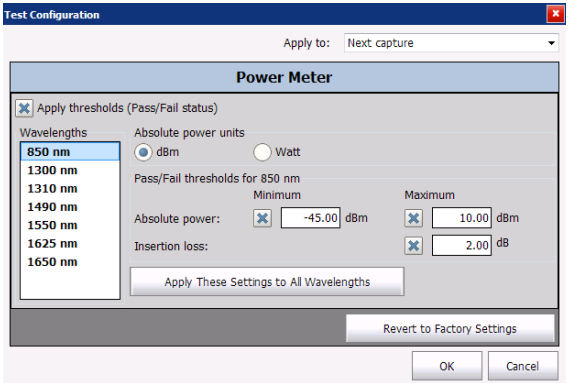
2. Select **Power Meter**.



3. In the **Apply to** list, select **Next capture**.
4. Select the desired wavelength.
5. Set the pass/fail thresholds for the selected wavelength.

Note: *You can apply the settings to all wavelengths.*

6. Choose the absolute power units.
7. If you want to see the pass/fail status, check the **Apply thresholds (Pass/Fail status)** option.



Reverting to Factory Settings

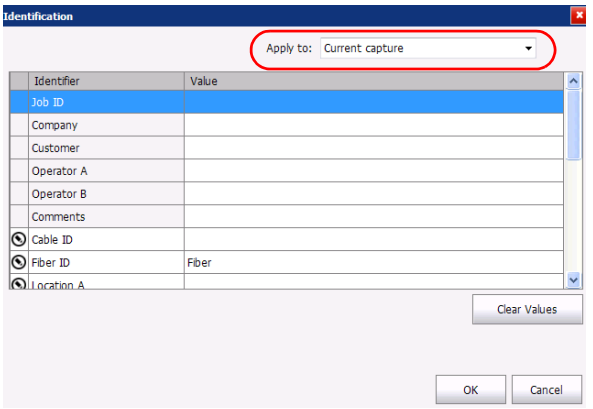
At any time in the application, you can revert to factory settings in your menus. However, the **Restore to Factory Settings** button is valid only for the window or tab where you use it.

Changing Fiber Information of Existing Captures

It is possible to modify the information for an existing capture. This information is provided by the automatic file naming. The procedure is almost the same as the one for autonaming but the changes apply to the current capture only.

To change fiber information:

1. From the **Main Menu**, tap **Identification**.
2. From the **Apply to** list, ensure that **Current capture** is selected.



3. Set the parameters as needed. For more information, see *Setting up Autonaming* on page 12.

4 Inspecting Fiber Ends

Viewing the fiber inspection is done using ConnectorMax2. You can start the application before or after connecting the probe, and the view on-screen will be automatically updated.

WARNING

Never look directly into a live fiber. It could cause serious eye damage. Always use your FIP-400B Fiber Inspection Probe.

Inspecting Fiber Ends (Single Fiber and Transceiver - Fiber Receptacles)

When you connect the FIP-400B Fiber Inspection Probe to your unit, you can view and inspect fiber ends right away. This direct viewing mode is known as the *Live* mode.

Since the available controls depend on the probe that is connected, if you disconnect the probe, the application will show an empty window. The controls become available again as soon as you reconnect the probe (no need to restart the application).

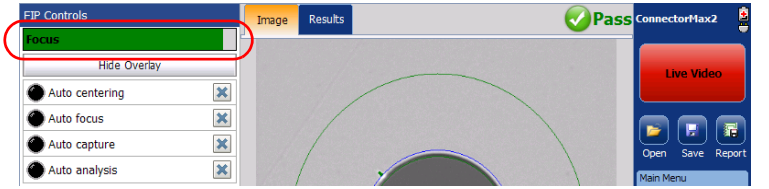
Note: *When the internal temperature of the FIP-430B is too low, the probe performs a warm-up that can take up to a minute.*

You can also capture images of your inspections to include in reports, or save them for future analyses. This is known as the *Capture* mode.

A digital watermark is added to the images generated by the application. This also applies to ConnectorMax1 files converted to the ConnectorMax2 format.

The focus indicator, which is displayed in the upper left part of the main window, indicates whether the current view is optimized for a capture. A green indicator shows a picture that can be captured and analyzed. Analysis will be more difficult with a yellow indicator, and impossible with a red indicator. A vertical black bar displays the peak focus level.

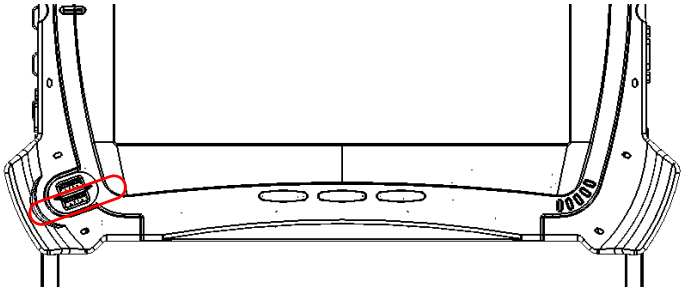
Note: *The peak focus level is shown only when the auto focus sequence is complete.*



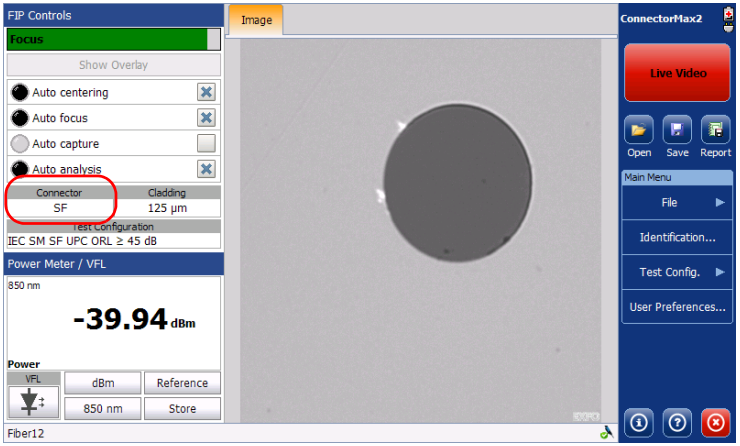
For more information on analysis, see *Analyzing Captures* on page 64.

To inspect fiber ends (single fiber) in Live mode:

1. Install a probe tip (see *Changing the Fiber Inspection Probe Tip* on page 9).
2. Insert the fiber into the probe tip.
3. Connect your Fiber Inspection Probe to your unit. On an FTB-500, connect the probe to the lower USB port located on the front of the unit.



4. Start ConnectorMax2 if it is not already started.
5. Ensure to configure the automatic file naming (see *Setting up Autonaming* on page 12).
6. Choose the type of connector you want to use (SF or Transceiver).



7. Depending on the probe you are using, proceed as follows:

- ➤ If you have an FIP-420B, activate the auto centering, then adjust the magnification level and the image focus to have the best view of the fiber end.
- ➤ If you have an FIP-430B, activate the auto centering and the auto focus.

  For more information, see *Analyzing Captures* on page 64.

8. If the fiber end is dirty, remove it from the probe, clean it and reinspect it.

9. Once you are satisfied with the inspection, when in high magnification level, press **Capture**.

OR

Press the Fiber Inspection Probe handset button.

10. Go to the next connector or close the application.

Setting Up Multifiber Inspection

Inspecting and analyzing multifiber connectors can be done separately for each fiber, or as a batch.

