



Test & Inspection

FlexScan® FS200 OTDR

With SmartAuto®, FleXpress™ and LinkMap®

User's Guide

www.AFLglobal.com or +1 (800) 235-3423

Contents

Safety Information	5
Apple Inc. Legal Notice	7
Hardware Overview	8
Controls, Display, Interfaces	8
Front Panel Buttons and Indicators	10
Battery Charging	11
Understanding Battery Charge Status	11
Configuring FlexScan to Auto-Off	12
User Interface Overview	13
Home Screen Features	13
Test Modes and Features Summary	13
Utility Modes and Features Summary	14
General Settings	15
SmartAuto® OTDR with FleXpress™ and LinkMap® Display	20
Using Touchscreen Controls	20
SmartAuto Settings Summary	21
Configuring Pass/Fail Rule	22
Configuring Fiber Type	24

Contents

Enabling Launch Quality Check	26
Launch and Receive Cable Settings	26
Testing in SmartAuto® OTDR	27
To Start SmartAuto Test	27
Live Fiber Detection	27
Launch Quality Check	28
Understanding LinkMap Display Features	29
Understanding Expert/Real-time OTDR Settings	31
Expert OTDR Settings	32
Real-Time OTDR Settings	33
Testing in Expert and Real-Time OTDR Mode	34
To Test in Expert or Real-Time OTDR Mode	34
Understanding Trace Display Features	35
Light Source and Power Meter Operation	37
Light Source Settings and Features	37
Power Meter Settings and Features	38
Inspecting Fibers with FOCIS Flex and FlexScan	39
FOCIS Flex Inspection Probe Overview	39
Pairing FlexScan with FOCIS Flex Inspection Probe	41

Contents

Enable Bluetooth on FlexScan	41
Enable Bluetooth on FOCIS Flex.	42
Inspecting Optical Connectors.	43
Saving, Recalling and Uploading Test Results.	45
Saving to a Newly Created Folder	47
Saving to the Current Folder	47
Viewing Saved Test Results	48
Deleting Jobs/Cables/Files	49
Transferring Files to a PC via USB	50
Backing up Results to External USB Memory Stick	51
Restoring Results from External USB Memory Stick	52
How to View Device Information	53
General Information	54
Warranty Terms and Conditions.	54
Repair Services	55

Safety Information

WARNING! Use of procedures or adjustments other than those specified herein may result in hazardous radiation exposure.

1550 nm OTDR/OLS port 1650 nm OTDR/OLS port 1310/1550 nm OTDR/OLS port 1310/1550/1650 nm OTDR/OLS port	This is a CLASS I LASER output.
VFL port	This is a CLASS II LASER output. Do not stare into beam!

NOTE! FlexScan OTDRs equipped with Bluetooth (option W1) contain the following Bluetooth Transmitter Module:

FCC ID: X3ZBTMOD8

IC: 8828A-MOD8

NOTE! FlexScan OTDRs equipped with WiFi contain the following WiFi Transmitter:

FCC ID: 2ANTH-FS2TS1

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by AFL Test and Inspection could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits 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 instruction manual, may cause harmful

Safety Information

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.

IC: 23261-FS2TS1

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license exempt (RSS(s)). Operation is subject to the following two conditions: 1. This device may not cause interference. 2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : 1. L'appareil ne doit pas produire de brouillage; 2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

WARNING! Use only the specified AC adapter. Use of another type of AC adapter can damage the instrument and create the danger of fire and electrical shock.

WARNING! To avoid the danger of fire and electrical shock:

- Never use a voltage that is different from that for which the AC adapter is rated.
- Do not plug the unit into a power outlet that is shared by other devices.
- Never modify the power cord or excessively bend, twist, or pull it.
- Do not allow the power cord to become damaged.
- Do not place heavy objects on the power cord or expose it to heat.
- Never touch the AC adapter while your hands are wet.

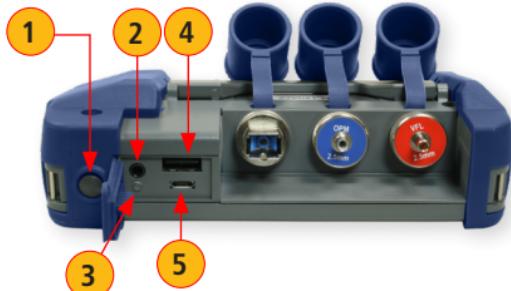
- Should the power cord become seriously damaged (internal wiring exposed or shorted), contact the manufacturer to request servicing.
- **CAUTION!** Do not run any tests or perform functions that activate a FlexScan laser unless fiber is attached to the corresponding port.
- **CAUTION!** To avoid serious eye injury, never look directly into the optical outputs of fiber optic network equipment, test equipment, patch cords, or test jumpers. Refer to your company's safety procedures when working with optical systems.
- **NOTICE:** FlexScan OTDR contains no user serviceable parts, it must be returned to AFL or authorized agents for repair and calibration.
- **IMPORTANT:** Proper care in handling should be taken when using any precision optical test equipment. Scratched or contaminated optical connectors can impact the performance of the instrument. It is important to keep the dust caps in place when the unit is not being used.
- **IMPORTANT:** Always clean OTDR port and any mating connectors using approved cleaning supplies (e.g. One-click cleaner) before mating the connectors.
- **CAUTION!** Power levels in excess of +3 dBm may damage OTDR optics. Do not connect OTDR to network connectors where received power level may exceed +3 dBm. If high power levels are suspected, verify power level by connecting to OPM and measuring received power level.

Apple Inc. Legal Notice

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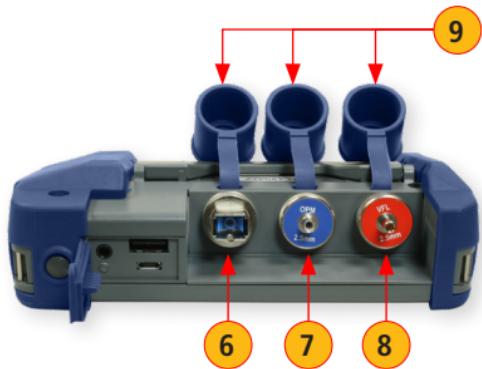
Hardware Overview

Controls, Display, Interfaces



Ref	Feature	Description
1	Power button	Press to power FlexScan OTDR on/off.
2	Power port (5 VDC)	This is interface for the AC power adapter/charger.
3	AC/Charger indicator	Illuminates when AC is connected and indicates battery charging status. <ul style="list-style-type: none">• RED light = rechargeable battery is charging.• GREEN light = rechargeable battery is fully charged.• Note: Flashing RED/GREEN = Battery charging halted due to over-temperature.
4	USB host port	This USB port allows connection to a PC for transferring stored test results; also may be used to connect USB Flash Drive for data storage and copying Internal files.
5	Micro-USB function port	With the supplied USB cable, this port may be used to connect OTDR to a USB host port on a PC.

Hardware Overview



Ref	Feature	Description
6	OTDR/Light Source port	This is a CLASS I LASER output. 1550 nm only, 1650 nm only, 1310/1550 nm, or 1310/1550/1650 nm single-mode OTDR/Light Source port, depending on model.
7	Power meter port	Optical Power Meter port. Used for power (dBm, W) or loss (dB) measurements.
8	VFL port	This is a CLASS II LASER output. Do not stare into beam! The VFL (visual fault locator) port is a 650 nm (visible red) laser. Used for short-range fault-location.
9	Dust cap	Used to protect optical ports from dust/damage. It is important to keep the dust caps in place when the unit is not being used.
10	Touchscreen display	Contains on-screen controls and menus. Used to show setup menus, test results, and saved test data information.

Front Panel Buttons and Indicators



Ref	Feature	Description
11	Home button	Press to access the Home screen.
12	Test start/stop button	Press to start a new test; or, if a test is running, stop the current test.
13	VFL indicator	When the VFL port is active this indicator illuminates as follows: <ul style="list-style-type: none">• Flashing RED = VFL is on• Solid RED = CW• OFF = VFL is off
14	VFL button	Use the VFL button to control the VFL laser: Press and hold ~ 1 sec to turn VFL ON Press and hold ~ 2 sec = CW Press and hold ~ 1 sec to switch off

Battery Charging

You may charge the battery while your FlexScan is switched on or off by attaching the supplied AC charger.

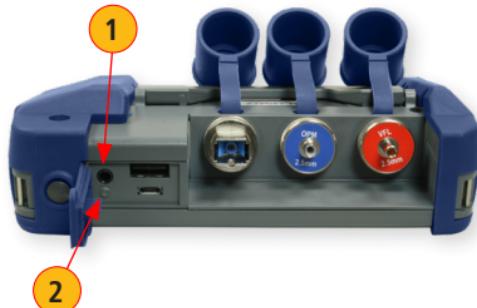
- Plug the included AC charger into AC outlet.
- Connect charger plug to the Power port **1**.
- AC/Charger indicator **2** will illuminate to indicate charging status as follows:

RED - Charging battery

GREEN - Fully charged

OFF - AC disconnected

- FlexScan charges while operating.
- A fully-charged battery operates for approximately 12 hours of typical use.



Understanding Battery Charge Status

When FlexScan is ON, battery icon shown on the display indicates battery status as follows:

 - Battery fully charged

 - Battery partially charged

 - Battery discharged

 - Battery charging

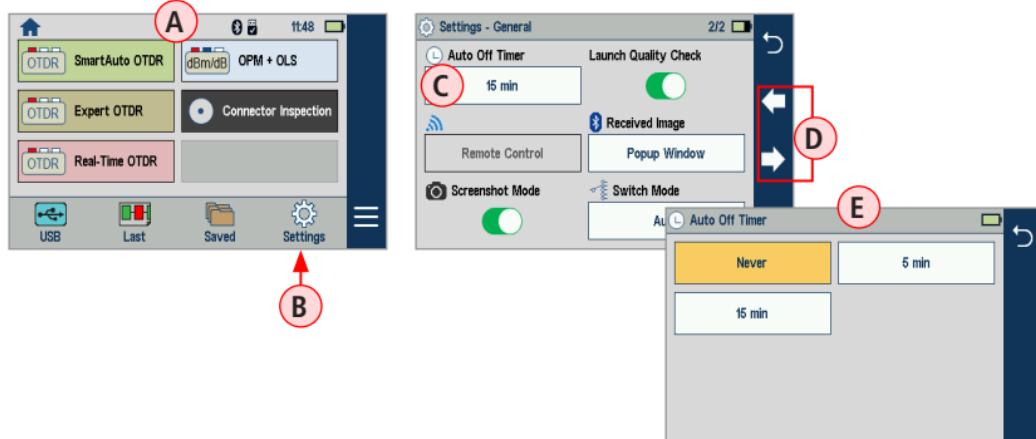
Battery fully charged, Battery partially charged, and Battery discharged symbols will only be shown when unit is operating without being connected to AC.

