# 4000 Base Unit

Portable, modular Platform designed for the construction, validation and maintenance of FTTx networks

User Manual

JDSU

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This 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 purchased from JDSU after 2005-08-13 can be returned for disposal at the end of its useful life. JDSU will ensure that all waste equipment returned is 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 the equipment to JDSU for appropriate disposal. If the equipment was imported by a reseller whose name or logo is marked on the equipment, then the owner should return the equipment directly to the reseller.

Instructions for returning waste equipment to JDSU can be found in the Environmental section of JDSU's web site at www.jdsu.com. If you have questions concerning disposal of your equipment, contact JDSU's WEEE Program Management team at WEEE.EMEA@jdsu.com.

# Table of Contents

# About This Guide

The 4000 Base-Unit of JDSU provides a portable, modular platform designed for the construction, validation and maintenance of FTTx networks.

The topics discussed in this chapter are as follows:

## Purpose and scope

The purpose of this guide is to help you successfully use the 4000 Base-Unit features and capabilities. This guide includes task-based instructions that describe how to install, configure, use, and troubleshoot the 4000 Base-Unit.

Additionally, this guide provides a complete description of JDSU'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 4000 Base-Unit 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 need assistance or have questions related to the use of this product, call or e-mail JDSU's Technical Assistance Center for customer support.

**Table 1** Technical assistance centers

| Region | Phone Number | |
|---|---|---|
| Americas<br>Telecom Products | 866 228 3762<br>World Wide: 301 353 1550 | tac@jdsu.com |
| Europe, Africa, and Mid-East | +49 (0) 7121 86 1345<br>(Europe) | hotline.europe@jdsu.com |
| | +33 (0) 1 30 81 50 60<br>(JDSU France) | support.france@jdsu.com |
| Asia and the Pacific Southeast Asia, Australia, and New Zealand | +852 2892 0990<br>(Hong Kong) | |
| | +86 10 6833 7477<br>(Beijing-China) | |
| All others | 866 228 3762 | tac@jdsu.com |

During off-hours, you can request assistance by doing one of the following:

– leave a voice mail message at the Technical Assistance number in your region
– e-mail North American Technical Assistance Center, tac@jdsu.com, or European Technical Assistance Center, support.uk@jdsu.com
– submit your question using our online Technical Assistance Request form at www.jdsu.com.

## Recycling Information

JDSU recommends that customers dispose of their instruments and peripherals in an environnmentally 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.

## Conventions

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

**Table 2** 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 |
| Code and output messages appear in this `typeface`. | `All results okay` |

**Table 2** Typographical conventions (Continued)

| Description | Example |
|---|---|
| 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 3** 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**. |

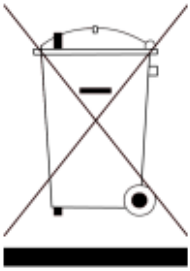
**Table 4** Symbol conventions

**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 5** 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.

# Introducing the 4000 Base Unit

# 1

The JDSU 4000 Base Unit is a portable, modular platform designed for the construction, commissioning and maintenance of FTTx networks.

The topics discussed in this chapter are as follows:

# Terminology used in this manual

To designate the modules making up the 4000 Base Unit, the following conventions have been adopted:

– User Interface Module designates the module comprising the screen and controls.

– Battery designates the compartment where the battery is set.

– Module designates, for example, the OTDR.

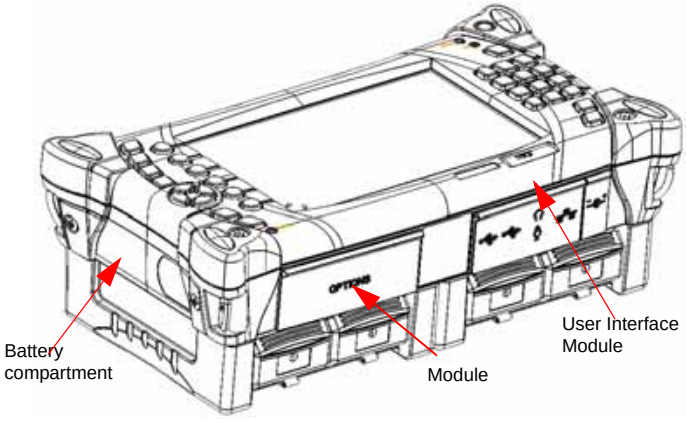



**Fig. 1** Designations of sub-assemblies of the 4000 Base Unit

# Laser safety

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 1<br>LASER PRODUCT | |
| Class 2 | LASER RADIATION<br>DO NOT STARE INTO BEAM<br>CLASS 2 LASER PRODUCT | CAUTION<br>LASER RADIATION - DO NOT STARE INTO BEAM<br>CLASS II LASER PRODUCT |

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.

## AC/DC and battery important safety instructions

In conformance with the recommendations of standard EN 61010, the instrument should be operated within the manufacturer's guidelines. Failure to do so may compromise the protection offered by the instruments design.

The 4000 Base Unit is supplied with a Lithium Ion rechargeable battery.

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

Batteries supplied by JDSU incorporate protection means.

If another adapter or battery is used, it may damage the 4000 Base Unit itself. Using the 4000 Base Unit with batteries other than those supplied by the manufacturer of the 4000 Base Unit 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.

**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.
– This product is intended to be used with a 3-wire grounding-type plug (a plug that has a grounding pin). This safety feature is vital to the safe operation of the instrument. Do not defeat the purpose of the grounding-type by modifying the plug or using an adapter.
– 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.

The 4000 Base Unit is equipped with a main supply for optical configurations

# Architecture

The architecture of the 4000 Base Unit is based on the superimposition of modules. This structure adapts to current applications in fiber optics and will adapt to future applications.

By the addition of modules, a lightweight battery-operated field instrument suitable for optical network maintenance can be converted into a complete apparatus with a high-level of performance and functions for the installation and upgrading of FTTx networks.

Modules are easily interchangeable in the field, reducing the number of instruments to be carried.

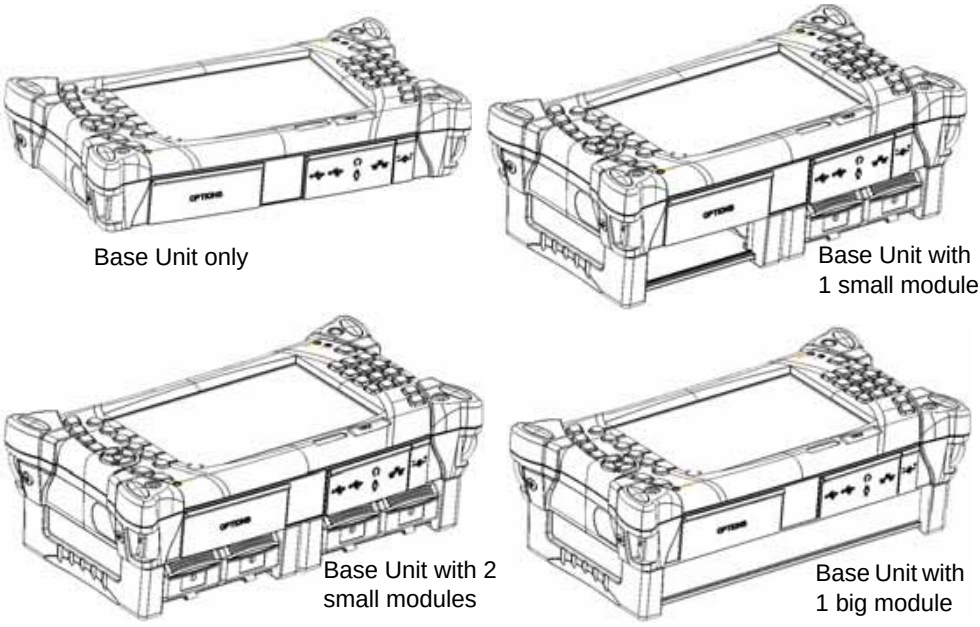



**Fig. 2** Possible configurations of the 4000 Base Unit

Whatever its configuration, the Platform 4000 has a user interface module with screen and controls and a battery compartment.

### Maximum configuration of the 4000 Base Unit

In addition to the user interface module, the 4000 Base Unit can include one big module, one small module and the other one empty, or two small modules.

## User interface

The topmost element of the 4000 Base Unit constitutes the user interface.

It is equipped with:

– a 7 inch TFT color screen, high visibility (optimized for outdoor use), which can be touchscreen on option
– hard keys or tactile keys (if the touchscreen option is available)
– numerous functions such as Fault Locator VFL (Visual Fault Location), power meter, optical microscope, bluetooth etc.
– remote front panel function etc.

The particularly simple user interface means familiarity with the instrument is quickly attained. This interface remains the same, irrespective of the options and modules with which the instrument may be equipped.

An external keyboard and a mouse (on option) facilitate data input.

## Technology

The 4000 Base Unit employs multi-tasking for the simultaneous performance of several operations (such as acquisition, modification of parameters, trace analysis, printing) and several functions (for example powermeter, OTDR measurements).

The measurement results can be stored in the internal memory (512Mb), or on the following options:

– internal memory extension (1 Gbyte)
– plug-in media (USB memory stick)

## Mechanical strength

Although it is extremely light, the housing of the 4000 Base Unit can resist harsh environmental conditions:

– its rubber protectors give it high shock resistance
– it resists water splashes.

The modules are very simple to install, requiring only a screwdriver.

## Software

The software can be easily updated from the harddisk of the PC,from Ethernet, or from a USB stick .

# Measurements

The 4000 Base Unit can be used to test FTTx networks:

– during the phase of design and production of equipment
– during the phase of installation and validation of such equipment in a network
– during the phase of network maintenance

# Starting up

# 2

This chapter explains the operations to be carried out before using the 4000 Platform.

The topics discussed in this chapter are as follows:

# Unpacking the instrument

Remove the 4000 Platform and its accessories from the packing case. Check that the modules and accessories ordered are all there.

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

The 4000 Platform is delivered with the following accessories:

– a USB memory stick, countaining the User Manuals for 4000 Platform, and modules.
– a battery which must be charged before use.
– a mains adapter used for mains operation of the instrument and battery charging
– a glove for the 4000 Platform (option)
– a soft carrying case for the 4000 Platform (option)
– a large soft case for one big module or two smalls, according to the module(s) ordered
– a small soft case for one small module,if one small module has been ordered

# Assembling the component parts of the 4000 Platform

– Assembly starts from the Interface module, which is placed face down on the work surface.
– The module(s) must then be fixed in place one after the other, using a screwdriver.

## Fitting and removing a module

The 4000 Platform must be switched off, and if it is operating on the mains, its supply cable must be unplugged.

### To fit a module

– Turn the instrument face down on the work surface.
– Set the two notches on the module part (1a) into the two holes provided for that purpose on the Base (1b).

– Make flush the 2 connections (2a & 2b), on module and base.
– Once positioned, fix the module to the base screwing the 2 screws fixing the receptacle.
– Repeat the same procedure for the following module if 2 small modules are to be used.

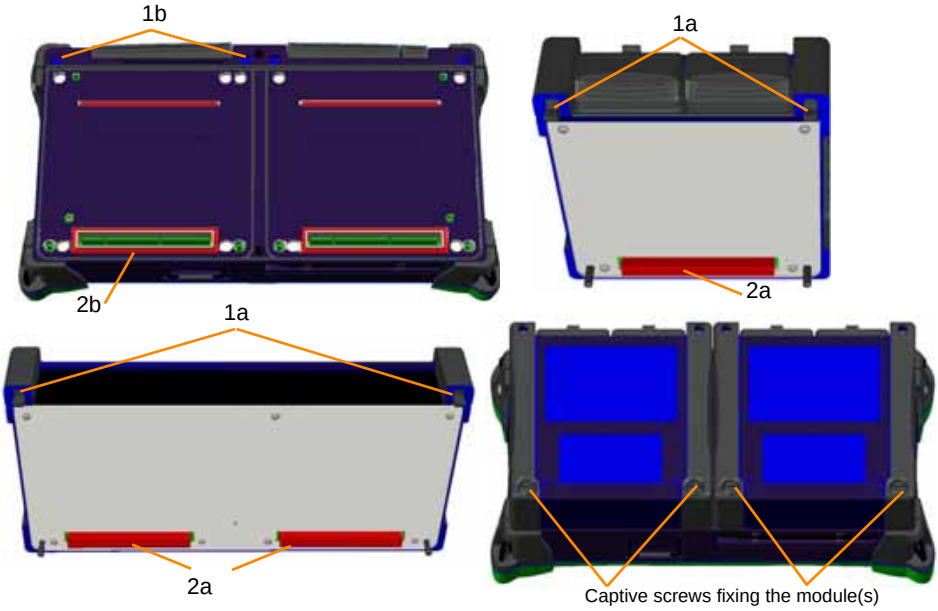



**Fig. 3** Fixing the module to the base

### Removing a module

**1** Unscrew the two captive fixing screws of the module completely (up to the stop).

**2** Remove the two slots of the module from their housing onto the base.

**3** Carefully slide the module out of its slot.

## Installing the backplate

The backplate, delivered on option, can be installed when no module is set onto the 4000 Platform.

### Installing the backplate

1. Turn the Platform face down, on the work surface.
2. Set the two notches (1a) of the backplate into the two holes of the base-unit (1b)
3. Once positioned, fix the backplate to the base, screwing the five screws fixing the backplate.

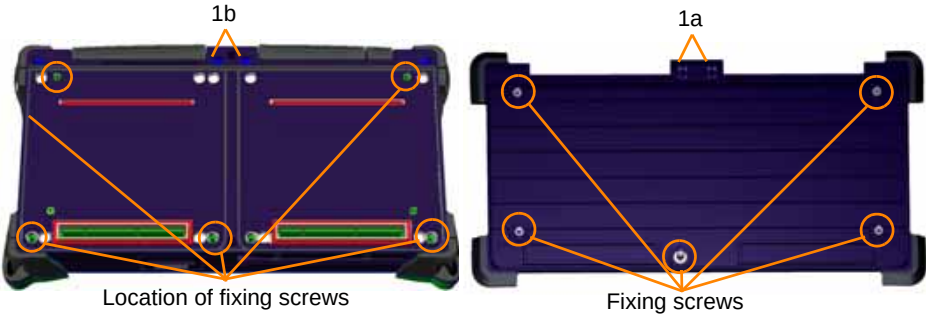



**Fig. 4** Fixing the backplate option onto the 4000 Base-Unit

### Removing the backplate

1. Unscrew the five fixing screws of the backplate completely (up to the stop).
2. Remove the two notches (1a) of the backplate from their housing onto the base.
3. Carefully slide the backplate out of its slot.

## Choosing the position of the instrument on the work surface

Depending on the conditions of use of the 4000 Platform, the instrument may be placed on a flat surface or held in the hand.

When used on a work surface, the 4000 Platform should be supported on its stand, which can be set in either of two positions, depending on whether the user is standing or sitting.

To change the stand from “seated user” position to “standing user” position,pull the stand towards you to unlock it from its housing.


**Fig. 5** Stay in positions for seated user and standing user

**The stand can be used only when one big module or two smalls is / are set under the base.**

## Setting the 4000 Platform into the glove

The glove for the 4000 Platform is furnished on option with the instrument.

This glove has been desgined to fit to the equipment, and to easily get access to all the commands of the product (interface, modules, connectors).

To set the 4000 Platform in the glove, take care of the sense of insertion: the screen must face the front of the glove.

Refer to Figure 6.

Once in the glove, the 4000 Platform can be set to the «standing» position, using the stay on the back of the glove.

**Fig. 6** Plaform View in the glove

# Battery management[1]

The battery supplied with the 4000 Platform must be fully charged before use.

A **Lithium Ion type** battery, 6 cells or 9 cells, is installed in the battery compartment.

## Charging the battery

### Connecting the mains adapter

Use only the mains adapter supplied with the 4000 Platform. The adapter for some other electronic device may appear to be identical, but entails a risk of damage to the 4000 Platform.

– At the top of the 4000 Platform, lift up the power supply socket protector and plug in the mains adapter.
– Connect the adapter to the mains. The **On** indicator lamp starts to blink in green.

1.if the 4000 Platform is equipped with a battery.

## Charging

If the instrument is fitted with a 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 lamp is 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.

Voltage must be superior to 14V to correctly charge the 9 cells battery (11V).

Only the 6 cells battery can be charged using the cigarette lighter adapter (provided on option). When this adapter is used with a 9 cells battery, the equipment can be used but the battery will not be charged (except if the vehicle is started).

## Battery charging time

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

– approximately 5.5 hours, if the apparatus is not in use (**Charge** indicator solid red)
– about 12 hours if the instrument is used during charging (**Charge** indicator lit in solid red).

## Battery endurance

A 6 cells battery is only guaranteed to deliver 20W and a 9 cells battery 30W, at ambient temperature. During discharge, battery increases its temperature.
Above 20W/30W at ambient temperature, the message **`Battery too hot, please turn power off`** may be displayed on the screen, inviting the user to shut off the equipment.

The user may or may not shutt off the product but the product may shut off later by itself, without warning.

The follonwng specifications are given for a MTS 4000 with one LiIon Battery, at 25°C, at full battery capacity (6.6 A.h), with one RLM OTDR module and without any options:

| | Endurance | |
|---|---|---|
| **Conditions of use** | **6 cells battery (7400 mV)** | **9 cells battery (11100 mV)** |
| According to Telcordia GR-196-CORE recommendation:<br>Normal conditons, with normal backlight, 3 acquisition of 30 seconds per quarter of hour, auto off | up to 7 hours | up to 11 hours. |
| Under continuous acquisition, with high screen backlight | Up to 3h15 | Up to 5h15 |

### Charge and On indicators

- **On** blinking green: the instrument is switched off but connected to an external power source.
- **On** solid green: the instrument is operating, either on batteries or an external power source.
- **Charge** solid red: the instrument is connected to an external power source and the battery is on charge.
- **Charge** solid green: the instrument is connected to an external power source and the battery is fully charged.
- **Charge** blinking red: the supply is not compatible with the battery used.

### Battery charge level display

When the battery is installed in the instrument, its charge level is displayed in the top right-hand corner of the screen and also as a charge percentage. Example: 80% .

It is essential to wait until charging is complete for maximum battery endurance, otherwise this may be considerably reduced and the level of charge may not be correctly displayed.

- When the battery charge level drops below 10%, a warning is displayed next to the  icon. Example: 4% When the level becomes too low, the instrument switches off automatically after saving the current configuration.

In the table below is a summary of the battery icon according to the charge level:

**Table 1** Color of the battery Icon according to charge level

| Icon | Charge level |
|---|---|
|  | From 100% to 70% |
|  | From 70% to 40% |
|  | From 40% to 10% |
|  | From 10% to 0% |

## Access to the battery

– Switch off the instrument and disconnect the mains supply.
– On the left side of the equipement, loosen the captive screws (a) at both sides using a Philips head screwdriver.
– Remove the battery door, pulling with the help of the screws
– Pull the battery to disconnect it from the base, taking care not to damage the connector into which it is plugged.

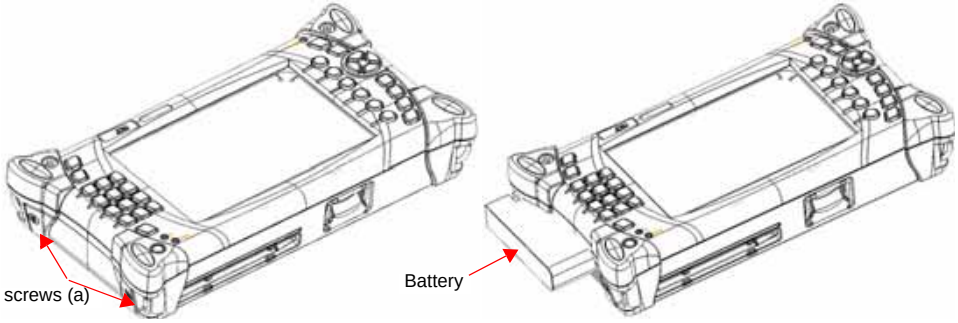



**Fig. 7** Battery seatings

When putting the battery back into its seating, make sure that its connector engages correctly with the one of the base.

Make sure that the connector of the battery engages properly with the one of the base. Tighten the screws, as securing the battery by the connector alone will not ensure uninterrupted operation.

### Safety recommendations

The Lithium Ion 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.

Use only the battery supplied with the 4000 Platform. Batteries supplied with other electronic devices may appear to be identical, but entail a risk of damage to the 4000 Platform.

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.

## Switching the 4000 Platform on and off

The mains adapter is used not only for charging the battery (if the battery is installed), but also for operating the 4000 Platform on the mains, if a mains socket is at hand, to save the battery.

### Switching on the 4000 Platform

#### Switching on using the battery

– Press the **ON/OFF** key.The **On** indicator pass from blinking to solid green.

The JDSU logo appears on the screen briefly, then an autotest is carried out, the software is installed (this just takes a few seconds), then the screen goes dark for about three seconds.

Then, the **Help** screen appears (see "Presentation page of the 4000 Platform" page 20).

The equipment is ready to be used once the **Home** page is displayed, or once the **result** page of the function selected before the Platform has been switched off and restart is displayed..

### Mains operation

If the instrument is to operate on the mains:

– lift the protective cover over the power supply socket on the upper part of the 4000 Platform (upper left side, with the icon  ) and plug in the mains adapter.

– press the **ON** key (if this is not done, and the instrument is equipped with a battery, it will switch over to charging of the battery).

  The JDSU logo shows briefly and is followed by an autotest, the software is installed (this just takes a few seconds), then the screen goes dark for about three seconds.

  Then, the **Help** screen appears.

  Finally, the equipment is ready to be used once the **Home** page is displayed, or once the **result** page of the function selected before the Platform has been switched off and restart is displayed.

**NOTE**

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

**The module cannnot be swapped when the unit is ON or AC powered**

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 4000 Platform

While the 4000 Platform is operating, press the **ON/OFF** button to switch it off.

**Disconnect the jack connector of the AC/DC power supply before disconnecting the AC/DC mains**

**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.

### Reset

If the 4000 Platform freezes, prolonged pressure (about 4 s.) on the **ON/OFF** key will reset the instrument.

## Presentation page of the 4000 Platform

The presentation page of the instrument is called up by pressing the **HOME** button, followed by **Help**. It also appears when the instrument is switched on.

This page shows:

1. the version of the softwares installed in the instrument,
2. the base options; base reference, Power Meter, Bluetooth, touch-screen, extension memory, battery reference...and the date of calibration for concerned options. The options set into the base are marked with a green tick.
3. the modules installed (including serial number and date of last calibration).

**NOTE**

The first module in the page corresponds to the module on the left side of the Platform, when you face screen.

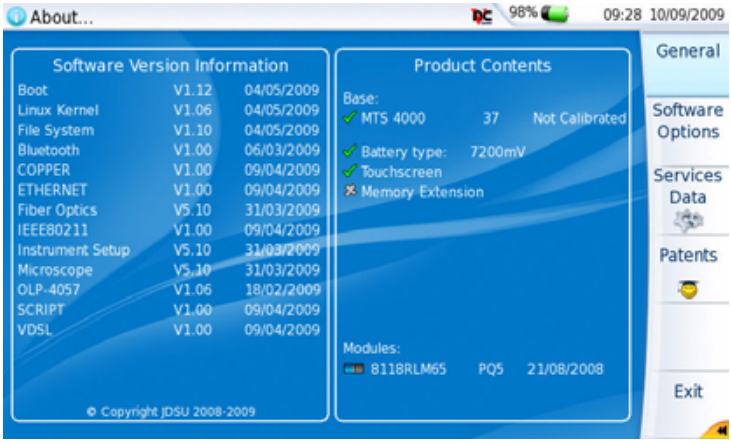



**Fig. 8** Example of presentation screen

The **Software Options** key allows to reach a screen in which the software options can be visualized (ask your local agent JDSU to get information about softwares options avaialble).

The **Services Data** key allows to display information about the services available: CPU, memory, hardware revision, screen reference, packages...

The **Patents** key allows to display the number of the patents according to the configuration of the 4000 Platform of client.

# Troubleshooting

| Troubleshooting | Solution |
|---|---|
| Nothing happens when the **ON/OFF** key is pressed. | Make sure that the battery is present or the mains adapter is properly connected. |
| You are using the 4000 Platform in the ordinary way when it suddenly switches off. | The parameters of the instrument may have been set so that it switches off automatically after a predefined time of inactivity to save the battery. Work in progress is first saved in the memory. See ."Screen saver" page 50 Otherwise, check the battery charge level. |
| 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. |

# Controls of the 4000 Platform

# 3

This chapter describes the controls of the 4000 Platform.

The topics discussed in this chapter are as follows:



The 4000 Platform is a multi-tasking instrument: the user can simultaneously carry out an acquisition, modify the configuration parameters, print out results and access the directory of the internal memory.
In some cases, it is even possible to perform several measurement operations at the same time, but only the result of the function selected can be displayed.