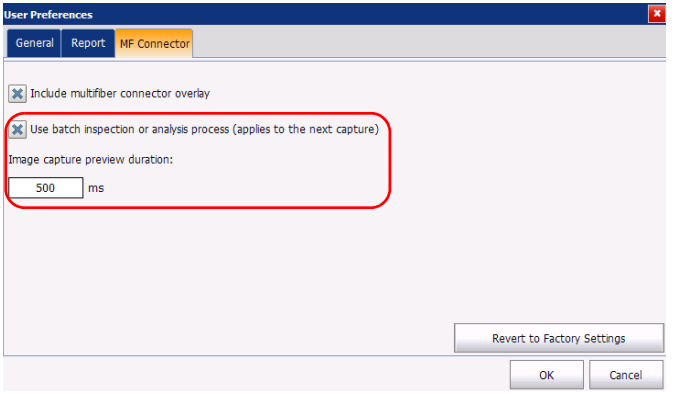
When the inspection and the analysis are done separately, there is a transition between the Live Video mode and the Capture mode after an image is captured.

To speed up the process of inspecting and analyzing connectors and fibers, you can use the batch inspection feature. With this feature, all fibers are captured and previewed one after the other for a configured period of time. Then the analysis is launched when all fibers are inspected.

To use the batch inspection and analysis process:

1. From the main window, select **User Preferences**.
2. Select the **MF Connector** tab.
3. Choose **Use batch inspection or analysis process (applies to the next capture)**.

   This enables the preview duration time box.



4. Enter the time you want the preview to last.
5. Tap **OK** to confirm your choice and close the window.

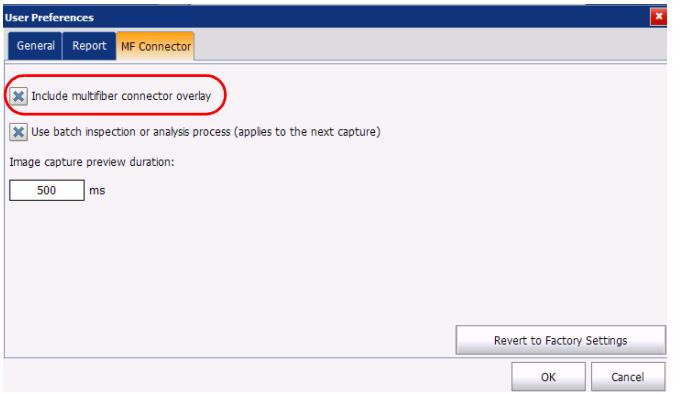
Displaying Multifiber Connector Overlay

By default, ConnectorMax2 displays the multifiber overlay only in high magnification. The overlay is used to see which of the connectors in a multifiber connector is being inspected. It is possible to see four fibers at a time when the overlay is displayed.

Note: *The FIP-410B probe does not display the overlay in multifiber.*

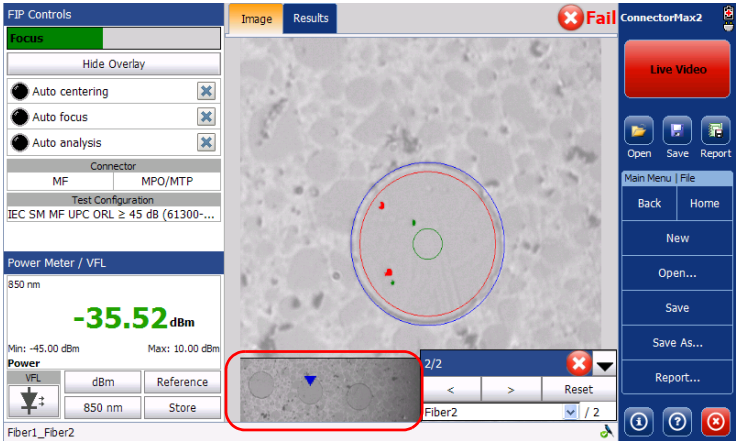
To display the multifiber connector overlay:

1. From the main window, select **User Preferences**.
2. Select the **MF Connector** tab.
3. Choose **Include multifiber connector overlay**.



4. Tap **OK** to confirm your choice and close the window.

In the main window, a blue arrow now indicates the fiber under test.



Inspecting Fiber Ends (Multifiber)

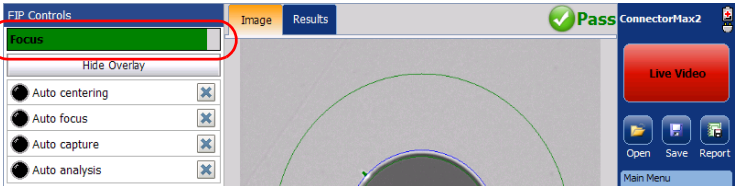
The multifiber inspection with a FIP-430B probe allows you to see multiple fibers at a time.

You can capture images of your inspections to include in reports, or save them for future analyses. This is known as the *Capture* mode.

A digital watermark is added to the images generated by the application. This also applies to ConnectorMax1 files converted to the ConnectorMax2 format.

The focus indicator, which is displayed in the upper left part of the main window, indicates whether the current view is optimized for a capture. A green indicator shows a picture that can be captured and analyzed. Analysis will be more difficult with a yellow indicator, and impossible with a red indicator. A vertical black bar displays the peak focus level.

Note: *The peak focus level is shown only when the auto focus sequence is complete.*

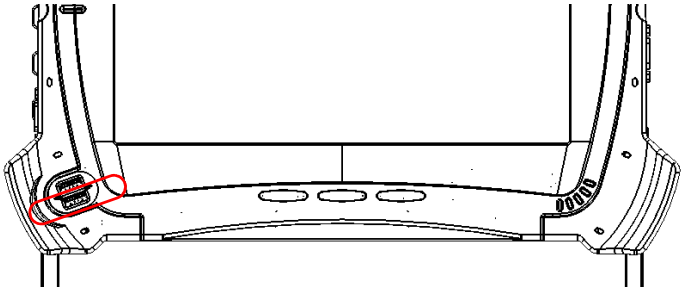


To speed up the process of inspecting and analyzing connectors and fibers, you can use the batch inspection feature. With this feature, all fibers are captured and previewed one after another for a configured period of time. Then the analysis is launched when all fibers are inspected.

For more information on analysis, see *Analyzing Captures* on page 64.

To inspect fiber ends (multifiber) in Live mode:

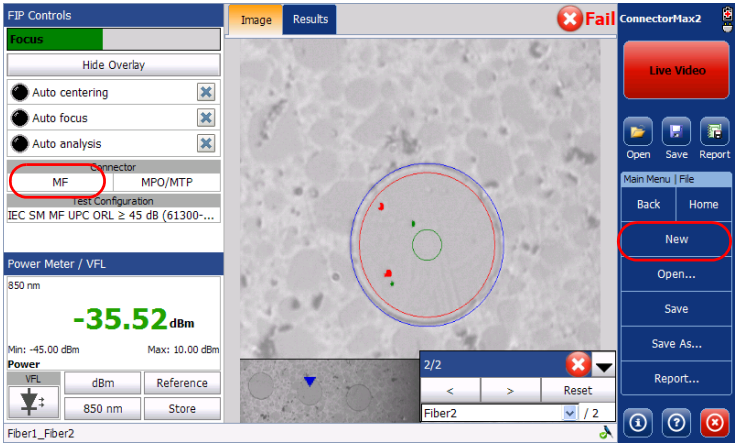
1. Install a probe tip (see *Changing the Fiber Inspection Probe Tip* on page 9).
2. Insert the fiber into the probe tip.
3. Insert replaceable APC or UPC nozzle in and tighten it (turn clockwise).
4. For patchcord inspection, insert a mating tip.
5. Connect your Fiber Inspection Probe to your unit. On an FTB-500, connect the probe to the lower USB port located on the front of the unit.



