



**Test & Inspection**

# **FlexScan<sup>®</sup> FS300 OTDR**

**With SmartAuto<sup>®</sup> and LinkMap<sup>®</sup>**

## **Quick Reference Guide**

[www.AFLglobal.com](http://www.AFLglobal.com)

## Controls, Display, Interfaces



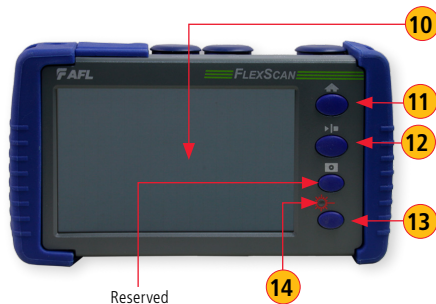
- |   |                         |    |                        |
|---|-------------------------|----|------------------------|
| 1 | Power button            | 8  | VFL port               |
| 2 | Power jack (5 VDC)      | 9  | Power Meter port       |
| 3 | Charge/AC indicator     | 10 | Touchscreen display    |
| 4 | USB host port           | 11 | Home button            |
| 5 | Micro-USB function port | 12 | Start/stop test button |
| 6 | MM OTDR/Source port     | 13 | VFL button             |
| 7 | SM OTDR/Source port     | 14 | VFL indicator          |

### 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 (Never, 5 min, 15 min).



## Home Screen

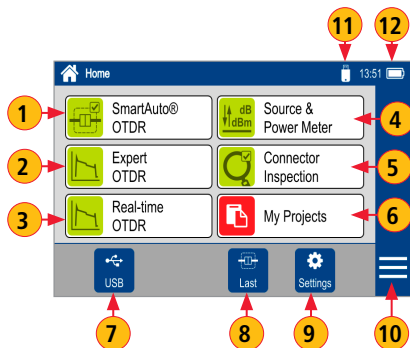
The Home screen is displayed at FlexScan startup. This screen contains menus of Test and Utility modes that allow users to set test parameters, select user preferences, manage saved test results, configure general settings and perform other non-test functions. While in any other screen, return to Home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

### Test Modes and Features Summary

- 1 SmartAuto® OTDR (recommended):** 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):** Measure power and loss; generate fiber ID Tones; enable light source.
- 5 Connector Inspection:** View connector inspection results received via Bluetooth from FOCIS Flex probe.

### Utility Modes and Features Summary

- 6 My Projects:** Touch to view test results.
- 7 USB:** Touch to enable file transfer to/from PC.
- 8 Last:** Touch to view the most recent test results.
- 9 Settings:** Touch to configure General Settings.
- 10 Menu:** Touch to view Device Information screen.
- 11 USB:** Indicates external USB memory stick detected.
- 12 Battery Icon:** Indicates battery charge level.

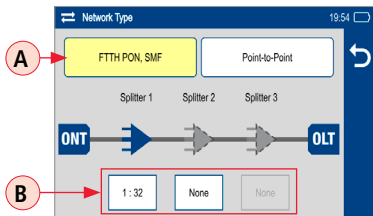
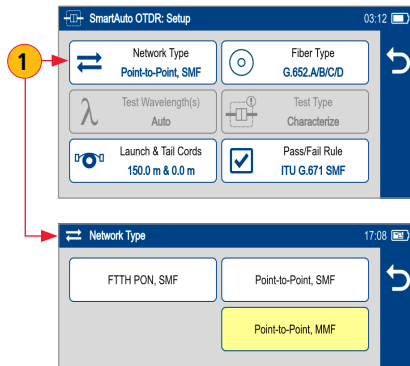


# Configure and Initiate SmartAuto® OTDR Test

## SmartAuto OTDR Settings Summary

- 1 Network Type.** Touch to select one of the following:
  - FTTH PON, Single-mode
  - Point-to-point, Single-mode
  - Point-to-point, Multimode
- If FTTH PON **A** selected, configure splitters.
  - Tap each expected splitter field (located below PON diagram - **B**) to display a sub-screen and configure split ratio. Up to 3 splitters may be configured.
  - If Auto **C** selected– FS300 automatically detects splitters and reports split ratio based on loss.

