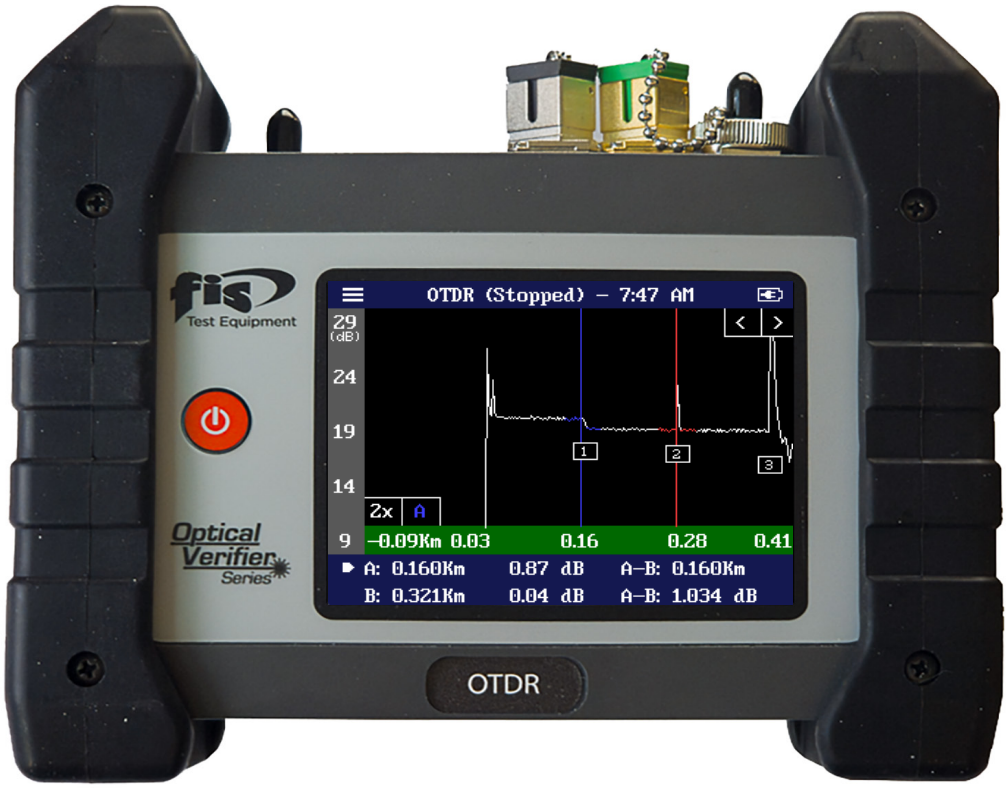
OV350-OTDR

Hand Held Mini OTDR

(Optical Time Domain Reflectometer)

Users Guide



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Section 1 Safety

Prior to using the quick start guide or operating this equipment in any way, it is highly suggested the user reads all safety information.

This product has been designed and tested in accordance with the Manufacturer's safety standards, and has been supplied in a safe condition.

Personal Safety

Personnel should always be aware when working with fiber optic test equipment that active fibers may be present and therefore infrared optical energy may be present.

Never look directly into the end of a connected fiber optic cable or fiber optic adapter of test equipment, to do so could expose the user to laser radiation and could result in sever personal injury.

Prevent Fire or Shock Hazard

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

Prevent Connector Damage

Fiber-optic connectors are easily contaminated or damaged. The connection to the OV350-OTDR is a physical contact type of connection and dirty or damaged connectors may impair the instruments capabilities at minimum and at worse result in the need to return the OV350-OTDR to the factory for expensive repairs. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed.

The OV350-OTDR is shipped with UPC polished connectors for MM and in many cases, angle polished connectors for SM applications, as appropriate per industry standards. Ensure the proper connector is used to interface with the unit. APC Adapters will be labeled "APC".

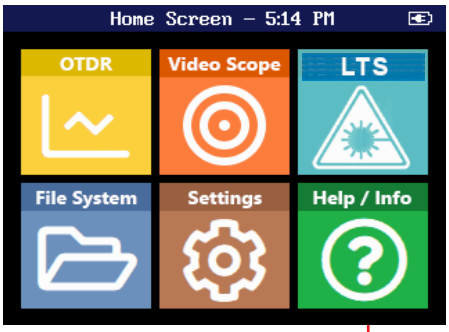
It is suggested a pulse box/dead zone eliminator always be use to minimize multiple connections and disconnections from the equipment's fiber optic adapters. This will help ensure proper testing practices with most accurate test results while using the OV350 optical time domain reflectometer.

Section 2 Quick Start Guide

Power Up

Press the button to power on the OV350-OTDR, the home screen will be displayed.

The home screen offers direct access to the OTDR, LTS (TLS for DWDM) and video scope modules. File management icon opens project/file management screen to manipulate and transfer projects and files saved in the OTDR and video scope and LTS modules. The settings icon opens the settings page. The Help icon offers the user a link to Fiber Instrument Sales manuals, upgrades and training online.

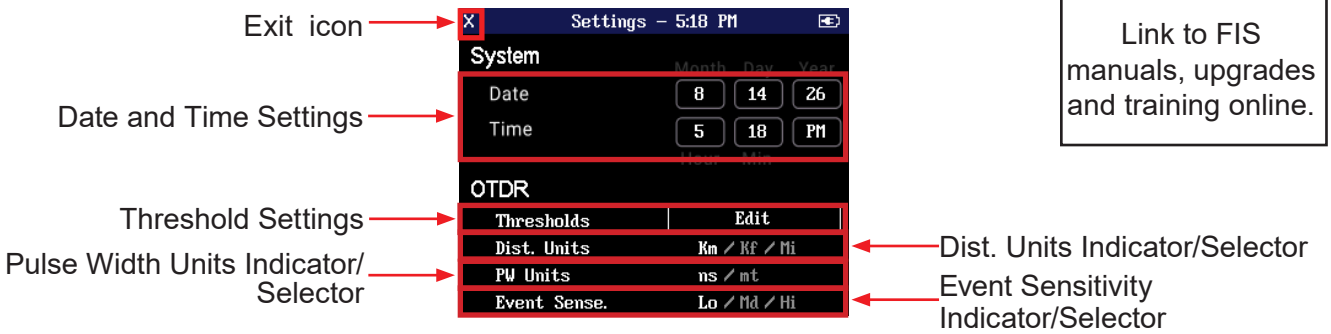




Link to FIS manuals, upgrades and training online.

Setting Screen

Select the Settings icon to open the settings screen.



Setup

Follow the steps below for initial setup and periodic adjustments

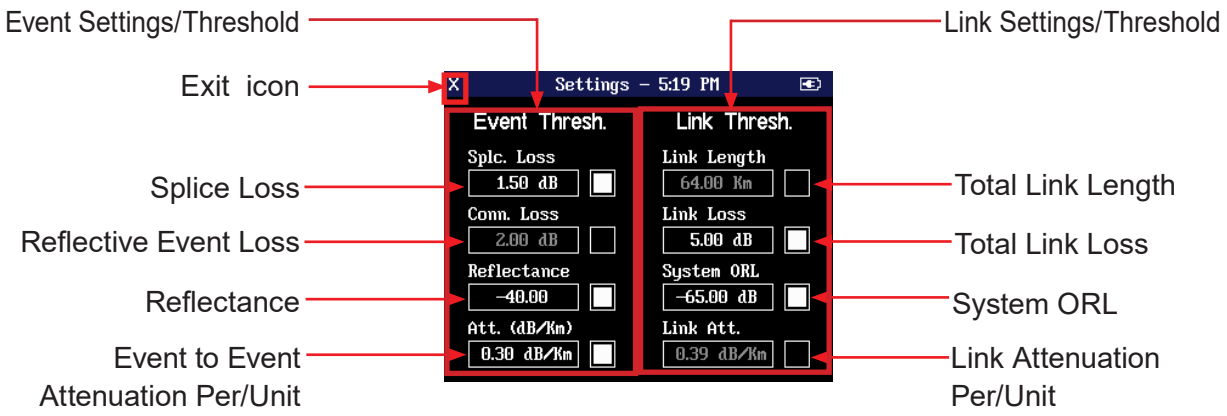
Time and Date Settings

- From the Home screen, select the Settings icon to enter the settings screen.
- For accurate time stamps on saved files set the date and time by touching each value to cycle to proper date and time. A long hold may be used for faster operation.

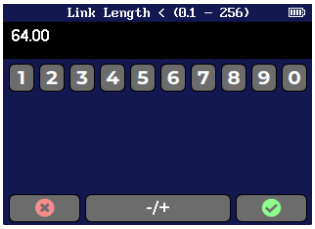
OTDR Threshold Settings

Touch the Edit button to the right of “Threshold” to open the Thresholds Settings screen. The following screen will be displayed.

Section 2 Quick Start Guide



To set the thresholds, ensure the threshold is active by selecting the box to the right. If the box is filled in white, it is active. Touch the value below a setting title and the following screen will be displayed:



Simply enter the full number desired for the threshold and the old entry will be overwritten. Use the +/- to set negative or positive values, then touch the green check to save or red X to cancel.

Note: These are pass thresholds, therefore the value entered and anything lower than that value passes.

Event Thresholds

- Splice Loss threshold is the maximum value allowed for a non-reflective event
- Connector Loss is the maximum value allowed for reflective events such as a pair of connectors.
- Reflectance is the reflective value at the event indicated.
- Attenuation db/unit, is the dB loss per unit of measure selected in OTDR Settings.

Link Thresholds

- Link Length is the maximum length a link may be before failure. This may be used to indicate the labeling is wrong or the wrong fiber is being tested.
- Link Loss is the total loss the fiber under test may have before failure.
- System ORL is the maximum ORL allowed before failure. Remembering the ORL is represented as a negative number.
- Link Attenuation is the maximum dB loss per/unit the Link/fiber under test may have before failure.

All the thresholds may be turned off or on by touching the box immediately to the right of the value. The box of a selected threshold will be filled white and un-selected items will be black.

Section 2 Quick Start Guide

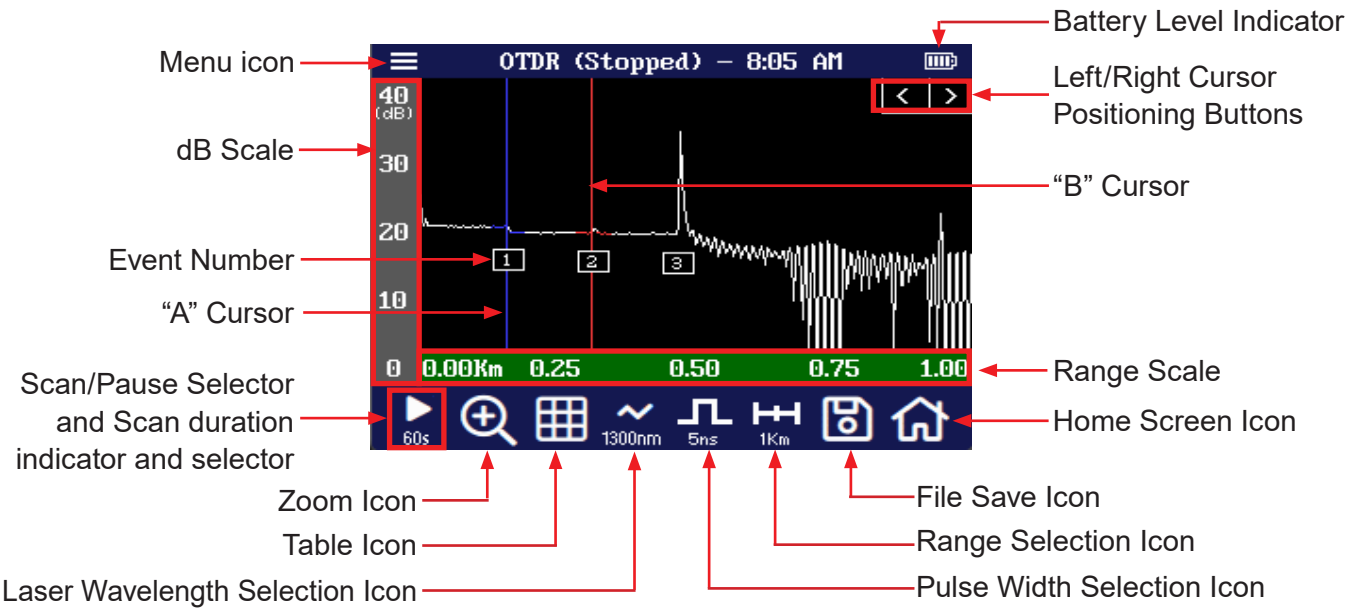
General OTDR Settings

For these settings, simply touch the desired unit or value.

- Distance Units of kilometer (Km), kilo feet (Kf) and miles (Mi) may be selected for all distance measurements.
- The pulse width my be represented in nanoseconds (ns) or meters (mt).
- Event sensitivity may be set to low (Lo), medium (Md) or high (Hi). It may be necessary in noisy environments to lower the sensitivity while in very clean flat traces, a higher sensitivity setting may be used.

OTDR Operation

OTDR Trace Screen with Menu Bar



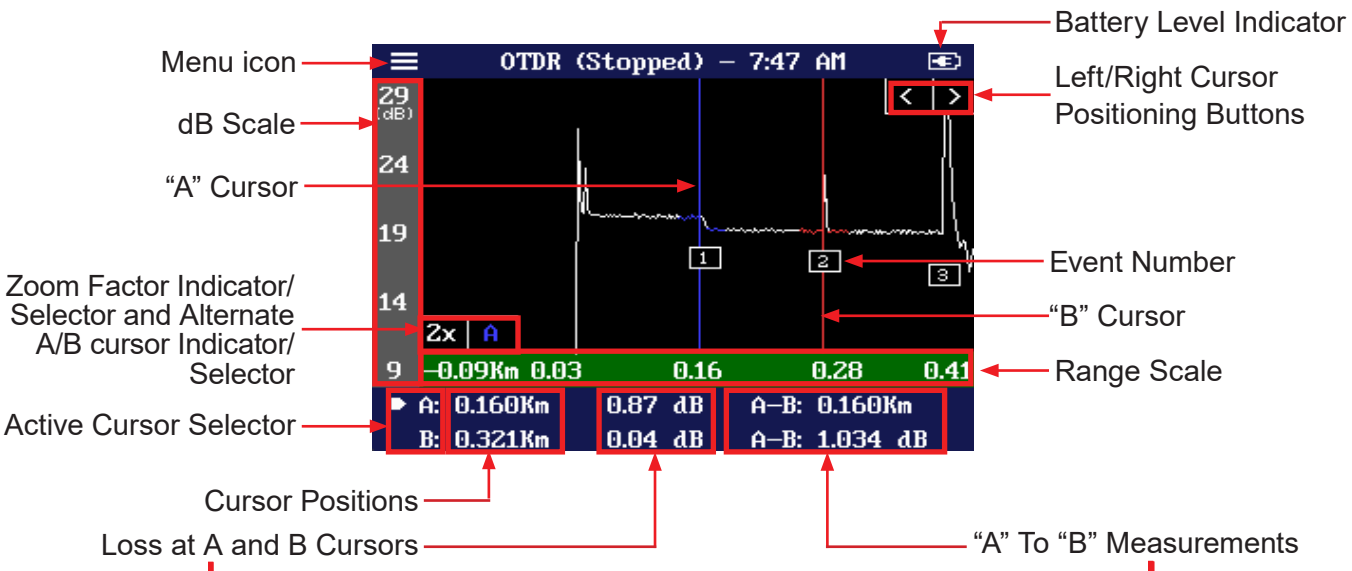
OTDR Trace Screen Operation With Menu Bar Description

Menu	The menu icon cycles between the OTDR trace screen with menu bar and the OTDR trace screen measurement bar at the bottom of the trace screen.
dB Scale	The dB scale range is 0-40 dB. The range adjust accordingly with increased zoom levels.
Event No.	Event numbers will display on event after the event table has been opened or after a trace with the auto save enabled.
Cursors	The cursors are the blue and red vertical lines on the trace. They may be moved by touching anywhere on the screen to snap the active cursor to that location. They may also be moved by touching the cursor and dragging it to a desired position. For micro adjustments, use the left/right cursor positioning buttons in the top right corner of the trace.

