SmartOTDR 100 Mainframe

Handheld OTDR, designed for the construction, turn-up and maintenance of fiber networks

User Manual

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User Manual

Viavi Solutions
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This product, and the batteries used to power the product, should not be disposed of as unsorted municipal waste and should be collected separately and disposed of according to your national regulations. In the European Union, all equipment and batteries purchased from Viavi after 2005-08-13 can be returned for disposal at the end of its useful life. Viavi will ensure that all waste equipment and batteries returned are reused, recycled, or disposed of in an environmentally friendly manner, and in compliance with all applicable national and international waste legislation.

It is the responsibility of the equipment owner to return equipment and batteries to Viavi for appropriate disposal. If the equipment or battery was imported by a reseller whose name or logo is marked on the equipment or battery, then the owner should return the equipment or battery directly to the reseller.

Instructions for returning waste equipment and batteries to Viavi can be found in the Environmental section of Viavi's web site at www.viavisolutions.com. If you have questions concerning disposal of your equipment or batteries, contact Viavi's WEEE Program Management team.

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About This Guide

The SmartOTDR of Viavi provides a handheld OTDR designed for the construction, turn-up and maintenance of fiber networks.

The topics discussed in this chapter are as follows:

- “Purpose and scope” on page xvi
- “Assumptions” on page xvi
- “Technical assistance” on page xvi
- “Conventions” on page xvi

Purpose and scope

The purpose of this guide is to help you successfully use the SmartOTDR features and capabilities. This guide includes task-based instructions that describe how to install, configure, use, and troubleshoot the SmartOTDR.

Additionally, this guide provides a complete description of Viavi's warranty, services, and repair information, including terms and conditions of the licensing agreement.

Assumptions

This guide is intended for novice, intermediate, and experienced users who want to use the SmartOTDR effectively and efficiently. We are assuming that you have basic computer and mouse/track ball experience and are familiar with basic telecommunication concepts and terminology.

Technical assistance

If you require technical assistance, call 1-844-GO-VIAVI. For the latest TAC information, go to http://www.viavisolutions.com/en/services-and-support/support/technical-assistance.

Conventions

This guide uses naming conventions and symbols, as described in the following tables.

Table 1 Typographical conventions

Description	Example
User interface actions appear in this **typeface**.	On the Status bar, click **Start**.
Buttons or switches that you press on a unit appear in this **TYPEFACE**.	Press the **ON** switch.

Table 1 Typographical conventions

Description	Example
Code and output messages appear in this `typeface`.	`All results okay`
Text you must type exactly as shown appears in this **`typeface`**.	Type: **`a:\set.exe`** in the dialog box
Variables appear in this ***typeface***.	Type the new ***hostname***
Book references appear in this ***typeface***.	Refer to ***Newton's Telecom Dictionary***
A vertical bar | means "or": only one option can appear in a single command.	`platform [a|b|e]`
Square brackets [ ] indicate an optional argument.	`login [platform name]`
Slanted brackets < > group required arguments.	<`password`>

Table 2 Keyboard and menu conventions

Description	Example
A plus sign + indicates simultaneous keystrokes.	Press **Ctrl+s**
A comma indicates consecutive key strokes.	Press **Alt+f,s**
A slanted bracket indicates choosing a submenu from menu.	On the menu bar, click **Start > Program Files**.

Table 3 Symbol conventions

This symbol represents a general hazard.

This symbol represents a risk of electrical shock.

NOTE

This symbol represents a Note indicating related information or tip.

This symbol, located on the equipment or its packaging indicates that the equipment must not be disposed of in a land-fill site or as municipal waste, and should be disposed of according to your national regulations.

Table 4 Safety definitions

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

1

Safety information

This chapter gives the main information on the safety conditions when using the SmartOTDR:

- “Battery and AC/DC safety information” on page 2
- “Precautions relating to optical connections” on page 3
- “Laser Safety instructions” on page 3

Battery and AC/DC safety information

Li-Polymer battery

- The Li-Polymer battery is designed for maximum safety.

In particular, each cell is provided with a safety valve to prevent excessive internal pressure in the event of overcharging or exposure to very high temperatures.

AA Dry Battery Pack

Explosion danger

- Short-circuiting the batteries can result in overheating, explosion or ignition of the batteries and their surroundings.
- Never short-circuit the battery contacts by touching both contacts simultaneously with an electrical conducting object.
- Only use AA size dry batteries or rechargeable batteries.
- Make sure the batteries are inserted with the correct polarity.
- Battery supplied by Viavi incorporate protection means.

General precautions

- Do not use any mains adaptor or battery other than those supplied with the instrument, or supplied by Viavi as an option for this instrument.

  If another adapter or battery is used, it may damage the SmartOTDR itself. Using the SmartOTDR with a battery other than the one supplied by the manufacturer of the SmartOTDR may entail risks of fire or explosion.

  The battery may explode, leak or catch fire:
  - if it is exposed to high temperature or fire
  - if it is opened or dismantled.
- If you do not intend to use the platform for several weeks, it is advisable to remove the battery in order to prolong its useful life, and to recharge it fully before using it again.
- In case of communication problems with the battery, informed to the user, the battery charging information is no more actualized.
  Restart the equipment to restore the communication with battery.

Other basic safety precautions are as follows:

- Do not use AC/Adapter/Charger outdoors or in wet or damp locations
- Connect the AC/Adapter/Charger to the correct mains voltage, as indicated on the ratings label.
- Do not allow anything to rest on the power cord, and do not locate the product where people can walk on the power cord.
- Avoid using this product during an electrical storm. There may be a remote risk of electric chock from lightning.
- Do not use this product in the vicinity of a gas leak or in any explosive environment.
- Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous, high voltage points and other hazards. Contact qualified service personnel for all service.

Precautions relating to optical connections

- The normal operating life of an optical connector is usually of the order of a few hundred manipulations. It is then advisable to manipulate the optical connections of the Platform as rarely as possible.
- The proper operation of the instrument and its accuracy of measurement are dependent on the cleanliness of the environment and the optical connectors as well as the care taken in its manipulation.
- The optical connectors must therefore be clean and dust-free. If the optical connection is not being used, protect the connections of SmartOTDR using the protective caps.

As an example, the results of measurements made with connectors that have not been cleaned will display an error of the order of 10% for all measurements. This error is additional to other errors inherent in the measurement process and due, for example, to the quality of the fiber (circularity and concentricity), the means of connection (axis alignment, distance between fiber faces, quality of fiber faces) and propagation modes.

Laser Safety instructions

The provisions contained in two standards define the safety procedures to be observed both by users and by manufacturers when utilizing laser products:

- EN 60825-1: 2001 - Safety of laser products – Part 1: Classification of products, requirements and user guidelines.

- FDA 21 CFR § 1040.10 - Performance standards for light-emitting products - Laser products.

Due to the range of possible wavelengths, power values and injection characteristics of a laser beam, the risks inherent in its usage vary. The laser classes form groups representing different safety thresholds.

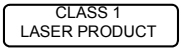
Laser classes

Standards EN 60825-1, Edition 1.2, 2001-08 and FDA21CFR§1040.10:

- VFL option: Class 2.

Warning labels for the laser classes

Due to the reduced dimensions of the optical modules, it is not possible to attach the required warning labels to them. In line with the provisions of Article 5.1 of the EN 60825-1 standard, the laser class identification labels are shown below:

Reference standard	EN 60825-1, Edition 1.2, 2001-08	FDA21CFR§1040.10
Class 1		
Class 1M		
Class 2		

The user must take the necessary precautions concerning the optical output of the instrument and follow the manufacturer's instructions.

Measurements on optical fibers are difficult to execute and the precision of the results obtained depends largely on the precautions taken by the user.

2

Introducing the SmartOTDR

This chapter provides a general description of the SmartOTDR.

Topics discussed in this chapter include the following:

- “Unpacking the instrument” on page 6
- “Main features” on page 6
- “Hard keys and Indicators” on page 9
- “Power Supply” on page 11

Unpacking the instrument

1 Remove the SmartOTDR and its accessories from the packing case.

2 Check that the correct model and accessories ordered are all there.

If any part is missing or damaged please contact your local Viavi agent.

The SmartOTDR is delivered as standard with:

Table 5 Elements delivered on standard with the SmartOTDR

A Getting Started Manual
A Li-Polymer battery, set into the equipment and which must be charged before use or A AA dry battery pack
A mains adapter used for mains operation of the instrument and battery charging
5 country adaptable plugs (Europe / UK / US / Australia / Japan)
A hands-free soft case for the SmartOTDR
A USB cable, to directly connect the SmartOTDR to a PC

Main features

The SmartOTDR is equipped with the following elements:

- A 5 inch color capacitive touchscreen, high visibility
- Two USB 2.0 host connectors for Microscope, USB memory stick, mouse, keyboard...
- One mini USB 2.0 device connector to connect the SmartOTDR to a PC
- A connection socket for the mains adapter providing the 15 V power supply and used to charge the battery.
- LED indicators for Charge, On status and Test
- A Li-Polymer battery or AA dry battery pack
- Built-in VFL (option)

With the SmartOTDR, the user can:

- Open and/or transfer files to a PC via a USB memory stick, USB cable or Wireless connectivity
- Generate pdf reports

- Open all user documentations included into the SmartOTDR
- Update the SmartOTDR firmware
- Remote the screen of the SmartOTDR onto a PC and issue commands from the keyboard of the PC
- ...

Figure 1 SmartOTDR

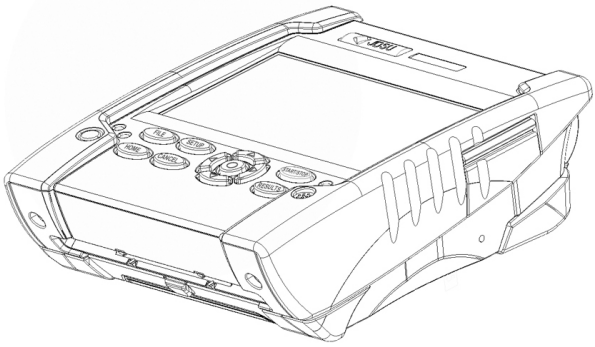


Figure 2 SmartOTDR: Front view

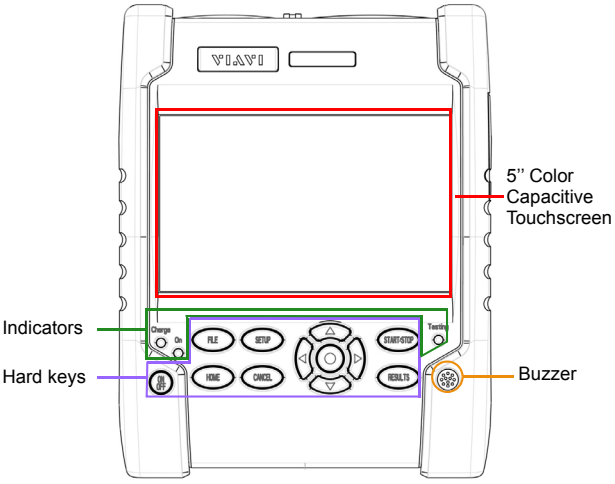
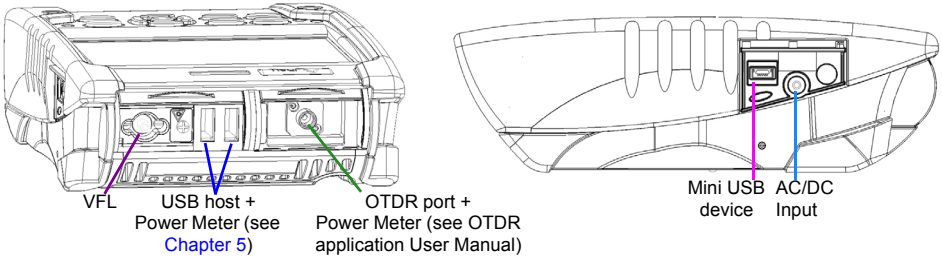


Figure 3 SmartOTDR: Connectors View



Hard keys and Indicators

Front panel hard keys

Figure 4 Hard keys and Indicators

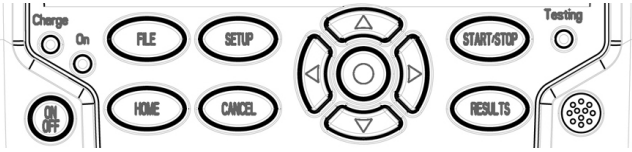


Table 6 Hard keys description

Hard key	Function
	Main on/off switch
	This button calls up the file explorer. It allows to: • choose the storage medium: internal memory, USB memory key. • manage files; with facilities for classifying them in directories and sub-directories
	Gives access to: • selection of the different measurement or functions • the settings of the instrument • the help page
	This button calls up the measurement configuration menu. This menu depends on the function in use.
	This button allows to deselect a function or escape a menu
	Starts and stops the measurement.
	This button calls up the results page (e.g. with OTDR module: reflectometry trace and table of results).

The direction keys have two principal functions:

- on the Results page, they are used to move the cursors or modify the zoom factor.
- on the set-up pages, they are used to scroll through the menus, the central button serving to select or confirm the parameter chosen.

Front panel indicators

The SmartOTDR is equipped with three indicators, lit into a different color according to the status of the unit.

Table 7 Indicators Status

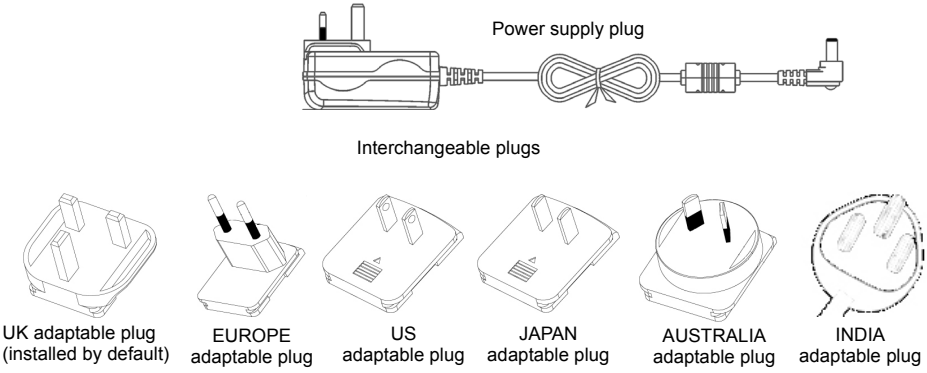
On indicator		
	*Blinking*	The instrument, though connected to an external power source, is switched off.
	*Solid green*	The instrument is operating, either by battery or on an external power supply.
Charge indicator		
	*Solid green*	The instrument is connected to an external power source and the battery is fully charged.
	*Solid red*	The instrument is connected to an external power source, and the battery is on charge.
Testing indicator		
	*Solid red*	At least one function is in measurement phase (for example, the laser emission pilot for an OTDR measurement)

Power Supply

The SmartOTDR may operate with

- the Li-Polymer battery or the AA dry battery pack (according to what has been ordered) or a AA dry battery pack (according to the order placed).
- an AC adapter/charger, via a power cable on which has been set the correct country adaptable plug.

Figure 5 Delivered elements for SmartOTDR supplying



3

Starting up

This chapter describes the first steps to perform when using the SmartOTDR.

The topics discussed in this chapter are as follows:

- “Setting the adaptable plug to the mains adapter” on page 14
- “Charging the battery” on page 15
- “Switching the SmartOTDR on and off” on page 17
- “Choosing the position of the instrument on the work surface” on page 18
- “First start: configuring the regional settings” on page 19

Setting the adaptable plug to the mains adapter

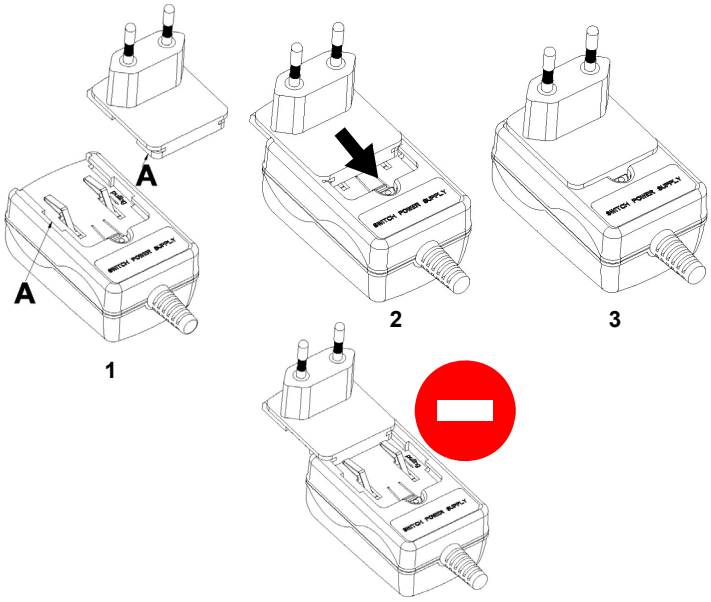
The SmartOTDR is supplied as standard with a mains adapter and 5 country adaptable plugs (Europe / UK / US / Australia/Japan).

To set the correct plug to the mains adapter:

1 Make flush the connector onto the mains adapter with the adaptable plug slots.

2 Push the adaptable plug until it stops.

Figure 6 Setting the adaptable plug onto the mains adapter



If the adapter plug is not correctly set onto the mains adapter, the connector may be damaged.

Charging the battery

CAUTION

Upon reception of the product, the battery of the SmartOTDR needs to be fully recharged, no later than 6 months after the date of calibration.

If the product is unused for a long period, the battery needs also to be periodically fully recharged, with a period not longer than 12 months

Connecting the mains adapter

1. Set the appropriate adaptable plug to the power supply cable, according to your country (see page 14).
2. At the right side of the SmartOTDR, lift up the power supply socket protector and plug in the mains adapter.
3. Connect the adapter to the mains.

   The **On** indicator lamp starts to blink in green.

Use only the mains adapter supplied with the SmartOTDR. The adapter for some other electronic device may appear to be identical, but entails a risk of damage to the SmartOTDR.

First use of the battery

At the delivery, the battery is already set into the equipment, but its charge level is not «recognized» by the equipment.

Using a Li-Polymer battery, the icon  is displayed on the upper banner of the screen.

To get a valid indication of the battery, and be able to use correctly the Platform:

1. Charge fully the battery
2. Once fully charged, discharge the battery by keeping the Platform switched on, but not plugged to mains.
3. The battery can then be charged, and the Platform used simultaneously.

NOTE

If a AA Dry Battery pack is used, fully charge the batteries before setting the pack into the SmartOTDR.

Charging the Li-Polymer battery

On connection to the mains:

- if the user does not press **ON**, the battery will start the charge. In this case, the **Charge** indicator will be lit in red.
- when the user presses the **ON** key, the instrument starts up and the battery will charge during use (**Charge** indicator in solid red).

Once the battery is fully charged, the **Charge** indicator is lit in solid green.

When the **Charge** indicator is blinking red, this mean the power supply is not compatible with the battery used. Charge is disabled.

It is essential to wait until charging is complete to ensure maximum independent operating time, which may otherwise be considerably reduced.

Battery charge level display

When the battery is installed in the instrument, a battery icon is displayed in the top right-hand corner of the screen. Example:  .

This icon is displayed exclusively when a Li-Polymer battery is installed into the equipment.

If a AA Dry Battery Pack is installed, then the icon displayed on the upper banner is  , without charge level indication.

Table 8 Battery icons

	The battery capacity is superior to 75%

Table 8 Battery icons

	The battery capacity is set between 50% and 75%
	The battery capacity is set between 25% and 50%
	The battery capacity is inferior to 25%
	The battery capacity is unknown. Perform a full charge/discharge of the battery to get back to a valid indication. This icon may appear if battery is changed or if the battery auto discharges at a very low level (example: if a Platform switches off as battery is empty, and the charge is not done during several months (= auto discharge)).

- When the level becomes too low, the instrument emits a beep ton inform the user until it switches off automatically after saving the current configuration and measurement.

Switching the SmartOTDR on and off

Switching on the SmartOTDR

1 Press the **ON/OFF** key.

If the equipment is powered to mains, the battery will charge.

The **On** indicator pass from blinking to solid green.

The Viavi logo appears on the screen briefly, then an auto test is carried out.

The equipment is ready to be used once all the applications are installed.

NOTE

It is possible to switch over from battery to mains operation, or vice versa, without loss of data.

In the event of an unexpected mains power cut, if there is no battery, the current results and configuration will not be saved. Next time the instrument is switched on, it will return to its initial configuration.

Switching off the SmartOTDR

While the SmartOTDR is operating, press the **ON/OFF** button to switch it off.

NOTE

When the instrument is switched off using the **ON/OFF** button, current results and configuration are saved. Next time the **ON/OFF** key is pressed, they are recalled.

Resetting the SmartOTDR

If the SmartOTDR freezes, prolonged pressure (about 4 s.) on the **ON/OFF** key will reset the instrument.

Choosing the position of the instrument on the work surface

Depending on the conditions of use of the Platform 8000, the instrument may be placed on a flat surface or held in the hand.

When used on a work surface, the SmartOTDR should be supported on its stay, which can be set in either of two positions, depending on whether the user is standing or sitting.

To change the stay from “seated user” position to “standing user” position, pull the stand outside of its housing until the stop.

Push the stand to return to «seated user» position.

Figure 7 SmartOTDR «seated» and «standing» user positions

First start: configuring the regional settings

Once the SmartOTDR is switched on, the first screen displayed allows to configure the regional settings.

Those settings will be kept in memory and automatically applied on the instrument each time it is restarted.

Figure 8 Regional Settings

1. Click on **Language** and select the language to be used for the equipment.
2. Click on **Date** and enter the current date, using the numeric keypad displayed using the menu key **Edit Number**.
3. Click on **Time** and enter the current time, using the numeric keypad displayed using the menu key **Edit Number**.

   Date and time are displayed on the upper right side of the screen.
4. Click on **Date Time Format** and configure the following parameters:
   - **Date format**: select one of the option **dd/mm/yy** or **mm/dd/yy**.
   - **Time format**: select one of the option **24 hour clock** or **12 hour clock.**
5. Once all parameters have been defined, press **Exit** menu key to return to **System Settings** page.

4

Configuring the SmartOTDR

This chapter describes the operations for configuring the instrument.