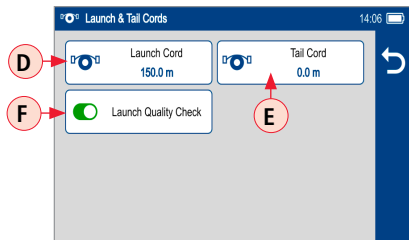
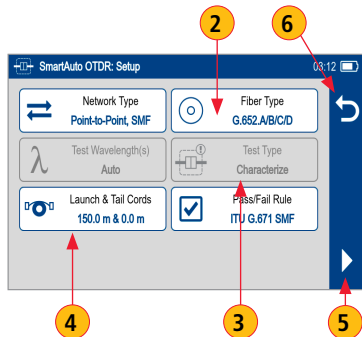
**Note:** If Auto selected, excess loss at splitter may result in incorrect split ratio being reported.



## Configure and Initiate SmartAuto® OTDR Test

- 2 **Fiber Type.** Select one of the following:
  - Multimode OMx or User
  - Single-mode G.65x or User
- 3 **Launch & Tail Cord:**
  - **D** Touch Launch Cord to configure length of launch cord, if present.
  - **E** Touch Tail Cord to configure length of tail cord, if present.
  - **F** Touch Launch Quality Check to enable/disable. When enabled, FS300 checks OTDR connection to launch cord or jumper cable at start of test.
- 4 **Pass/Fail Rule:** Indicates selected LinkMap event pass/fail rules.
  - Touch to select ITU G.671, TIA-568.3-D or User.

**Note:** OTDR test results evaluated against selected or configured rules:
- 5 Touch ▶ to initiate SmartAuto test.
- 6 Touch Back (↶) to return to Home screen.



## 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, FS300-325 models display a warning screen **A** and do not allow testing.

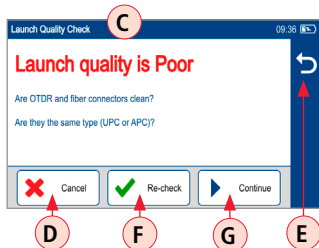
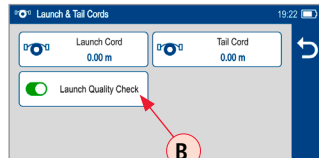
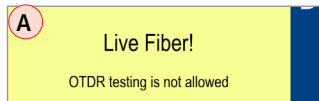
### Launch Quality Check

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, then 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.



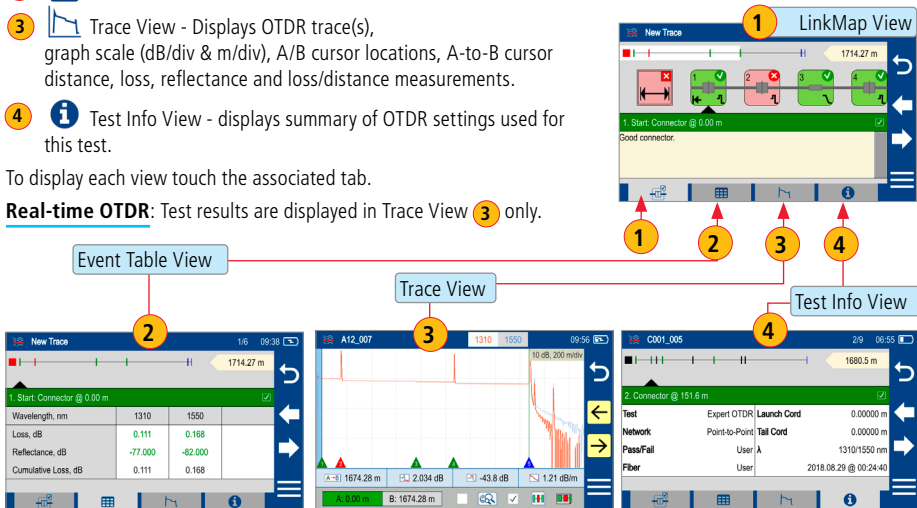
# OTDR Test Results Views

**SmartAuto® OTDR and Expert OTDR:** Test results may be displayed in four views as follows:

- 1  LinkMap View - displays an icon-based representation of the network.
- 2  Event Table View - displays measurements for the currently selected Link Summary, Event, or Section.
- 3  Trace View - Displays OTDR trace(s), graph scale (dB/div & m/div), A/B cursor locations, A-to-B cursor distance, loss, reflectance and loss/distance measurements.
- 4  Test Info View - displays summary of OTDR settings used for this test.

