



Test & Inspection

FOCIS Lightning

**Fiber Optic Connector Inspection System
Quick Reference Guide**

www.AFLglobal.com

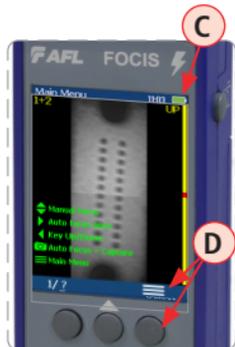
Battery Charging and Operation

- Plug the included AC Charger into AC outlet.
- Connect charger plug into 5 VDC jack (A) on FOCIS Lightning.
- LED (B) indicates charging status as follows:
 - **OFF** - AC not connected
 - **RED** - Charging battery
 - **GREEN** - Fully charged
 - **RED/GREEN flashing** - Charging error.
Verify correct 5VDC 2A charger is used. Allow to cool before charging.



- FOCIS Lightning charges while operating.
- Battery icon (C) indicates battery state as follows:

-  - AC connected; charging, not fully charged
-  - AC connected; charging, fully charged
-  - Battery operation, fully charged
-  - Battery operation, partially charged
-  - <15 min Battery operating time remaining



How to View Device Information Menu

- From the Live Image mode, press Menu (D).
- Use Up/Down  arrows to select Device Info option (E).
- Press Select (F) to display the Device Info: device name, serial number, controller version number, user interface version number.

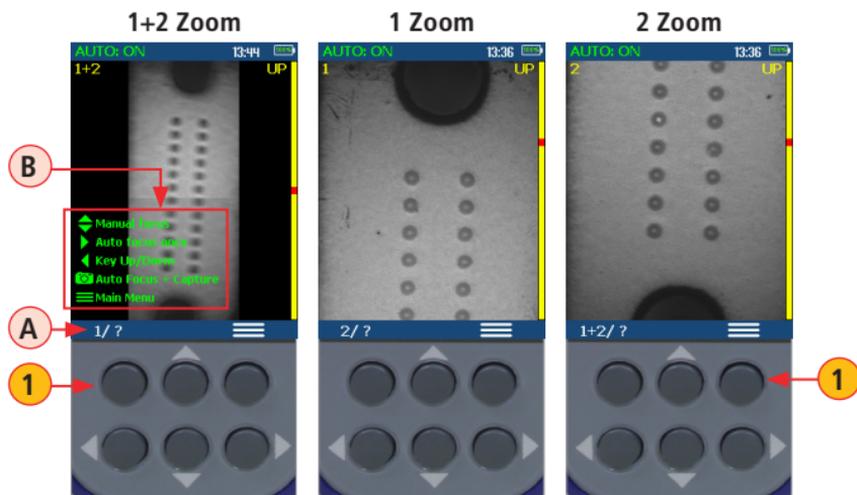


MPO Live Image Mode Features

Buttons Functionality

- 1/? Zoom/Help** soft button provides several functions as follows:
 - Short press to toggle '1+2' > '1' > '2' zoom levels, where:
 - '1+2' displays the entire end-face image
 - '1' displays the upper half of the full end-face image
 - '2' displays the bottom half of the full end-face image
 - Label **A** above this button indicates the "next zoom" settings
 - Press and hold to display help tips **B** about buttons usage.

2 Menu ≡ Button



Press to display the Main menu that allows the user to set preferences, manage saved test results and perform other non-test functions.

3 Up and Down Arrow buttons:

Press Up/Down ▼▲ arrow buttons to manually adjust focus.

MPO Live Image Mode Features

Vertical 'slider' **C** indicates the current focus level relative to focus range.

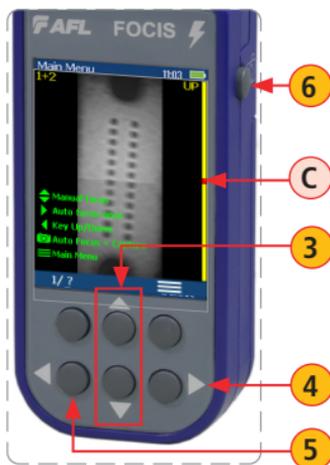
- 4 Right Arrow** button: Press to auto focus once.
- 5 Left Arrow** button: Press to toggle the MPO bulkhead button position between Up and Down.
- 6 Capture Button** 

In the Live Image mode:

Capture button initiates live image capture.

- When the Auto Focus option is enabled in the Capture screen and Capture button is pressed:
 - Auto focus is initiated
 - Image is captured when auto focus completes
 - Image is analyzed if Pass/Fail set to On
 - FOCIS Lightning transitions to Captured Image mode
- When the Auto Focus option is disabled in the Setting screen and Capture button is pressed:
 - Image is captured (without adjusting focus)
 - Image is analyzed if Pass/Fail set to On
 - FOCIS Lightning transitions to Captured Image mode

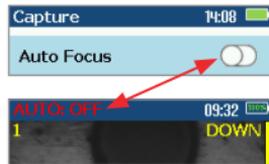
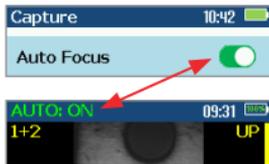
In all other modes: Capture button is used to return to the Live Image mode.