Configuring FlexScan to Auto-Off

The Auto-Off feature is available for conserving battery power on your FlexScan.

To Configure the Auto-Off Timer:

- Turn your FlexScan On.
- From the displayed Home screen **(A)**, touch Settings menu **(B)**.
- In the Settings menu, locate the Auto Off Timer option **(C)**.
 - Touch **↔** **(D)** to navigate to next/previous screen if the Auto Off Timer option is not displayed.
- Touch the Auto Off Timer field to display the settings sub-menu **(E)**.
- Select the desired power save option (5 min, 15 min, Never).



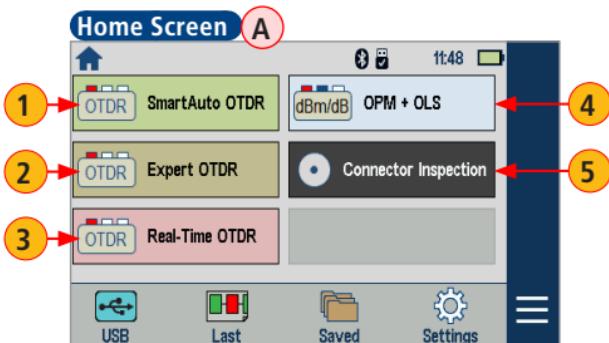
User Interface Overview

Home Screen Features

The Home screen **(A)** is the FlexScan's Main screen that is displayed at startup. While in any other screen, return to Home by either pressing the Home button  or touching and holding (if available) the Back  soft key. This screen contains menus of Test and Utility modes that allow users to set test parameters, select user preferences, manage saved test results, configure general settings and perform other non-test functions.

Test Modes and Features Summary

- 1 SmartAuto™ OTDR:** Configure and run SmartAuto OTDR test using multi-pulse acquisition.
- 2 Expert OTDR:** Configure and run Expert OTDR test with averaging.
- 3 Real Time OTDR:** Configure and initiate OTDR test with real-time updates.
- 4 Power Meter & Source (OPM + OLS):** Enable light source and/or measure optical power.
- 5 Connector Inspection:** View connector inspection results received via Bluetooth from

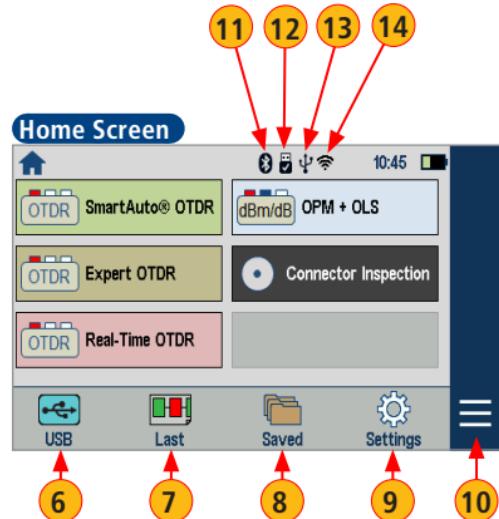


User Interface Overview

Utility Modes and Features Summary

FOCUS Flex auto-focus probe.

- 6 **USB:** Touch to enable file transfer. Enabling this mode allows the user to connect to a PC to upload results to the PC or download software updates from the PC.
- 7 **Last:** Touch to view the most recent test results.
- 8 **Saved:** Touch to recall and view saved test results.
- 9 **Settings:** Touch to access General Settings menu that contains Unit settings, user preferences, and common OTDR settings.
- 10 **Menu:** Touch to view Device Information screen.
- 11 **Bluetooth:** Indicates Bluetooth enabled.
- 12 **USB Stick:** Indicates external USB memory stick cable plugged in and detected.
- 13 **USB Cable:** Indicates USB cable plugged in.
- 14 **WiFi:** Indicates WiFi remote control enabled.



General Settings

While in the General Settings screen:

- Touch the desired setting field/tab (e.g. ② Distance Units) to display a sub-menu.
- Touch ① to display additional General Settings screen.
- Touch ③ to return to the previous menu.

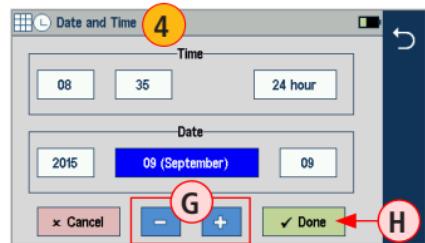
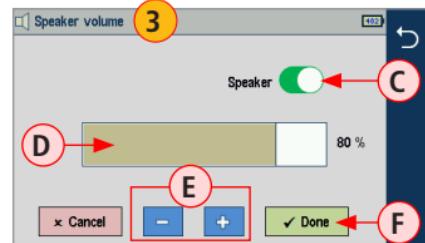
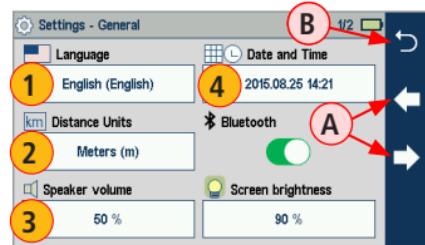
Select and view/edit settings as follows

- ① **Language:** touch to select the desired language.
- ② **Distance Units:** select kilometers, meters, kilofeet, feet, miles.
- ③ **Speaker Volume:**

- If disabled, touch the on/off control to turn the Speaker on ④.
- Touch and/or touch and drag the adjustment slider ⑤ right/left to increase/decrease the Speaker volume. Or, press controls ⑥ for precise adjustments of 10% by step.
- Press Done ⑦ to save changes and return to the General Settings screen.

- ⑧ **Date and Time:**

- Touch the desired Time/Date Parameter to enable it.
- Use controls ⑨ to change the selected parameter value.
- Press Done ⑩ to save changes and return to the General Settings screen.



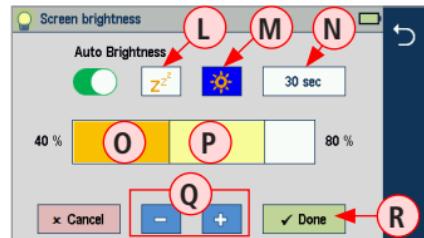
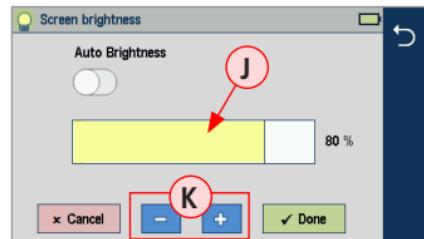
General Settings

5 Bluetooth:

- If disabled, touch the Bluetooth field to display Bluetooth menu.
- Touch the Bluetooth radio button  to enable .
- In the device name field you will see Bluetooth ID displayed for the FlexScan device.

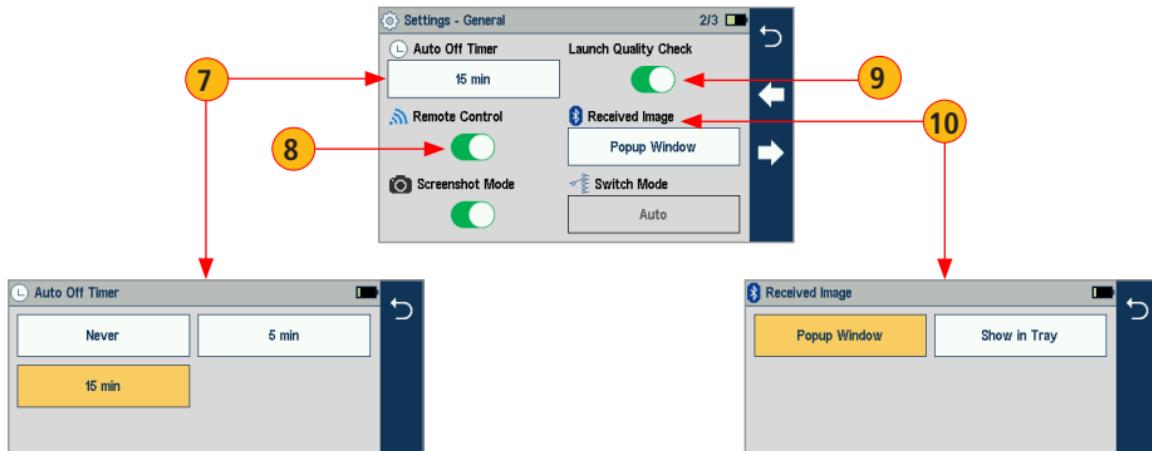
6 Screen Brightness and Auto-dim:

- Touch the on/off control  to enable/disable the Auto Brightness feature.
 - When the Auto Brightness feature is disabled , you may adjust Brightness by touching and/or touching and dragging the adjustment slider  right/left to increase/decrease the Brightness value. Or, you may press the [-] and [+] controls  for precise adjustments of 10% by step.
 - When the Auto Brightness feature is enabled , you may adjust several parameters: Auto-dim , Brightness , and Timer control . Make adjustments using sliders  for dimmer,  for brightness or controls  for all.
- Press Done  to save changes and return to the General Settings screen.



General Settings

- 7 **Auto Off Timer:** Touch to display a sub-screen and select Auto Off option: 5 min, 15 min, Never.
- 8 **Remote Control:** Enable/disable WiFi remote access.
- 9 **Launch Quality Check:** Touch the on/off control  to enable/disable check of the OTDR connection quality at start of each OTDR test.
- 10 **Received Image:** Touch to display a sub-screen and select an option for displaying inspection results transferred from the FOCIS Flex probe:
 - Display received FOCIS Flex results in popup window
 - Save received FOCIS Flex results in background and show notification in tray.



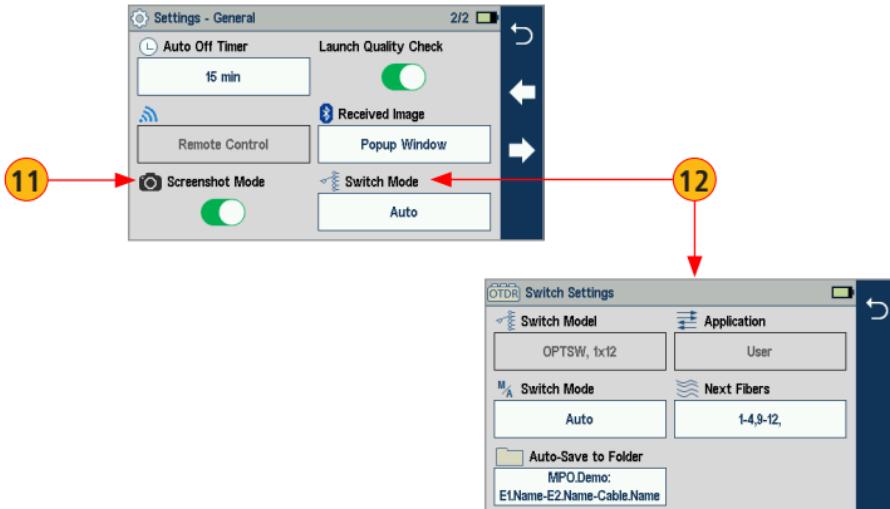
General Settings

11 **Screenshot Mode:** Touch to enable/disable capture.