To display each view touch the associated tab.

**Real-time OTDR:** Test results are displayed in Trace View 3 only.



1 LinkMap View

2 Event Table View

3 Trace View

4 Test Info View

Wavelength, nm	1310	1550
Loss, dB	0.111	0.168
Reflectance, dB	-77.000	-82.000
Cumulative Loss, dB	0.111	0.168

Test	Expert OTDR	Launch Cord	0.00000 m
Network	Point-to-Point	Tail Cord <th>0.00000 m</th>	0.00000 m
Pass/Fail	User A	1310/1550 nm <td></td>	
Fiber	User	2018.08.29 @ 00:24:40	

## Testing in SmartAuto® OTDR Mode

Initiate the SmartAuto test by touching ► 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® View Features

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

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

Link map thumbnail view with proportionally spaced events

$x/y$  or  $x1-x2/y$ , where  
 $x$  = number of the selected event  
 $x1-x2$  = link section between events,  
 $y$  = total events

LinkMap detail view: shows summary and first 4 events, or up to 5 events. White highlighted area in thumbnail indicates region of fiber for which events are shown in the detail view. Touch an event icon to see more details about that event.

Link Length

Back key: touch to return to the previous menu

Menu key: touch to navigate to Save As screen



## LinkMap® View Features

Link Summary icon: may be green (all events passed), red (one or more events failed)

Event icon: event icons may be green (pass) or red (fail). Pass/fail is based on event loss and reflectance thresholds configured by the currently selected Pass/Fail Rule. Touch an event icon to see details about that event.

Selection marker ▲ indicates selected icon: Summary, Event, or Section

Link Section between events

Details of the currently selected Summary, Event, or Section

Swipe or Use arrows to move to next or previous event or link section

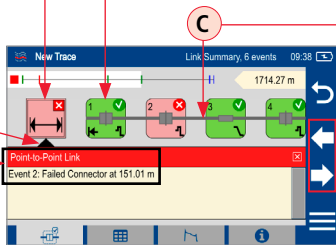
LinkMap tab: when in any other test results viewer (Event Table View, Trace View, Test Info View), touch to return to LinkMap View

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


Event Table tab: touch to view measurements for the currently selected Link Summary (A), Event (B), or Section (C)

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

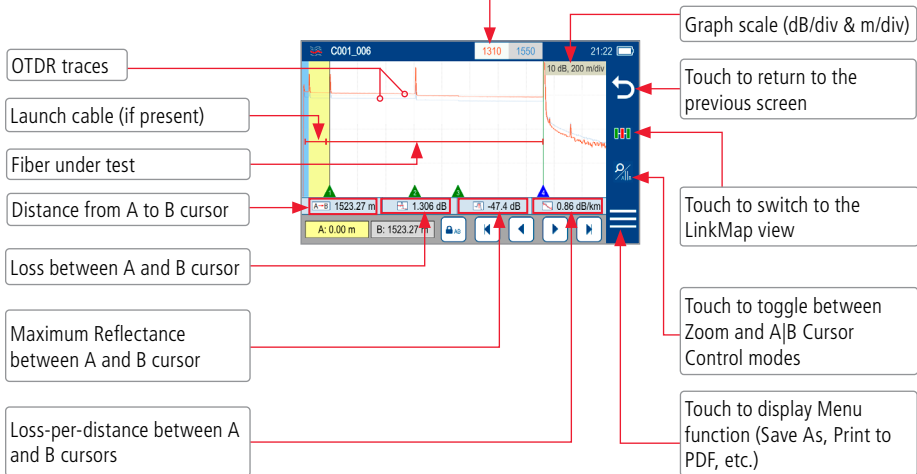
Selection	Display View
Summary	Trace of entire network
Event	Trace around event
Section	N/A



## Trace View Features

Trace View is accessed from any other results view by touching the  Trace tab. Trace View displays OTDR trace(s), graph scale (dB/div & m/div), A/B cursor locations, A-to-B cursor distance, loss, reflectance and loss/distance measurements.

- Touch the desired wavelength make it active.
- White background indicates active wavelength.
- Cursor measurements apply to active wavelength.