Section 2 Quick Start Guide

Play/Pause	The Play Pause button starts and stops a trace. The value below it is the time duration of the trace acquisition. Long touch the play button (While the trace is stopped) and a selection menu with available times will be displayed. Touch the desired length of time and a new trace will start.
Zoom	Touch the Zoom button to cycle through the available zoom levels. The available levels are 1X, 2X, 4X, 8X, 16X, and 32X. An alternative method to zoom, is simply touch the very bottom left of the trace window, just above the range bar. This will activate the zoom indicator/selector.
Table	Touch the Table icon to open the event table.
Wavelength	Touch the Wavelength icon to display a list of the available wavelengths installed on the equipment.
Pulse Width	Touch the Pulse Width icon to display a list of the available pulse widths for the selected range. Therefore, the desired range should be set first.
Range	Touch the range icon and a list of available test ranges will be displayed. The ranges (in meters) are; 500m, 1km, 2km, 4km, 8km, 16km, 32km, 64km and 128km (SM only).
File Save	Touch the File Save icon to save test to non volatile internal memory.
Home	Touch the Home icon to return to the home screen.
Range Scale	The Range Scale represent the selected range and will adjust as necessary based on zoom level and active cursor position in increased zoom levels.
L/R Cursor	Use the Left/Right buttons to mover the cursors left or right in one step increments.

OTDR Trace Screen with Measurement Bar



If the "A" and "B" loss area is touched, the measurement will toggle between Basic Splice Loss and LSA Splice Loss

If the "A" To "B" area is touched, the measurement will toggle between "A" To "B" Loss and distance to link loss per Unit of measure, in this case dB loss per Km

Section 2 Quick Start Guide

OTDR Trace Screen Operation With Measurement Bar

Note: Items that are consistent with the trace screen displaying the menu bar will not be listed below.

Zoom Factor When the zoom factor is greater than 1X, the current zoom level and an “A” or “B” will be displayed in the bottom left of the trace. Touch the displayed zoom level to cycle through the available levels and touch the “A” or “B” to toggle the active cursors.

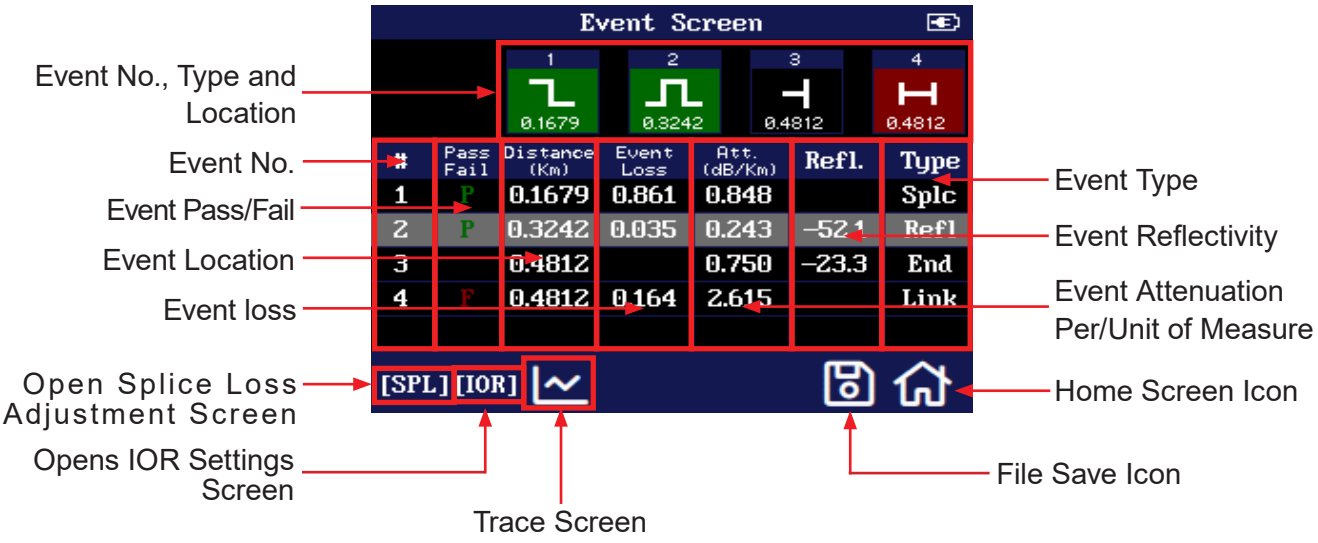
Active Cursor In The measurement bar there is an “A” and “B” line. One will have a pointer preceding the line. The one with the pointer in front of it indicates the active cursor. Touching in this area of the “A” and “B” will also toggle the active cursor.

Cursor Position These measurements are the location along the range line, using the unit of measure as a reference

“A” & “B” Info These measurements are the splice/event loss at “A” and “B” cursors. When this area is touched, it will toggle measurements between basic splice loss and LSA loss. LSA loss is indicated by the yellow splice zone marker on the trace.

“A” To “B” Info These measurements are the distance and loss between the “A” and “B” cursors. If this area is touched, the measurements will toggle to the link loss per unit. In this case loss per km.

OTDR Event Table Screen



Section 2 Quick Start Guide

Event Table Description

- Event number, type and location is indicated at the top of the table in the header.
- The first column indicates the event number.
- The next column is a pass or fail grade, indicated by a green “P” or Red “F”. There will be no fail if that data segment was not selected in the thresholds screen.
- Next is the distance column this indicates the location of the event on the trace. Using the select unit of measure.
- Next is event loss, this measurement is derived from the splice average method at the event.
- Next is loss per unit of measure. In this case loss per kilometer. This is the loss per/km of the fiber between the current event and the prior event or launch location. The row indicated by an “L” (Link), will be the 2 point loss of the entire trace.
- Next column is reflectance. This offers the reflectance of an event that has a reflective value. Splice events should not have a reflection and link will not display reflectance.
- The last column is event type.

Icon Descriptions

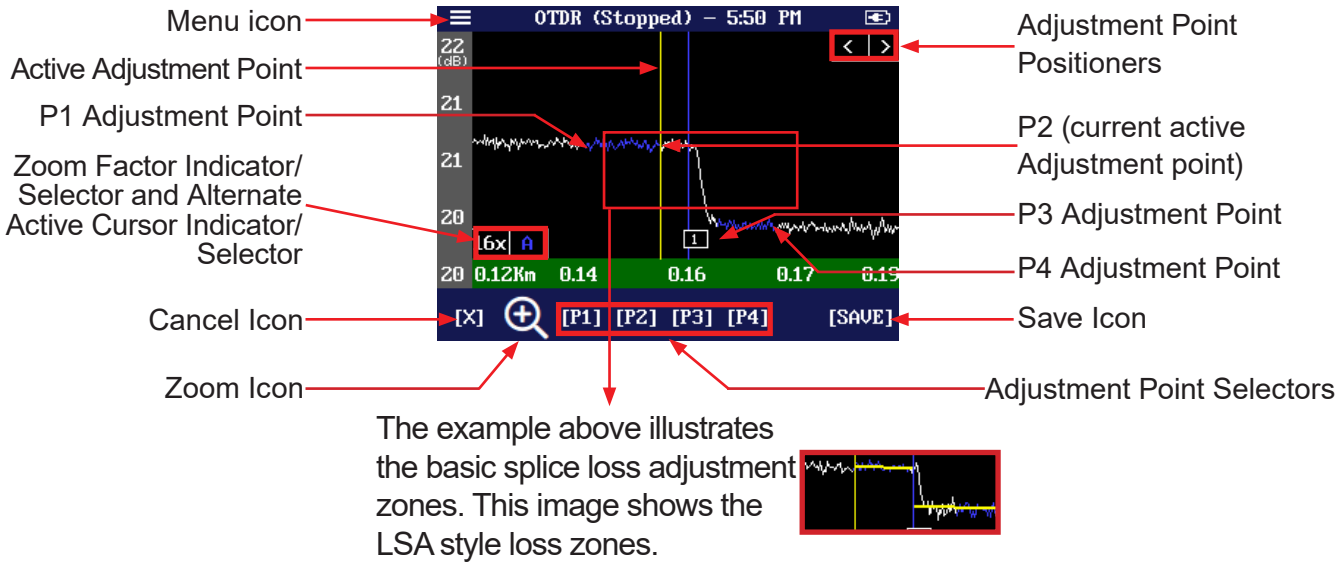
[SPL]	Touch this Icon to open the splice zone adjustment screen.
[IOR]	This icon will open an IOR settings screen, simply type in the new IOR for the selected wavelength.
Trace Screen	Touch this icon to return to the trace screen
File Save	Touch this icon to open the file save screen
Home	Touch this icon to return to the home screen.

Event Icon Descriptions

	Splice	Non-reflective event
	Reflective Event	Reflective event, such as a connector
	WDM	Indicates a WDM in the link
	End	End of fiber detected
	Link	Link, measurements are relative to the link and not a single event

Section 2 Quick Start Guide

Splice Zone Adjustment Screens with Basic Splice Zones



The example above illustrates the basic splice loss adjustment zones. This image shows the LSA style loss zones.

Splice Zone Adjustment Screen Description

Open the splice loss adjustment screen by touching the [SPL] icon in the bottom left of the table screen.

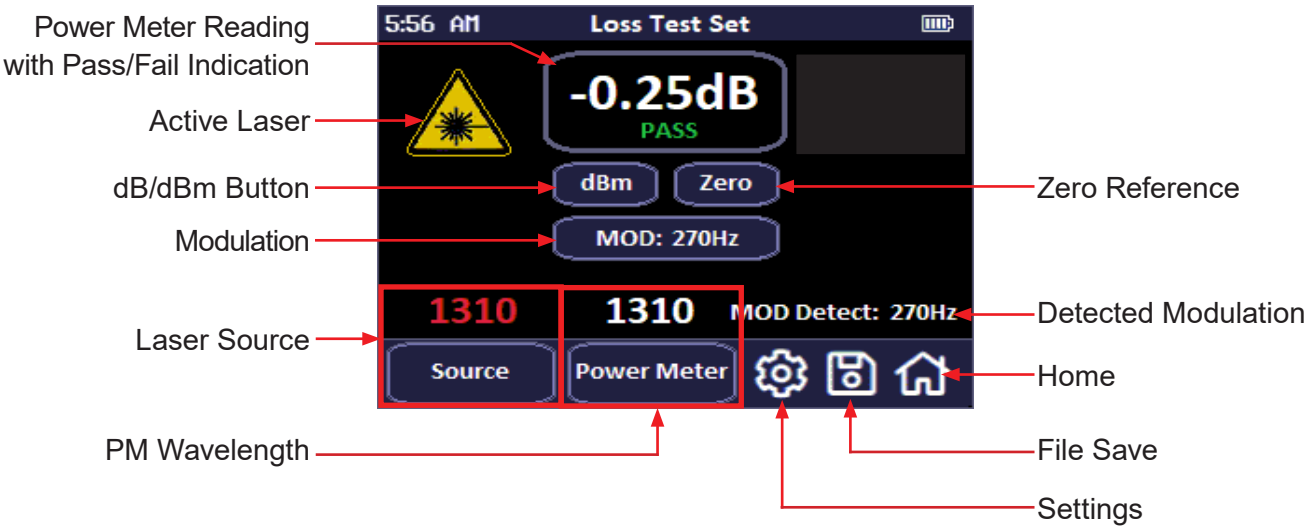
- The active adjustment point is shown with a vertical yellow line running from the top to bottom of the trace. In this example, the active adjustment point is P2.
- P1 is the first adjustment point. It is the start of the zone to the left of the cursor.
- P2 adjustment point sets end position of the zone before the cursor.
- P3 adjustment point sets the beginning of the zone that is after the cursor. This point sets the start of the right zone to accommodate the dead zone after the splice or reflective event.
- P4 adjustment point is end of the second segment and sets the length of the zone after the cursor.
- In the large image above, the basic splice loss is used. The small image shows the LSA example. In the LSA example, the splice zones are overlaid by yellow reference lines.

Splice Zone Adjustment Screen Icon Operation

Menu	The menu icon toggles between the splice loss adjustment screen and the trace screen with measurement bar. On the trace screen, touch the “A” and “B” splice loss area to toggle between basic splice loss for noisy traces and LSA splice loss for clean traces.
[X]	The cancel icon returns the use to the trace screen with measurement bar.
Zoom	The Zoom Icon will cycle through the available zoom factors and bring up the on screen zoom level indicator/selector and active cursor indicator/selector.
[P1]-[P4]	The [P1] through [P4] icons will place the focus of operation on the desired adjustment position. The point can be manipulated with the left and right arrows (adjustment point positioners).
[SAVE]	The save icon will save the settings, recalculate and return the user to the trace screen with measurement bar.

Section 2 Quick Start Guide

Loss Test Set



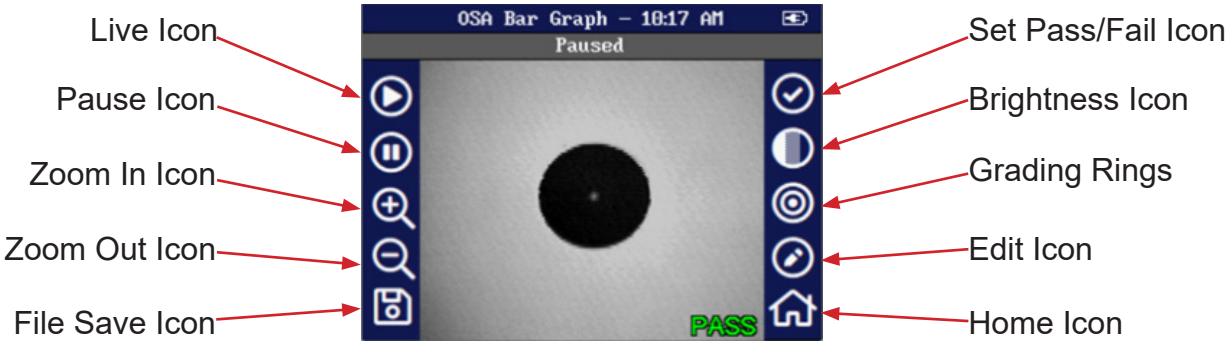
Power Meter Screen Description/Operation

Power Reading	Power meter reading with pass/fail.
Laser Symbol	The laser symbol is displayed when there is an active laser being transmitted.
dB-dBm	This toggles between db and dBm readings.
Modulation	Use this button to Cycle through the modulation settings of CW, 270Hz, 1000Hz or 2000Hz for LTS light source and CW and 2Hz for the VFL source.
Laser Source	This button will open a list of available OTDR test wavelengths and the VFL light source. Select the desired wavelength from this list. The indicator above will show the active source or display OFF.
Power Meter	The button will cycle through the calibrated wavelengths. The indicator above will show the selected wavelength for testing
Settings	Opens the loss test set settings screen to set the pass/fail power meter thresholds.
File Save	Saves the current measurements.
Home	Returns to the home screen.
Detected Modulation	Indicated the current modulation being detected.
Zero Reference	Use this button to set the zero reference.

Section 2 Quick Start Guide

Video Microscope

Video Microscope Icons



Video Scope Operation

Live Icon	Selecting the live icon turns on live or running mode. This is a real time reading of the connector face.
Pause	To freeze an image inspection, select the pause icon. While in auto of the auto/pass/fail mode, pressing pause will also grade the connector end face and display calculated pass or fail.
Zoom In	Selecting Zoom In increases the image to 250x
Zoom Out	Selecting Zoom Out returns the image to 125X
Save Icon	Selecting the Save Icon opens the file save/naming screen with QWERTY keyboard
Pass/Fail	Selecting the set pass/fail icon while in the live mode will toggle through fail, pass and auto grading markers (Auto will be accomplished by the unit when entering the pause mode.)
Brightness	Selecting the brightness icon will cycle through the brightness levels available.
Grading Rings	Selecting this icon will toggle the grading rings off and on. These pass/fail grading rings are used to assist with manually grading a connector. The rings represent 25um, 120um, 130um and 250um.
Edit Icon	This is used to mark the points of contamination and is accomplished in the paused mode. Available markers will be displayed at the top of the screen. Pick up the marker by using the stylus and touching the contamination sample size that is required. Touch the image where the marker is to be placed. The marker may be fine-tuned with the stylus to cover the contamination point. Once positioned properly, touch the statement “Place marker on image then touch here” to lock marker in place. Repeat this as necessary to mark all the points that need to be indicated for the pass/fail status. At this point the image should be saved as the marks are removed upon returning to live mode.
Home Icon	Select the home icon to return to the home screen.