- When enabled, press Home (🏠) to capture current screen.

12 **Switch Mode:** Touch to configure MPO switch settings.

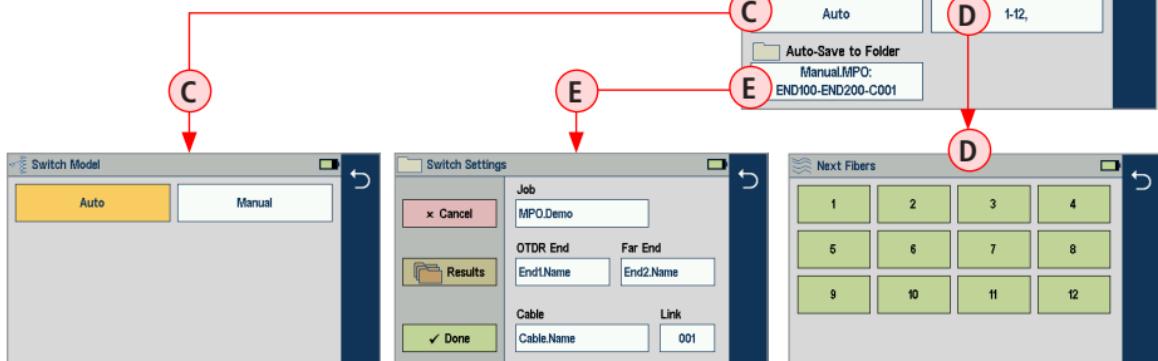
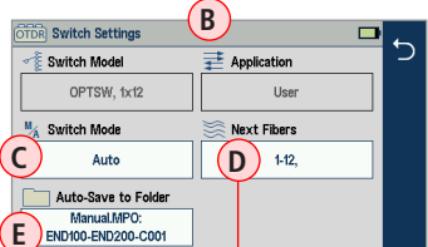
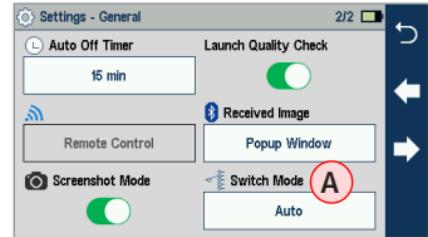
- MPO Switch control is available only when MPO Switch is enabled and connected to FlexScan via USB cable.
- When MPO Switch connected, up to 12 fibers may be tested in a single SmartAuto or Expert mode test.



General Settings

To configure automatic MPO Switch control:

- Touch Switch Mode **A**.
- A popup error message appears if Switch Mode selected with no MPO switch connected and enabled.
- Switch Settings **B** appears if switch connected and enabled.
- Select Auto Switch Mode **C**.
- Select Next Fibers **D** and configure fibers to be tested.
- Touch Auto-save to Folder **E**, then select and configure Job,OTDR End, Far End, Cable folder, and start Link (Fiber#) where multi-fiber test results will be saved.



SmartAuto® OTDR with FleXpress™ and LinkMap® Display

Using Touchscreen Controls

While in the Settings Menu:

If no setting changes required:

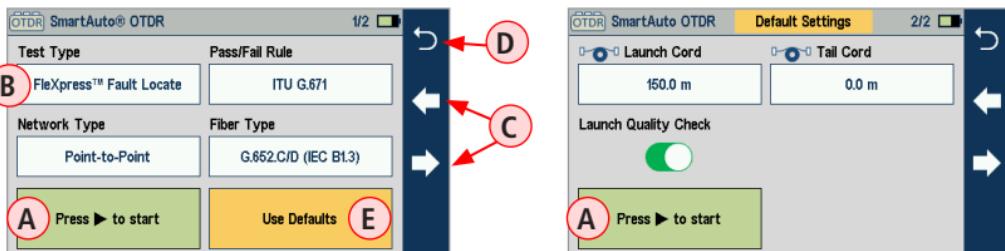
- Touch 'Press ► to start' **(A)** to initiate testing.

Notes:

1. **Characterize mode:** Standard multi-pulse acquisition.
2. **FleXpress mode (FS200-300/304 only):** Fast Test mode for Point-to-Point networks only.

If setting changes required:

- Touch the desired setting field/tab (e.g. **(B)** Test Type) to display a sub-menu (where applicable).
- Touch left/right arrows **(C)** to navigate to next/previous screen (where applicable).
- Touch Back **(D)** to return to the previous menu.
- Touch Use Defaults **(E)** (if displayed) to reset settings to the factory defaults as needed.
- When done, touch 'Press ► to start' **(A)** to initiate testing.



SmartAuto® OTDR with FleXpress™ and LinkMap® Display

SmartAuto Settings Summary

1 Test Type:

- Limited to Characterize in FS200-50B/100 models.
- Select Characterize or FleXpress Fast Test in FS200-60/300/304 models when Network Type = Point-to-Point.

2 Pass/Fail Rule:

Indicates selected LinkMap event pass/fail rules. Touch to select ITU G.671, TIA-568.3-D or User. Touch and hold to view/edit pass/fail event thresholds.

3 Network Type:

Limited to Point-to-Point in FS200-50B /100 models. Select Point-to-Point or FTTH PON in FS200-60/-300/-304 models. If PON selected, configure split ratio settings to match expected network splitter configuration.

4 Fiber Type:

Touch to select SMF-28e or User fiber type. Touch and hold to view/edit associated Group Index of Refraction (GIR) and Backscatter Coefficient (BC) settings.

5 Launch Cord:

Touch to configure length of Launch cable, if present.

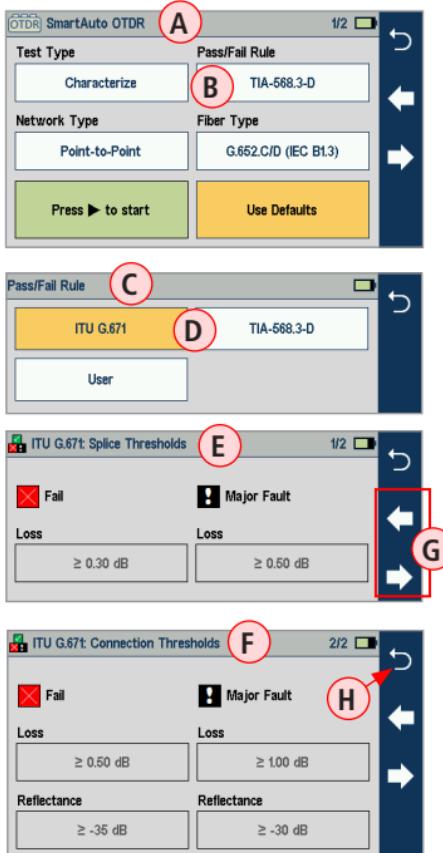
6 Tail Cord:

Touch to configure length of Receive cable, if present.

7 Launch Quality Check:

Enable to check OTDR connection to launch cord or jumper cable at start of test.





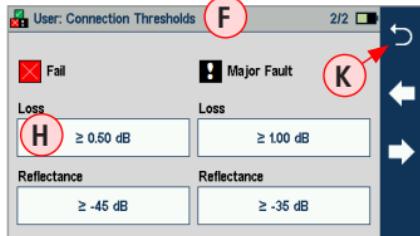
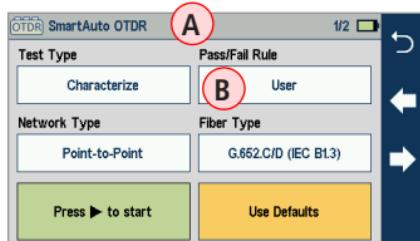
Configuring Pass/Fail Rule

ITU G.671 Pass/Fail Settings may be viewed but NOT changed.
TIA-568.3-D Pass/Fail Settings may be viewed but NOT changed.
User Pass/Fail Settings may be viewed and changed.

To view ITU G.671 or TIA-568.3-D Pass/Fail Rule Settings

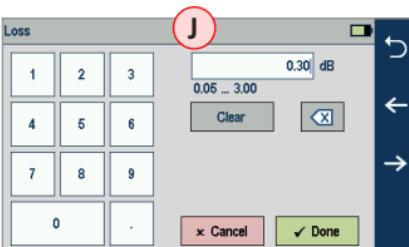
- While in the SmartAuto Settings screen **A**, make sure the ITU G.671 or TIA-568.3-D Rule **B** is displayed in the Pass/Fail Rule field.
- If not, touch the Pass/Fail Rule field to display the Rules menu **C** and touch the ITU G.671 or TIA-568.3-D option **D** to select.
- When back in the SmartAuto Settings screen, touch and hold the displayed Rule **B** to open one of the settings screen:
 - Either Splice Thresholds **E** or Connection Thresholds **F** screen will be displayed.
 - Touch **G** to toggle between screens.
 - View settings.
- Touch **H** to return to the SmartAuto Settings screen.

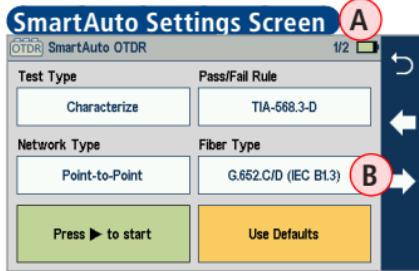
Note: FS200-300/303/304 include additional pass/fail screens to view/edit splitter min/max loss pass/fail limits based on split ratio.



To view and edit User Pass/Fail Rule Settings

- While in the SmartAuto Settings screen **A**, make sure the User Rule label **B** is displayed in the Pass/Fail Rule field.
- If not, touch the Pass/Fail Rule field to display the Rules menu **C** and touch the User option **D** to select.
- When back in the SmartAuto Settings screen, touch and hold the displayed User Rule **B** to open one of the settings screen:
 - Either Splice Thresholds **E** or Connection Thresholds **F** screen will be displayed.
 - Touch **G** to toggle between screens.
 - Touch the desired threshold field (e.g. **H** Fail: Loss) to display its Editor screen **J**.
 - Edit the threshold value using on-screen controls.
 - Touch Done to save changes and return to the Thresholds screen.
- Touch **K** to return to the SmartAuto Settings screen.