Auto Focus functionality

AUTO: ON or **AUTO: OFF** label shown on the Live Image screen indicates Auto Focus functionality as set in Main Menu > Settings > Capture screen :

- **AUTO: ON** label is displayed when Auto Focus is enabled – 
- **AUTO: OFF** label is displayed when Auto Focus is disabled – 

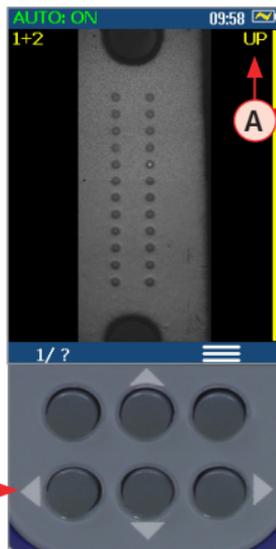


Understanding MPO Connector Key Orientation Settings

The goal of the MPO Key Up/Down settings is to provide users with the correct information about fiber numbering (pinout) after the image capture.

When inspecting MPO connector using bulkheads with **opposed keys**, it is **important to define the MPO key orientation** in the in Live Image mode prior to the Image Capture.

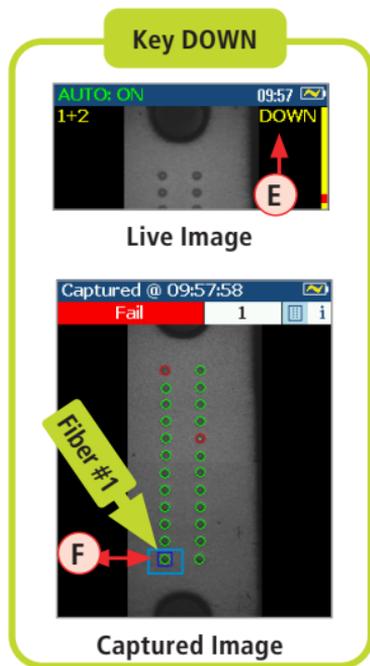
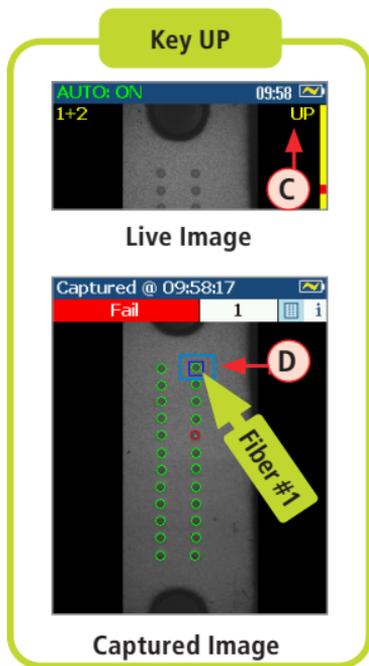
- The MPO bulkhead key position indication (UP or DOWN) is provided in the upper right corner of the display **(A)**.
- At power-up, FOCIS Lightning defaults to key Up orientation.
- If needed, press the Left Arrow key **(B)** to toggle the MPO connector key orientation to DOWN.
- This setting should be defined in the in Live mode prior to the Image Capture.



Understanding Fiber Numbering After The Image Capture

After the fiber end-face image is captured, FOCIS Lightning transitions to the Captured Image mode displaying inspection results.

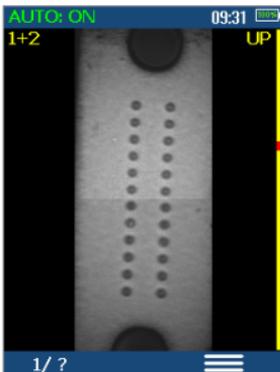
- Default display:
 - Fiber #1 location is indicated by Blue box - 
 - Passing fiber is indicated by Green circle - 
 - Failing fiber is indicated by Red circle - 
- When the MPO key orientation is set to Up  in the Live mode, fiber #1 is located at top-right  as indicated by Blue box.
- When the MPO key orientation is set to Down  in the Live mode, after image capture, fiber #1 is located at bottom-left  as indicated by Blue box.



User Settings and Controls

The Main Menu is accessed from Live Image mode by pressing the Menu  button.

- **While in the Main Menu**, use Up/Down  arrow buttons to navigate and select (highlight) the desired menu option.
 - **Settings**: Configure Auto Focus, Pass/Fail, Connector, Bluetooth, etc.
 - **Results Manager**: Navigate and review or share saved test results
 - **Last Image**: Recall most recently viewed image
 - **WiFi**: Configure WiFi for remote access (future)
 - **Language**: Select the FOCIS Lightning User Interface Language
 - **Device Info**: View serial number, software revision, etc.
- Press Select or Right  arrow button to display the selected option sub-screen.
- **While in a sub-screen**, press Up/Down  arrow buttons to navigate and highlight the desired option.
 - Press Select soft button or Right  arrow button to edit highlighted parameter
 - If selected option shows On/Off icon , press Select to enable/disable
- Press Back button  to return to the previous menu screen.
- Press Capture button  to return to the Live Image mode.