# Control interface

The Interface module of the 4000 Platform embodies the controls and display needed for measurement analysis:

- the display screen, with the associated menu keys on the right.
- the **ON/OFF** button and the operating & battery charging indicators.
- the general control buttons: **CANCEL** / **FILE** / **SETUP**/ **HOME** / **RESULTS**
- the measurement control key:**START/STOP**
- the **Test** indicator (lit during a measurement)
- direction keys for scrolling through the menus
- a numeric keypad on the left
- the validation key **ENTER**.
- the key **AUTO** which calls up the **Macro** function
- the **SHIFT** key ⇧ to use the shortcuts .
  ⇧ + 3: rise luminosity / ⇧ + 6: decrease luminosity
  ⇧ + 9: rise sound / ⇧ + # : decrease sound
  ⇧ + **HOME**: full scale (in trace display mode)

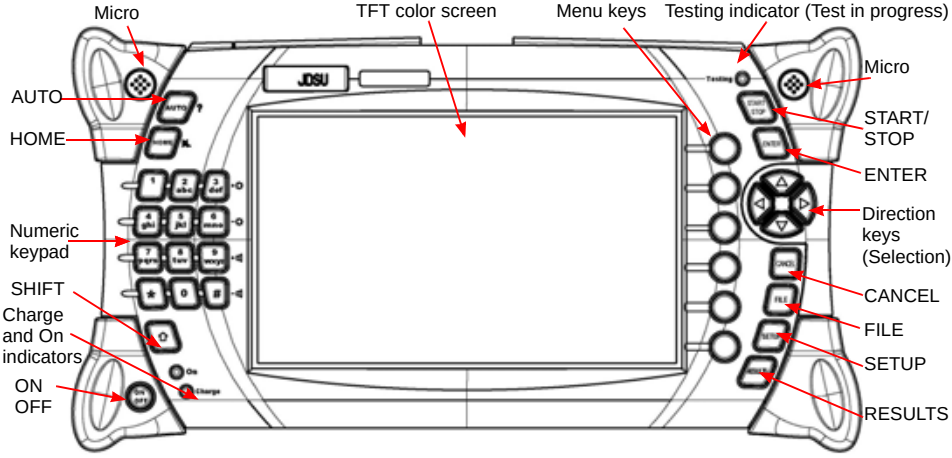



**Fig. 9** Controls of the Interface module

**NOTE**

The **Print** function is available by pushing simultaneously the left and right direction keys.

## TFT display screen

The 4000 Platform has a large, 7 inch TFT color screen, with a resolution of 800 x 480, back-lit:

– either a high visibility TFT screen, for hight visibility outdoors and indoors.

– or the high visibility screen supplied may also be a touch screen (option).

### The different zones of the screen

The display is divided into 3 zones:

**1** the central zone, displaying the configuration or the results of measurements.

**2** at the top, in the status bar, in the form of icons:

| | |
|---|---|
|  | a different icon according to the type of application and / or the name of this function |
|  | if visual fault location (VFL) is activated |
|  | if data saving is in progress |
|  | if the VNC function is used |
|  | if a battery is set in the Platform, the icon and the battery charge level (see "Battery charge level display" page 16). |
|  | if a USB stick is connected |
|  | if a printing process is in progress |
|  | if the Web Browser application is active |
|  | if the PDF viewer is activated |
|  | if the text editor application is active |
|  | if the calculator application is active |
|  | if the Mail application is active |
|  | if the Contact application is active |
|  | if the Calendar application is active |
|  | if the VNC Viewer application is active |
|  | if the Ethernet connection is established (  if it is cut) |

– current date and time.

**3** at the right side, rigid function keys (or tactile on option).

## Control buttons

The buttons below the screen provide the following functions:

**ON OFF**

Main on/off switch

**HOME**

This button gives access to:

– selection of the different measurement or base functions

– the configuration menus of the instrument (choice of module(s) used), When the instrument is switched off, its configuration is stored in the memory, as are the measurement results.

– the configuration menus of the system (screen, date, language, print-out, etc.).Once you have pressed the **System Settings** key, you can select:

  – the display parameters: screen illumination, automatic shut-down.

  – the parameters specific to the country of use: date, time, format of date/time, language.

  – the input/output parameters: optical switch, Ethernet, e-mail configuration.

  – the audio parameters (Headset / Hands-free function)

  – the initialization of automatic shutdown of the instrument.

For a complete description, see "System set-up" page 43.

**NOTE**

The configuration menus can be displayed, and modified if required during acquisition or measurement.

**SETUP**

This button calls up the measurement configuration menu. This menu depends on the function in use.

**RESULTS**

This button calls up the results page (e.g. with OTDR module: reflectometry trace, results and table of results) and is used to analyze results.

**FILE**

This button calls up the file and directory management menu.

It allows to:

– to choose the storage medium: internal memory, USB memory key, extended internal memory; file name and format; information relating to the data stored in the file.
– to store files or retrieve them for selection, copying or deletion; with facilities for classifying them in directories and sub-directories.

**START/STOP**

Starts and stops the measurement.

**NOTE**

All these functions, except **HOME**, depend on the modules used and the measurements made: refer to the user manuals of the corresponding modules of the 4000 Platform.

**AUTO**

This button allows to launch the Script function. This can only be activated if a module is set onto the 4000 Platform.

**CANCEL**

This button allows to deselect a function on the Home page, or to quit the edition/numeric keypad without validating the modifications.

## Numeric keypad on the 4000 Platform

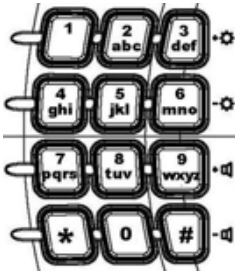



**Fig. 10** Numeric keypad of the Platform

The numeric keypad is very useful to quickly enter numerical values but also letters when the edition or numeric keypad is displayed on the screen (see “Editing” on page 31).

The numeric keypad on the Platform works like the numeric keypad displayed on the screen: push on a number to display it.

The numeric keypad of the Platform can also be used when the edition keypad is displayed on the Platform screen.

– To enter exclusively numbers, select **123...** with the key 

and type the number(s) wished to display it/them.

– To enter letters and numbers, select **abc2...** with the key 

and type as many times as necessary on a key of the numeric keypad of the Platform to insert the character wished.

  For example, to enter the letter «o», push three times the button «6». If you click one again, you will display the number «6».

– Some specific characters (e.g. @, /...) can be entered using specific keys from the Platform keypad:

| Key pressed | Character displayed one after the other |
|---|---|
| 1 | . , - ? ! " @ : / 1 |
| 0 | space 0 |

## Indicators

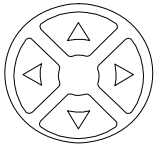
**On**
**blinking green**: the instrument, though connected to an external power source, is switched off.
**solid green**: the instrument is operating, either by battery or on an external power supply.

**Charge**
**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**
**blinking red**: at least one function is in measurement phase (for example, the laser emission pilot for an OTDR measurement).

## Direction keys

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 **ENTER** key serving to select or confirm the parameter chosen.

# Using an external keyboard, mouse and touchscreen (options)

The external keyboard facilitates input of:

– alphanumerical configuration parameters
– comments in the File menu
– editing characters

The mouse can be used instead of the direction keys to scroll through menus and make a selection.

Connect the keyboard and mouse to the USB connectors.

## Virtual control buttons bar

It is possible to emulate hard keys with Virtual Control buttons

To display these buttons, click once on the top of the screen in the status bar, at the same height than the date and time.


**Fig. 11** 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 real buttons in the front panel of the 4000 Platform.

The printing function is available in this bar, whereas no softkey exists for this function on the platform.

**NOTE**

This virtual control buttons bar is especially useful when the 4000 Platform screen is exported on a remote PC (see "Transfer of the interface of the 4000 Platform on to a PC" page 37).

## Equivalence between external keyboard and 4000 Platform

Although it is intended primarily to replace the Edit menu of the 4000 Platform, the external keyboard can replace all the buttons and keys of the 4000 Platform except the **ON/OFF** button**:**

– The menu keys to the right of the screen 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 4000 Platform.

| Function on the 4000 Platform | External keyboard |
|---|---|
| HOME | Ctrl + H |
| SYSTEM SETTINGS | F12 |
| SET-UP | Ctrl + U |
| FILE | Ctrl + F |
| RESULTS | Ctrl + R |
| START/STOP | Ctrl + S |
| SCRIPT (Macro)[a] | Ctrl + M |
| PRINT | Ctrl + P[b] |
| ◀ ▲ ▶ ▼ | ← ↑ → ↓ |
| Menu keys 1 to 6 (from top to bottom) | F1 → F6 |
| ABOUT | F11 |
| Save and quit (Exit) | Entrée/Enter |
| Quit without saving (Abort) | Escape/Echap. |

a. The Macro function is called on the 4000 Platform using the **AUTO** key
b. The Print function is available directly on the 4000 Platform pushing simultaneously the left and right arrow keys.

## Editing text using the external keyboard

To use the external keyboard to insert a name or identification in the set-up menus, or a Note in the table of results:

**1** Press **Enter** to go into the Edit menu

**2** Type the text

**3** Press **Enter** to leave the Edit menu.

Pressing the **Esc** key close the Edit menu without saving the text.

# Editing[1]

In the set-up menus, it is sometimes necessary to enter alphanumerical information for names of files or results or for comments.

To call up the Edit menu, select the name to be modified, then press the ▶ key. The Edit menu will appear.

This menu can be used to simulate a keyboard: it displays available characters and function keys. Some Edit menus may include keys specific to the current function.

The name to be modified is displayed above the keyboard. The cursor can be moved about over the name to be modified and the characters available, using the direction keys or a mouse or an external keyboard: see "Using an external keyboard, mouse and touchscreen (options)" page 29.

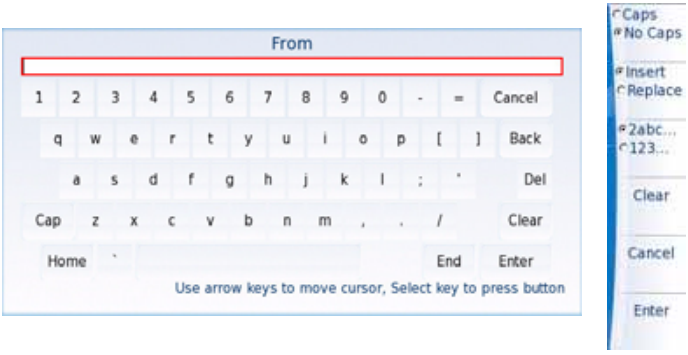



**Fig. 12** Example of Edit menu

– The **Caps/No Caps** key enables the keyboard to type either upper case letters or lower case letters and figures (as well as punctuation marks and certain special characters).
– The **Insert/ Replace** key selects the action which will be performed by the confirm key **ENTER**: either insertion of the character selected by the position of the cursor, or replacement of the highlighted character, by the character selected.

1.If an external keyboard is used, see "Using an external keyboard, mouse and touchscreen (options)" page 29

- The **2abc...** key allows to use the numeric keypad to enter numbers and letters. The **123...** key allows to enter exclusively numerical values using the numeric keypad.
- Using the keyboard, with the cursor positioned on the name:
  - confirming **DEL** deletes the character after the cursor;
  - confirming **CLEAR** deletes all characters from the edit line;
  - confirming **BACK** deletes the character before the cursor;
  - confirming Cancel will close the edition menu without applying the modifications
  - confirming **HOME** moves the cursor to the beginning of the word;
  - confirming **END** moves the cursor to the end of the word.
- The **Enter** key saves the name that has been entered and quits the Edit menu.
- The **Cancel** key quits the Edit menu without saving any changes that may have been made.

### To enter text:

- Press the **Caps/No Caps** key, depending on the case of the character to be entered.

| Without Touch Screen | Using Touch Screen |
|---|---|
| - Using the direction keys, move the cursor onto the first character required.<br><br>- Press the **ENTER** validation key.<br><br>The character will appear in the upper box.<br><br>- Repeat the process for the remaining characters. | - Directly click onto the character you want.<br><br>The character will appear in the upper box.<br><br>- Repeat the process for the remaining characters. |

**To delete characters in a text:**

| Without Touch Screen | Using Touch Screen |
|---|---|
| - Go into **Replace** mode and move the cursor on to the character to be deleted.<br><br>- Move the cursor on to **Back** (or **Del**) and press the **ENTER** validation key.<br><br>Repeatedly pressing this same key will delete the preceding (or following) characters. | - Go into **Replace** mode and position the cursor on to the character to delete.<br><br>- Click on the **Back** touch (or **Del**)<br><br>Repeatedly clicking on this same key will delete the preceding (or following) characters |

**To insert characters in a text:**

| Without Touch Screen | Using Touch Screen |
|---|---|
| - Go into **Insert** mode and place the cursor on the name at the insertion point.<br><br>- Using the direction keys, move the cursor on to the first character to be inserted.<br><br>- Press the **ENTER** validation key.<br><br>Repeat the process for the other characters to be inserted. | - Go into **Insert** mode and place the cursor on the name at the insertion point.<br><br>- Directly click on the character you want<br><br>Repeat the process for the other characters to be inserted. |

### Quitting the Edit menu

– Press the **Cancel** key to quit without saving the action performed (onto the keyboard or on the screen).

– Press the **Enter** key to quit the menu while saving the text entered (onto the keyboard or on the screen).

## Numeric Keypad

For some configuration parameters, you will have to enter numeric values. The direction keys of the 4000 Platform can be used. However, the user can also use the numeric keypad, displayed when the **Edit Number** key is pressed.

Click on **EDIT NUMBER** to display the Numeric Keypad.


**Fig. 13** Example of Numeric Keypad

The keys **Min** and **Max** are displayed when the parameter has a minimum and maximum value (for example, for the screen lighting level, pressing the **Min** key will display the value -5 and pressing the **Max** key will display the value +5).

– The direction keys ^ v allow to increment of +/-1 the selected value.
– The direction keys < > allow to select the previous or the next figure.
– **Clear** key: delete all the displayed value (same function as the Clear key of the screen)
– **Cancel** key: quits the Edit Number menu without saving any changes that may have been made (same function as the Cancel key of the screen)
– **Enter** key: saves the name that has been entered and quits the Edit Number menu (same function as the **ENTER** key of the screen).

### Modifying / Changing a value with the numeric keypad

When the Edit Number menu is oopened, the first figure of the value is selected.

| Without Touch Screen | Using Touch Screen |
|---|---|
| - Move the cursor to the first number to be inserted.<br><br>- Press the **ENTER** validation key.<br><br>Repeat the process for the other characters to be inserted. | - Directly click on the number to be inserted<br><br>Repeat the process for the other characters to be inserted. |

# Accessing the 4000 Platform from a PC

The 4000 Platform can be connected to a PC in order to:

– remote the screen of the 4000 Platform on to the PC and issue commands from the keyboard of the PC

– access the internal memory of the 4000 Platform from the PC and transfer files from the 4000 Platform to the PC and vice versa.

## Connecting the 4000 Platform to a PC

**NOTE**

The Ethernet card of the equipment connected to the 4000 Platform must be configured to the Auto-detect mode (Auto negociation).

### *Direct connection*

**1** Connect directly the 4000 Base Unit to the PC with a crossover or straight-through Ethernet cable, using the RJ45 connectors on each equipment.

**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 seleted (◉); if not, click on the button to select it.

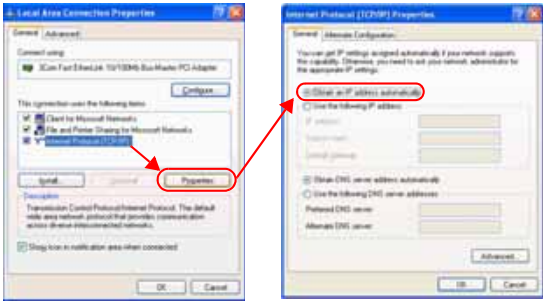


**Fig. 14** Internet Protocol

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

**3** On the 4000 Base Unit, in the **System Setup** page, under **I/O interface > Ethernet**, select **Dynamic**.

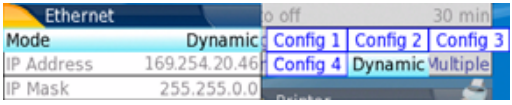



**Fig. 15** System Setup > Ethernet: Dynamic mode

**4** Wait for about ten seconds while the connection is established.

***Connection via a local network***

**1** **On the PC**: find the IP address and the mask of the PC's sub-network:

– With Windows 98 or Millenium: Select **Start > Execute**, then enter `winipcfg`[2] and click on **OK**.

– With Windows NT, 2000, XP or Vista: select **Start > Programs > Accessories > Dos Prompt**, type `ipconfig`", then **Enter**.

Note the IP address and the mask of the PC's sub-network.

**2** Plug the RJ 45 connector of the 4000 Platform into a hub or Ethernet switch with a straight-through Ethernet cable

**3** **On the** 4000 Platform:
In the system set-up menu, under **I/O interface > Ethernet**, select **Config 1** (or 2 / 3 / 4) on the line **Mode**, then enter the **IP address**, the **IP mask** of the PC and the **IP gateway** communicated to you by the network manager;

2.The character _ corresponds to a space.

or

on his recommendation, use **Dynamic** attribution mode (DHCP). In this case, the address of the 4000 Platform (`10.10.50.204` in the example) is displayed but cannot be altered.

4 Wait for about ten seconds while the connection is established.

5 On the PC, make sure that the connection is operational by selecting **Start > Execute...** and typing `ping` followed by the address of the 4000 Platform.

## Transfer of the interface of the 4000 Platform on to a PC

1 Make the 4000 Platform / PC connection as described above.

2 **On the** 4000 Platform in the system set-up menu, under I/O interface, confirm **Remote screen** = **Session / Permanent / Permanent with password** (for more information, see "Remote screen" page 51).

3 **On the PC**, go into Internet Explorer and type the address:
`http://10.10.50.204:5800`
if `10.10.50.204` is the IP address of the 4000 Platform that was defined when the connection was set up.

A VNC window will open demanding a password: press **Enter** without typing any password.

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) and Real VNC (V 4.1.1).

The screen of your 4000 Platform will then appear offset on to your PC. You can use the keyboard and mouse of the PC to control the 4000 Platform: see "Using an external keyboard, mouse and touchscreen (options)" page 29, for the command equivalents between the controls of the 4000 Platform and those of the PC keyboard and mouse.

Moreover, via the VNC window, you can launch a rebooot of the Platform, typing `Ctrl + Q` on the PC keyboard and validating.

## Accessing the internal memory or the USB memory stick of the 4000 Platform via a PC

Il is possible, from a PC, to access the internal memory of the 4000 Platform or to the USB memory stick connected to the Platform by means of the FTP server of the 4000 Platform.

FTP access is obtained through the user account «fttx» (password: fttx).

1. Make the 4000 Platform / PC connection as described above.
2. On the PC, use either an FTP client or Internet Explorer.
3. In Internet Explorer, type the following address (`10.10.50.204`, which is the IP address of the 4000 Platform that was defined when the connection was set up):

   `ftp://mts4000:JDSU@10.10.50.204/disk/`
   This allows to access to internal memory.

   `ftp://mts4000:JDSU@10.10.50.204/extmem/`
   This allows to access to extended internal memory (option).

   `ftp://mts4000:JDSU@10.10.50.204/usbflash/`
   This allows to access to the contents of the USB memory stick connected to the 4000 Platform.

If you use Internet Explorer 7, the following adress must be entered:

`ftp://mts4000:JDSU@10.10.50.204/acterna/user/disk` or `ftp://mts4000:JDSU@10.10.50.204/acterna/user/extmem` or `ftp://mts4000:JDSU@10.10.50.204/acterna/user/usbflash`

The PC then displays the contents of the internal memory, of the internal extended memory or of the USB memory stick of the 4000 Platform.

### *Creating a shortcut toward the 4000 Platform internal memory*

You can add on your PC, a direct connection to the internal memory of the 4000 Platform, creating a shortcut in the network place, in the Explorer.

To create a network place, do as follows:

1. Open the Explorer on your PC
2. Double click on **Add Network Place**
   The Wizard for the Network Place installation opens


**Fig. 16** First page of the installation

3 Click on **Next**

4 In the dialog box, click on 

, then on **Next**

5 In the following dialog box, type the following address (`10.10.50.204`, being the IP address of the 4000 Platform defined during connection):

`ftp://mts4000:JDSU@10.10.50.204/disk`
(access to internal disk of the 4000 Platform)


**Fig. 17** Entering the ftp address

**NOTE**

You can access to the internal extended memory (option) or to the USB memory stick connected to the 4000 Platform typing respectively `extmem` or `usbflash` instead of `disk`.

6 Click on **Next**

7 Enter a name for this Network Place

**Fig. 18** Name of the Network Place

**8** Click on **Next**

The PC is searching for the connection

**9** The last dialog box inform you the network place has been successfully created, and will be open once you click on **Finish**.

Deselect this parameter if the internal memory of the 4000 Platform must not be opened on the PC.


**Fig. 19** Completion of the Network Place installation

In the Explorer > Network Place, the new shortcut is displayed, with the name applied on step 7.

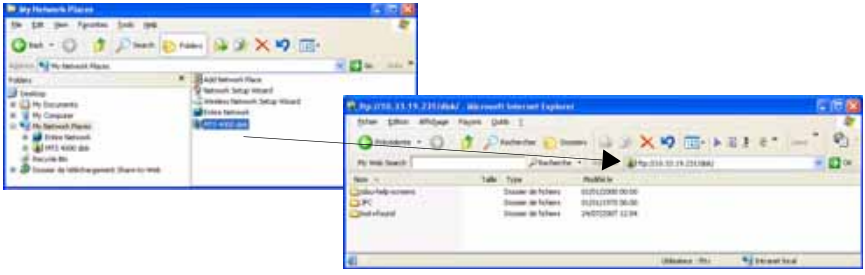


**Fig. 20** Network Place created

# Connectors

## Upper panel

The upper panel contains, from left to right, the following elements (see example below):

- the connection socket for the mains adapter providing the 15 V power supply and used to charge the battery,
- the RJ 45 connector for the Ethernet interface,
- the headset plug-in
- the 2 USB connectors for printer, mouse, keyboard, USB memory stick...

**USB memory sticks can be very different.**

They differ on Hw and Sw aspects, even inside a given brand.

In particular, USB memory sticks targeting audio recording are often formatted in very specific ways and the format is often very different from a standard FAT.

For all these reasons, we advise users to use memory sticks provided by JDSU.

In any case, USB memory sticks which are recognized by the 4000 Platform (a sound is generated when plugged on the 4000 Platform) but which cannot be read or written, **should be formatted on the** 4000 Platform with the Usbflash Format utility, in **Expert tools** > **Media utilities**.

If a problem occurs with the USB stick you are using, contact your Local Technical Assistance Center.

- the powermeter plug-in if the option is available
- if the VFL option is present, the corresponding output
- the internal memory extension, which is delivered on option and cannot be reached by the user

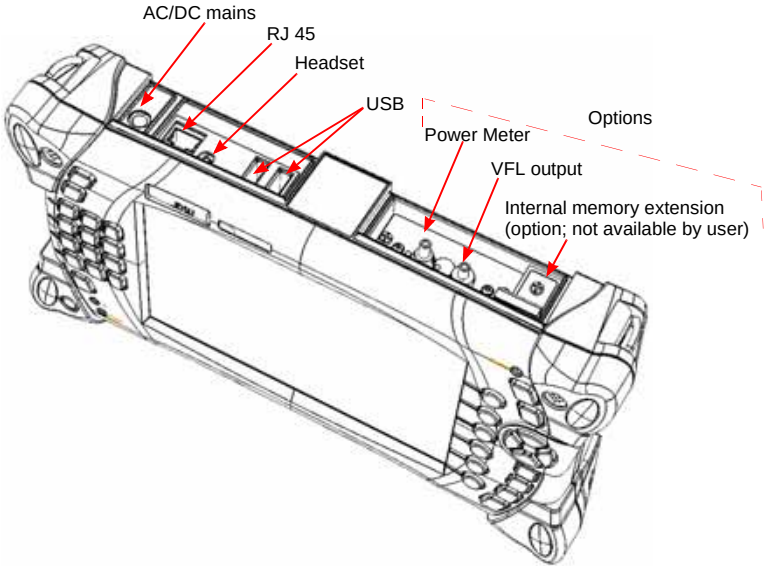



**Fig. 21** Example of upper panel

# System set-up

# 4

This chapter describes the operations for configuring the instrument (choosing the module or function to be used) and the system (date, language, input/output, etc.).

The topics discussed in this chapter are as follows:

**The procedures described below usually use the direction keys. When the instrument is equipped with a mouse or/and a touch screen:**

**- the user must adapt the text to the option used; which means that for touch screen and mouse, the user must directly click on the desired field.**

**- to edit a string of characters, the ▶ key of the equipemnt must sometimes be used.**

## Principle of the set-up menus

A set-up can be displayed or modified while an acquisition or measurement is in progress. The parameters that cannot be modified are greyed out. The menu thus gives all the possible options.

– To move from one parameter to another, use the direction keys ▲ and ▼. When a parameter is selected, its possible values are shown to the right of the parameter.

– To modify the value of a parameter, use the direction keys ◀ and ▶ to highlight the option selected.

– To leave a set-up menu the user can press any of the keys below the screen or the menu key **Exit**.

## Configuring the instrument

Since the instrument can be equipped with a range of modules and plug-ins, a variety of functions are possible. Before carrying out a particular measurement, it is therefore necessary to select the function or functions required for it

If a module has been changed, the instrument configuration menu will automatically be displayed as soon as the power is switched on.