The topics discussed in this chapter are as follows:

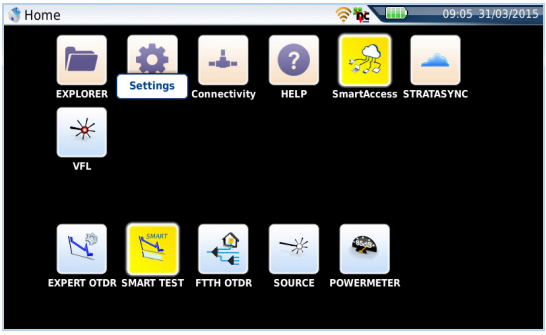
- “Displaying the System Settings screen” on page 22
- “Defining the screen parameters of the SmartOTDR” on page 23
- “Defining the Automatic shutdown and the type of batteries” on page 24

Displaying the System Settings screen

To display the **System Settings** screen, you must:

1 Press the **HOME** hard key to reach the **Home** page.

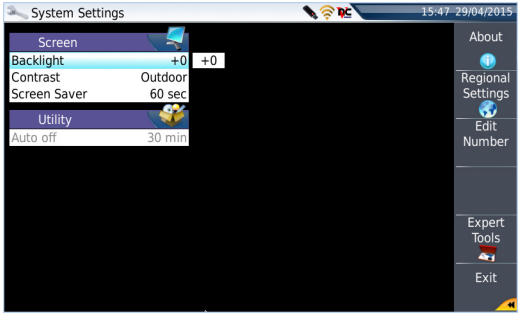
Figure 9 Home page



2 Activate the **Settings** icon 

to open the **System Settings** screen.

Figure 10 System Settings page



NOTE

If you are in the Regional Settings page, and you press **Exit**, then the **System Settings** page automatically displays.

Defining the screen parameters of the SmartOTDR

In the **System Settings** page, the following parameters can be defined:

Backlight

1 Click on **Backlight**

2 Define the backlight level of the screen, using the left and right direction keys, or clicking on **Edit Number** softkey and using the keypad displayed.

– Min backlight level: -5

– Max backlight level: +5

If the SmartOTDR is operating on battery or AA dry battery pack, it is advisable to choose a minimum lighting level, acceptable for the user, to keep endurance as long as possible.

Contrast

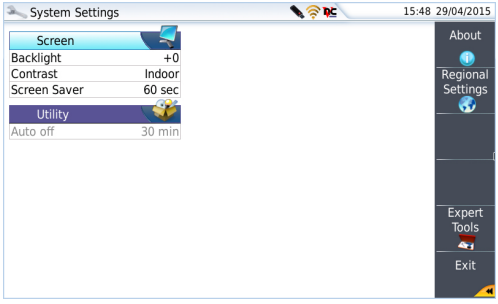
1 Click on **Contrast**

2 Select the type of environment into which the instrument is used:

– **Indoor**: to be selected when the instrument is used inside

– **Outdoor**: to be selected in order to optimize the readability of the screen for an outside use (see Figure 10 on page 22)

Figure 11 Example of indoor contrast



Screen Saver

Click on **Screen Saver** if you wish to activate a screen saver to the equipment, to extend the life of the battery/AA dry battery pack, in case the SmartOTDR is not used for some time.
Instead of the normal screen, a small animated picture of the SmartOTDR is displayed on the blackened screen.

To configure the screen saver:

1 Click on **Delay** and select the time of inactivity before the screen saver starts: **60s**, **3 min**, **5 min**.
The parameter **No** deactivates the screen saver function.

Defining the Automatic shutdown and the type of batteries

Automatic shutdown

The automatic shutdown function switches off the SmartOTDR automatically if no operation has been performed and no key actuated for a period selected from this menu. Work in progress is automatically saved.

The function for automatically switching off the SmartOTDR is available only on battery operation, to save the battery.

1 In the **Utility** box, click on **Auto off** parameter.

2 Choose a time after which the SmartOTDR will be switched off automatically, if no action has been done for that period: **5**, **10** or **30 minutes**.

Select **No** if the SmartOTDR must not be switched off, even if there is inactivity on the equipment.

Type of batteries

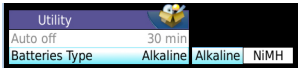
When a AA Dry battery pack is used to work on the SmartOTDR, the type of batteries can be defined on the **System Settings** page: either NiMH (rechargeable) batteries or Alkaline batteries.

This parameter displays automatically if a AA dry battery pack is installed into the equipment.

To define the batteries type:

1 In the **Utility** box, click on **Batteries type** parameter.

Figure 12 Batteries Type



2 Select the batteries type installed into the SmartOTDR: **NiMH** or **Alkaline**.
The type of batteries is displayed in the **About** > **General** page (see "Accessing to the SmartOTDR information" on page 133).
The icon displays on the upper banner.

5

Optical options

A variety of built-in optical options are available when ordering. See references in Chapter 10 “Options and accessories”, for details.

The topics discussed in this chapter are as follows:

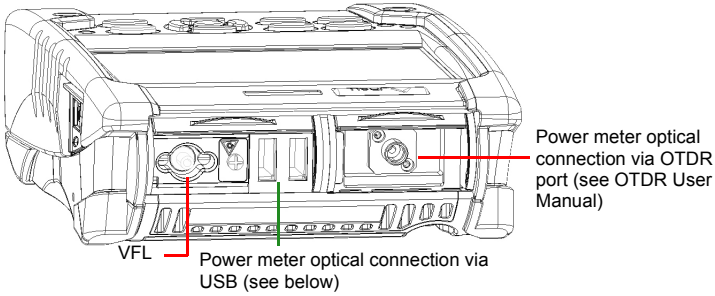
- “Connection to the power meter and VFL” on page 28
- “Using the Power meter via USB port” on page 28
- “VFL Function” on page 42
- “Storing and reloading results” on page 43

NOTE

The Source function is available on the OTDR port (non-filtered). Refer to the OTDR User Manual for a complete description of the Source function.

Connection to the power meter and VFL

Figure 13 Optical connectors



- USB power meter uses UPP-type adapter, which is compatible with different connectors (FC, SC...)
- OTDR power meter uses same adapter as OTDR (see OTDR User Manual)

Using the Power meter via USB port

The power meter function is an option chosen at the time of order.

To activate the function:

1 Press the **HOME** button

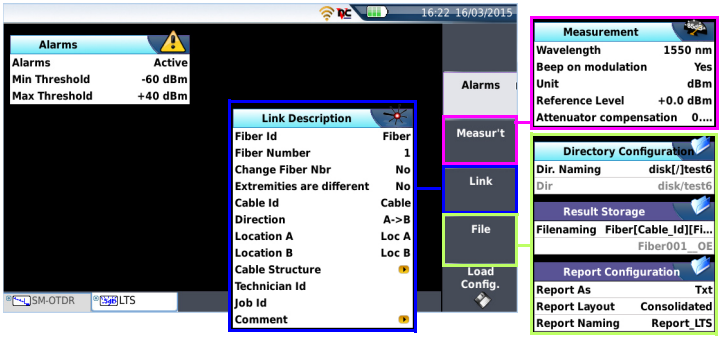
2 Activate the power meter icon of the Mainframe 

.
The effect of this action will to be to bring the power meter into use and to display the Results page for Power Meter.

Configuring the power meter

The configuration parameters can be accessed with the **SETUP** key.

Figure 14 Configuration of power measurement



Configuring the alarm parameters

Alarm Activation of the Alarm function: any result below the lower threshold or above the upper threshold will be displayed in red on the Results page.

Min and max thresholds

Choice of lower and upper thresholds for each available wavelength, from -60 to +40 dBm (selected with the direction keys).

NOTE

To copy one value of the Lower or/and Upper threshold for all wavelengths, select the reference value and click on **Update for All Wavel.**.

NOTE

A continuous push on direction keys increments the value by 10 dBm.

Configuring the Measurement parameters

In the **Setup** page, press **Measur't** soft key (if one parameter is selected in the current screen, press **Top Menu** soft key to display the right menu keys and click on **Measur't**)

Wavelength Select wavelength:
Auto: the wavelength of the input signal will be automatically detected and selected to perform the measurement:
1310, 1490, 1550, 1625 or 1650 nm: measurement performed at specified wavelength.

NOTE

Using MP 60 or MP80 power meter, set manually to **Auto** the Lambda to automatically detect the wavelength: in results page, press **Power Config.** > **Wavelength** key multiple times until **Auto** is displayed.

Beep on modulation Select if a sound must be heard when a modulation occurs (**Yes** / **No**)

Unit Unit of power displayed:
Watt, **dBm** for displaying absolute power
dB for displaying a result relative to a reference (link loss)

Reference level If dB units were chosen in the previous line, selection of the reference value for the wavelength selected. Using the direction keys, first choose the wavelength, then press the > key to access choice of the value (+XXX.XX), then confirm this value with the **ENTER** key.This reference is also automatically available, in the **Results** page, using the **Set as Reference** key.

Attenuator compensation
Choice of level to be applied to the wavelength chosen for measurement to compensate for the loss due to the external attenuator (+XX.XX dB). First use the direction keys to choose the wavelength, then press ▶ to access choice of value, then confirm this value pressing **ENTER.**

NOTE

To copy a Reference Level/Attenuator Compensator on all wavelengths, select the reference wavelength and click on **Update for All Wavel.**.

Configuring the Link parameters

In the **Setup** page, press **Link** soft key (if one parameter is selected in the current screen, press **Top Menu** soft key to display the right menu keys and click on **Link**).

NOTE

The softkey **Copy File/Link To all** is displayed when one parameter is selected in the Link or File Setup page and when the Powermeter function is active at the same time as another FO application (for example OTDR Expert).

It allows to apply the Link and File configuration parameters of the current applications to all the other active Fiber Optic applications.

The information entered in the **Link** window concerns the editing and/or the modifications of the cable and fiber parameters. When a trace is recalled without recall of the configuration, the parameters of this trace will be present only in its signature.

Link Description

Fiber ID

Select the parameter **Fiber Id** and enter a name for the fiber, using the edition keypad.

Fiber Number

Select the parameter **Fiber Number** and modify the parameter using the left and right direction keys.

The fiber number can be automatically incremented/decremented at each new file save if it has been configured in the following parameter.

Change Fiber Nbr

NOTE

The fiber number concatenated with **Fiber Name** are interdependent: they are incremented or decremented at the same time.

Increment	the fiber number is automatically incremented at each new file-save.
Decrement	the fiber number is automatically decremented at each new file-save
User defined	Use **Edit Number** softkey to enter the increment/decrement value for fiber number.

Note: to decrement the number, enter the sign «-» before the number.
Example: -1.

Min: -999 / Max: 999 / Auto: 0

No the Fiber number must not automatically modified.

Cable Id

This parameter allows to enter an identification of the cable, using the Edition menu.

Direction

The direction shows if the acquisition has been made from the origin to the extremity (A->B) or from the extremity to the origin (B->A). Changing direction makes it possible, when different extremities are handled, to see the parameters of the fiber for the other extremity.

Location A

The name of the Location A of the link may be entered here.

Location B

The name of the Location B of the link may be entered here.

Project Information

Technician Id

Use the arrow ▶ to enter the name of the operator carrying out the measurement.

Job Id

Use the arrow ▶ to enter a description of the measurement to be performed.

Comment

In contrast to the other data in this menu, the comment is specific to a fiber. This line is thus used to enter a new comment and not to display it. The comment appears at the top of the screen, with the other parameters of the fiber.
This comment will remain available for the next acquisition, unless it is deleted. It is also saved when a trace is saved with a comment.

Configuring the File parameters

The File storage parameters must be also configured, in order to define how the results will be saved on to the SmartOTDR.

In the **Setup** page, press **File** soft key (if one parameter is selected in the current screen, press **Top Menu** soft key to display the right menu keys and click on **File**).

NOTE

The softkey **Copy File/Link To all** is displayed when one parameter is selected in the Link or File Setup page and when the Powermeter function is active at the same time as another FO application (for example, OTDR Expert).

It allows to apply the Link and File configuration parameters of the current applications to all the other active Fiber Optic applications (powermeter and source).

Directory Configuration

Dir. Naming

Click on **Current Directory** menu key to select the directory currently selected in the explorer for files saving

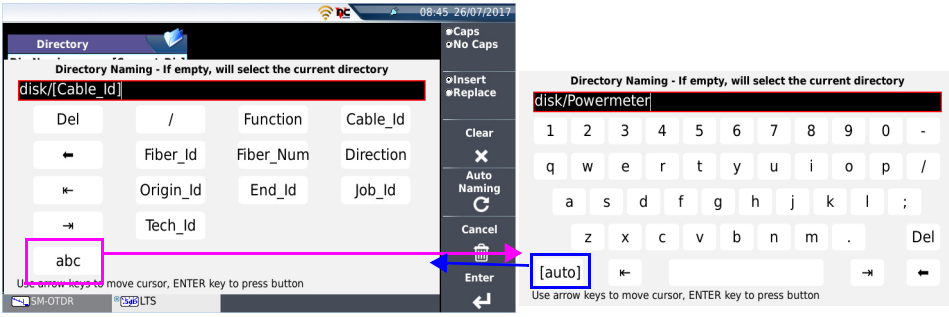
or

Use the arrow ▶ to enter the directory name and path:

In the edition keypad, select the pre-defined parameters available or, press **abc** key to enter a name manually for the directory. Then, press **Enter** to validate.

Example: `disk/Powermeter`

Fig. 15 Directory - Edition keypad



or

Press **Auto Naming** to apply the name by default to the directory:
`disk/[Cable_Id]`

Press **Clear** and validate (**Enter** key) in order to define the `[Current directory]` selected as directory for saving measurements.

Dir

This parameter cannot be configured, and display the directory selected by default into which the file(s) will be saved.

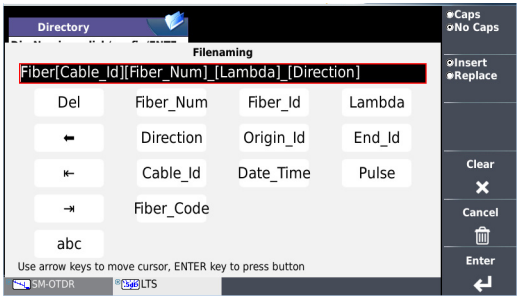
Result Storage

Filenaming

Select **Filenaming** parameter and press the right arrow key to modify the name of the file for the result trace.

In the edition keypad, select the pre-defined parameters available or, press **abc** key to enter a name manually for the file. Then, press **Enter** to validate.

Figure 16 Filenaming - Edition keypad (Auto)



or

Press **Default Filename** to apply the name by default to the file:

`Fiber[Cable_Id][Fiber_Num]_[Lambda]_[Direction]`

The name of the file is displayed in grey under **Filenaming** parameter.

Report Configuration

The powermeter results file can be saved with or without a report according to the configuration defined.

In the parameter **Rapport As**, select the format for the report which will be saved with the powermeter file:

No	only the powermeter results are saved in a filen with the extension.lts
Txt	the results are saved, with the extension «.lts» and a txt report file is also generated.

If the text report is generated with the results file, the **Report Layout** parameters turns active:

Select the saving mode for the report:

Standard	the report is saved in a standard txt file.
Consolidated	the report is saved in a text file, into which results are consolidated.

If the selected parameter is **Consolidated**, the following parameter, **Report Naming**, turns active and allows to enter a name for the report file. If no name is defined, the file will automatically be saved with the name `Report_LTS`.

Saving configuration in a file

Once **File** and **Measurement** parameters have been configured, those parameters can be kept in memory and saved in a configuration file.

This configuration file can then be recalled in order to be applied when powermeter measurements are performed.

To save parameters in a configuration file:

1 If necessary, press **SETUP** to return to **Setup** page.

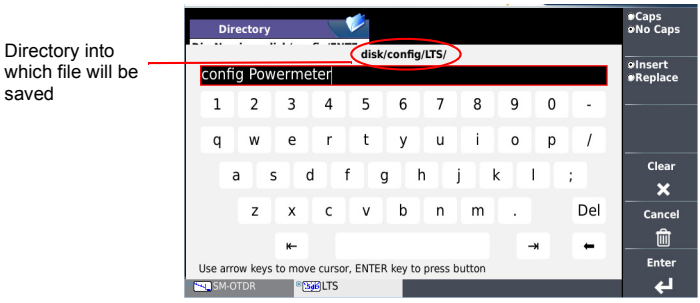
2 Select one parameter in one of the setup page (acquisition, link..)

3 Press menu key Save Config..
An edition keypad displays

4 Enter a name for the configuration file (max. 20 characters).

NOTE
Configuration file is saved by default in the directory **`disk/config/LTS`**.

Fig. 17 Save Configuration file - Edition keypad



5 Press **Enter** to validate
A sound is emitted to indicate the file is saved.
The configuration file is saved with the extension .fo_cfg (icon) and can be recalled at any time from the **Explorer** page.

Loading an existing LTS configuration

To load a configuration file previously created or available in the T-BERD/MTS/ SmartOTDR and apply parameters to new Powermeter tests:

From the File Explorer page

1. Press **FILE** hard key
2. Select the configuration file desired.
3. Press **Load** > **Load Config.**

- Press **SETUP** hard key to display the configuration parameters saved in the selected configuration file.

You can modify some acquisition or file storage parameters, and save them in a new configuration file (see "Saving configuration in a file" on page 36).

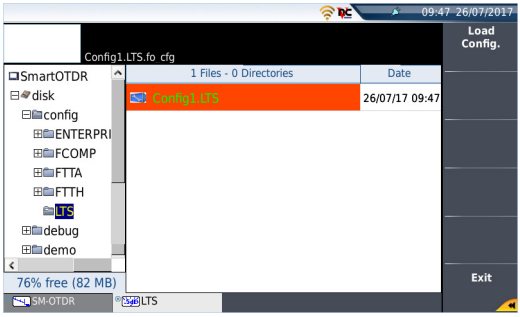
From the Setup page

1. Select one header in either Setup page (Acquisition, Link, File...)
2. Press **Load Config.** menu key.
   The file Explorer page displays
3. Select the configuration file desired
4. Press **Load Config.** to load the configuration file for measurements.
   A sound is emitted to confirm the loading.
   The **Setup** screen is displayed again.

NOTE

Most of the configuration files are available into the equipment, in `disk/config`.

Fig. 18 Loading a configuration file



Display of results and commands

The results page called up by the **RESULTS** button**,** gives the information relating to the measurement in progress, results previously saved and the commands available for measurement and saving.

Result of the measurement in progress

The power measured by the power meter is displayed in large characters, in the units selected in the **SETUP** menu, together with:

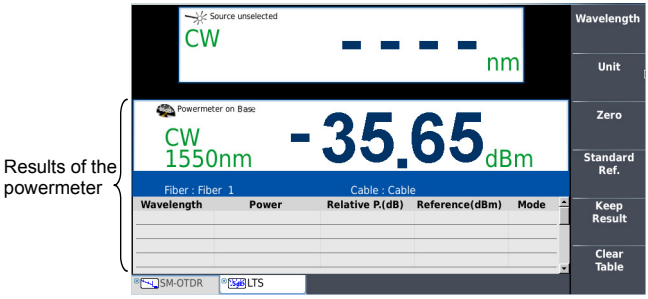
- the mode of transmission of the signal measured: continuous (CW) or modulated to a frequency of 270Hz, 330Hz, 1KHz, or 2KHz.
- the wavelength of the signal measured.
- the reference level expressed in dB.
- the level of Attenuation Compensation.

Table of results

For each fiber being tested, the power meter displays a table of 9 results corresponding to the different possible wavelengths. The first 4 results are displayed on the screen; to scroll through the other results, use the direction key ▼ or touchscreen. The table shows the power measured in dBm, the relative power (in dB) and the reference level in dBm (if units = dB), together with the mode.

- A measurement result is displayed in the table when the **Keep Result** soft key is pressed.
- The **Clear Table** soft key deletes all the results displayed in the table.
- If the Alarm function has been activated, any result that exceeds the selected thresholds appears in red in the table. Otherwise, results are shown in the table in green.
- When the Platform is switched off, results present in table are kept.

Figure 19 Results and commands of the power meter



Commands of the power meter parameters

When the Powermeter function is selected, the following softkeys are available on the results page:

The different configuration buttons are displayed:

Wavelength selection of the wavelength

Unit choice of the unit

Zero Adjustment of the Zero value when the power meter's optical input is closed with a plug or cap (a validation is required).

On the results page, the following actions are available:

Standard Reference
Selects the current result as reference value to measure the insertion of a link. This reference is displayed under the measurement result until a new reference is performed.

Keep Result Keeps the result on the corresponding line of the table.

Clear Table Deletes all the results displayed in the table.

If the **Source** function is selected (either on this Platform / base Unit or on an OTDR module), the Power meter results page is different:

- The choice of **Wavelength**, **Unit** and **Zero** menu keys are accessible via the menu key **Power Config.**.

Performing a measurement

The power meter is started up as soon as the function 

is activated in the **HOME** page.

Power measurement is automatically updated in consequence. The value «<-60 dB» is displayed when the laser is switched off and if the source output is looped on to the power meter input.

Power measurement

1. Connect the light source to be tested to the rear connector (see "Connection to the power meter and VFL" page 28).
2. In the **SETUP** menu, choose the units dBm, dB or Watts.
3. Press the **START/STOP** key to start the measurement**.**
   The result will appear in the results page and can be memorized in the table (see "Table of results" page 38).
4. Press the **START/STOP** key to stop the measurement.

Optical link loss

Setting the zero value of the power meter

It is important to set the zero of the power meter before performing any low power level measurement when accuracy is critical, as the noise from the photodiode may fluctuate over time and with temperature.

1. Fix the plug or cap over the optical input of the power meter so that no light can reach the photodiode of the power meter. If the zero adjustment is made without this plug, an error message may be displayed, as the photodiode will detect too much light.

2 In the **Results** page, press the **Powermeter Config.** > **Zero** soft key and validate.

Carrying out the reference measurement (1-jumper reference)

1 Fix the adapter corresponding to the jumper to the optical connector of the power meter.
2 Connect the jumper between the input of the power meter and the output of the source.
3 Configure the same wavelength on the source and the power meter.
The power measured is displayed in the results page of the power meter.
4 Press the **Standard Ref** soft key to save the result displayed as reference value.

Measurements on the fiber under test

After defining the reference value, proceed as follows to make the measurement:

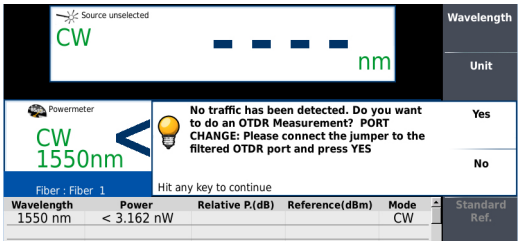
1 Fix the jumpers and connectors needed to connect the fiber to be tested between the source output and the power meter input.
2 In the set-up menu, select dB units.
3 The power displayed in the Power Meter window corresponds to the optical loss of the link tested. It can be displayed in the table (see "Table of results" page 38).

Combo Powermeter/OTDR

If the ExpertOTDR mode is activated at the same time as the Powermeter, a menu key **Combo PM/OTDR** is displayed in the powermeter page.

It allows to launch an OTDR acquisition on the same port as the powermeter, clicking on **Yes** in the dialog box displayed.

Figure 20 Combo Powermeter / OTDR



CAUTION

Only the following SmartOTDR used in combination with the powermeter, have the Combo PM/OTDR function; E117FA65PPM-PC, E117FA65PPM-APC, E136FB-PC and E136FB-APC.