Live Image mode



Main Menu

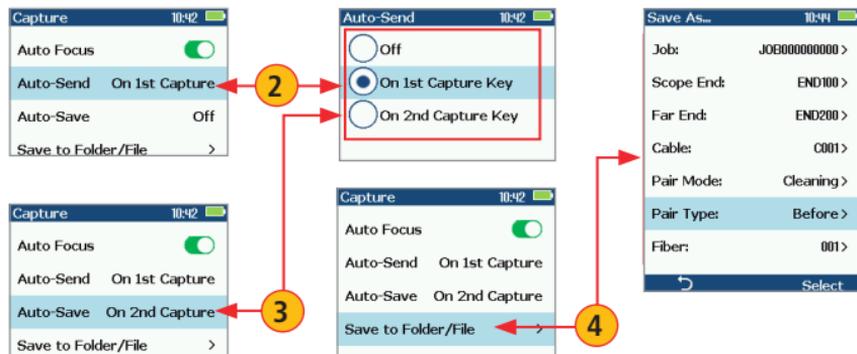
Configuring Auto-Save and Auto-Send

- 1 From the Main Menu, select Settings > Capture > Auto Focus.
Use ◀▶ to enable or disable the Auto Focus option as needed.



- 2 Highlight and Select Auto-Send. Use ▼▲ to disable auto-send, enable on 1st Capture key, or enable on 2nd Capture key.
- 3 Highlight and Select Auto-Save. Use ▼▲ to disable auto-send, enable on 1st Capture key, or enable on 2nd Capture key.
- 4 Highlight and select Save to Folder/File. Use ▼▲ to select and edit the desired folder/file field.

When Auto-Send and Auto-Save is enabled, press Capture from Live Image mode to auto-focus (if enabled), capture image, analyze pass/fail (if enabled), then send image and pass/fail results to paired device and save image and pass/fail results to configured Job/Cable folder.



Setting Pass/Fail Criteria

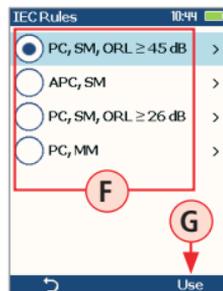
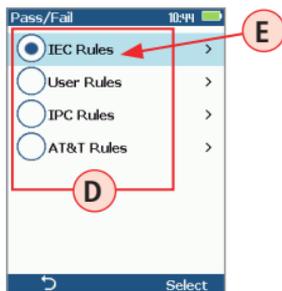
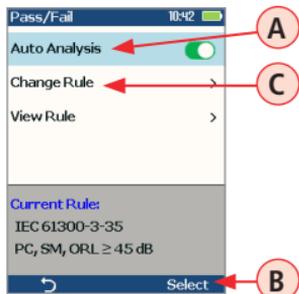
Pass/Fail menu is accessed from the Live Image mode > Main Menu > Settings.

Enable/disable Auto Analysis

- Highlight Auto Analysis (A).
- Press Select (B) to enable/disable / Pass/Fail analysis.

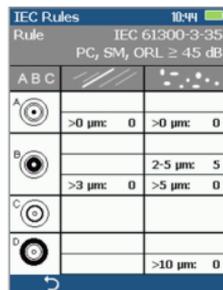
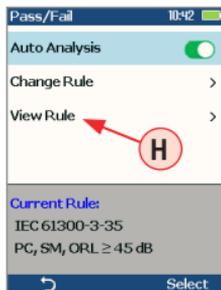
Change Rule:

- Highlight Change Rule (C).
- Press Select or Right ► arrow button to display a list of the available Rules (D).
- Use Up/Down ◀▶ arrow buttons to highlight the desired Rule group (E).
- Press Select or Right ► arrow button to display a sub-list (F).
- Use Up/Down ◀▶ arrow buttons to highlight the desired rule.
- Press Use (G) to apply the selected Rule in Pass/Fail analysis.



View Rule

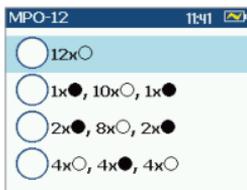
1. Highlight View Rule (H).
2. Press Select or Right ► arrow button to view details for the current rule.
3. User Rules may be edited while viewing.



MPO Connector Fiber Configurations Support

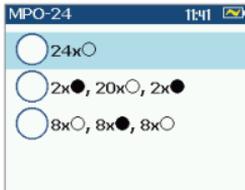
FOCIS Lightning supports all fiber configurations of MPO-12 up to two rows, with "base 8", "base 10", and "base 12" fiber configurations per row as well as other MPO options. Note that solid circle is "dark" or an unused fiber, and open circle is an active or used fiber and will be analyzed by FOCIS Lightning.