The functions of Reflectometry, Visible Source (VFL), Power Measurement (Radiometry) are not mutually exclusive: several functions can be active at once.

### To configure the instrument, proceed as follows:

– Press the **HOME** button.

The functions available on the instrument are represented graphically by icons.

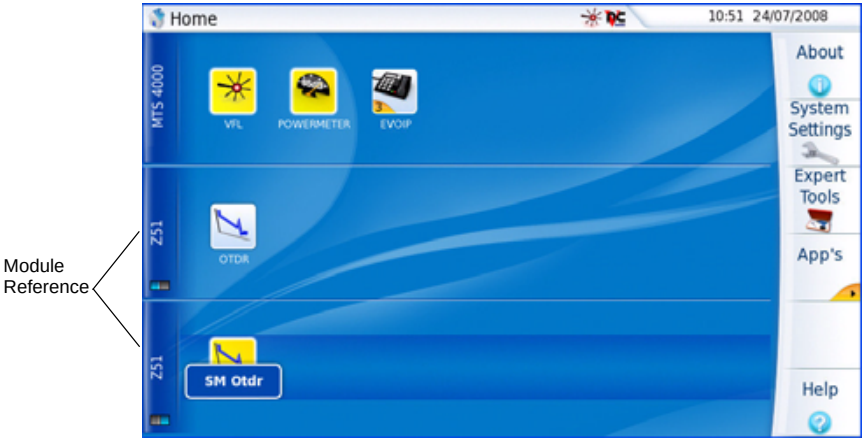



**Fig. 22** Example of instrument configuration

**To validate a function:**

– Move on to the icon representing the function to be validated using the direction keys (or the mouse or external keyboard if the corresponding option is present).

**NOTE**

You can also use the numeric keypad of the base, selecting the number displayed for each function.

– Press the **ENTER** validation key to confirm the selection. The icon turns yellow and is outlined with a white frame.

## Validating several simultaneous functions

It is possible to validate several distinct functions, whether or not they are elements of the same application. Thus it is possible, for example, to activate the microscope function at the same time as the OTDR function by validating each of them.

When several functions are validated, pressing the keyboard keys (**SETUP**, **FILE**, **RESULTS**, **START/STOP**) will give access to the function in focus (in yellow).

To change from one function to another:

– If the functions are elements of the same application (for example, Optical Fibres), simply change tabs (refer to the manual corresponding to the application).

– If the functions are not elements of the same application (for example, to change over from the OTDR function to the VFL function), return to the instrument configuration screen shown here and place the focus on the VFL function. The actions of the keyboard keys will then indeed be those corresponding to the VFL function.

## Help

The **Help** Page from the **HOME** menu display the Getting Started manual contents, in a web page (in english).

## About

The **About** page allows to display the presentation screen, with all the information concerning the softwares versions, the hardware options and the module installed (see Figure 8on page 20).

Once this page is displayed, you can click on the **Software Options** key to visualize the software options available on the 4000 Platform, ordered according to specific categories (Copper, DSL, Ethernet, OTDR ...). Use the direction keys to scroll through the options available


**Fig. 23** Software Options page

In ths **About** page, you can also click on **Services Data** key, which allow to display information about the elements inside the Platform (CPU, Memory, hardware revision, screen reference...).


**Fig. 24** Services Data page

The **Patents** page allows to display the number of the patents according to the configuration of the 4000 Platform of client.


**Fig. 25** Patents screen

## Configuring the unit

When the 4000 Platform is to be used for the first time, or before a measurement campaign is started, the parameters of the system must be configured:

- the parameters specific to the 4000 Platform (screen lighting level, automatic shutdown).
- the parameters specific to the country of use: language, date, time, display format of date and time.
- parameters of input/output.
- audio parameters (heaset / hands-free) and regulation of sound level
- programming of automatic shutdown (during battery operation).
- IP adress for upgrading via the network
- parameters for printing

To call up this configuration menu, press the **HOME** button, then **System Settings.**

**NOTE**

The key **FACTORY DEFAULT** allows to reinitialize the configuration set in factory, in case of error during the new configuration.


**Fig. 26** System configuration screen

## Factory Default Configuration

### Screen

- Backlight: +0
- Contrast: Indoor
- Screen Saver: No

### I/O Interface

- Remote Screen: No
- Ethernet: Config. 1 / Security: Standard

– File Export: None
– Bluetooth: Disable
– Use proxy: No

**NOTE**

The Bluetooth selection appears only if the option is installed on your unit. It requires factory-installed hardware.

### Country

– Language: English
– Date Format: dd/mm/yyyy
– Time Format: 24 hour clock

### Audio

– Channel: Hands-free
– Hands-free Volume: 0
– Headset Volume:0

### Utility

– VFL Mode: 1Hz
– Auto off: 30 minutes (only on battery operation)
– Upgrade Parameters: Server name: 4k.updatemyunit.net
– Home Selection: Multiple

### Printer

– Printer : None

## Screen

### Choosing screen lighting level

In the **Screen** window, move the cursor on to **Lighting**.

– use the direction keys → or ←, to choose the desired lighting level (between -5 and +5).

  or

– click on **Edit Number** to enter the screen lighting level on the numeric keypad

If the 4000 Platform is operating on battery, it is advisable to choose a minimum lighting level acceptable for the user, to keep endurance as long as possible.

### Contrast

– Indoor: to be selected when the instrument is used inside (see Figure 26on page 48)

– Outdoor: to be selected in order to optimize the readability of the screen for an outside use.


**Fig. 27** Example of Outside contrast

### Screen saver


This feature is available both when battery powered or AC powered. Its purpose is to extend the life of the screen, in case the 4000 Platform is not used for some time. Instead of the normal screen, a small animated picture is displayed on the blackened screen, eventually followed from time to time by a name and phone number (if configured by the user).

To configure this feature, select **Screen Saver**.

A sub-menu is displayed :

| | |
|---|---|
| Screen saver | **60s**, **3 min**, **5 min**, **No**.<br>**No**: disables the screen saver.<br>Other values indicate time of inactivity before the screen saver automatically starts. If the screen saver is enabled (a time is set), the following two lines are proposed. |
| Name | A name or comment may be entered. This name or comment may be usefull to persons who find the 4000 Platform in the screen saver mode. Information such as who currently uses the apparatus, where to find the person or any other commercial information may be entered. |

| | |
|---|---|
| Phone number | A phone number or other comment may also be added in order to provide more information : number to call in case of emergency, user telephone number... |

## Country

### Choosing language (Language)

Select one of the languages offered, using the direction keys → or ← .

**NOTE**

The **ENGLISH CAPS** parameter allows to get a display in English, with all words in capitals.

### Resetting the date

Change the date by using the direction keys → or ← .

### Resetting the time

– Use the direction keys → or ← to change the minutes and hours.

### Choosing date and time format

Choose one of the options: dd/mm/yy or mm/dd/yy for the date format.

Use the direction keys → or ← to change the hour format (12 hour clock / 24 hour clock).

## I/O Interface

### Remote screen

It is possible to remote the screen of the 4000 Platform on to a PC and to read the contents of the disk of the 4000 Platform on a PC. To do this, see ."Accessing the 4000 Platform from a PC" page 35

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

| | |
|---|---|
| Session Mode | the remote screen function is inactive once the 4000 Platform is switched off. |
| Permanent Mode | the remote screen function is still active when the 4000 Platform 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` |
| No | the screen cannot be remote on a PC. |

**NOTE**

When the equipment is in the Remote screen mode, the icon  is displayed at the bottom of the screen.

### Ethernet

Parameters of the local Ethernet network to which the 4000 Platform is connected:

| | |
|---|---|
| Mode - Config 1 to 4 | static mode enabling input of the configuration of 4 sites. |
| - Dynamic | in this mode, which requires a DHCP server, the 4000 Platform requests an IP address from this server which will be allocated dynamically if dynamic host configuration is activated on the local network.<br>After selecting this mode or after power-on, the 4000 Platform tries to establish a connection to obtain an address from a DHCP server. If for any reason, this process fails, the 4000 Platform reverses to static IP address mode with User1 IP address. |
| Site Name | the user can enter the name of the site in the Edit menu. |
| IP Address | IP address of the 4000 Platform |
| 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 4000 Platform is connected. |

**NOTE**

NOTE

Once the 4000 Base-Unit is connected to the network, the icon  turns  indicating the connection is working

1.Domain Name Server

### File Export

In the I/O Interfaces menu, select **File Export** to configure the system in order to send traces and results by e-mail. Parameters to configure the mail feature.

| | |
|---|---|
| Send Mail | Choose **Ethernet** if you wish to use the sending mail function.<br>If **Enable** has been selected on the Bluetooth line, select **Bluetooth** to send files using the Bluetooth option |
| Sender Mode | **Auto** or **Manual**.<br>In **Auto** mode, you will not have the possibility to reply to the mail sent.<br>In **Manual** mode, the reply will be sent to the address entered in the line **From**. Use the button ▶ to enter into an edition window |

If Sender Mode is set to Auto, any reply to an e-mail sent by the 4000 Platform will be lost.

| | |
|---|---|
| Relay Mode | ***Auto*** or ***Manual***.<br>If the e-mail sending is performed via a SMTP network, select the **Manual** Relay mode and indicate the SMTP server address in the field Mail Relay, using the button ▶ to open the edition window.<br>In **Auto** mode, the sending of e-mail is performed automatically. |

See "Sending files by mail" page 174 for more explanation on sending files.

### Bluetooth

The Bluetooth selection appears only if the interface is installed on your unit. It requires factory-installed hardware.

Select **Disable** to deactivate or **Enable** to activate the Bluetooth option.

**NOTE**

If the Bluetooth is activated (Enable), the icon is displayed on the upper banner of the screen.

### Use proxy:

– If **Manual** has been selected, enter the **Proxy Address**.
– If **Auto** has been selected, enter the **Pac Address**.

## Audio

### Channel

Select the Hands-free function or the Headset

– If the **Hands-free** function has been selected, adjust the volume in the line **Hands-free Volume**.
– If the **Headset** function has been chosen, adjust the volume in the line **Headset Volume**

## Utility

### VFL Mode

Select the mode of emission of the light signal:

– 1 Hz: frequency of 1Hz (blinking signal)
– CW: signal is emitted in a Continuous Wave

### Auto off

**NOTE**

The function for automatically switching off the 4000 Platform is available only on battery operation, to save the battery.

This function switches off the 4000 Platform automatically if no operation has been performed and no key actuated for a period selected from this menu. Work in progress is automatically saved.

– To activate this function, open the **Utility** window and move the cursor on to **Auto off**, then choose an option (5, 10 or 30 min.) so that the 4000 Platform will be automatically switched off if no key has been actuated for the period selected.
– To deselect this function go into the **Utility** window, move the cursor on to **Auto off**, then choose option **No**.

### Upgrade parameters

When updating the software (see "Installing a new version of the software" page 180):

– In the server IP address line of the configuration menu, enter the IP address of the PC on which the updating files were loaded.

or

Select **Server Name** and enter the name of the server in which the updating files are set.

### Home selection

Multiple / Single

This configuration menu allows to choose if, on the **Home** page, only one function can be deselected (**Single**) or several functions can be selected at the same time (**Multiple**).

**NOTE**

If the mode **Simple** is selected, the activation of a function in the **Home** page will automatically display the result page for this function.

## Printer

Parameters for configuring an internal printer, a USB printer or for saving JPG files.

| | |
|---|---|
| Printer | ***USB, USB (Land), Files (Formatted), Files (Screen), None***. |

### *USB and USB (Land)*

If you choose **USB**, you can configure:

| | |
|---|---|
| Printer manufacturer | Use the keys ◀ and ▶ to select the manufacturer corresponding to the printer you wish to configure. By default, a model type will automatically be proposed on the next line, corresponding to your manufacturer choice. |
| Printer type | If the model type set by default for the chosen manufacturer is not correct, you may change it using the keys ◀ and ▶. |
| ASCII Mode | Select **Graphic** or **Text** according to the printer configuration. Some printers do not recognize the ASCII mode, so that you must select **Graphic** to print files from the Web Browser. |
| **Logo** | Select the Logo to be displayed on the upper right of the page: select the line, and press ▶ to enter the path of the logo file in the edition keypad. Press **Enter** to validate |

The parameter **USB Land** allows to configure the printer as the USB parameter, but also to print with landscape setting.

***Files (Formatted)*** Choosing in the Printer menu, the option **Files (Formatted)**, you can print the open file of the 4000 Platform in the JPG, PNG or PDF format, exactly as if the file was printed on paper. Therefore, if the file (trace or other) is too large for one A4 page, several JPG, PNG or PDF files will be created.

### Printing a trace to the JPG/PNG/PDF format

**1** Select the **Files (Formatted)** function

**2** Select the File Format: JPG / PNG / PNG on the second line.

**3** Select the logo to be displayed on the upper right of the page:

**a** Select the line **Logo**

**b** Press the right direction key to open the Edition keypad

**c** Enter the full path and name of the file containing the logo

Example: *disk/Logo/JDSU.jpg* (media/directory/file name)

**d** Press **Enter** to validate

The logo will be displayed on the upper right part of the file.

**4** Open the trace to be printed in the JPG format

**5** If necessary, make the modifications on the trace (see user manual of the 4100 OTDR Modules).

**6** Set the trace view as wished:

– if the function is set to the **Trace** mode (**Trace** is selected on the menu key **Trace/Table/Summary**), the JPG/PNG/PDF file will countain the header and the trace (in one page).

– If the function is set to **Table** mode (**Table** is selected on the menu key **Trace/Table/Summary**), the JPG/PNG/PDF file will countain the header, the trace and the entire results table (several pages may be required)

– If the function is set to **Summary** mode (**Summary** is selected on the menu key **Trace/Table/Summary**), the JPG/PNG/PDF file will countain the header and the summary page. This view is only available with OTDR traces.

**NOTE**

If several traces are displayed in overlay, the JPG/PNG/PDF file will print exclusively the data for the active trace.

**7** Launch printing by pushing simultaneously the left and right direction keys

The icon  is displayed until the saving process is finished

8 Press the **FILE** key to find the JPG file in the Explorer

**NOTE**

The file will be saved in the current directory, the last directory used.

The name of the JPG/PNG/PDF file will be: ***name of the stored trace_date (year/month/day)_time (hour/minute/second).jpg/png/pdf***

### Printing another file to the JPG/PNG/PDF format

1 Select the **Files (Formatted)** function.

2 Select the **File Format**: JPG / PNG / PNG on the second line.

3 Select the **Logo** to be displayed on the upper right of the page:

- **a** Select the line **Logo**
- **b** Press the right direction key to open the Edition keypad
- **c** Enter the full path and name of the file containing the logo
  Example: *disk/Logo/JDSU.jpg* (media/directory/file name)
- **d** Press **Enter** to validate

The logo will be displayed on the upper right part of the file.

4 Open the file to be printed in the JPG, PNG or PDF format (for example: Microscope etc.)

5 Launch printing by pushing simultaneously the left and right direction keys
The icon  is displayed until the saving process is finished

6 Press the **FILE** key to find the JPG/PNG/PDF file in the Explorer

**NOTE**

The JPG/PNG/PDF file will be saved in the directory PRINT, on the internal memory of the 4000 Platform.

The name of the file will be: ***Print_date (year/month/day)_time (hour/minut/second).jpg/png/pdf***

***Files (Screen)*** Choosing in the Printer menu, the option **Files (Screen)**, you can print the open file of the 4000 Platform in the JPG, PNG or PDF format, exactly as it is displayed on the screen.

Therefore, if you make a zoom on the trace for example, the file will only show the zoom section.

1. Select the **Files (Screen)** function.
2. Select the **File Format**: JPG / PNG / PNG on the second line.
3. Open the trace or file to be printed.
4. Make the necessary modifications
5. Launch printing by pushing simultaneously the left and right direction keys.
   The icon  is displayed until the saving process is finished
6. Press the **FILE** key to find the JPG, PNG or PDF file in the Explorer

**NOTE**

The JPG, PNG or PDF file will be saved in the directory PRINT, on the internal memory of the 4000 Platform.

The name of the JPG file will be: ***Print_date (year/month/day)_time (hour/minut/second).jpg/png/pdf*** wether it is a trace file or not.

# Applications

## PDF and Web Browser

Those desktop applications are available with the 4000 Platform.

It opens the same page as the pushing the **FILE** button.

For more information about this function, see Chapter 6 on page 75.

## File Explorer

This function open the file explorer page. See Chapter 11 on page 163.

## Standalone results

Even if no module is present, the 4000 Platform can access and display measurement results.

To access this feature, select **App's** > **Standalone Results**, and choose the desired application, for example **Consult Fiber Optics**.

# Expert Tools

## Upgrades

The **Upgrades** key allows to make an upgrading of the softwares (see "Installing a new version of the software" on page 180).

## Install Option

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


**Fig. 28** Example of a License file (.lic)

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 4000 Platform.

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

### *Enter Manually the Licence*

1 In the **Home** page, click on **Expert Tools** > **Upgrades** > **Install Option** > **Enter License**

The edition keypad is displayed

2 Enter the challenge code of the option, set at the bottom of the file (see Figure 28on page 59),

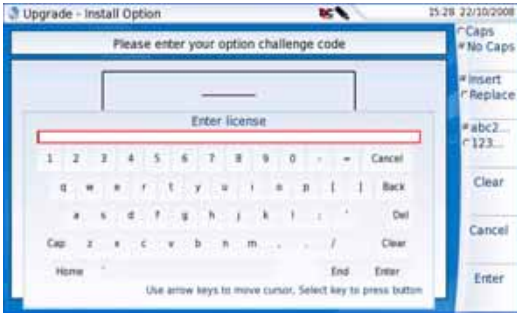



**Fig. 29** Enter the Licence code

**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.**

3 Press the **Entrer** 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***

1 In the **Home** page, click on **Expert Tools** > **Upgrades** > **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.

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

3 Click on **Load** > **Confirm**

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

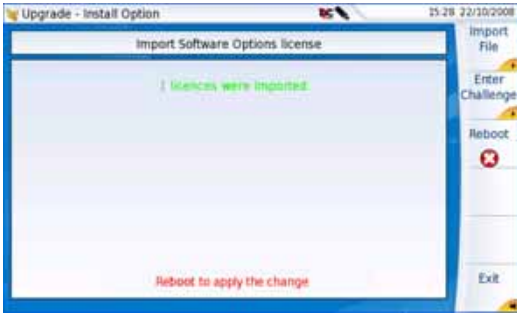



**Fig. 30** License imported

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.

## Media utilities

To get access to the menu, click on **Expert tools** then on **Media utilities**.

### *Formating a USB memory stick*

In order to format a USB memory stick, select **Media utilities**, then **Usbflash Format**. 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.**

**USB memory sticks can be very different.**

They differ on Hw and Sw aspects, even inside a given brand.

In particular, USB memory sticks targeting audio recording are often formatted in very specific ways and the format is often very different from a standard FAT.

For all these reasons, we advise users to use memory sticks provided by JDSU.

In any case, USB memory sticks which are recognized by the 4000 Platform (a beep is generated when plugged on the 4000 Platform) but which cannot be read or written, **should be formatted on the** 4000 Platform with the Usbflash Format utility in **Expert tools** > **Media utilities**.

If a problem occurs with the USB stick you are using, contact your Local Technical Assistance Center.

### *Removing the USB memory stick*

Once a USB memory stick is inserted in one of the USB port of the 4000 Platform: it can be removed via the Media Utilities menu.

1 Click on **Expert Tools** > **Media Utilities**

2 Push the **Eject USB** key,

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

The USB memory stick can then be disconnected from the 4000 Platform's USB port.

The disconnection of the USB memory stick produces one beep.

**NOTE**

The USB memory stick can also be removed via the File menu (see "External USB storage media" on page 165).

### *Erase disk / Erase Extmem*

In **Media Utilities**, select **Erase Disk** or **Erase Extmem** to delete all the disk contents or all the extended internal memory contents into the 4000 Platform.

A confirmation must be validated before the deletion.

### *Formating an extended internal memory*

In order to format an extended memory (delivered on option), select **Media utilities**, then **Usbflash Extmem**. Confirm your choice to actually format the extended memory.

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

## Locking the 4000 Platform

The 4000 Platform can be locked at any time:

1 In the **HOME** page, click on **Expert Tools**

2 Click on **Instrument Lock Out**

3 Confirm the 4000 Platform locking by clicking on **Confirm** (or use the **Cancel** key to cancel the process).

The numeric keypad is displayed

4 Entrer the password to lock the instrument: **42000** (see "Example of Edit menu" page 31)


**Fig. 31** Password

5 Click on **Enter**

The 4000 Platform locking screen is displayed.


**Fig. 32** Locking screen

Click on the **Notepad Message** key to add a message using the text edition (see "Example of Edit menu" page 31).

### Unlocking the 4000 Platform

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

– Enter the password **42000** using the numeric keypad (see "Numeric Keypad" page 33) and validate.

  The screen automatically displays the **HOME** page.

# Power meter and VFL (Visual Fault Locator)

# 5

A variety of options are available when ordering. Option 40PM consists of a power meter; the option 40HPPM consists of a High Power power meter with universal  2.5 MM UPP adapter; the option 40VFL consist of a VFL with a connector 2.5MM and the option 40PMVFL consists of an optical power meter and a VFL, with 2.5 mm UPP connectors. See references in "References of options for the 4000 Platform mainframe" page 196, for wavelengths of the sources in each option.

The topics discussed in this chapter are as follows:

# Principle of optical power and attenuation measurements

## Power measurements

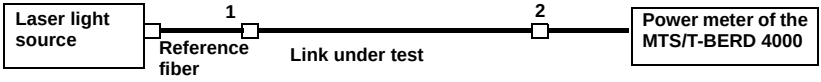
A power meter, is all that is needed to measure emitted or received power:

– to measure emitted power, connect the power meter directly to the output of the optical emitter;
– to measure the power at the input of an optical receiver, the power meter is connected to the end of the fiber, at the point where the optical receiver would be connected.

## Attenuation measurements (optical link loss)

For measurement of the attenuation of power in a complete link or in elements such as sections of fiber, connections or optical components, a light source and a power meter are required.

This attenuation is usually deduced from the measurement of optical power at two points:




Attenuation $A_{(dB)} = P1_{(dBm)} - P2_{(dBm)}$

To perform accurate measurements, the following conditions are vital

– Use a light source which is stable both in time and as a function of temperature.
– Make sure that all connections and fibers and the receiving cell are perfectly clean.
– Use a reference link between the laser source and the test subject. If several measurements are to be made under identical light injection conditions, this reference fiber must not be disconnected during the period while measurements are taking place.

### Insertion loss method

**1** The power meter is first connected to the laser source via the reference fiber: P1 is measured.

**2** Then the fiber to be tested is inserted between the reference fiber and the power meter: P2 is measured.

The difference between P2 and P1 gives the attenuation of the fiber under test.

It is preferable to use the same type of connector at both ends of the fiber being tested, to ensure the same connection conditions for measuring P1 and P2.

### Accuracy of measurements

– A high degree of accuracy is often required. It is then necessary to perform a preliminary calibration without the fiber under test to eliminate the losses due to connections as far as this is possible. To do this, use the «Reference Value» function.

## Connection to the power meter

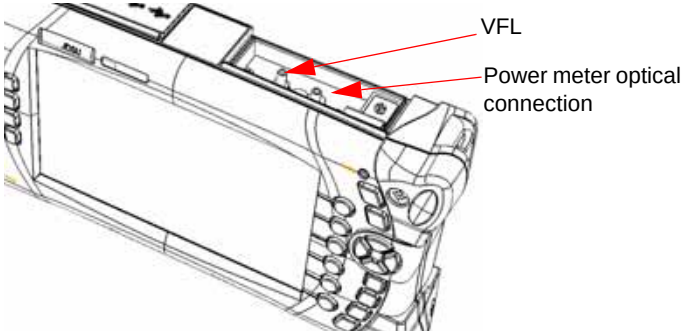



**Fig. 33** Optical connectors

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

## Configuring the Power meter

The power meter function is an option chosen at the time of order and incorporated into the MTS/T-BERD 4000 in the factory.

To activate the function:

– Press the **HOME** button

– Use the direction keys to select the power meter icon 

(framed in white) and press the **ENTER** key : the icon is selected.

The effect of this action will to be to bring the power meter into use.

## Configuring the measurement parameters of the power meter

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

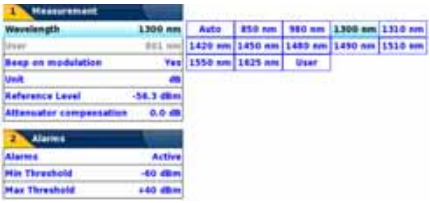



**Fig. 34** Configuration of power measurement

Wavelength — Selecting wavelength:
- Auto: the wavelength of the input signal will be automatically detected and selected to perform the measurement:
850, 980, 1300, 1310, 1420, 1450, 1480, 1490, 1510, 1550 or 1625 nm: measurement performed at specified wavelength.
- User: choice of wavelength on the next line

User choice — (if the User option was selected in the Lambda line) selection of the wavelength between 800 nm and 1650 nm, in 1 nm steps, by means of the direction keys ◀ and ▶.