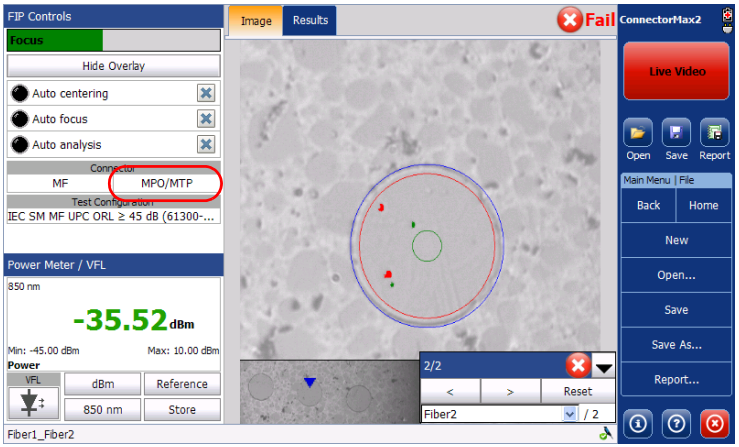
6. Start ConnectorMax2 if it is not already started.
7. Ensure to configure the automatic file naming (see *Setting up Autonaming* on page 12).
8. Choose the type of connector you want to use (MF).

   OR

   Tap **File**, then **New**.



9. Choose the type of connector you want to use between MTP/MPO (selected by default) or Optitap.



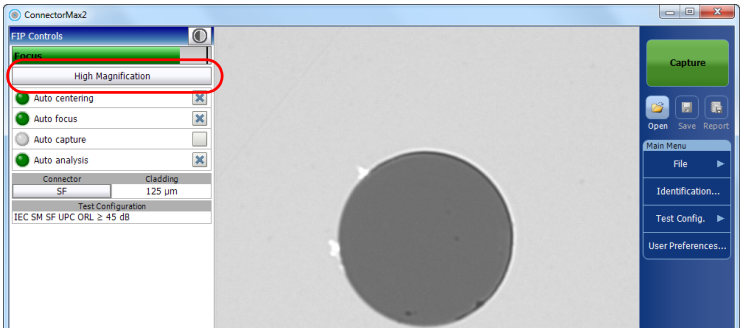
10. Depending on the probe you are using, proceed as follows:

- If you have an FIP-420B, activate the auto centering.
- If you have an FIP-430B, activate the auto centering and the auto focus.

  For more information, see *Analyzing Captures* on page 64.

11. Set the probe to **Low Magnification** and locate the first fiber.

12. Set the probe to **High Magnification**.



Note: *The FIP-420B and FIP-430B probes show a low magnification connector image in the overlay.*

13. Center the appropriate connector in the array:

- For multi-row tips, use the Y wheel to select the required fiber row.
- For multi-row and single-row tips, use the X wheel to select the required fiber.

14. View results on screen.

Note: *The auto-focus starts automatically only for the first fiber (FIP-430B only).*

➤ Hold the magnification control button located on the probe for one second to reactivate the auto-focus process (FIP-430B only).

OR

➤ Adjust focus manually.

15. If the fiber end is dirty, remove it from the probe, clean it and reinspect it.

16. When in high magnification level, press **Capture**.

OR

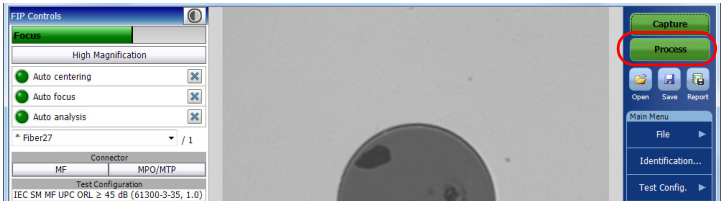
Press the Fiber Inspection Probe handset button.

17. If you are not using the batch inspection feature, return to **Live Video** mode. Repeat steps 13 to 17 until you reach the end of the connector.

18. If you are using the batch inspection feature, press **Process**.

OR

To continue the current connector inspection, return to **Live Video** mode.



19. To inspect a new connector, tap **File**, then **New**.

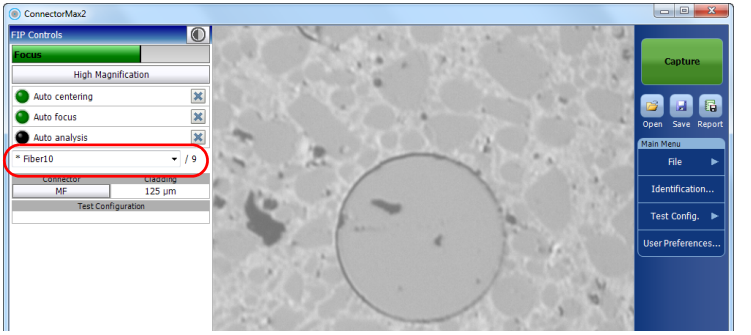
Retesting a Fiber (Multifiber)

Sometimes, a capture will show a fail status, but it could only be because the fiber is dirty and you want to clean it and test it again. However, if you have saved the file, the next capture you take will be incremented instead of replacing the current file.

In order to avoid this incrementation and end up with unwanted files, you can test a fiber again.

To retest a fiber in Live Video mode:

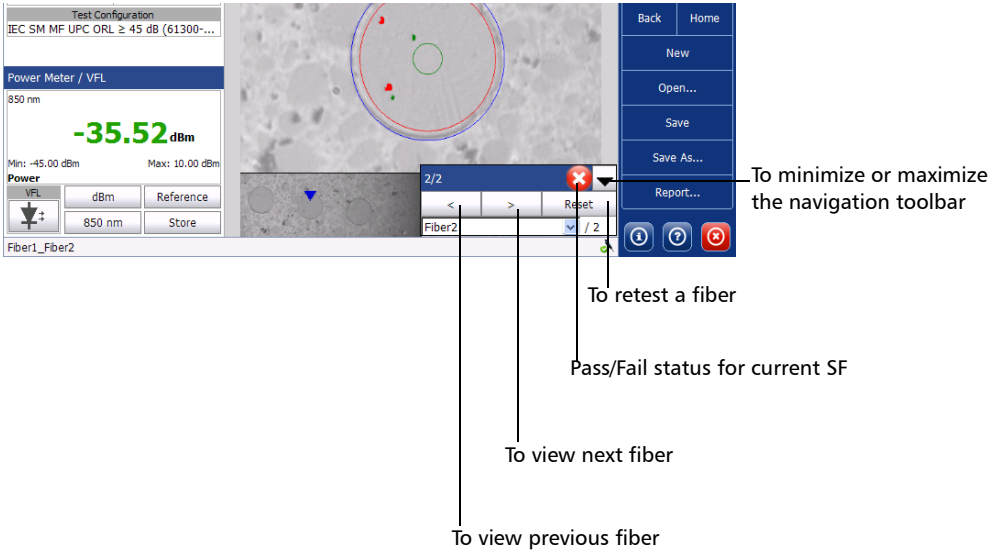
1. Use the list to navigate between the captured fibers.



2. Tap **Capture**.

To retest a fiber in Capture mode:

1. Use the list to navigate between the captured fibers.



2. Tap **Reset**.

Saving Files

In Capture mode, you can save the acquisition files manually for future reference.

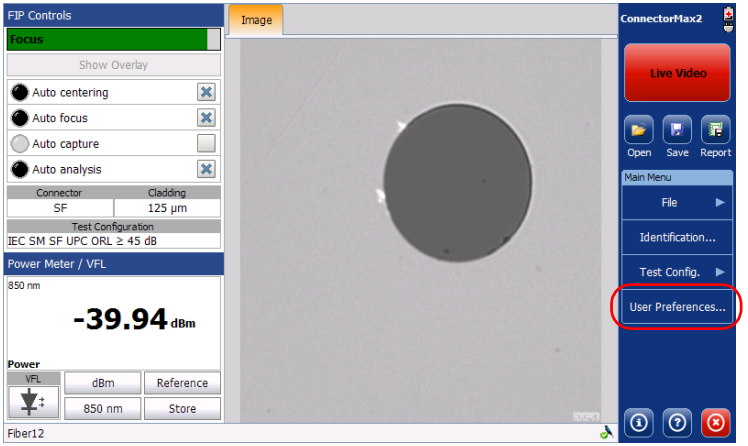
You can also set ConnectorMax2 so that it saves the capture automatically regardless of the result, or automatically when the result is Pass only.