MPO-12 configurations

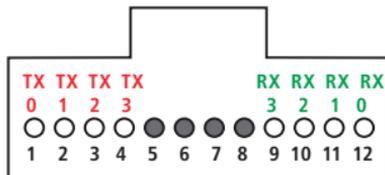


- – active (used) fiber
- – dark (unused) fiber

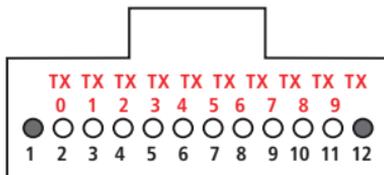
MPO-24 configurations



Single Row MPO Fiber Configuration Examples

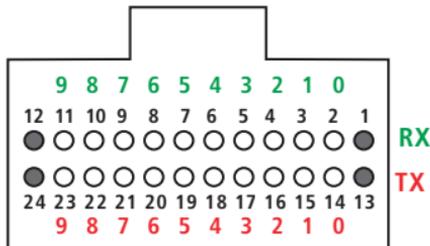


Base 8



Base 10

Dual Row MPO Fiber Configuration Examples



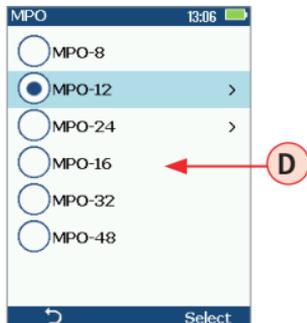
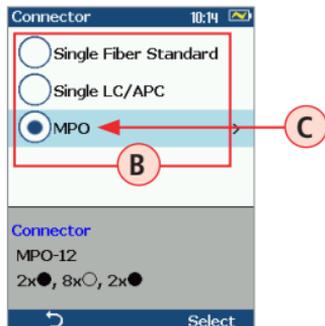
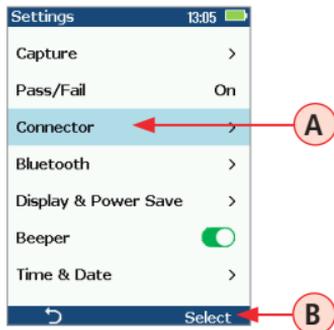
Base 20

To Configure MPO Connector

Note: It is important to set the correct MPO fiber configuration prior to inspection! If the MPO connector setting is not configured correctly, the auto-analysis results will likely show “false negatives” and possibly “false positives”.

To Configure MPO Connector

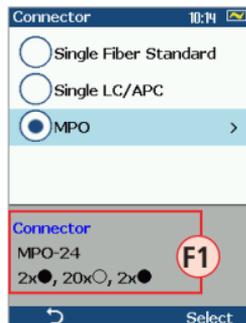
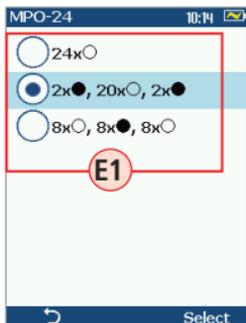
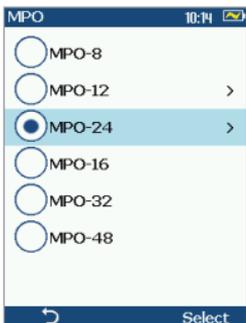
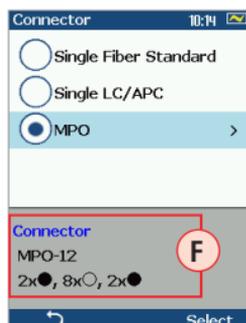
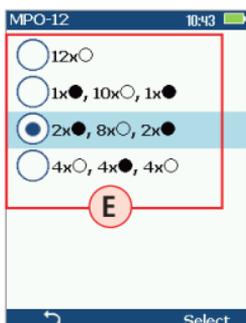
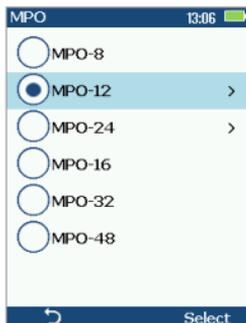
- From the Main Menu > Settings, highlight Connector **(A)**.
- Press Select or Right ► arrow button to display the Connector menu, which shows a list of the available Connector options **(B)**.
- Highlight MPO option **(C)**, press Select.
- From the displayed list **(D)**, highlight the desired MPO connector, press Select.



To Configure MPO Connector

– Note that for MPO-12 and MPO-24, you would need to select fiber configuration (**E** for MPO-12; **E1** for MPO-24), and then press Select.

- **Important:** Note that selected MPO configuration (**F** for MPO-12/ **F1** for MPO-24) is displayed at the bottom of Connector menu.



Inspecting MPO Connectors

1. Plug male (pins) or female (holes) MPO cable into appropriate MPO alignment sleeve ("bulkhead"), with adapter tip appropriate for the cable type.
2. Plug FOCIS Lightning adapter tip into the MPO alignment sleeve.
3. Turn on FOCIS Lightning (press the Power button  on top).
4. The full MPO end-face in "1+2" view mode will be displayed on the FOCIS Lightning display in less than two seconds.
5. Press the Capture button  to initiate fiber inspection and analysis.

Captured MPO Image - Overview Page

Once an end-face image is captured and analyzed, the full MPO end-face image with Pass/Fail overlay (if enabled) will be displayed in the Captured Image mode.