Beep on Modulation — Select if a sound must be heard whea 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 by pressing **ENTER**.

**NOTE**

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

### Configuring the alarm parameters of the power meter

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.

## 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 one and the same fiber, 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 ▼. 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** softkey is pressed.
– The **Clear Table** softkey orders deletion of 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 instrument is switched off, results present in the table are saved.


**Fig. 35** Results and commands of the power meter

## Commands of the power meter parameters

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

**Keep Result** Saves the result on the corresponding line of the table.

**Clear Table** Deletes all the results recorded in the table.

Pressing the **Powermeter Config.** key allows to reach the following function:

**Wavelength** Allows to modify the wavelength to be applied with the Power meter.

| | |
|---|---|
| **Unit** | Allows to modify the unit of power displayed (dB, dBm, nW) |
| **Zero** | Adjustment of the Zero value when the power meter's optical input is closed with a plug (a validation is required). |

Click on **Exit** to go back to the **Results** page.

Pressing the **Pow. Reference** key allows to reach the following function:

| | |
|---|---|
| **Standard Reference** | Selects the current result as reference value to measure the attenuation of a link. This reference is displayed under the measurement result until a new reference value is chosen. |
| **Jumper Reference** | This key can be pressed when a reference in loopback mode must be performed (see 4100 Module Series User Manual). |

**The soft key Jumper Ref is displayed in grey and cannot be activated if both power meter and Source are selected onto the OTDR Module set into the Platform.**
**The power meter must be selected onto the Base-Unit, and the Source onto the OTDR Module to activate the soft key and be able to perform a reference measurement in loopback mode.**

## Making a measurement

The power meter is started up as soon as the function 

is activated in the **HOME** menu.

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

– Connect the light source to be tested to the rear connector (see "Connection to the power meter" page 67).
– In the **SETUP** menu, choose the units dBm, dB or Watts.
– 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 70).
– 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 making any measurements where accuracy is required, as the noise from the germanium photodiode fluctuates over time and with variations in temperature.

1. Fix the plug 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. 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 **Pow Reference** > **Standard Ref** soft keys 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 70).

# 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 33 on page 67 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 fibre.

To emit a light signal into a fiber:

– Connect the fiber to the VFL port on the connectors panel (see Figure 33 on page 67)
– Press the **HOME** key**,** then press <- and -> to select the VFL icon and confirm by pressing the **ENTER** key.
– You can configure the signal mode in the **System Settings** page > **Utility** > **VFL Mode** (see “VFL Mode” on page 54).

Selection of this option is compatible with another function (OTDR, etc.).

# Storing and reloading results

## File Setup

Click on the button **FILE** to access the **File** setup. See the chapter «File management» in the user manual «4100 modules series» for a complete description of all parameters, options and the explorer.

## 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 to be used with the MTS/T-BERD 4000 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 4000 Platform via the Web Brrowser. 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 «8100 modules series»), click on **Load** then **View trace**.

The LTS tab is displayed with the loaded results in the table.

# Applications

# 6

Several desktop applications are provided to you, thanks to the integration of free software released under the free licences (GPL, LGPL, BSB or other). Their purpose is to bring more functionality to the 4000 Platform. JDSU **doesn't provide any warranty or support regarding these free software.**

To access desktop applications, press the button **HOME**, and the soft key **App's**.

The topics discussed in this chapter are as follows:

# Navigation and text edition in the Application pages

## Navigating into an application page

Once one of the seven applications is selected, the corresponding page opens. Whatever is the page, different methods can be used to navigate in the screen and select one text field, one button...

### With VNC, touchscreen or mouse connected to one USB port of the 4000 Platform:

The easiest way to navigate is to directly click, with mouse or stylus for touchscreen, on one text field / button to enter text / activate the button.

### With the 4000 Platform keys:

When you can only use the Platform keys to navigate into a page, several methods can be used:

– You can use the direction keys to reach a text field / a button one after the other, by successive presses.
– You can, when they are available, press the menu key **Cursor** until the wished text field / button is active, and then press **Select** to select it.
– Press simultaneously **SHIFT** +  to use the cursor on the screen and move it until the text field / button wished. Once cursor correctly positionned, press simultaneously **SHIFT + ENTER** keys to validate the selection.

### Full Screen mode

In order to easily navigate in an application page, you can modify the page display by using a full screen mode.

**1** To display the open page in full screen mode, onto the 4000 Platform, press simultaneously **SHIFT + HOME** keys.

This mode will automatically widen the page, and hide the menu keys on the right of the screen.

Once the full screen mode, press back simultaneously **SHIFT + HOME** key to return to the «normal» display mode, with menu keys on the right of the screen.

## Entering text

Some pages from the applications menu require to enter text, number... Five ways can be used to enter text

1 Enter text using an external keyboard which is connected to the 4000 Platform via the USB port or using an external keyboard of a PC connected to the Platform.

2 Enter text using the keyboard of the Application

**a** Select **Keyboard** on the key 


A keyboard is displayed on the lower part of the screen


**Fig. 36** Keyboard of the Text Editor

**b** Use the arrow keys or the touchscreen to enter the text.

3 Enter manually the text <u>when a touch screen is used</u>.

**a** Select **Writing** on the key 


**b** Write the letter manually, using the stylus for touch screen

You can click on **Train**, in order to draw each character on its cell. This allow to store the characters with your writing characteristics, in order to get the good letters when writing with the stylus.

4 Enter text using the numeric keypad onto the Platform. To enter a character, push as many times as necessary on the corresponding button. The characters available for a button are displayed on the lower left part of the screen (see "Numeric keypad on the 4000 Platform" on page 27).

Example: to enter the letter «b» push the key «2» twice 


5 Press simultaneously **SHIFT +**  to position the cursor on the character wished and press simultaneously on **SHIFT + ENTER** to validate and enter the character in the text zone.

## Specific keys and shortcuts:

<u>Key «1»</u>

– Press key «1» to enter specific characters:

– Pushing **SHIFT +** «**1**» keys allows to select all the text entered

Key «0»

– Pushing once the key «0» allows to enter a space:


– Pushing **SHIFT +** «**0**» keys allows to make a backspace and delete the letter on the left of the cursor.

The **CANCEL** button onto the 4000 Platform allows to delete the character preceeding the cursor.

**Do not press Cancel menu key if you wish to delete a character; if you click on Cancel menu key, you will leave the Edition dialog box.**

Shift + *

Before entering text, you can also choose the kind of characters which must be entered. To do so, press simultaneously **SHIFT + *** keys, until the good mode display: uppercase / lowercase / numeric.


**Fig. 37** Characters edition mode

# PDF viewer

General information is provided in this chapter. Please refer to the button inside the PDF viewer to find the PDF reader version and a mini help on how to navigate into the pdf document.


**Fig. 38** PDF Help page

## Opening a PDF document

The simplest way to open a pdf file is to press **FILE**. Select **Explorer,** look for your file and then select **Load** >**Confirm Load** to load the corresponding file. The file opens automatically in the PDF viewer.

Another way used to open a pdf document is to press **Home** > **App's** and select the PDF Reader icon.

The PDF Reader opens but without document. To open a PDF document, click on the icon , and select a document in the file explorer dialog box.

## Interacting with a PDF document

Once your document is open, you may browse through different pages very quickly, zoom to a particular level, find a special name or sentence, rotate the page... All these features are available via buttons on the screen.


**Fig. 39** PDF Viewer Graphical User Interface

The buttons on the right are pressed using the functions keys of the 4000 Platform, the touchscreen or via the mouse. The buttons on the bottom of the PDF viewer, may only be used with a mouse or a touchscreen.

**NOTE**

You may scroll in all directions using the direction key pad of the 4000 Platform or of an external keyboard, or by dragging the scroll bars with the mouse.

# Web browser

## Starting the web browser

To access this application, on the **HOME** page click on the soft key **App's**.

In the **Application** screen, select Web Browser icon and press **ENTER** to open the web browser. 


The web browser is launched.


**Fig. 40** Web Browser page

## Opening an internet page

Once the Web Browser is displayed, you must enter the internet address.

**1** Set the cursor in the address bar:

**a** Use the mouse connected via USB port on the 4000 Platform or the mouse of the PC if the screen is deported via VNC application on the PC.

**b** Click on the icon so that it becomes . This allows to move the cursor toward the address bar, and to turn from to .

**2** Once the cursor set onto the address bar, enter the address:

**a** Using a keyboard connected to the 4000 Platform USB port or the keyboard of the PC with a deport of the screen via VNC, enter the entire address of the site to be opened.

**b** If none keyboard is available:

– click on the icoon to display the virtual keyboard and enter the address using the buttons on the 4000 Platform or clicking directly on characters (see "Entering text" on page 76).

**3** Push the **ENTER** hard key.

The page opens

If an error message is displayed in place of the internet page, verify the address you typed, or check the proxies configuration (see "Configuring the proxies" on page 82).

Before validating the address, if the virtual keyboard is used, you must deselect the mouse option (becomes ) .


**Fig. 41** Internet page openend with the Web Browser

– During the loading of the page, the icon is displayed. Once completed, the icon turns .

– The loading can be stopped at any time by clicking on .

**NOTE**

Press **SHIFT** + **HOME** keys to display the page in full screen mode

Click once again on those keys to go back to the menu keys display.

## Configuring the proxies

For the first use of the Web Browser, or if an error message is displayed instead of the internet page, check the configuration of the proxies.

**1** Click on 

in the tool bar to access the dialog box which allows to configure the proxies for the internet connection.


**Fig. 42** Configuration of the proxies

**2** Select the kind of connection:

– **Direct connection to the internet**: option by default, to be selected if no proxy server is used

– **Auto-detect proxy settings for this network**: select this option if you wish Firefox detects automatically the proxy parameters for your network.

– **Manual proxy configuration**: select this option if you do not have a proxy address (URL). Ask your system administrator the ports names and numbers for servers on which the proxy is executed and enter the information in the appropriate fields.

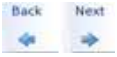
– **Automatic proxy configuration URL**: if there is no file for the proxy configuration, ask the configuration URL to your system administrator and type it in this field.

**3** Click on **Ok** to validate the configuration.

## Navigation into the Web Browser

Once the Web Browser is open, push the key 

to display on the right of the screen, the buttons used to navigate.

| Icon | Definition |
|---|---|
|   | Go to the previous or next page loaded |
|   | Refresh the actual page |

| Icon | Definition |
|---|---|
|  | Exit the Navigation menu |

When a link is available in the page, the arrow cursor becomes a hand cursor.

## Using the bookmarks

Once a page is opened, you can apply it a bookmark, in order to get a shortcut toward this page.

Click on  .

A new tools bar is displayed on the right of the screen.

### *Creating bookmarks*

Once the internet page for which a bookmark must be created is opened:

**1** Click on the icon  to open the dialog box for bookmarks creation.

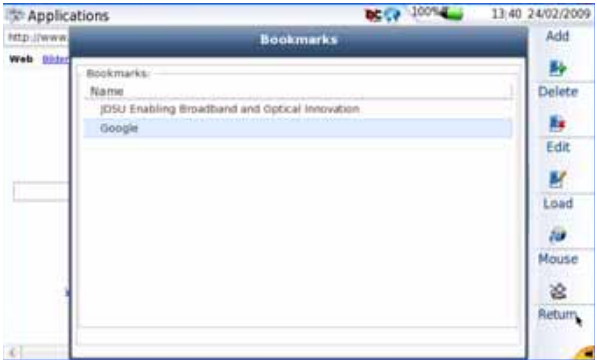



**Fig. 43** Creation of bookmarks

New icons are available on the right of the screen.

**2** Click on the icon  to add a bookmark for the page displayed

**3** Click on the icon  to edit the bookmark, and modify if necessary the name of the bookmark. Click on **Ok** to confirm the modification or **Cancel** to cancel the modifications.

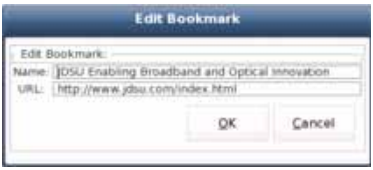



**Fig. 44** Bookmark edition

– Click on  to open the page of the bookmark selected in the list
– Click on  to delete the selected bookmark from the list
– Click on  to exit the bookmark menu and go back to the Web Browser page.

## Opening a PDF document

PDF documents may be opened and read within the Web browser.

Please refer to "Navigation and text edition in the Application pages" on page 76 for more information about that application.

– When you click on a link toward a PDF file, a dialog box during loading is displayed.
– Once loading is completed, click on **Ok** to open the pdf file.

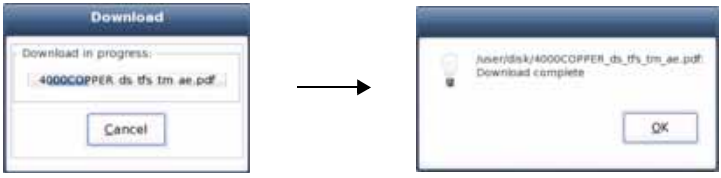



**Fig. 45** Downloading a pdf file

Click on the icon  to go back to the web browser.

**NOTE**

The web browser will open a PDF document, not a URL including a PDF file.

The PDF is also automatically saved on the `disk` of the 4000 Platform.

### Leaving the web browser

Depending on how long you want to leave the web browser and on your connection mode, you may:

– Leave the web browser running and switch to another task. To do this, click on the **HOME** button.

  You can see that the Web icon remains, to indicate that the web application is still running in the background. Nevertheless, you have now a complete access to all the 4000 Platform functionalities.

  To go back, you must select again the **Web Browser** in the **App's** menu. The application will reopen much faster, and all your environment will be the same (last current page, possibilities to go back...)

– Quit the application using the **Web browser** application menu: click on the key Exit .

## Text Editor

The Text Editor application allows to enter text on the 4000 Platform and save it into a txt file

### Text Editor page

To open the Text editor:

1 In the **Home** page, press the **App's** key

2 In the **Application** screen, select the icon **Text Editor**.

  The icon is framed in white

3 Press **ENTER** to validate the selection and open the Text Editor application.

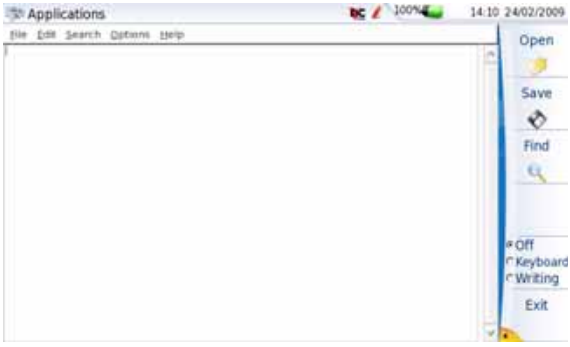



**Fig. 46** Text Editor application

Once the text editor is open, enter text using the method you wish (see "Entering text" on page 76).

## Saving the text in a file

Once the text is entered, you can save it in a file onto the 4000 Platform.

1 Click on **File > Save** or **Save as...**

2 In the new dialog box, select the folder in which the file must be saved

3 Enter a name for the file with the file extension (.txt or .csv if it must be opened with the 4000 Platform).

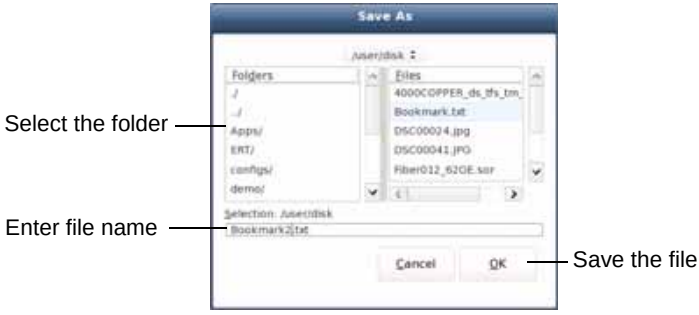



**Fig. 47** Save file

4 Click on **Ok** to validate

The file is saved and still opened

– You can modify it and click on **Save** at any time

– If you modify the file and click on **Save as....**you can choose another folder and/or another name

Press 

to exit the text editor and go back to the **Applications** page.

Press **HOME** to go back to the **Home** page, and keep the application active (the icon  is still displayed on the upper banner).

# Calculator

A calculator can be displayed and used onto the 4000 Platform.

1 In the **Home** page, press the **App's** key

**2** In the **Application** screen, select the icon **Calculator**.
The icon is framed in white

**3** Press **ENTER** to validate the selection and open the Calculator


**Fig. 48** Calculator

Press 

to exit the Calculator and go back to the Application page.

Press **HOME** button to go back to the **Home** page, and keep the **Calculator** application active (the icon  is still displayed on the upper banner).

## VNC Viewer

A VNC Viewer is available onto the 4000 Platform and allows to command an equipment onto the network.

**1** In the **Home** page, press the **App's** key

**2** In the **Application** screen, select the icon **VNC Viewer**.
The icon is framed in white

**3** Press **ENTER** to validate the selection and open the VNC viewer.
The screen displays a Connection dialog box

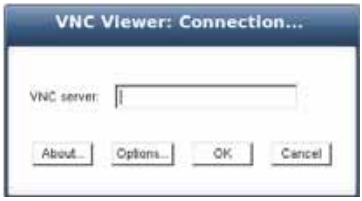



**Fig. 49** Connection screen to VNC Viewer

**NOTE**

When the VNC Viewer from the application menu is used, the icon is displayed in the upper banner.

4 Enter the VNC server address

5 If necessary, modify the options of the VNC server by clicking on the **Options...** button

The options dialog box is displayed


**Fig. 50** VNC Viewer: options

6 Once the parameters wished are selected, click on OK to apply the modification to the VNC Viewer

7 In the VNC Viewer Connection dialog box, click on OK to activate it.

The VNC screen is displayed.


**Fig. 51** VNC Viewer screen (example in full screen mode)

Click on Exit to exit the VNC Viewer and go back to **Applications** page.

Press **HOME** key to reach the **Home** page, and keep the application active (icon still displayed on the upper banner).

## Calendar

The Application page also allows to use a calendar, in order to enter Notes, dates, events etc.

Display of the calendar

1 In the **Application** menu, select **Calendar** icon using direction keys

2 Press **Enter** to open the Calendar application

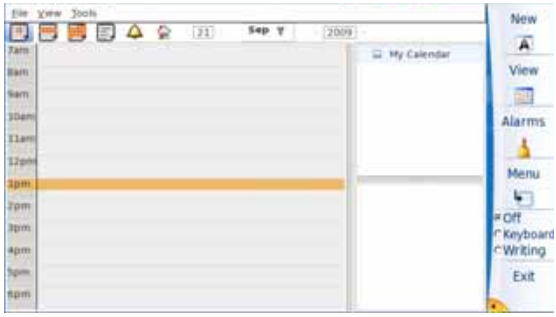



**Fig. 52** Calendar

The page displays by default the calendar for the current date, in the daily mode.

**The today date corresponds to the date entered in the System Settings page.**

## Create an event in the calendar

Once the Calendar application is active, whatever is the View displayed, you can add events to the calendar.

**1** To enter a new event, click on **New** button (or use the File menu and select New).

**2** The **Event** dialog box opens

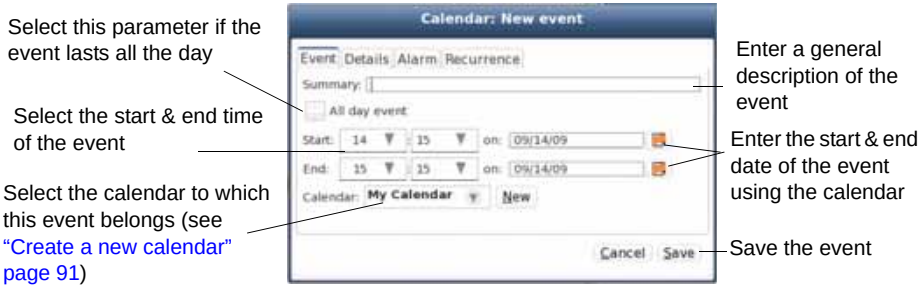



**Fig. 53** Calendar: create a new event

**3** Enter the necessary information for this event on each available tab:

– **Event** tab: enter the event description, date and time (see Figure 53 on page 90)

– **Details** tab: The elements countained in this tab allow to define the location of the event, to save this event into a category (see "Create a category" page 91) and to enter a full description of it.

– **Alarm** tab; this tab allows to activate an alarm for this event. This alarm will be activated some minutes before the event start time (from 1 minute).

– **Recurrence** tab; this tab allows to assign a recurrence to the event; it will allow to recall the event as long as necessary (daily, monthly ...),

**4** Once all the necessary parameters have been entered for an event, click on **Save** to save it in the calendar.

– The event will be underlined in the calendar or in the agenda.

## Create a category

The events saved in the calendar can be defined in a specific category you can create.

To do so:

1 In the **Tool** Menu, select **Category**

2 The dialog box opens


**Fig. 54** Create a category

3 Enter a name for this category

4 Select a predefined color for this category, or click on  to define a new color.

5 Click on **OK** to validate the creation of the category

This choice of colour will allow to distinguish the events according to the category to which they belong.

## Create a new calendar

You can also create one or several other calendars than the one defined by default in the application. This calendar will be specific and will allow to insert specific events.

To create a new calendar:

1 In the Calendar application, click on **Menu** key and select **Tools** > **Calendars**

The Calendars page opens

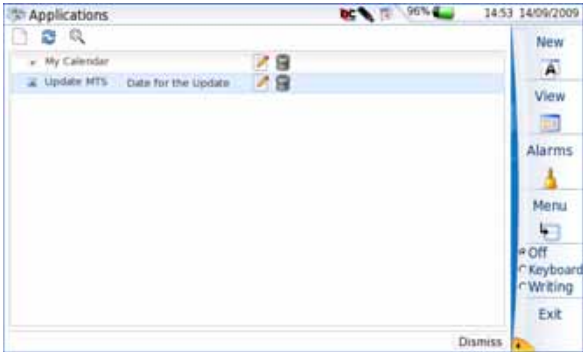



**Fig. 55** View existing Calendars

**2** To add a new calendar to the existing ones, click on the icon . A new box opens


**Fig. 56** Create a new calendar

**3** Enter the Calendar Title, which will appear in the View page.

**4** You can also give a description of this calendar (for which use it has been created...)

**5** You can select a parent of this calendar; another calendar which will be used as model for this one.

**6** Modify if necessary the colour of the calendar clicking on the colour displayed, to open the colour selector box

**7** The colour will be applied for all the events belonging to this calendar.

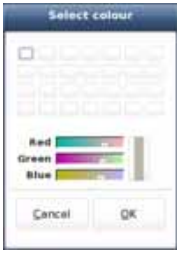



**Fig. 57** Select colour

**8** Click on **OK** to validate the new colour

**9** Select the type of calendar:

– **Local**:

– **Subscribe**: select this parameter in order to receive other calendars from other users.

If Subscribe has been selected, enter the URL, Username and Password to access the calendar. Enter also the recurrence of the update for this calendar (*x* times per hour / day / week / month / year).

– **Publish**: select this parameters in order to publish the calendar, and allow other users to visualize it.

If **Publish** has been selected, enter the URL, Username and Password to access the calendar.

**10** In the New calendar box, click on **OK** once all parameters are validated.

The screen displays the list of calendars, including the one just created.

If this is not the case, click on the icon .

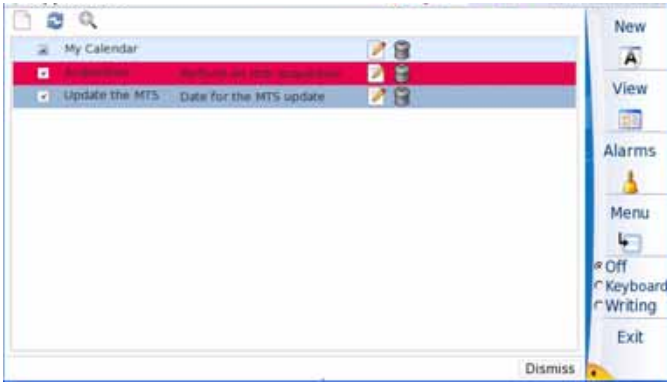



**Fig. 58** New calendar in the list

Click  to Edit the calendar (see Figure 56).

Click on  to delete the calendar and reassign if necessary the events to another one.

## The different views of the calendar

The calendar application allows to display different information on the screen.

### *Daily, weekly and monthly calendar*

Once the calendar application is activated, the page displays by default the daily calendar, with the today date.