Note: *Saving a file automatically after a capture is not possible in multifiber mode.*

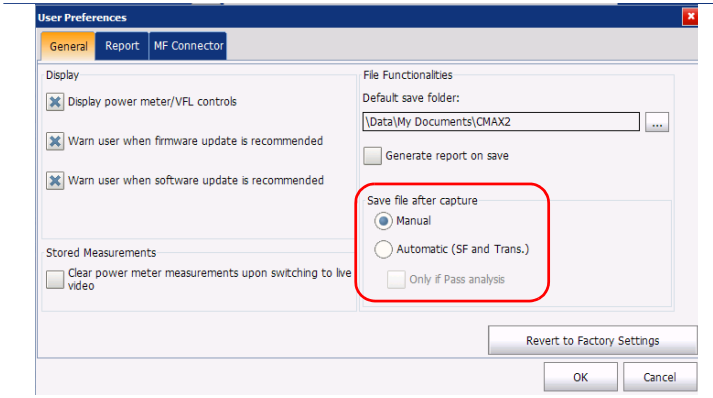
Note: *When you return to the Live mode, your file name structure will be automatically incremented or decremented so that you do not overwrite your work.*

To save files automatically, or automatically only when the status is set to Pass:

1. From the main window, select **User Preferences**.



2. Select the **General** tab.
3. Select whether you want the capture to be automatically saved regardless of the result (all models), saved if the result of the analysis is pass (only available with the FIP-420B and FIP-430B models), or select the manual save option if you only want to save specific files.



4. If you want to change the default location where the files will be saved, you can do so by using the ... button.
5. Tap **OK** to confirm your choice.

To save a file:

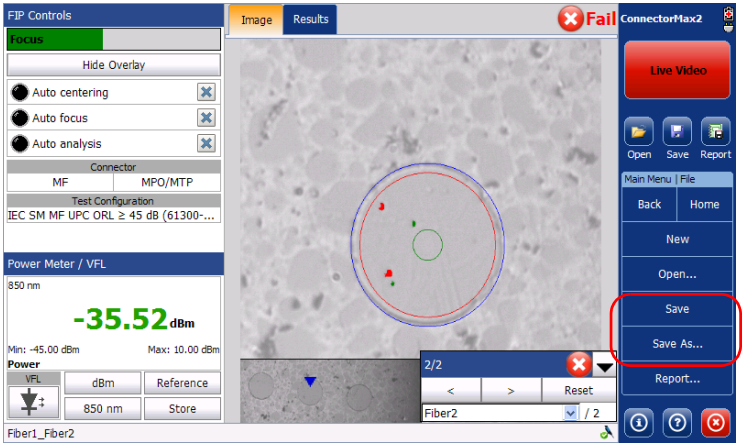
From the main window, tap the button.

OR

Select the **File** menu, then **Save** to overwrite an existing file.

OR

Select the **File** menu, then **Save As** to change the file name or location.



Note: *If you change the location for saving the files, this location will remain as the default location for the remainder of the work session, or until you change the location again.*

IMPORTANT

If you have enabled the Generate report on save option, the new report file will automatically overwrite the old one without notifying you.

Opening and Closing Files

You can open captured files directly from the application to view them. You can either open current .cmax2 files, .cmax files (not supported by MAX-700B and MAX-FIP), or a legacy image file taken from a previous fiber inspection.

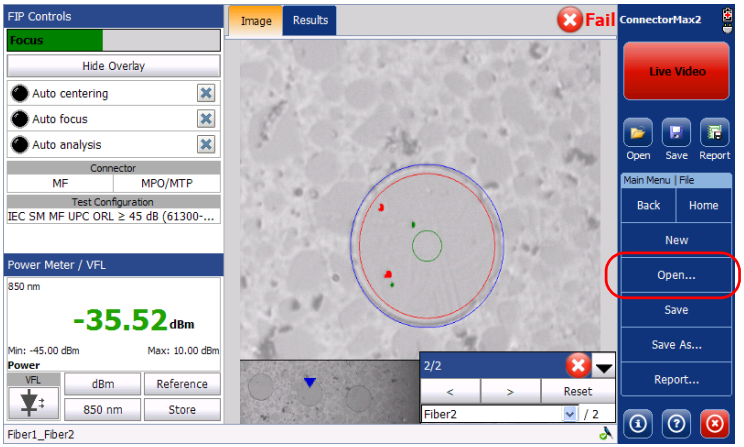
The .cmax files, when saved with the ConnectorMax 2 application, are compatible with ConnectorMax2 files. However, the .cmax2 files can be opened with the ConnectorMax 2 application only.

Note: *The accepted image formats for legacy files are .bmp, .jpg and .gif.*

Note: *Sample files are available on the platform.*

To open a file:

1. From the main window, select **File**, and then **Open**.



2. Select the desired file, and then tap **OK**.

Analyzing Captures

With the capture analysis option (FIP-420B and FIP-430B), you can perform automated pass/fail analyses according to the criteria you have set.

Note: *Analysis is not available for the FIP-410B.*

Depending on the fiber probe that you have, you may have access to the following features:

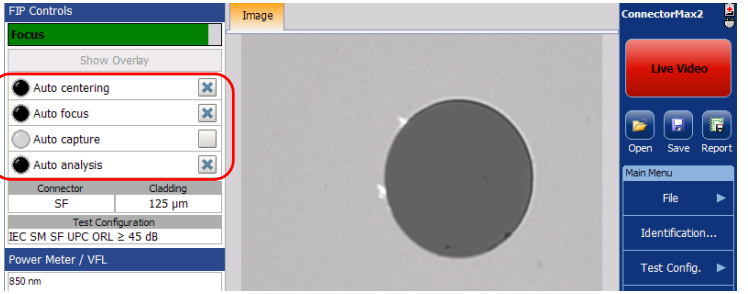
- auto centering: The auto centering displays the fiber in the middle of the image. It is compatible with all connector types and fiber with a cladding of 125 μm. The auto centering is enabled only in high magnification. Working with the auto centering feature can be useful with standard connectors. When inspecting special connectors, it is also possible to uncheck the auto centering check box.
- auto focus: The auto focus focuses on the connector image. It is enabled if the auto centering is activated and only in high magnification. The auto focus is only possible in Live video mode and if the focus is not done manually. It starts automatically when you insert an optical fiber connector. For more information, see *Fiber Inspection Probe Tip Compatibility Chart* on page 95.
- auto capture: The auto capture is possible with an acceptable focus level. It is enabled if the auto centering and auto focus are activated. The auto capture is possible only in high magnification. For the FIP-430B probe, the auto capture is not displayed when a multifiber connector is selected.
- auto analysis: The auto analysis displays 4 inspection zones: core, cladding, adhesive, and contact. It is enabled only in high magnification. When a multifiber connector is selected, the auto analysis is available for zone A and B only.

An indicator is located at the left of the available features. The color of this indicator shows the status of the feature:

Color	Meaning
Grey	The item is not selected
Green	The item is selected and the conditions allow the analysis.
Black	➤ The item is selected but the conditions do not allow the analysis. ➤ The auto focus process was aborted by the user.
Red	The application is in timeout state because it is unable to complete the auto focus process. There are three ways to reapply the auto focus: ➤ Clear the auto focus check box and select it again ➤ Press the FIP-400B magnification button for 1 second ➤ From Capture mode, return to Live video mode

To select the analysis features:

Select the features you need for the capture.