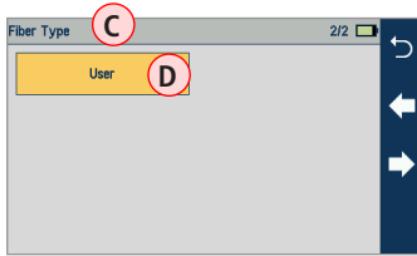
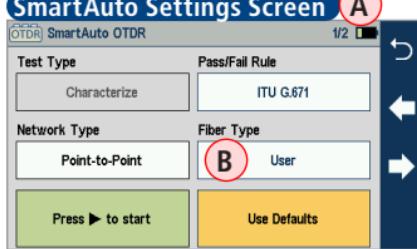
Configuring Fiber Type

G.65x Fiber Settings may be viewed but NOT changed.

User Settings may be viewed and changed.

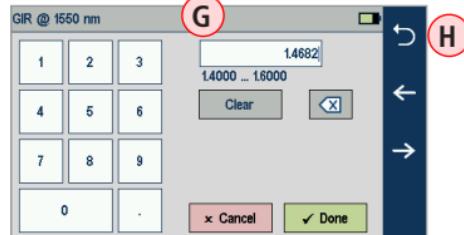
To view G.65x Fiber Settings

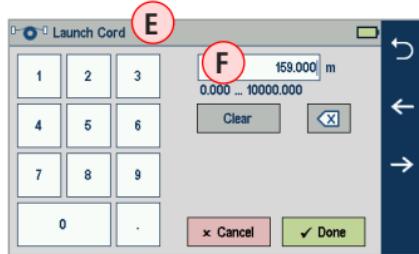
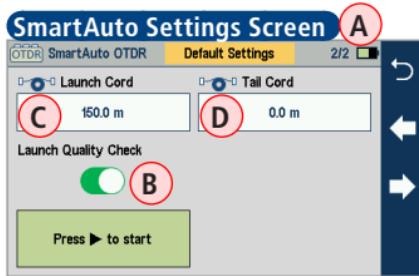
- While in the SmartAuto Settings screen **A**, make sure a G.65x fiber type **B** is displayed in the Fiber Type field.
- If not, touch the Fiber Type field to display the Fiber Type menu **C** and touch one of the G.65x fiber types **D** to select.
- When back in the SmartAuto Settings screen, touch and hold the displayed G.65x fiber type **B** to open and view the default settings **E** as follows:
 - Group Index of Refraction (GIR)
 - Backscatter Coefficient (BC)
 - Fiber Attenuation (A; Loss-per-Distance)
- Touch Back **F** to return to the SmartAuto Settings screen.



To view and edit User Fiber Type Settings

- While in the SmartAuto Settings screen **A**, make sure the User Fiber Type label **B** is displayed in the Fiber Type field.
- If not, touch the Fiber Type field to display the Fiber Type menu **C** and touch the User option **D** to select.
- When back in the SmartAuto Settings screen, touch and hold the displayed User label **B** to open the User Fiber Type settings screen **E** and configure settings as follows:
 - Group Index of Refraction (GIR)
 - Backscatter Coefficient (BC)
 - Fiber Attenuation (A; Loss-per-Distance)
- Touch the desired parameter field (e.g. **F** GIR @1550) to display its Editor screen **G**.
- Edit the value using on-screen controls.
- Touch Done to save changes and return to the User Fiber Type settings screen.
- Touch Back **H** to return to the SmartAuto Settings screen.





Enabling Launch Quality Check

When Launch Quality Check feature is enabled, FlexScan checks loss and reflectance of OTDR connection to network enabling the user to detect dirty, damaged, poorly seated, or mismatched (UPC to APC) connectors.

To Enable Launch Quality Check

- While in the SmartAuto Settings screen (A), touch the on/off control (B) to enable .

Launch and Receive Cable Settings

To Configure Length of Launch and Receive Cables

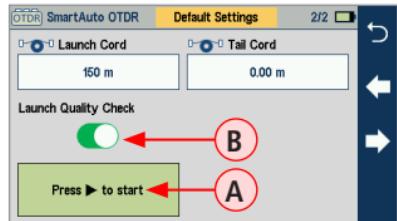
- While in the SmartAuto Settings screen (A), touch the Launch Cord field (C) or Tail (Receive) Cord field (D) to display the length editor screen (E).
- Using on-screen controls, enter the desired length (F).
- Touch Done to save changes and return to the SmartAuto Settings screen.

Testing in SmartAuto® OTDR

To Start SmartAuto Test

Initiate the SmartAuto test by touching 'Press ► to start' (A) soft key or pressing Test start/stop button.

1. FlexScan begins testing with the Live Fiber check and if a live fiber is NOT detected, proceeds to next step.
2. If the Launch Quality check is enabled (B), FlexScan checks loss and reflectance of the OTDR connection.
3. If launch quality is 'Good', FlexScan starts testing at both wavelengths using SmartAuto settings.
4. When testing is completed, FlexScan displays the LinkMap® screen, which is a primary display in SmartAuto OTDR mode.



Live Fiber Detection

To prevent service disruption on live PONs, FlexScan performs a Live Fiber check prior to every OTDR test. If a live fiber is detected, FS200-50B/100/300 models display a warning screen and do not allow testing; FS200-60/-304 displays a warning (C) and allows the user to complete a test at 1650 nm only.



Testing in SmartAuto® OTDR

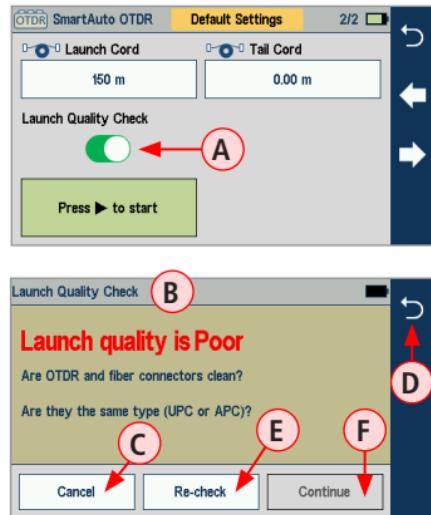
Launch Quality Check

An optional launch quality check enables users to detect dirty, damaged, poorly seated, or mismatched (UPC to APC) connectors.

To perform the launch quality check:

1. With the Launch Quality Check option **A** enabled in the OTDR or General Settings screen, initiate an OTDR test.
2. The FlexScan will assess the loss and reflectance at the OTDR's connection to the launch cord (fiber ring) or fiber under test.
3. If excess loss or reflectance is detected, the OTDR displays the 'Launch Quality is Poor' warning screen **B**.
From this screen the user may chose to perform one of the following:
 - Cancel a test by touching either Cancel **C** or Back **D**.
 - Clean and reconnect connectors and repeat the launch quality check by touching Re-check **E**.
 - Continue testing without checking and cleaning the connection by pressing Continue **F**.

Note: Testing a fiber with poor launch quality may produce poor test results.



Understanding LinkMap Display Features

LinkMap is an icon-based representation of the analyzed network.

The screenshot shows the LinkMap application interface. At the top, a header bar displays the text "LinkMap" and "C001_005". Below the header is a "Link Map thumbnail view" showing a series of green and red rectangular icons representing network events. A "Link Length" value of "1672.8 m" is displayed next to the thumbnail. To the right of the thumbnail is a "Link Length" label with a formula: x/y or x_1-x_2/y , where x = number of the selected event, x_1-x_2 = link section between events x_1 and x_2 , and y = total events. A "File name" label with a description follows, stating "File name: consists of cable name and fiber number, or 'New Trace' if file has not been saved". A "Battery icon" indicates battery state. On the right side, a vertical control bar features a "Back key" (left arrow), "Menu key" (down arrow), and "Touch to move to next or previous event or link section" (right arrow). A "LinkMap detail view" is shown below the thumbnail, displaying a summary of the first four events (1, 2, 3, 4) and a "3. Fusion Splice @ 758.6 m" event, which is marked as "FAIL" and "Does not meet quality standards. Re-splice." A "Link Length" value of "1672.8 m" is also present in the detail view. A "Link Length" label with a formula is also present in the detail view area.

Link map thumbnail view with proportionally spaced events

File name: consists of cable name and fiber number, or "New Trace" if file has not been saved

LinkMap detail view: shows summary and first 4 events, or up to 5 events. White highlighted area in thumbnail view indicates region of fiber for which events are shown in the detail view.

x/y or x_1-x_2/y , where
 x = number of the selected event
 x_1-x_2 = link section between events x_1 and x_2 ,
 y = total events