**The today date correponds to the date entered in the System Settings page.**

To modify the view of the calendar, you can:

– Click as many times as necessary on the key **View** to display successively a weekly calendar, a monthly calendar, an agenda, the existing alarms or go back to the today calendar.

or

– Use the tool bar or the **View** menu and select the view to be displayed:
  –  : weekly calendar

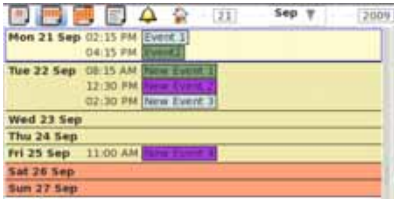



**Fig. 59** Example of weekly calendar

– : monthly calendar

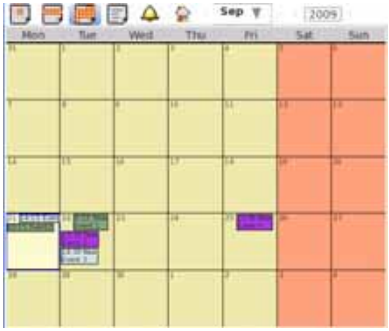



**Fig. 60** Example of monthly calendar

– : today calendar (this is the same display as a daily calendar)

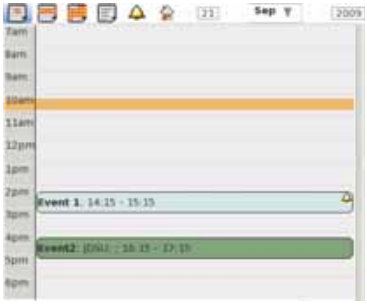



**Fig. 61**

– You can choose the date for which the calendar will be displayed, by using the following fields: 21 Sep 2009 .

Once the date is entered, when you click on the weekly or monthly icon, the calendar will be displayed for the week / month to which the date belongs.

***Agenda*** In the View menu, or on the toolbar, you can choose to display a agenda, which will display a list of all the events registered for a defiend period.

**1** Click on the icon of the toolbar

or

Select **Agenda** in the **View** menu

or

Click as many times as necessary on the **VIEW** key to reach the agenda screen

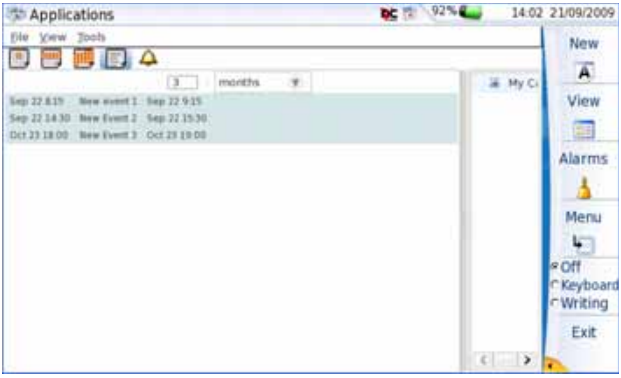



**Fig. 62** View Agenda

**2** Once selected, you will have to enter the period you want to display on screen

For example, in the Figure 62, the agenda displays the events registered for 3 months, starting from the current date.

**NOTE**

The agenda for the period selected can also be displayed in sidebar (see “Sidebar” on page 98).

***Event menu*** Whatever is the kind of calendar displayed, you can click on an event of the calendar, which will open a menu with different available actions:


**Fig. 63** Event menu

– **Edit**: allows to edit the event selected, and if necessary to modify its parameters.
– **Delete**: allows to delete the event selected. A confirmation will be asked.
– **Save**: allows to save the event in a .ics format onto the disk of the 4000 Platform, or on the usb key connected to the equipment, if any,
– **Move to Calendar...**: allows to modify the calendar to which the event belongs. Click to open a sub-menu with all the calendars available (see “Create a new calendar” on page 91).
– **Calendar**: allows to edit, save in a .ics format, delete, show exclusively or hide the calendar to which the events belong.

***Alarms*** Once the alarms of past events have gone off, it is possible to display a list of those alarms.

**1** Click on the icon  of the toolbar or select **Alarm** in the**Tool** menu or click on the alarms menu key 

.

A summary of the Alarms which have gone off displays.


**Fig. 64** Alarms

You can click on **SHOW EVENT** to display the event in alarm.

Click on **ACKNOWLEDGE** to remove the alarm for this event

Click on **ACKNOWLEDGE ALL** at the bottom of the screen to remove all the alarms of the screen.

Click on **DISMISS** to go back to the calendar view. In this case, if an reccurence has been defined for the alarms, the Alarms screen will display back each time a reccurence occurs.

### *Sidebar*

A sidebar can be configured, to display more or less information on the calendar screen. Three elements can be displayed on the sidebar:

- **Calendar**: this displays a calendar of the month activated.
- **Calendar Selector** (displayed by default when application is launched): this display a list of the calendars available, and allows to show or hide the events belonging to the calendar(s)
- **Agenda** (displayed by default when application is launched): display a list of all the events saved for a defined period (see "Agenda" on page 99 to modify a period for the agenda).

**If a Calendar is deselected in the Calendar selector sidebar, then the events belonging to it will not be displayed either in the calendar nor in the agenda sidebar.**

To activate one or several sidebar(s):

1. In the **View** menu, activate **Sidebar**
2. Select **Calendar** and/or **Calendar Selector** and/or **Agenda** to display the corresponding sidebar on the right of the calendar.

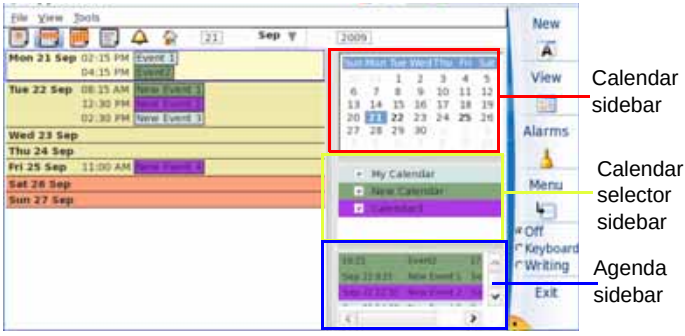



**Fig. 65** Calendar with all sidebars

### Calendar

– Once this calendar is displayed, you can click on one date to display the corresponding calendar.

  The display will kept the calendar mode selected (daily / weekly / monthly) and then will display the day, week or month to which the date selected belongs to.

– The dates in bold are those for which one or several events have been defined.

– The sidebar will not be displayed if a monthly calendar is activated.

– Click on the white dates to reach the previous or next month (or select a month on the upper toolbar).

### Calendar selector

– Select/deselect a calendar to display/hide the events belonging to it.

  If a calendar is deselected, this will automatically remove the events defined for this calendar from the Agenda sidebar and from the calendar on the left of the screen.

### Agenda

– The agenda displays the events with the color corresponding to the calendar they belong to.

– Click on one event to display it in the daily calendar.

### Exiting from the calendar application

– Click on 

to exit the Calendar application and go back to **Applications** page.

  Or

  Press **HOME** key to reach the **Home** page, and keep the application active (icon  still displayed on the upper banner).

## Contacts

The Contacts application, available in the App's screen, allows to add contacts for sending e-mail.

### Add a contact

**1** In the **Application** menu, select **Contacts** icon using direction keys

**2** Press **Enter** to open the Contacts application

**3** To enter a new contact, click on the **New** menu key

A new dialog box displays


**Fig. 66** New Contact

**NOTE**

You can select the Keyboard or Writing function to enter text (see "Entering text" on page 76).

If a category is modified / added / deleted via the **eMail** application, it will be automatically added / deleted in the Calendar application, and vice versa..

4 In the tab **Personal**, enter general information concerning the new contact (Name / Birthday date / Summary)

Click on the blank square in order to select an image on the explorer and associate it to the contact.

5 The **Details** button opens a new dialog box allowing to select details about the contact: Title (Dr, Mss, Mr, Dr...) / First name / Middle name / Last name / Suffix (Jr., Esq., Sr., I, II...)

6 In the tab **Location**, define the contact personal and professional addresses and phone numbers, as well as its mail addresses.

7 In the **Notes** tab, you can add information about the contact

8 In the **Categories** tab, click on the Categories button to define the contact to a existing category; or create a new one and link the contact to it.

**NOTE**

The categories available are the same as the calendar categories available in the Calendar application (see "Create a category" on page 91)

**9** Once all the necessary information have been entered, click on **SAVE** to store the contact in the application.


**Fig. 67** New contact

**NOTE**

When a contact belongs to a category, a circle with the colour corresponding to the category is displayed next to its name.

**10** You can use the menu **Categories** at the bottom of the screen to filter the contacts according to the category they belong to.

**11** Use the **Find** field to quickly retrieve a contact entering its name, address...

or

Click on the **Find** button to easily find a contact.

**12** Click on the contact mail address to directly open the **eMail** application and send him a message by e-mail

or

Click on the **Email** button (see "eMail Application" on page 102).

**13** Click on the **Backup** button to save the contacts in a xml file.

**14** Double click on the contact name on the left list to edit and modify if necessary the contact information.

**15** Click on  to exit the **Contacts** application and go back to **Applications** page.

Or

Press **HOME** key to reach the **Home** page, and keep the application active (icon  still displayed on the upper banner).

# eMail Application

The **eMail** application allows to send and receive mail onto the 4000 Platform.

To open the **eMail** application:

1 In the **Home** page, click on the **App's** button

2 In the **Application** page, select the icon **eMail** using direction keys
The icon is white framed.

3 Click on **ENTER** key to open the Mail application page.
The following screen is opened by default

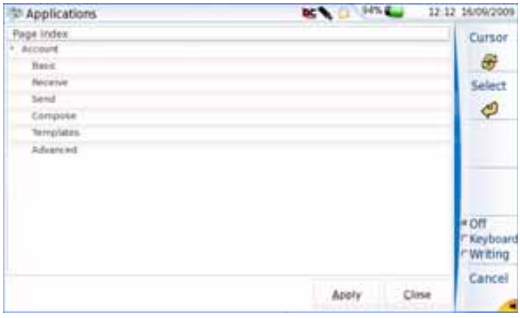



**Fig. 68** eMail: Folder List page

## Configuring an e-mail account

In order to be able to send and receive e-mail onto the 4000 Platform, you must first create and configure the user account.

1 Once the Index page is displayed, click on one the **Basic** parameter to start configuration (see step 3). In this case, the Account titled **Example-Account** in the Account page will be modified (see Figure 69 on page 103)

or

Click on **Cancel** to reach the Folder List page and click on **Accounts** Accounts on the upper part of the screen.
A new screen displays with one account visible, used as example.


**Fig. 69** Account page

**2** Click on **New** button to create a new account (or on **Edit** if an existing account must be modified).

The Page Index displays

**3** Click on **Basic** line to display the Basic screen and enter general information on the account.

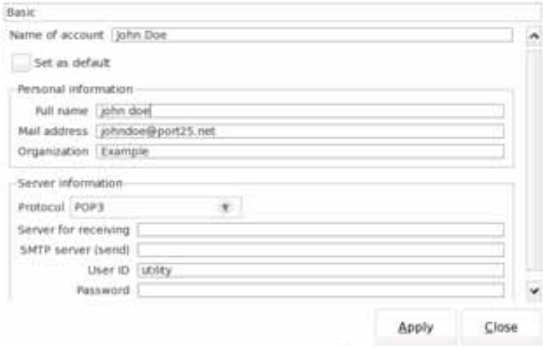



**Fig. 70** Mail Account - Basic parameters

Enter the necessary information concerning the description of the account:

– **Name of account**: enter the name for the new account.
– Select **Set as Default** to define this new account as the default one.
– **Personal Information**

  In this box, enter the full name of the account (optional), its mail address (mandatory) and the organization he belongs to (optional).
– **Server Information**

Select the Protocol to be used for the account configuration:

- **POP3**: Post Office Protocole
- **IMAP4**: Internet Message Access Protocol
- **News (NNTP)**: Network News Transfer Protocol
- **Local mbox file**
- **None (SMTP only)**: Simple Mail Transfer Protocol

**CAUTION**
**Once the Protocol is selected, and the Apply key is pressed, if you go back to the Basic page, you cannot modify the Protocol previously defined.**

According to the Protocol selected, the parameters available are different.

### POP3 and IMAP4 Protocols

- **Server for receiving**: enter the server address for the received messages.
- **SMTP server (send)**: enter the server address for the sent messages.
- **User ID**: enter the user idenfier for accessing to the server
- **Password**: enter the password for accessing to the server

### News (NNTP) Protocol

- **News Server**: enter the server address for the received messages
- **SMTP server (send)**: enter the server address for the sent messages.
- **This server requires authentication**: if the server needs authetication, select this parameter to activate if necessary the following one, and to enter a user identifer and password.
- **Authenticate on connect**: this parameter can be activate exclusively when the following one is selected.
- **User ID**: enter the user idenfier for accessing to the server
- **Password**: enter the password for accessing to the server

### Local Mbox File Protocol

- **Local Mailbox**: Enter the name of your local mail box
- **SMTP server (send)**: enter the server address for messages sent.

– **Use mail command rather than SMTP server**: select this parameter deactivate the previous one and activate the following.
  – command to send mails

### None (SMTP only) Protocol

– **SMTP server (send)**: use this protocol in order to exclusively send mails and not to receive them.

Once the Basic Page is completed, click on **APPLY** to validate this new account.

**4** In the page index, click on **Receive** and define the parameters for the received messages.


**Fig. 71** Mail Account - Receive parameters

In the upper box (POP3 in the figure), define the parameters available, which are different according to the protocol defined in the Basic page (see page 103).

**NOTE**

If the protocol None (SMTP) is selected in the Basic page, the Receive page is inactive.

### POP3

– **Use secure authentication (APOP)**

– **Remove message on server when received**: allows to delete the messages from server after a period, which will be defined in the following parameter, activated once this one is selected.

  **Remove after *x* days**: enter the number of days after which messages will be removed from the server.

– **Receive size limit *x* KB**: enter if necessary the maximum size authorized for the revceived e-mail.
– **Default inbox**: if necessary, select another directory in which received e-mail will be stored, clicking on Browse.

### IMAP4

– **Authentication method**: select in the list, the method to be used: Automatic / Login / CRAM-MD5 / ANONYMOUS / GSSAPI / DIGEST-MDS.
– **IMAP server directory (usually empty)**:
– **Show subscribed folders only**
– **Bandwidth-efficient mode (prevents retrieving remote tags)**:

### NEWS (NNTP)

– **Maximum number of articles to download**:

### Local Mbox file

– Default inbox

The following three parameters are available for all protocols:

– **Filter messages on receiving**: selecting this parameter allows to «sort» the e-mail when received.
– **Allow filtering using plugins on receiving**: this parameter can be activated exclusively if the previous one is selected, and allows to filter messages using plug-ins.
– **'Get Mail' checks for new messages on this account**: this parameter allows to check automatically the messages when Get Mail button is activated.

Click on **Apply** to validate the Receive parameters.

**5** On the Page index, click on **Send** and define the parameters for the messages sent.

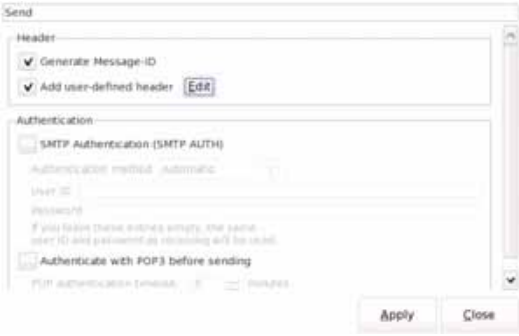



**Fig. 72** Mail Account - Send parameters

In the **Header** zone:

– Select **Generate Message-Id** (not available with IMAP4 Protocol)

– Select **Add user defined header** to insert a specific header for all messages, and click on **EDIT** to select the file and configure the header.

In the **Authentication** zone:

– Select **SMTP Authentication (SMTP AUTH)** if you wish to add an authentication to the mail access.

  Once selected, you can choose the authentication method to be used: **Automatic** / **PLAIN** / **LOGIN** / **CRAM-MD5**

  You can also enter a User ID and Password for authentification when sending messages.

**NOTE**

If those two fields are empty, the same user ID and password as the Receive parameters will be used.

Select **Authentication with POP3 before sending** if the message must be authenticated by a POP3 server before sending.

Click on **Apply** to validate the **Send** parameters.

**6** On the Page index, click on **Compose** and define the parameters for the composition of the messages.

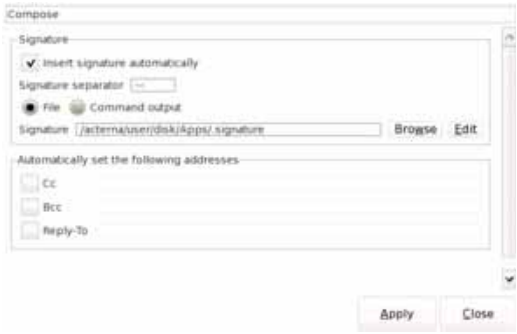



**Fig. 73** Mail Account - Compose parameters

In the Signature zone:

– **Insert signature automatically**: select this parameter in order to insert a signature at the end of all the messages sent.
– **Signature separator**: modify, if necessary, the signature separator (-- by default)
– Select if the signature is available in a file or with a command output.
– In the **Automatically set the following addresses** zone, enter the addresses of the contact(s) to which a copy or a reply will be sent for all messages.

Click on **Apply** to validate the **Compose** parameters.

**7** On the Page index, click on **Templates**

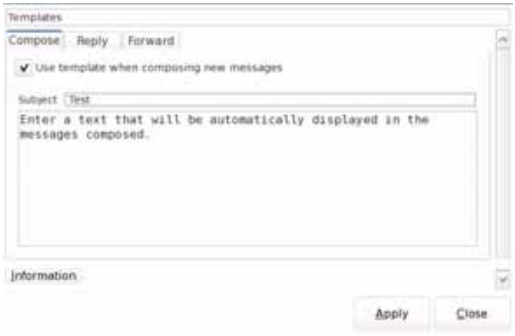



**Fig. 74** Mail Account - Template parameters

The page allows to enter a text which can be used as template for the messages composed / replied / forwarded (select the correct tab).

– Select **Use template when composing new messages** in order to automatically get the message from the template into the messages sent / replied / forwarded.
– Click on **Apply** to validate the **Template** parameters.

**8** On the Page index, click on **Advanced**

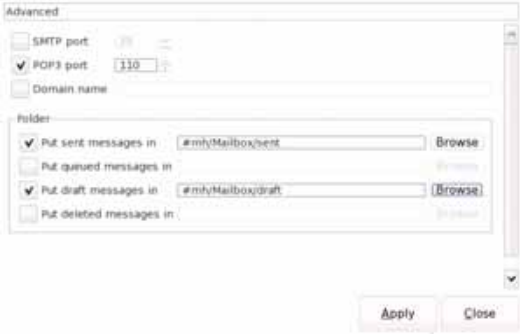



**Fig. 75** Mail Account - Advanced parameters

– In the upper zone, if necessary, select the port wished and define its number.
– In the Folder zone, modify the directory in which each kind of message (sent / queued / draft / deleted) will be stored.
– Click on **Apply** to validate the **Advanced** parameters.

**9** Once all parameters are defined, click on **Close** to go back to the list of accounts.

The new account has been automatically added.

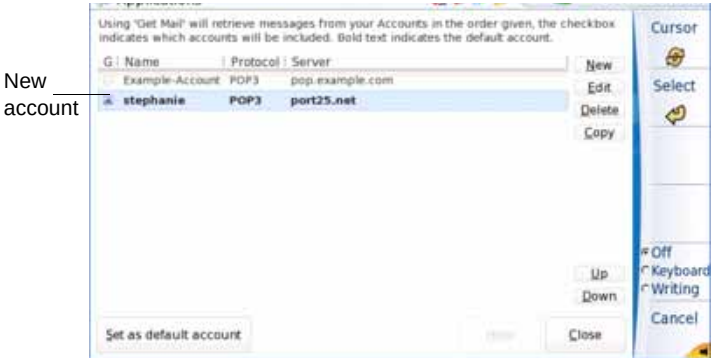



**Fig. 76** New Account

Set as default account : Modify the default account by selecting a new one and clicking.on **Set as default account**.

The account set by default is displayed in bold.

New : Click on **New** to create a new account.

Edit : Select an account and click on **Edit** to modify the parameters.

Delete : Select an account and click on **Delete** to remove the account.

Copy : Select an account and click on **Copy** to create a new account, identical to the one selected (and click on **Edit** once the new account is selected to modify the parameters).

Up
Down : Click on **Up** or **Down** to modify the position of the account in the list.

Close : Click on **Close** to close the account page and reach the E-mail page.

## Sending an e-mail

Once the account has been correctly configured. you can send e-mail using the 4000 Platform.

1. In the account page, select the account to be used for sending message (icon ).
2. Click on **Close** to reach the Folder List page (see Figure 68 on page 102).
3. Click on **Compose** Compose to create a new message

   or

   In the Folder list, click on **Address Book** and select the contact to which an e-mail must be sent, and click on the **Email** button (see Figure 67 on page 101); or directly click on the contact e-mail address.

   The screen displays a page to compose e-mail, in which the sender address is the one corresponding to the account previously selected.

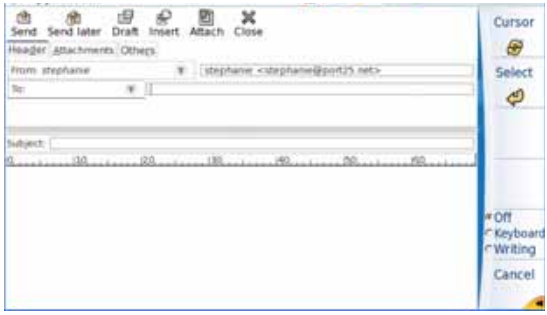



**Fig. 77** Composing an e-mail

**4** On line **To:**, enter the recipient e-mail address (if the button **Compose** is used).

If the key **Address book** has been used, the recipient name and address is already defined.

**5** On line **Subject**, enter a subject for the mail

**6** Enter the text in the empty field

**7** Click on Send to send the e-mail

Before sending the message, several actions can be performed:

– To attach a file to the message, click on the button Attach and select the file in the dialog box opened.

– To insert a file into the message (an image...), click on Insert and select the file into the dialog box opened.

– Click on Close to close the current opened message and choose to discard it or save it in the drafts folder.

– Click on Draft to save the message in the **Draft** folder.

– Click on Send later to save the message in the **Queue** folder and send it later.

Once the message has been sent to the recipient(s), the screen returns to folder list display (see Figure 68 on page 102).

You can click on one folder to display its contents.

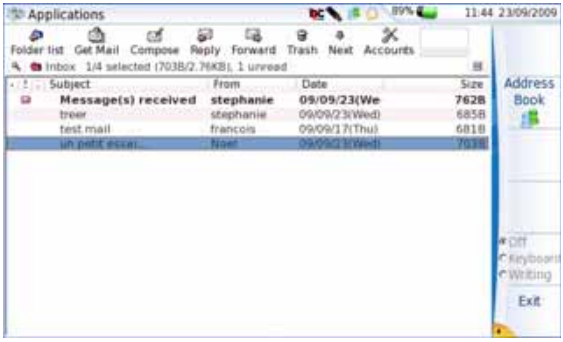



**Fig. 78** Folder «Inbox» open

On this screen you can also:

– Get Mail : Click to refresh the display and display the mail recently received.
– Reply : Click to reply to the message sender.
– Forward : Click to transfer the message to other recipients.
– Trash : Click to delete the selected file from the current folder and transfer it to the Trash folder.
– Next : Click to select the next file in the list.

### Exiting from the eMail application

– Click on Exit to exit the **eMail** application and go back to **Applications** page.

Or

Press **HOME** key to reach the **Home** page, and keep the application active (icon still displayed on the upper banner).

## Wireshark Application

Wireshark is a Protocol Analyzer.

The application set onto the MTS / T-BERD 4000 allows to open VoIP packet capture files.

## Opening the Wireshark application

1. In the **Application** menu, select **Wireshark** icon using direction keys
2. Press **ENTER** to open the Wireshark application

   The following screen displays

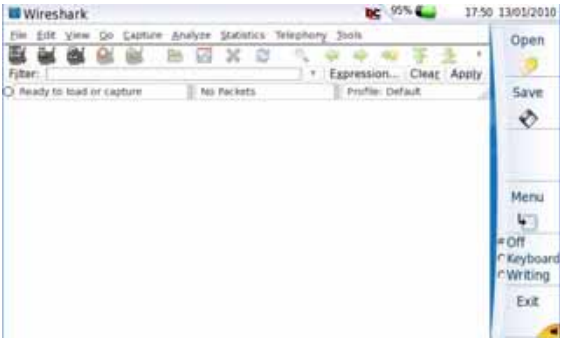


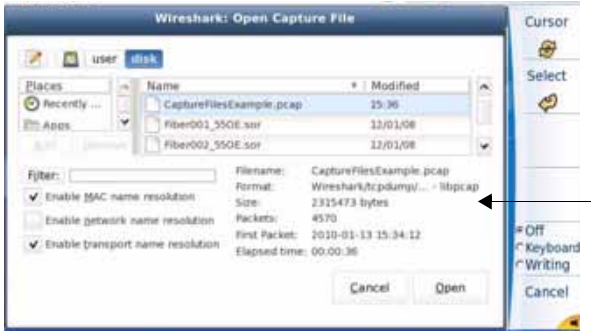

**Fig. 79** Wireshark page

## Opening VoIP packet capture files via Wireshark

Once the application is open, you can load a file to be displayed via Wireshark.

1. Press **Open** key

   A browser displays
2. Select the directory in which the VoIP packet capture file has been stored, and press **ENTER**.
3. Select the file in the list (extension .pcap).




Description of the selected file

**Fig. 80** Selecting the VoIP packet capture file

4 Press **Open** to lad the file in Wireshark application.

A new box opens during loading, indicating the remaining time of loading.