VFL Function

VFL connector

The type of optical connector used for the VFL source is UPP (Universal Push Pull), which is compatible with all diameter 2.5 mm connectors (FC, SC, ST, DIN, E2000, etc.)

See Figure 13 on page 28 to visualize the VFL connector.

Visual Fault Locator function (VFL)

This function is used to emit a red light signal of frequency 1 Hz or in continuous mode into a fiber to detect any defects in the dead zone of the reflectometer, or to identify it.

This function is suitable for short fibers (length < 5 km) or the first few metres of a long fiber.

NOTE
Identification is facilitated by the blinking of light in the fiber.

To emit a light signal into a fiber:

1 Connect the fiber to the VFL port on the connectors panel.

2 Press the **HOME** key and activate the VFL 

The icons  display on the upper banner of the screen.

The signal mode of the VFL can be modified in the **System Settings** page, in **Utility** > **VFL Mode** parameter.

NOTE
Press **CANCEL** button on the Platform to deactivate the VFL.

Storing and reloading results

Storing results

In order to save the results of a measurement, click on **FILE** and select **Store trace**. Two files are being saved:

- The first file is used with the SmartOTDR and allows to retrieve all measurement results. It is saved with the extension «.Lts».
- The second file is a ASCII file using tabulations to separate values. It is saved with the extension «.txt» and can be opened by the SmartOTDR. It has been designed to be used with a spreadsheet program on a PC where it allows to retrieve all measurement results and format them in a nice customized table.

Loading results

In order to load the results of a measurement, select a file 

with the extension «.Lts» in the file explorer (see the chapter «File management» in the user manual for OTDR application), click on **Load**.
The LTS tab is displayed with the loaded results in the table.

6

Scope

The scope function is a hot-plug feature enabled directly when inserting a Viavi scope supplied as an accessory (see Chapter 10):

The topics discussed in this chapter are as follows:

- “Scope feature” on page 46
- “Installation of tips” on page 47
- “Configuring the Scope” on page 47
- “Starting up with the scope” on page 56
- “Launching a test of the connector and fiber end-face” on page 58
- “File menu” on page 62

Scope feature

Overview

This feature enables you to verify that your optical connectors are in perfect shape and very clean condition.

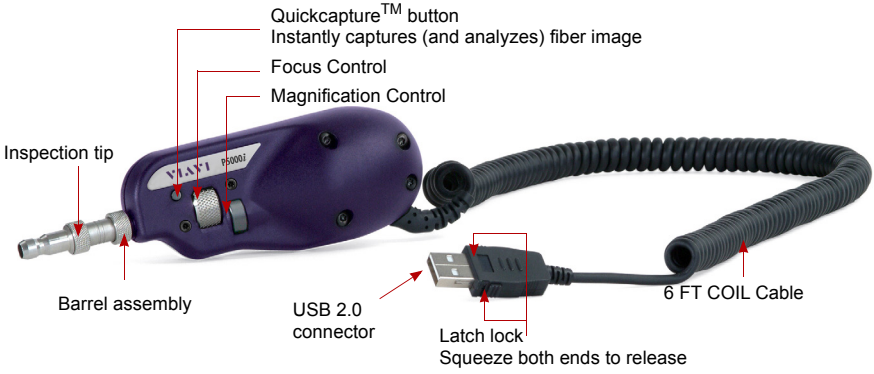
The P5000i Digital Probe Microscope and the FiberCheck Probe are a portable hand-held microscope used to view and inspect both the bulkhead (female) and patch cord (male) sides of fiber connectors as well as other optical devices, such as transceivers.

The P5000i and the FiberCheck Probe require an FBPT inspection tip.

The P5000i is connected to the SmartOTDR with a USB 2.0 connector.

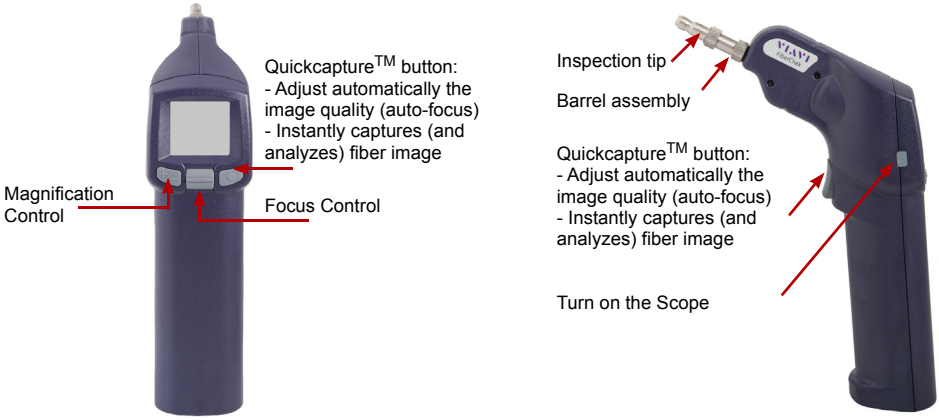
The FiberCheck is connected to the SmartOTDR with a mini-USB connector or via WIFI.

Figure 21 P5000i Probe components



Before using the P5000i scope, make sure the Bluetooth option has not been activated, even once, after the start of the SmartOTDR. If it has been activated, stop and restart the equipment before using the P5000i Scope.

Fig. 22 FiberCheck Probe components



Buttons on FiberCheck probe are also used to navigate onto the screen of the product, if it is used alone, without being linked to a Platform (see FiberCheck user manual).

Installation of tips

The Pass/Fail analysis function on the SmartOTDR can only be used with certain inspection tips mounted on the P5000i.

Seven tips, patchcords and bulkheads types, are delivered with the Videoscope Kit (ESDFSCOPE5Ki) but many others can be used.

Configuring the Scope

P5000i Scope connection

1. Plug in your Viavi scope into a USB port from the SmartOTDR.
2. Push the button Home

3 Validate the Scope function 

.

4 Connect probe with the fiber being inspected.

You may select this option while other options are already selected (e.g. OTDR).

FiberCheck Scope connection

WIFI Connection

1 Turn on the scope.

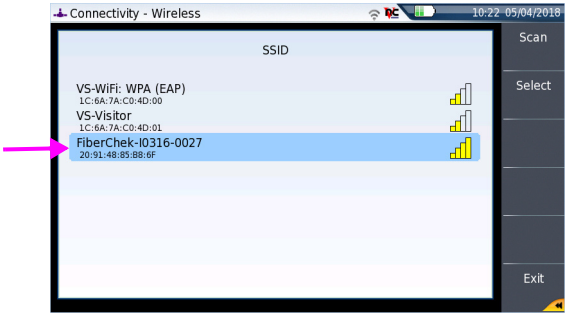
2 Make sure the WIFI connection is activated onto the Scope (see FiberCheck User manual).

3 On SmartOTDR, press the **HOME** button.

4 Click on **Connectivity** > **Wireless**.

5 Perform a scan to detect the Scope and establish the connection with the Platform (see “Configuring the WIFI access” on page 72).

Fig. 23 Microscope FiberCheck detected via WIFI



6 Once connection is established, return to the **Home** page.

7 Validate the icon **Microscope** 

.

You may select this option while other options are already selected (e.g. OTDR).

USB Connection

1 Link the scope to the SmartOTDR using a mini-USB cable.

Figure 24 WIFI connection of the FiberCheck Scope to the SmartOTDR

2 Turn on the scope.

3 On the SmartOTDR, press the **HOME** button.

4 Validate the **Fiber Microscope** icon 

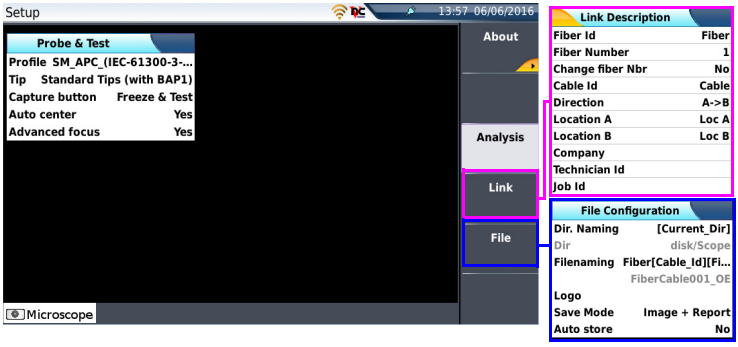
.

You may select this option while other options are already selected (e.g. OTDR).

Configuring the Scope

1 Press **SETUP** key to configure the test.
The following screen displays:

Figure 25 P5000i Scope Setup



Analysis

Profile

On the line **Profile**, select the Profile which will be used for the test of fiber connector:

- **SM_UPC** Pass/Fail criteria for single-mode UPC connectors from IEC 61300-3-35 standard.
- **SM_APC** Pass/Fail criteria for singlemode APC connectors from IEC 61300-3-35 standard.
- **SM_PC** Pass/Fail criteria for singlemode PC connectors from IEC 61300-3-35 standard.
- **MM_** Pass/Fail criteria for multimode connectors from IEC 61300-3-35 standard.
- **Ribbon, SM_APC** Pass/Fail criteria for ribbon singlemode APC connectors

Profiles contain the analysis parameters by which PASS/FAIL criteria are determined.

Once the line is selected, you can also add a new profile, clicking on the **Manage** Button (see “Managing scope profiles” on page 54).

Tip

On the line **Tip**, select the tip set onto the scope to connect fiber for inspection.

Capture button

This parameter allows to select the action of the Quick Capture button onto the Scope (see Figure 21 on page 46 and Figure 22 on page 47):

- **Freeze & Test** pressing the button will automatically perform a test of fiber and freeze the result
- **Freeze image** pressing the button onto the Scope will automatically freeze the live image.

Auto Center

This parameter allows to select if the scope image must be centered on screen (select **Yes**) or not (select **No**).

Advanced focus (focus meter)

This parameter allows to define if the advanced focus must be used (**Yes**) or not (**No**).

CAUTION

This parameter is not available with the FiberCheck scope as the function is available by default.

Press the Quick Capture button to apply the auto-focus onto the image (see "FiberCheck Probe components" on page 47).

The advanced focus displays a Red / Yellow / Green bar graph to indicate the focus level and the image sharpness.

Link

In the **Setup** page, press **Link** softkey (if one parameter is selected in the current screen, press **Top Menu** soft key to display the right menu keys and click on **Link**).

The information entered in the Link window concerns the editing and/or the modifications of the cable and fiber parameters.

- **Fiber Id** Use the edition keypad, which will display by clicking on the right arrow key, to enter a specific name for the fiber.
- **Fiber Number** Use the numeric keypad, which will display by clicking on the right arrow key, to enter the fiber number.
- **Change fiber Nbr** Select if the fiber number must be modified after each results saving:

  No: the fiber number is not modified at each saving

Increment; the fiber number is automatically incremented at each results saving

Decrement: the fiber number is automatically decremented at each results saving.

User Defined: Use the menu key **Edit Number** to enter the value for incrementation / decrementation of the fiber number.

Note: to decrement the number, enter the sign «-» before the number. Example: -1.

Min: -999 / Max: 999 / Auto: 0

- **Cable Id** This parameter allows to enter an identification of the cable, using the Edition menu.
- **Direction** The direction shows if the acquisition has been made from the origin to the extremity (A->B) or from the extremity to the origin (B->A). Changing direction makes it possible, when different extremities are handled, to see the parameters of the fiber for the other extremity.
- **Location A** The name of the Location A of the link may be entered.
- **Location B** The name of the Location B of the link may be entered.
- **Company** Enter the name of the company carrying out the test.
- **Technician Id** Enter the name of the operator carrying out the test.
- **Job Id** This line is used to enter a description of the job in progress.

NOTE

All parameters of the Link Description box will appear in the pdf report generated from a test results page.

File

In the **Setup** page, press **File** softkey (if one parameter is selected in the current screen, press **Top Menu** soft key to display the right menu keys and click on **File**).

The File box allows to configure the saving of scope results.

Dir. Naming

Click on **Current Directory** menu key to select the directory currently selected in the explorer for files saving

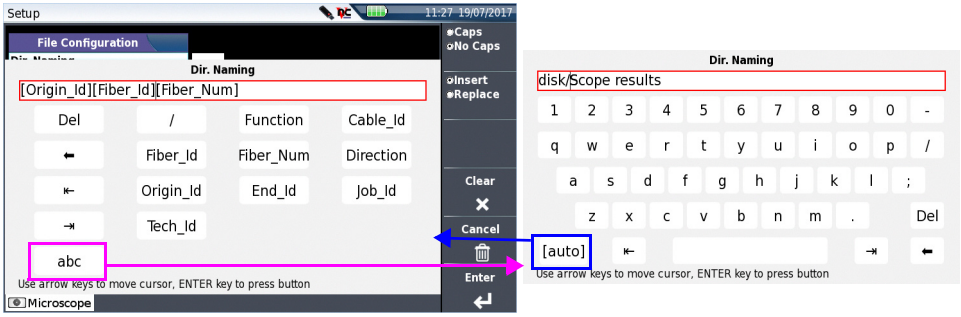
or

Use the arrow ▶ to enter the directory name and path:

In the edition keypad, select the pre-defined parameters available or, press **abc** key to enter a name manually for the directory. Then, press **Enter** to validate.

Example: `disk/Scope results`

Fig. 26 Directory - Edition keypad



Press **Clear** and validate (**Enter** key) in order to define the `[Current directory]` selected as directory for saving measurements.

Dir

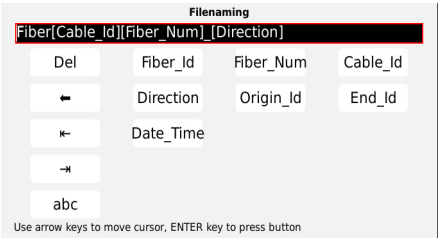
The **Dir** parameter is displayed in grey, and indicates the directory into which the results will be saved.

Filenaming

Use the edition keypad, which will display by clicking on the right arrow key, to enter a specific name for the file. You can enter manually a name and/or use pre-defined parameters (Fiber Id, Cable Id, Locations...).

In the edition keypad, select the pre-defined parameters available or, press **abc** key to enter a name manually for the file. Then, press **Enter** to validate.

Figure 27 Filenaming - Edition keypad (auto)



or

Press **Default Filename** to apply the automatic name to the file:
`Fiber[Cable_Id][Fiber_Num]_[Direction]`

Below **Filenaming,** the name of the file is displayed.

Logo

Click on right arrow key and select in the Explorer a JPG file which will represent the Logo displayed on the upper left part of the report

Save mode

Select if the test results must be saved only in an **Image**, only in a pdf **Report** or in an image + a pdf report (**Image + Report**).

Auto Store

Select **Yes** if the saving must be done automatically after a test, or **No** if the saving must not be done automatically.

Press **Exit** to return to the Results screen of the scope.

Managing scope profiles

Once the Setup screen of the scope is displayed, you can :

- Select / unselect a profile from the list, which will be available / unavailable in the Setup screen.
- Add a profile to the existing ones.

Defining the profiles available on the Setup screen

Once in the Setup page of the Scope application:

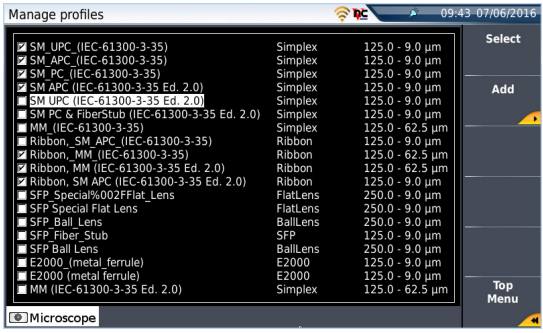
1. Select the Profile parameter to open the sub-menu
2. In the right menu keys, press **Manage**.
3. From the Profiles list, click on one profile (in video reversed) and press **Select** / **Unselect** menu keys to add or remove this profile to/from the sub-menu of the Setup screen

   or

   Directly click on the check box of the profile to select/deselect it.
4. Press **Top Menu** softkey to go back to **Setup** page.

   The changes are applied at selection.

Figure 28 List of profiles available



Importing a profile to the Scope application

The profile must be created via FiberChekPro™, and stored on one storage media of the SmartOTDR (disk, or USB memory stick).

1. On the Setup screen, select **Profile** and press **Manage**.
2. From the Profile list, press **Add** menu key.
3. On the explorer, select the file which will be used as profile (icon ; extension: .PRO)
4. Press **Load**.

   Once loaded, the display goes back automatically to **Manage Profile** screen.

5 Select the profile just loaded.

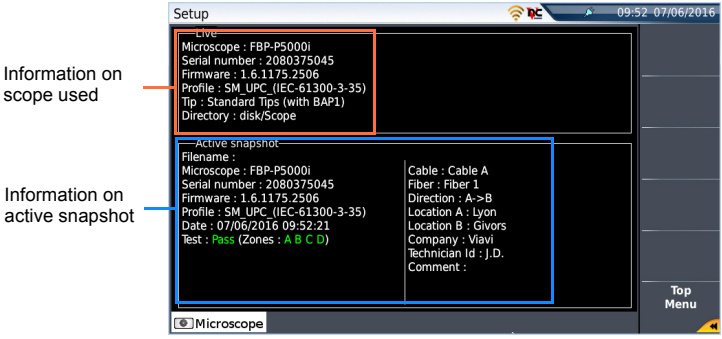
6 Press **Top Menu** to return to Setup screen and select the profile just added.

About page

On the **Setup** screen, the softkey **About**, on the right of the screen, allows to display information on scope and current test result displayed (in Full Screen mode or mosaic mode - see “Mosaic Mode” on page 60).

1 Press **About** softkey to display a page as the following one:

Figure 29 P5000i Scope: About page

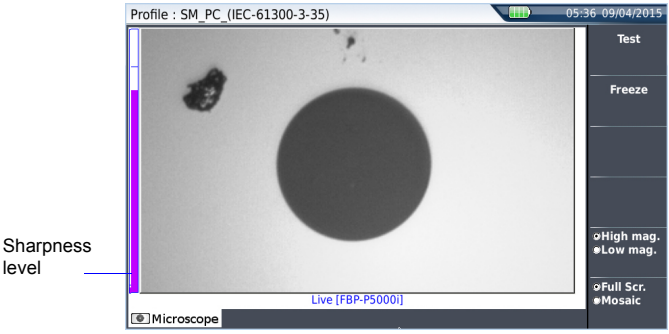


Starting up with the scope

Once the FiberScope icon is validated:

1 Press **RESULTS** hard key

Figure 30 Example of the result using the P5000i scope



Use the **Focus Control** button onto the scope (see Figure 21 on page 46 or Figure 22 on page 47) to adjust the image quality and sharpness.

NOTE

To switch from Scope page to FO results page and vice-versa, press the **RESULTS** hard key for about 2 seconds (a beep is emitted).

Freeze mode

Once the image is acceptable, you may freeze the picture. This feature allows to store in memory the resulting picture.

Freezing a scope result does not store the picture in a file (see "File menu" on page 62). The result will be lost if the instrument is shut off, or if more than 3 pictures are frozen (see "Mosaic Mode" on page 60)

NOTE

The button set on the lead, or the QuickCapture™ on the scope allows to freeze the picture and/or to perform a test (according to the configuration in Setup page - see "Configuring the Scope" on page 47).

High Mag. / Low Mag.

The **High Mag./Low Mag.** menu key allows to switch the display from High to Low magnification and vice-versa.

This function is also available pressing the button directly on the scope (see Figure 21 on page 46 and Figure 22 on page 47).

Live mode

If you are in Freeze mode, or in Mosaic mode, with a picture selected (see “Mosaic Mode” on page 59), press **Live** menu key to return to live camera picture.

Use the focus control to adjust the focus of the image

Launching a test of the connector and fiber end-face

Launching a test of the connector and fiber end-face

Once the display is correctly adjusted (magnification, sharpness...), a test of fiber connector can be launched.
To launch the test:

1 Press **Test** key or **Quickcapture™** button to launch the test of plugged fiber connector.

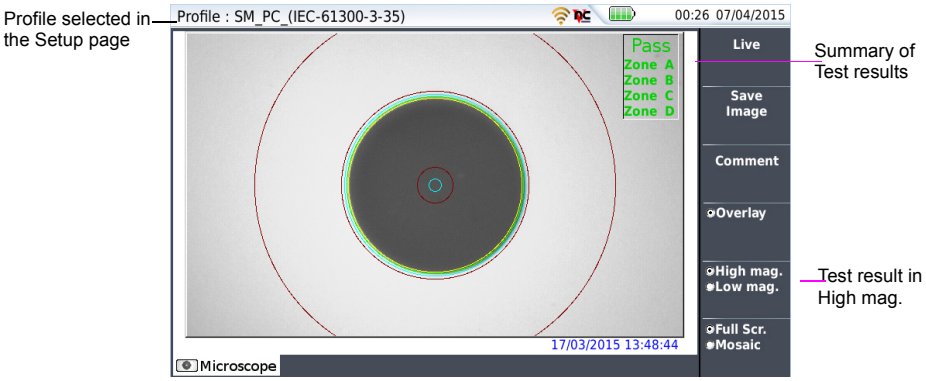
The test is completed:

- once the Led **Testing** is no more lit in red
- once the icon is no more displayed on the upper banner
- once a screen as the following one displays:

NOTE

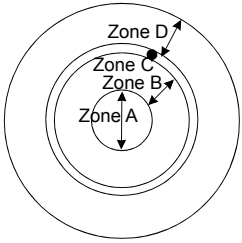
To configure Pass/Fail criteria, see "Configuring the Scope" page 49.

Figure 31 Test results



A summary of test results is displayed on the right, upper part of the screen.

- Zone A: **Core** zone: it is the area surrounding the core
- Zone B: **Cladding** zone. It surrounds the majority of the fiber cladding.
- Zone C: **Epoxy** ring.
- Zone D: **Ferrule/Contact** zone: it identifies a portion of the ferrule near and around the fiber



NOTE

To return to a Live Camera image, press the **Camera** key; or press the **Full Screen/Mosaic** key view both the live image and a test result simultaneously.

In **Mosaic** mode (see "Mosaic Mode" page 60), the result of the test only displays Pass or Fail information; the status of each zone is displayed only in full screen mode.

Overlay

The Overlay key allows, when selected, to display the limits of each zone and to display with colors the defaults on the image.