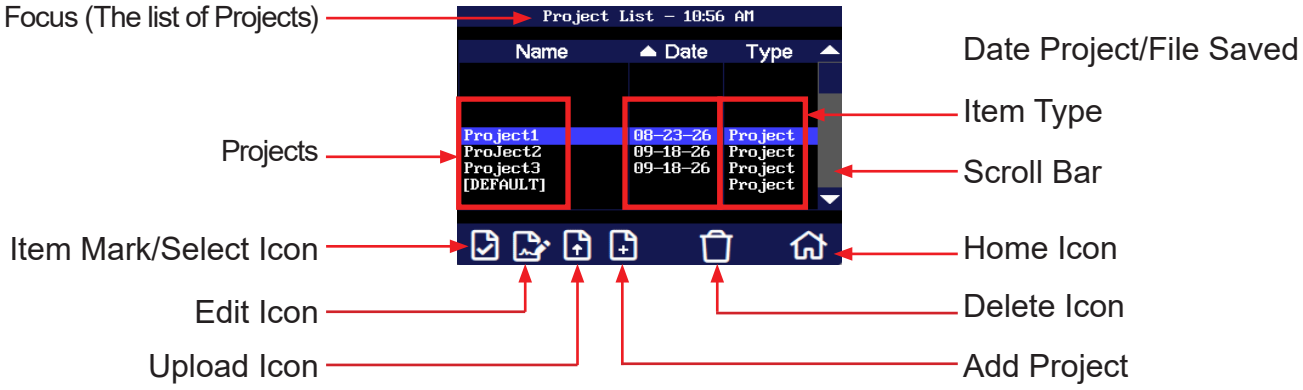
Section 2 Quick Start Guide

Project/File Management

Project Management Screen/Icons

When the project/file management screen is opened, it will default to project management with a list of projects displayed. All files are saved within a project. Once a project is added or opened, the “file icon with a + sign” will change to a “file folder icon”. This indicates a project is opened and the items being view are now files within the project and the project name will be displayed at the top of the screen.

Project Management Screen

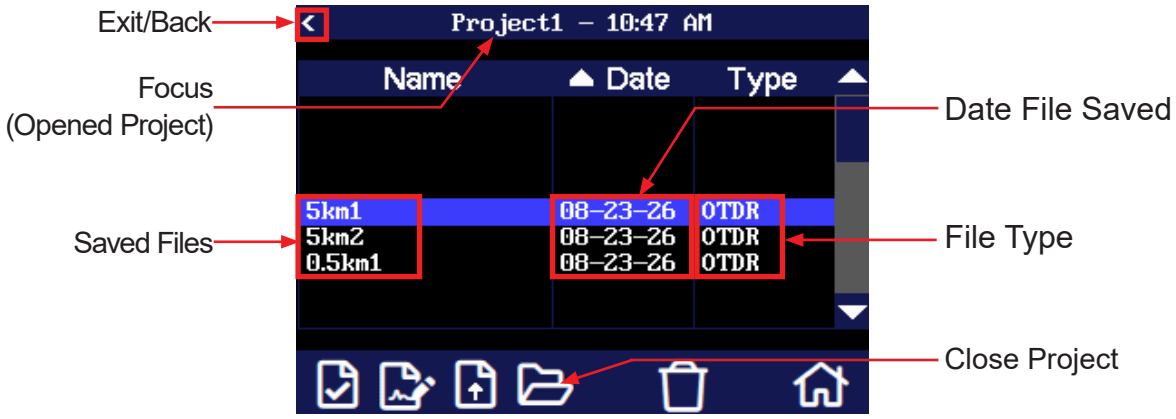


Project Management Screen Description/Use

Focus	Indicates the focus of the list, whether it is the project list or which project is open.
Projects	Shows a list of the saved projects.
Mark/Select	Selecting this will mark the highlighted project for uploading or deleting.
File Edit	When selected the highlighted item will open the QWERTY keyboard for name editing.
Upload Icon	Selecting this will upload marked Items to the computer through FIS Connect Software.
Add Project	Add Project will open a new project and bring up the file naming screen with QWERTY keyboard.
Delete Icon	This is a non-recoverable delete key, once selected the highlighted project is deleted immediately.
Home Icon	Select the home icon to return to the home screen
Scroll Bar	Use to move quickly through project list.
Item Type	Displays the item is a project, while in project screen.
Date	Displays the date the project was created.

Section 2 Quick Start Guide

File Management Screen



File Management Screen Description

Exit	This will return the user to the project management screen
Focus	Indicates the focus of the list, whether it is the project list or which project is open.
Projects	Shows a list of the saved files in the project.
Mark/Select	Selecting this will mark the highlighted file for uploading or deleting.
Edit Icon	When selected the highlighted item will open the QWERTY keyboard for name editing.
Upload Icon	Selecting this will upload marked files to the computer through FIS Connect Software.
Folder Icon	Indicates a project is open and selecting this icon will return the user to the project management screen
Delete Icon	This is a non-recoverable delete key, once selected the marked and highlighted file/s are deleted immediately.
Home Icon	Select the home icon to return to the home screen
Scroll Bar	Use to move quickly through file list.
Item Type	Displays the item is either an OTDR, scope or PM file.
Date	Displays the date the file was created.

Section 3 Introduction

Dear Valued Customer,

Thank you for choosing Fiber Instrument Sales Inc. for your fiber optic testing requirements. Our professional staff is available to answer questions and provide any assistance that you may require. At Fiber Instrument Sales Inc., we strive to provide premier customer care and technical support through timely responsiveness and training. We are proud of our quality and high standards and aim to produce the most user-friendly and affordable fiber optic solutions to meet individual needs.

This Manual covers the operation of our OV350-OTDR, Hand Held Optical Time Domain Reflectometer. This unit offers full featured trace analysis for standard MM/SM systems as well as PON and DWDM versions in a truly hand held portable package. This unit is available in both standard and extended dynamic ranges (32 or 37 dB). While the standard and PON OTDRs offer the Loss Test Set feature, the DWDM OTDR is equipped with a Tunable Laser Source. The DWDM equipment is available in the C-band Channels of 14 - 62.5 (196.25THz - 191.4THz and 1527.6 -1566.31nm). These OTDRs have a pass/fail feature and a 4 inch color TFT Display. The OV350-OTDR is designed with solid state optics and no fragile or moving parts, keeping the unit field friendly. There is storage for up to 1000 tests and the test may be viewed and printed with the included FIS Connect Software for fast and easy reporting. These units are housed in a rugged enclosure with robust protective boot, and are designed to withstand the rigors of field use and are extremely user friendly.

These are the lowest cost handheld OTDRs designed and manufacture in the USA.

Section 4 Preparation For Use

4.1 Inspection

Before shipment, this instrument was inspected and found to be in perfect working order and free of defects.

The shipping carton contains the following:

1. Hand Held Optical Time Domain Reflectometer, with protective boot
2. USB 5V, 3.4A charger
3. USB C cable
4. Quick Reference Guide
5. Interchangeable adapters, SC included for each OTDR port.

4.2 Identification and Configuration

The instrument's Model/Part Number, Serial Number and Date of Manufacture are indicated on a label located on the back of the unit. The instrument's history is filed at the factory by model/part number and serial number.

4.3 Power Requirements

The OV350-OTDR OTDR is equipped with a 8000mAh Li-Poly battery. It is also supplied with a 100-240V USB power adapter with 5VDC, 3.4A output. A fully charged Li-Poly battery will typically enable approximately 10 hrs. of use and require approximately 4 hours of recharging.

Warning

To Prevent Fire or Shock Hazard:

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

Failure to follow these caution statements may void the warranty of this equipment.

Section 5 Physical Description

The Optical Time Domain Reflectometer is packaged in a rugged housing which is further protected with a rubberized boot. Although the front panel is weather resistant, care must be taken to avoid liquids and contaminants around the fragile optical and electrical connectors, and the glass display. Use a mild cleaning agent and damp soft cloth to clean the panels and the outside case. See the maintenance section for notes to clean the optical connector. NEVER open the instrument for cleaning. Return to the factory for servicing if necessary.

Front Panel

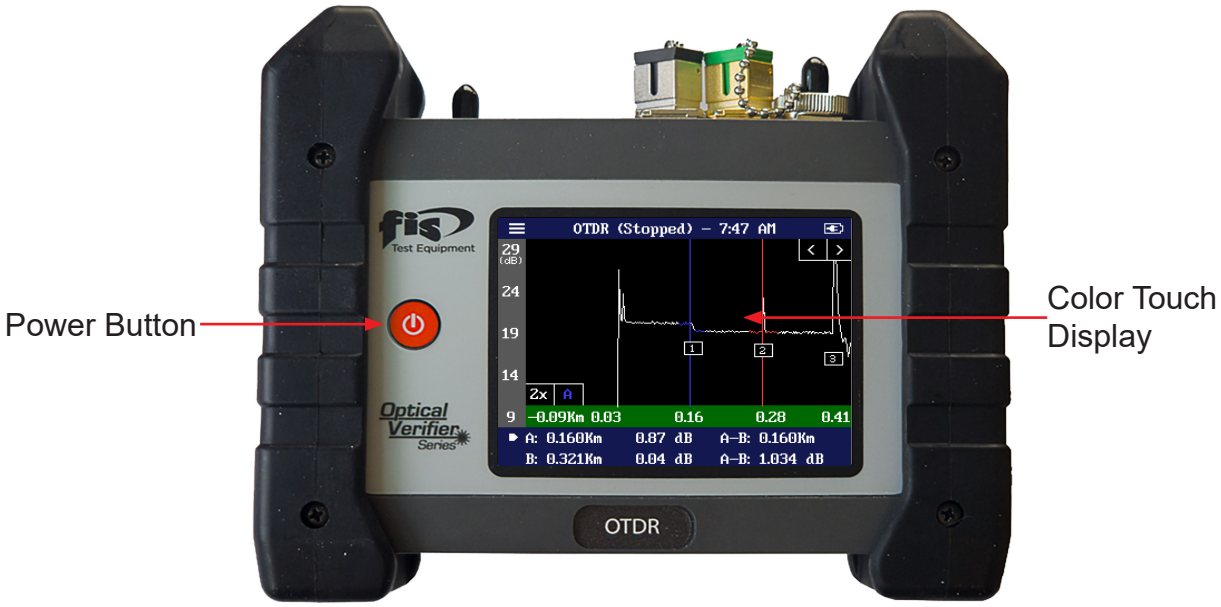
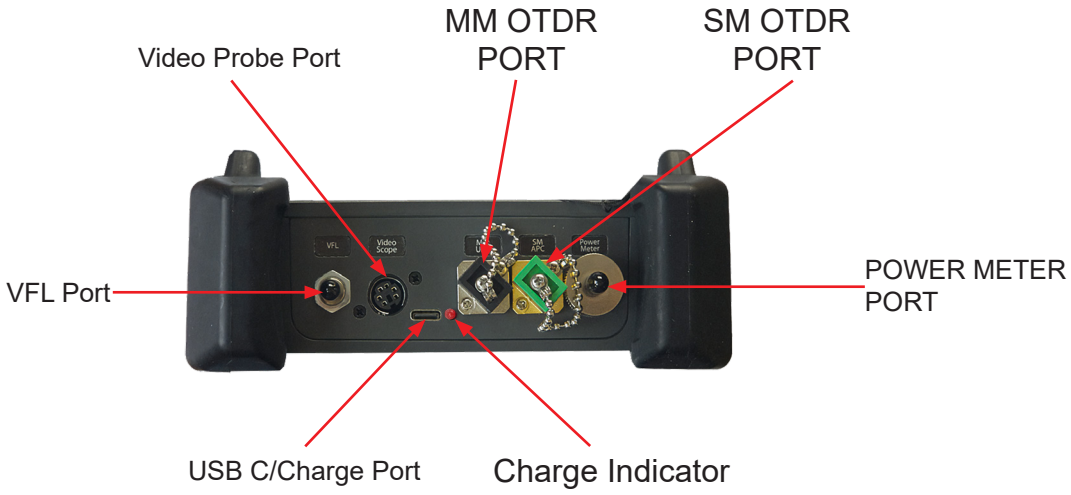


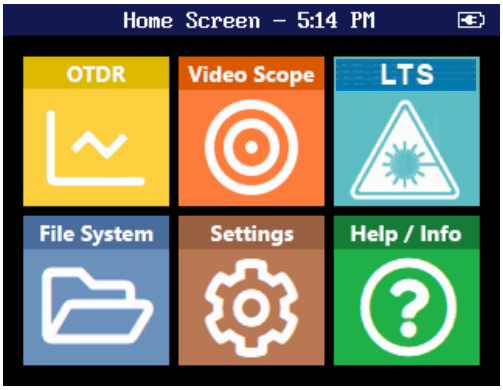
Fig 6.1

Top Plate



Section 6 User Interface

6.1 Home Screen



Home Page Icons



Select the OTDR Icon to enter the OTDR module



Select this icon to enter the video scope module.



The LTS icon will open the loss test set in standard OTDRs and the DWDM will have a TLS icon which opens the Tunable Laser Source.



File management icon opens the full project/file management system. Note: the file save icon available in the OTDR, LTS and video scope modules opens a simple file save screen.



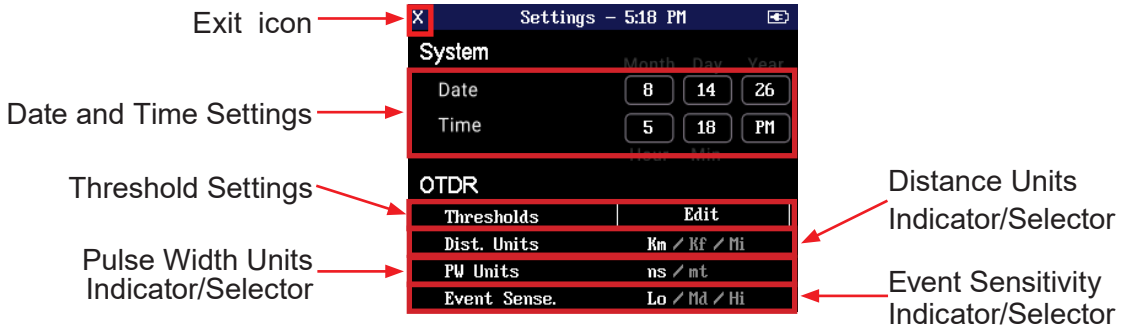
Settings icon opens the settings page which allows the user to set the real-time clock for time stamping files as well as setting OTDR general settings and threshold (pass/fail) settings.