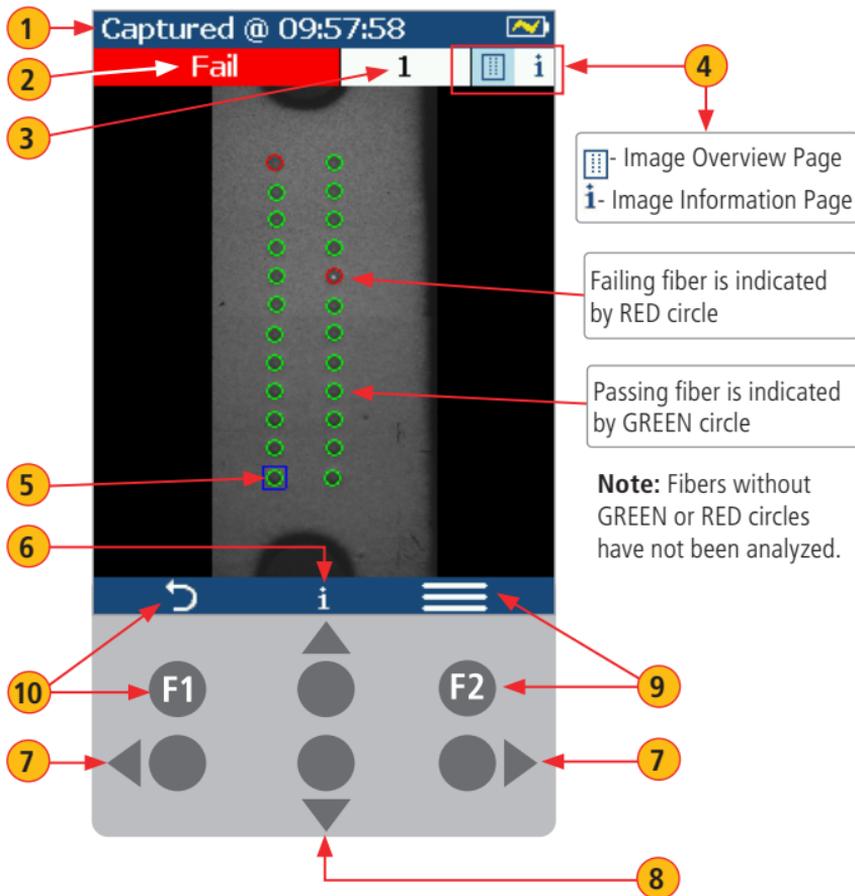
Description

- 1 Screen title: displays file name (e.g. COO1-003) if saved image is shown or 'Captured @ hh:mm:ss' if unsaved image is shown.
- 2 Connector Analysis status (Pass or Fail): shown only if the Pass/Fail option is enabled in Settings.
- 3 Number of the currently selected fiber.
- 4 MPO Image Overview/Image Information page indicator: blue highlight  indicates the current view/page.
- 5 Selected fiber indicator: fiber that is the currently selected for detailed views is indicated by blue box.
- 6 Up  arrow button: press to toggle display between the MPO Image Overview and Image Information pages.
- 7 Left and Right   arrow buttons: press to navigate through fibers. Direction of navigation through fibers with Left/Right arrows depends on Key Up/Down settings.
- 8 Down  arrow button: press to display Detailed View of the currently selected

Captured MPO Image - Overview Page

fiber. See "[Detailed View of the Currently Selected Fiber](#)" on page 17.

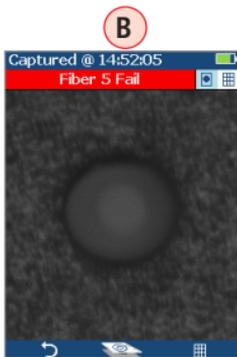
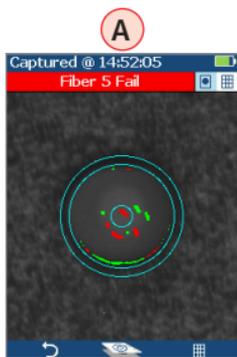
- 9 Menu ☰ button: press to display the Save/Send/Existing Folders menu.
- 10 Back ↶ button: press to return to the Live Image mode.



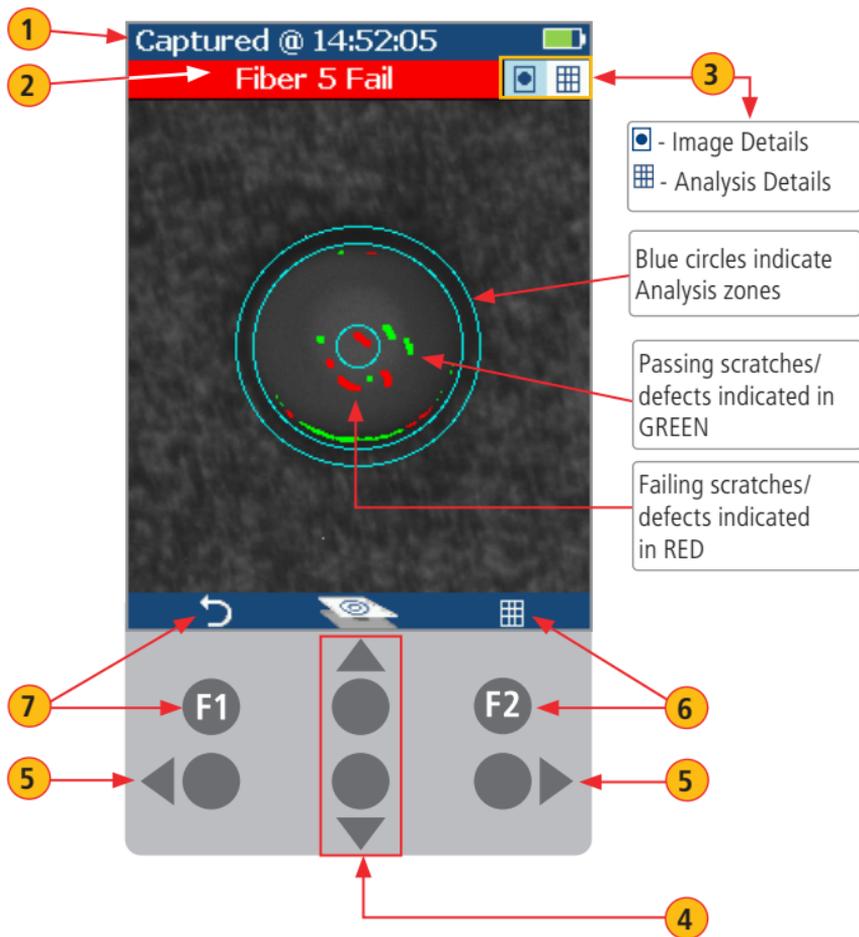
Detailed View of the Currently Selected Fiber