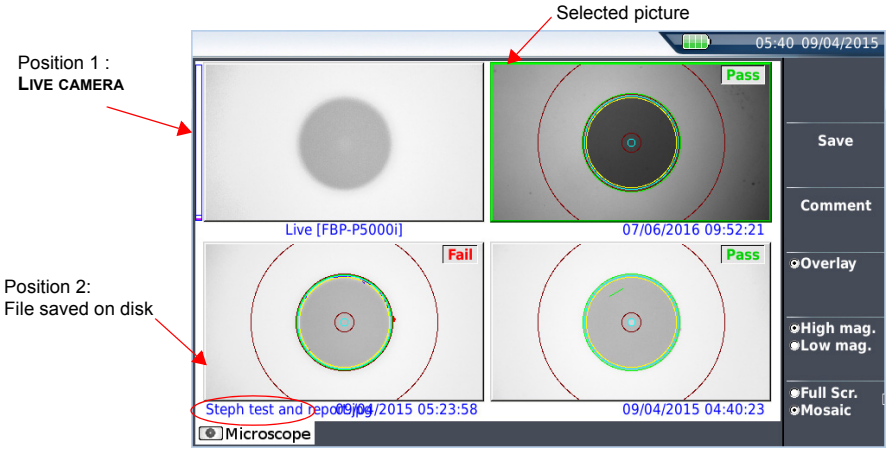
When the key is deselected, the zones and defaults are not graphically identified.

This function is also available in Mosaic Mode (see “Mosaic Mode” on page 60).

Mosaic Mode

It is possible to display only one picture in full screen (640 * 390 pixels) or up to four pictures (320*180 pixels each, including the live camera picture) in mosaic mode. Use the key **Full scr./Mosaic** to switch from one mode to another.

Figure 32 Mosaic mode



- You may select one of the pictures by clicking on it.
  The selected picture is framed in green.

The tool bar on the right varies according to which picture is selected (camera, or static picture):

Picture selected: Live

Test Allows to launch a (new) test of the connector (see “Launching a test of the connector and fiber end-face” on page 58)

Freeze The live picture from the camera is frozen but does not replace the live picture at position 1. The new snapshot is placed at the second position, and all existing pictures are pushed to the next position.

If all positions were taken, the picture that was once at the fourth position is unloaded from memory. Frozen pictures and snapshots are lost, unless they were saved on the internal memory.

High mag./Low mag.
Allows to modify the live display from high to low magnification and vice-versa

Picture selected: Image

Save Image allows to save the selected picture in the directory Scope, in the disk of the Platfom. Press **Save** key, enter a name for the jpg file and validate. This key is not available with jpg files other than those resulting from scope application.

Comment allows to add a comment to the selected picture (see “Adding a comment” on page 61)

Overlay The **Overlay** key allows, when selected to display with colors the defaults on the image.

When the key is deselected, the zones and defaults are not graphically identified.

High mag./Low mag.
Allows to switch all the images from scope test results from high to low magnification and vice-versa.

Adding a comment

The key **Comment** allows you to enter/modify a comment to your picture if necessary. This comment appears at the bottom left of the picture.

The right bottom of the frozen picture also contains the date of the acquisition (where the picture was frozen).

NOTE
Both the comment and the date will be saved with the picture.

Loading a picture

It is possible to retrieve and load a picture stored in the Scope directory and display it in the Scope page.

1 Press the **FILE** button.

2 Select the JPEG file to be loaded via the Explorer

3 Click on **Load**

Recognized pictures are images resulting from the Scope option and saved on disk via the SmartOTDR.

Some pictures resulting from the Scope option may appear nevertheless unrecognized, if they have been stored with a different Scope application, or if the JPG file has been opened and modified under another JPG editor.

Even though the JPG editor of the Scope function has been designed to display Scope pictures in black & white, it is also possible to open any JPG valid file and display in color the corresponding picture. That picture is enlarged or shrunk to the size of the display (full screen or mosaic, see."Mosaic Mode" page 60).

File menu

Saving the test result in a jpg file and / or in a report

Once the test has been performed, and the result is displayed on the SmartOTDR screen:

1 Click on **Save Image** soft key to save a jpg file and / or a pdf report of the test result on the disk of the SmartOTDR.

2 On the edition keypad, enter the name of the file(s)

3 Press **Enter** to validate.

The file is automatically saved on the disk, in the directory **Scope** (icon  for jpg file, icon for report).

The jpg file includes pass/fail and setup information which is used for combo report with OTDR (see OTDR User Manual).

Display of the report

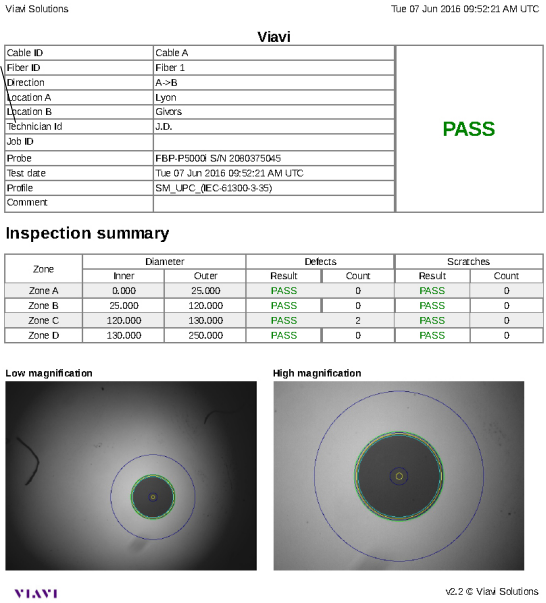
Once the report has been generated:

1 Press **FILE** hard key.

2 In the **File Explorer**, select the pdf report just created.

3 Press **Load**.

Figure 33 PDF report of Scope test result



Viavi Solutions Tue 07 Jun 2016 09:52:21 AM UTC

Viavi

Cable ID	Cable A
Fiber ID	Fiber 1
Direction	A->B
Location A	Lyon
Location B	Givors
Technician Id	J.D.
Job ID	
Probe	FBP-P5000 S/N 20603750-45
Test date	Tue 07 Jun 2016 09:52:21 AM UTC
Profile	SM_UPC_(IEC-61300-3-35)
Comment	

PASS

Parameters selected in the Setup page (see "Configuring the Scope" on page 49)

Inspection summary

Zone	Diameter		Defects		Scratches	
	Inner	Outer	Result	Count	Result	Count
Zone A	0.000	25.000	PASS	0	PASS	0
Zone B	25.000	120.000	PASS	0	PASS	0
Zone C	120.000	130.000	PASS	2	PASS	0
Zone D	130.000	250.000	PASS	0	PASS	0

Low magnification

High magnification

VIAVI

v2.2 © Viavi Solutions

7

Connectivity

This chapter describes the different ways to access to the SmartOTDR interface or content using different connection modes.

Topics described in this chapter are as follows:

- “Establishing connection” on page 66
- “Remote Control” on page 81
- “Stratasync” on page 101

Establishing connection

Via Bluetooth

The Bluetooth interface allows interface and file transfers.

It is an option that must be installed at the factory.

The product is approved in accordance to R&TTE directive concerning transmitter module marked by CE0678. It is manufactured by MITSUMI and it is an OEM product.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This device contains FCC-ID: POOWML-C40.

Installing the Bluetooth option onto the SmartOTDR

The Bluetooth option is delivered on a USB dongle to be connected to the board which will be inserted into the SmartOTDR.

To install the Bluetooth option onto the equipment:

1 Switch off the SmartOTDR and, if necessary, unplug it from mains.

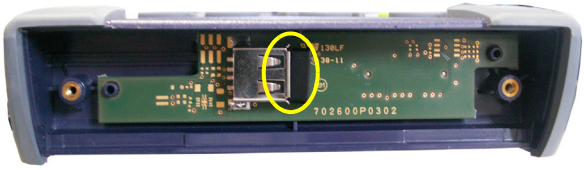
2 Remove the cover on the underside of the Platform, unscrewing the two screws.
If the board is already set into the Platform, follow instructions on step 4.

3 Insert the board, pressing it gently but firmly, taking care to the connectors.

Figure 34 View board and connectors

4 Insert the Bluetooth into the connector of the board.

Figure 35 Bluetooth set into the Platform



5 Screw back the cover onto the Platform

6 Restart the SmartOTDR, pressing **ON** button.
The Bluetooth option can be launched.

An external USB dongle is also available (reference E60EBLUE).

Pairing the Platform with a device

1 On the **Home** page, press **Connectivity** key

2 Under **Connectivity** page, select **Bluetooth**

The following screen displays

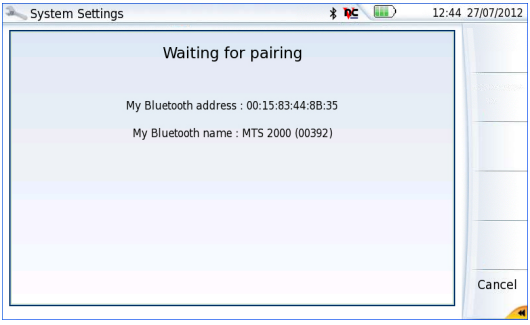
Figure 36 Bluetooth disabled

3 Press the menu key **Bluetooth** 

to enable the Bluetooth interface**.**
The icon  is displayed on the upper banner of the screen
The Paired Bluetooth Devices screen appears

4 Press the **Become Pairable** soft key to wait for another device to initiate the connection to the SmartOTDR.
A screen as the following one displays:

Figure 37 Waiting for pairing



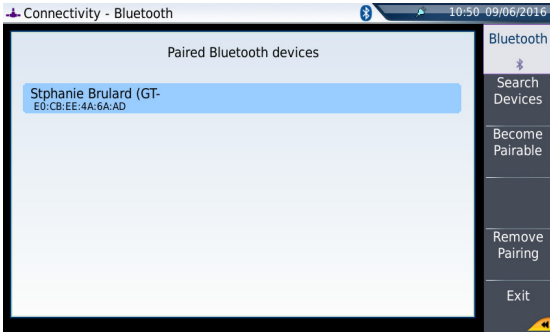
5 Activate Bluetooth on the equipment which need to be paired with the Platform

6 If you are asked to, validate a pairing code on the equipment.

7 In this case, validate the pairing code on both equipments.

Both equipment are now paired:

Figure 38 Platform paired with one equipment



The icon has a blue background when paired with a device , versus no background when not paired .

Searching new devices to be paired with the Platform

1 If the desired device is not displayed on the screen, or if no devices are detected, press the **Search Devices** soft key.

The SmartOTDR is searching for the devices which could be used via Bluetooth with the equipment.

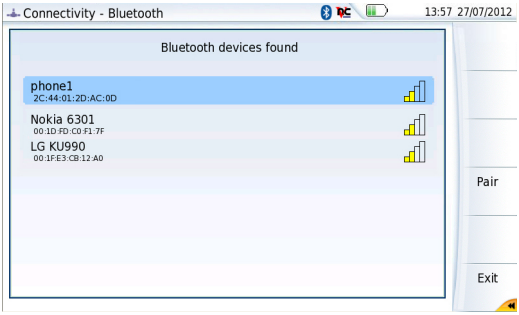
REMINDER

You may need to activate bluetooth on the other device to allow pairing.

A baragraph is displayed during research

Once the research is completed, a list of the available devices is displayed, with the level of detection of the SmartOTDR

Figure 39 List of devices found



a Select the device to be paired with the Platform

It will be underlined in blue.

b Push the **Pair** key to connect the device to the Platform

2 If prompted, enter a pairing code. The code must be identical on the SmartOTDR and the device.

3 Once the bluetooth device and the Platform are paired, a screen is displayed with the description of the device (see Figure 38 on page 69).

The icon has a blue background when paired with a device , versus no background when not paired .

You can now go to the file explorer and transfer files from the SmartOTDR toward the bluetooth device and vice versa (see “Transferring files via Bluetooth” on page 95).

Removing the Pairing

To remove the pairing between the two equipments

1 From the Home page, press **Connectivity > Bluetooth**.

2 Push the **Remove pairing** key

The icon on the upper banner of the screen becomes showing the Platform is no more connected to a bluetooth device, but the Bluetooth option is still active.

To deactivate the bluetooth onto the Platform, press **Bluetooth** menu key to disable the interface.

Via Wifi

The WIFI application is available on option with the SmartOTDR, ref E10WIFI.

Installation of the WIFI option in the Platform

The WIFI option is delivered on a USB key to be connected to the WIFI board which will be inserted into the SmartOTDR.

To install the WIFI option onto the Platform:

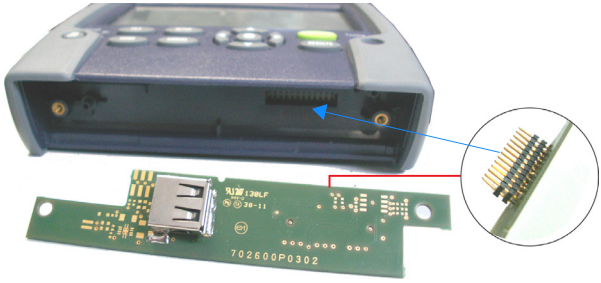
1 Switch off the SmartOTDR and, if necessary, unplug it from mains.

2 Remove the cover on the underside of the Platform, unscrewing the two screws.

If the board is already set into the Platform, follow instructions on step 4.

3 Insert the board, pressing it gently but firmly, taking care to the connectors.

Figure 40 View board and connectors



4 Insert the WIFI USB key into the connector of the board.

Figure 41 WIFI USB set into the Platform

5 Screw back the cover onto the Platform.

An external USB dongle is also available (reference E60EWIFI).

Configuring the WIFI access

1 Restart the SmartOTDR, pressing **ON** button.

2 On the **Home** page, press **Connectivity** 

.
The **Connectivity** page opens.

3 In the new page, select the **WIFI** icon 

.
The WIFI **Setup** screen displays.

4 Press **Wireless** menu key to enable the Wifi interface.
The icon  is displayed on the upper banner.

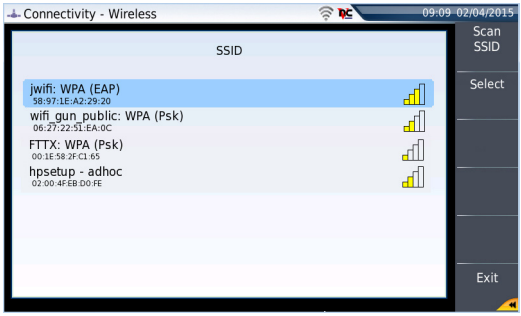
Figure 42 WIFI Setup screen

Once the Setup screen is displayed, configure the WIFI connection:

5 Press **Scan SSID** menu key to scan for Service Set Identifiers (SSIDs) in the area.

6 Wait for the list of SSIDs to be displayed.

Figure 43 List of SSIDs found



7 Select the desired network to connect to.

8 Press **Select** menu key to validated the connection.

The display goes back to Setup screen.

The **SSID** parameter is automatically configured with the one selected.

9 In **Encryption** parameter, select the type of encryption wished: **None**, **WEP Static**, **WPA Personal**, **WPA Enterprise**.

10 According to encryption type selected, enter **Login** (if any needed) and **Key/ Password**.

NOTE

Login and Password are kept in memory, even if the WIFI is deactivated or the SmartOTDR switch off and restarted.

11 In the **AutoConnect** parameter, select if the connection to SSID selected must be done automatically (**On**) or not (**Off**).

Connection to SSID

Once configuration is valid, connect the SmartOTDR to the Wireless network:

1 In the Setup screen, press **Connect SSID** menu key.

or

If **AutoConnect** is defined to **On**, the connection is launched automatically.

Once association of Platform with SSID is established, the icon becomes to indicate the connection is active.

Configuring the WIFI mode to which the Platform is connected

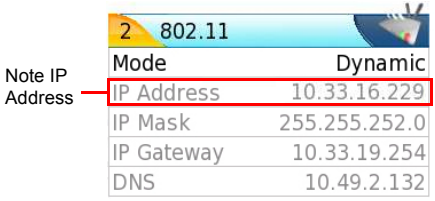
To work on WIFI with the Platform, configure the **802.11** parameter on the WIFI Setup screen.

1 Select the mode of connection:

- **Config 1 to 4** static mode enabling input of the configuration of 4 sites. If this parameter is selected, the following parameters must be entered:
  - – Site Name the user can enter the name of the site in the Edit menu.
  - – IP Address IP address of the SmartOTDR
  - – IP Mask address of the mask of the sub-network
  - – IP Gateway IP address of the machine enabling access outside the sub-network.
  - – DNS (Domain Name Server) IP address of the machine providing the IP address on the basis of the name
- **Dynamic** in this mode, which requires a DHCP server, the SmartOTDR requests an IP address from this server which will be allocated dynamically if dynamic host configuration is activated on the local network.
  After selecting this mode or after power-on, the SmartOTDR tries to establish a connection to obtain an address from a DHCP server. If for any reason, this process fails, the SmartOTDR reverses to static IP address mode with User1 IP address.

Note the IP address of the Platform, to be able to remote screen on PC or to transfer files.

Figure 44 WIFI connection in Dynamic mode



2 Configure the **Proxy** dialog box:
In the **Use proxy** parameter
- Select **No** if no proxy is used.
- Select **Manual** to enter manually the **Proxy address**
- Select **Auto** and enter the **Pac address**.

Creating a network from the SmartOTDR

A WIFI network can be created from the SmartOTDR, in order to associate it to a Smartphone or Tablet.

1 From the **Home** page, press **Connectivity** > **Wireless 802.11**.
2 On the **Setup** screen, select the Wlan Mode for WIFI connection: **Ad-hoc (IBSS)** or **AP Master.**
3 Press **Create Network** menu key and wait for the network creation.
The network creation on platform is completed once the dialog box is no more displayed.
4 On the Smart device, open the Wifi setup age.
5 Check the Platform has been detected (SSID identifier displayed in the list of WIFI networks found)
6 Click on this SSID and follow the instruction on your Smart Device to link it to the Platform.

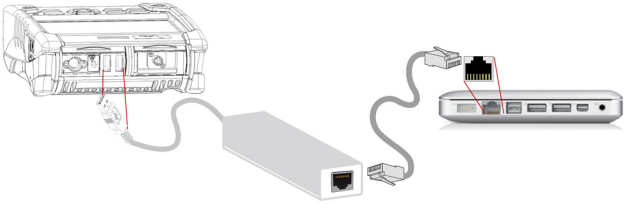
Via Ethernet

The connection between SmartOTDR and the PC can be done directly, or via a local network.

Connecting the SmartOTDR and the PC

1 Connect the SmartOTDR to the PC via an Ethernet cable, using the USB Ethernet - adapter and an ethernet cable.

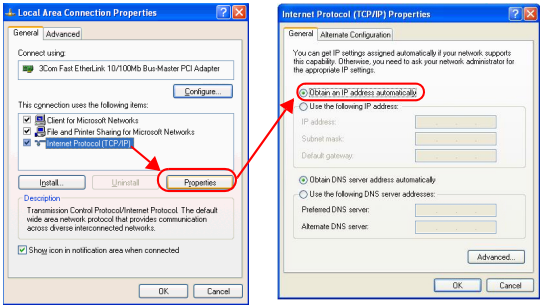
Figure 45 Connection SmartOTDR and PC



2 Make sure the network configuration onto the PC is set to the **Dynamic** mode:

- **a** Click on **Start** > **Control Panel**.
- **b** Double click on **Network Connection**.
- **c** Double click on **Local Area Connection**.
- **d** In the dialog box, click on **Properties**.
- **e** Check the parameter **Internet Protocol (TCP/IP)** is selected (◉) and click once on it (underlined in blue)
- **f** Click on **Properties** button.
- **g** On the tab **General**, check the parameter **Obtain an IP address automatically** is selected (◉); if not, click to select it.

Figure 46 Internet Protocol



- **h** Click on **Ok** and close all the dialog boxes opened onto the PC.

Configuring the SmartOTDR via Ethernet

1 In the **Home** page, validate the **Connectivity** icon.

2 In the connectivity page, validate the **Ethernet** icon

3 In the **I/O Interfaces** box, configure the following parameters:

Remote Screen

Remote screen = Session or **Permanent** must be confirmed in both cases, in the Interface E/S window.

- **No** the screen cannot be remote on to a PC or on to another SmartOTDR.
- **Session Mode** the Remote screen function is inactive once the SmartOTDR is switched off.
- **Permanent Mode** the Remote screen function is still active when the SmartOTDR is switched off and restarted.
- **Permanent with password**
  Same function as the Permanent mode, with an access to the equipment via VNC protected by a password: 42000

The password to access VNC can be modified:

1 Click on the menu key **Change password**.

2 Enter the current password in the Edition keypad and press **Enter** to validate.

3 Enter the new password and press **Enter** to validate.

Ethernet > Mode

Parameters of the local Ethernet network to which the SmartOTDR is connected:

- **Config 1 to 4** static mode enabling input of the configuration of 4 sites. If this parameter is selected, the following parameters must be entered:
  - – Site Name the user can enter the name of the site in the Edit menu.
  - – IP Address IP address of the SmartOTDR
  - – IP Mask address of the mask of the sub-network
  - – IP Gateway IP address of the machine enabling access outside the sub-network.
  - – DNS[1] IP address of the machine providing the IP address on the basis of the name

– Domain name — name of the local network to which the SmartOTDR is connected.

- **Dynamic** — in this mode, which requires a DHCP server, the SmartOTDR requests an IP address from this server which will be allocated dynamically if dynamic host configuration is activated on the local network.
  After selecting this mode or after power-on, the SmartOTDR tries to establish a connection to obtain an address from a DHCP server. If for any reason, this process fails, the SmartOTDR reverses to static IP address mode with User1 IP address.

NOTE

Once the SmartOTDR is connected to the network, the icon indicates the connection is working.

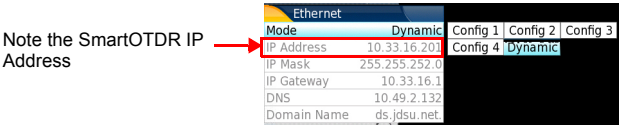
Proxy > Use proxy

1 Select **No** if no proxy is used.

2 If **Manual** has been selected, enter the **Proxy Address**.

3 If **Auto** has been selected, enter the **Pac Address**.

Figure 47 Example of configuration for I/O Interfaces box



4 Note the IP Address.

5 Wait about 10 seconds the connection is established.

The SmartOTDR Interface can now be transferred onto the PC, or the internal memory or USB key contents can be transferred on PC.

1.Domain Name Server

Via Cloud Storage

Principle and prerequisites of the Cloud Storage

The Cloud storage defined the outsourcing of data on distant servers, which avoid the data storage on a local workstation.

The cloud storage onto a SmartOTDR allows to transfer the files from the Platform toward a distant server and vice-versa.

Before configuring the Cloud Storage on Platform, you must first create an account on a Cloud Platform on internet.

The Cloud storage function onto the SmartOTDR works exclusively with sites using the WebDav technology such as CloudSafe (https://secure.cloudsafe.com/pages/index.html) or Box (https://www.box.com/pricing/).

Once account is created, with WevDav configuration, you get the following information for connection:

- URL
- Login Name
- Login Password

Configuring and connecting to Cloud Storage on the SmartOTDR

Configuring the SmartOTDR

Once an account has been created on the Cloud site, configure the SmartOTDR before establishing the connection:

Before configuring the Cloud Storage, make sure the configuration for Ethernet parameters and Proxy parameters are correctly configured.

See “Ethernet > Mode” on page 77 and “Proxy > Use proxy” on page 78.