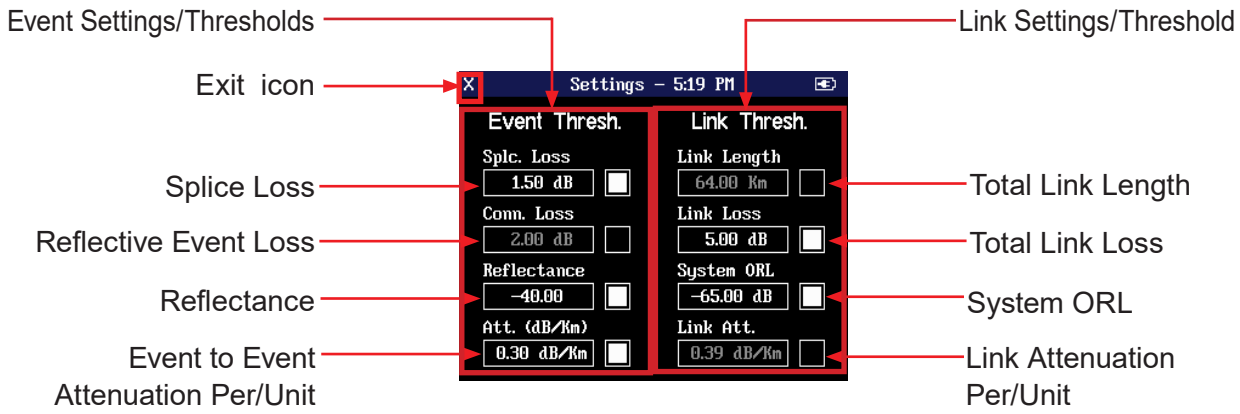
The Help icon offers the user a link to Fiber Instrument Sales manuals and training online.

6.2 Settings Screens

Main Settings Screen:

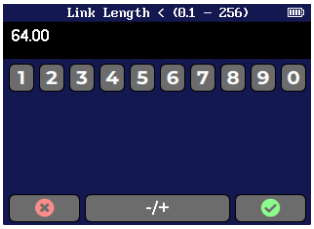


THRESHOLD SETTINGS SCREEN:



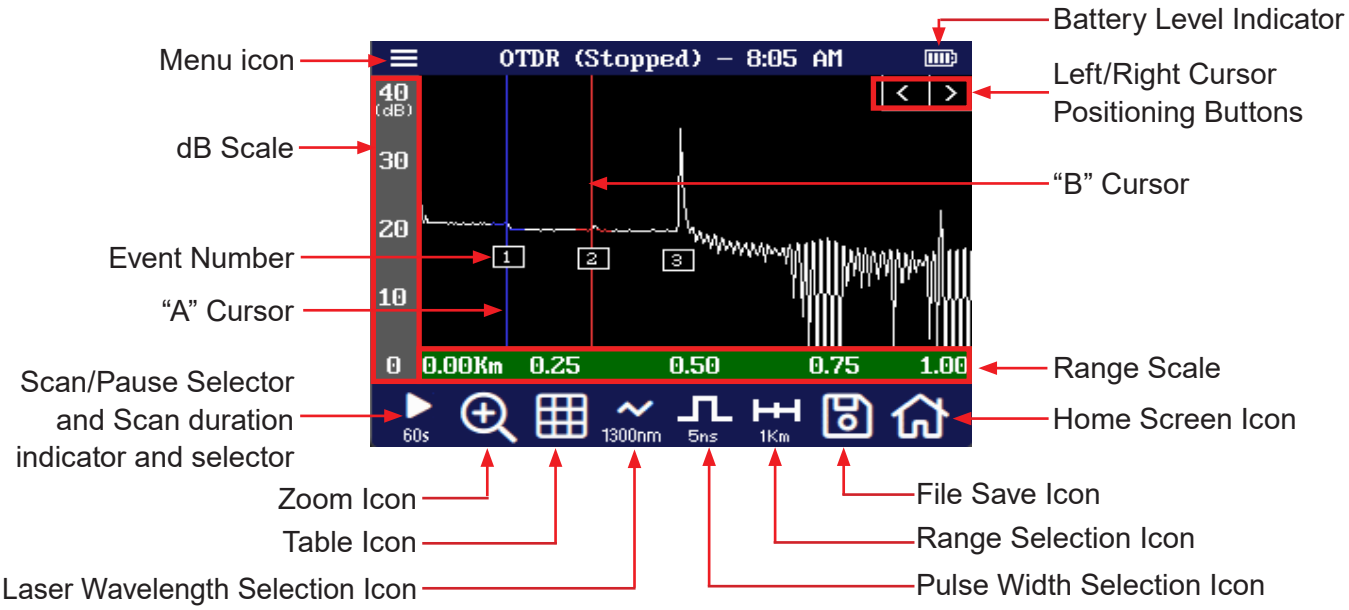
Threshold Data Entry Screen:

To set the thresholds, touch the value below a setting title and the following screen will be displayed. Simply enter the full desired value to overwrite the current setting.



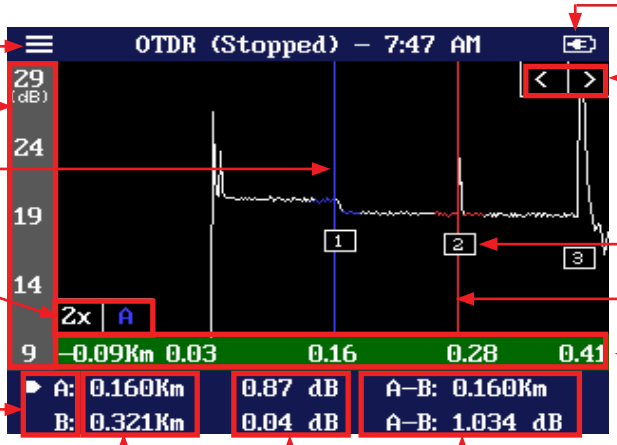
6.2 OTDR SCREENS

OTDR Trace Screen with Menu Bar



Section 6 User Interface

OTDR Trace Screen with Measurement Bar:



Menu icon

dB Scale

"A" Cursor

Zoom Factor Indicator/ Selector and Alternate Active Cursor Indicator/Selector

Active Cursor Selector/Indicator

Cursor Positions

Loss at A and B Cursors

Battery Level Indicator

Left/Right Cursor Positioning Buttons

Event Number

"B" Cursor

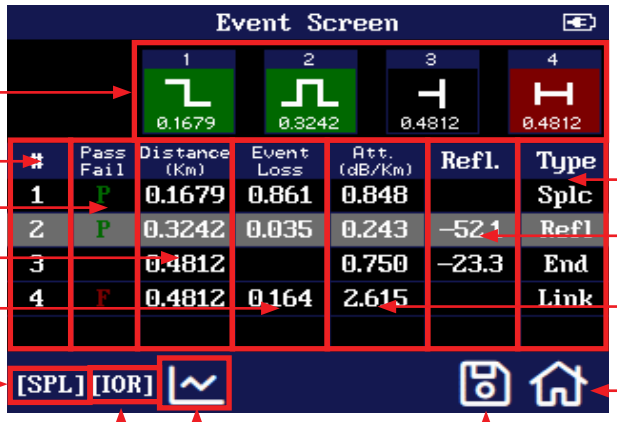
Range Scale

A To B Measurements

If the A and B loss area is touched, the measurement will toggle between Basic Splice Loss and LSA Splice Loss

If the A To B area is touched, the measurement will toggle between A To B Loss and distance to link loss per Unit of measure, in this case dB loss per Km

OTDR Event Table Screen



Event No., Type and Location

Event No.

Event Pass/Fail

Event Location

Event loss

Splice Zone Adjustment Icon

IOR Settings Icon

Trace Screen

Event Type

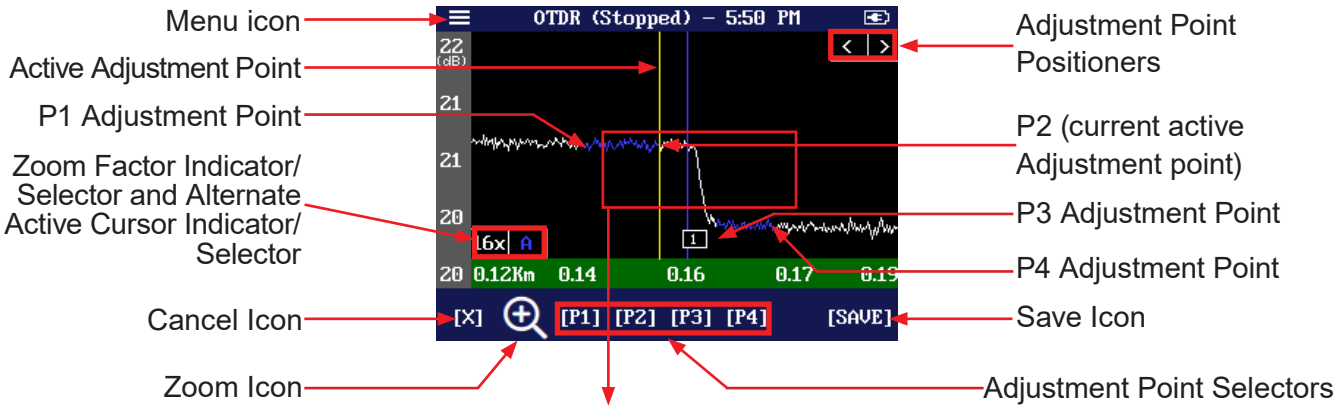
Event Reflectivity

Event Attenuation Per/Unit of Measure

Home Screen Icon

File Save Icon

Splice Zone Adjustment Screens with Basic Splice Zones

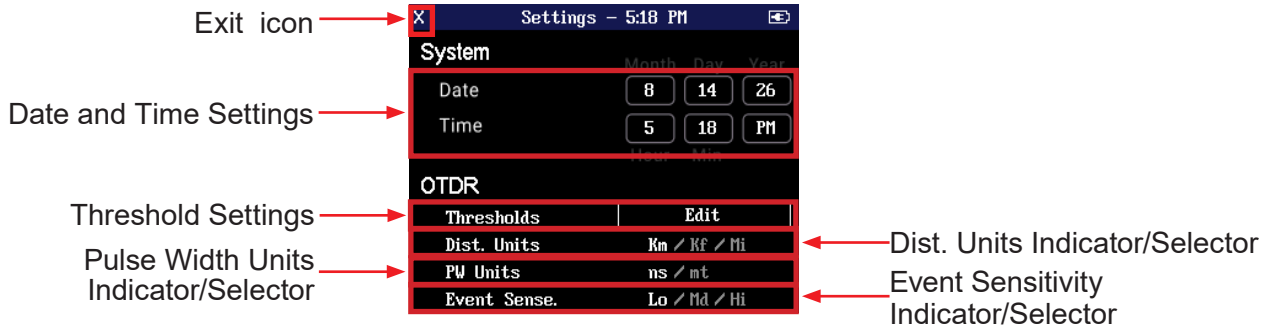


Section 7 Setting Test Parameters

7.1 Main Setting Screen

To ensure the most accurate and usable information is derived from the OTDR, it is necessary to set the testing and equipment parameters prior to starting a scan.

To set date/time, OTDR and pass/fail threshold setting, access the setting screen from the home page. To exit the setting screen touch X at the top of the display.



Date/Time and General OTDR Settings

Set Date and Time

To ensure proper date and time stamps on saved files, set date and time to local time zone.

To set the date and time, long hold the date and time fields until the proper information is displayed.

General OTDR Settings

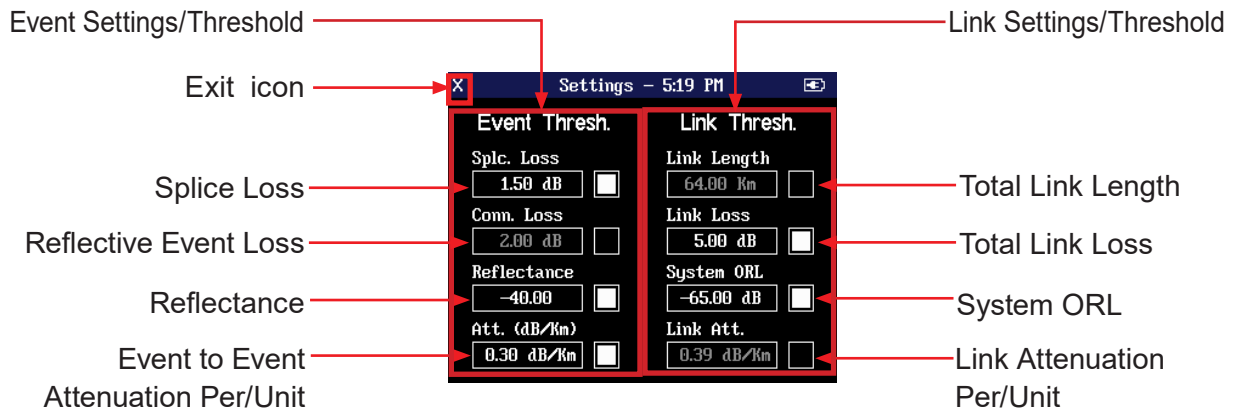
The general OTDR settings are unit of measure for distance, and pulse width. The event sensitivity may also be set to help eliminate false events from being displayed. For these settings, simply touch the desired unit or value.

- Distance Units of kilometer (Km), kilo feet (Kf) and miles (Mi) may be selected for all distance measurements.
- The Pulse width my be represented in nanoseconds (ns) or meters (mt).
- Event Sensitivity may be set to low (Lo), medium (Md) or high (Hi). It may be necessary in noisy environments to lower the sensitivity while in very clean flat traces, a higher sensitivity setting may be used.

7.2 Setting Test Thresholds

To set thresholds, touch the edit button next to the thresholds tab on the main settings screen. The thresholds setting screen will be displayed.

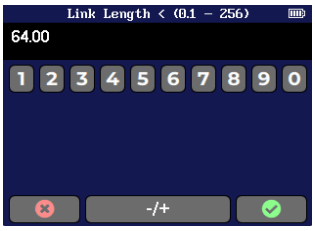
Threshold Settings Screen



There are two sets of thresholds, event and link. A threshold has to be active to set a pass/fail value. Make it active by touching the check box next to the threshold. If the box is white, it is active.

Set each threshold by selecting the value below the category. A screen like the one below will be displayed. Type the maximum allowable value that passes for the category and select the +/- if the negative or positive designator needs to be changed. Select the red X to cancel the change, or the green check mark to accept and save the change.

The old value does not need to be erased, simply type the complete value and the old value will be overwritten.



Note: These are pass thresholds, therefore the value entered and anything lower than that value passes.

Event Thresholds

- Splice Loss threshold is the maximum value allowed for a non-reflective event
- Connector Loss is the maximum value allowed for reflective events such as a pair of connectors.
- Reflectance is the reflective value at the event indicated.
- Attenuation db/unit, is the dB loss per unit of measure, selected in OTDR settings, between the previous event and the event current event,

Section 7 Setting Test Parameters

Link Thresholds

- Link Length is the maximum length a link may be before failure. This may be used to indicate the cable labeling is wrong or the wrong fiber is being tested.
- Link Loss is the total loss the fiber under test may have before failure.
- System ORL is the maximum ORL allowed before failure. Remembering the ORL is represented as a negative number.
- Link Attenuation is the maximum dB loss per/unit of measure the Link/fiber under test may have before failure.