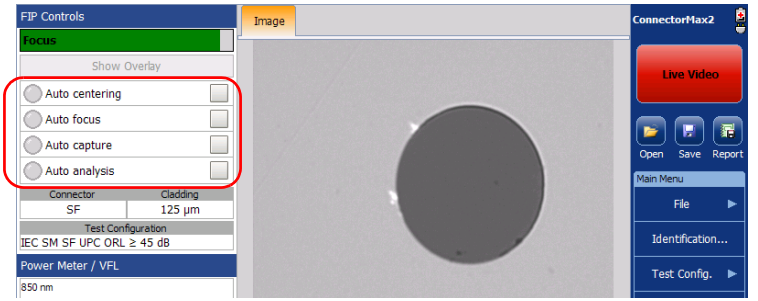


The analysis results are available as soon as you tap **Process**. Fibers are analyzed sequentially. The process time depends on the number of fibers to be analyzed.

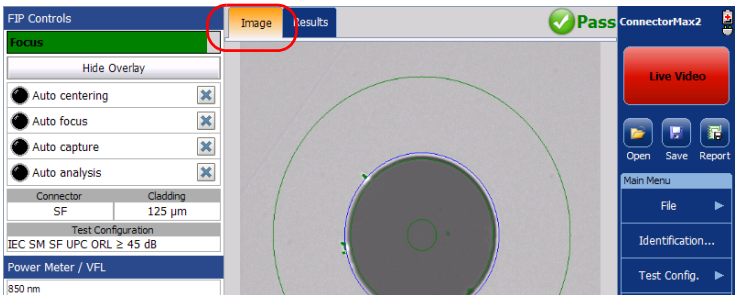
The global status is displayed in the upper right part of the window after an analysis. The **Image** and **Results** tabs are displayed when a capture is made (using the button from the button bar or on the probe). When you are ready to inspect another fiber, you have to return to the Live video mode first.

To disable the analysis features:

Clear the check box next to the corresponding features.



➤ The **Image** tab shows the snapshot of the fiber when you captured it. You can see all the anomalies that have been detected.

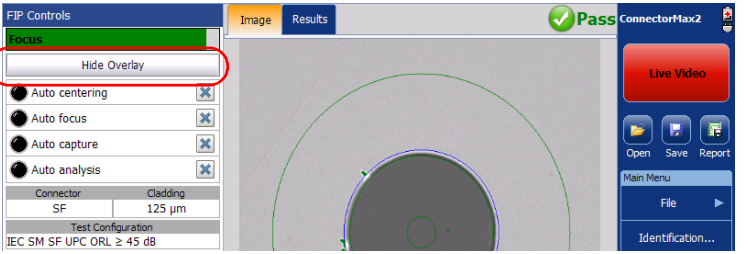


The overlay shows the status of the analysis, the status per zone, the analysis zones, any anomaly (defects, scratches) found on the fiber endface, and the global status in the upper right part of the main window. The color of the circles shows the status of the analysis zone:

- ➤ Green: pass
- ➤ Blue: no analysis was performed or the function is disabled
- ➤ Red: fail

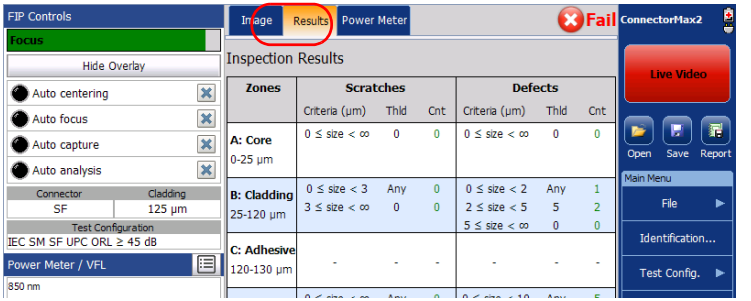
Note: *You can change the diameter of the analysis zones. For more information, see* Managing and Selecting Test Configurations *on page 20.*

By default, the overlay is shown after an analysis, but you can hide it using the **Hide Overlay** button.



➤ The **Results** tab shows detailed information for scratches and defects detected in each test zone and the corresponding test status.

Note: *When there is no analysis, the **Results** tab does not appear.*

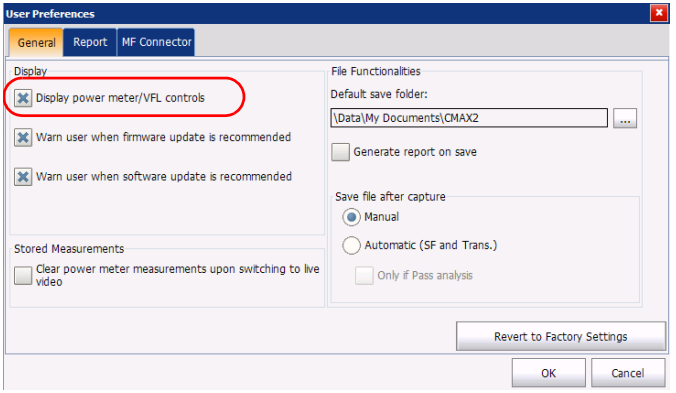


Displaying or Hiding the Power Meter and VFL Controls

By default, the power meter and VFL controls are displayed in the left side bar of the main window. However, you can hide them. This option is present on all platforms even if no power meter or VFL is available, except on computers.

To display or hide the power meter and VFL controls:

1. From the main window, select **User Preferences**.
2. Select the **General** tab.
3. Under **Display**, select **Display power meter/VFL controls**.



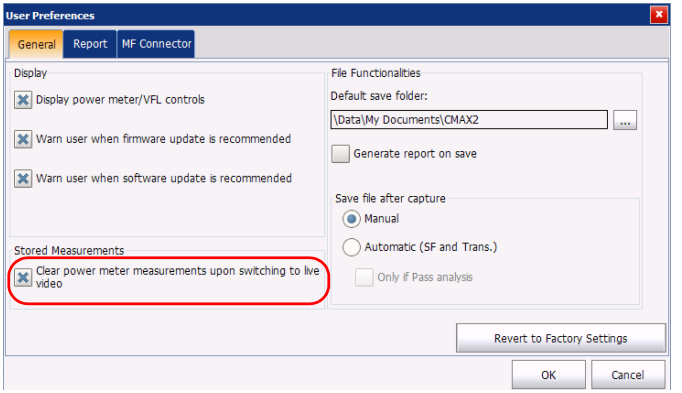
4. Tap **OK** to confirm your choice and close the window.

Clearing Power Meter Measurements Automatically

Measurements can be automatically erased from memory upon returning to the Live video mode. This option is present on all platforms even if no power meter is available, except on computers.

To clear power meter measurements automatically:

1. From the main window, select **User Preferences**.
2. Select the **General** tab.
3. Under **Stored Measurements**, select **Clear power meter measurements upon switching to live video**.



4. Tap **OK** to confirm your choice and close the window.

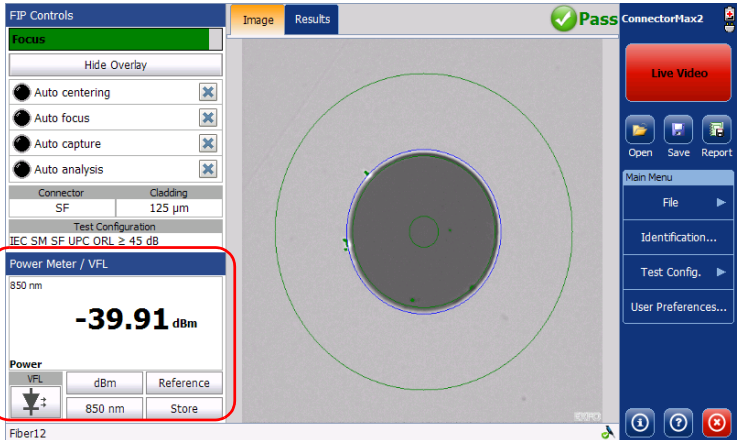
Measuring Power or Insertion Loss

If your unit is equipped with a power meter, ConnectorMax2 provides power meter measurements. The power meter view displays current power and loss measurements. This view is available either in Live mode or Capture mode.