1 On the **Home** page, press **Connectivity**.

2 In the **Connectivity** windows, press **Cloud/File Storage** 

.

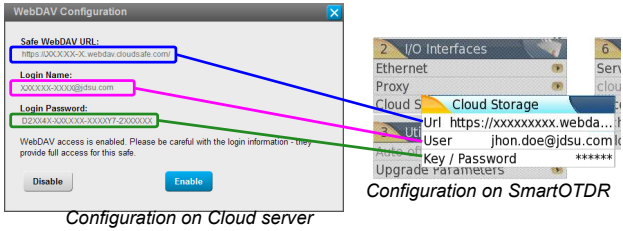
A new page opens

3 In the **Url** parameter, enter the URL define for the Cloud server created on internet

4 In the **User** parameter, enter your Login created on your account

5 In the **Key / Password**, enter the password attributed by the Cloud server.

Figure 48 Example of configuration



Configuration on Cloud server (example with CloudSafe)

Configuration on SmartOTDR

Connecting Cloud Storage

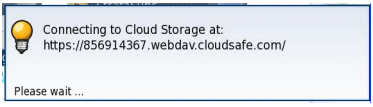
Once configuration has been established on the SmartOTDR, it is ready to be connected with Cloud server:

1 Select one parameter of the Cloud Storage window on SmartOTDR

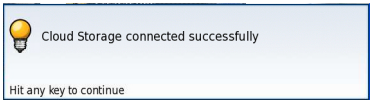
2 Press **Connect Cloud Storage** menu key 

.

The connection launches



3 Once connection is established, a message displays in the window



4 Press any key to continue, and start files transfer.

The icon  is displayed on the upper banner as long as the connection is active.

Disconnecting from Cloud storage

To disconnect the SmartOTDR from Cloud storage:

1 Press **HOME** hard key.

2 Select a parameter of the **Cloud Storage** window.

3 Press **Disconnect Cloud Storage** menu key.

Remote Control

Smart Access Anywhere

The SmartOTDR can be accessible to any network test locations, using a specific function: **Smart Access Anywhere**.

This function allows one distant user, on a PC, to transfer the Platform Interface and work on SmartOTDR or to access the internal memory / USB memory stick contents on the PC and perform files transfer from SmartOTDR to PC and vice-versa.

This feature does not need any license code if the user wants assistance from a Viavi person located within the Viavi network.

This feature requires a license code into the unit if the user wants any other assistance/ support (“company A” willing to be remotely controlled by “company A or B”).

The license **E10SAA-L2** is used for SmartAccessAnywhere using Ethernet, wifi hostpot connection, or USB / Wifi connection through smartphone

The SmartOTDR can be used in combination with a PC in order to transfer the Platform Interface onto a PC, or to access the internal memory or USB memory stick contents on the PC.

Connection modes

Different kinds of connection are available to access to a distant SmartOTDR.

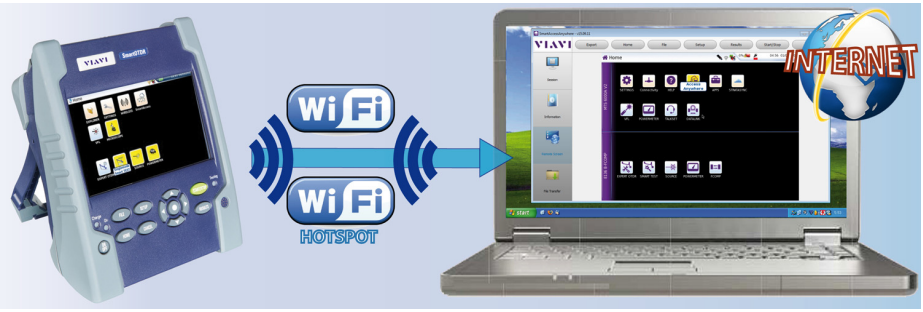
According to the connection type used, specific requirements are mandatory.

WIFI connection

1 The WIFI connection can be used to access to SmartOTDR from any location.

This connection is available exclusively if the **WIFI option is installed onto the** SmartOTDR which will be seen remotely.

Figure 49 WIFI connection



USB/WIFI connection via Smartphone (Tethering)

To access to a SmartOTDR remotely, the connection between the unit and the Viavi application can be established via a USB cable or WIFI, and through a Smartphone, having Internet Sharing capability via USB or WIFI.

1 To establish connection between SmartOTDR and Smartphone using USB, connect the USB cable on SmartOTDR and on Smartphone connector.

Figure 50 USB connection through Smartphone

2 To establish connection between the SmartOTDR and Smartphone using WIFI, the **WIFI option must be installed onto the** SmartOTDR.

Figure 51 WIFI connection through Smartphone

Pre-requisite for using the Smart Access Anywhere Application

To access to a SmartOTDR from any locations, specific requirements are mandatory:

- a licence installed on SmartOTDR which will be accessible from any locations.
- an Ethernet connection (the Platform must have an IP address - see “Ethernet > Mode” on page 53) and, if the network uses a proxy, this proxy must be configured (see “Proxy > Use proxy” on page 54).
- the Viavi application, downloaded for free at the address «`http://smartaccess.updatemyunit.net`».
- port 22 (SSH) or 443 (HTTS) output opened
- according to connection mode selected:
  - the WIFI option installed on SmartOTDR
  - a USB cable to connect SmartOTDR with Smartphone
  - a Smartphone from given list and having appropriate basic subscription for internet connection sharing

Downloading the Viavi application on PC

The Viavi application **Smart Access Anywhere** must be downloaded on the PC which will be connected to the SmartOTDR remotely.

NOTE

It is not necessary to have administrator privileges to install the Viavi application on PC. This application is just saved on PC.

1. On PC, open an internet explorer and type the following address: `http://smartaccess.updatemyunit.net`
2. Click on the link **SmartAccessAnywhere_Vxx.xx.xx.zip**
3. Select **Save** in the dialog box.
4. Open the directory into which has been save the zip file and unzip files into a directory
5. Open the directory and double click on **SmartAccessAnywhere.exe**

   The Smart Access Anywhere application opens:

Figure 52 Smart Access Anywhere: Connection page

If the software version is not the last one available, a message displays, on the upper part of the screen to indicate the latest version available can be downloaded at the address: http://smartaccess.updatemyunit.net.

Figure 53 Warning message of a new version available

Downloading the Viavi application on Tablet/ Smartphone

The Viavi application **Smart Access Anywhere** can be downloaded on a Smartphone or tablet which will be connected to the SmartOTDR remotely.

NOTE

It is not necessary to have administrator privileges to install the Viavi application. This application is just saved on the smartphone or tablet.

1 On Smart device, open an internet explorer page and type the following address: `http://smartaccess.updatemyunit.net`

2 Click on the link **SmartAccessAnywhere_Vxx.xx.xx.apk**

The downloading starts.

Some security messages can be displayed.

3 Follow the process on the Smart device to confirm the installation of the application on the instrument.

4 Once the installation is completed, the icon appears on Tablet/Smartphone.

5 Click on the icon to launch the SmartAccess Anywhere application.

Launching the SmartAccess Anywhere application

Once connection is configured, the SmartAccess Anywhere application can be launched

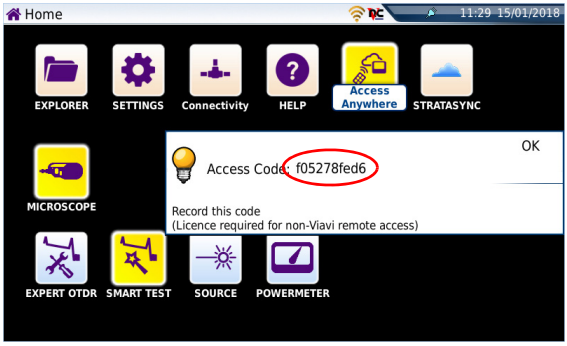
On SmartOTDR

1 On the **Home** page, select the **SmartAccess** icon 

As soon as the icon is selected, the SmartOTDR begin to connect to SmartAccessAnywhere Server.

2 Once connection is established with the server, the SmartOTDR displays a message with the code to be used to access to the equipment remotely.

Figure 54 Access code displayed



3 Note this access code and transfer it to the distant user, who will access the unit remotely.

4 Press **OK** to hide the message.

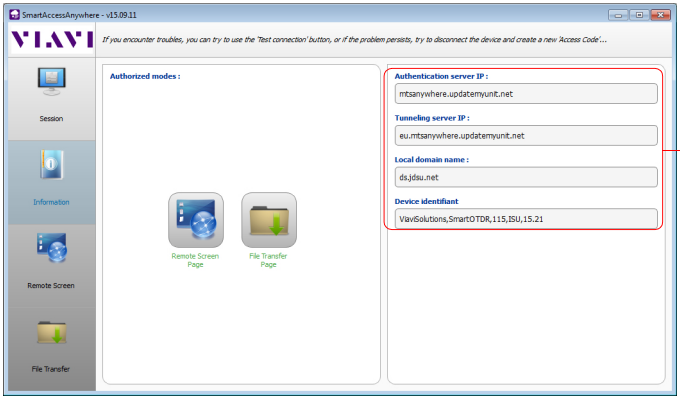
On the distant PC

1 On the PC of the distant user, once the application is launched, enter the Access Number on the upper part of the screen.

2 Click on **Connect** to validate 

The following screen displays:

Figure 55 Smart Access Anywhere: Home page



After remote upgrade or reboot, please wait for more than 2 minutes before re-starting the link between the PC and the unit with SmartAccessAnywhere.

Using Remote screen and File Transfer applications

Once the Introduction page is displayed, the user can work on distant SmartOTDR:

- transfer the interface to work on the unit (perform acquisition, configure the equipment...)
- transfer files from the equipment toward the PC, and vice-versa.

Transferring the interface onto the PC/Smartphone/Tablet

To display the remote SmartOTDR onto the PC:

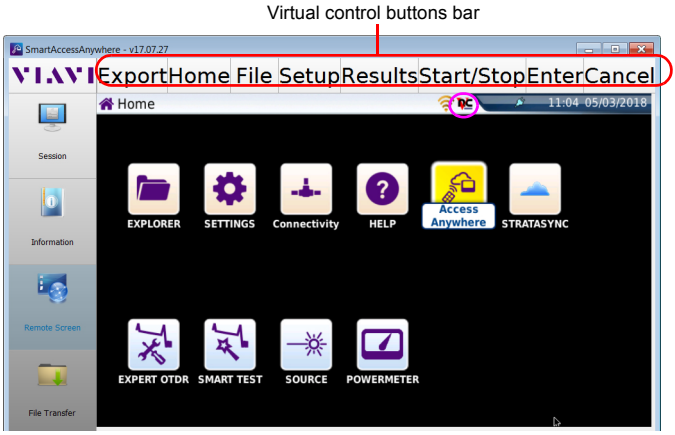
1 On the Introduction page, click on 

or

On the left menu, click on 

The current screen of the SmartOTDR displays:

Figure 56 Smart Access Anywhere: Remote screen



The VNC icon on the upper banner of the unit indicates the remote screen is active.

2 On the upper part of the screen, the virtual control buttons bar is permanently dipslayed and allows to emulate hard keys.

You may click on any of these buttons to obtain exactly the same results than using the hard keys on the front panel of the SmartOTDR.

3 You can use keyboard mouse of the PC to control the SmartOTDR (see “Equivalence between the keyboard and SmartOTDR” on page 100).

Transferring files

To work on files (onto PC and onto unit):

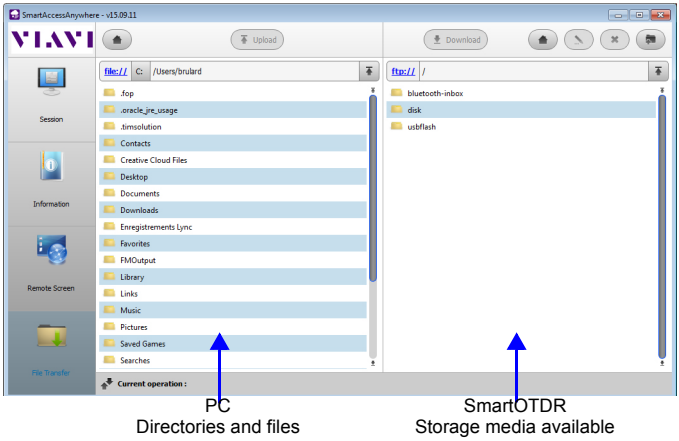
1 On the Introduction page, click on .

or

On the left menu, click on .

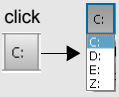
The file Explorer on PC and the one of the SmartOTDR displays:

Figure 57 File Transfer page



2 Double-click on one directory/storage media to display the contents (directories / sub-directories / files)

Navigation buttons

	Return to the Home directory
	Select the PC drive in the list
	Access to parent directory

Transferring files from PC to SmartOTDR

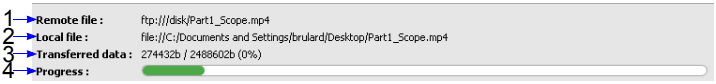
1 On the SmartOTDR explorer, select the storage media, and if wished the (sub-)directory into which file will be transferred.

2 On the PC file explorer, select the file to be transferred

3 Click on the button **Upload**  .

At the bottom of the screen, a new banner displays with information on file transfer:

Figure 58 Information on file transfer



1: location of the uploaded file on PC	3: level of transferred data
2: location of the file on SmartOTDR once transfer is completed	4: bar graph of the transfer in progress

Only one file can be uploaded from PC to SmartOTDR at the same time.

Once transfer is completed, the banner disappears and the transferred file is underlined in blue on SmartOTDR explorer.

Transferring files from SmartOTDR to PC

1. On the PC explorer, select the storage media, and if wished the (sub-)directory into which file will be transferred.
2. On the file explorer of the SmartOTDR, select the file to be transferred.
3. Click on the button **Download** 

.

   A dialog box open, allowing to modify the location on PC of the file.
4. Select the directory into which file will be saved.
5. Press **Save** to start the transfer

   Under both file explorers, a new banner displays with information on file transfer (see Figure 57 on page 89).

Once transfer is completed, the banner disappears and the transferred file is underlined in blue on PC explorer.

Working with files and directories on SmartOTDR

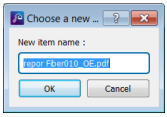
Renaming file or directory

1 Select a file/directory stored on the SmartOTDR hard disk or USB key.

2 Click on  .

3 In the new dialog box opened, enter a new name for the file/directory, **keeping the file extension**.

4 Press **OK** to validate.

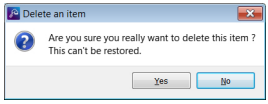


Deleting file

1 Select a file stored on the SmartOTDR hard disk or USB key.

2 Click on  .

3 In the new dialog box opened, press **Yes** to confirm the deletion (or **No** to keep the file).



Creating a new directory

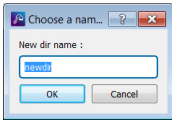
1 Select the storage and, if wished, the directory into which the new directory will be stored.

2 Click on  .

3 In the new dialog box opened, enter a name for the new directory (*newdir* is given by default).

4 Press **OK** to validate.

The new directory is automatically created at the location selected.



Connection information and settings

Displaying session information

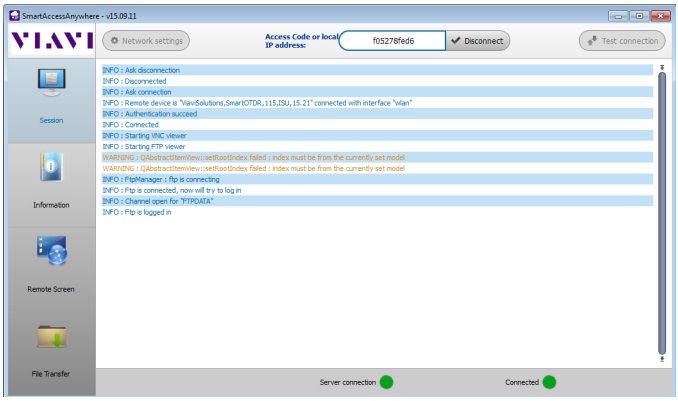
At any time during application use, the information about the session in progress can be displayed.

1 Press **Session** menu key on left of the screen 

.

A screen as the following one displays:

Figure 59 Session page



This page gives information on connection «in real time».

Modifying connection settings

To modify the settings for connection to internet:

1 Press **Session** menu key on left of the screen 

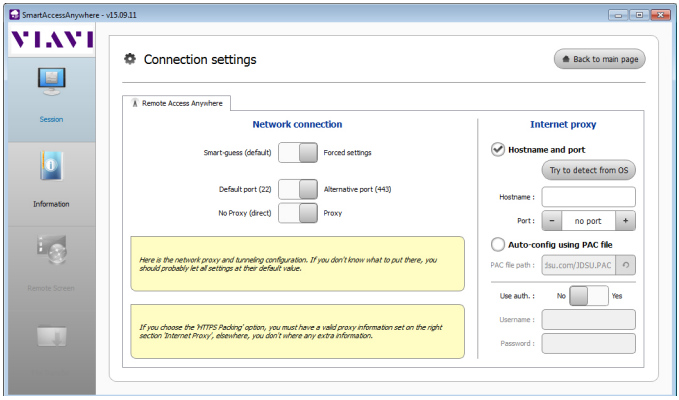
.

2 Disconnect from application pressing 

3 On the session screen (see Figure 59 on page 92), press button 

.
The following screen displays:

Figure 60 Connection settings



By default, the connection is defined to **Smart-guess (default)**.

4 To modify the current parameters, select **Forced settings**.

The parameters for Port configurations turn automatically active.

5 Modify, if necessary, the port used: **Default port (22)** is selected by default

6 Select **Alternative port (443)** if necessary

7 If the parameter **Alternative port (443)** is selected, you can defined if the proxy is used or not in the following parameter.

The **Internet proxy** configuration is available exclusively if the port selected is **Alternative port (443)** and if the **Proxy** is selected..

It is recommended to configure parameters of connection with your local network administrator, if the default parameters need to be modified.

8 Once configuration is completed, press 

.

The **Home** page displays (see Figure 55 on page 87).

Testing connection

Before entering the Access code to activate the application, the connection to internet can be tested from displayed screen.

1 Open the Smart Access Anywhere application on PC

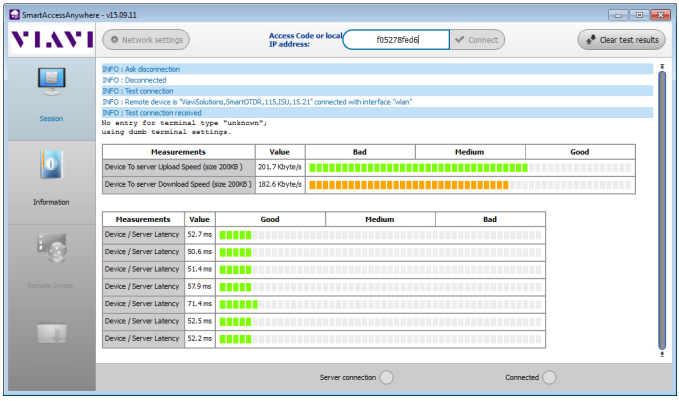
2 Press Test connection button

The test is automatically launched

3 Press See full logs ... to display logs in real time

Once completed, the results for connection display:

Figure 61 Test results



The screen displays, in two different tables:

- the Upload and Download speed (in Kbyte/s) from Device to server.
- the Latency between Device and server (in ms).

4 Press Clear test results to delete the current table, and retest connection if wished.

5 If connection is valid, enter the access code and establish connection (see “Launching the SmartAccess Anywhere application” on page 85 - “On the distant PC” on page 86).

Data Transfer

The SmartOTDR enables to transfer files, from or toward the product using Wifi, Bluetooth or Ethernet connection.

Transferring files via Bluetooth

Once the connection has been established with a bluetooth device:

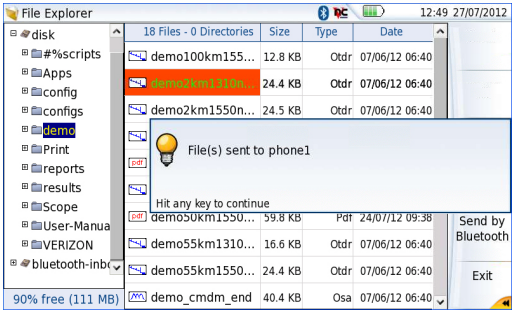
1 On the **Home** page, press **File Explorer** key to go in the File Explorer.

2 Select the file(s) to be transferred from the Platform toward the PC.

3 Push **Export** > **Send by Bluetooth** menu keys Send by Bluetooth.

A confirmation message displays once the transfer is completed.

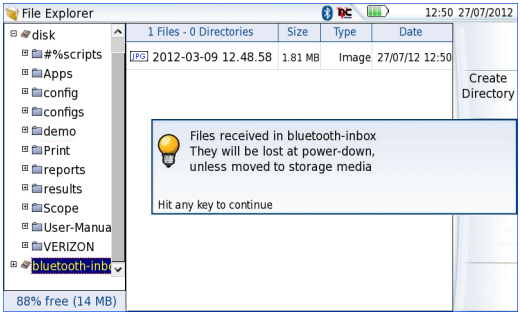
Figure 62 Confirmation of files sending



You can also transfer file(s) from the bluetooth device toward the Platform.

In this case, the files received will be stored in a storage media created automatically on the Platform: *bluetooth-inbox*.

Figure 63 Confirmation of file receiving



WARNING

The files stored in bluetooth-inbox will be lost once the SmartOTDR is switched off. Copy/Paste the files to keep toward another storage media (disk, usb key...).

Transferring files to/from a PC via WIFI or Ethernet

Once connection is established between the Platform and the PC:

1. On the PC, use an FTP client, and access to internal memory via an internet explorer (I.E, Mozilla Firefox...) or Windows Explorer.
2. In the address bar, type the following address (`10.33.16.229` being the IP address of the SmartOTDR defined when the connection was configured):

   `ftp://mts1000:JDSU@10.33.16.229/disk/`
   This allows to access to internal memory.

   `ftp://mts1000:JDSU@10.33.16.229/usbflash/`
   This allows to access to the contents of the USB memory stick connected to the SmartOTDR.

If you use Internet Explorer 7, the following address must be entered:
`ftp://mts1000:JDSU@10.33.16.229/acterna/user/disk` or `ftp://mts1000:JDSU@10.33.16.229/acterna/user/usbflash`

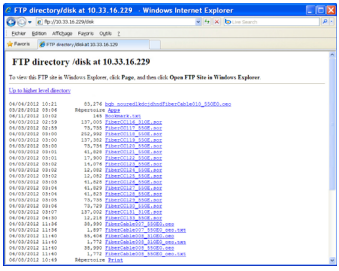
3 If an identification is required, enter:

– User name: mts1000

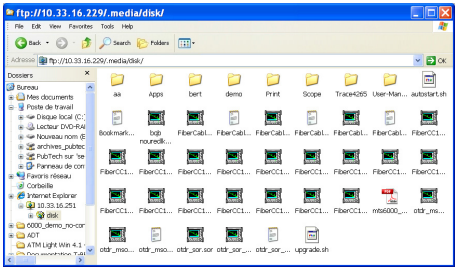
– Password: JDSU

The PC then displays the contents of the internal memory or of the USB memory stick from the SmartOTDR.