Turn On or Off Threshold Settings

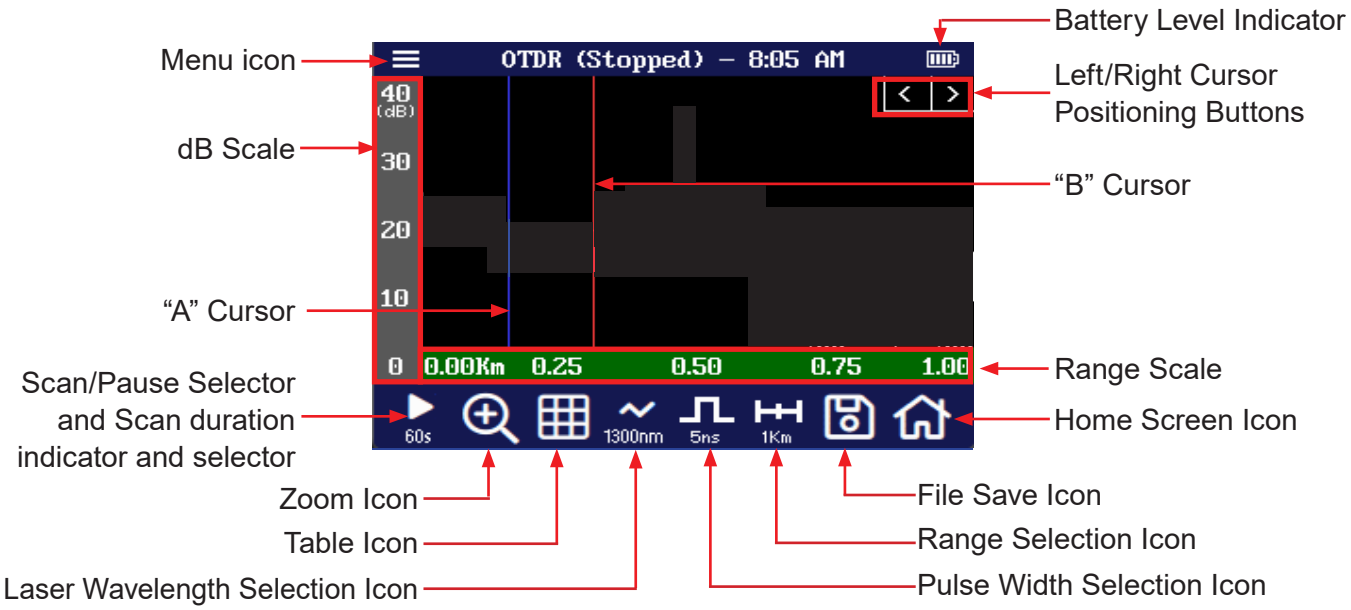
Thresholds may be turned on or off as needed. The box to the right of each threshold is used to control the on or off state. If the box is white, the threshold is on, and black if it is not turned on. Simply click the box to toggle them on or off.

Section 8 OTDR Operation

8.1 Start-up

Press and hold the power button for one second to start the OV350-OTDR. To operate the OTDR, touch the OTDR icon. The OTDR trace screen will be displayed.

OTDR Trace Screen with Menu Bar



OTDR Trace Screen Icons

	Scan	Start Scan (replaced by pause icon below when Scanning). Scan duration is indicated below icon.
	Pause	Pause Scan (replaced by scan icon above when in Pause Mode). Scan duration indicated below icon.
	Zoom In	Cycles screen through 1X, 2X, 4X, 8X, 16X and 32X
	Table	Opens the data in event table mode
	Wavelength	Opens a menu with available wavelengths
	Pulse Width	Opens a menu with available pulse widths for selected wavelength and range settings
	Settings	Opens a menu with available ranges settings for selected wavelengths and pulse widths.
	File Save	Opens file save screen with QWERTY keyboard or long hold for manual save or auto save selection
	Home	Returns to the home screen

Section 8 OTDR Operation

8.2 Open/Create A Project

The file management system is project based, therefore, all files are saved into a project folder. To ensure all subsequent files are saved in the proper project, first open file management from the home screen and create a project or open the desired project for storing files.

Create a Project

To create a new project, select the file icon at the bottom of the screen, displaying a plus sign. The QWERTY screen will be displayed. If there is an entry already displayed, remove it by back spacing until it is removed. Use the keyboard to enter the desired project name. and select the green check to set the name or red X to back out/cancel.

Open a Project

Select the working project by moving it in the highlighted position on the screen and touch it to open. The project name will be displayed at the top of the screen and the file field will now display the stored files in the project.

Now all files will save to the selected project including video scope and PM files. Files will save to the last opened project. A project must be selected each time the unit is powered up.

Note: That there is a 16 character limit to file names, both for projects and files.

8.3 Set Trace Parameters

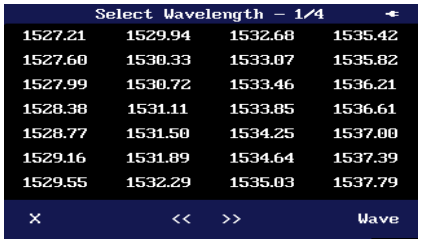
Set test parameters using the menu at the bottom of the trace screen.

Wavelength

Use the laser wavelength selection icon to set the desired laser wavelength. Touching the icon will display a list of available laser wavelengths. Standard MM lasers will be 850nm and 1300nm. Standard Singlemode lasers are 1310nm, 1550nm and 1625nm for the PON option.

DWDM OTDRs will display a list of 96 Wavelengths 1527.6 - 1566.31. These wavelengths may also be displayed as channels (14 - 62.5), or in Terahertz (196.25THz - 191.4THz).

DWDM wavelengths will displayed on a set of 4 pages which may be cycled with the arrows at the bottom of the page. The display unit may be cycled by selecting the unit description in the bottom right corner of the screen.



Trace Range

Use the range icon to open a list of available trace ranges. The available ranges are listed in the table to follow. There is also an auto range that will determine the probable end of fiber, once this is determined, the OTDR will select an appropriate trace range. Note that the 128km range is not available with MM sources. It is best to try and select a range that is about 1.5 to 2 time expected range of the fiber under test.

Pulse Width

Use the Pulse Width icon to open the list of available pulse widths. Available pulse widths vary by range, as detailed in the chart below.

Note: Longer pulse widths produce a cleaner, less noisy trace, but they may cause closely spaced events to be missed if they fall within the same pulse.

Pulse Width

Range	5ns	10ns	30ns	100ns	300ns	1000ns	3000ns	10us	20us
500m	✓	✓	✓	✓	✓				
1km	✓	✓	✓	✓	✓				
2km		✓	✓	✓	✓	✓			
4km		✓	✓	✓	✓	✓			
8km			✓	✓	✓	✓	✓		
16km			✓	✓	✓	✓	✓		
32km				✓	✓	✓	✓	✓	✓
64km				✓	✓	✓	✓	✓	✓
128km					✓	✓	✓	✓	✓

Set Averaging Time

Long touch the play button to display a list of available averaging times. The available times are RT, RT-AVG, 15s, 30s, 60s, 2m, 4m and Auto.

Note: RT (Real-Time) does not perform any averaging/smoothing while performing a scan. RT-AVG (Real-Time Average) will perform a minimal amount of averaging/ smoothing between screen updates. With RT-AVG, the time between screen updates will be approximately 1.5 seconds.

Note: The Auto average will use the selected pulse width and range settings, initiate a test, calculate the best averaging time and continue to complete the scan.

When an averaging time is selected, the OTDR will begin a scan. To stop a scan, long press the pause button (approx. one second) and the scan will stop after about another second.

8.4 Connecting Fiber

The OV350-OTDR may have one or two ports depending on the configuration. A Quad or PON OTDR will have two while a SM, MM or DWDM will have only one port. The ports will be labeled with “MM”, “SM” or “1650”. The DWDM port will be labled “DWDM”.

Section 8 OTDR Operation

It is suggested that a test cable or a launch box (dead zone eliminator) be used between the fiber under test and the OV350-OTDR. This cable or launch box should be at least as long as the pulse width to get beyond the dead zone if possible. Operationally getting beyond the dead zone will give you more accurate readings. The launch box will also help protect the OTDR's adapters by not continually connecting and disconnecting connectors from the unit. This will limit wear and tear on the panel connectors on the unit and will extend the live span of the panel connectors eliminating down time and costly repairs. Spare test cables and launch boxes are available when replacements are needed.

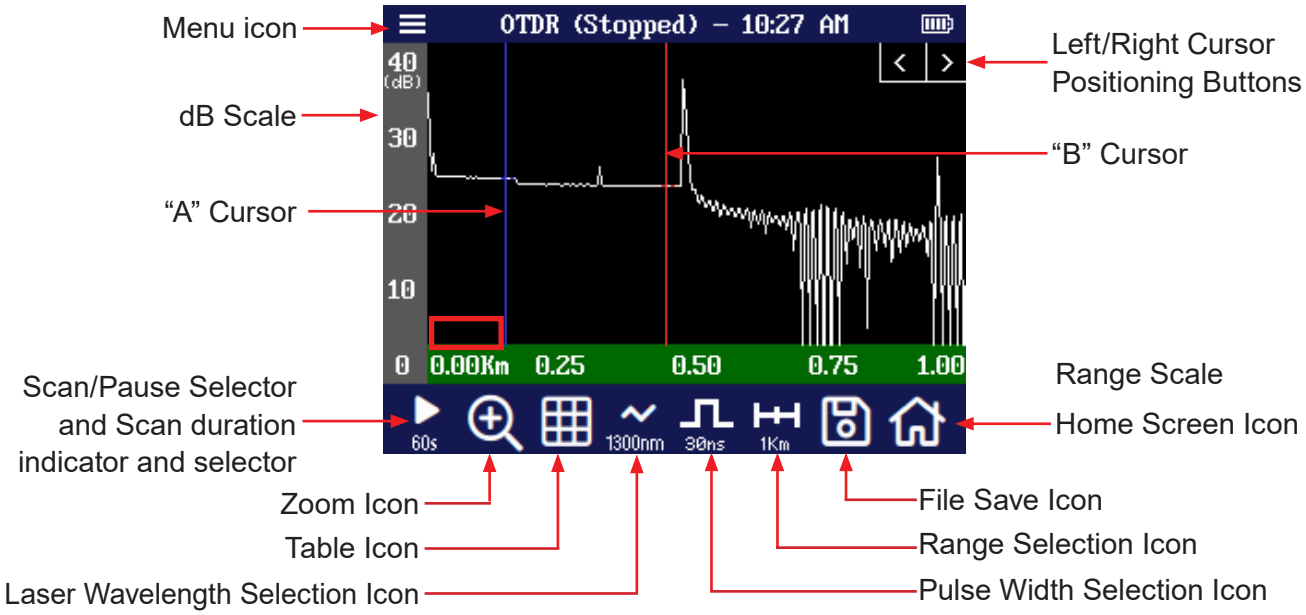
Fiber-optic connectors are easily contaminated or damaged. The connection to the OV350-OTDR is a physical contact type of connection and dirty or damaged connectors may impair the instruments capabilities at minimum and at worst, result in the need to return the OV350-OTDR to the factory for expensive repairs. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed. Please use the VIS-300 video inspection probe and consumable cleaning supplies before every connection.

The OV350 units are sold with either UPC or APC adapters. It is imperative that the proper fiber optic connector be used with these ports. The adapters on the unit will be tabled as with the mode and as APC or UPC. Using the wrong connector can damage the port/connection and require sending the unit back to the manufacture for repair.

8.5 Working With OTDR Scans

With the desired parameters established, touch the play button and allow the OTDR to complete a scan.

OTDR Trace Screen with Menu Bar



Section 8 OTDR Operation

Upon completion of a scan a screen similar to the above will be display. This is the trace screen with the menu opened. From this screen the following actions can take place.

Menu Icon
Use the menu icon to toggle between this screen and the trace screen with measurement data.

Scan Icon
Takes a new scan or long hold to change the scan averaging time.

Cursor Movement
Cursors may be moved in three ways. First is Snap to position. Touch cursor to make it the active cursor. Touch anywhere on the trace area and the active cursor will snap to that location. Touch the cursor and drag it into position or use the left and right arrows in the top right of the screen to move the active cursor one point at a time into position.

Zoom
Touch the Zoom button to cycle through the available zoom levels. The available levels are 1X, 2X, 4X, 8X, 16X, and 32X. An alternative method to zoom, is simply touch the very bottom left of the trace window, just above the range bar. This will activate the zoom indicator/selector.

This indicator/selector may be used to cycle through the zoom levels and select “A” and “B” as the active cursors.

Event Table
Touch the event table icon to open the event table screen.

Laser Wavelength
Use the laser wavelength icon to change the wavelength if desired and retest with the scan button

Pulse Width
Use the laser pulse width icon to change the pulse width if desired and retest with the scan button

Range
Use the range icon to change the trace range if desired and retest with the scan button

File Save Icon and Manual/Auto Save Select
Touching the file save icon will save the file into non-volatile memory. There are two methods of saving files, auto and manual. To toggle between the two, long touch the file save icon and a menu with manual or auto save will be displayed.

Manual Save - Manual mode will bring the user to the file naming screen where a file may be named as desired. Selecting the green check mark will be required to accept and save the file. When saving in manual mode, If it is desired to have the file names increment automatically with a numeric last digit, the first file should have a digit as the last character.

Section 8 OTDR Operation

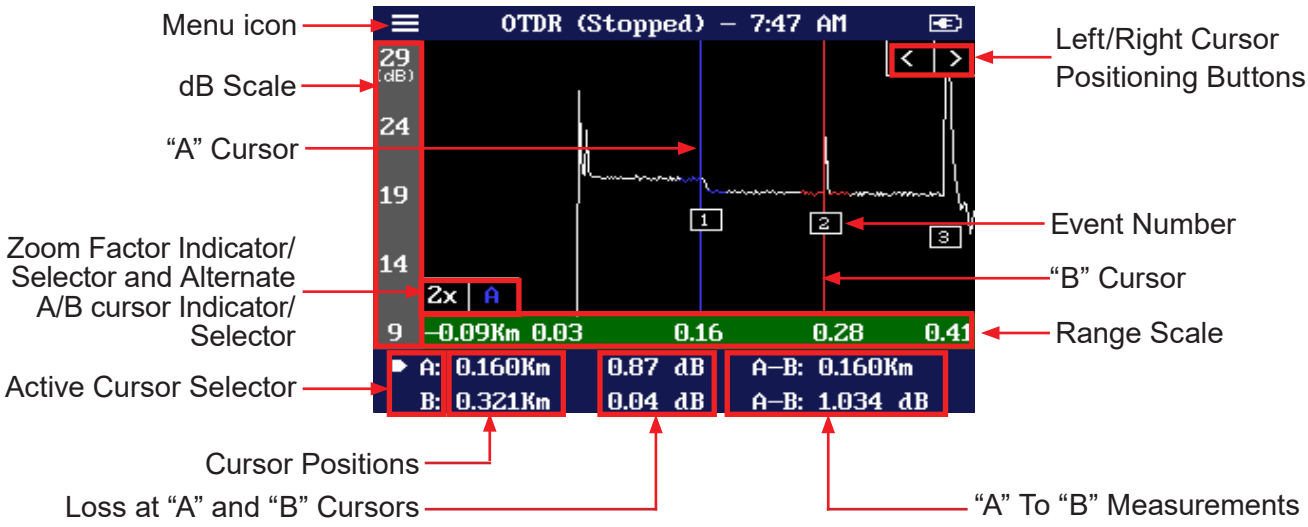
Auto Save - Auto save will immediately save a trace when the scan is completed and numerically increment the last character of the name with a number. It is not necessary to save the first file with a last digit, when in auto save.

Home

Touch the home icon to return to the home screen.

OTDR Trace Screen with Measurement Bar:

Use the Menu Icon in the top left of the display to open the trace screen with the measurement bar.



All operations on this trace window are consistent with the Trace screen with menu bar window. The difference in operation is solely the measurement area at the bottom of the screen.

Active Cursor Selector

In the measurement area there is an "A" and "B" line. One will have a pointer preceding the line. The one with the pointer in front of it indicates the active cursor. Touching in this area of the "A" and "B" will also toggle the active cursor.

Cursor Position

These measurements are the location along the range, using the selected unit of measure as a reference. If this area of the measurment bar is selected, it will also toggle between "A" and "B" as the active cursor.

Loss at "A" & "B"

These measurements are the splice/event loss at "A" and "B" cursors. When this area is touched with the stylus, it will toggle between basic splice loss and LSA loss. LSA loss is indicated by the yellow splice zone marker on the trace.