Link Length

Link Length

3/5

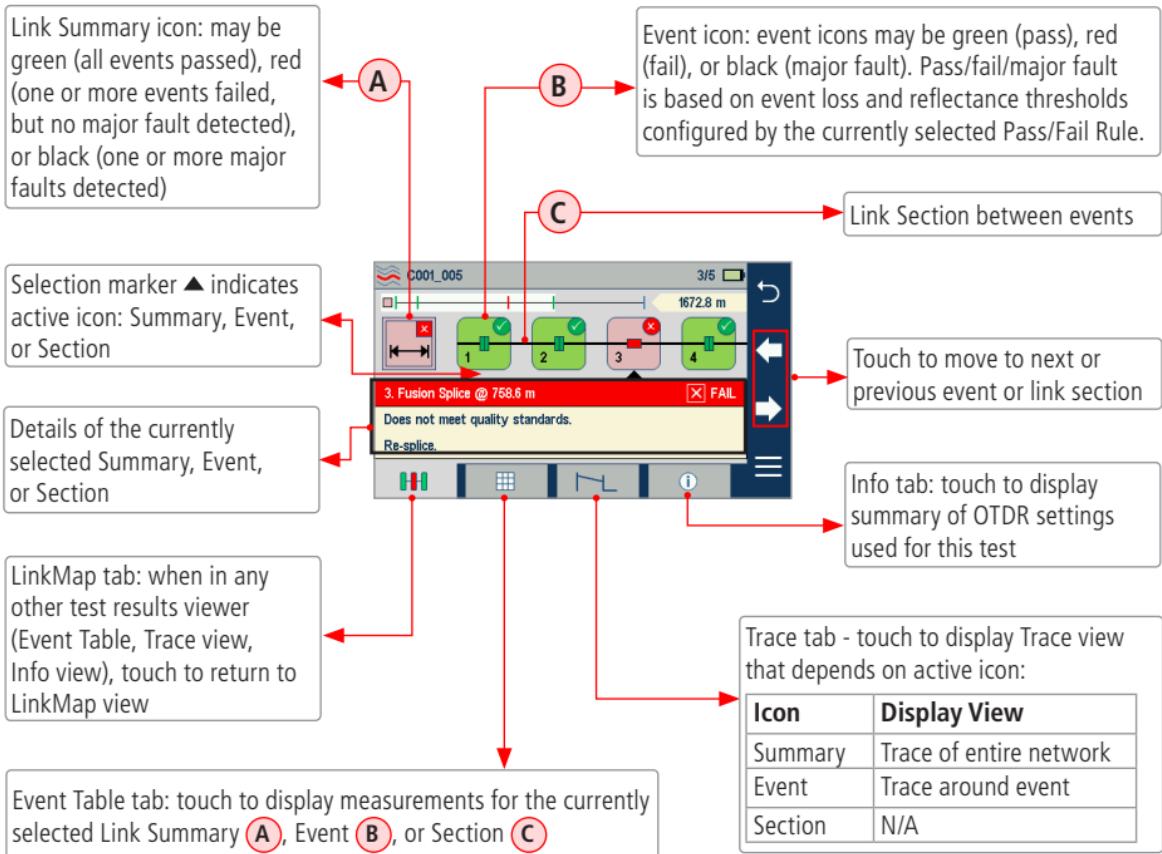
1672.8 m

Battery icon indicates battery state

Back key: touch to return to the previous menu

Touch to move to next or previous event or link section

Menu key: touch to navigate to Save As screen



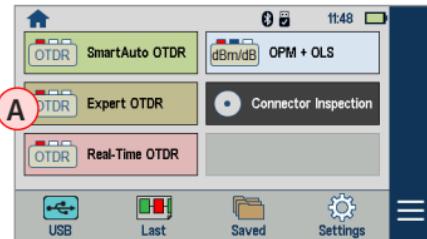
Understanding Expert/Real-time OTDR Settings

Parameter	Description
Trace Length	The Trace Length parameter determines the distance range of the full (unzoomed) trace. It also determines the distance between data points in the trace: the longer Trace Length, the wider the data point spacing. We recommend selecting the shortest Trace Length that is longer than the fiber under test. For example, to test a fiber that is 2.5 km long, select the 5 km range. Available Range values: 250 m, 500 m, 1, 2, 5, 10, 15, 20, 40, 80, 160, 240 km.
Pulse Width	The FlexScan can operate using different pulse widths. Short pulse widths provide the shortest event and attenuation dead zones. Long pulse widths provide the range needed to test long fibers. Available Pulse values: 3, 5, 10, 30, 100, 300 ns, 1, 3, 10 μ s. Note: Longer pulse widths only available on longer Trace Lengths.
Averaging Time	The Averaging Time parameter determines the duration of a timed test and the number of trace averages performed. Longer averaging time produces a smoother trace. Available Averaging Time values: 5, 10, 30, 60, 90, 180 sec.
Fiber Type	Available: User or G.65x. Press and hold the currently selected User or SMF-28E option to view Group Index of Refraction, Backscatter Coefficient, and Attenuation coefficient. User values can be edited.
Wavelength Settings	FS200-50B: 1550 nm only FS200-60: 1650 nm only FS200-100: 1310, 1550, 1310/1550 nm FS200-300: 1310, 1550, 1310/1550 nm FS200-304: 1310, 1550, 1650, 1310/1550, 1310/1650, 1550/1650, 1310/1550/1650 nm

Expert OTDR Settings

The Expert OTDR mode is accessed from the Home screen by touching the Expert OTDR tab **A**. While in the Expert OTDR screen **B**:

- Touch the desired test setup parameter to display a sub-screen.
- While in a sub-screen, touch the desired field to set the value.
- Touch **C** to toggle between Expert settings screens.
- Touch **D** to return to the Home screen.



The image displays two screenshots of the Expert OTDR settings screen. The top screenshot shows the main configuration page with the following fields:

- Wavelength(s): 1310, 1550 nm
- Trace Length: 10.0 km
- Pulse Width: 30 ns
- Averaging Time: 30 sec
- Fiber Type: G.652.C/D (IEC B1.3)
- Launch Quality Check: A toggle switch (green)

Below this is a vertical navigation bar with arrows for navigating between screens. The bottom screenshot shows the Launch Cord and Tail Cord length settings:

- Launch Cord: 0.00 m
- Tail Cord: 0.00 m

Below these is another vertical navigation bar with arrows for navigating between screens. Callouts with arrows point from text boxes to specific settings:

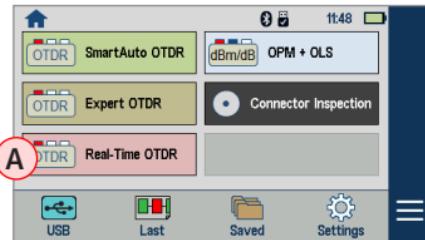
- Choose wavelength(s) at which to test (points to Wavelength(s))
- Select Pulse Width: 3, 5, 10, 20, 30, 50, 100, 200 ns. Longer pulse width settings up to 20 μ s may be selected for longer Trace Length settings. (points to Pulse Width)
- Select G.65x or User (points to Fiber Type)
- Set the Launch Cord length (points to Launch Cord)
- Set Trace Length in Distance units that are set in the General Settings screen (points to Trace Length)
- Select Averaging Time: 5, 10, 30, 60, 90, 180 sec (points to Averaging Time)
- Touch to enable/disable Launch Quality Check (points to the toggle switch)
- Set the Tail Cord length (points to Tail Cord)

Red circles labeled C and D are placed on the vertical navigation bars to indicate the left and right arrow buttons for switching between screens.

Real-Time OTDR Settings

The Real-Time OTDR mode is accessed from the Home screen by touching the Real-Time OTDR tab **(A)**. While in the Real-Time OTDR screen **(B)**:

- Touch the desired test setup parameter to display a sub-screen.
- While in a sub-screen, touch the desired field to set the value.
- Touch **← →** **(C)** to toggle between Expert settings screens.
- Touch **↶** **(D)** to return to the Home screen.

The main screen shows 'Real-Time OTDR' settings. A vertical navigation bar on the right has arrows pointing up, down, left, and right, and a '1/2' indicator. The screen includes fields for Wavelength(s) (1310 nm), Trace Length (2.0 km), Pulse Width (30 ns), Update Rate (2 Hz), Fiber Type (G.652.C/D (IEC B1.3)), and Launch Quality Check (a toggle switch). A sub-screen 'Expert OTDR' is open at the bottom, showing 'Launch Cord' (0.00 m) and 'Tail Cord' (0.00 m) fields, with a '2/2' indicator. Callouts with red arrows point to specific elements:

- Choose wavelength(s) at which to test (points to Wavelength(s) field)
- Select Pulse Width: 3, 5, 10, 20, 30, 50, 100, 200 ns. Longer pulse width settings up to 20 μ s may be selected for longer Trace Length settings. (points to Pulse Width field)
- Select G.65x or User (points to Fiber Type field)
- Set the Launch Cord length (points to Launch Cord field)
- Set the Tail Cord length (points to Tail Cord field)
- Select Trace Length in Distance units that are set in the General Settings screen (points to Trace Length field)
- Select Update Rate: 1, 2, 4 Hz (points to Update Rate field)
- Touch to enable/disable Launch Quality Check (points to the toggle switch)

Red circles labeled **(B)** through **(D)** are placed over the Trace Length field, the vertical navigation bar, the Update Rate field, and the '2/2' indicator respectively.

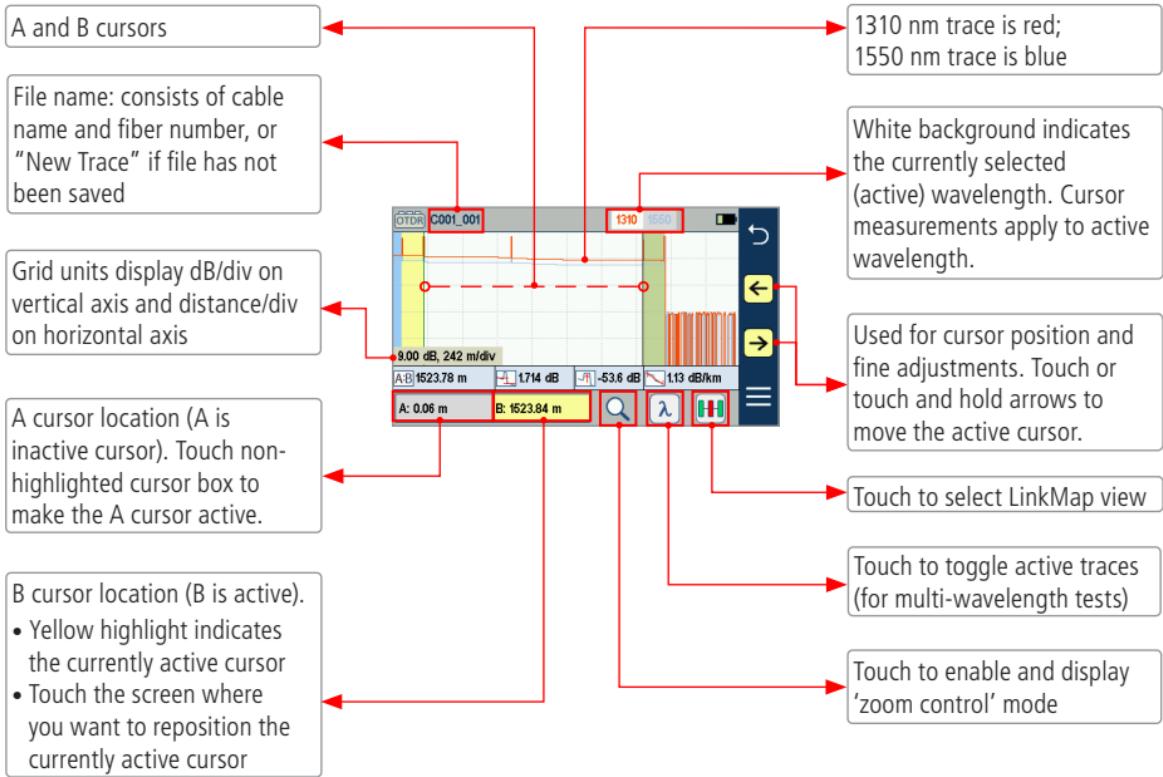
Testing in Expert and Real-Time OTDR Mode