Figure 64 Internal memory of the SmartOTDR



Internal memory open via Internet Explorer



Internal memory open via Windows Explorer

4 If internal memory of the Platform is accessible via Internet Explorer (or any other explorer), right click on one file and click on **Save target as...** to transfer file onto the PC.

If internal memory of the Platform is accessible via Windows Explorer, select one / several files and click on **Copy**, then click on **Paste** on PC to transfer file(s).

Transferring files using Cloud Storage

Once connection between SmartOTDR and cloud storage server is successfully established (see “Configuring and connecting to Cloud Storage on the SmartOTDR” on page 79), the files can be transferred from one Platform to the other.

1 Press **HOME** hard key.

2 Press **Explorer** on the **Home** page

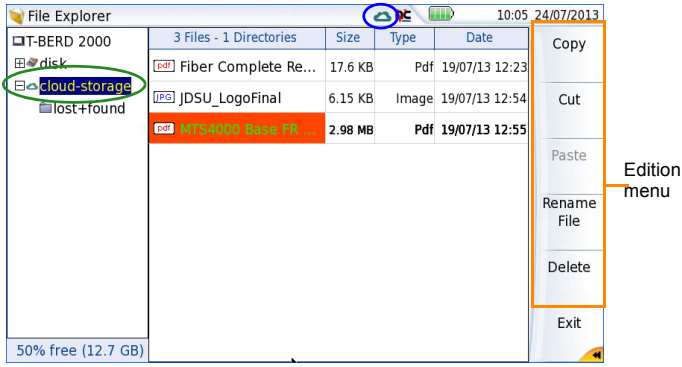
In the **Explorer** page, a new storage media is available: **cloud-storage.**

The cloud-storage media is not available when File Explorer is opened from a FO application.

3 Transfer the files from the disk or USB memory stick of the SmartOTDR toward the cloud storage or vice-versa:

- **a** Select the file(s) to be transferred
- **b** Press the **Edit** > **Copy** or **Cut** menu keys
- **c** Select the storage media (and the directory) into which files must be copied.
- **d** Press **Paste** menu key

Figure 65 File Explorer with cloud storage



The cloud storage is automatically disconnected once the SmartOTDR is switched off. Reconnect from the System Settings page of the SmartOTDR after the Platform restart.

VNC

The SmartOTDR can be used in combination with a PC in order to transfer the Interface onto a PC, or to access the internal memory or USB memory stick contents on the PC.

The transfer of the interface can be done using a VNC window on PC.

For an intensive use of the deport screen or when it is used via a WAN network, it is strongly recommended to use a dedicated VNC client. The VNC clients recommended are Tight VNC (V 1.2.9 or later) and Real VNC (V 4.1.1 or later).

Transferring the interface on a PC via WIFI or Ethernet

Once the connection is established between the SmartOTDR and the PC, proceed as follow:

1 Open Internet Explorer on the PC.

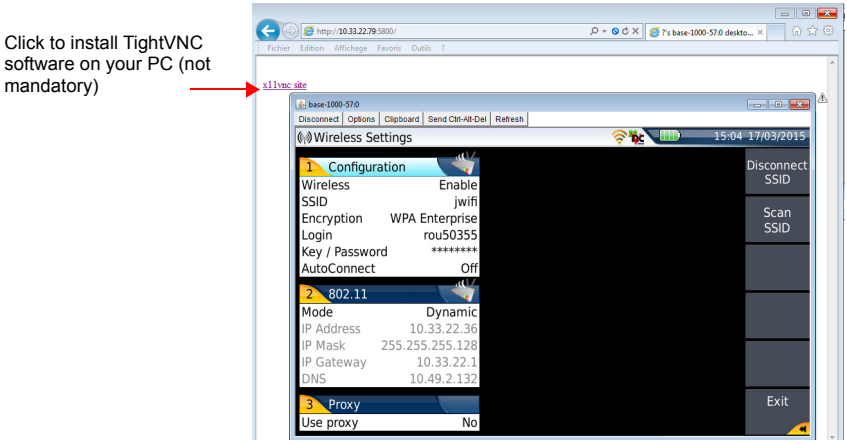
2 Considering `10.33.16.229` is the IP Address of the SmartOTDR (as shown Figure 44 on page 74), enter the following address in the Internet Explorer window:

`http://10.33.16.229:5800`

3 Press **Enter** to validate.

The screen of the SmartOTDR appears offset on your PC.

Figure 66 VNC window



See “Virtual control buttons bar” on page 100 and “Equivalence between the keyboard and SmartOTDR” on page 100 to get information on the deported screen use.

NOTE

Once Remote screen is accessible via VNC, the icon displays on the upper banner of the screen until the connection is cut or the SmartOTDR is switched off.

Virtual control buttons bar

It is possible to emulate hard keys with Virtual Control buttons. This virtual control bar is especially useful when the SmartOTDR screen is exported on a remote PC.
To display those buttons, click once on the top of the screen in the status bar, at the same height than the date and time.

Figure 67 Virtual control buttons bar

The virtual control buttons bar is displayed during a few seconds. You may click on any of these buttons to obtain exactly the same results than using the hard keys on the front panel of the SmartOTDR.

Equivalence between the keyboard and SmartOTDR

The PC keyboard can replaced all the buttons and keys of the SmartOTDR except the **ON/OFF** button**:**

- The menu keys to the right are replaced by the function keys **F1** to **F6**.
- The buttons below the screen are equivalent to **Ctrl +** a letter (see table below).
- The direction keys have the same function on the external keyboard and on the SmartOTDR.

Function on the SmartOTDR	**External keyboard**
HOME	Ctrl + H
SET-UP	Ctrl + U
FILE	Ctrl + F
RESULTS	Ctrl + R
START/STOP	Ctrl + S
EXPORT	Ctrl + P[a]
◀ ▲ ▶ ▼	← ↑ → ↓
Menu keys 1 to 6 (from top to bottom)	F1 → F6
Validate a selection	Entrée/Enter
Deselect a function on the Home page	Escape/Echap.

a. The Export function is available directly on the SmartOTDR pushing simultaneously the left and right arrow keys.

NOTE

Those equivalences are also valid with a keyboard directly connected to the SmartOTDR via one USB port.

Stratasync

Principle and prerequisites of the Stratasync

Stratasync is a new solution that provides network operators with an agile and centralized way to manage and analyze data from thousands of deployed Viavi test instruments directly from the cloud.

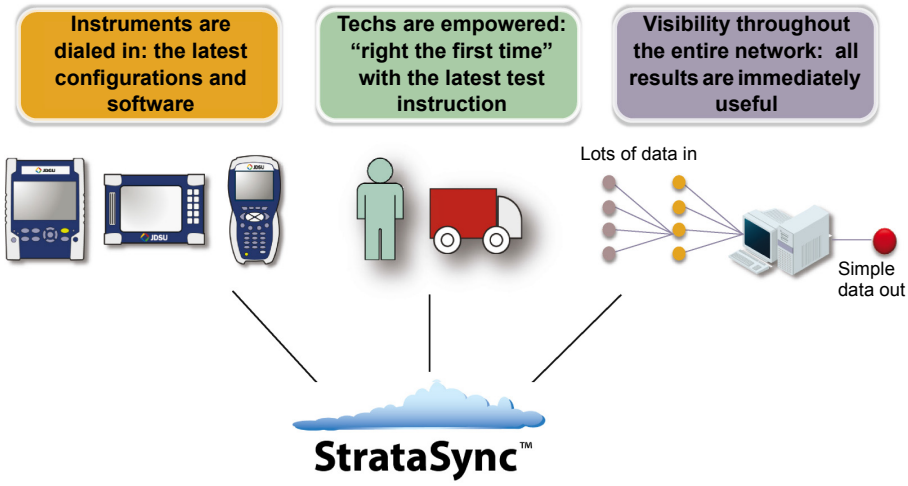
StrataSync is a hosted, cloud-based software application that provides Viavi instrument asset, configuration, and test-date management.

StrataSync improves technician and instrument efficiency.

StrataSync allows to:

- Manages and tracks test instruments
- Collects and analyzes results from the entire network
- Informs and trains the workforce

Figure 68 Principle of the Stratasync application



Pre-requisites for using the Stratasync with the SmartOTDR

The user must have subscribed to Stratasync, and by consequence, he must have acquired an **account Identifier** and a **password**.

The Ethernet and Proxy parameters must have been correctly configured in the System Settings page of the SmartOTDR (see "Ethernet > Mode" on page 77 and "Proxy > Use proxy" on page 78).

Configuring and synchronizing the SmartOTDR

The SmartOTDR can be configured to be synchronized with the Stratasync.

1. On the **Home** page, press **Connectivity**.
2. Check the configuration of the **Ethernet** and **Proxy** parameters (see "Configuring the SmartOTDR via Ethernet" on page 77
3. In the **Connectivity** windows, press **Stratasync** 

.
4. Configure the Stratasync parameters:
   a. In the **Server Type** parameter, the **Viavi Server** is selected by default and it

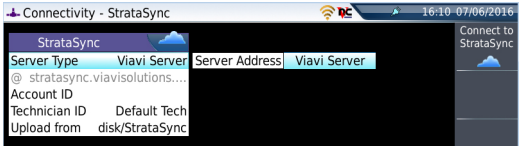
is recommended to keep this parameter.
However, the user can select if necessary the **Server Name** parameter and enter the name in the following parameter.

b In the **Account ID** parameter, enter the same identifier as the one used to access to Stratasync.

c The **Technician ID** parameter is automatically fulfilled after synchronization (if it has been defined by the administrator of the Stratasync)

d To upload the files from a directory onto the SmartOTDR toward Stratasync, select the parameter **Upload from** and press right arrow key to enter the directory path (example: `disk/Stratasync`). The directory Stratasync is defined by default.

Figure 69 Stratasync configuration



Connecting the SmartOTDR to Stratasync

Once SmartOTDR is configured in the **System Settings** page:

1 In **Home** page, press Stratasync icon 

.

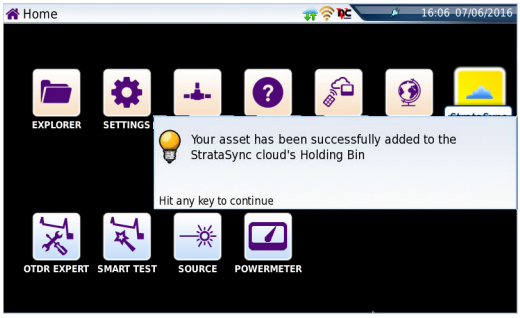
The synchronization with Stratasync starts

The icon  displays on the upper banner of the SmartOTDR during synchronization.

Once the icon is no more displayed, this mean that the synchronization is completed.

2 For the first synchronization only, a message displays on the SmartOTDR to indicate the addition of the equipment in Stratasync.

Figure 70 First synchronization - Message on SmartOTDR



The SmartOTDR is now available in Stratasync.

8

File management

This chapter describes the files management using a SmartOTDR.

The topics discussed in this chapter are as follows:

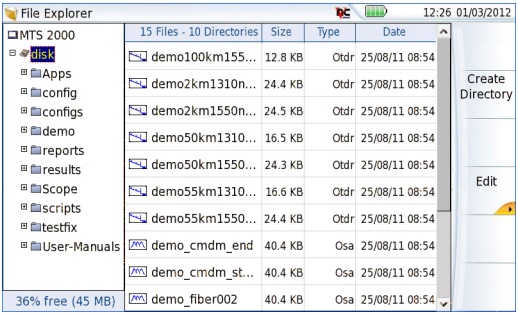
- “File Explorer Overview” on page 106
- “Directories and Files selections” on page 106
- “Directories & Files editing functions” on page 108
- “Working with directories and files from the explorer” on page 109
- “Creating a screenshot” on page 111
- “Merging pdf or txt files” on page 112
- “Storage media” on page 113

File Explorer Overview

To reach the File Explorer page

- On the **Home** page, select the **File Explorer** icon.
  The File Explorer page displays.

Figure 71 File Explorer page



Directories and Files selections

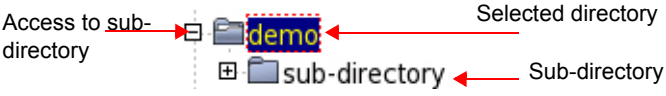
Directory selection

To select a directory from the explorer page:

1 Press on the directory that must be selected on the left of the screen.
The list of files the directory contains displays on the right side of the screen
The selected directory is underlined in blue

2 Click on the arrow at the left of the directory name, or press validation hard key , to display the sub-directories if any.

Figure 72 Directory selection



Files selection

To select one or several files from the explorer page:

1 Press on files that must be selected.

or

To select a list of files using the keys of the Platform:

a Select and validate the first file of the list (underlined in red)

b Set the cursor on the last file of the list (underlined in blue)

c Maintain the right direction key ▶ pushed until all the files are selected.

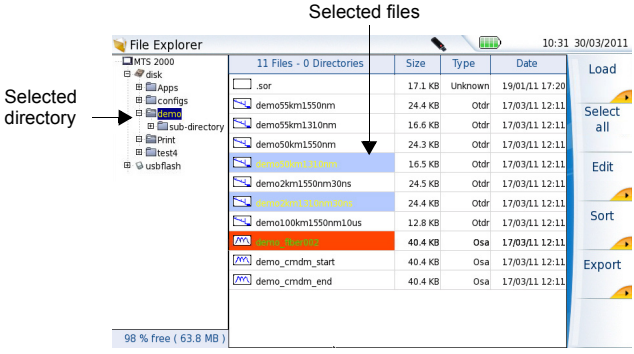
or

Click on **Select all** menu key to select all files into the directory.

NOTE

The last selected file is underlined in red and the previous one(s) selected is/ are underlined in blue.

Figure 73 Example of files selection



Directories & Files editing functions

Copy/Cut & Paste files/directories

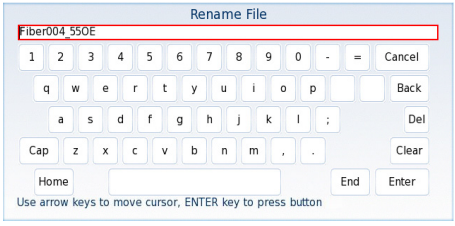
To copy (cut) one or several files, or one directory, and paste them in another place:

1. Select the directory / the file(s) (see "Directories and Files selections" on page 106).
2. Press **Edit** menu key
3. Press **Copy** to keep the directory / file(s) to their initial location.
   or
   Press **Cut** to delete the directory / file(s) from their initial location
4. On the left of the screen, select the directory; or select the new storage media.
5. Click on **Paste** menu key.

Renaming a directory / file

1. Select the directory / file to be renamed (see "Directories and Files selections" on page 106).
2. Press **Edit** > **Rename Directory** or **Rename File.**
   The Edition keypad displays.

Figure 74 Edition keypad for renaming file



3. Press **Clear** if you wish to delete the entire name
4. Enter a new name for the directory / file.
5. Click on **Enter** to validate the new name.

Deleting a directory / file

1. Select the directory or file(s) to be deleted (see "Directories and Files selections" on page 106).
2. Press **Edit** > **Delete.**
   A confirmation dialog box displays.
3. Press **Yes** to delete the selected directory or file(s).
   Press **No** to cancel the deletion.

Working with directories and files from the explorer

Creating a directory

To create a new directory from the explorer page:

1. Check the cursor is set on the left of the screen
2. Select the storage media into which the directory must be created
3. If you want to create a sub-directory, select the directory into which it must be created.
4. Press the right menu key **Create Directory**.
   The edition keypad displays
5. Enter a name for this directory
6. Press **Enter** key to validate the new directory

Opening files

Once a file is selected, press **Load** menu key.

Opening several files at the same time can be done exclusively with trace files (example: all OTDR trace files if a reference trace has been defined). Other type of files (PDF, TXT...) must be open one by one.

If different types of files have been selected in the Explorer, only the last one selected will open.

File Types

For files recognized by the SmartOTDR, the types are symbolized by icons. E.g.

Icon	Type of FO file
	OTDR file (.SOR extension)
	Multi OTDR file (.MSOR extension)
	Power Meter file (.LTS extension)

Icon	Type of file
	PDF File (.PDF extension)
	Text file (.TXT extension)
	License file (.LIC extension)
	CSV file (.CSV extension)

Sorting files

Wether files are selected or not, the key **Sort** allows to access to a sub-menu allowing to sort the file according to pre-defined parameters:

- **Sort by name**: the files display in an ascending order (from A to Z). If you click once again on the key, the files display in a descending order (from Z to A).
- **Sort by size**: by clicking once on this key, the files display from the smallest to the heaviest one. Clicking a second time allows to sort the files in opposite order.
- **Sort by type**: clicking once on this key; the SmartOTDR displays files in an ascending order (the file type A to file type W). By clicking again, the SmartOTDR displays the files in opposite order.
- **Sort by date**: clicking once on this key; the SmartOTDR displays files from the more recent to the less one. By clicking again on key, the Platform displays files from the older to the more recent one.

NOTE
You can also sort files clicking on the column titles in the files list

Creating a screenshot

You can create captures of what is displayed on the screen, directly from the SmarTOTDR and save it into a pdf file.

Taking a screenshot

Once the screenshot parameters are configured:

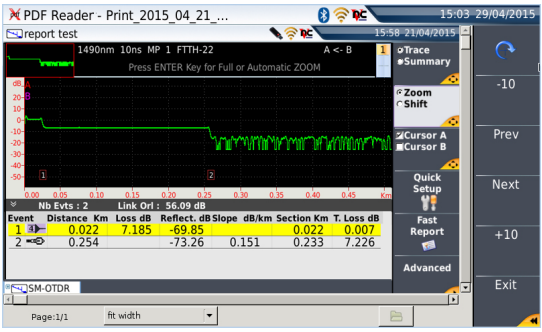
1. Reach the display which will be saved as a screenshot in a file.
2. If necessary, make modifications on this display (example: zoom on trace...)
3. Press simultaneously the left and right arrow keys ◀ ▶ for about 5 seconds
   or
   Click on the upper banner of the screen and, in the virtual control buttons bar, press **Export** key
   The icon  displays until the end of process.
4. Press the **FILE** key to find the PDF file in the Explorer.
   For trace results, the file is saved in the same directory than the file used for screenshot., or in the last directory selected.
   For other page open and used for a screenshot, the file is saved in the directory **Print** into the disk.

Name of the screenshots files

The screenshot is saved in a file, which is automatically named as follow:

- *Print_date (year/month/day)_time (hour/minute/second).pdf*

Figure 75 Example of screenshot, open on the SmartOTDR



Merging pdf or txt files

In the Explorer page, two pdf/txt files or more, generated via the results traces can be merged in one pdf file.

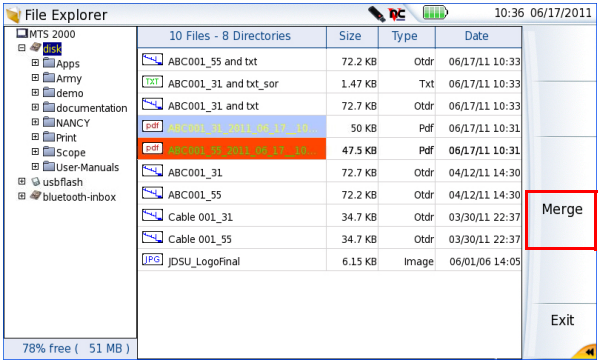
- The pdf files that can be merged are those generated via the **Fast Report** key on trace results page or via the **Export** key on the upper banner (or left and right arrow keys).
- The txt files that can be merged are those saved with the results trace (see OTDR Application User Manual).

1 In the Explorer, select the two or more pdf/txt files generated

2 Press **Export** menu key

3 Press **Merge** key

Figure 76 Files selection and Merge key



The icon is displayed during merging process.

After a few seconds, the files are merged in one pdf/txt file, which name by default is: *merged_year_month_date__hour_min_sec*.pdf/txt.

The file is automatically saved in the same directory as the one where files have been selected.

It gathers all results from pdf/txt files selected (and traces for pdf file), in one single pdf file of several pages (1 results screen per page, if the results table does not exceed one page).

NOTE

Once merged file is saved, it can be renamed in the Explorer (see “Renaming a directory / file” on page 108).

Storage media

For saving or recalling data, the SmartOTDR offers a wide choice of media, both built-in and external.
Free space on selected media is clearly displayed at the bottom of the left panel.

Storage media built into the SmartOTDR

The SmartOTDR is delivered with an internal memory, which maximum capacity is of 2GB (with a minimum of about 128 Mb are available for data storage).

External USB storage media

The SmartOTDR is equipped with 2 USB ports as standard. One of these can be used to connect an external storage medium, in particular a USB memory stick.

NOTE

Although two USB ports are present, it is not possible to use simultaneously more than one external USB storage medium.

USB memory stick connection

1 Insert the USB memory stick in one of the SmartOTDR's USB port.

A sound is emitted to confirm the successful insertion and recognition of a USB memory stick.

Then, the icon  is displayed in the upper banner to inform the user the USB stick is ready to be used.

When a file is moved in the explorer of the Platform, the end of the move on the screen does not mean that writing of data into the memory is complete. Some data may still be in a writing process if the storage unit is removed prematurely.

USB memory stick disconnection

1 Before disconnecting the USB memory stick, always select a storage device different from usbflash (select disk for example) in the explorer.

2 Make sure you no longer have any running applications using the usbflash storage media.

3 The user must push the **EJECT USB** key, available in **File Explorer**.

The icon becomes  to indicate it can be removed safely. In this state, the USB stick cannot be used anymore

The USB memory stick can then be disconnected from the Platform USB port.

NOTE

The USB memory stick can also be removed using the **Expert Tools** > **Media Utilities** menu, accessible via the **System Settings** page.

See Chapter 11 “Maintenance and Troubleshooting” if any problem occurs with the USB memory stick

Abbreviations for storage media

The abbreviations used in the explorer for the different storage media are:

Abbreviation	Storage medium
disk	Internal flash memory
usbflash	USB memory stick
bluetooth-inbox	Bluetooth storage media (option)[a]
cloud-storage	Cloud storage media available on PC

a. The files stored in bluetooth-inbox are lost when the SmartOTDR is switched off.

9

Technical specifications

This chapter contains the technical specifications of the SmartOTDR mainframe.

The topics discussed in this chapter are as follows:

- “General specifications” on page 118
- “Characteristics of the Source (standard) and Power Meter (optional)” on page 121
- “Characteristics of the options” on page 122
- “Characteristics of the OTDR” on page 123

General specifications

Display specifications

Screen

- Backlight high visibility color capacitive touchscreen
- Size: 5 inches

Resolution

- 800 x 480 pixels

Memory

Standard memory: internal memory, with a capacity of 2GB (with a minimum of about 125 Mb are available for data storage).