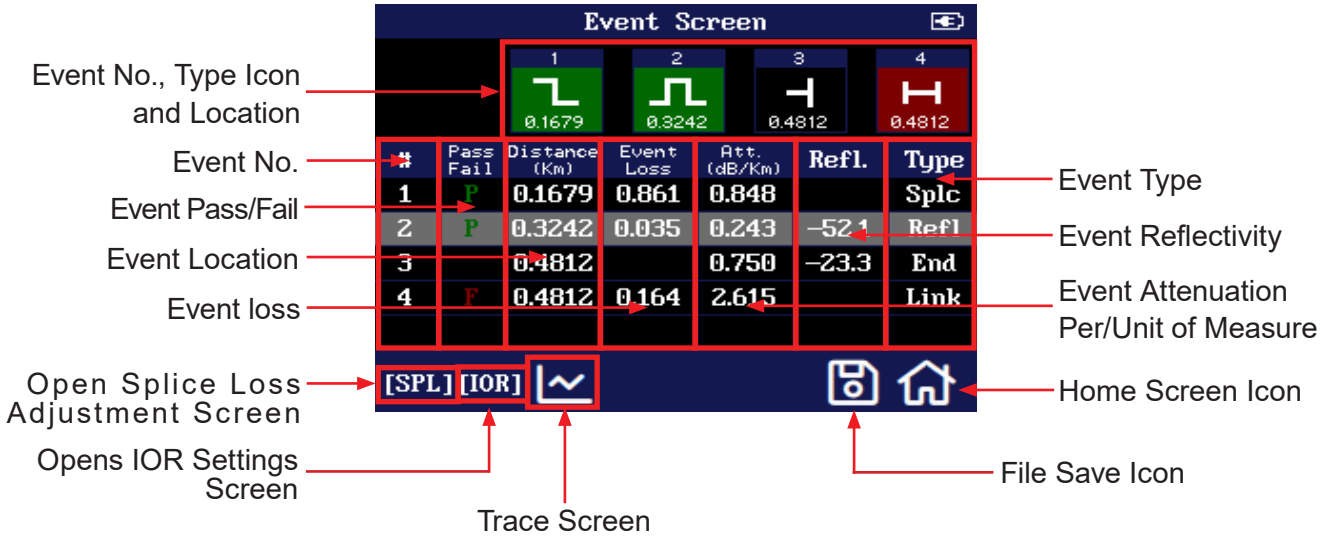
"A" To "B" Measurement Info

These measurements are the distance and loss between the "A" and "B" cursors. If this area is selected, the measurements will toggle to the link loss per unit. In this case loss per km.

Section 8 OTDR Operation

8.6 OTDR Event Table Screen

Selecting the table icon from the trace screen with menu bar, will open the table screen. If not already accomplished this will prompt the OTDR to evaluate the trace for purposes of populating the event table. After the table is open, the trace screen will also display event numbers on each event, corresponding to the event table.



Event Table Event type Icons:

	Splice	Non-reflective event
	Reflective Event	Reflective event, such as a connector
	WDM	Indicates a WDM in the link
	End	End of fiber detected
	Link	Link, measurements are that of the link and not a single event

Event Table Screen Operation Icons

[SPL] Touch this Icon to open the splice zone adjustment screen.

[IOR] This icon will open a settings screen the same as the thresholds screen. Simply type in the new IOR for that testing wavelength.

Trace Screen Touch this icon to return to the trace screen

File Save Touch this icon to open the file save screen

Home Touch this icon to return to the home screen.

Row and Column Descriptions

Event Number, Type and Location

The top header row of the table is the event number, type; represented by an icon, and the location. If there are more events than can be displayed across the top, this row may be scrolled by touching the last event displayed and the row will step through the events. Selecting an event will return the user to the trace screen with the active cursor at the selected event. If the “Link” event is selected, it will go to the last event.

Note: Selecting anywhere on the table will highlight that event and center the event in the header row. Touching the event a second time will return to the trace screen with active cursor positioned at that event.

Event No. Column

The first column is the event number. The last event will be the last number, however not the last row. The last row will be represented by an “L”, displaying data relative to the full link.

Pass/Fail Column

Pass Fail column is populated with a green “P” or a red “F” to indicate if the event passed or failed the established thresholds. If items are not selected for pass/fail in the settings screen, they will be displayed as pass.

Distance Column

This column indicates the distance along the trace the event occurs. In the link row, that will be displayed as the end of fiber location.

Event Loss Column

The event loss column is the loss of the event, whether it is a splice loss or connector loss. The pass/fail will be relative to the indication of the event type in the last column and in the header row.

Attenuation (dB/km) column

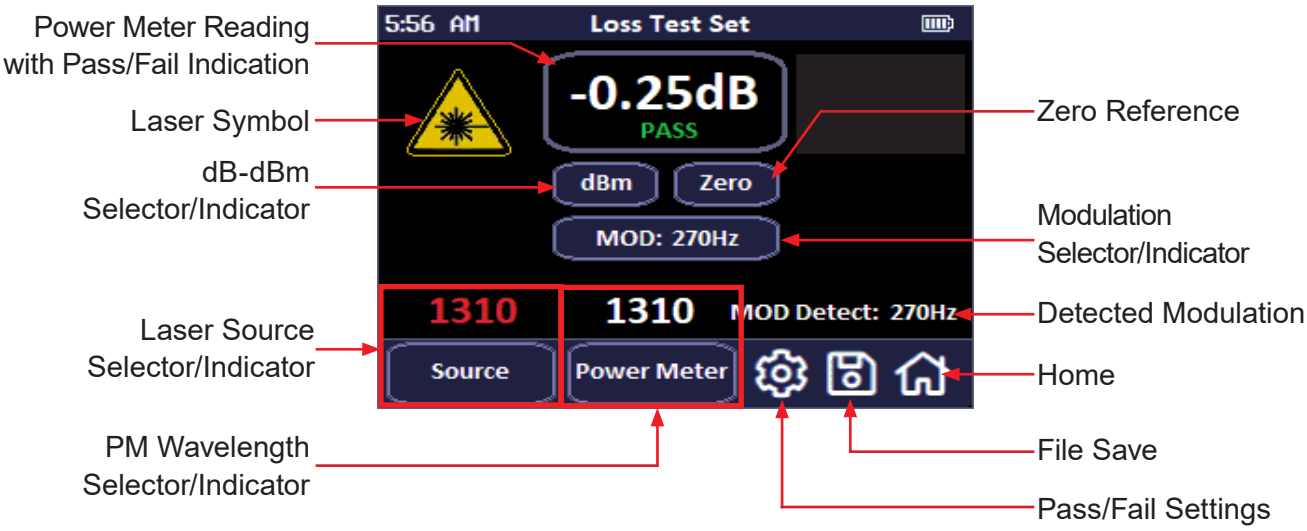
Next is loss per unit of measure. In this case loss per kilometer. This is the loss per/km of the fiber between the current event and the prior event or launch location. For the line indicated by link, this will be the 2 point loss of the entire trace

Reflectance column

Next column is reflectance. This displays the reflectance of an event that has a reflective value. Splice events should not have a reflection and link will not display reflectance.

Section 9 Loss Test Set Operation (SM, PON or Quad Only)

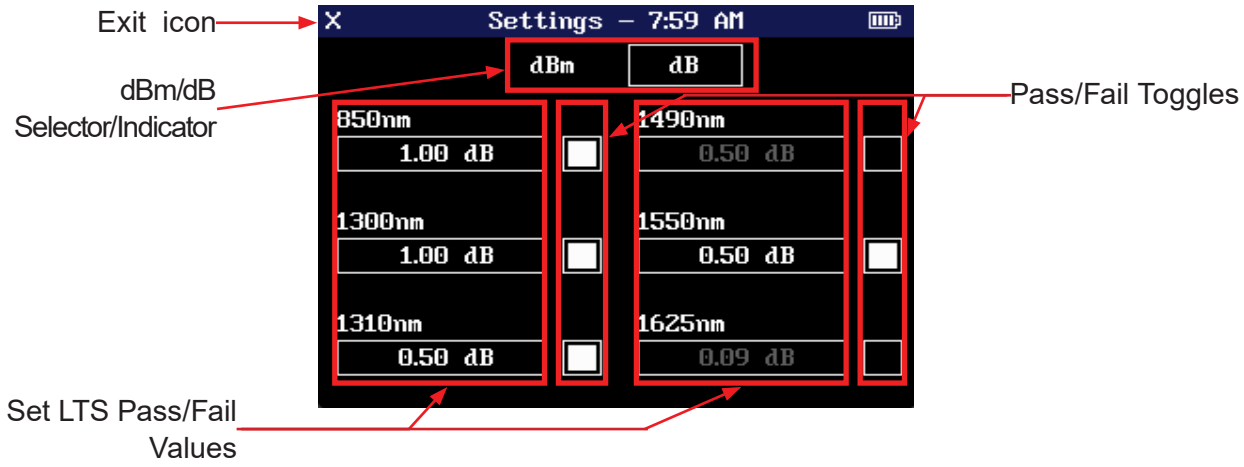
9.1 Loss Test Set Screen



Power Meter Screen Description

Power Reading	Power meter reading with pass/fail.
Laser Symbol	The laser symbol is displayed when there is an active laser being transmitted.
dB-dBm	This button toggles between db and dBm readings.
Modulation	Use this button to Cycle through the modulation settings of CW, 270Hz, 1000Hz or 2000Hz. for the LTS sources and for CW and 2Hz for the VFL Source.
Laser Source	This button will display a list of the available OTDR test wavelengths and the VFL light source. Select the desired wavelength from the list. The indicator above will show the active source or display OFF.
Power Meter	The button will cycle through the calibrated wavelengths. The indicator above will show the selected wavelength for testing
Pass/Fail Settings	Opens the power meter settings screen to set the power meter pass/fail thresholds.
File Save	Saves the current measurements.
Home	Returns to the home screen.
Detected Modulation	Indicated the current modulation being detected.
Zero Reference	Use this button to set the zero reference.

9.2 Pass/Fail Settings Screen

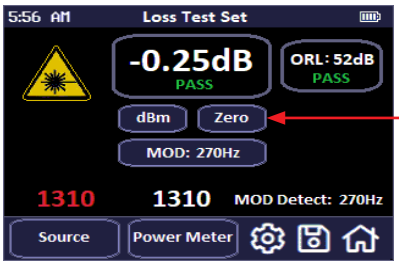


Pass/Fail Screen Description

Exit Icon	The pass/fail exit icon returns the use back to the LTS screen
dBM/dB Selector Indicator	Select between setting dBm or dB pass/fail values. Toggle between the two by touching in this area. The active setting will be boarded in white.
Pass/Fail Toggles	Use the pass/fail toggles to turn on or off the pass/fail feature. White boxes indicate the pass/fail feature is active. If it is inactive the value for that setting will be greyed out and not accessible.
Set LTS Pass/Fail	Select the value below the desired wavelength and the LTS pass/fail value entry screen will be displayed to enter the pass/fail value.

Section 9 Loss Test Set Operation (SM, PON or Quad Only)

9.3 Zero The Reference Cable/s



Zero Button To Set Reference

It is suggested that test or reference cables be used between the fiber under test and the OV350 Power Meter. This reference fiber should be approximately one meter in length and have minimal loss.

When using the power meter to conduct loss/relative (dB) test, there are two basic methods; single fiber or two fiber. With a single fiber test, one cable is used to zero reference and remains connected to the light source at all times to maintain an accurate reference. The fiber under test is placed between the power meter and the reference cable. With two fiber tests, a fiber is attached to the light source and another to the power meter. These cables are connected together to conduct the zero reference. Both cables remain connected to their assigned equipment and the fiber under test is placed between the two reference cables for testing.

Whether conducting single or two fiber tests, to zero/reference the test cable/s out from the reading, the PM and LS must be attached with just the reference cable/s and the light source needs to be warmed and stable. The PM needs to be in loss (dB), which is indicated by the dB reading on the test screen. It is also evident by the fact that the dB/dBm button displays as dBm, meaning that button may be used to change over to absolute (dBm) readings.

Touch the Zero button on the power meter. The dB reading should now indicate ~zero dB. This may fluctuate slightly, depending on the stability of the light source.

Note: Once a fiber is removed from the light source, a new zero reference must be conducted to reset the zero reference accuracy.

9.4 Setting Pass/Fail Values

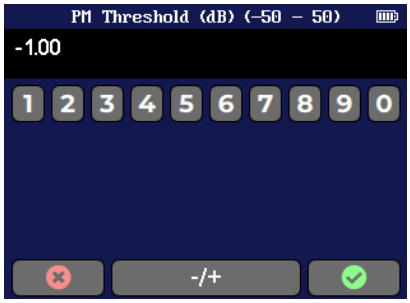
If the pass fail feature is going to be used, The values may be entered at anytime during the set up and testing process. To set the values, enter the pass/fail settings screen by selecting the setting icon on the main LTS page.

Select the desire test values to be set by selecting dB or dBm. This will set the wavelength measurement values to be entered.

Turn on or off specific wavelengths by selecting the pass/fail check box next to each wavelength.

Note: If the pass/fail check box is not turned on, the value will always be displayed as passing.

To set the value for each desired wavelength, touch the value below the wavelength indicator and the following page will be displayed.



The old value does not need to be erased, simply enter the complete value and the old value will be overwritten. Enter the maximum value that is acceptable. The value range that may be entered is -50 to +50. Use the +/- button to toggle between positive and negative values. Use the red X to cancel the entry and the green check to accept and save the entry.

Note: These are pass thresholds, therefore the value entered and anything lower than that value passes.

9.5 Conducting a Loss (dB) Measurement

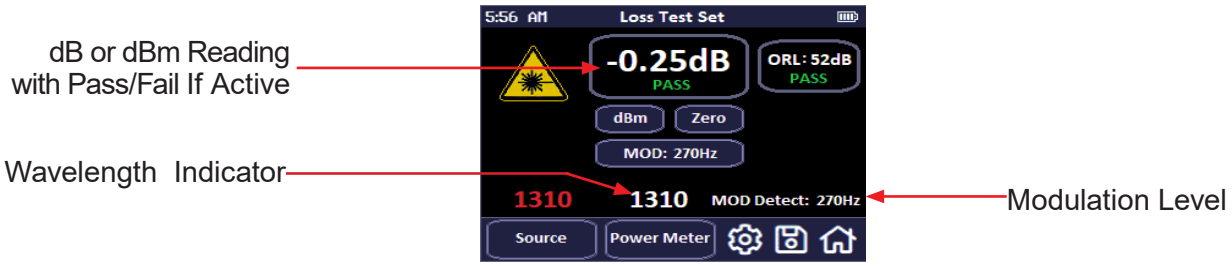
Once zeroing is complete, loss (dB) testing may be accomplished.

Note: Fiber-optic connectors are easily contaminated or damaged. Even though the power meter connection on the OV350 is not a physical contact type of connection, dirty or damaged connectors may impair the instruments capabilities. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed. Please use the VIS-300 video inspection probe and consumable cleaning supplies before every connection.

Connecting Cables

After ensuring proper cleanliness practices have been accomplished, and a proper warming period has been allowed on the light source being used, place the fiber under test between the power meter and the reference cable for single fiber test or between the two reference cables for a two fiber test. The reading on the display will now be the loss/relative (dB) measurement.

Section 9 Loss Test Set Operation (SM, PON or Quad Only)



dB Measurements

While testing for loss (dB), a green “PASS” or red “FAIL” will be display under the reading, if the loss threshold indicator is turned on in the settings screen. The wavelength of the source will be automatically displayed as above with a compatible FIS light source when it is first energized. If it is not recognized, that button may be used to cycle to the proper wavelength to ensure the correct wavelength is being tested..

Save dB Measurements

To save loss (dB) measurements, with the measurement on the screen, touch the save icon. This will open the file naming screen and allow the user to name the file appropriately.

Note: The auto save is not available in the LTS.

9.6 Conducting a Power (dBm) Measurement

If only a power measurement is desired, and currently testing loss (dB), touch the dBm button to display the dBm power reading. If the reference cable/s were being used, they will no longer be referenced.