5 Once fully loaded, the file contents displays.

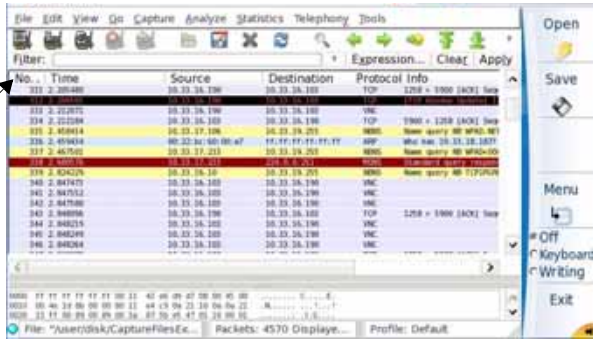



**Fig. 81** VoIP packet capture file openend in Wireshark

## Exiting from the Wireshark application

– Click on 

to exit the application and go back to **Application** page.

Or

Press **HOME** key to reach the **Home** page, and keep the application active (icon 

still activated on the Application page).

# File Explorer

This key allows to directly open the MTS/T-BERD 4000 explorer, where all the files are stored (traces, pdf files ...).

The explanation about the explorer are available in Chapter 11 “File management” on page 163.

# Bluetooth option

# 7

The Bluetooth interface allows file transfers.

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

The topics discussed in this chapter are as follows:



**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.**

# Setting up a Bluetooth connection

The Bluetooth option allows file transfers between the 4000 Platform and another device

1 On the **Home** page, press **System Settings** key

2 Under **I/O interfaces**, select **Bluetooth** > **Enable**

The icon is displayed on the upper banner of the screen

3 Push the **Bluetooth Pairing** key 


The Paired Bluetooth screen appears

4 Do one of the following:

Press the **Become Pairable** soft key to wait for another device to initiate the connection to the 4000.

or

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

The 4000 Platform 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 4000 Platform

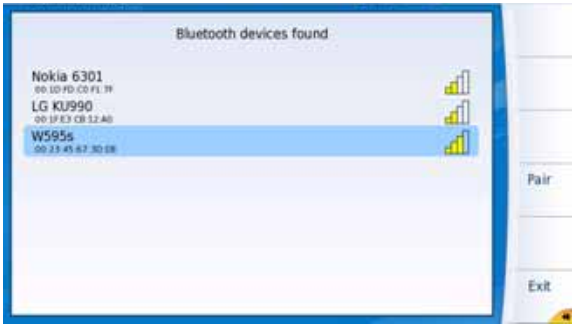



**Fig. 82** List of devices found

**a** Using the direction keys ▲ and ▼, 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

**5** If prompted, enter a pairing code. The code must be identical on the 4000 and the device.

**6** Once the bluetooth device and the Platform are paired, a screen is displayed with the description of the device

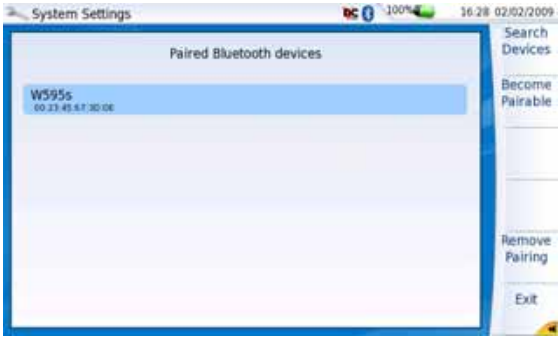



**Fig. 83** Device paired with Platform

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 4000 Platform toward the bluetooth device and vice versa (see "Sending files by Bluetooth" on page 175):

If you haven't already done so, enable file export using Bluetooth by doing the following:

**1** Press the **HOME** key and then press the **System Settings** soft key.

**2** Use the down arrow ▼ to move to the **I/O Interfaces** settings and then to **File export**.

**3** Select **Bluetooth** and then exit the menu.

## Removing the Pairing

**1** To remove the pairing between the two equipments, in the **System Settings** page, push the **Bluetooth Pairing** key

**2** In the screen displayed, 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, go in the **System Settings** page, and under **I/O Interfaces**, select **Disable** on the **Bluetooth** line.

# 802.11 Wireless Testing

# 8

This chapter provides task-based instructions for using the MTS/T-BERD 4000 wireless testing features. Topics discussed in this chapter include the following:



**This product is approved in accordance to R&TTE directive concerning transmitter module marked by CE0560. It is manufactured by QCOM TECHNOLOGY 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: RUJ-LR802UKG – IC: 4654A-LR802UKG.**

# About 802.11 testing

In IEEE 802.11 mode, you can use the MTS/T-BERD 4000 to emulate a wireless PC or laptop and connect to a wireless network. After connecting to the network, you can then use the data tests as well as the VoIP and Video features.

**NOTE**

The 802.11 wireless feature is an option that requires an add-on board. VoIP and IP Video are also options, but only require software.

### To select IEEE 802.11 mode

– From the Home screen, highlight **IEEE 802.11**, and then press the **ENTER** key.

The 802.11 tab appears.

# Wireless testing

The wireless test involves the following steps:

– Specifying test settings
– Connecting to the line
– Performing tests
– Viewing results

### To run a wireless test

**1** To specify test settings, do the following:

**a** From the 802.11 tab, press the **SETUP** key.

The 802.11 setup page appears.

Configuring the settings can be done one of two ways:

– Press a number on the key pad that corresponds to the setting you want to configure.

– Use the arrow keys to highlight the setting you want to change, and then press the **ENTER** key. Press the **CANCEL** key to exit a menu.

**b** Specify the settings.

The following table describes the settings.

| Setting | Description |
|---|---|
| SSID | Press the ENTER key to scan for service set identifiers (SSIDs) in the area. If found, select the desired network to connect to. To enter a custom SSID, press the Custom SSID soft key and use the keypad to enter the SSID name. |
| Encryption Type | Select the type of encryption.<br>**None, WEP40**, **WEP104**, **WPA/WPA2 (Auto), WPA Only, WPA2 Only**<br>WPA/WPA2 (Auto) will cause the unit to use WPA2 if available and then fall back to WPA |
| WPA1/2 PSK | Enter the pre-shared key (PSK) to use for WPA or WPA2. |
| WEP40 or WEP104 Key | Enter the static WEP key to use. |
| Region | Select your region: US, Japan, EU. The channels that are available will change based on the region.<br>**NOTE:** Changing the region will restart the application. If you are running a test this will cause errors. Only change the region before a test. |

**2** To connect to the line, press the **RESULTS** key to return to the 802.11 Summary screen.

The MTS/T-BERD 4000 will scan for the SSID that you specified, and attempt to connect to it.

**3** To view another result category, do one of the following:

**a** Press the right or left arrow to cycle through the menus.

**b** Press the **View** soft key, and then select a category.

**4** After successfully connecting to the wireless network, run your test.

For Data tests, VoIP tests, and IPVideo tests, see MTS 4000 Triple Play Testing User's Guide.

# 802.11 wireless results

The following result categories are available in the 802.11 application:

- Summary
- BSS Properties
- 802.11 Frames
- Networks In Range
- Event Log

You can view many additional results by pressing the arrow keys or use the **View** soft key and then select another category.

The following sections describe the results in each category.

## 802.11 Summary results

This default results screen provides a summary of the most frequently used test results. Table 2 describes the 802.11 summary results.

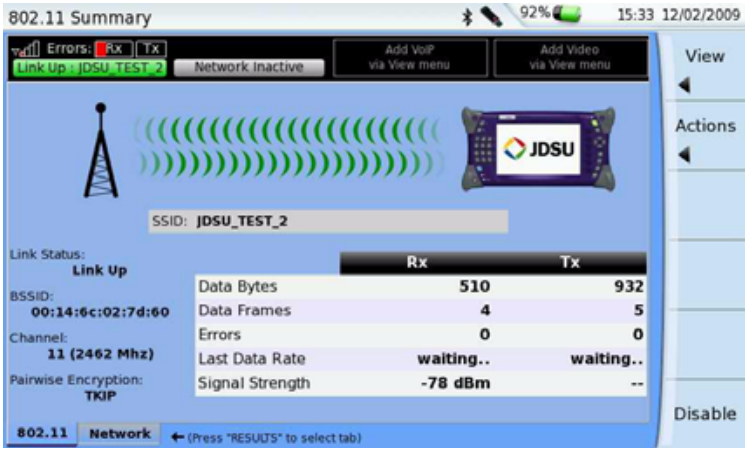



**Fig. 84** Summary result page

**Table 2** 802.11 summary results

| Result | Definition |
|---|---|
| Circuit diagram | Located in the top area of the screen, shows a graphic indication of the circuit, including the link status. The status will be one of the following:<br>**Idle** – 802.11 stopped, unit may be scanning depending on Idle Scan option in networks screen<br>**Scanning** – Scanning for the SSID configured in setup<br>**Associating** – associating to a BSS<br>**Associated** – Associated to a BSS. However, the link is not fully up yet.<br>**WPA Handshake** – Completing the WPA handshake to set up encryption<br>**Link up** – Link is fully up. |
| SSID | The SSID selected in the Setup menu. This is the network that we are connected to (or attempting to connect to). |
| Link status | Located on the left of the screen, indicates whether the link is up or down. |
| BSSID | The Basic Service Set Identifier is an identifier that represents a single 802.11 cell (similar to a MAC address). |
| Channel | The 802.11b/g channel the particular BSS is operating in. |
| Pairwise Encryption | The encryption used for frames sent between the MTS/T-BERD 4000 and the access point. |
| Data Bytes | Total bytes received and transmitted. |
| Data Frames | Total frames received and transmitted. |
| Errors | Total errors received or transmitted. |
| Last Data Rate | The data rate most recently achieved. |
| Signal Strength | The dB level of the signal. |

## BSS Properties

This screen reports the properties of the basic service set (BSS). Table 3 describes the BSS Properties results.


**Fig. 85** BBS Properties

**Table 3** BBS Properties results

| Result | Definition |
|---|---|
| SSID | The SSID selected in the Setup menu. This is the network that we are connected to (or attempting to connect to). |
| BSS | The Basic Service Set Identifier is an identifier that represents a single 802.11 cell (similar to a MAC address). |
| Channel | The 802.11b/g channel the particular BSS is operating in. |
| Frequency | The frequency of the 802.11b/g channel in use. |
| Mode | The 802.11 mode - whether it is managed or not. |
| Slot Time | The slot time in use for this BSS - short or long. Short slot times typically provide better performance. |

**Table 3** BBS Properties results

| Result | Definition |
|---|---|
| Preamble | The preamble type in use by this BSS - short & long or long only. Short preambles can increase performance but can reduce frame detection in noisy environments. |
| QoS BSS | Whether the BSS supports any quality of service controls. A BSS with QoS will generally handle tasks such as VoIP better. |
| APSD | Whether the BSS supports Automatic Power Save Delivery. APSD is a method to allow 802.11 devices to consume very little power. |
| Protection | Whether the BSS requires CTS protection when transmitting. CTS-to-self is a mechanism used to protect 802.11b devices operating on 802.11g networks. |
| AID | The association identifier of the MTS/T-BERD 4000 in this BSS. |
| Pairwise Cipher | The cipher (encryption method) used for frames sent between the MTS/T-BERD 4000 and the access point. |
| Groupwise Cipher | The cipher (encryption method) used for frames sent from the access point to all devices associated with it. |
| Protocol | The security key protocol in use. This is N/A when using no security or WEP. For WPA modes, it will be either WPA or WPA2 depending on what was negotiated. |
| Key Mgmt | The key management system used by the key protocol. For WPA/WPA2, it will be PSK; for non-WPA encryption modes, it will be None. |
| Speeds | The speeds supported by the BSS. The bold speeds are speeds that all associated devices must support to join the BSS. |

## Errors

This screen reports error statistics. Table 4 describes the 802.11 Errors results.


**Fig. 86** Erros Results page

**Table 4** Errors results

| Result | Definition |
|---|---|
| RX False Alarms/ Second | A graphical representation of the percentage of false alarms per second received in the last 120 seconds. This is useful in noisy environments to show interference. |
| FCS Errors | Count of frame check sequence (FCS) errors received in the last second and total received. Frames with FCS errors have corrupted payload so they are dropped. |
| PLCP Errors | Count of physical layer convergence procedure (PLCP) errors received in the last second and total received. Frames with PLCP errors have a corrupted header so they are dropped. |
| RX False Alarms | Count of false alarms received in the last second and total received. A false alarm is when the radio is triggered to enter the receive state by RF energy but then realizes that there is no 802.11 traffic. This result is indicative of non-802.11 interference or severely corrupted 802.11 frames. |

**Table 4** Errors results

| Result | Definition |
|---|---|
| Long RX False Alarms | Count of long false alarms received in the last second and total received. These are false alarms that last an unusually long time. Long RX False Alarms are not included in the RX False Alarm result. |
| TX No Retries | Count of bits that transmitted successfully with no TX retries. |
| TX One Retry | Count of bits that transmitted successfully with only one retry. |
| TX Multiple Retries | Count of bits that transmitted successfully with multiple TX retries. |
| Tx Failed | Count of bits that were attempted to be transmitted but failed. This doesn't always mean the frame was lost, but the MTS/T-BERD 4000 did not receive an acknowl-edgement. |

## 802.11 Frames

This screen reports frame statistics. Table 4 describes the 802.11 Frame statistics.


**Fig. 87** Frames results

| Result | Definition |
|---|---|
| RX Unicast Data | Number of data frames or bytes received whose payload is unicast and the last rate for this frame type. If no frames have been received of this type, it will say “waiting”. |
| RX Multicast Data | Number of data frames or bytes received whose payload is multicast and the last rate for this frame type. |
| RX Unicast Mgmt | Number of management frames or bytes received whose payload is unicast and the last rate for this frame type. |
| RX Multicast Mgmt | Number of management frames or bytes received whose payload is multicast and the last rate for this frame type. |
| Tx Unicast Data | Number of data frames or bytes sent with unicast payloads and the last rate for this frame type. |
| TX Multicast Data | Number of data frames or bytes sent with multicast payloads and the last rate for this frame type. |
| Tx Mgmt | Number of management frames or bytes sent and the last rate for this frame type. |
| BSSID | The Basic Service Set Identifier is an identifier that represents a single 802.11 cell (similar to a MAC address). |
| AID | The association identifier of the MTS/T-BERD 4000 in this BSS. |

## Networks in Range

This screen reports any 802.11 networks within range. The SSID, BSSID, signal strength, channel number and frequency, and the encryption in use are listed. The list can be sorted by SSID or signal strength.

The list updates in the follow situations:

– The **Scan** soft key is pressed. Using the Scan soft key while associated to an access point could cause data disruption.

– When the state is Idle and the **Idle Scan** soft key is set to On. This option means “scan while idle” – the unit updates the network list every 2 seconds. This is useful for walking around and checking out networks.
– During normal operation while trying to associate with an access point, the network list may be updated.

The **Last Scan Time** indicates when the previous scan occurred and gives an indicator how old the list is.


**Fig. 88** Networks in range

## Event log

This category provides a running log of significant wireless events and errors.

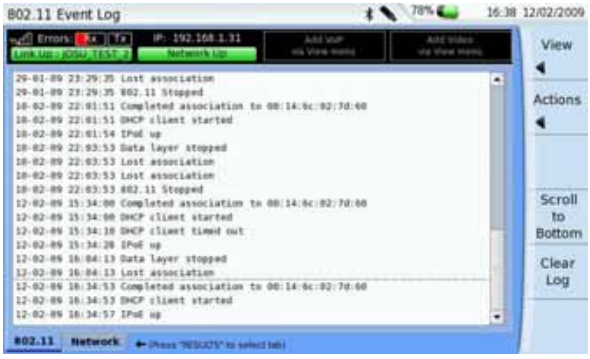



**Fig. 89** Events log

# Ethernet TE Testing

# 9

This chapter provides task-based instructions for using the MTS/T-BERD 4000 Ethernet TE testing features. Topics discussed in this chapter include the following:

# About Ethernet TE testing

In Ethernet TE mode, you can use the MTS/T-BERD 4000 to emulate Ethernet terminal equipment by connecting to an Ethernet LAN or to the Ethernet port on the customer's modem. After connecting to the circuit, you can then use trace route, FTP, the web browser, or IP Ping to test for connectivity.

You can also ping through the modem to a network switch or web address to test for connectivity.

### To select Ethernet TE mode

– From the Home screen, highlight **Ethernet**, and then press the **RESULTS** key.

  The Ethernet tab appears, with the last viewed result menu (for example, the Ethernet Summary).

The Ethernet TE test involves the following steps:

– Specifying test settings
– Connecting to the line
– Performing tests
– Viewing results

# Specifying test settings

Before you begin testing, make sure the test settings on the MTS/T-BERD 4000 match the settings of the line that you are testing.

### To specify test settings

**1** From the Ethernet tab, press the **SETUP** key.

  The last viewed setup page appears.

  Configuring the settings can be done one of two ways:

  – Press a number on the key pad that corresponds to the setting you want to configure.
  – Use the arrow keys to highlight the setting you want to change, and then press the **ENTER** key. Press the **CANCEL** key to exit a menu.

**2** Press the **General Ethernet** soft key, and then specify the Media Type.

This is the type of circuit (media) you are testing: 10M half or full duplex, 100M half or full duplex, or 1000M half or full duplex.

**3** Press the **SETUP** key to move to the Network Settings.

**CAUTION: FAULTY RESULTS**

Any time the Network settings are changed, the network layer resets. If you change these settings during a test, you may cause errors in the test. Only change them before you begin a test.

**4** Press the **General Network** soft key, and then specify the settings.

The following table describes the settings.

| Setting | Description |
|---|---|
| Emulation Type | This specifies the data emulation: whether to **Terminate** the line to analyze the data or pass the data **Through** after analyzing it. |
| Network Type | Select the network type.<br>**IPoE** is IP over Ethernet<br>**PPPoE** is PPP over Ethernet |
| Auto Enable | Specify whether to automatically enable the network layer. If set to Off, you must manually enable the network by pressing the Enable Network or PPP Logon soft key. |
| STUN Enabled (IPoE network only) | Select **Yes** or **No**. STUN allows calls across a NAT router. Change this only if you know it is necessary. |

**5** Press the **LAN** soft key, and then specify the settings.

The following table describes the settings.

| Setting | Description |
|---|---|
| IP Mode (IPoE networks) | Select either **Static** or **DHCP** (dynamic host configuration protocol). |
| IP Address (Static IP mode) | Enter the LAN IP address. |
| Net Mask (Static IP mode) | Enter the net mask address. |

| Setting | Description |
|---|---|
| Gateway (Static IP mode) | Enter the gateway address. |
| DNS (Static IP mode) | Enter the address of the DNS server. |
| Use Vendor ID (DHCP mode) | Specify whether the vendor ID is used. |
| Use Vendor ID (If Use Vendor ID is Yes) | Enter the vendor ID. |
| MAC Setting | Specify whether the MAC is the factory default or user defined. |
| VLAN | Specify whether VLANs are used. |
| VLAN ID | If VLAN is On, specify the VLAN ID. |
| VLAN Priority | If VLAN is On, specify the VLAN Priority. |

**6** Press the **PPP** soft key, and then specify the settings. The following table describes the settings.

| Setting | Description |
|---|---|
| PPP Mode | Select **Client** or **Server**.<br>Client is normally used. Use Server only when you have a CO unit. This allows a remote modem to establish a PPP session with the MTS/T-BERD 4000.<br>**NOTE:** If you selected “Server” as the PPP mode, connect only to other devices with the same service name. |
| User Name | Enter a valid user name.<br>This must be a valid user account with an ISP. |

| Setting | Description |
|---|---|
| Use Provider | Select **Yes** or **No**.<br>This option indicates whether to append the user name with the service provider domain name (for example, earthlink.net). Select Yes only if user names for the ISP must include the domain name as part of the user name. This setting automatically appends the @ sign for you. |
| Provider | Enter the provider name.<br>This is required if you selected Yes for “Use Provider.” |
| Password | Enter the user password.<br>This must be a valid password that matches the user name above. Passwords are often case-sensitive. |
| Use Service | Select **Yes** or **No** to whether to use the Service Name |
| Service Name | Enter the Service Name. This is required if you selected Yes for “Use Service.” |

**7** Press the **STUN** soft key, and then specify the settings.

STUN (Simple Transversal of UDP [User Datagram Protocol] Through NATs [Network Address Translators]) allows calls across a NAT router. These settings should only be changed if necessary.

The STUN settings are only available if the following settings are specified on the General Network Settings menu: Emulation Type is Terminate, Network Type is IPoE, and STUN Enabled is “Yes”.

The following table describes the settings.

| Setting | Description |
|---|---|
| Address Type | Specify whether an **IP Address** or **DNS Name** is used. |
| Server IP Address (IP Address Type) | Enter the IP address of the STUN server. |

| Setting | Description |
|---|---|
| Server DNS Name (DNS Name Type) | Enter DNS name of the STUN server. |
| Server Port | Enter the port number for the STUN server |
| Client Port | Enter the client port number. |
| NAT Refresh | Specify the NAT refresh rate. This is the number of seconds between messages to the STUN server to keep the NAT mapping alive. |

**NOTE:**

If STUN is enabled, the network layer will not come up until the STUN client on the MTS/T-BERD 4000 has determined the type of NAT used between the MTS/T-BERD 4000 and the STUN server.

You are finished specifying test settings.

## Connecting to the line

After specifying the test settings, you can connect to the line.

### To connect to the line

1. Connect one end of an Ethernet cable to the Ethernet jack on the top of the unit.
2. Connect the other end of the cable to an Ethernet jack. If connecting to a PC, use a cross-over cable.

## Running a cable test

Before testing 10/100/1000 electrical Ethernet, IP, or TCP/UDP, you can use the MTS/T-BERD 4000 to examine the state of the cables used to transmit 10/100/1000 electrical signals. Typically this involves out-of-service testing to determine the link status, the pair assignments for

1000M links, the polarity for each pair, and the pair skew. If the link is inactive, you can use the MTS/T-BERD 4000 to determine the nature of the fault.

### To run a cable test

1 Connect to the line (see "Connecting to the line" on page 136).

2 Press the **View** soft key and then select **Cable Test**.

**NOTE:**

The Ethernet Cable Test is an optional feature. If your unit is not equipped with this option, the Cable Test selection will not be available.

The Ethernet Cable Test screen appears.

3 *Optional.* To change the measurement units, use the **Units** soft key and select Feet or Meters.

4 Press the **Start Test** soft key.

The test runs and then displays the results.

See "Ethernet TE results" on page 137 to learn what your results mean.

## Viewing results

After specifying test settings and connecting to the line, you can view results.

### To view results

1 Use the RESULTS key to access the Ethernet tab and view results.

The last viewed result screen appears.

2 To view another result category, do one of the following:

**a** Press the right or left arrow to cycle through the menus.

**b** Press the **View** soft key, and then select a category.

## Ethernet TE results

The following result categories are available in the Ethernet TE application:

– Ethernet Summary

– Ethernet Cable Test
– Event Log

You can view many additional results by pressing the arrow keys or use the **View** soft key and then select another category.

The following sections describe the results in each category.

## Ethernet Summary results

This default results screen provides a summary of the most frequently used test results. Table 5 describes the Ethernet summary results.


**Fig. 90** Summary page

**Table 5** Ethernet summary results

| Result | Definition |
|---|---|
| Circuit diagram | Located in the top area of the screen, shows a graphic indication of the circuit, including the link status (“Link Up/Link Down”). |
| Link status | Located on the left of the screen, indicates whether the link is up or down. |
| Duplex | Indicates the media type: half duplex or full duplex. |
| Speed | Indicates the media speed: 10Mbps, 100Mbps, or 1000Mbps. |
| Bytes | Total bytes received and transmitted. |

**Table 5** Ethernet summary results

| Result | Definition |
|---|---|
| Frames | Total frames received and transmitted. |
| Errors | Total errors received and transmitted. |
| Dropped Frames | Total dropped frames |
| TX collisions | Ethernet frames are transmitted “space-available” when there is a break on the signal on the cable; sometimes frames are transmitted at the same time as another transmitter, causing a “collision” of frames. |

## Ethernet Cable Test

This category provides statistics on the pairs inside the cable. Table 6 describes the Ethernet Cable Test results.


**Fig. 91** Cable Test Page

**Table 6** Ethernet Cable Test results

| Result | Definition |
|---|---|
| Pair | The pair being tested. |
| Channel | Either Tx or Rx for 10/1000<br>A, B, C, or D for GigE |

**Table 6** Ethernet Cable Test results (Continued)

| Result | Definition |
|---|---|
| Fault Type | Good appears if no faults are found, if a fault is detected, one of the following will appear: Open, Short, or Imp. Mismatch (Impedance) |
| Dx to fault | The distance to the fault. |
| Polarity | Normal or reversed. (Used for GigE tests.) |
| Skew | 0, 16, 32, or 64 nanoseconds. (Used for GigE tests.) |
| Carrier | When lit, indicates the link is active. |
| Speed | Indicates the speed of the circuit: 10 Mbps, 100 Mbps, or 1000 Mbps. |
| Auto Cross-over | Indicates whether Auto Crossover is active. |
| Estimated Pair Length | Indicates the estimated length of each pair. This only populates when testing a GigE link.<br>**NOTE**: This is a rough estimate. |

## Ethernet Event Log

This category provides a running log of significant events and errors.