Input/Output

- Two USB 2.0 host ports.
- One Mini USB 2.0 device
- Built-in buzzer
- Built-in WIFI (optional)
- Built-in Bluetooth (optional)

Battery

The instrument can be supplied with one Li-Polymer battery or AA dry pack battery.

Li-Polymer Battery charging time

If the battery is completely discharged, the time taken to recharge is:

- approximately 5 hours, if the apparatus is not in use (**Charge** indicator solid red)
- about 10.5 hours if the instrument is used during charging (**On** indicator lit in fix green, **Charge** indicator lit in solid red).

Endurance of the SmartOTDR with battery

Measurement conditions:

- at +25 °C,
- at full battery capacity (4.8 Ah),

Li-Polymer Battery

Conditions of use	Endurance
According to Telcordia GR-196-CORE recommendation: Normal conditions, with normal backlight, 3 acquisition of 30 seconds per quarter of hour, auto off	up to 20 hours
Under continuous acquisition, with high screen backlight: with a E136FB SmartOTDR	Up to 5h45

AA Dry Battery Pack

Conditions of use	Endurance	
	NiMH	Alkaline
According to Telcordia GR-196-CORE recommendation: Normal conditions, with normal backlight, 3 acquisition of 30 seconds per quarter of hour, auto off	up to 7h15	Up to 6h15
Under continuous acquisition, with high screen backlight: with a E136FB SmartOTDR	Up to 2h45	Up to 2h30

Mains adapters

	Standard Mains Adapter
Input	100-250 V, 50-60 Hz
Output	12V DC 2.5 A max
Compliance	EN 60950

Supply or Power assigned in AC and in DC: 25 W

Dimensions - Weight

Dimensions

175 x 138 x 57 mm (6.9 x 5.4 x 2.4 in)

Weight

About 900 gr (1.98 lb)

Environment

Temperature

- Operating temperature range: -20°C to +50°C (-4°F to +122°F)
- Operating temperature range with guaranteed specifications: 0°C to +40°C (+32°F to +104°F)
- Storage: -20°C to +60°C (-4°F to +140°F)

Humidity

- 5 to 95% without condensation

EMI/ESD

- CE Compliant (EN61326-1)
- FCC 47-1 Part 15 Compliant

Drop test

In accordance with the Telcordia GR-196-CORE recommendations, the SmartOTDR resists the following test:

- 6 impacts dropped from a height of 76 cm on a pinwood floor of 5 cm thickness (1 impact on each of its 6 sides, with power off).

Shocks

The SmartOTDR resists the following test:

- 3 shocks per axis along each of the 3 axes, with power off.
- Impacts of 15g, 1/2 sine, duration 11 ms, at 10 second intervals.

Bumps

The SmartOTDR resists the following test:

- 1,000 bumps per axis along each of the 3 axes, with power off.
- Jolts of 15g, 1/2 sine, duration 6 ms, at 1 second intervals.

Vibration

The SmartOTDR resists the following vibration tests:

- Complete test comprising 6 cycles along each of the x, y and z axes.
- One cycle of 5 to 200 Hz and back to 5 Hz with a sweep duration of one minute/ octave.
- 3 mm amplitude displacement test, for the range 5 Hz to 15 Hz.
- 3g acceleration test for the range 16 Hz to 200 Hz.

Flammability

The SmartOTDR housing (in ABS, type V0) does not propagate fire.

Characteristics of the Source (standard) and Power Meter (optional)

Source

- Output Power Level[1]: -3.5 dBm
- Stability long term (8h): ± 0.05 dB[2]

Power meter (through OTDR port)

Specifications given for 25°C, after 20 minutes stabilization time and after zero setting.

1.+/- 1 dB
2.After 30min light source stabilization time

- Calibrated wavelengths: 1310 / 1490 / 1550 / 1625 / 1650 nm
- Accuracy at calibrated wavelengths: ± 0.5 dB (at -30 dBm)[3]
- Input power range: -60 dBm to +10 dBm
- Maximum resolution: 0.01 dB / 0.01nW
- Measurement range:0 to -55 dBm
- Linearity: ± 0.5 dB[4]

PON/XG-PON Power Meter (E118FA65PPM version)

- Wavelengths: 1490/1550 nm; 1490/1578 nm
- Measurement ranges
  - 1490 nm: -35 to +5 dBm
  - 1550/1578 nm: -35 to +23 dBm
- Measurement accuracy: ± 0.5 dB
- Channels isolation from external source:
  - 1310/1490: > 40dB
  - 1550 to 1650: > 20dB

Characteristics of the options

VFL

- Wavelength: 650 nm
- Length of fiber: up to 5 km
- Class 2 laser (standards EN60825-1 and FDA21 CFR Part 1040.10).

Bluetooth and WIFI

- WIFI: standard IEEE802.11n
- Bluetooth Option
  - Class 2
  - Range: up to 20 meters
  - Bluetooth V2.1 + EDR

3.Except 1650 nm
4.from -5 dBm to -50 dBm

Characteristics of the OTDR

OTDR Optical Interfaces

Interchangeable optical connectors: FC, SC[5]

OTDR Optical characteristics

Laser safety class (21 CFR)	Class 1
Distance units	Kilometer, meter, feet, and miles
Group index range	1.300000 to 1.700000 in 0.00001 steps
Number of data points	Up to 256,000 data points
Distance measurement	Automatic or dual cursor
Display range	0.1 km to 260 km for single-mode
Cursor resolution	1 cm
Sampling resolution	4 cm for single-mode
Accuracy	±1 m ±sampling resolution ±1.10–5 * x distance (Excluding group index uncertainties)

Characteristics of reflectometry measurements

Distance measurement

- Automatic or Dual cursor
- Distance displayed takes into account the calibration of the refractive index of the fiber.
- Index adjustable from 1,30000 to 1,70000 in steps of 0,00001
- Resolution of display: 1 cm max.
- Resolution of cursor: 1 cm max.
- Spacing of measurement points: from 4 cm, with up to 256 000 acquisition points.

5.SC mandatory for E136FB configuration

- Accuracy: ± 1m± sampling resolution ±1.10^{-5} x distance
  (excluding errors of calibration of refractive index of the fiber).
- Display span: 0.1 km m to 260 km for single mode

Attenuation measurement

- Automatic, manual, 2-point, 5-point, and LSA
- Resolution of display: 0,001 dB
- Resolution of cursor: 0,001 dB
- Linearity: ± 0.04 dB/dB for single mode
- Display span: 1.25 dB to 55 dB

Reflectance / ORL Measurement

- Resolution of display: 0,01 dB
- Accuracy: ± 2 dB

Automatic measurement

- Automatic measurement of all the elements of the signal. Slope measurement by least squares or 2 points of measurement.
- Display threshold of faults:
  - 0 to 5.99 dB in steps of 0.01 dB for event thresholds
  - -11 to -99 dB in steps of 1 dB for the reflectance
  - 0.01 to 5.99 dB in steps of 0.01 dB for attenuation
- Display of slope and attenuation for a segment of fiber.
- Display of the position of a fault and of attenuation.
- Display of the reflectance of the fault.
- Display of ORL

Manual Measurement

- Measurement of slope between the cursors.
- Measurement of attenuation between two segments of fiber.
- Measurement of reflectance of a reflecting element.
- Measurement of ORL between the two cursors.
- Measurement of splice by 2 or 5 points method

Typical specifications

Typical values, measured at 25°C unless specified.

	100B Series	100A Series
Central Wavelength[a]	1310 ± 20nm 1550 ± 20nm filtered 1625 nm ± 20nm	1310 nm ± 20nm 1550 nm ± 20nm filtered 1650 nm ± 20 nm
Cut Wavelength range on live port (filtered)	1290 - 1580 nm Isolation > 45 dB	
Typical RMS Dynamic Range[b]	40 / 40 / 41 dB	37 / 35 / 32 dB
Distance Range[c]	Up to 150 km	Up to 100 km
Pulse width	3 ns to 20µs	5 ns to 20µs
Event Dead Zone[d]	0.90 m	1.35 m
Attenuation Dead Zone[e]	2.5 m	4 m
Splitter Attenuation Dead Zone	45 m after 15dB splitter loss	N/A

a. Laser, at 25° C and measured at 10 µs
b. Typical value corresponding to the one-way difference (in dB) between the extrapolated backscattering level at the beginning of the fiber and the RMS (SNR = 1) noise level, after 3 minutes averaging and high dynamic resolution, using the largest pulse width.
c. At 1550 nm
d. EDZ measured at ± 1.5 dB below the peak of a unsaturated reflective event using the shortest pulse width.
e. ADZ measured at ± 0.5 dB from the linear regression, using a FC/UPC- type reflectance, at shortest pulse width.

10

Options and accessories

This chapter shows the references of the options and accessories of the SmartOTDR.

The topics discussed in this chapter are as follows:

- “References of the SmartOTDR” on page 128
- “References of accessories” on page 130
- “References of firmware applications” on page 130

References of the SmartOTDR

OTDR Configurations[a]	Reference
SmartOTDR 1550nm A Range Handheld Tester With Continuous Light Source & PC Connector	E100A-PC
Activation Key to add 1310 nm Wavelength to a SmartOTDR	E113-UPG
SmartOTDR 1550nm A Range Handheld Tester With Continuous Light Source & APC Connector	E100A-APC
SmartOTDR 1310/1550nm A Range Handheld Tester With Continuous Light Source & PC Connector	E126A-PC
SmartOTDR 1310/1550nm A Range Handheld Tester With Continuous Light Source & APC Connector	E126A-APC
SmartOTDR 100B 1310/1550 nm Handheld Tester With Continuous Light Source and PC connector	E126B-PC
SmartOTDR 100B 1310/1550 nm Handheld Tester With Continuous Light Source and APC connector	E126B-APC
SmartOTDR 100A Handheld Tester With Two Ports (PC) and Continuous Light Source: - Standard 1310/1550 nm Port - Filtered 1650nm Port for In-Service Measurement	E138FA65-PC
SmartOTDR 100A Handheld Tester With Two Ports (APC) and Continuous Light Source: - Standard 1310/1550 nm Port - Filtered 1650nm Port for In-Service Measurement	E138FA65-APC
SmartOTDR 1310/1550nm & Filtered 1625nm B Range Handheld Tester With Continuous Light Source & PC Connector	E136FB-PC
SmartOTDR 1310/1550nm & Filtered 1625nm B Range Handheld Tester With Continuous Light Source & APC Connector	E136FB-APC
SmartOTDR 100A Filtered 1650nm Handheld Tester With PON Power Meter (1490nm + 1550nm Or 1490nm + 1577nm) & APC Connector	E118FA65PPM-APC
SmartOTDR 100A Filtered 1650nm Handheld Tester With APC Connector	E118FA65-APC

a. Comes with AC/DC converter/adapter, hands-free carrying case, stylus and getting started manual. OTDR connector adapter and battery type (LiPo mandatory for E126A and E136FB) are not included.

OTDR Connector Adapters	Reference
SC Universal Adapter (standard)	EUSCADS
FC Universal Adapter (accessory)	EUFCADS
LC Universal Adapter (accessory)	EULCADS

SmartOTDR Mainframe option	Reference
Calibration Report	E10OTDRCR

Battery	Reference
Lithium Polymer battery for SmartOTDR (tray + batteries) (see “Changing the battery” on page 151)	E10LIPO
AA dry battery pack for SmartOTDR (tray + batteries)	E10DRYBAT

Power Meter / VFL options	Reference
Built-in VFL option with UPP 2,5 & 1,25 mm connectors for SmartOTDR	E10VFL
Optical power meter option for SmartOTDR (same port as OTDR)	E10PM
MP-60A;USB Optical power meter with accessories	MP-60A
MP-80A;USB Optical power meter high power with accessories	MP-80A

WIFI / Bluetooth options	Reference
Built-in WiFi Option for SmartOTDR	E10WIFI
Built-in Bluetooth Option for SmartOTDR	E10BLUE
External WiFi USB Dongle	E60EWIFI
External Bluetooth USB Dongle	E60EBLUE

References of accessories

Scope	Reference
Digital Videoscope kit including FBP-P5000i probe (USB2.0) in a small soft case, and 7 tips in a box (FC, SC, SC-APC, LC, U25M, U25MA & U12M)	EDFSCOPE5Ki

Carrying Cases	Reference
Hands-free soft case with neckstrap for SmartOTDR (Standard with all configurations)	E10GLOVE
Large carrying soft case for SmartOTDR	E40SCASE1

Mains options	Reference
12V Car lighter adapter for SmartOTDR	E40LIGHTER
EU/US to India type D power adapter	EINDIADPLUG

References of firmware applications

Applications for SmartOTDR	Reference
Smart Test only option for SmartOTDR. License key enabling only the Smart Test mode, the Expert OTDR is removed	ESMARTTEST-100
FTTA-SLM OTDR Application for SmartOTDR	ESMARTFTTA-100
FTTH-SLM OTDR Application for SmartOTDR	ESMARTFTTH-100
SLM OTDR Software Option for SmartOTDR	ESMARTLINK-100
CABLE-SLM OTDR Software Option for SmartOTDR	ESMARTCABL-100
Smart Access Anywhere for SmartOTDR -L2: Remote coaching and file transfer for SmartOTDR using Ethernet, WIFI and selected 3G Smartphone (via USB or WIFI)	SAA-100-L2

11

Maintenance and Troubleshooting

This chapter describes how to maintain your unit and identify and correct problems related to the SmartOTDR.

The topics discussed in this chapter are as follows:

- “Maintenance procedure” on page 132
- “Recycling Information” on page 147
- “Troubleshooting” on page 148
- “General information on warranty” on page 153

Maintenance procedure

Maintenance work on this instrument must only be undertaken by qualified personnel using suitable equipment.

In most cases, it is advisable to contact the nearest Viavi Service Centre, which will undertake the appropriate troubleshooting and repair work.
The performance and technical complexity of the SmartOTDR class this instrument in a new generation of equipment, for which Viavi has laid down a maintenance policy based on the principle of standard module replacement.
In implementation of this policy, we have set up powerful card troubleshooting test resources in our factories and a rapid dispatch system operating between our factories and branches.
Only by this procedure can the high quality of the instrument continue to be ensured after repair work. This procedure also has the advantage of reducing repair costs and time.

In the interests of quality and efficiency, we strongly recommend adoption of the following procedure in the event of a fault, before any other steps are taken:

- Verify that the instrument is plugged in.
- Check the connections of any peripheral equipment to the Platform.
- If a fault is detected, or in case of doubt, it is advisable to contact the nearest Viavi Service Centre, which will undertake the appropriate repair work.

Cleaning

Cleaning plates and housings

The front and rear plates and the housings may become tarnished with handling. To clean them, use only a rag moistened with soapy water.
Never use any product containing acetone, trichlorethylene, benzine or alcohol, as these will attack the printed markings.

Cleaning the screen

To clean the screen, use an antistatic product.

Cleaning the optical cable connector

- Use a non-fluffy type of paper, such as Joseph paper, soaked in isopropylic alcohol.
- Pay particular attention to the polished face of the fiber, rubbing it in a direction perpendicular to the axis of the fiber.

Cleaning the optical connections of the SmartOTDR

- Squirt a highly volatile solvent (such as isopropylic alcohol) into the connector.
- Blow out the connector using a clean dry air supply from an aerosol can fitted with an extension.

NOTE

If your equipment has a universal connector, unscrew its adaptor to access the ferule.

Accessing to the SmartOTDR information

On the SmartOTDR, some screens allows to display information on different elements of the equipment.

To display the information on the SmartOTDR

1. On the **Home** page, validate **Settings** icon to reach the **System Settings** page.
2. On the right menu keys, press **About** to display the presentation screen of the SmartOTDR.

General page

The **General** page is displayed by default, and allows to display the presentation screen, with all the information concerning the software versions, the hardware options and the OTDR module.

Figure 77 General page

This page shows:

- The software version information
- The product contents: base, optical options, battery type, touchscreen used, module type and date of calibration for options.

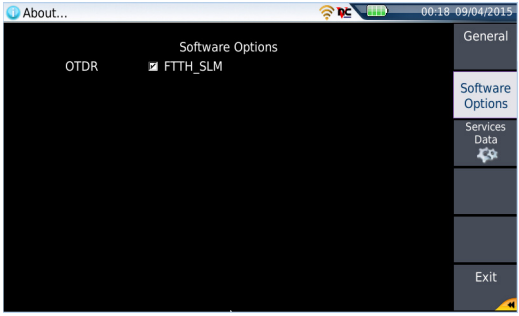
  The options set into the SmartOTDR are marked with a green tick.

Software options page

This page allows to visualize the software options available on the SmartOTDR.

1 Once on the **About** screen, press **Software Options** menu key to display the list of software options available on your SmartOTDR.

Figure 78 Software Options page

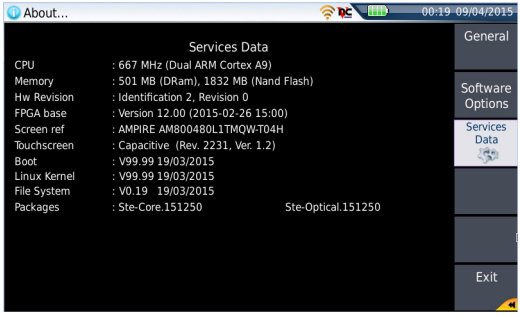


Services Data page

This page allows to display information about the elements inside the SmartOTDR (CPU, Memory, hardware revision, screen reference...).

1 Once on the **About** screen, press **Services Data** menu key to display the list of elements contained on your SmartOTDR.

Figure 79 Services Data page

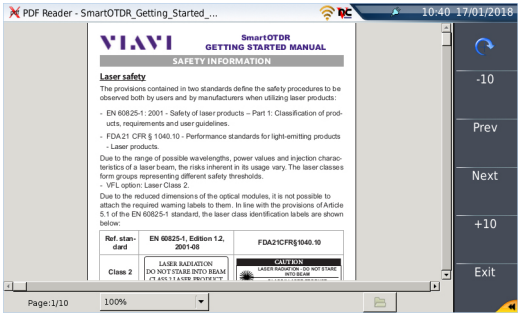


Accessing to the Platform documentation

The Getting started document for the SmartOTDR use is directly available onto the equipment:

1 Validate the **Help** icon on the Home page
The Getting Started Manual displays, in the pdf reader.

Figure 80 Getting Started manual



Installing a new version of the software

When a new software version is loaded, there is a risk of re-initialization of the internal memory. Before installing the new software, it is therefore advisable to save the results in the memory.

Do not interrupt the installation process, as this could damage the instrument.

To avoid any interruption of the installation procedure, the SmartOTDR must be operating on the mains: if the procedure is started while operating on battery, a message indicates that the instrument must be connected to the mains.

Downloading from Internet

When the software is obtained from the Internet, it must be saved on a storage medium before the software upgrade of the product can be carried out. To do this:

1 Open Internet Explorer

2 Enter the internet address http://www.updatemyunit.net, which will give access to the installation/update portals for all Viavi products.

3 Click on the link SmartOTDR® Platform.

A new page opens, displaying the current version available

4 According to your region, click on the one of the following icon to download the archive.

Download from European server
Download from North American server
Download from Singapore server

5 In the new dialog box displayed, click on **Save** to save the exe file on the PC.

6 Once completed, connect the USB memory stick to the PC and follow the instructions chapter "Installation from a USB memory stick" on page 139, from step 2.

Installation from Viavi Server

The update can be performed directly onto the equipment, using the Viavi server.

1 Connect the SmartOTDR to a PC via an Ethernet cable or via WIFI.

2 Check on the **WIFI** setup page that the connection mode is defined to Automatic (**Home** > **Connectivity** > /**WIFI**> **Mode**: **Dynamic**).

3 On the **Home** page, press **Connectivity** icon 

.

4 Press **Upgrade** icon 

.

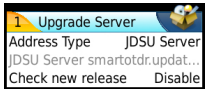
5 In the **Upgrade Server** box:

– On the line **Address Type**, select **Viavi Server**

The address **smartotdr.updatemyunit.net** is automatically displayed.

6 Select if the new release for SmartOTDR must be automatically detected (**Enable**) or not (**Disable**). See "Checking new upgrade on Viavi Server" on page 141.

Figure 81 Configuration of the Viavi Server

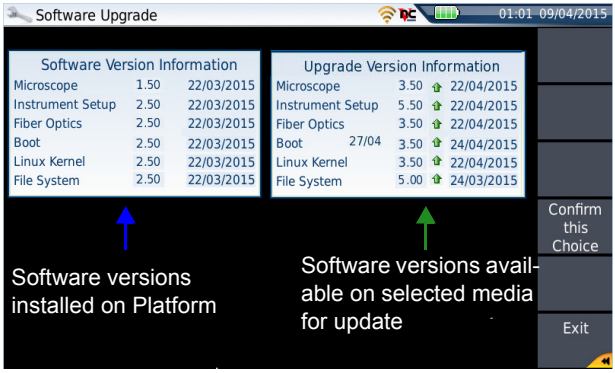


7 Press **Software Upgrade > Upgrade via Ethernet**.

The message `Verify IP address of PC server` appears.

8 Click on **Continue**.
The list of the software versions available on the PC is displayed next to the versions installed on the SmartOTDR.

Figure 82 List of software versions (current and new)



Installation from another server

Before starting the software upgrade via Ethernet, make sure the IP address of the PC server.

The update can be performed directly onto the equipment, using an http address.

1 Connect the SmartOTDR to a PC via an Ethernet link or via WIFI.

2 Check on the **Ethernet** or **WIFI** setup page that the connection mode is defined to Automatic (**Home** > **Connectivity** > **Ethernet** / **WIFI**> **Mode**: **Dynamic**).

3 On the **Home** page, press **Connectivity** icon 

.

4 Press **Upgrade** icon 

.

5 In the **Upgrade Server** box:

– On the line **Address Type**, select **Server Name** or **IP Address**.

– Enter the Server Name (if **Server Name** has been previously selected) or the Server Address (if **IP Address** has been previously selected)

6 Select if the new release for SmartOTDR must be automatically detected (**Enable**) or not (**Disable**). See “Checking new upgrade on Viavi Server” on page 141.

7 Press **Software Upgrade > Upgrade via Ethernet**.

The message `Verify IP address of PC server` appears.

8 Click on **Continue**.

The list of the software versions available on the PC is displayed next to the versions installed on the SmartOTDR (see Figure 82 on page 138).

Installation from a USB memory stick

You must be equipped with a USB memory stick with a minimum capacity of 128 Mo.

Before installing the upgrade, you must format the USB memory stick (see “Formatting the USB memory stick onto the SmartOTDR” on page 149).

1 Once formatted, disconnect the USB memory stick from the SmartOTDR using the key **Eject USB** available pressing **Settings** > **Expert Tools** > **Media Utilities**.

As for any media formatting, please note that all data present on the USB memory stick will be irremediably lost.