To Test in Expert or Real-Time OTDR Mode

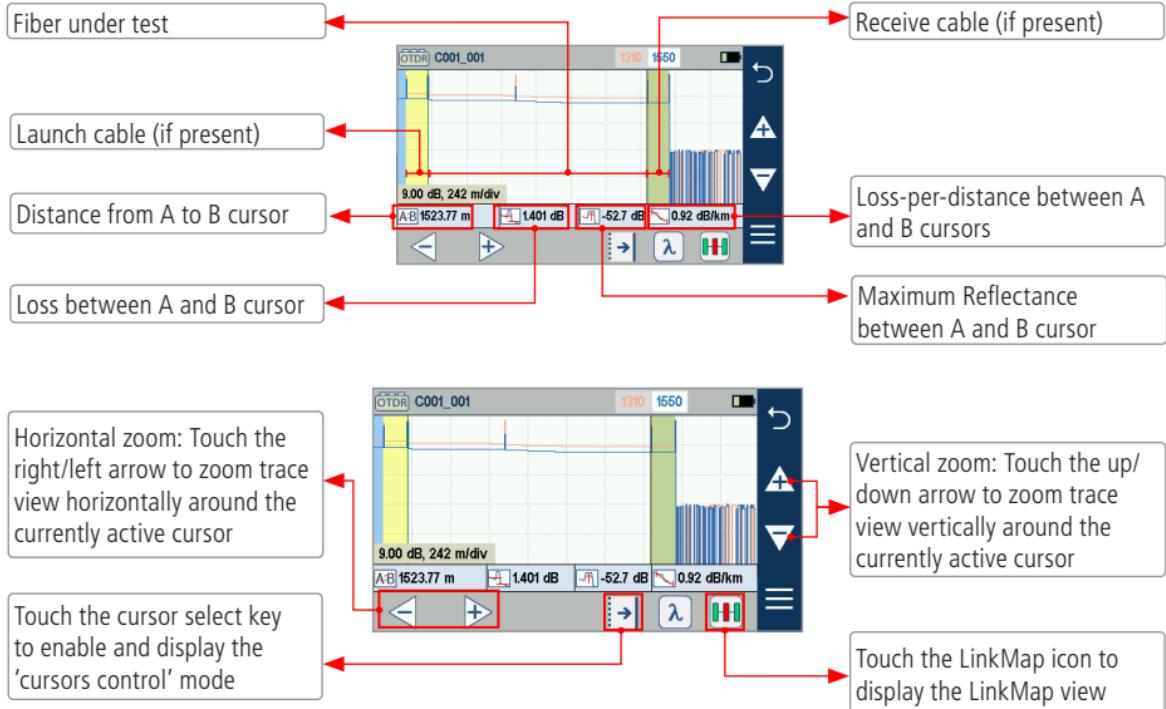
Initiate an OTDR test by pressing the Start/Stop button.

1. FlexScan begins testing with the Live Fiber check and if a live fiber is NOT detected, proceeds to next step. For details, see section ["Live Fiber Detection" on page 27](#).
2. If the Launch Quality check is enabled, FlexScan checks loss and reflectance of the OTDR connection. For details see section ["Enabling Launch Quality Check" on page 26](#) and ["Launch Quality Check" on page 28](#).
3. If launch quality is 'good', FlexScan starts testing using settings configured in Expert OTDR (Real-Time OTDR) settings screen.
4. When testing is completed, FlexScan displays the Trace screen, which is the only view shown in Expert and Real-Time modes. For details, see section ["Understanding Trace Display Features" on page 35](#).

Understanding Trace Display Features



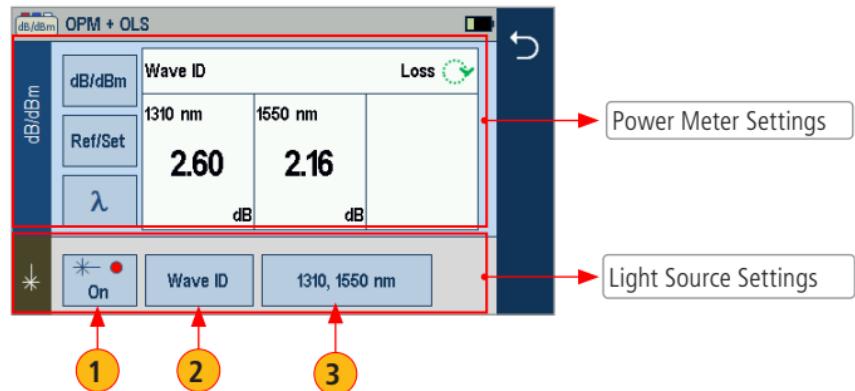
Understanding Trace Display Features



Light Source and Power Meter Operation

Light Source Settings and Features

- 1 Touch to enable/disable light source. RED dot indicates that source is ON.
- 2 Touch to select test mode: Wave ID, CW, Tone (270 Hz, 330 Hz, 1 kHz, 2 kHz).
 - Select Wave ID mode for fastest loss measurements.
While in this mode, the FlexScan source transmits wavelength information, enabling a Wave ID power meter to synchronize and measure power at received wavelength(s).
 - Use CW mode to generate continuous wave light at a single wavelength.
 - Generate Tone for fiber identification (270 Hz, 330 Hz, 1 kHz, 2 kHz).
- 3 Touch to select test wavelength: 1310, 1550 or 1650 nm (depending on model).

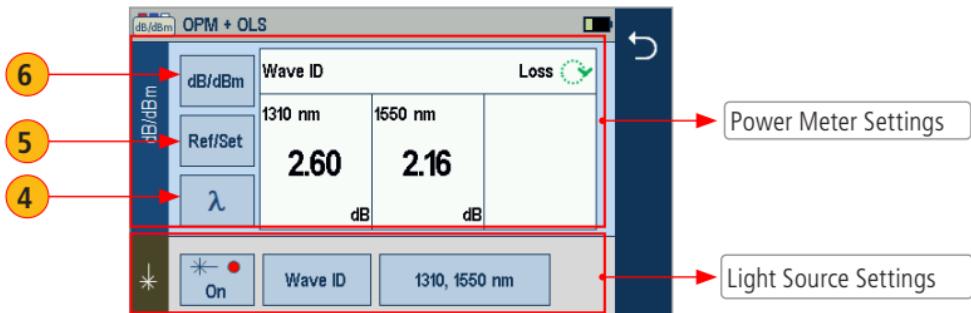


Light Source and Power Meter Operation

Power Meter Settings and Features

- 4 If used with non Wave ID source, touch to select wavelength. If used with Wave ID source, power meter automatically synchronizes to and indicates received wavelength(s).
- 5 Hold to store new reference(s) at received wavelength(s). Touch Ref/Set to view stored reference(s).
- 6 Touch to toggle between power (dBm or nW) and loss (dB) mode.

Note: Power meter detects and indicates fiber identifying tones when used with a light source capable of generating a modulated Tone signal.



Inspecting Fibers with FOCUS Flex and FlexScan

Optical connectors may be inspected using FOCUS Flex auto-focusing connector inspection probe with IEC pass/fail analysis. Captured fiber end-face images and pass/fail results are immediately displayed on the FOCUS Flex and on the paired FlexScan OTDR and may be saved in either FOCUS Flex or FlexScan. A micro-USB port on either FOCUS Flex or FlexScan supports fast upload of internally stored results to PC.

FOCUS Flex Inspection Probe Overview

For detailed instructions on how to operate FOCUS Flex inspection probe, please refer to the FOCUS Flex User's Guide (available on www.AFLglobal.com) or the FOCUS Flex Quick Reference Guide provided with your FOCUS Flex inspection probe.

Controls

- 1 Power button.
- 2 Power On/Off indicator (GREEN when On).
- 3 Image Capture button.
- 4 F1 soft key (typically Back function).
- 5 F2 soft key (typically Select function).
- 6 Navigation and Edit functional keys.



FOCIS Flex Inspection Probe Overview

Display (2-inch Color LCD [320 x 240])

- 7 Screen title.
- 8 Battery status icon.
- 9 Image and information display area.
- 10 F1 and F2 soft key labels area.

Interfaces

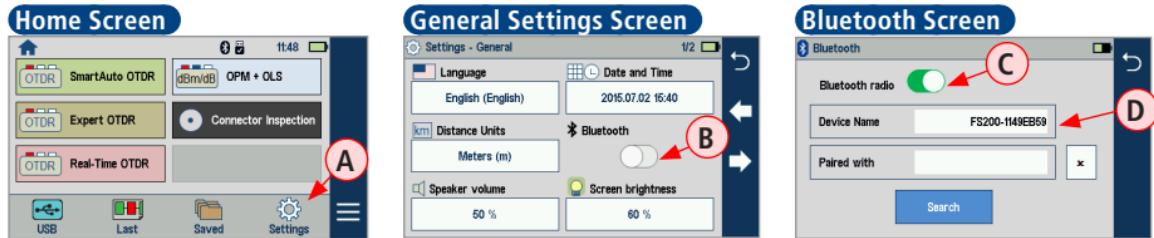
- 11 Optical inspection port.
- 12 Adapter tip.
- 13 Dust cover.
- 14 Micro-USB port.
- 15 6 VDC input jack.
- 16 Charging indicator.



Pairing FlexScan with FOCUS Flex Inspection Probe

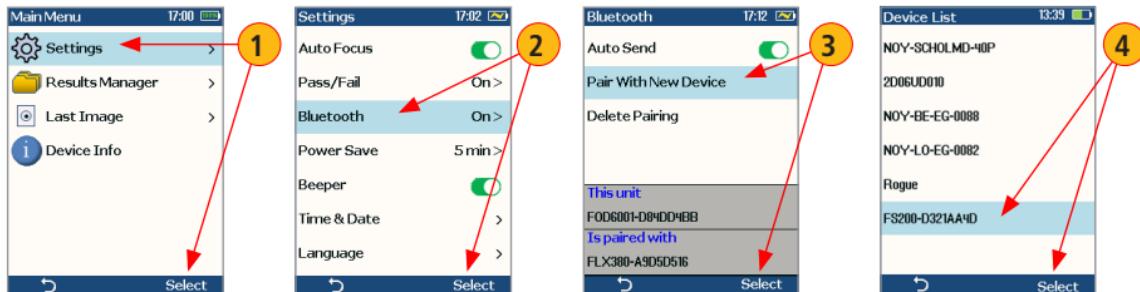
To transfer fiber-end images from the FOCUS Flex inspection probe and display inspection results on FlexScan, you need to pair your FOCUS Flex probe with FlexScan.

Enable Bluetooth on FlexScan



- From the Home screen, touch Settings **A**.
- In the General Settings screen: If Bluetooth is disabled **B**, touch its field to display the Bluetooth screen.
- Touch the Bluetooth radio button **B** to enable **C**.
- In the device name field **D** you will see Bluetooth ID displayed for the FlexScan device.