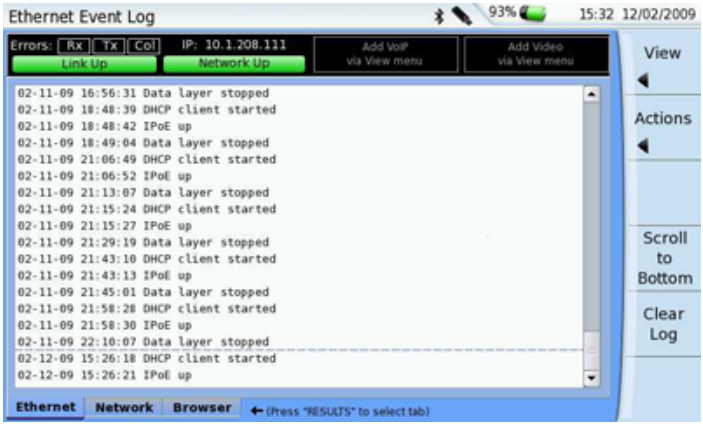



**Fig. 92** Event Log page

# Web browser

## About the wbe browser

With the web browser feature, you can provide visual proof to customers that a circuit is correctly provisioned all the way to the Internet. The browser works over Ethernet, and 802.11 interfaces, allowing you to surf the web from the customer's NID or demarcation point using only the MTS/T-BERD 4000. The browser allows you to connect to any public web site on the Internet through an internet service provider.

Because the browser's primary purpose is to demonstrate connectivity, it does not have all the capabilities of typical web browsers such as Internet Explorer or Netscape Navigator. The MTS/T-BERD 4000's web browser has the following limitations:

– The browser does not cache web pages. The MTS/T-BERD 4000 does not have sufficient memory to cache web pages. Each time a page is selected, the MTS/T-BERD 4000 re-loads the page.
– The browser does not currently support Java applets, and will not display web pages written in Java. Sites optimized for quick downloads, such as DSLReports.com, are not supported because they are based on Java.
– The browser does not support Shockwave Flash (SWF) content.

The following sections in this chapter describe how to access and use the web browser.

## Accessing the web browser

Like IP ping, you must have an established underlying network connection, such as PPP over Ethernet, before you can use the browser. After you have a successful network connection, the MTS/T-BERD 4000's Network status (on the top of the screen) turns green. If the Network status is red, the underlying connection is not ready, and the web browser (and IP ping) will not work.

### To access the web browser

1. Make sure that you have a network connection, such as PPP over Ethernet.
2. Press the **View** soft key, and then select **Browser**.
3. Press the **RESULTS** key to move to the Browser tab.
4. Select **Web Browser**.

The Web Browser Help screen appears.


## Navigating the browser

You can connect a USB mouse or a USB keyboard/mouse combination to the MTS/T-BERD 4000 to navigate the web browser as you would with a desktop computer. If you don't use a mouse, you can use the MTS/T-BERD 4000 arrow keys. The following sections describe how to navigate the web browser.

### *Scrolling the view*

The screen displays only the top left area of a web page. To view other areas of a web page, use the MTS/T-BERD 4000 arrow keys to scroll the page view. If you have a touch screen, press the scroll bar to move the view.

### *Moving the pointer*

Using the shift key plus the arrow keys you can move the pointer to different areas of the web page.

When the mouse pointer passes over a link, it changes to a pointing finger.

### *Selecting links*

The following procedure describes how to select a link on a web page.

#### To select a link

1. Navigate to the link using the arrow keys and the shift+arrow keys.

   When the pointer passes over the link, it changes to a pointing finger.

2. Press the **ENTER** key.

   If you have a touch screen, double click the link.

The screen changes as appropriate.

***Moving among fields***

This feature is only available on units with a traditional screen (not a touch screen). After loading a page, use the **Next Item** to move to the next field on a page. This is the same function as pressing the tab key on a PC. Similarly, use the **Prev Item** to go backward one field (like shift-tab on the PC).

***Entering data in fields***

The procedure for entering data is different depending on the type of screen you have.

**To enter data in fields**

If you have a touch screen, do the following:

1. Select the field, and then press the **Show Keyboard** soft key.
2. Use the on-screen keyboard to enter the data.

If you have a traditional screen, do the following:

1. Navigate to the field and then press the **Edit Field** soft key.
2. Use the alpha-numeric keypad on the MTS/T-BERD 4000 to enter the data into the dialog box.

***Returning to the Home page***

If at any time you wish to return to the Home page, press **Navigate** and then select **Home**.

***Setting your home page***

To select a page as your home page, press the **Options** soft key and then **Set as Home Page**.

***Going back one page***

If you want to go back to the previous page, press the **Back** soft key.

## Opening a web page

There are three ways to open a web page.

- Enter the address
- Select an address from the last five previously visited pages.
- Use a bookmark. See “Adding and deleting bookmarks” on page 145 for more information.

### *Typing in an address*

The following procedure describes how to type in an address.

**To type in an address**

1. Press the **Navigate** soft key.
2. Select **Enter URL**.
3. Enter the URL.
   To enter a dot (.), use the **Symbols** soft key.
4. Press the **ENTER** key.

### *Selecting a previous address*

The following procedure describes how to select a previously visited address.

**To select a previous address**

1. Press the **Navigate** soft key.
2. Select **Recently Entered URLs**.
   The last five visited sites are listed.
3. Select the address you want to go to.

## Selecting a bookmark

**To select a bookmarked site**

1. Press the **Bookmarks** soft key.
   A list of bookmarks appears.
2. Press the appropriate key to select the desired bookmark.

## Stopping or reloading a page

After selecting a URL or bookmark, you can stop loading the page with the **Stop** soft key. This soft key only appears when the page is loading. If you have a touch screen, after the page fully loads, the soft key changes to Reload; on a traditional screen, it returns to Prev Item.

To reload the current page, press the **Reload** soft key.

## Viewing the full screen

To view more of the web page, press the **Options** soft key and then select **Full Screen.** The soft keys disappear. Select **CANCEL full screen** to end full screen mode.

## Adding and deleting bookmarks

If there is a specific page that you would like to view or if you visit a site frequently, you can bookmark it. The following procedure describes how to add and delete bookmarks.

### To add or delete bookmarks

1. When on a web page, press the **Bookmarks** soft key.
2. Do one of the following:

| To... | Do the following |
|---|---|
| Add the current URL to the list of saved bookmarks | Select **Bookmark this Page**.<br>The address will show up in the bookmark list the next time it is viewed. |
| To delete a bookmark | Select **Manage Bookmarks**, and then select Delete. A list of saved bookmarks appears.<br>Select the bookmark to delete. |

The address is added or removed from the bookmark list.

## Exiting the browser

When you are finished demonstrating internet access to the user, you should exit the browser.

### To exit the browser

1. Press the **RESULTS** key to view a different tab.
   This leaves the Browser running in the background.
2. To exit, select the **View** soft key and un-select **Browser**.

# Scope

# 10

The scope function is a hot-plug feature enabled directly when inserting a USB scope supplied as an accessory (see"Reference of Scope" on page 197 ).

The topics discussed in this chapter are as follows:

# Scope feature

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

**Fig. 93** 4000 Platform and scope

# Scope connection

To use the scope function, use a USB scope supplied by JDSU (see the list of all 4000 Platform accessories in “Reference of Scope” on page 197).

1. Plug in your scope into a USB port from the 4000 Platform.
2. Connect probe with the fiber being inspected.
3. Push the button **HOME,** then use the arrows keys <- or -> to select the icon **Scope** and validate the selection by pushing the **ENTER** key.


**Fig. 94** Activation of Scope icon

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

In order to see the **Scope** icon and select it, you must first make sure that the scope is correctly plugged into an available USB slot, before you reach this screen. If this was not done, quit this screen and come back to it after plugging in your scope correctly. This will refresh your detected devices.

# Result display

To display the result, click on **RESULTS** while **Scope** is still actively selected.

## Camera mode

Set the key **Camera/Freeze** on **Camera**, to get a live picture of the scope result.

Use the focus control to adjust the focus of the image

### Luminosity and contrast settings

Luminosity and contrast may be set manually by using the key **Bright/Cont.**. Once you select which parameter you wish to modify, use the arrow keys ▲ and ▼ to tune the luminosity or contrast to the desired value. Note that the set values are displayed on the key.


You may also choose to use the function **Auto Contrast** in order to get settings calculated automatically by the instrument.

**NOTE**

Saturated parts of the picture appear in yellow. Modify the luminosity and contrast settings or use **Auto contrast** to modify the actual setting and remove saturation.

**Auto Contrast must be used with a pristine (perfectly clean, undamaged) fiber connector. Changing the brightness or contrast settings can significantly change the fiber inspection test result.**

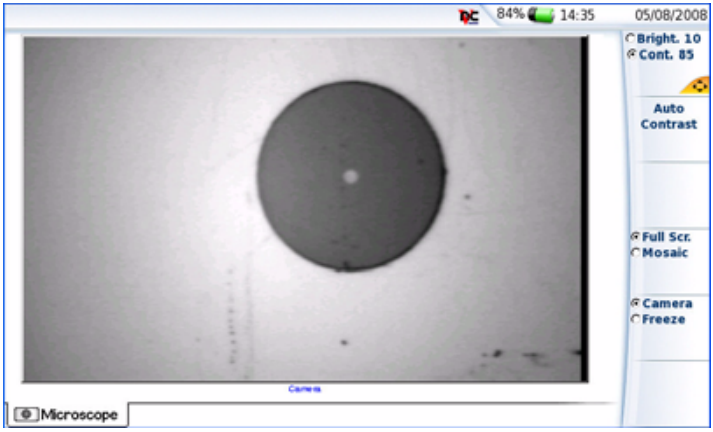



**Fig. 95** Example of a fiber connector endface image when using the scope option

## Freeze mode

Once the image is acceptable (sharpness, luminosity and contrast are tuned correctly), you may **freeze** the picture. This feature allows to store in memory the resulting picture in order later to compare it to others or save it in a file.

Freezing a scope result does not store the picture in a file (see "Saving a picture" on page 151). The result will be lost if the instrument is shut off, or if more than 3 pictures are frozen (see "Mosaic Mode" on page 153).

**NOTE**

The button set on the lead, or the QuickCapture™ on the P5000 allows to freeze the picture or to take a snapshot.

### Adding a comment

A key **Comment** allows you to enter 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 if that picture is saved later on.

**NOTE**

The comment may be modified at any time later on.

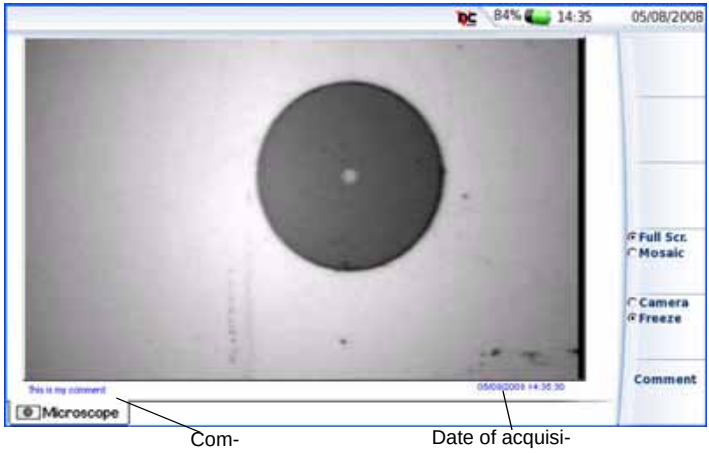



**Fig. 96** Frozen Scope image

## File toolbar

Click on the **FILE** button to access the File toolbar on the right of the screen.

### Saving a picture

It is possible to save the frozen picture resulting from the scope.

To do this, select **Save**. An edition screen is displayed in which to enter alphanumerical characters in order to save the file with an appropriate name.

**NOTE**

By default, files are saved and read in the directory***disk/Scope***. It is possible to move these files to another place, via the file explorer.

However, reading will always be done in the initial directory.

**NOTE**

Files are saved using the JPG format.

## Loading a picture

It is possible to retrieve and load a picture stored in the default directory (see "Frozen Scope image" on page 151 to know the default directory).

1 Select **Load**. The list of all files in a JPEG format are presented in a list, showing for each file :

– An icon indicating the type of JPG file ( unknown picture or Recognized scope picture)

– The name of the file

– The date of acquisition of the picture (only appears for recognized scope pictures)

– A potential comment (only appears for recognized scope pictures if comment is present)

2 Click on **Load/Confirm Load** to load the image selected

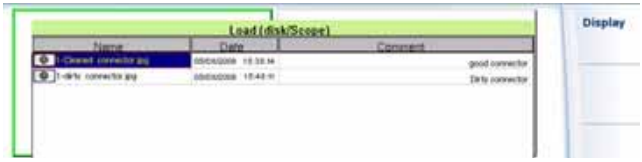



**Fig. 97** List of JPG files that can be loaded

Recognized pictures are images resulting from the Scope option and saved on disk via the 4000 Platform.

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. Opening such a picture and saving it again with the current 4000 Platform software version will allow this file to be displayed later with the scope logo.

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" on page 153).

**NOTE**

The JPG editor may open all files in a JPG valid format, wether the extension is «.jpg» or «.jpeg».

Click on the **RESULTS** button if you wish to come back to the previous screen

# 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.

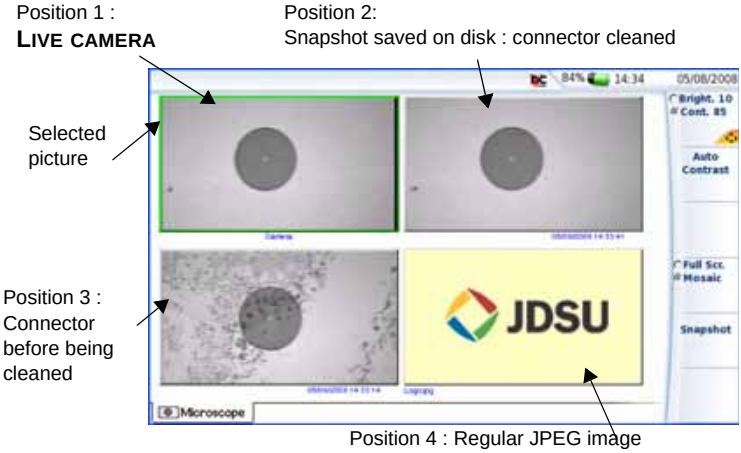



**Fig. 98** Mosaic mode

You may select of the pictures by using the arrow keys ◀, ▶, ▼. or ▲.

The selected picture is framed in green.

The toolbar on the right varies according to which picture is selected (camera, or static picture).

### Camera

All the Contrast and Luminosity settings are available just like in full screen.

Snapshot — 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.

### Static pictures

Comment — It is possible to add a comment to a picture, just like in full screen.

## File toolbar

The File toolbar is also available in mosaic mode. Actions made by this toolbar will concern the selected file.

Click on the **FILE** button to access the File toolbar on the right of the screen.

Up to two choices are presented :

**Load** — Refer to "Loading a picture" on page 152

**Save** — This choice is only available if the picture has been recognised by the system as a Scope picture, either before opening it or after opening it (pictures created with different versions). When this choice is available, refer to "Saving a picture" on page 151.

A new loaded picture will take the place of the selected picture, unless:

– the selected picture corresponds to the camera (first position). In this case, the rule is the same as when a snapshot is made (see "Camera" on page 153).
– free spots are available in the mosaic. In this case, the new picture takes the second position while other ones are pushed to the next position.

**NOTE**

Clicking on **Save** while the camera is selected will both create a snapshot (see "Camera" on page 153) and save it on disk.

# New features available with the P5000 Scope

The P5000 Digital Probe Microscope is a portable handheld 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 probe is specially designed to fit and operate comfortably and easily in-hand, allowing the user to inspect hard-to-reach connectors that are installed on the back side of patch panels or inside hardware devices. The P5000 requires an FBPT inspection tip and is connected to the 4000 Base Unit with a USB 2.0 connector.

The P5000 Digital Scope Kit sold with the 4000 Base Unit (Ref EDFSCOPESK) contains the standard barrel assembly (FBPP-BAP1), standard patch cord tips and standard bulkhead tips.

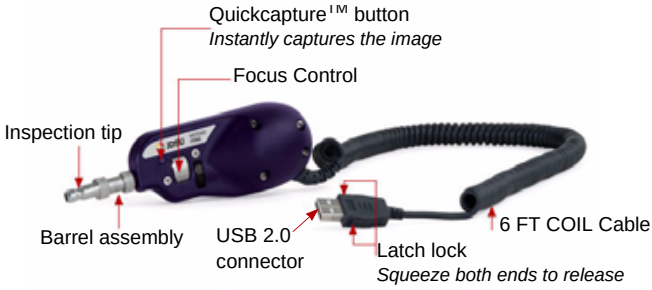



**Fig. 99** P5000 Probe components

**Before using the P5000 scope, make sure the Bluetooth option has not been activated, even once, after the start of the MTS/ T-BERD 4000. If it has been activated, stop and restart the equipment before using the P5000 Scope.**

## Configuring the P5000 Scope

Once the Fiber Microscope icon is selected on the **Home** page 

, press **Setup** key to configure the P5000.

The following screen displays:


**Fig. 100** Scope Setup

### Warning on tips use

The Pass/Fail analysis function on the MTS / T-BERD 4000 can only be used with certain inspection tips mounted on the P5000.

Only tips that attach to the standard barrel assembly (ref: **FBPP- BAP1**) will give an accurate Pass/Fail result: standard patch cord tips and standard bulkhead type.

Specially tips, such as LC Bulkhead Long Reach (ref:**FBPT - LC - L**) and MTP Bulkhead x-axis pan knob (ref:**FBPT - MTP**) can be used only to view and record the fiber end-face, but will cause the MTS-4000 to give a false Test result.

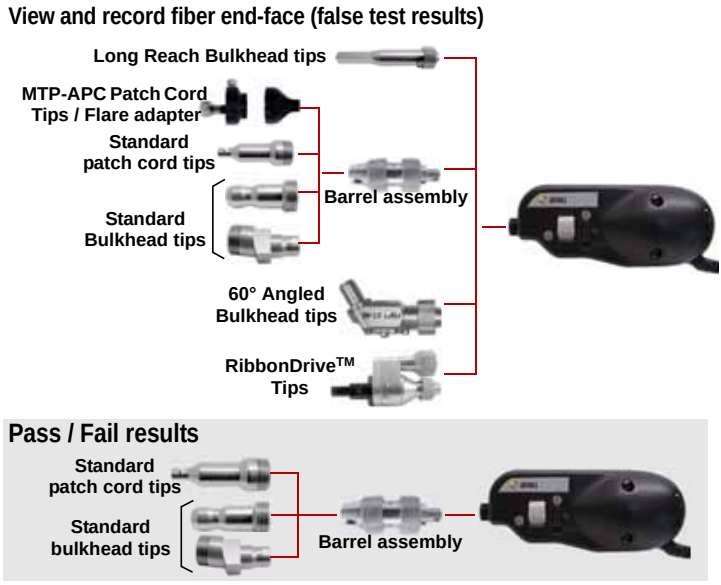



**Fig. 101** Use of tips

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

- IEC SM-UPC: Pass/Fail criteria for single-mode UPC connectors from IEC 61300-3-35 standard.
- IEC SM-APC: Pass/Fail criteria for single-mode APC connectors from IEC 61300-3-35 standard.

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 **Add** Button (see "Adding a new profile" on page 157).

On the line **P5000 Type**, select **FBP-P5000**.

***Report*** The parameters in **Report** box allow to configure the Report page setup.

On the line **Company**, enter the name of your company using the edition keypad which will displayed automatically once clicking in the edition field or on the right arrow key.

On the line **Logo**, you can select an image on the 4000 Explorer once clicking on the right arrow key, which will be displayed on the upper left part of the report. Press the **SETUP** key to return back to the **Setup** page.

On the line **Operator**, you can enter the name of the operator, which will be displayed on the header of the report.

See Figure 105 on page 161 for a description of the pdf report.

***Fiber*** The **Fiber** box allows to configure the fiber plugged to the scope.

On the line **Fiber Name**, use the edition keypad, which will display by clicking on the right arrow key, to enter a specific name for the fiber.

On the line **Fiber Number**, use the numeric keypad, which will display by clicking on the right arrow key, to enter the fiber number.

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

## Adding a new profile

Once the **Setup** screen of the scope is displayed, you can add a specific profile which will be used for the test.

1. Check first the profile has been created via FiberChek2™, and the file is stored on one storage media of the MTS 4000 (disk, internal or USB memory stick). If using a memory stick, select USB FLASH.
2. On the **Setup** screen, select **Profile** parameter and press **Add** 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 Setup screen.
5. Use arrow keys to select the profile just loaded.

### Removing a profile

1. In the **Profile** list, select the profile to be deleted, using the arrow keys.
2. Press **Remove** key.
3. Press **Exit**.

## Launching a test of the connector and fiber end-face

Once the connector is plugged to the microscope, the following screen displays:

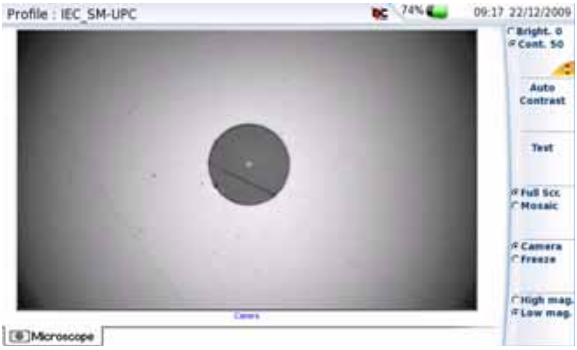



**Fig. 102** Example of the result using the P5000 scope

See"Camera mode" on page 149 and "Freeze mode" on page 150 for more information on commands available.

To launch the test:

1 Check first the display, and modify if necessary the Brightness and Contrast using keys 

and 

.

**NOTE**

Manually changing the brightness or contrast settings can significantly change the fiber inspection test results.

2 Press **Test** key 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:

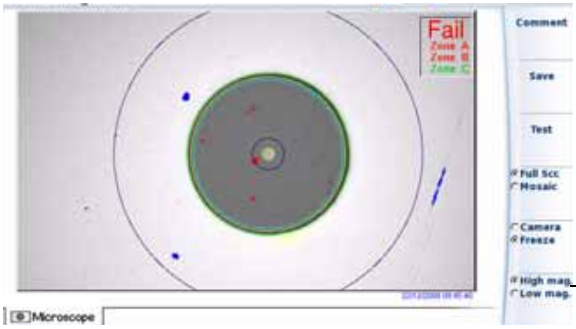
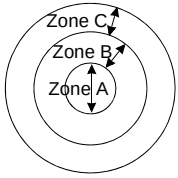



**Fig. 103** Test results

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




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

**NOTE**

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

In **Mosaic** mode, the result of the test only displays Pass or Fail information; the status of each zone is displayed in full screen mode.

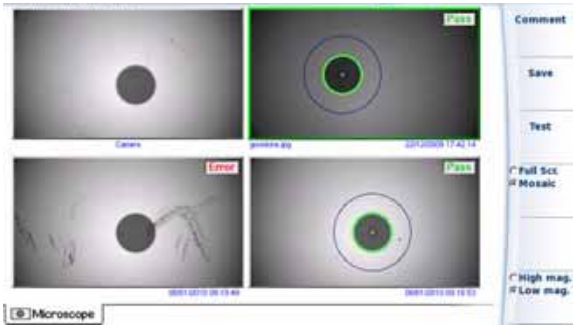



**Fig. 104** Test result in mosaic mode

## Saving the test result in a jpg file

Once the test has been performed, and the result is displayed on the MTS / T-BERD 4000 screen:

1. Click on **Save** key to save a jpg file of the test result on the disk of the MTS / T-BERD 4000, in the directory Scope.
2. On the edition keypad, enter the name of the jpg file
3. Press **Enter** to validate and save the document.

   The file is automatically saved on the disk, in the directory **Scope**.

## Generating a report

Once a test has been performed via the P5000 Microscope, a report can be generated in a pdf document.

### Generating the report

1. In mosaïc mode, check the correct test result is selected (framed in green)..
2. Press the **FILE** button

   The menu bar changes
3. Press the **Report** key
4. On the edition keypad, enter the name of the pdf file and press **ENTER** to validate and start the report generation.

   The report generation is completed once the icon  is no more displayed on the upper banner.

**NOTE**

The pdf report will be saved on the disk, in the directory Scope.

### Display of the report

Once the report has been generated:

1. Return to the **HOME** page.
2. Select **Apps** > **File Explorer**
3. In the **Explorer** page, select the directory **Scope**.
4. Select the pdf file of the report.
5. Press **Load** > **Confirm Load**

   The pdf report displays in the PDF Reader onto the MTS / T-BERD 4000.