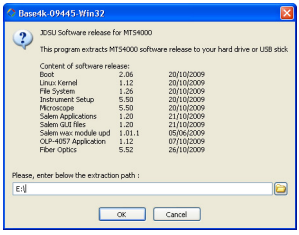
2 Connect the USB memory stick to the PC

3 Unzip the upgrade files on the PC and transfer it to the USB memory stick:

a Download and save on your PC the.exe upgrade file that you can get from the web (http://updatemyunit.net see “Downloading from Internet” on page 136).

b Once the transfer is completed, double click on the.exe file: A window will appear. Check that the folder is correct i.e. the USB memory stick driver is appearing in the line at the bottom of the dialog box then press OK. If not, click on the icon  in order to select the right USB drive.

Figure 83 List of software update



c Press **OK** and wait for the end of loading.

4 Then remove the USB memory stick, using the appropriate procedure, from your PC

5 Insert the memory stick into one of the USB ports on the product.

> **NOTE**
> A bip is emitted each time the USB memory stick is inserted or removed from the USB port.

6 On the Home page, press **Connectivity** icon 

.

7 Press **Upgrade** icon 

.

8 Press **Software Upgrade > Upgrade from USB**.

The message Are you sure? is displayed

9 Click on **Confirm**.

The list of the software versions available on the USB stick is displayed next to the versions installed on the SmartOTDR (see Figure 82 on page 138).

Launching the upgrade

Whatever is the method selected for upgrade (Server, USB key...) and once the list of the software versions available is displayed next to the versions installed on the SmartOTDR (see Figure 82 on page 138), follow these instructions to launch the upgrade:

1 Click on **Show Prev choice** or **Show Next Choice** to display the previous and next versions available.

2 Click on **Confirm this Choice** to start the upgrade of the selected software(s).

or

Click on **Confirm All Choices** to upgrade all versions.

> **NOTE**
> The software versions list does not always appear (cf previous versions) as well as the **Previous / Next Choice** buttons and the **Confirm/Continue** key. In this case, the upgrading starts automatically.

Upgrading begins. The SmartOTDR is automatically rebooted. Upgrading takes several minutes. Finally, the SmartOTDR is automatically restarted.

During the upgrade, the Testing indicator is lit in red. Do not push any button or remove the USB memory stick while the indicator is lit. The USB stick can be removed if necessary once the Testing indicator is off.

Checking new upgrade on Viavi Server

If the Viavi Server is selected for upgrade (see Figure 81 on page 137), the parameter **Check new release** can be defined to automatically inform user of a new upgrade available for Platform.

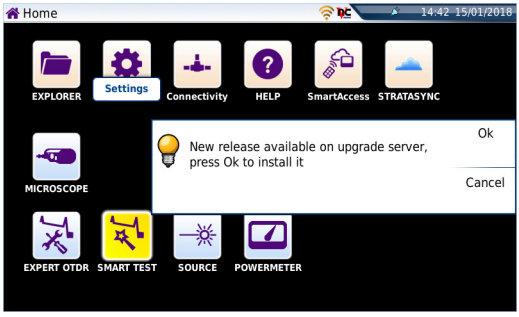
1 In the **Connectivity** screen, press **Upgrade** icon.

2 Check the **Address Type** is set to **Viavi Server**.

3 Define the parameter **Check new release** to **Enable**.

If the parameter is set to **Enable**, a message displays, at any time, when one update is available on server.

Figure 84 Checking new release



4 Press **Ok** to display the list of software versions available (see Figure 82 on page 138) and follow instructions “Launching the upgrade” on page 140.

Upgrading from the boot

This method is used to make a complete reinstallation of the software versions.

1 Turn off the SmartOTDR using the **ON/OFF** button, keeping the equipment connected to the mains.

2 Insert the USB stick onto which the software versions are stored into one of the USB port of the Platform

3 Press simultaneously **SETUP + START/STOP** buttons

4 Maintaining the two buttons pressed, press **ON** button to start the SmartOTDR.

5 A menu displays, then the screen allows to select **Upgrade from USB**

After a few seconds, a new page displays indicating that to continue the reboot, the validation key must be pressed.

Press the hard key  .

The reboot starts automatically.

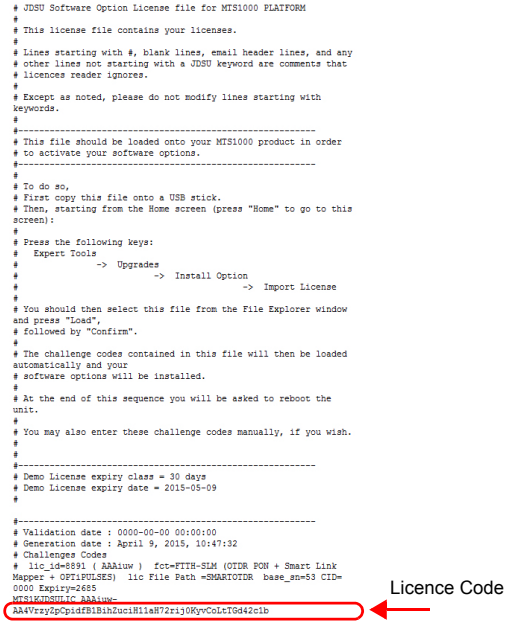
The Testing indicator will be lit in red during upgrade. Do not push any key or remove the USB memory stick until the lit turns off.

Once the upgrade is completed, the SmartOTDR will automatically turns on and display the **Home** page.

Install Software License

This page allows to import the license to get a software option.

Figure 85 Example of a License file (.lic)




```
# JDSU Software Option License file for MTS1000 PLATFORM
#
# This license file contains your licenses.
#
# Lines starting with #, blank lines, email header lines, and any
# other lines not starting with a JDSU keyword are comments that
# licences reader ignores.
#
# Except as noted, please do not modify lines starting with
keywords.
#
#-------------------------------------------------------------
# This file should be loaded onto your MTS1000 product in order
# to activate your software options.
#-------------------------------------------------------------
#
# To do so,
# First copy this file onto a USB stick.
# Then, starting from the Home screen (press "Home" to go to this
screen):
#
# Press the following keys:
#   Expert Tools
#                ->  Upgrades
#                            ->  Install Option
#                                          ->  Import License
#
# You should then select this file from the File Explorer window
and press "Load",
# followed by "Confirm".
#
# The challenge codes contained in this file will then be loaded
automatically and your
# software options will be installed.
#
# At the end of this sequence you will be asked to reboot the
unit.
#
# You may also enter these challenge codes manually, if you wish.
#
#
#-------------------------------------------------------------
# Demo License expiry class = 30 days
# Demo License expiry date = 2015-05-09
#

#-------------------------------------------------------------
# Validation date : 0000-00-00 00:00:00
# Generation date : April 9, 2015, 10:47:32
# Challenges Codes
#  lic_id=8891 ( AAAiuw )  fct=FTTH-SLM (OTDR PON + Smart Link
Mapper + OPTIPULSE5)  lic File Path =SMARTOTDR  base_sn=53 CID=
0000 Expiry=2685
MTS1KJDSULIC_AAAiuw-
AA4VrzyZpCpidfBlBihZuciH1laH72rij0KyvCoLtTGd42c1b
```

To import the license, you can either enter manually the licence code, given in the license file, (.lic file) or import this file with a USB memory stick connected to the SmartOTDR.

It is strongly recommended to perform the installation using the importation of License via a USB memory stick.

Enter Manually the License

1 In the Home page, click on Settings icon 

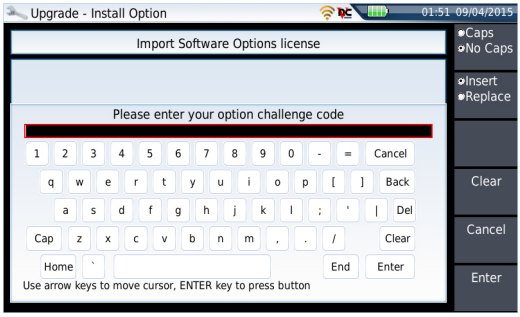
.

2 Press successively the menu keys **Expert Tools** > **Install Option** > **Enter Challenge**.

The edition keypad is displayed

3 Enter the challenge code of the option, set at the bottom of the file (see Figure 85 on page 143),

Figure 86 Enter the License code



The license file can be opened via a word processing software such as Word...

The challenge code must be entered exactly as it is in the .lic file, paying attention to the lower-case and upper-case letters etc.

4 Press the **Enter** key to validate the code.

Your software options will be installed.

At the end of this sequence you will be asked to reboot the unit to apply the modifications, pushing the key Reboot. Confirm the reboot to restart the Platform.

Import the license from the USB memory stick

CAUTION

Any file linked to the license file (.lic) must be saved at the root of the USB key.

1 In the **Home** page, select the **Settings** icon Settings.

2 In the **System Settings** page, press **Expert Tools** > **Install Option** > **Import License**

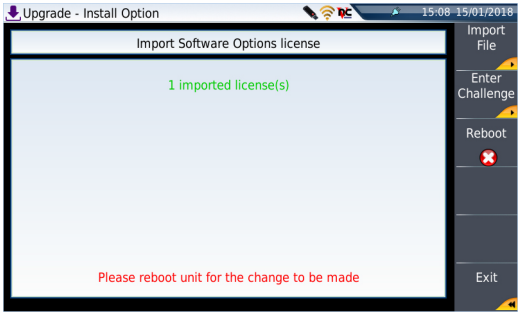
If the USB memory stick is not already connected to the Platform, a message asking the memory stick insertion is displayed. Confirm it once the stick is connected.

3 In the File Explorer, select the USB stick, then the license file (.lic) to be imported,

4 Click on **Load** > **Confirm**

5 The challenge codes contained in this file will then be loaded automatically and your software options will be installed.

Figure 87 License imported



6 At the end of this sequence you will be asked to reboot the unit to apply the modifications, pushing the key 

.

7 Confirm the reboot

Locking the SmartOTDR

The SmartOTDR can be locked at any time:

1 In the **HOME** page, select the **Settings** icon 

.

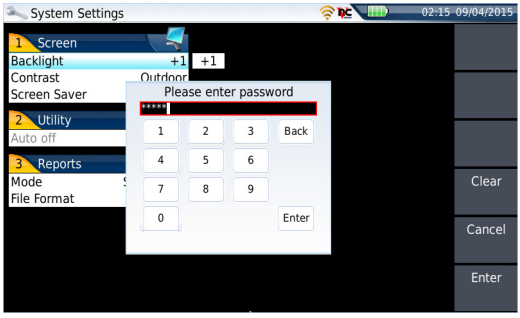
2 In the **System Settings** page, click on **Expert Tools > Instrument Lock.**

3 Confirm the SmartOTDR locking by clicking on **Confirm** (or use the **Cancel** key to cancel the process).

The numeric keypad is displayed

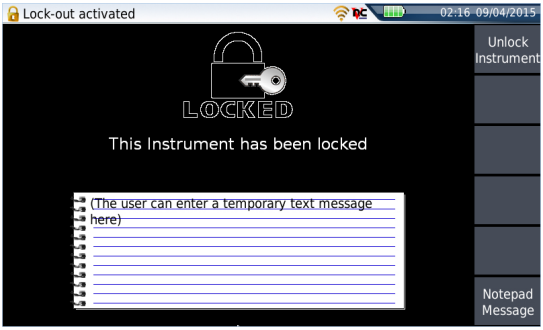
4 Enter the password to lock the instrument: `42000` with the numeric keypad displayed.

Figure 88 Password



5 Click on **Enter**
The SmartOTDR locking screen is displayed.

Figure 89 Locking screen



Click on the **Notepad Message** key to add a message using the text edition.

Unlocking the SmartOTDR

1 Once the locking screen is displayed, click on the key **Unlock Instrument**.

2 Press confirm to confirm the Platform must be unlocked.

3 Enter the password **42000** using the numeric keypad displayed and validate. The screen automatically displays the **HOME** page.

Returning an instrument

When returning an instrument, it is essential to indicate the following minimum information:

- the type and serial number of the instrument (on the identification label) and the configuration code (under the bar code)
- a description of the fault found on the instrument.

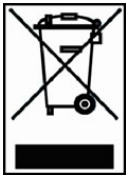
The returned instrument will then be repaired and calibrated.

Guarantee conditions

Any repair operation supervening within the guarantee period of the instrument will be carried out at the expense of Viavi. However, for any sub-assembly upon which work has been carried out otherwise than by Viavi Service Centers, the cost of a replacement sub-assembly will be invoiced.

Recycling Information

Viavi recommends that customers dispose of their instruments and peripherals in an environmentally sound manner. Potential methods include reuse of parts or whole products and recycling of products components, and/or materials.



Waste Electrical and electronic Equipment (WEEE) Directive

In the European Union, this label indicates that this product should not be disposed of with household waste. Il should be deposited at an appropriate facility to enable recovery and recycling.

Troubleshooting

Interpreting alarms

Troubleshooting	Solution
Nothing happens when the **ON/OFF** key is pressed.	- Make sure that the battery is present or charged; or the mains adapter is properly connected (see "Connecting the mains adapter" on page 15).
Nothing happens on screen, whatever is the action done (menu key / hard key pressed...)	- The Platform must be rebooted. See "Resetting the SmartOTDR" on page 18.
Nothing happens on touchscreen, whatever is key pressed (icon, menu key...)	- Perform an Autotune. See "Touchscreen calibration («Autotune» process for capacitive touchscreen)" on page 150).
You are using the SmartOTDR in the ordinary way when it suddenly switches off.	- Check the instrument is not configured to Auto off. See "Defining the Automatic shutdown and the type of batteries" on page 24). - Check the battery charge level. See "Charging the battery" on page 15.
The battery refuses to charge (the **Charge** indicator does not go on when the instrument is connected to the mains and is not operating).	- There is no battery in the instrument. - The temperature level of the equipment does not allow the battery charging for safety reasons. Wait the equipment cools down. - The battery needs to be changed. See "Changing the battery" on page 151.
Error message when USB has been disconnected	- The USB disconnection has not been done properly (see "USB memory stick disconnection" on page 114) - The data transfer was not completed when USB key was disconnected.
No beep is emitted when the USB memory stick is connected	- A previous USB memory stick has not been properly disconnected (see "USB memory stick disconnection" on page 114). - The USB memory stick is not detected by the SmartOTDR: use another memory stick, or another storage media.

Troubleshooting	Solution
Error message when upgrade via Ethernet is confirmed	- Check the Server Name is correctly entered (see “Installation from another server” on page 138)
Error message when upgrade via USB key is confirmed	Check the USB key is correctly connected (see “USB memory stick connection” on page 114)
Error message when unlocking the instrument	- The password is not the correct one (see “Locking the SmartOTDR” on page 145).

Formatting the USB memory stick onto the SmartOTDR

If the USB icon  is displayed on the upper banner of the screen, when a USB memory stick is connected to the SmartOTDR, this may means the memory stick must be formatted.

If the stick needs to be formatted, proceed as follows:

1. Insert the memory stick into one of the USB port on the top of the SmartOTDR.
2. Press the **HOME** button
3. Validate the **Settings** icon to open the **System Settings** page.
4. On the right menu keys, successively select **Expert tools** > **Media utilities** > **Usbflash Format.**
5. Confirm your choice to actually format the USB memory stick.

As for any media formatting, please note that all data present on the USB memory stick will be irremediably lost.

Erase disk

To delete all the disk contents of the SmartOTDR:

1. On the Home page, press the **Settings** icon to open the **System Settings** page
2. Press **Expert Tools** > **Media Utilities**,
3. Select **Disk Erase** to delete all the disk contents into the SmartOTDR.
   A confirmation must be validated before the deletion.
4. Enter the password `02468753` and press **Enter** to start disk erasing.

Touchscreen calibration («Autotune» process for capacitive touchscreen)

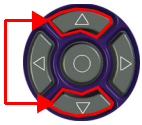
In case of problem with the capacitive touchscreen of your SmartOTDR, an «Autotune» can be performed:

From the **Home** page:

1 Press **Settings** icon top open the **System Settings** screen

or

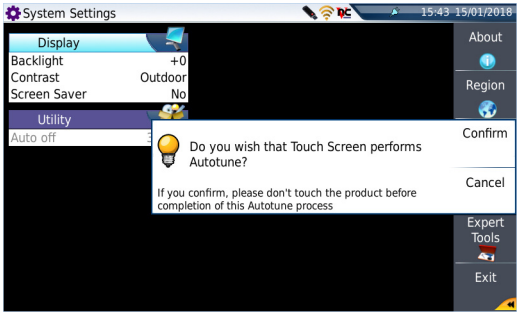
If the use of the touchscreen is not possible, press simultaneously the up and down arrow keys on the Platform to open the **System Settings** screen.



2 Press again the up and down arrow keys simultaneously.

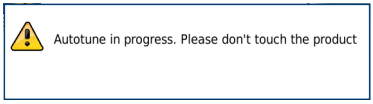
A dialog box displays, asking if you wish to perform an Autotune.

Figure 90 Autotune process



3 Press **Confirm** to start Autotune process.

A dialog box displays during the process.



NOTE

Do not touch the product during the Autotune process!

Once the dialog box is closed, the Autotune process is completed, and the screen is calibrated.

Changing the battery

If you meet problems during the Platform functioning, or if the battery does not charge anymore when plugged, this may require the battery to be replaced.

CAUTION

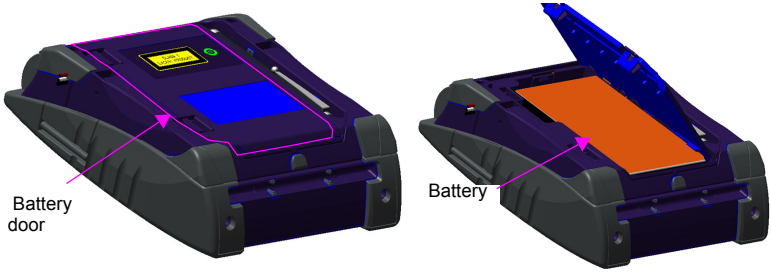
Battery is not interchangeable in the field. It must be replaced exclusively for maintenance purpose.

Accessing to the damaged battery

To access the battery of the SmartOTDR, proceed as follows:

1. Switch off the instrument and disconnect the mains supply.
2. Turn the instrument face down on the work surface.
3. Remove the battery door
4. Pull the battery connector from its housing, to disconnect it from the base, taking care not to damage the connector into which it is plugged.

Figure 91 Battery location



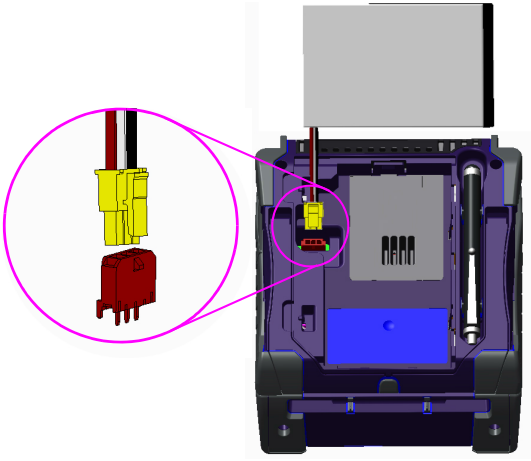
Date and Time parameters will be lost when battery is disconnected.

Installing a new battery

1. Set the battery into the Platform

2 Connect the new battery in the connector of the SmartOTDR, in the right way using the location notch.

Figure 92 Setting a new battery



3 Close the battery door

The instrument can be restarted.

NOTE

Take care to set the connector of the battery in the right way on the plug of the base!

Do not forget the black foam to wedge the battery.

When putting a battery back into its seating, make sure that its connector engages correctly with the one of the base and that the door is correctly closed.

Contact Viavi local Sales Service to get a new battery.

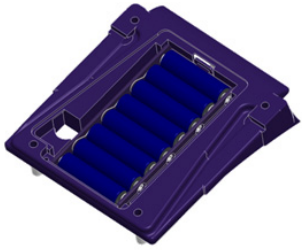
Do not use any battery other than the one supplied with the instrument, or supplied by Viavi.

Accessing to the AA dry battery pack

If the battery pack is used, it can be changed.

1. Repeat step 1 to step 3 to access the battery pack.
2. Remove the battery pack removing the entire plate from its housing.
3. Change the batteries.
4. Put back the pack into the SmartOTDR.
5. Close the battery door.
   The instrument can be restarted.

Figure 93 AA dry battery pack



NOTE

The type of battery used into the AA battery pack is specified in the System Settings page (see “Type of batteries” on page 25)

General information on warranty

The warranties described herein shall apply to all commercially available Viavi products. Any additional or different warranties shall apply only if agreed to by Viavi in writing. These warranties are not transferable without the express written consent of Viavi.

Hardware Warranty

Viavi warrants that Hardware Product sold to customer shall, under normal use and service, be free from defects in materials and workmanship. Information regarding the specific warranty period for this product can be obtained by contacting your local Viavi Customer Service Representative, or at our web site ***www.viavisolutions.com***. If installation services have been ordered, the warranty period shall begin on the earlier of (1) completion of installation, or (2) thirty (30) days after shipment to customer. If Installation Services have not been ordered, the warranty period shall begin upon shipment to Customer. Hereafter these periods of time shall be collectively referred to as the Initial Warranty Period.

Viavi 's obligation and customer's sole remedy under this Hardware Warranty is limited to the repair or replacement, at Acterna's option, of the defective product. Viavi shall have no obligation to remedy any such defect if it can be shown: (a) that the Product was altered, repaired, or reworked by any party other than Viavi without Viavi's written consent; (b) that such defects were the result of customer's improper storage, mishandling, abuse, or misuse of Product; (c) that such defects were the result of customer's use of Product in conjunction with equipment electronically or mechanically incompatible or of an inferior quality; or (d) that the defect was the result of damage by fire, explosion, power failure, or any act of nature.

Viavi performed repairs shall be warranted from defective material and workmanship for a period of ninety (90) days, or until the end of the Initial Warranty Period, whichever is longer. Risk of loss or damage to Product returned to Viavi for repair or replacement shall be borne by customer until delivery to Viavi.

Upon delivery of such product, Viavi shall assume the risk of loss or damage until that time that the product being repaired or replaced is returned and delivered to customer. Customer shall pay all transportation costs for equipment or software shipped to Viavi for repair or replacement. Viavi shall pay all transportation costs associated with returning repaired or replaced product to customer.

Warranty disclaimer

For hardware and/or services furnished by Viavi, the foregoing warranties are in lieu of all other warrantees and conditions, express or implied. Viavi specifically disclaims all other warranties, either express or implied, on any hardware, documentation or services including but not limited to warranties relating to quality, performance, noninfringement, merchantability or fitness for a particular purpose, as well as those arising from any course of dealing, usage or trade practice.

Under no circumstances will Viavi be liable for any indirect or consequential damages related to breach of this warranty.

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7SMART102 rev004/UM/07-18/AE
Rev 004, 07-18
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