Enable Bluetooth on FOCUS Flex



- 1 From FOCUS Flex Main Menu, select Settings, then press Select.
- 2 From the displayed Settings Menu, select Bluetooth, then press Select.
- 3 Highlight Pair with New Device, then press Select.
- 4 When a list of devices is displayed, navigate to and select Bluetooth ID of the FlexScan device, and then press Select to 'Set as Default Device'.

Inspecting Optical Connectors

Once FlexScan is paired to FOCIS Flex with Bluetooth enabled on both units, perform the following steps.

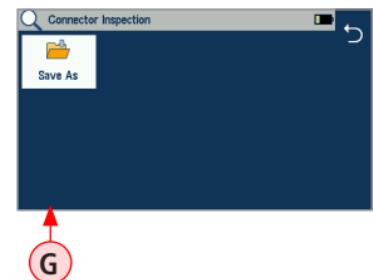
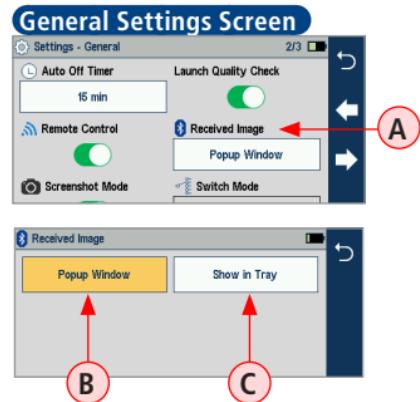
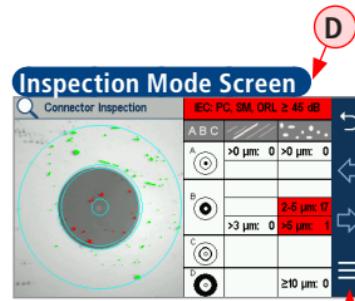
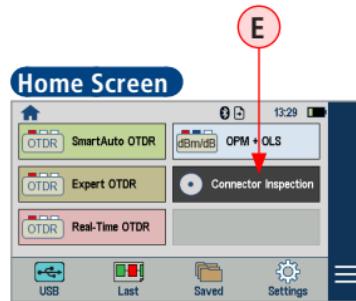
On FOCIS Flex:

- If testing an optical fiber connector, slide the ferrule of the optical fiber into the adapter tip installed on the FOCIS Flex inspection port. Use caution not to contaminate the end-face of the fiber connector.
- If testing an optical fiber connector mounted in a bulkhead adapter, slide the adapter tip into the bulkhead adapter.
- You will see a Live fiber-end image appears on the FOCIS Flex display.
- Capture the displayed image by pressing the Capture button. (Refer to section ["FOCIS Flex Inspection Probe Overview" on page 39](#)).
- Once captured, the fiber end-face image gets analyzed by the FOCIS Flex.
- Once analysis is done, inspection results will appear on the FOCIS Flex display.
- Simultaneously, FOCIS Flex will be sending results to the FlexScan paired to it.

Inspecting Optical Connectors

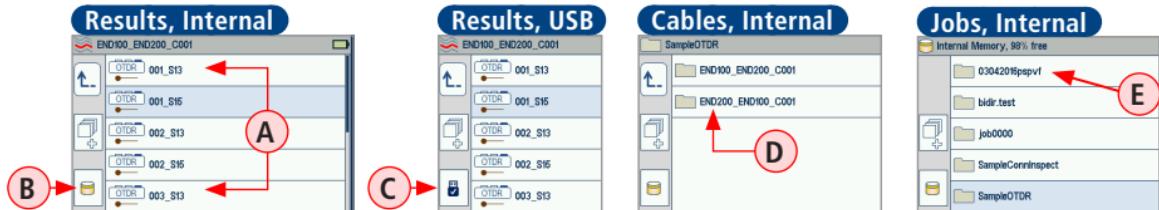
On FlexScan:

- If the Received Image option **A** is set to Popup Window **B** in General Settings, inspection results received from FOCIS Flex will be immediately displayed on FlexScan **D** screen even if Connector Inspection mode **E** is not enabled.
- If the Received Image option **A** is set to Show in Tray **C** in General Settings, inspection results will only be displayed when Connector Inspection mode **E** is enabled.
- Once displayed, view image and results on FlexScan **D**.
- Inspection results can be stored in FOCIS Flex or FlexScan. To save results in FlexScan, select Menu **F**, then Save As **G**.

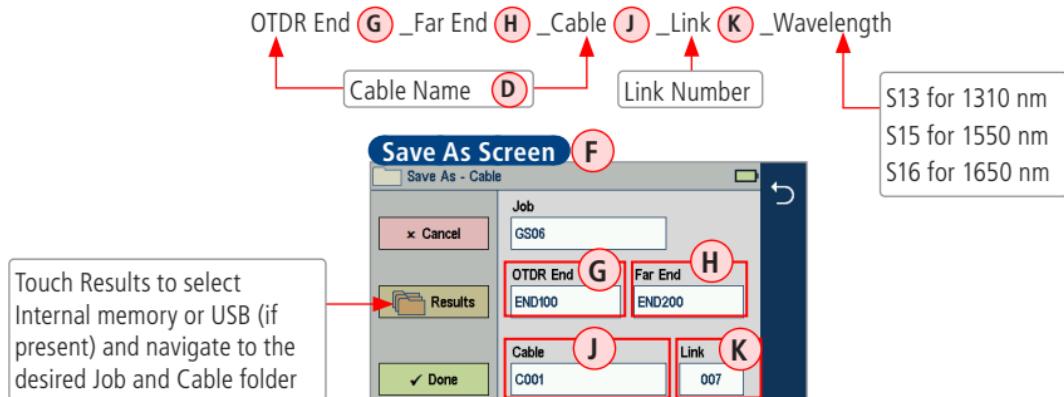


Saving, Recalling and Uploading Test Results

Test results **A** may be stored in the FlexScan Internal memory **B** or on USB **C**. Saved test results are organized into a Cable sub-folder **D** within a Job folder **E**.



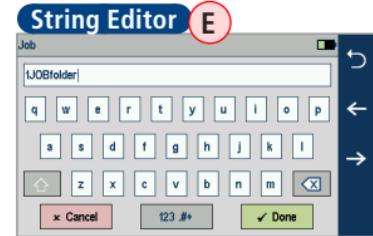
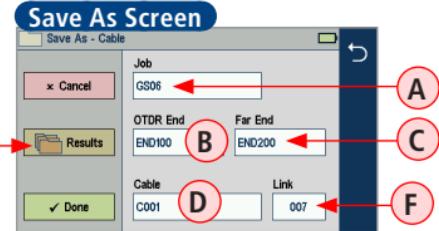
A name of the saved result consists of several parameters, which are defined in the Save As screen (F).



Saving, Recalling and Uploading Test Results

Touch Results to select Internal memory or USB (if present) and navigate to the desired Job and Cable folder

- Job **A**, OTDR End **B**, Far End **C**, and Cable **D** fields are user-defined and may be set and/or edited in the String Editor screen:
 - Touch the desired field to display String Editor **E**.
 - Make edits using on-screen controls.
 - Touching Done will save edits and return to the Save As screen.
 - Touching Back  or Cancel will return to the Save As screen with no edits saved.
- Link number **F** auto-increments after each save, but can be modified in the Number Editor screen as needed.
 - Touch the Link field **F** to display the Number Editor **G**.
 - Make edits using on-screen controls.
 - Touching Done will save edits and return to the Save As screen.
 - Touching Back  or Cancel will return to the Save As screen with no edits saved.



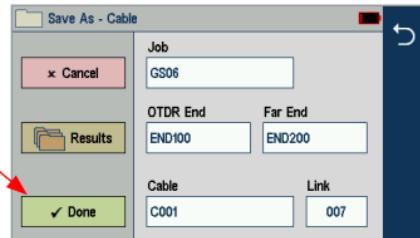
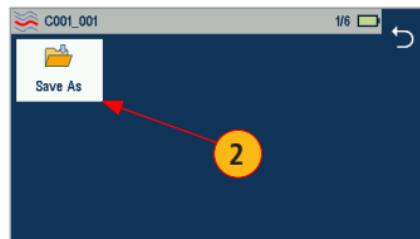
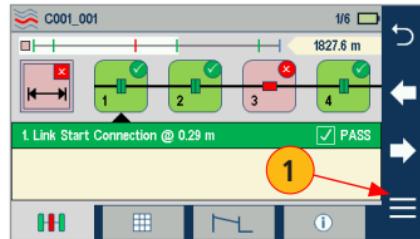
Saving to a Newly Created Folder

- 1 While in the Results view, touch Menu  soft key.
- 2 From the displayed sub-screen, touch Save As to display the Results Manager screen.
- 3 Define <Job>, <OTDR End>, <Far End>, <Cable>, and <Link> fields used to name saved results. Touch Done when finished.

Note: this will make the newly created Job, OTDR End, Cable, or Fiber current.

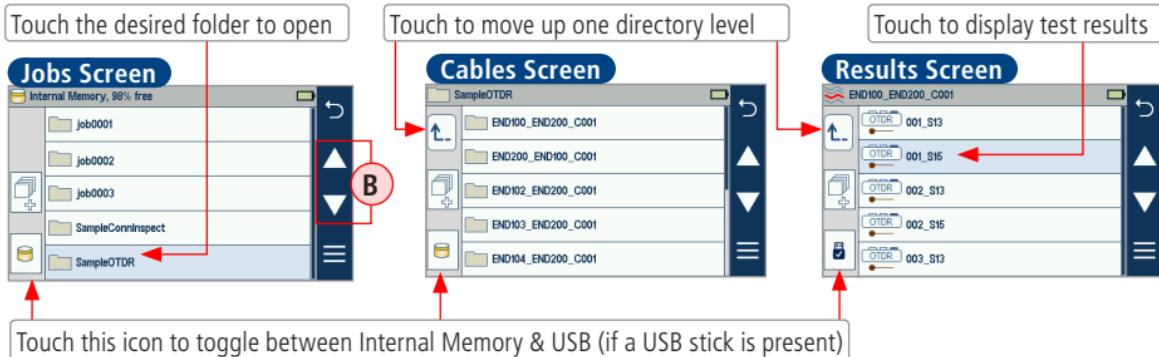
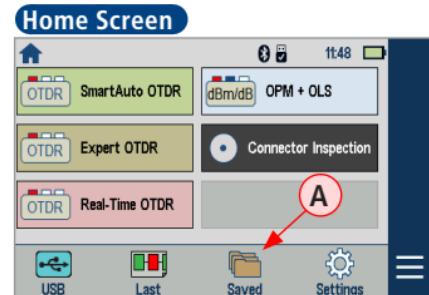
Saving to the Current Folder

- 1 While in the Results view, touch the Menu  soft key.
- 2 From the displayed sub-screen, touch Save As to display the Results Manager screen.
- 3 Review <Job>, <OTDR End>, <Far End>, <Cable>, and <Link> fields used to name saved results. Touch Done when finished.

