



**Test & Inspection**

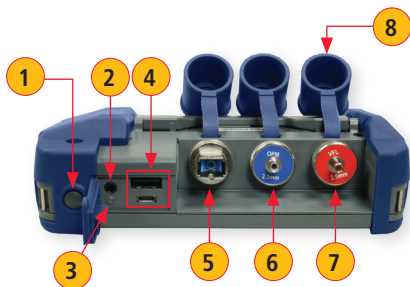
# **FlexScan OTDR**

## **With SmartAuto™ and LinkMap™**

### **Quick Reference Guide**

[www.AFLglobal.com](http://www.AFLglobal.com) or (800) 321-5298, (603) 528-7780

## Controls, Display, Interfaces



1. Power button
2. Power jack (5 VDC)
3. Charge/AC indicator
4. USB ports
5. OTDR/source port
6. Power meter port
7. VFL port
8. Dust cover
9. Home button
10. Start/stop test button
11. VFL indicator
12. VFL button
13. Touchscreen display

### Battery Charging



- Plug the included AC charger into AC outlet.
- Connect charger plug to power jack **2**.
- LED **3** indicates charging status as follows:
  - OFF** - AC not connected
  - RED** - Charging battery
  - GREEN** - Fully charged
- FlexScan charges while operating.

### Configure FlexScan to Auto-Off

- From the Home screen, select Settings menu.
- Locate and select the Auto Off Timer menu.
- From the Auto Off Timer menu, select the desired power save option (5 min, 15 min, Never).



## Home Screen

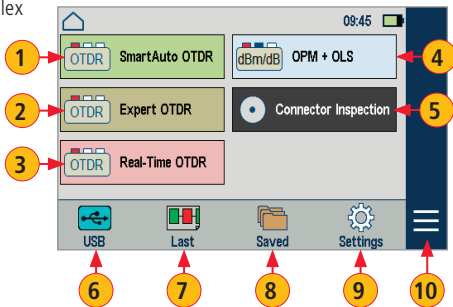
The Home screen is the FlexScan's Main menu that is displayed at startup. While in any other screen, return to Home by either pressing the Home button  or touching (if available) the Back  soft key. This screen contains menus of Test and Utility modes that allow users to set test parameters, select user 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 **Source & Power Meter:** Enable light source and/or measure optical power.
- 5 **Connector Inspection:** Pair FlexScan with FOCIS Flex auto-focus probe for fiber optic connector end-face inspection.

### Utility Modes and Features Summary

- 6 **USB:** Touch to enable file transfer.
- 7 **Last:** Touch to view the most recent test.
- 8 **Saved:** Touch to view saved test results.
- 9 **Settings:** Touch to access General Settings menu.
- 10 **Menu:** Touch to view Device Information screen.



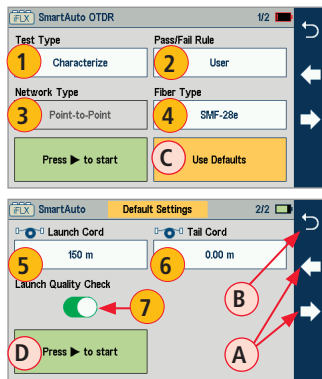
## OTDR Modes: SmartAuto™ with LinkMap™ Display Summary

### While in the SmartAuto OTDR Settings Menu:

- Touch the desired setting field/tab (e.g. 1 Test Type) to display a sub-menu (where applicable).
- Touch ← → (A) to navigate to next/previous screen (where applicable).
- Touch ↶ (B) to return to the previous menu.
- Touch Use Defaults (C) (if displayed) to reset settings to the factory defaults.
- Touch 'Press ▶ to start' (D) to initiate testing.

### SmartAuto OTDR Settings Summary

- 1 Test Type:** Touch to select either Characterize Network or Locate End & Faults test type.
- 2 Pass/Fail Rule:** Indicates selected LinkMap event pass/fail rules. Touch to select User or ITU G.671. Touch and hold to view/edit pass/fail event thresholds.
- 3 Network Type:** Currently only supports Point-to-Point network.
- 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.