For the MAX-700B platform, you can either perform measurements manually and select each wavelength yourself, or you can use the auto-wavelength and auto-switching modes of your source.

Note: *When there is a selected wavelength and the source is in Auto mode, the power meter switches automatically to Auto mode.*

The correction factors and the offset nulling are not supported by ConnectorMax2. For more information on your power meter, refer to the corresponding user guide.

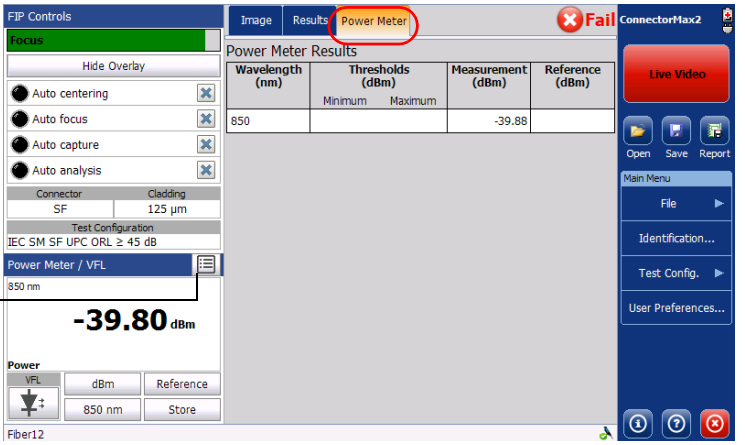


Viewing Power Meter Results

You can view the power meter results stored in memory in a separate tab (see *Measuring Power or Insertion Loss* on page 71). The global pass/fail status also takes the power meter measurements into account.

To view power or insertion loss measurements:

Select the **Power Meter** tab. All your measurements are displayed in the order they were performed.



Switches between current measurement and stored measurement

Identifying Fiber Faults Visually with the VFL

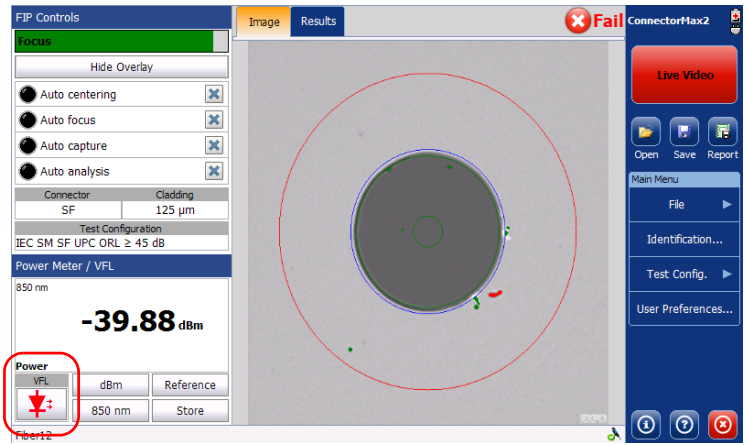
Your unit can be equipped with an optional visual fault locator (VFL) to help you identify bends, faulty connectors, splices and other causes of signal loss. It can also help the person at the other end of the link to identify the fiber under test, which could be particularly useful when working with cables containing many fibers.

From its dedicated port, the VFL emits a red signal which becomes visible at the location of a fault on the fiber. This signal can be continuous (CW) or blinking (1 Hz).

The VFL is available either in Live mode or Capture mode. It can be switched from one state to another (on, off or blink).

WARNING

When the VFL is active, the VFL port emits visible laser radiation. Avoid exposure and do not stare directly into the beam. Protect any unused port with a cap.



Creating Reports

You can create a report based on the current inspection and analysis results. This report can be saved in the following formats: PDF, HTML and MHTML.

However, HTML and MHTML reports are not supported on the MAX-700B and MAX-FIP platforms.

Note: *The report creation is available only in Capture mode.*

Note: *The report may include the OPM results or not. Even if there are no OPM results, the report title still mentions OPM results and the global pass/fail includes both FIP and OPM results.*

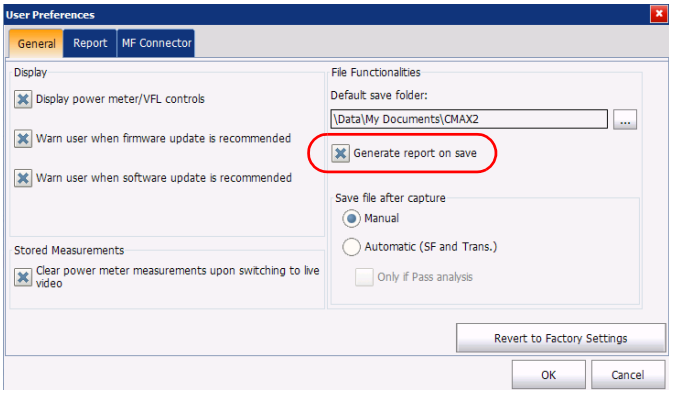
If you have selected the **Generate report on save** option, a report is automatically created when you save your capture.

IMPORTANT

Your application has been designed for optimal viewing of the fonts shown in reports in all supported languages. Ensure the language settings for Non-Unicode applications remains to English (United States).

To activate automated report creation:

1. From the main window, select **User Preferences**.
2. Select the **General** tab.
3. Under **File Functionalities**, select **Generate report on save**.



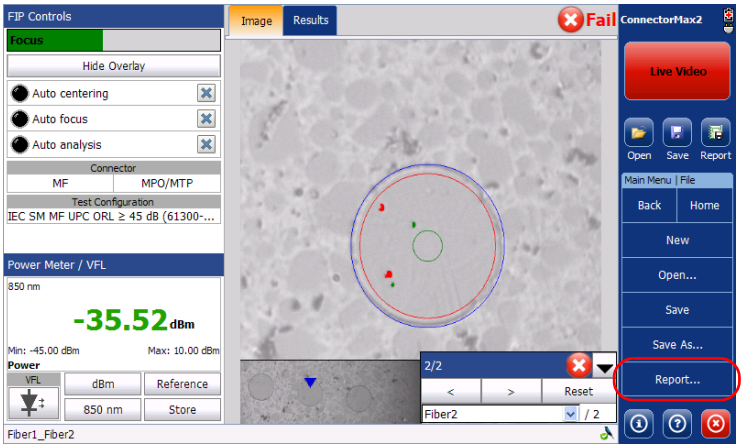
4. Tap **OK** to confirm your choice and close the window.

To create a report manually:

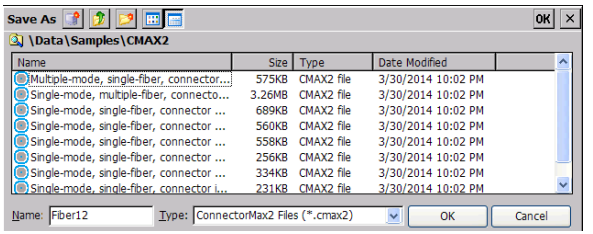
1. From the main window, tap  .

OR

Select the **File** menu, then **Report**.



2. From the **Save As** dialog box, select a folder or create one to save your file.



3. If desired, modify the file name.

4. Tap **OK** to close the window.

You can now open the report with PDF reader from the location where the file was saved. The HTML and MHTML reports are compatible with Internet Explorer (IE 7 and latest), and the latest software release of FireFox and Google Chrome.

Updating the Firmware and Software

The FIP-400B is designed to provide automatic software update notifications and firmware updates whenever necessary. This allows you to benefit from the updates of your unit each time you use it. The firmware and software updates can be recommended or required.