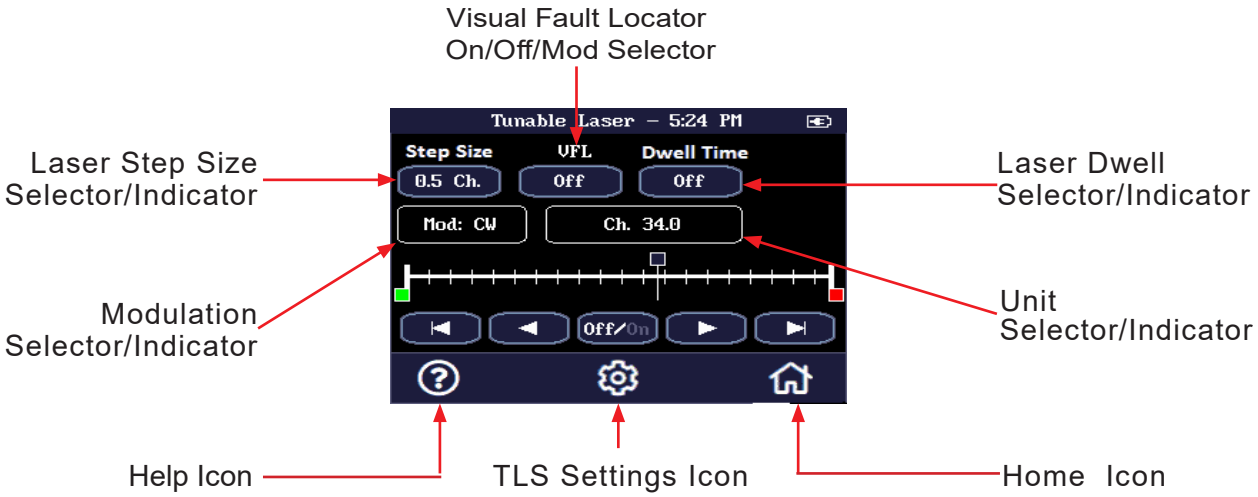
While in Power (dBm) mode, the auto wavelength and modulation level of the source will be displayed.

Measurements are saved in the same manner as dB readings.

Section 10 Tunable Laser Source (DWDM OTDR)

10.1 TLS Screen

TLS Test Parameter Buttons and Icon menu



TLS Test Parameter Button Descriptions

Use the parameter buttons to set the appropriate laser step size, dwell time, modulation and display unit for the testing requirements.

Laser Step Size Selector/Indicator

This button indicates the laser step size and when touched will cycle through the step sizes in channel, terahertz, and nanometer as established by the “unit selector/indicator and laser value indicator”. The available step sizes are; .5, 1 and 2 ch in channel mode, - 50, 100 and 200 GHz. in terahertz mode, and .4, .8 and 1.6 nm in nanometer mode.

Modulation Selector/Indicator

This button indicates the current modulation selection and when touched will cycle through the available modulation settings of CW, 270Hz, 330Hz, 1000Hz and 2000Hz.

Laser Dwell Time Selector/Indicator

This button indicates the current dwell time of each step. When touched a window will open with the range of 5.0 to 60.0 second dwell time available. Enter 0.0 to turn off automatic laser steps.

Unit Selector/Indicator

This button allows the user to select the identifying unit of the laser, Ch. for channel, THz for terahertz and nm for nanometer. It also indicates the laser position based on the selected identifier.

Visual Fault Locator (VFL)

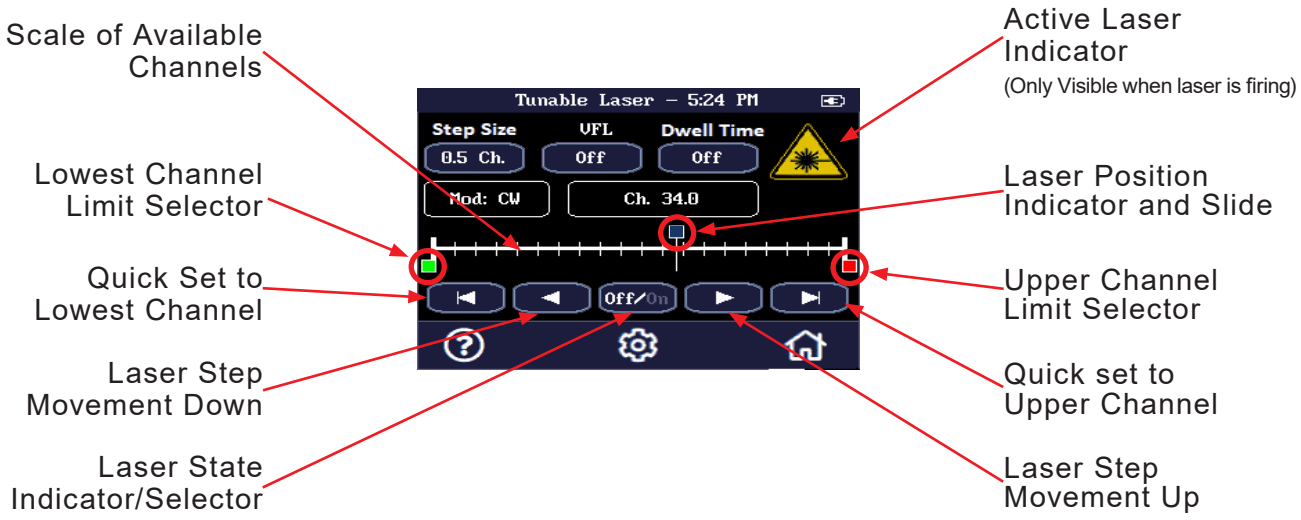
The VFL is accessed from this screen in the top center. The VFL button will cycle through on/off and CW.

Section 10 Tunable Laser Source (DWDM OTDR)

TLS Icon Descriptions

	Help “?”	Displays a link to FIS, manuals, PC application software, equipment upgrades and training online.
	Settings	Opens the TLS settings screen
	Home	Returns to the home screen

TLS Screen Operational Buttons



Use the operational buttons to select appropriate Ch., frequency, or wavelength according to the settings established with the setting buttons

TLS Operational Button Descriptions

Scale of Available Ch.s — This is the full scale of channels available in the Tunable Laser Source.

Laser Position Indicator and Slide — The blue box indicates the position of the laser on the scale, the channel that is firing. It is also a touch slide to move up and down the scale as desired. It moves as the dwell of the laser progresses. Touch on the scale to snap to that position.

Lowest Ch. Limit Selector	The green box is a selectable limit, the lowest channel to be used either manually with the 0.0 dwell time or automatically with a selected dwell time.
Upper Ch. Limit Selector	The red box is a selectable limit on the upper channel to be used either manually with the 0.0 dwell time or automatically with a selected dwell time.
Quick Set to Lowest Channel	This button will move the “laser position indicator” to the lowest channel as set by the “Lowest Channel Limit Selector”
Quick Set to Upper Channel	This button will move the “laser position indicator” to the upper most channel as set by the “upper channel limit selector”
Laser Step Movement Down	This button will move the laser down the scale one step at a time or continuously with a long touch.
Laser Step Movement Up	This button will move the laser up the scale one step at a time or continuously with a long touch.
Laser State Indicator/Selector	This button shows the On/Off state of the laser and is the selector to turn the laser on or off.
Laser Activity Indicator	The laser emblem in the top right corner of the screen indicates laser activity from the unit. It is only present when there is laser activity.

10.2 TLS Operation

Connecting Fiber Optic Cable

After ensuring proper cleanliness practices have been met, connect cable under test with appropriate SC/APC connectors to the tunable laser source.

Note: Always treat fiber cable and equipment test ports as if they have laser activity present. If the laser is powered on, the laser activity Indicator will illuminate for a positive indication that the laser is active.

Activating The Laser

After all parameters have been established as described above, use the laser state button to power on the laser. The laser activity indicator will be displayed to indicate the laser is firing.

Make changes as required to accommodate the equipment receiving and evaluating the laser signal.

Visual Fault Locator (VFL)

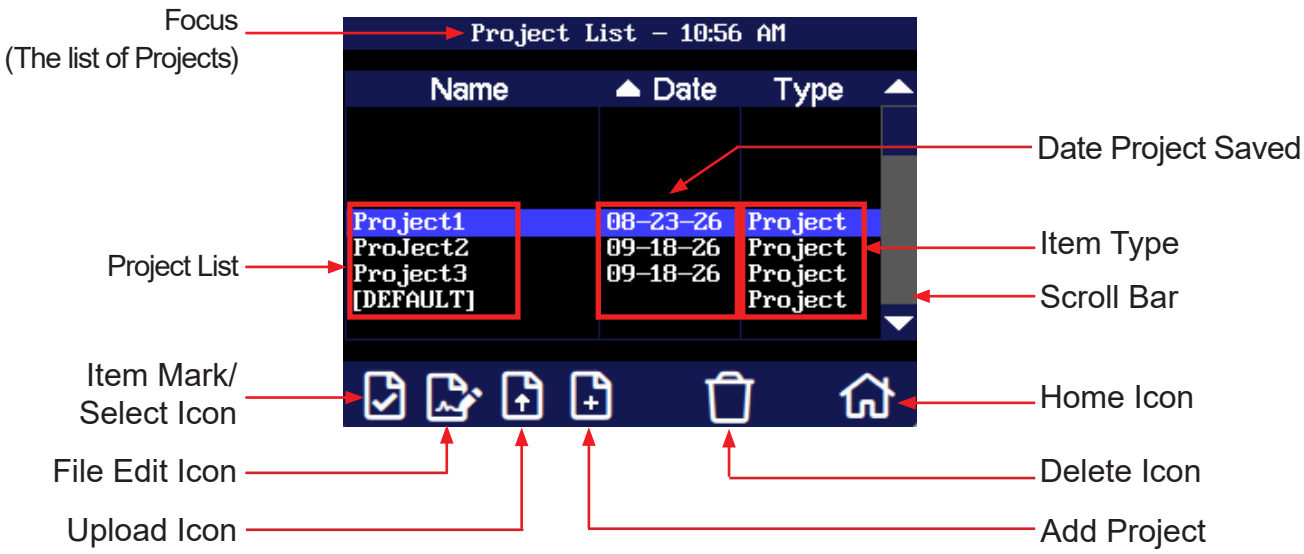
The VFL is accessed from this screen in the top center. Select the VFL button to cycle through on/off and CW.

Section 11 Project/File Management

11.1 Project/File Management Screens

When the project/file management screen is opened, it will default to project management with a list of projects displayed. All files are saved within a project. Once a project is added or opened, the “file icon with a + sign” will change to a “file folder icon”. This indicates a project is opened and the items being view are now files within the project and the project name will be displayed at the top of the screen.

Project Management Screen



Project Management Screen Description

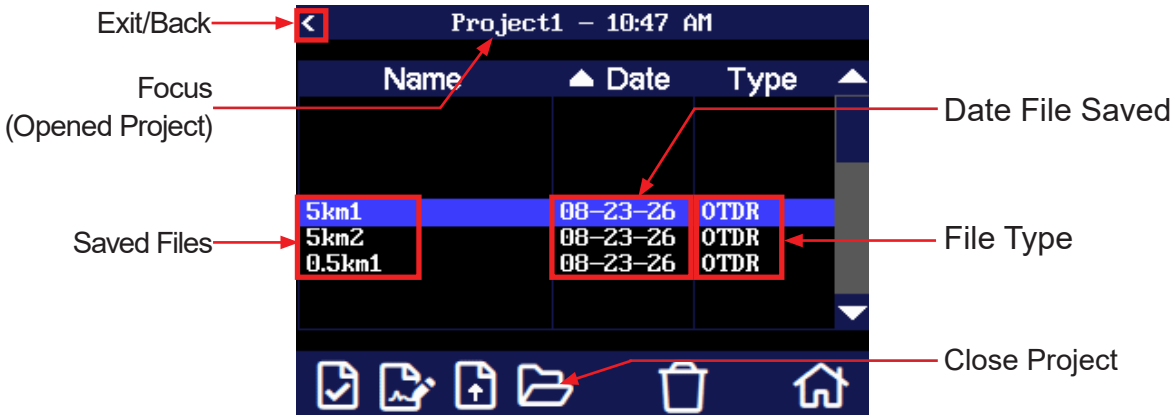
Focus	Indicates the focus of the list, whether it is the list of projects or which project is open.
Projects	Shows a list of the saved projects.
Scroll Bar	Use to move through long list of projects quickly.
Type	Displays project when in the project list.
Date	Displays the date the project was created.

Section 11 Project/File Management

Project Management Menu Icons

	Item Mark Select	Marks or un-marks multiple projects for an uploading to FIS Connect Software
	File Edit	Opens a project to be edited
	Upload	Uploads the highlighted or marked project/s to FIS Connect software
	Add Project	Adds a project to the project list
	Delete	Deletes marked files
	Home	Returns to the home screen

File Management Screen



File Management Screen Description

Exit — When a project is open select the exit/back icon to return to the project list.

Focus — Indicates the project that is currently open and where files will be saved

Saved Files — List of the saved files within the focused project.

File Type — Displays the type of file type, such as OTDR, Scope or PM.

Date — Displays the date the file was created.

Section 11 Project/File Management

File Management Screen Icon Description

	Exit/Back	Select this to return to the project management screen
	File Select	Marks or un-marks multiple files for an action/operation
	File Edit	Opens a file to be edited
	Upload	Uploads the highlighted or marked files to FIS Connect software
	Folder Icon	This replaces the add project icon when a project is open, select it to close the project
	Delete	Deletes marked files
	Home	Returns to the home screen

Project/File Naming and Editing Screen (QWERTY Keyboard)



11.2 Project/File Management Operation

This is a project based file system, individual OTDR trace files, PM files or scope files are always saved within a project. To save file, a project needs to be designated as the storage location. Projects are the same a folder in a computer system. If no project is designated, files will be saved to the last opened project or the (default) project if there are no other projects created or saved to the project/file management system.

Section 11 Project/File Management

Creating a Project

To create a project, select the add project icon from the project management screen. The project/ file QWERTY screen will be opened, with the last save item name displayed. erase the old name by touching the back space key repeatedly. Use the keyboard to enter the desired project name and select the green check to save the project and return to the project management screen.

Note: Project and file names are limited to 16 characters

Selecting a Project to Save Files

To designate a project in which to save files, enter the project/file management screen from the home screen and open a project by double tapping it when it is in the highlighted line of the screen. Close the project and return to the home screen by touching the home icon, then open the desired module.

Saving Files

Note: File names are limited to 16 characters.

To save a file, simply touch the file save icon on any screen. This is available in the trace screen with menu bar, table screen, scope screen and the LTS screen. Whatever the last file saved in that folder will be displayed on the file naming screen. If the last file saved in the project had a numeric last digit, the new file name will be increments by one.

While in the OTDR, there are two methods to save a file; manual mode and auto mode.

Selecting Manual or Auto Mode

To select manual or auto mode, long touch the file save icon when in the trace screen. A drop down menu will be displayed with a selection of manual or auto. The one highlighted in yellow is active save method. Simply touch the non-highlighted option to set it as the active saving method.

Manual Mode

When in manual mode, touch the file save icon and the file naming screen will be displayed with a file name automatically populated. If the end of the previous file name was a numeric character the new filename will be increased by one. if it was not, it will be the previous file name. Rename the file as necessary and select the green check mark to save the file or the red X to back out and cancel.

Auto mode only operates when a new trace is taken. When the trace is complete or is stopped, a message will be displayed stating “finding events”, followed by a message showing the file name that was saved. When in the auto mode, the previous the file will automatically be saved with a numeric suffix or if there was already a digit at the end it will increase by one.

Viewing a File

View file in the same method as opening a project. Double tap the file name while it is in the center highlighted location on the screen. This will open the file in the proper module, such as OTDR, scope or PM.

Section 11 Project/File Management

Project/File Select

Note: Multiple files or projects may be uploaded (copied) to a computer, while only multiple files may be deleted.

To mark the projects or file, highlight a file to be included in the operation and touch the file select icon. The highlighted project or file will now be displayed in yellow and the next file will be in the highlighted position. Continue marking project/files by touching the select icon. To skip files simply move down the file list until the next file to be marked is highlighted and touch file select icon again. The file select is a toggle and to unmark a file, place it in the highlighted position and touch file select again, and it will be unmarked. Once the projects or files are selected touch the delete icon to delete multiple files or upload icon to move multiple projects or files the a computer with the FIS Connect Software.

Note: If files have been marked for batch processing, only the marked files are process not the highlighted file as in single file processing. (The last file in a list may be marked when in the highlighted position) If only one file is to be process, having it in the highlighted position will be sufficient for the action.

Project/File Edit

With a project or file highlighted, select the edit icon and the project or file will be opened in the QWERTY keyboard screen. Make name changes as necessary and select save.