## OTDR Modes: Live Fiber Detection and Launch Quality Check

### Live Fiber Detection

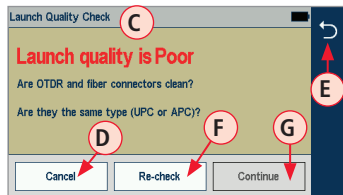
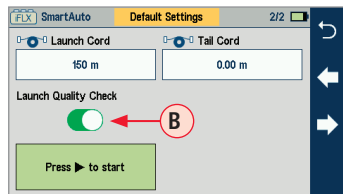
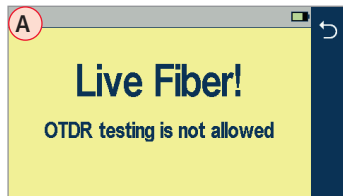
To prevent service disruption on live PONs, FlexScan performs a Live Fiber check prior to every OTDR test. If a live fiber is detected, FlexScan displays a warning screen **(A)** and doesn't allow testing.

### 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 **(B)** 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 **(C)**. From this screen the user may choose to perform one of the following:
  - Cancel a test by touching either Cancel **(D)** or Back **(E)**.
  - Clean connectors and repeat the launch quality check by touching Re-check **(F)**.
  - Continue testing without checking and cleaning the connection by pressing Continue **(G)**.

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



## OTDR Modes: Testing in SmartAuto™

Initiate the SmartAuto test by touching 'Press ► to start' soft key or pressing 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, 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.

### LinkMap Display Features

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

The screenshot shows the LinkMap interface with the following callout boxes:

- File name:** consists of cable name and fiber number, or "New Trace" if file has not been saved. (Points to 'C001\_001')
- Link map with proportionally spaced events:** (Points to the horizontal bar chart showing event positions).
- Link Length:** (Points to '227.5 m').
- x/y or x1-x2/y:** where x = number of the selected event, x1-x2 = link section between events, y = total events. (Points to '1/13').
- Back key:** touch to return to the previous menu. (Points to the left arrow key).
- Menu key:** touch to navigate to Save As screen. (Points to the bottom right menu icon).

The main display shows a sequence of four events (1, 2, 3, 4) with status indicators (red 'X' for fail, green checkmark for pass). A red banner at the bottom indicates: "1. Link Start Connection @ -0.18 m FAIL Does not meet quality standards. Inspect then clean or repair connectors as needed."

## OTDR Modes: Testing in SmartAuto™

Link Summary icon: may be green (all events passed), red (one or more events failed, but no major fault detected), or black (one or more major faults detected)

Event icon: event icons may be green (pass), red (fail), or black (major fault). Pass/fail/major fault is based on event loss and reflectance thresholds configured by the currently selected Pass/Fail Rule.

Selection marker ▲ indicates current selection: Summary, Event, or Section

Link Section between events

Details of the currently selected event

Touch to move to next or previous event or link section

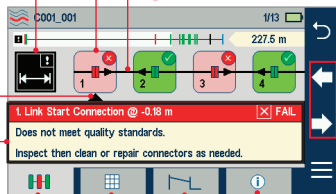
LinkMap tab: when in any other test results viewer (Event Table, Trace view, Info view), touch to return to LinkMap view

Info tab: touch to display summary of OTDR settings used for this test

Event Table tab: touch to display measurements for the currently selected Link Summary **A**, Event **B**, or Section **C**

Trace tab - touch to display Trace view that depends on selection:

Selection	Display View
Summary	Trace of entire network
Event	Trace around event
Section	N/A



## Expert and Real Time OTDR: Trace Display

The image shows two screenshots of an OTDR trace display interface. The top screenshot shows the main trace with two cursors (A and B) and various data points. The bottom screenshot shows the same trace with a zoomed-in view of the loss between the two cursors.

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

**A and cursors**

**Trace graph (RED is current)**

**Test wavelengths (RED is current)**

**Grid units display dB/div on vertical axis and distance/div on horizontal axis**

**Press to toggle active traces (for multi-wavelength tests)**

**A cursor location (A is inactive cursor). Touch non-highlighted cursor box to make the A cursor active.**

**Used for cursor position and fine adjustments. Touch or touch and hold arrows to move the active cursor.**

**B cursor location (B is active).**

- Yellow highlight indicates the currently active cursor.
- Touch the screen where you want to reposition the currently active cursor.