Description

- 1 Screen title: displays file name (e.g. CO01-003) if saved image is shown or 'Captured @ hh:mm:ss' if unsaved image is shown.
- 2 Fiber Analysis status (Pass or Fail) and Number of the currently displayed fiber.
- 3 Image Details/Analysis Details page indicator: blue highlight () indicates the currently displayed view/page.
- 4 Up ▲ or Down ▼ arrow button: press to navigate through various detailed views of the currently selected fiber:
 - **A** End-face image with overlay layer shown (default view)
 - **B** End-face image only
 - **C** Overlay only
- 5 Left and Right ◀ ▶ arrow buttons: press to navigate through fibers. Direction of navigation through fibers with Left/Right arrows depends on Key Up/Down settings.
- 6 F2 button: press to toggle display between the Image Details and Analysis Details pages.
- 7 Back ↶ button: press to return to the MPO Image Overview page.



Detailed View of the Currently Selected Fiber



End-face Image with Overlay

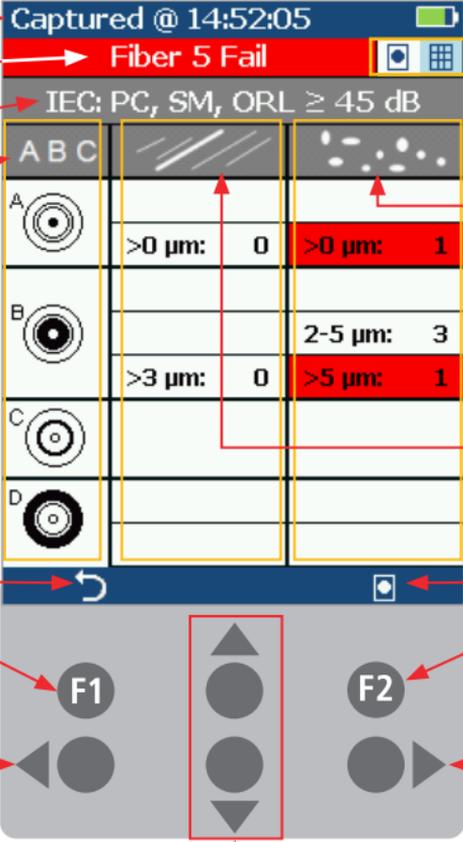
Pass/Fail Analysis Details Page

Description

- 1 Screen Title: displays File Name (e.g. COO1-003) if saved image is shown or Captured @ hh:mm:ss if unsaved image is shown.
- 2 Fiber Analysis status (Pass or Fail): shown only if the Pass/Fail option is enabled in Settings.
- 3 Image Details/Analysis Details pages indicator: blue highlight () indicates current page.
- 4 Analysis Rule applied to determine Pass/Fail.
- 5 Analysis Zones: A - core, B - cladding, C - adhesive, D - contact area.
- 6 Scratch analysis results for each zone: reports the number of detected scratches exceeding limit for each region; highlights failed rules in RED.
- 7 Defect analysis results for each zone: reports the number of detected defects exceeding limit for each region; highlights failed rules in RED.
- 8 Left and Right ◀ ▶ arrow buttons: press to navigate through fibers. Direction of navigation through fibers with Left/Right arrows depends on Key Up/Down settings.
- 9 F2 button: press to toggle display between the Analysis Details and Image Details pages.
- 10 Back ↶ button: press to return to the MPO Image Overview page.
- 11 Up ▲ and Down ▼ arrow buttons: inactive on the Analysis Details page.

Pass/Fail Analysis Details Page

-  - Image Details Page
-  - Analysis Details Page



1 - Captured @ 14:52:05

2 - Fiber 5 Fail

3 - Image Details Page / Analysis Details Page

4 - IEC: PC, SM, ORL ≥ 45 dB

	A	B	C
A			
	>0 μm : 0	>0 μm : 1	
B			
	>3 μm : 0	2-5 μm : 3	>5 μm : 1
C			
D			

5 - Table header (A B C)

6 - Table body

7 - Table body

8 - F1 / F2 buttons

9 - Refresh / Image icon

10 - Refresh icon

11 - Navigation buttons (Up, Down, Left, Right)