## Trace View – Cursor Control Enabled

A and B cursors. Touch and drag in trace display area to move the active cursor to the desired location

Event Marker:

- Green - Passing event; Red - Failing event, Blue - Not evaluated event.
- Touch Event marker to move active cursor to that event

Cursor A location (A is active). Yellow highlight indicates the currently active cursor. Cursor A is always located to the left of cursor B.

Cursor B location (B is inactive cursor). Touch non-highlighted cursor box to make cursor active. Cursor B is always located to the right of cursor A.

Lock / Unlock A/B cursors (when locked, cursors move together). A|B Cursor locked icon toggles to show expected function when touched (e.g. if A|B currently locked, icons shows unlock A|B)



**Cursor Control enabled**

Jump active cursor to the Next Event

Nudge active cursor Right

Nudge active cursor Left

Jump active cursor to the Previous Event

## Trace View – Zoom Control Enabled

### Note:

- Zoom In/Out centers trace about a point where the active cursor intersects with the active wavelength trace.
- Unzoom / Rezoom icon toggles to show expected function when touched (e.g. if zoomed in, icon shows Unzoom state).



- Pinch in trace area to zoom (horizontally or vertically).
- Swipe in trace area to pan display (horizontally or vertically).

### Zoom Control enabled

Touch to zoom out vertically on the active trace around the currently active cursor.

Touch to zoom in vertically on the active trace around the currently active cursor.

Touch to zoom out horizontally on the active trace around the currently active cursor.

Touch to zoom in horizontally on the active trace around the currently active cursor.

Cursor A location (A is active). Yellow highlight indicates the currently active cursor. Cursor A is always located to the left of cursor B.

Cursor B location (B is inactive cursor). Touch non-highlighted cursor box to make cursor active. Cursor B is always located to the right of cursor A.

Touch to Unzoom (if zoomed in);  
Touch to Rezoom (If zoomed out).

## Printing Results to PDF

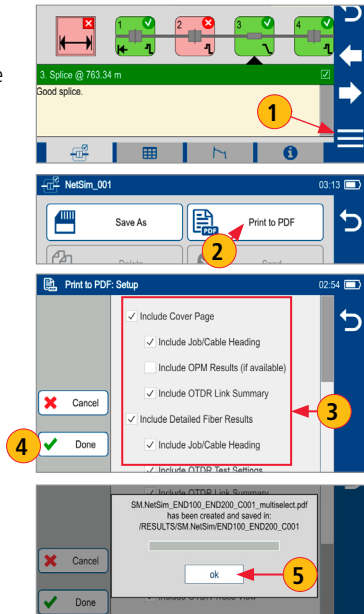
Saved test results may be organized into reports and printed to PDF file format as needed.

- 1 Navigate to the desired test results and touch Menu (☰) from the results display.
- 2 Touch Print to PDF from the displayed menu.
- 3 Select options to include cover page and configure content of printout.
  - Scroll to configure additional options.
- 4 Touch Done to complete setup and generate PDF report.
- 5 Touch OK when done.

### Uploading PDF reports to PC




- Connect FlexScan to PC (via FlexScan's micro-USB function port and USB port on a PC).
- On FlexScan, enable USB mode (on Home screen).
- On PC, navigate to FS300 (X:) > RESULTS > TRACES > "Destination PROJECT folder".
- Upload PDF report from FlexScan to PC.

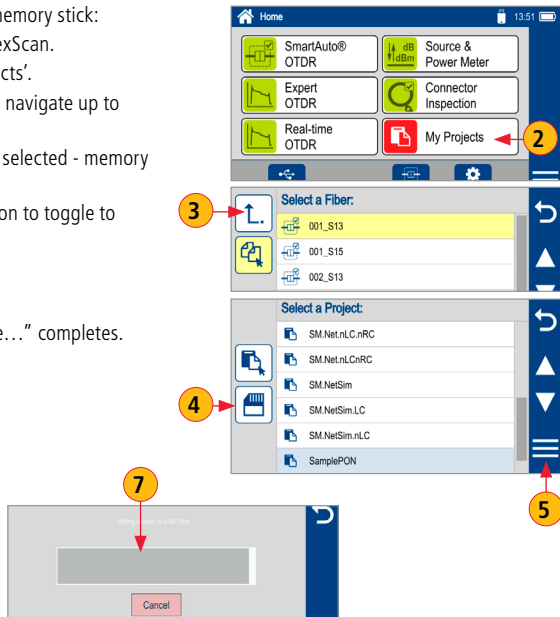
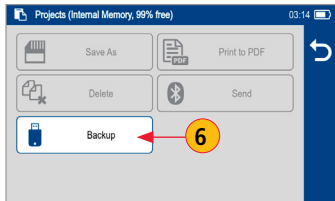
**Note:** Future software update will allow PDF to be sent to another device via Bluetooth or WiFi (Bluetooth/WiFi option required).