Upload Projects/Files

The upload files icon is used to send projects or files to the computer for use with the FIS Connect software suite. One or more projects or files may be uploaded at a time. Use the mark (select) feature to select multiple projects/files or have the project/file to be uploaded in the highlighted position. With the OTDR connected to the computer and via USB cable, and the FIS Connect Software running, touch the upload icon and the projects/files will transfer to the selected folder on the computer.

Delete Projects/Files

To delete a single project or file, with the name in the highlighted position, touch the delete icon. To delete a group of files, mark all files to be processed and press the delete icon.

Note: Once the delete icon is selected, files are immediately deleted and they can not be recalled.

Note: Only one project may be deleted at a time and it must be empty. Delete all the files in a project prior to deleting the project itself.

Exit

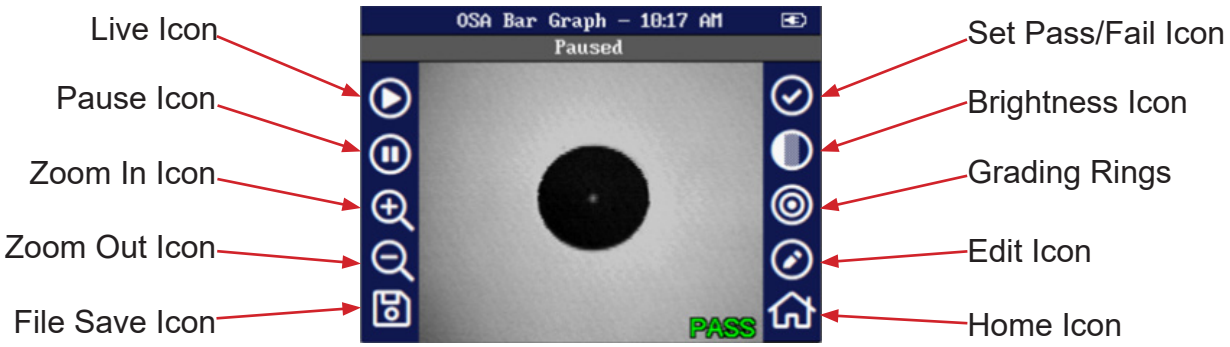
Select the home icon to return to the home screen.

Section 12 Video Scope Operation

Select Video Scope icon from the home screen.

12.1 Video Scope Screen

Video Scope Screen



Video Scope Icon Function

	Live	Selecting the live icon turns on live or running mode
	Pause	Selecting pause freezes an image in position and focus level for inspection, also runs auto pass/fail when set to auto.
	Zoom In	Toggles image to 250x
	Zoom Out	Toggles image to 125x
	File Save	Selecting this icon opens file save to the QWERTY keyboard
	Set Pass/Fail	Sets pass, fail and auto grading markers
	Brightness	Selecting the brightness icon will cycle through the brightness levels available
	Grading Rings	Selecting this icon will toggle the grading rings off and on
	Edit	This is used to mark the points of contamination on image
	Home	Returns to the home screen

12.2 Video Probe Operation

To operate the video scope, touch the Scope icon on the Home Screen. If a probe is not connected already, connect the Video Probe to the video probe port on the top of the unit.

Video Probe Tips

There are a number of video probe tips available. To remove a tip from the Probe, grasp the probe tip and unscrew the tip retention nut from the tip. Pull the tip straight up from the probe. To place a tip on the probe, ensure the lens is clean, slide the tip on to the end of the probe and tighten the tip retention nut. Do not overtighten the retention nut.

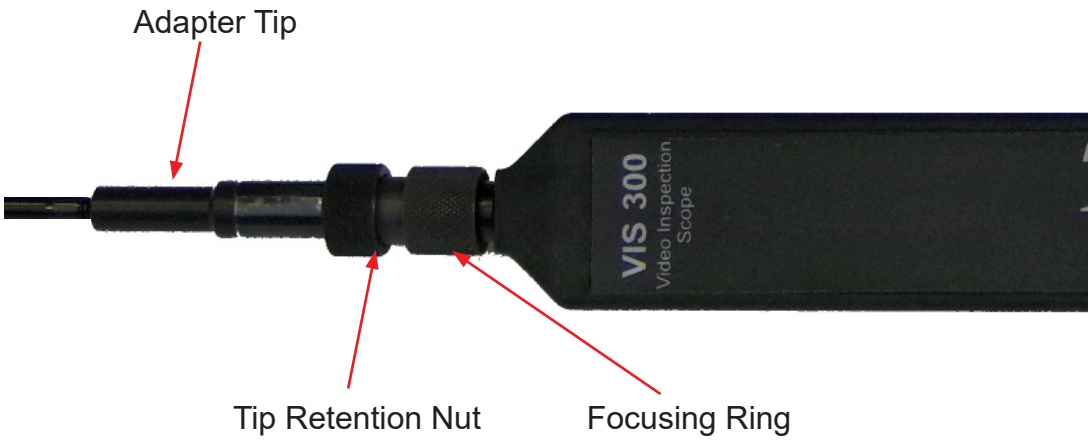


Fig 11.1

Viewing/Focusing a Connector

With the video scope turned on and the video probe plugged into the unit, insert a connector in to the tip or insert the panel adapter tip into the appropriate port. The scope must be in the live scanning (“Running” noted at the top of the display) mode to make focus adjustments. Use the focus ring to get the connector image as sharp as possible. When using panel adapters it is possible to turn the body of the probe while the adapter is inserted into the panel to make focus adjustments.

NOTE:
To auto center the image, touch the center of the connector core image and the connector will move as close as possible to the center of the display.

13.3 Video Scope Operation

Live / Pause
The scope starts up in live (Running) mode. To pause or freeze the image, select the Pause icon. Live is a real time viewing of the connector end face. Most features are available in live mode, however editing (marking contamination) is not.

Zoom In - Zoom Out
Select the Zoom In icon to increase the magnification to 250x. Selecting the Zoom-Out icon will return the image to 125x.

File Save
Selecting the File Save Icon opens the file save/naming screen with QWERTY keyboard. Enter the file name as desired, upon starting the unit, the default file name is “Default”. This will be the case every time the unit is powered on. Once a file is saved, the default file name is the previous saved name. There is a limit of 15 characters to file names. Once the file name is entered, select the Save (check mark) button. To back out without saving, select the Cancel (X) button

Pass/Fail Icon
Use the pass/fail icon to mark the connector image in live mode (running). Selecting the icon will cycle through fail, pass and auto. If set to auto, this allows the smart grading system to evaluate the connector. To start the auto pass fail process, with the image as close to centered as possible, select the Pause icon. The video scope will attempt to auto center then run the test and display a pass or fail label.

Note: If the connector shows all red or the test fails to complete, maneuver the probe tip to allow for centering of the image and retry the test.

Brightness
Touch the Brightness icon to cycle the brightness levels for best image quality. The brightness could affect the auto analysis.

Grading Rings
Turn on and off the grading rings when in live (running) mode. by selecting the Grading Rings Icon. These are use to indicate the IEC61300-3-35 grading zones. These pass/fail grading rings are used to assist with manually grading a connector. The rings represent 25um, 120um, 130um and 250um. Use Pass/Fail Criteria Tables on the following page to help grade the connector end face. 2, 3, 5 and 10 micron contaminant examples are displayed when the edit icon is active.

Edit (marking contamination points)
To mark the points of contamination the unit must be in paused mode. Pick up the contamination marker by using the stylus and touching the contamination sample size that is required. Touch the image to place the marker. The marker may be fine-tuned with the stylus to cover the contamination point on the image to be marked. Once the marker is positioned properly, touch the area just above the image that states “Place marker, touch here to apply” to lock the marker in place. Repeat this as necessary to mark all the points that need to be indicated for the pass/fail status. At this point the image should be saved, the markers will be cleared with the next scan.

12.4 Pass/Fail Criteria Tables

Fiber End Face Criteria Table

Zone	Description	Diameter	Allowable Scratches (Width)	Allowable Defects (Diameter)
A	Critical Zone	0µm to 25µm	None	None
B	Cladding Zone	25µm to 120µm	No limit ≤ 3µm None > 3µm	No Limit < 2µm 5 from 2µm to 5µm None > 5µm
C	Adhesive Zone	120µm to 130µm	No limit	No limit
D	Contact Zone	130µm to 250µm	No limit	None ≥ 10 µm

Section 13 Visual Fault Locator

13.1 VFL Safety



Caution

This Visual Fault Locator is classified as a Class II laser system and must be used with all commensurate safety precautions. Never view the light emanating from the fiber directly. Place a white piece of paper at the end of the fiber and look for the presence of a red spot on the paper.

13.2 VFL Description

The Visual Fault Locator emits visible (red) light at the 650 nm wavelength. Its intended function is to allow an operator to identify the exact location of a break, micro bend, or other discontinuity in a fiber optic cable. As the radiation is visible, light emanating from a break or micro bend enables the user to locate the exact position of a fault even at very short distances that would not be detectable by conventional means such as an Optical Time Domain Reflectometer, (OTDR). It is also useful for identifying a particular fiber in a cable by exciting the fiber to be located with visible radiation.

13.3 VFL Operation

MM/SM, QUAD and PON OTDRs VFL Operation

The visual fault locator is accessed from the Loss Test Set screen. To activate the VFL, enter the LTS from the home screen. Touch the source button to cycle through the available light source lasers and the VFL. Select the Mod:CW button toggle between CW and 2Hz modulation.

DWDM OTDRs VFL Operation

The visual fault locator is accessed from the tunable laser source (TLS) screen. Use the dedicated VFL button to toggle through VFL on, mod and off.

Panel Interface

The fiber to be tested is connected to the VFL port by means of a standard 2.5 mm fiber optic adapter.

Section 13 Visual Fault Locator

Operation Mode

The source may be used in one of its two modes, modulated or continuous. In the modulated mode the laser is turned on and off at a 2 Hz rate. This mode is helpful in permitting the user to identify the source radiation in the presence of high levels of ambient light. It also aids in conserving battery life.

Operational Range

The usable range for fault location depends on many factors, the type of fiber, the type of cable, the overall loss.

Active Laser Notification

An active laser symbol is displayed whenever the VFL is active/firing.

Section 14 Maintenance

14.1 Battery Replacement

The battery of the OV350-OTDR is not field replaceable please call the factory for an RMA to replace the battery.

Warning

To Prevent Fire or Shock Hazard:

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

14.2 Calibration and Verification

Periodic verification of the OV350-OTDR is recommended to ensure that your instrument remains within specification. Although not imperative, we recommend a calibration and verification once a year to make certain the instrument is functioning properly and performing to its rated specifications. Consult the factory for service.

14.3 Adapter Replacement

The OV350-OTDR is supplied with easily interchangeable port adapters SC and optional FC. To change an adapter, remove the two screws that hold the adapter in place, pull the adapter straight up from ferrule. It is suggested that you clean the exposed ferrule with appropriate cleanser and lint free wipe anytime you replace the ferrule.

Note: In order to maintain a low loss fiber connection, care should be taken to adequately clean the ferrule of any connector to be connected to the OTDR. We recommend the use of the video inspection scope accessory for inspection before every optical connection.

Note: In the event that the port needs to be cleaned, first step is to be certain the instrument is turned off. We suggest the use of isopropyl alcohol and foam swabs specifically designed for cleaning connectors accepting 2.5mm ferrules.

Section 15 Specifications

OTDR SPECIFICATIONS	MM, SM, QUAD and PON	DWDM
Wavelength	850, 1300, 1310,1550 and 1650 ±20nm	1527.61-1566.31 nm 191.4-196.25 THz (ITU Chs. 14-62.5)
Dynamic Range	26/27dB MM, 32/32dB SM, (1310/1550/1650 PON 37/38/38dB)	35 dB
Pulse Width	5 - 20,000 ns 5 - 20,000 ns	
Units of Measure	km, ft, kf, mi km, ft, kf, mi	
Event Dead Zone	1m 1m	
Attenuation Dead Zone	4m 4m	
Resolution	.125 - 32m .125 - 32m	
Distance Uncertainty	±(0.75m + 0.005% x distance + sampling resolution)	
Full Scale Dist. Range	0.5-64km MM 0.5-128km SM	0.5-128km
Real-Time Refresh Rate	2 Hz typ.	
Group Index of Refraction	1.024 - 2.048	
Linearity	± .05 dB/dB	
Memory Capacity	1,000+	
Memory Type	Internal	
Power Supply/Charger	USB, 5V 2A	
Battery	Li-pol, 10hr typ.	
Storage Temperature	-20 to 60 C	
Operating Temperature	-10 to 50 C	
Dimensions	5.25L 6.125x25'H/ (133mm Lx 15/m x64mm H))	
Weight	1.5 lbs (0.7 kg)	
Communications Port	USB	
Connector Styles/Choice	FC, ST, SC	FC,SC APC
Accessories Included	5V, 3.4A USB Wall Charge with USB cable, 2 stylus	

Section 15 Specifications

VFL SPECIFICATIONS	
Emitter Type	Laser
Wavelength	650nm ± 5nm
Laser Safety Class	Class II FDA21 CFR1040.10 & 1040.11 IEC 825-1: 1993
Connector Type	2.5mm Universal
Output Power	1mW Max.
POWER METER SPECIFICATIONS	
Detector Type	InGaAs
Connector Type	ST, FL, SC, 1.25mm and 2.5mm Interchangeable
Dynamic Range	+5 to -77dB (CATV - +25 to -57dB)
Calibrated Wavelengths	850,1300,1310,1490,1550 and 1625nm or 1650nm
Power Measurement Uncertainty	± 0.18 dB under reference conditions, ± 0.25 dB from 0 to -65 dBm, ± 0.35 dB from 0 to +5 dBm and from -65 to -77 dBm
Units of Measure	dBm, dB
Resolution	.01 dB
DWDM TUNABLE LIGHT SOURCE SPECIFICATIONS	
Wavelength	1527.61-1566.31 nm, 191.4-196.25 THz, (ITU Chs. 14-62.5)
Frequency Accuracy	+/- 2.5 GHz
Line Width	1 MHz
Side Mode Suppression Ratio	30 dB
Output Power	0.0 dBm
Minimum Channel Spacing	50 GHz (0.4 nm)
Fiber/Connector type	9/125 µm / APC Polish
Relative Intensity Noise	-140 dB/Hz

Section 16 Warranty and Repair

16.1 Warranty Information

This product, including all mechanical, electrical, and optical parts and assemblies are unconditionally warranted to be free of defects in workmanship and material for a period of two (2) years from the date of delivery.

This warranty does not apply to expendable parts such as batteries or optical panel connectors, nor to any instrument or component which has been subjected to misuse, alteration, or fiber connector damage. It is the customer's responsibility to understand all the instructions and specifications prior to operating this instrument. This warranty does not extend to any loss or damage consequent to the failure of the warranted product.

16.2 Repair Information

If repair is required, simply call the factory for return instructions and a return authorization number (RMA).

Section 17 Trouble Shooting Guide

Symptom	Possible Cause	Solution
LCD dark	Power not on	Press ON/OFF key
	Batteries require recharging	Recharge batteries
LCD white	Power cycled too quickly	Turn off wait 10 seconds – turn on
Instrument locked Up	Unexpected Operational Mode	Turn off (hold ON/OFF button in for 1 second) wait 10 seconds – then depress On/Off to turn the unit on.
Low or no power being displayed	Defective cord or dirty connector	Replace or clean cord
	mismatch in connector Polish	Examine connector ends for damage. Use correct APC or UPC connectors ONLY!
USB hookup to PC not functioning properly	USB connection fault between unit and PC	Reset FIS Connect (After upgrading firmware or resources)
	PC drivers not set properly	Un-install & re-install FIS Connect software and drivers

Section 18 Version Control

Through a program of continuous improvement, we upgrade the features and performance of the instrument in an on going process. The instrument firmware version is accessible at “turn-in the bottom right-hand corner of the display. The version changes and approximate release dates are as follows.

OV350-OTDR

V1.0.0.1 - Original Release

V1.0.0.2 - Update to PM over range indicator

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