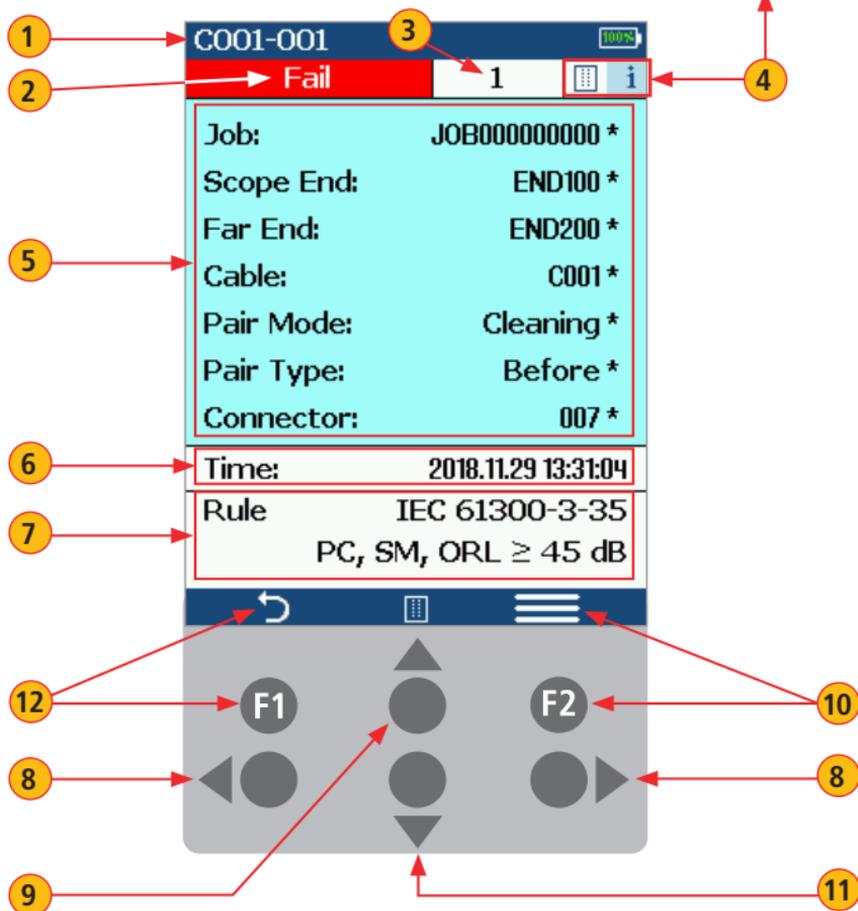
Image Information Page

Description

- 1 Screen title: displays file name as follows:
<Cable>-<Connector> (e.g. CO01-003) if saved image is shown.
'Captured @ hh:mm:ss' if unsaved image is shown.
- 2 Fiber Analysis status (Pass or Fail): shown only if the Pass/Fail option is enabled in Settings.
- 3 Number of the currently selected fiber.
- 4 Image Information/MPO Image Overview pages indicator: blue highlight  indicates current view/page.
- 5 Results ID field: displays Job/Scope End/Cable/Pair Mode/Pair Type/Connector information.
- 6 Time & Date field: shows time & date of the image capture.
- 7 Rule field: indicates the applied pass/fail analysis rule.
- 8 Left and Right ◀ ▶ arrow buttons: press to navigate through fibers. Direction of navigation through fibers with Left/Right arrows depends on Key Up/Down settings.
- 9 Up ▲ arrow: press to toggle display between the MPO Image Overview and Image Information pages.
- 10 Menu ≡ button: press to display the Save/Send/Existing Folders menu.
- 11 Down ▼ arrow: press to display detailed view of the currently selected fiber.
- 12 Back ↶ button: press to return to the Live Image mode.

Image Information Page

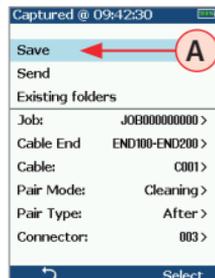
 - Image Overview Page
 - Image Information Page



Saving Captured Images

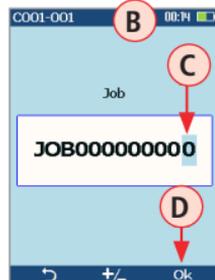
To save results to the current folder

- While in the Captured Image mode, press Menu  to display the Save/Send screen.
- Highlight Save  and press Select to save results to the current folder.



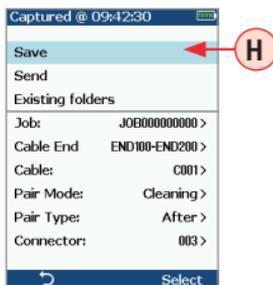
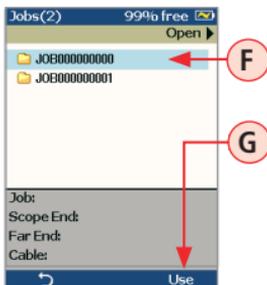
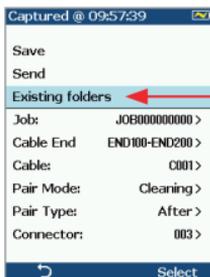
To edit file name

- Use Up/Down  arrows to select the desired parameter: Job, Cable End, Cable, Pair Mode, Pair Type, Connector.
- Press Select to display Editor .
- Use   arrow buttons to edit text field .
- Press Ok to save new name .



To save results to an existing folder

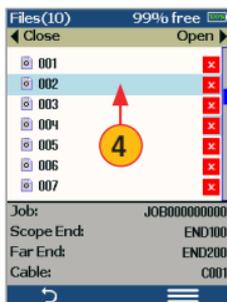
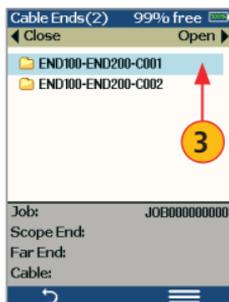
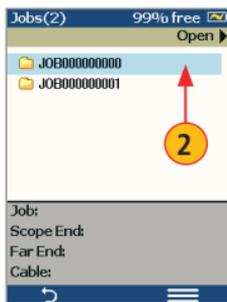
- Highlight the Existing folders  option.
- Press Select to display a list of existing folders.
- Use Up/Down  arrows to select desired Job folder .
- Press Right  arrow button to open selected Job folder.
 - Repeat for desired Cable folder and Fiber number as needed.
- Press Use  to confirm selection.
- When back in the Save/Send screen, highlight Save  and press Select.