## Back Up Saved Results to USB Memory

To back up internally stored results to USB memory stick:

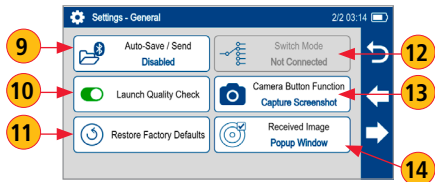
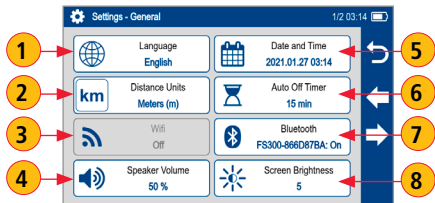
- 1 Plug external USB memory stick into FlexScan.
- 2 From the Home screen, touch 'My Projects'.
- 3 If Folder Up icon  is shown, touch it to navigate up to Projects level until  icon disappears.
- 4 Verify that Internal Memory is currently selected - memory card icon is shown.
  - If USB selected, touch USB memory icon to toggle to internal memory.
- 5 Touch Menu icon .
- 6 Touch Backup.
- 7 Wait until "Writing backup to USB drive..." completes.



## General Settings

While in the General Settings screen, touch the desired setting field to display a sub-menu and perform settings as follows:

- 1 Select Language (added in future update)
- 2 Select Distance Units
- 3 Configure WiFi (Future)
- 4 Set Speaker volume
- 5 Set Date and Time
- 6 Set Auto Off Timer
- 7 Enable/configure Bluetooth
- 8 Set brightness and auto-dim
- 9 Configure Auto-Save/Send
- 10 Enable/disable Launch Quality Check
- 11 Restore Factory Defaults
- 12 Configure MPO Switch Control (if Switch connected and enabled)



- 13 Configure Camera Button Function - When configured as "Capture Screenshot," press and release of the Camera button captures current screen and saves it in the \SCREENSHOTS folder in internal memory. Captured screenshots may be uploaded to PC via the micro-USB port.
- 14 Display received FOCIS Flex results in popup window or save in background

# Light Source and Power Meter Operation

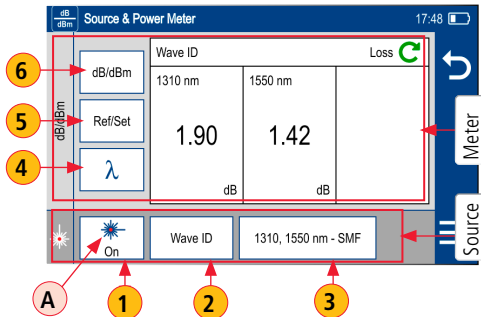
## Source Settings and Features

- 1 Touch to enable/disable light source. RED Laser **A** 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: 850 nm, 1300 nm, 1310 nm, 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 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 (in dBm or Watts) and loss (dB) mode.

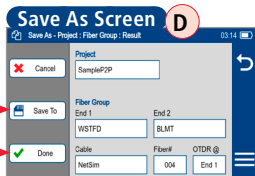
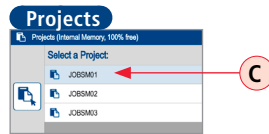
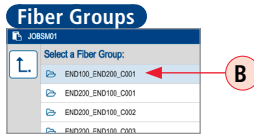
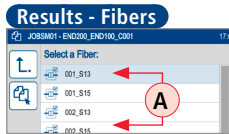
**Note:** Power meter detects and indicates fiber identifying tones when used with a light source capable of generating a modulated Tone signal.





## File Manager

Fiber test results **(A)** may be stored in the FlexScan internal memory or external USB stick.  
Saved test results are organized into a Fiber Group sub-folder **(B)** within a Project folder **(C)**.