**Touch to enable and display 'zoom control' mode**

**Fiber under test**

**Receive cable (if present)**

**Launch cable (if present)**

**Loss between A and B cursor**

**Distance from A to B cursor**

**Maximum Reflectance between A and B cursor**





## Light Source and Power Meter Operation

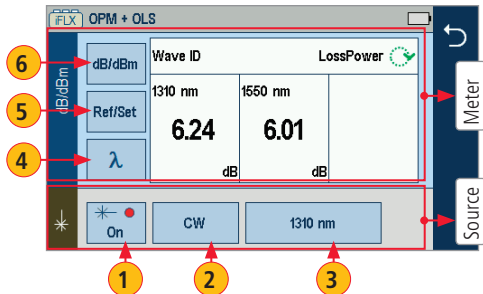
### Source Settings and Features

- 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 or 1550 nm.

### 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 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.

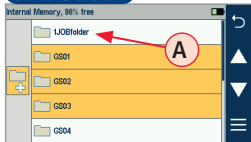
Note: Power meter detects fiber identifying tones when used with a light source capable of generating a modulated Tone signal.



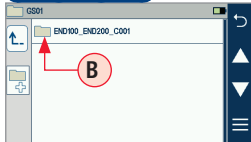
## Saving, Recalling and Uploading Test Results

Test results **(C)** are stored into Cable sub-folders **(B)**, which are organized into Job folders **(A)**.

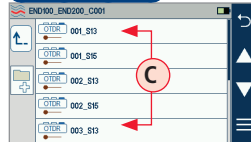
### Jobs Screen



### Cables Screen

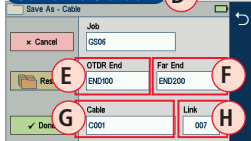


### Results Screen



A name of the saved test result consists of several parameters that are defined in the Save As screen **(D)**.

### Save As Screen **(D)**



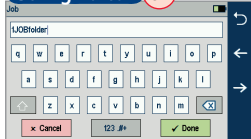
OTDR End **(E)** \_Far End **(F)** \_Cable **(G)** \_Link **(H)** \_Wavelength

Cable Name **(B)**

S13 for 1310 nm, S15 for 1550 nm

- <Job>, <OTDR End>, <Far End>, and <Cable> fields are user-defined in the String Editor **(J)** screen
- <Link> number auto-increments after each save, but can be modified in the Number Editor **(K)** screen as needed.
- Touch the desired field to display the String/ Number editor sub-screen. Make edits. Touch Done when finished.

### String Editor **(J)**




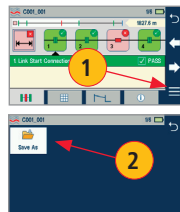
### Number Editor **(K)**



## Saving, Recalling and Uploading Test Results

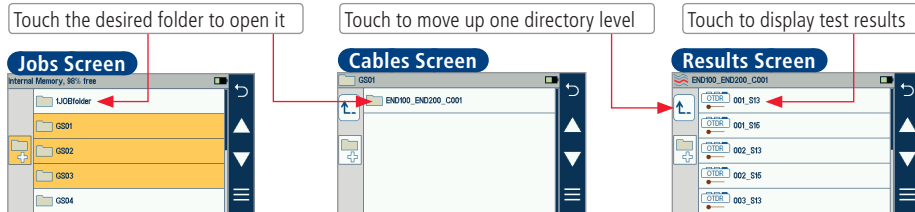
### To Save Test Results

- 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.



### To Review Test Results

4. From the Home screen, touch Saved icon to display the Results Manager.
5. Navigate through Job/Cable/Results screen to locate the desired test result.
6. Touch to display.



For detailed operating instructions, refer to the FlexTester User's Guide (available on the supplied CD and [www.AFLglobal.com](http://www.AFLglobal.com)).