Note: If Auto-Save or Auto-Send on 2nd Capture key is enabled, you will be prompted to press the Capture button again to save or send. Press the Back button if you do not wish to save or send image.

View Saved Images

- 1 From the Main Menu, access the Results Manager by pressing Select or Right ► arrow button.
- 2 Use Up/Down ◀▶ arrows to navigate and highlight the desired Job folder, press Right ► arrow button to open.
- 3 Use Up/Down ◀▶ arrows to navigate and highlight the desired Cable folder, press Right ► arrow button to open.
- 4 Use Up/Down ◀▶ arrows to navigate and highlight the desired File, then press Right ► arrow button to open.



Sending Captured Results to FlexScan

Automatically send results to FlexScan via Bluetooth

On FlexScan

- Configure FlexScan for pairing:
 - Select Settings > Bluetooth
 - Enable Bluetooth and Visibility option - 'ON'.

On FOCIS Lightning

- From the Main Menu > Settings > Bluetooth, select Pair With New Device **A**.
 - Wait for list of visible devices to be shown
 - Use ▼▲ arrow buttons to select FlexScan device to pair with
 - Select Set Default Connection to complete pairing
- From the Main Menu > Settings > Capture, configure FOCIS Lightning to auto-send captured images on 1st or 2nd Capture Key. See page 10.
- Press the Capture button to return to the Live Image mode.
- Press the Capture button to focus/capture/analyze/send image to FlexScan.



On FlexScan

- After a few seconds, captured image and pass/fail results will appear on your FlexScan.

FOCIS Lightning Inspection Reporting with TRM®

Inspection reports for MPO overlay images and/or individual fiber images can be generated with AFL's TRM (Test Results Management) PC Software

This capability is available when the following software releases are used:

FOCIS Lightning: Version 2.0.0 or later

TRM PC Software: Version 3.8.4 or later

TRM licenses are available to FOCIS Lightning users free of charge and may be downloaded from the AFL website.

The following link can be used to register for, and download, the latest release of TRM software.

<https://www.aflglobal.com/Resources/Software.aspx>

In addition to the TRM software, the TRM User's Guide, Software Installation Instructions, Release Notes, and Introduction to Operations are also available for download. For new TRM users, it is recommended to download all these documents.

PC-Based Reporting Documentation & Software

- FOCIS2Go +
- OFL2Go +
- TRM® 2.0 -
- TRM® 3.0 -

For use with FlexScan FS200, FS300 and FOCIS Connector Inspection

- TRM Licensing Quick Reference Guide** - 42.0 / 3.0
- TRM User's Guide** - Rev EB
- TRM3 3.7.3** - Rev AN
Updated 1/4/2021
- TRM 3.0 Software Installation Instructions** - Rev AB
Updated 7/23/2020
- TRM3 3.7.3 - Release Notes** - Rev AK
Updated 1/4/2021
- TRM 2.0-3.0 Intro to Operation** - 02172008.0
- FlexScan App Intro to Operation** - 10100001.0

Product Profile +

WinTest +

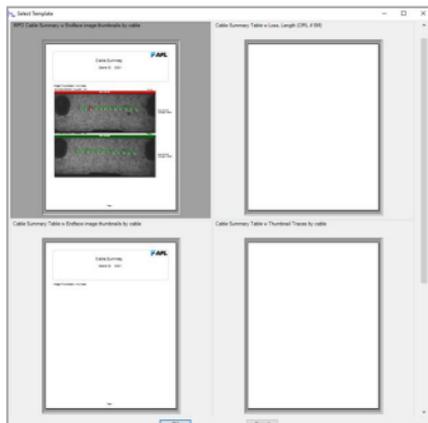
Download Selected Files (6)

TRM® Template Examples for FOCIS Lightning

The two most common reports generated for FOCIS Lightning are:

- MPO overlay only report
- MPO overlay plus individual fiber report.

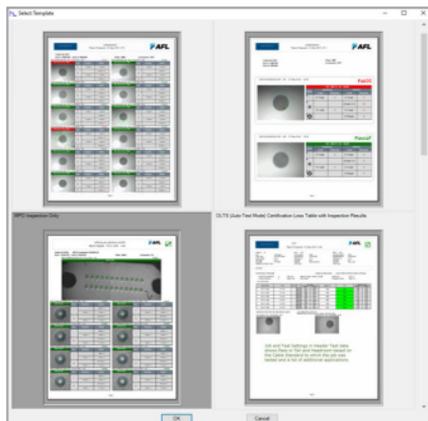
Examples of these templates are shown below:



MPO Overlay Only:

Page 1 displays 2 MPOs per page.

Pages 2 and following pages display 3 MPO images per page.



MPO Overlay plus Individual Fibers:

The MPO overlay and first 8 fibers are shown on page 1. Depending on MPO type (MPO-12, MPO-16, MPO-24, MPO-32), additional individual fibers are shown on page 2 and following pages.

For MPO-12 connectors, individual fibers 1-8 and the MPO overlay shown on page 1, and fibers 9-12 are shown on the following page.



Test & Inspection

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