To notify you, a message box appears each time a firmware or software update is recommended.

When a firmware update is required, the application shows an error if you choose not to update the FIP-400B. If a firmware update fails, ConnectorMax2 performs a fault recovery procedure the next time the FIP-400B is connected.

The FIP-400B becomes unavailable if a software update is required or when a firmware update is in progress. The Live video button becomes disabled in capture view and in video view, the capture button becomes disabled as well.

CAUTION

Do not disconnect the probe or turn off the unit when an update is in progress.

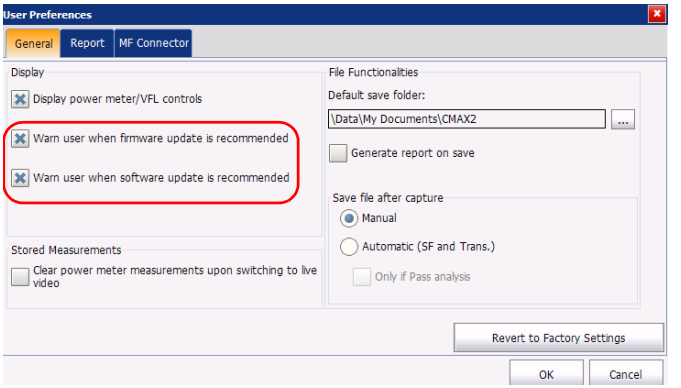
Once an update is started, follow the indications to complete the process.

IMPORTANT

During the automatic upgrade of the firmware of your FIP-400B probe, you may be prompted to install USB drivers for your instrument. In that case, you need to map your fiber inspection probe with the necessary driver.

To be notified of the firmware or software updates automatically:

1. From the main window, select **User Preferences**.
2. Select the **General** tab.
3. Under **Display**, choose the appropriate option.



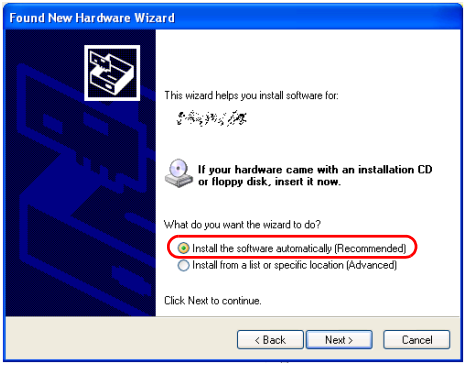
4. Tap **OK** to confirm your choice and close the window.

Note: *By default, both check boxes are selected.*

To configure the USB driver for your fiber inspection probe:

1. Confirm the firmware upgrade when ConnectorMax2 prompts you.
2. During the upgrade process, the **Found New Hardware** wizard can be displayed. In this case, if the application prompts you to connect to Windows Update to search for software, select **No, not this time**, and then click **Next**.

3. Make sure that the **Install the software automatically (Recommended)** option is selected, and click **Next**.



4. The wizard may display a warning message indicating that the hardware has not passed Windows Logo testing. In this case, since it has been verified that the drivers work with Windows, click **Continue Anyway**.
5. Follow the on-screen instructions, and then click **Finish** when the installation is complete.
6. When the application displays an error message indicating that the FIP firmware update has failed, click **OK** to close the message.
   The automatic upgrade process will continue normally since the driver has been associated with your fiber inspection probe already.

Note: *If the application continues to display the firmware update error message even after the driver has been associated correctly with your fiber inspection probe, contact technical support.*

5 Maintenance

General Maintenance

To help ensure long, trouble-free operation:

- 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 and let the unit dry completely.

WARNING

The use of controls, adjustments and procedures other than those specified herein may result in exposure to hazardous situations or impair the protection provided by this unit.

Recycling and Disposal (Applies to European Union Only)

For complete recycling/disposal information as per European Directive WEEE 2012/19/UE, visit the EXFO Web site at www.exfo.com/recycle.

6 Troubleshooting

Solving Common Problems

The table below presents common problems and their solutions.

Problem	Solution
I cannot analyze an image	➤ The image is not focused properly; use the focus knob on the probe until the focus indicator displays the best value available. Yellow indicates an acceptable range, and green shows the preferred range. ➤ Ensure that the probe is connected properly. ➤ Ensure that the connector is aligned properly. ➤ Ensure that the focus value is sufficient to perform the analysis. ➤ Ensure that you are using a high magnitude level.
I cannot see the fiber on-screen	➤ Connect the probe to the USB port of the unit. ➤ Verify the probe connection status to see if ConnectorMax2 is detecting the probe properly. If the probe is connected properly, close ConnectorMax2 and open it again. ➤ If you are working with a FTB-500, ensure that the probe is connected to the lower USB port located in front of the unit.
The FIP internal temperature is too high	Let the FIP cool down.
The FIP has encountered a critical internal error	Contact EXFO for technical support.
Violation of EXFO embedded software copyright	Contact EXFO for technical support.
The auto centering does not function properly	➤ Clean the connector. ➤ Adjust the image focus.

Problem	Solution
The analysis was interrupted before it was complete FIP_ERROR_CODE_101	➤ Ensure that the Live video mode is selected. ➤ Adjust the image settings.
A connection error occurred	➤ Ensure that the probe is not currently in use by another application. ➤ Try to connect the probe again.
An APC fiber is connected to an FIP-430B probe, the blue LED is blinking and the motor is not running	When the fiber connector is detected, this will then initiate the auto-focus sequence.
Refresh rate is very low	➤ Ensure that the CPU throttling is not in degrade mode. ➤ Choose another power scheme which is not Max Battery. For more information about power scheme, refer to the power management options section in your platform user guide.
On a computer, in Live video mode, the probe no longer works when it loses its focus	Tap anywhere in the application window to bring it back to the front.
The firmware update fails when the driver installation process is too long.	Disconnect the probe and try to connect it again.

Problem	Solution
On a Dell computer, the same image is displayed twice, one on top of the other, when the Dell Webcam Central software is installed and the Show Original Video option is enabled.	Ensure to disable the Show Original Video option.
An error message regarding the initialization of the application may appear when starting the ConnectorMax2 application.	You must install .NET Framework 3.5 SP1 or higher on your unit.

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.com.

If 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.

Viewing Information about ConnectorMax2

You can view information about ConnectorMax2 such as the version number and contact information for technical support in the **About** window.

To view ConnectorMax2 information:

From the main window, tap  .

Viewing Online Help

You can view the online help for ConnectorMax2 at any time.

To view the online help:

From the main window, tap  .

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.

7 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.

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 92). 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 92).

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 10,
Yu Sheng Industrial Park (Gu Shu Crossing), No. 467,
National Highway 107,
Xixiang, Bao An District,
Shenzhen, China, 518126

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

A Technical Specifications

IMPORTANT

The following technical specifications can change without notice. The information presented in this section is provided as a reference only. To obtain this product's most recent technical specifications, visit the EXFO Web site at *www.exfo.com*.

SPECIFICATIONS [a]

Size (H x W x D)	47 mm x 42 mm x 162 mm (1 7/8 in x 1 5/8 in x 6 3/8 in) [b]
Weight	0.3 kg (0.66 lb)
Resolution	0.55 µm
Camera sensor	Five-megapixel CMOS
Visual detection capability	<1 µm
Field of view	304 µm x 304 µm (high mag) 608 µm x 608 µm (mid mag) 912 µm x 912 µm (low mag)
Light source	Blue LED
Lighting technique	Coaxial
Capture button	Available on all models
Magnification button	Available on all models
Digital magnification	Three levels
Connector	USB 2

Note

a. Typical.

b. Measurement excluding tip and including strain relief.