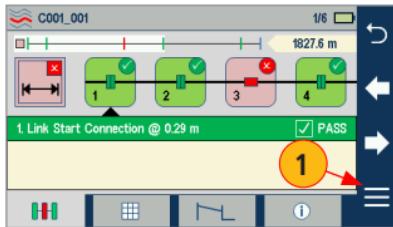


Viewing Saved Test Results

1. From the Home screen, touch the Saved icon **(A)** to display the Results Manager, which may be displayed as Jobs screen, Cables screen, or Results screen.
2. Navigate through Job/Cable/Results screen to locate the desired test result and touch to display it.
 - In Jobs screen: use Up/Down  arrow keys **(B)** to navigate to the desired folder, then touch it to display saved folders.
 - In Cables screen: navigate to the desired folder, then touch it to display saved results.
 - In Results screen: navigate to the desired test record, then touch it to display test results.



Deleting Jobs/Cables/Files



- 1 From the Home screen, touch the Saved icon to display the Results Manager, which may be displayed as Jobs screen, Cables screen, or Results screen.
- 2 Navigate through the Jobs/Cables/Results screen to locate the desired results.
- 3 Press Add Files control to enable 'select' function.
- 4 Touch as many files as needed to select.
- 5 Touch the Menu  soft key to display a sub-menu A.
- 6 Touch Delete.
- 7 Then touch Ok to confirm deletion.



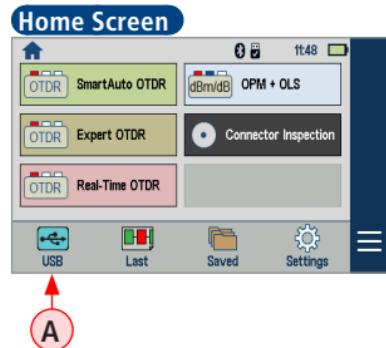
Transferring Files to a PC via USB

To transfer files from your FlexScan to a PC using a USB cable, perform the following:

- Connect your FlexScan to a PC using the supplied micro-USB to USB cable. Make sure the micro-plug is fully seated in your FlexScan.
- Touch the USB **(A)** soft key on the FlexScan's Home screen.
- On your PC, open My Computer. A new removable drive named FS200 X: will appear, where 'X:' is the drive letter assigned to your FlexScan.
- Under FS200 X: you should see two folders: RESULTS and SOFTWARE.
- Copy the RESULTS folder to your PC.
 - Under RESULTS you will see: TRACES.
 - Under TRACES you will see all of the folders containing OTDR traces or OPM results.

Note:

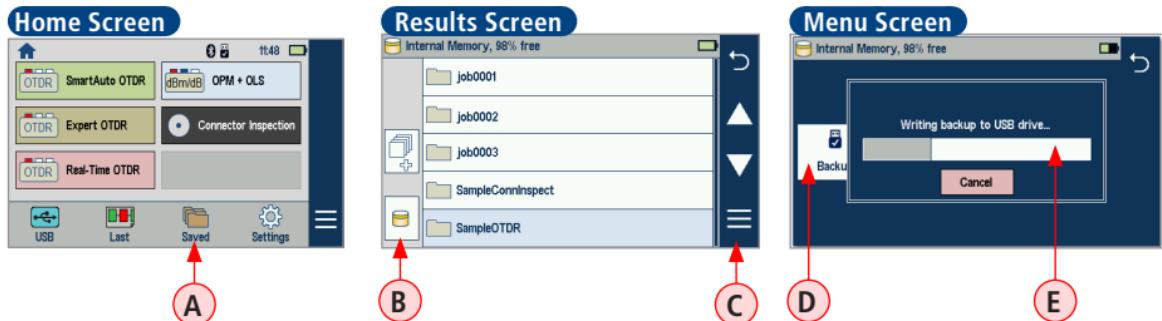
Before removing the USB cable connecting your FlexScan to your PC, or pressing the Cancel soft key on the USB screen, left click the Safely Remove Hardware icon in the Start bar of your PC, then left click the Safely remove USB Mass Storage Device – Drive (X:) message, where 'X' is the drive letter assigned to your FlexScan.



Backing up Results to External USB Memory Stick

To back up internally stored results to USB memory stick:

- Turn on the FlexScan OTDR.
- Plug in an external USB memory stick.
- From the Home screen, touch the Saved icon **(A)**.
- When in test results screen, verify that Internal Memory **(B)** option is currently selected.
 - If the USB option is selected, touch the USB memory icon to toggle to the Internal Memory option.
- Touch the Menu icon **(C)**.
- Touch the Backup icon **(D)**.
- Wait until the Backup progress indicated by the “Writing backup to USB drive...” label **(E)** completes.



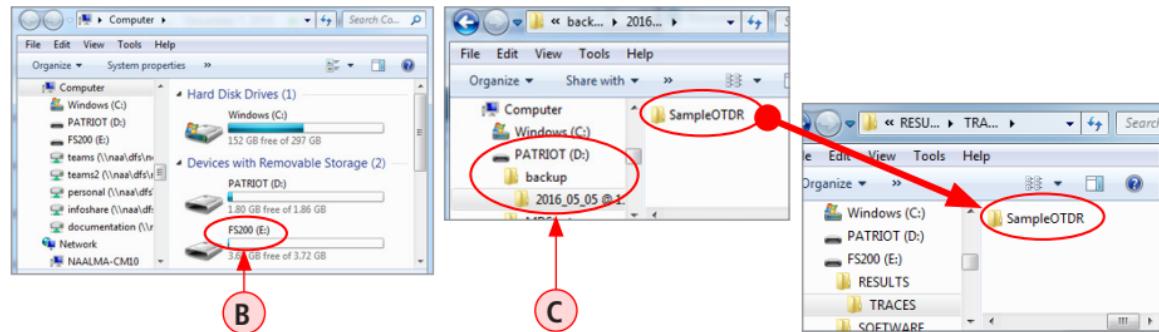
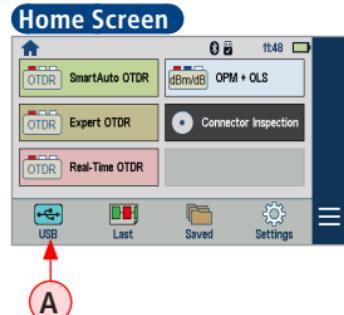
Restoring Results from External USB Memory Stick

Use a PC to restore backed up FlexScan results from the USB memory stick:

- Turn on the FlexScan OTDR and connect to a PC via USB cable.
- Touch the USB icon **A** on the FlexScan's Home screen.
- Plug the USB memory stick containing test results into a PC.
- Open 'My Computer' and double-click on the FS200 drive **B**.
- Open 2nd instance of 'My Computer' and double-click on the USB drive.

 - Within USB drive, double-click on 'backup' folder, then select date/time-stamped folder **C**.
 - Drag contents of the desired backup folder from the USB to the FS200\Results\Traces folder.

- PC will prompt to confirm overwrite of folders or files having the same names.



How to View Device Information

FlexScan software revision, serial number, and calibration date can be viewed from the Device Information screen, which is accessed from the Home screen.

- 1 From the Home screen, touch the Menu  soft key.
- 2 From the displayed sub-screen, touch the Info tab.
- 3 View FlexScan Info displayed on the Device Information screen.

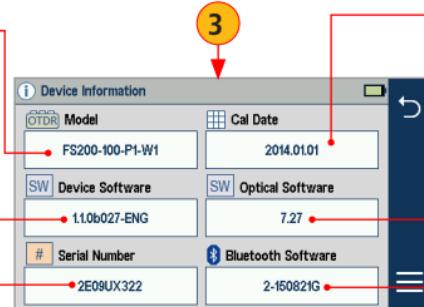


Model Number:

- FS200-50B: 1550 nm OTDR
- FS200-60: 1650 nm OTDR
- FS200-100: 1310/1550 nm Pt-to-Pt OTDR
- FS200-300: 1310/1550 nm PON & Pt-to-Pt OTDR
- FS200-304: 1310/1550/1650 nm PON & Pt-to-Pt OTDR

Device Software: Revision of the current User Interface software

Serial Number: FlexScan serial number



Cal Date: Date of last calibration

Optical Software: Revision of current optical firmware

Bluetooth Software: Revision of current Bluetooth firmware

General Information

This user's guide provides operating instructions for testing fiber optic networks with your FlexScan OTDR and assumes that you have basic knowledge about testing fiber optic networks. The purpose of this user's guide is to explain how to use and maintain your FlexScan OTDR. Please check our web site at **www.AFLglobal.com**, **Test and Inspection** for updates to this user's guide and additional application information. If you have questions about your FlexScan OTDR and recommended accessories, or if you need technical or sales support, please contact AFL Customer Service.

Contacting Customer Service

You may call AFL Customer Service between 8 AM and 5 PM, United States Eastern Time.

Phone: +1 (800) 235-3423

Technical Support: AFLEquipmentService@AFLglobal.com

Warranty Terms and Conditions

AFL products are warranted against defective material and workmanship for a period of (1) one year from the date of delivery to the end user.

Any product that is found defective within the warranty period will, at the discretion of AFL, be repaired or replaced. Warranty will be voided if the product has been repaired or altered by other than an authorized AFL product repair facility, if the void sticker has been compromised, or which have been subject to misuse, negligence, or accident. In no case shall AFL liabilities exceed the original purchase price.

Repair Services

AFL has an authorized calibration/repair facility for AFL products in the USA, Europe and Asia Pacific. Please contact customer service for a return authorization number prior to sending your AFL test equipment in for repair or calibration.

Fujikura Europe LTD is an Authorized European Repair and Calibration facility for AFL Test and Inspection products and should be contacted directly for service.

Fujikura Asia LTD is an Authorized Asia Pacific Calibration facility for AFL Test and Inspection products and should be contacted directly for product calibrations. Please contact customer service for a return authorization number prior to sending your test equipment in for repair.

USA

AFL
260 Parkway East
Duncan, SC 29334
Attn: Calibration and Repair
+1 (800) 235-3423
www.aflglobal.com

Europe

Fujikura Europe Ltd
C51 Barwell Business Park
Leatherhead Road
Chessington, Surrey, KT9 2NY
+44 208 240 2020
www.fujikura.co.uk

Asia

Fujikura Asia Ltd
438A Alexandra Road,
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Test & Inspection

Thank you for choosing AFL Test & Inspection!

www.AFLglobal.com or +1 (800) 235-3423