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

Fiber Group folders are named and displayed as:

<End1>\_<End2>\_<Cable>

Individual Test Result files are named and displayed as:

<End1>-<End2>-<Cable>\_<Fiber#>\_<WavelengthCode>.SOR.

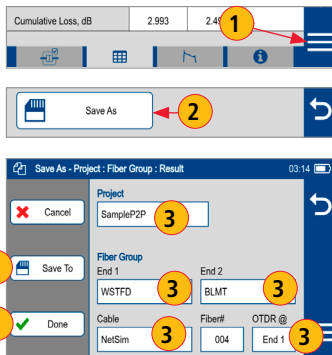
- Touch Save To **(E)** to display File Manager and navigate to the desired Project / Fiber Group folder.
- Project, End 1, End 2, and Cable are user-defined in Text Editor.
- Fiber number auto-increments after each save, but can be modified in Number Editor as needed.
- Touch Done **(F)** when finished.

For Bi-directional OTDR reports, results must be obtained and stored from each end of the network:

- Use same test settings (range, pulse width, etc.) in both directions; Use same launch and receive cables in both directions; Set OTDR@ End 1 to test from one direction; Set OTDR@ End 2 to test from other direction; Bi-directional averaging and report generation is performed using TRM® 3.0.

## Saving Results

- 1 While in the Results view, touch Menu icon ☰.
- 2 Touch 'Save As'.
- 3 Edit [Project], [End1], [End2], [Cable], [Fiber#], and [OTDR@] fields used to identify saved results: touch any field to edit it.
  - For Bi-directional OTDR testing: Set OTDR@ End 1 to test from one direction; Set OTDR@ End 2 to test from other direction.
  - Touch Done when finished.
- 4 Touch 'Save To' to view, navigate and select destination Project/Fiber Group folder. Touch Back ↶ to return to Save As screen.
- 5 Touch Done to save test results.



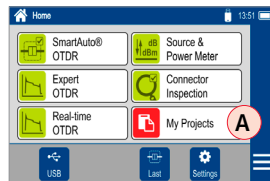
### Saving Results for Bi-directional Reporting:

- Results must be obtained and stored from each end of the network. Bi-directional averaging and report generation is performed using TRM® 3.0.
- To ensure TRM can associate results from both ends, proper naming of test results is critical:
- Use same Project name and Fiber Group name when testing from each end.
- Fiber Group name created from End1, End2 and Cable names.
- Use same End1 and End2 names.
  - End1 and End2 names must be swapped when testing from End2.
  - Reset fiber number to same starting fiber when testing from End2.

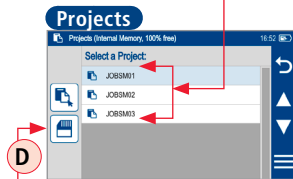
## Recalling Saved Test Results

### To View Saved Test Results

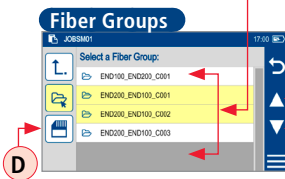
- From the Home screen, touch 'My Projects' **A**.
- Navigate through Project/Fiber Group/Fiber screens to locate the desired test record, then touch it to display test results.
  - Touch up/down keys **B** or swipe to scroll up/down through list of files.
  - Touch Folder Up icon **C** to navigate up to Fiber Groups or Projects level.
  - Touch the Memory/USB icon **D** to toggle between USB memory stick and internal memory card (if USB stick present).



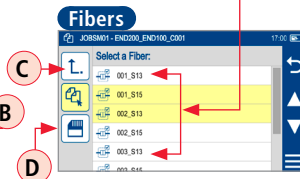
Touch the desired Folder from the list to open it



Touch the desired Fiber Group to open



Touch the desired Fiber to display test results



Touch this icon to toggle between Internal Memory and USB (if USB stick present)

Refer to the FlexScan User's Guide (available on the supplied CD or USB stick and [www.AFLglobal.com](http://www.AFLglobal.com)).



**Thank you for choosing AFL Test & Inspection!**

Vous pouvez trouver de brèves instructions en français sur:  
Eine kurze Anleitung in deutscher Sprache finden Sie unter:  
Puede encontrar breves instrucciones en español en:

**[www.AFLglobal.com](http://www.AFLglobal.com):**

Products/Test and Inspection/OTDRs and Troubleshooters/FlexScan FS300 Quad OTDRs