GENERAL SPECIFICATIONS

Temperature	operating	–10 °C to 50 °C
	storage	–40 °C to 70 °C
Relative humidity		0 % to 95 % non-condensing

ACCESSORIES

Standard	Optional	
Video inspection probe (FIP-410B/420B)	FIPT-BOX	Plastic case divided into various compartments for tips
FC-SC tip for bulkhead	GP-10-2175	Protective cap and cord assembly for FIP-400/400B
U25M universal patch cord tip for 2.5 mm ferrule	GP-10-094	Soft pouch for FIP-400 and FIP-400B
Plastic case with various compartments for tips		

B Fiber Inspection Probe Tip Compatibility Chart

The table below establishes the Fiber Inspection Probe tip compatibility with the different operations: fiber inspection, auto analysis (option), auto focus (option), and auto detection (option) provided with the ConnectorMax2 application:

Tip Description	Tip Code	Inspection (all models)	Analysis (FIP-420B and FIP-430B)	Auto focus (FIP-430B)	Connector Auto detection (FIP-430B)
Uni.2.5mm for PC connector	FIPT-400-U25M	OK	OK	OK	OK
Uni.2.5mm for APC connector	FIPT-400-U25MA	OK	OK	OK	OK
Uni.1.25mm for PC Connector	FIPT-400-U12M	OK	OK	OK	OK
Uni.1.25mm for APC connector	FIPT-400-U12MA	OK	OK	OK	OK
FC APC tip for bulkhead adapter	FIPT-400-FC-APC	OK	OK	OK	OK
FC and SC tip for bulkhead adapter	FIPT-400-FC-SC	OK	OK	OK	OK
ST for UPC bulkhead adapter	FIPT-400-ST	OK	OK	OK	OK
E-2000 for PC bulkhead	FIPT-400-E2000	OK	OK	OK	NO
E-2000 for APC bulkhead adapter	FIPT-400-E2000-APC	OK	NO	OK	NO
FIPT-400-FC-SC-A6 bulkhead adapter	FIPT-400-FC-SC-A6	OK	OK	OK	NO
MU for UPC bulkhead adapter	FIPT-400-MU	OK	OK	OK	OK

Fiber Inspection Probe Tip Compatibility Chart

Tip Description	Tip Code	Inspection (all models)	Analysis (FIP-420B and FIP-430B)	Auto focus (FIP-430B)	Connector Auto detection (FIP-430B)
MU-L for UPC bulkhead adapter	FIPT-400-MU-L	OK	OK	OK	OK
149 mm, Extended MU tip for PC bulkhead adapter	FIPT-400-MU-L-149	OK	OK	OK	NO
ODC 4 Pin Plug (female) Guide tip	FIPT-400-ODC-4PIN-P	OK	OK	OK	OK
ODC Socket (male) tip	FIPT-400-ODC-S	OK	OK	OK	OK
ODC Universal Guide tip	FIPT-400-ODC-U	OK	OK	OK	OK
ODC 2 Pin Plug (female) Guide tip	FIPT-400-ODC-2PIN-P	OK	OK	OK	OK
D4 bulkhead adapter	FIPT-400-D4	OK	OK	OK	OK
FIPT-400-U20M2 is for male ferule connector	FIPT-400-U20M2	OK	OK	OK	OK
FIPT-400-Lemo for bulkhead adapter	FIPT-400-Lemo	OK	OK	OK	OK
OPTITAP for APC bulkhead adapter	FIPT-400-OTAP-APC	OK	NO	NO	NO
MT/APC type OptiTip(tm) and OptiTap multifiber adapter for male and female connectors	FIPT-400-OTAP-MTP-APC	OK	OK	OK	OK

Tip Description	Tip Code	Inspection (all models)	Analysis (FIP-420B and FIP-430B)	Auto focus (FIP-430B)	Connector Auto detection (FIP-430B)
LC for PC bulkhead	FIPT-400-LC	OK	OK	OK	OK
LC for APC bulkhead adapter	FIPT-400-LC-APC	OK	OK	OK	OK
LC for bulkhead adapter 60 Degree Angled	FIPT-400-LC-A6	OK	OK	OK	NO
Extended LC tip for PC bulkhead adapter	FIPT-400-LC-L	OK	OK	OK	NO
137 mm, Extended LC tip for PC bulkhead adapter	FIPT-400-LC-L-137	OK	OK	OK	NO
LX5 for UPC bulkhead adapter	FIPT-400-LX.5	OK	OK	OK	OK
LX5 for APC bulkhead adapter	FIPT-400-LX5-APC	OK	NO	OK	OK
MTP/APC Tip for bulkhead adapter - Extended & Improved	FIPT-400-MTPA2	OK	OK	OK	OK
FIPT-400-MTP2 bulkhead adapter	FIPT-400-MTP2	OK	OK	OK	OK
Bulkhead adapter Westover	FIPT-400-ADAPTER	OK	N/A	N/A	N/A
SMA bulkhead adapter	FIPT-400-SMA	OK	NO	OK[a]	OK[a]
SMA male connector	FIPT-400-SMAM	OK	NO	OK[a]	OK[a]

Fiber Inspection Probe Tip Compatibility Chart

Tip Description	Tip Code	Inspection (all models)	Analysis (FIP-420B and FIP-430B)	Auto focus (FIP-430B)	Connector Auto detection (FIP-430B)
Uni. 1.6 for PC connector	FIPT-400-U16M	OK	NO	OK	OK
MTRJ bulkhead adapter	FIPT-400-MTRJ	OK	NO	NO	NO
SC APC for bulkhead	FIPT-400-SC-APC	OK	OK	OK	OK
Extended SC tip for PC bulkhead adapter	FIPT-400-SC-L	OK	OK	OK	NO
149 mm Extended SC tip for PC bulkhead adapter	FIPT-400-SC-L-149	OK	OK	OK	NO
SC for APC bulkhead adapter – extended	FIPT-400-SC-APC-L	OK	NO	OK	NO

a. Only with a 125 μm ferrule.

Contact your vendor for additional information regarding the most recent Fiber Inspection Probe tips that are not listed above.

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NOTICE
通告

CHINESE REGULATION ON RESTRICTION OF HAZARDOUS SUBSTANCES
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和含量

O	Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X	Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

Part Name 部件名称	Toxic or hazardous Substances and Elements 有毒有害物质和元素					
	Lead 铅 (Pb)	Mercury 汞 (Hg)	Cadmium 隔 (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 电子和电子组件	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

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 [a]	5	

a. If applicable.
如果适用。

P/N: 1066789

www.EXFO.com · info@exfo.com

CORPORATE HEADQUARTERS	400 Godin Avenue	Quebec (Quebec) G1M 2K2 CANADA Tel.: 1 418 683-0211 · Fax: 1 418 683-2170
EXFO AMERICA	3400 Waterview Parkway Suite 100	Richardson, TX 75080 USA Tel.: 1 972-761-927 · Fax: 1 972-761-9067
EXFO EUROPE	Winchester House, School Lane	Chandlers Ford, Hampshire S053 4DG ENGLAND Tel.: +44 2380 246 800 · Fax: +44 2380 246 801
EXFO ASIA-PACIFIC	62 Ubi Road 1, #09-01/02 Oxley Bizhub 2	SINGAPORE 408734 Tel.: +65 6333 8241 · Fax: +65 6333 8242
EXFO CHINA	Beijing Global Trade Center, Tower C, Room 1207, 36 North Third Ring Road East, Dongcheng District	Beijing 100013 P. R. CHINA Tel.: +86 (10) 5825 7755 · Fax: +86 (10) 5825 7722
EXFO SERVICE ASSURANCE	270 Billerica Road	Chelmsford MA, 01824 USA Tel.: 1 978 367-5600 · Fax: 1 978 367-5700
EXFO FINLAND	Elektroniikkatie 2	FI-90590 Oulu, FINLAND Tel.: +358 (0) 403 010 300 · Fax: +358 (0) 8 564 5203
TOLL-FREE	(USA and Canada)	1 800 663-3936

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