Logo, company & operator name selected in the Setup page (see "Report" on page 157)

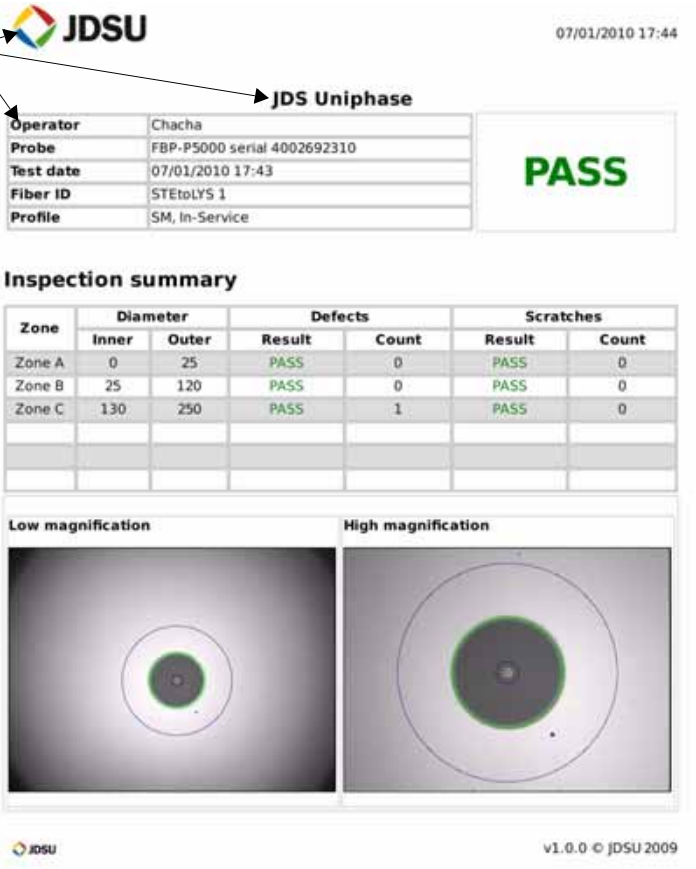



**Fig. 105** PDF report

# File management

# 11

The files management with the 4000 Platform can be performed, wether a module is set onto the Base or not.

**CAUTION**

The following chapter discuss about the management of files, other than FO ones, using the **FILE** button or the **File Explorer** Application, when no module is set into the Platfomr or when the FO Module is not selected on the **System** page (see the 4100 Module Series User Manual for the file reading and trace display...).

The topics discussed in this chapter are as follows:

# File menu

– Press the **FILE** button.

or

– On the **Home** page, select **App's** > **File Explorer** applcation.

The File menu appears.

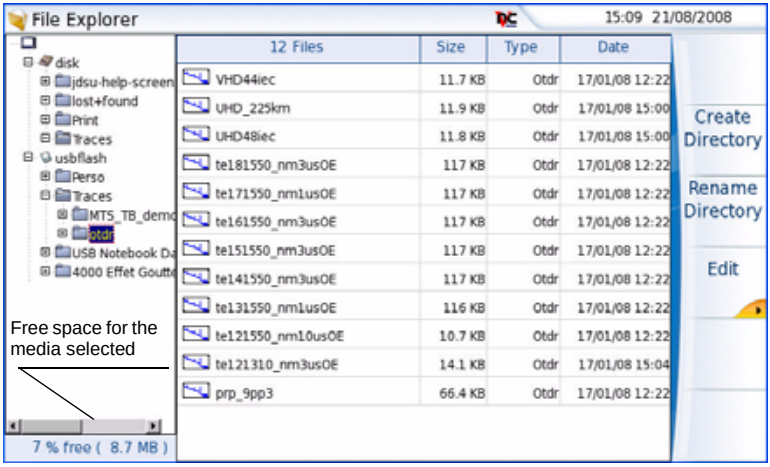



**Fig. 106** File Menu

## Description of the explorer

The explorer is used to select the storage medium, and to create or rename directories and files:

– The left-hand part presents the storage architecture. Use the keys ▲ and ▼ to move around among all the media and their respective directories.

– The right-hand part displays all the files present in the directory selected.

The direction keys can be used to move horizontally between the two parts and vertically within each zone.

## Storage media

For saving or recalling data, the 4000 Platform 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 4000 Platform***

– An internal memory
– An extended internal memory, on option

***External USB storage media***

The Base Unit 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.

For the high capacity USB sticks of 2Go or higher, only the memory sticks provided by JDSU are recommended.

### USB memory stick connection

Insert the USB memory stick in one of the 4000 Base Unit'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.

Do not connect a USB memory stick while a USB printer is printing.

If the Base Unit does not emit a beep, disconnect and reconnect the USB memory stick (do not perform this action too quickly - wait 5 seconds between the disconnection and reconnection).

If after several trials, no beep is emitted and no icon is visible, two problems can be considered:

– A previous USB memory stick has not been properly disconnected. Go to "USB memory stick disconnection" on page 166
– the USB memory stick is not detected by the Base Unit: use another USB memory stick or another storage medium or transfer data via Ethernet (see "Accessing the internal memory or the USB memory stick of the 4000 Platform via a PC" on page 38).

In case of errors, the icon  is displayed:

– The stick is not formatted
– The stick has been removed without prior **Eject USB** key use and some applications are still using it.

If the size of the free space is not correct, the USB memory stick must be formatted.

**a** Press the **SYSTEM** button

**b** Successively select **Expert Tools**>**Media Utilities**>**Usbflash Format**

**c** Confirm your choice to format the USB memory stick

**d** Once formatted, disconnect the USB memory stick using the **Eject USB** key and reconnect it.

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

**When a file is moved in the explorer of the Base Unit, 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

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

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

The user must push the **EJECT USB** key, which is available in **File > Explorer** or **Link Manager**, but also in **Expert Tools** > **Media Utilities**.

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 Base Unit's USB port.

**NOTE**

If the Base Unit operates on battery and is switched off before the USB memory stick is properly disconnected, all the applications using the usbflash storage media will be automatically turned off and the USB memory stick can be disconnected afterwards without any problem.

**NOTE**

If the 4000 is on mains and is switched off before the USB memory stick is properly disconnected, the Base Unit needs to be completely switched off (using the **ON/OFF** button and main plug unplugged).

**NOTE**

The USB memory stick can also be removed using the **Expert Tools** > **Media Utilities** menu (see "Removing the USB memory stick" on page 62).

***Abbreviations for storage media***

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

| Abbreviation | Storage medium |
|---|---|
| disk | Internal flash memory |
| extmem | Internal extended memory (option) |
| usbflash | USB memory stick |
| bluetooth-inbox | Bluetooth storage media (option)[1] |

1. The files stored in bluetooth-inbox are lost when the Platform is switched off.

## Directory edit function

The editing functions are similar to those of other explorers. The directories are at the top left of the screen. If the cursor is in this part, the functions proposed by the keys are specific to the management of the directories.

***Selection of directories***

If the cursor is in the left-hand part of the screen:

- the direction keys can be used to select a directory.
- the **ENTER** key opens the directory selected and closes it when pressed a second time.

Do not confuse "Selected" with "Active". A directory may be displayed in video inverse, to show that it is the current working directory. If it does not have a broken red line round it, it is not active.


**Fig. 107** Selected / Active File

## Edition of directories

When a directory is selected, the keys offer different functions available onto the directories.

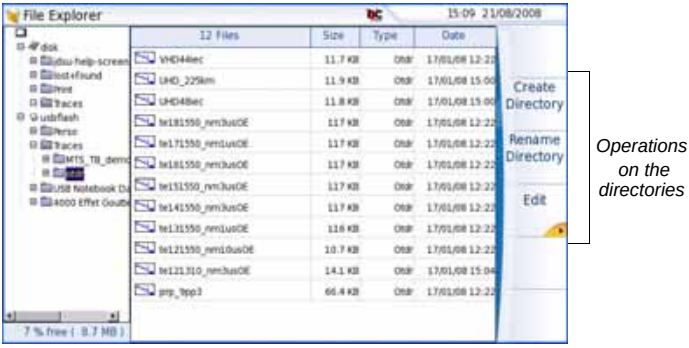



**Fig. 108** Operations available on the directories

***Create Directory*** This key allos the creation of a new directory.

- Select the storage media on which the directory will be stored the new directory
- Click on **Create Directory**

  The editor enables entry of its name.
- Enter a name for the directory
- Click on **Enter**

  The directory is saved in the storage media previously selected.

***Rename Directory*** This function allows to rename the directory selected.

- Select the directory which name must be modified.

– Click on **Rename Directory**

  The editor is displayed

– Enter a new nam for the directory

– Click on **Enter**

  The directory is saved under a new name, on the same storage media.

***Edit*** This key opens a new menu providing functions for editing the directories.

### Copying a directory on the same media or on another media

**NOTE**

A whole directory with its contents can be copied into another directory or on to another storage medium.

– Select the directory to be copied

– Click on **Copy** or **Cut**

– Select the directory and / or the storage media in which the directory will be placed.

– Click on **Paste**

***Remove a directory*** The **Edit** menu allows to delete a directory from the storage media.

– Select the directory to be deleted.

– Click on **Delete**

  A confirmation message is displayed: click on **Yes** to confirm the directory removal or on **No** to cancel the operation.

## File editing function

Once the file(s) is / are selected, several operations are available with the 4000 Platform.

The right-hand part of the screen can be used to work on the files in the directory selected.

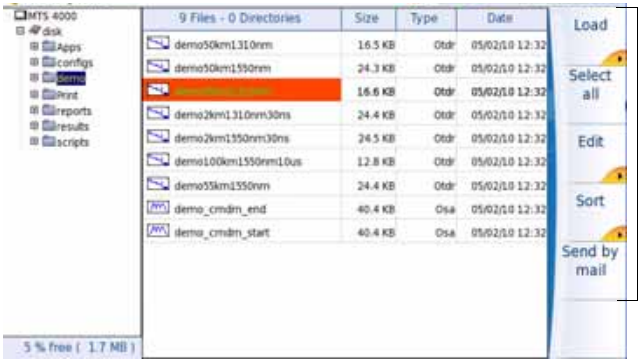



**Fig. 109** Available operations on files

## File Format and Type

A table gives the list of the files in the directory, showing for each one: its name, size, type and date of creation.

### *File Types*

For files recognized by the 4000 Platform, the types are symbolized by icons. E.g.

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

| Icon | Type of file |
|---|---|
|  | HTML file (.HTML extension) |
|  | PDF File (.PDF extension) |
|  | Text file (.TXT extension) |
|  | License file (.LIC extension) |

| | |
|---|---|
|  | CSV file (.CSV extension) |
|  | JPEG / JPG file (.JPEG extension) |
|  | XML file (.XML extension) |
|  | Audio / Video file (.AVI, .MP3... extension) |

**With the 4000 Platform, you can open and load any kind of file (OTDR and LTS) even if the corresponding modules are not set into the Platform.**

***Format of files***

– OTDR files that can be read by the 4000 Platform are type Bellcore 1.0, 1.1 and 2.0.
– The PDF files are opened via the PDF viewer (see "PDF viewer" on page 78).
– The HTML, audio/video, JPEG and XML files are openend via the Web Browser (see “Web browser” on page 80).
– The LIC files allow to load new licenses (see “Install Option” on page 59).
– The TXT and CSV files are opened via the Text Editor application (see "Text Editor" on page 85)

To read other formats, use JDSU's FiberTrace or FiberCable software.

## Easy file selection

To select one or several files:

– Click on ▶ to pass from the directory to hte file selection
– Use the arrows ▼ and▲ to move around the files list.
– Click on **ENTER** to validate the selection of each file wished.

To select all the files from the directory, click on **Select All**.

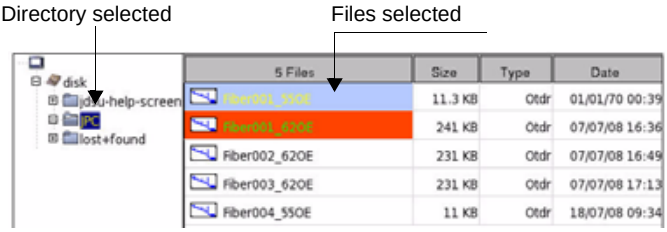



**Fig. 110** Selection Directory - File

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

**1** Select and validate the first file of the list (red display)

**2** Set the cursor on the last file of the list (blue display)

**3** Maintain the validation key ▶ pushed until all the files from the list are selected

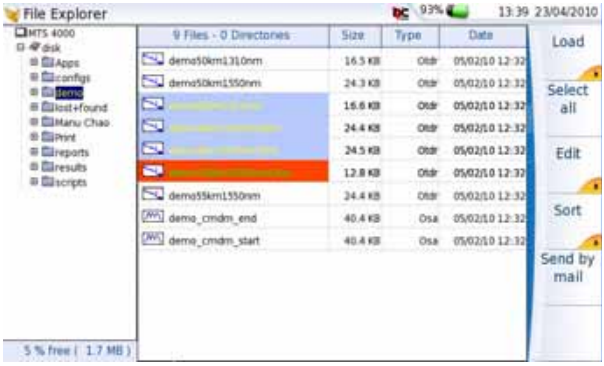



**Fig. 111** Selection of a list of files

**NOTE**

If a mouse is used, click on a file to select it, and click again to deselect it.

If no file has been selected by the **ENTER** key, the file where the cursor is positioned is taken as selected.

On the other hand, if a file has been selected with the **ENTER** key, and the cursor is on another file, the latter is not selected!

## Rename File

Opens the editor to modify the name of the file:

– Select the file in the list
– Click on **Rename File.**
  The Editor is displayed.
– Enter a new name for the file.
– Click on **Enter**

## Sorting the files

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

– **Sort by name**: the files will be displayed in an ascending order (from A to Z). If you click once again on the key, the files will be displayed in a descending order (from Z to A).
– **Sort by Size**: by cliking once on this key, the files will be displayed 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 4000 Platform will display the files in an ascending order (the file type A to file type W). By clicking again, the 4000 Platform will display the files in opposite order.
– **Sort by Date**: clicking once on this key; the 4000 Platform will display the files from the more recent to the less one. By clicking again on this key, the 4000 Platform will display the files from the older to the more recent one.

## Copying one / several file(s)

You can copy files from one storage media or from a directory to another.

– Select the file(s) to be copied
– Click on **Copy** or **Cut**
– Select the directory / the storage media in which the file(s) will be saved.
– Click on **Paste**

## Merging txt/pdf Files

When saving a measurement result, in addition to the trace file, a txt file can be saved for each measurement type:

– with OTDR traces, select "+ txt" in the line **File Type** on **Menu** screen (see 4100 Module Series User Manual).

– with the LTS functions, the txt file is automatically generated when saving the results.

You can also choose to print the result trace in pdf:

**1** In the **Config System** page, in the **Printer** menu, select **Printer > File (formatted)**, and on the line **Type**, select **PDF**.

**2** Return to the OTDR trace and press simultaneously the left and right arrow keys to start the PDF printing.

The key **Merge** is used to merge several tx/pdf t files from measurements into one txt/pdf file, putting together the results of all txt/pdf files.

– In the explorer, select the files generated with the trace files you want.

– Click on **Edit** > **Merge** key

The file *merged_files.txt/pdf* is automatically saved in the same directory as the one where the files have been selected.

**NOTE**

The file *merged_files.txt* can be renamed once it is saved.

### Merging pdf files

You can combine bidir IL / ORL and OTDR measurement results (acquired with FiberComplete function set onto an OTDR Module) into a single pdf:

**1** Once both results are generated in pdf, select them in the **Explorer** page.

**2** Press **Edit** > **Merge** keys

Once merging is completed, a new pdf file is created, which name by default is: *«merged_year_month_day__hour_min_sec.pdf».*

See User Manual 4100M02 for more information.

## Sending files by mail

This option appears if **Mail** has been defined with Ethernet, in the system setup menu (see “File Export” on page 53).

**1** Select the file(s) to be sent.

**2** Click on **Send by mail**

The editor is displayed.

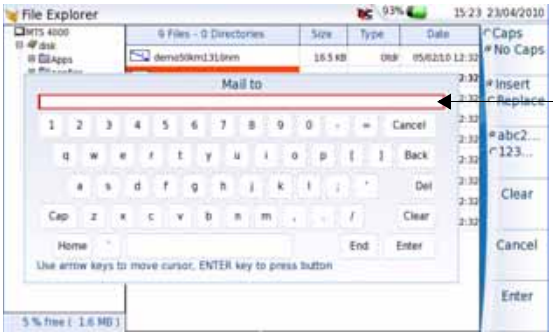



**Fig. 112** Enter e-mail address

**3** You will have to fill in the two following fields:

– **Mail To**: Using the key ▶, display the edition window which allows you to enter the name of the recipient.

– **Subject**: in the same way, enter the subject of the mail or a comment if necessary. By default, the name of the mail is «`Result` + sending date».

**NOTE**

If at least one function is selected in the **System** page (yellow icon), this two parameters «**Mail to**» and «**Subject**» can be configured by default in the **Explorer** page > **File Export** (see "File Export" on page 53)

**4** Click on **Enter**

Once the mail has been sent, the following message is displayed: **`Mail Sent. Hit any key to continue`**.

**NOTE**

You can also send a file by e-mail to a contact onto another Platform, by using the Mail application (see "eMail Application" on page 102).

## Sending files by Bluetooth

Once the connection has been established with a bluetooth device (see "Setting up a Bluetooth connection" on page 116):

**1** Go in the File Explorer.

**2** Select the file(s) to be transferred from the Platform toward the device via bluetooth

**3** Push the **Send by Bluetooth** key

**REMINDER:**
**To transfer files, the File Export selection on the System Settings>I/O Interfaces menu must be set to Bluetooth.**

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.

**WARNING**

The files stored in bluetooth-inbox will be lost when the 4000 Platform will be switched off. Move the files you wish to keep toward another storage media (disk, usb key, extmem...).

# Maintenance

# 12

This chapter gives the main maintenance procedure for the 4000 Platform.

The topics discussed in this chapter are as follows:



**For software updates, or to find our JDSU representatives and technical support offices around the world, please visit our web site: www.jdsu.com.**

# 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 JDSU Service Centre, which will undertake the appropriate troubleshooting and repair work.
The performance and technical complexity of the 4000 Platform class this instrument in a new generation of equipment, for which JDSU 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 trouble-shooting 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 4000 Platform.
– If a fault is detected, or in case of doubt, it is advisable to contact the nearest JDSU Service Centre, which will undertake the appropriate repair work.

## 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 JDSU. However, for any sub-assembly upon which work has been carried out otherwise than by JDSU Service Centers, the cost of a replacement sub-assembly will be invoiced.

# 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, trichloro-ethylene, benzine or alcohol, as these will attack the printed markings.

## Cleaning the screen

To clean the screen, use an antistatic product.

# 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 therefore advisable to manipulate the optical connections of the 4000 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 4000 Platform using the protective plugs provided.

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.

## Cleaning the optical cable connector

- Use a non-linting 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 4000 Platform

– 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 module has a universal connector, unscrew its adaptor to access the ferule.

## 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, using the **Save** function called up by the **FILE** button.

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

To avoid any interruption of the installation procedure, the 4000 Platform 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.

### Obtaining the New software

The new version of the software can either be procured on a storage medium (USB stick memory) from your JDSU Customer Service, or can be downloaded from JDSU's internet site: www.jdsu.com.

### 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 address: http://www.jdsu.com

**3** Open the page of the product concerned
   – MTS 4000 Multiple Services Test Platform
   or
   – T-BERD 4000 Multiple Services Test Platform

4 Click on the tab **Downloads**.

5 Click on the link *4000 Firmware Update*

A new page opens,displaying the current version available and several links.


**Fig. 113** Internet page for MTS / T-BERD 4000 Update

6 Click on the icon  or on the exe file to load the archive.

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

8 Once completed, connect the USB memory stick to the PC and follow the instructions chapter "Installation from a USB memory stick" on page 183, from step 7.

## Installation from Ethernet

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

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

1 Connect the 4000 4000 Base Unit to a PC via an Ethernet link.

2 On the **Home** page, press **System Settings** key

3 In **I/O Interfaces**, on the line **Ethernet**, select **Mode**: **Dynamic**.

4 In the **Upgrade Server** box::
   – On the line **Address Type**, select **Server name**
   – On the line **Server Name**, enter the address: **4k.updatemyunit.net**

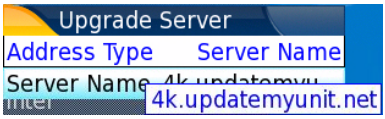



**Fig. 114** Configuration of the Upgrade Server

**NOTE**

This configuration is already available on delivery of the equipment.

5 In the **I/O Interfaces** box::
   – On the line **Use proxy**, select **No**, **Manual** or **Auto** wether a proxy is used or not.

6 Once completed, press **Exit** to return to the **Home** page.

7 Press, in succession, **Expert Tools > Upgrades > 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 4000 Platform.

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

10 Click on **Confirm** 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 **Show Previous / Next Choice** buttons and the **Confirm/Continue** key. In this case, the upgrading starts automatically.

Upgrading begins. The 4000 Platform is automatically rebooted. Upgrading takes several minutes. At the end, the 4000 Platform is automatically restarted.

**During the upgrade, the Testing indicator is lit in red. Do not push any button while the indicator is lit.**

## Installation from a USB memory stick

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

**USB memory keys can be very different.**

They differ on Hw and Sw aspects, even inside a given brand.

In particular, USB memory keys targeting audio recording are often formatted in very specific ways and the format is often very different from a standard FAT.

For all these reasons, we advise users to use memory Keys provided by JDSU.

In any case, USB memory keys which are recognized by the 4000 Platform (a beep is generated when plugged on the 4000 Platform) but which cannot be read or written, **should be formatted on the** 4000 Platform with the Usbflash Format utility, in **Expert tools** > **Media utilities**.

If a problem occurs with the USB key you are using, contact your Local Technical Assistance Center.

Before installing the upgrade, you must format the USB memory stick (steps 1 to 5).

1. Insert the memory stick into one of the sockets on the 4000 Platform provided for this purpose.
2. Switch on the 4000 Platform
3. Press the **HOME** button
4. Successively select **Expert tools** > **Media utilities** > **Usbflash Format.**
5. Confirm your choice to actually format the USB memory stick.
6. Once formated, disconnect the USB memory stick from the 4000 Platform using the key **Eject USB** in the Media Utilities page.

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

7. Connect the USB memory stick to the PC

**8** 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://www.jdsu.com, see "Downloading from Internet" on page 180).

**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.

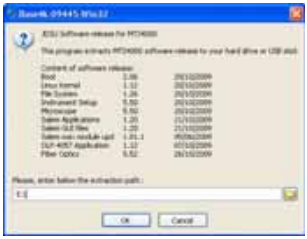


**Fig. 115** List of software update

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

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

**10** Insert the memory stick into one of the USB ports on the Platform.

**NOTE**

A bip is emitted each time the USB memory stick is inserted or removed from the 4000 Platform.

**11** Press the **HOME** button, then successively the buttons **Expert tools > Upgrades > Software Upgrade > Upgrade from USB**.

The message Are you sure? is displayed

**12** Click on **Confirm**.

The list of the software versions available on the USB stick is displayed next to the versions installed on the 4000 Platform.

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

**14** 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 4000 Platform is automatically rebooted. Upgrading takes several minutes.. Finally, the 4000 Platform 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.**

## Upgrading from the boot

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

**1** Turn off the MTS/T-BERD 4000 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 **SHIFT + SETUP** buttons

**4** A menu is displayed, then the screen allows to select **Install from USB**

**5** Press the key to confirm

**6** In the new screen displayed, you can either:

– Press **1** to add the missing elements or replace the corrupted ones.
The upgrade will start automatically

– Press **2** to delete all and re install all the softwares

**a** If the button 2 is pressed, the updates available will be displayed.

**b** Use direction keys ▲ ▼ to display the available choices and install the software versions wished

**c** Once the choice is selected, press **ENTER**
The update will start 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.**

**7** Once the upgrade is completed, the 4000 Base Unit will automatically tunrs on and display the **Home** page.

# Replacement of the small PCB battery (for backup)

The 4000 Platform Lithium battery on the microprocessor board ensures that date, time and certain information data are not lost when the instrument is switched off.

## Checking the battery

If there is doubt as to whether the battery needs to be changed or not, switch off the instrument. On switching the instrument on again, check whether the date is still correct. If the date has been lost, the battery needs replacing.

Contact your nearest JDSU Customer Service Centre.

This battery has an average life of more than five years.

**Battery replacement should not be carried out by the user: this may be dangerous to the microprocessor board (certain components may be damaged or destroyed) and requires special tools**

# Touchscreen calibration

If the 4000 Platform is equipped with a touchscreen, a specific button **Touchscreen Calibration** appears in the right hand corner of the setup screen.

To calibrate the touchscreen

**1** Push the **HOME** button

**2** Press the **System Settings** key

**3** Press the **Touchscreen Calibration** key

A blue slightly smaller screen appears, displaying a little target on the left hand corner .

4 Click on this target (preferably with the touchscreen pen).

5 A new target appears then and again for a total of 4 times, in order to click on all corners of the screen.

If all the targets are not correctly touched, the touchscreen cannot be used. Otherwise, the touchscreen may be used directly.


**Fig. 116** Touchscreen calibration

## General information on warranty

The warranties described herein shall apply to all commercially available JDSU products. Any additional or different warranties shall apply only if agreed to by JDSU in writing. These warranties are not transferable without the express written consent of JDSU.

### Hardware Warranty

JDSU 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 JDSU Customer Service Representative, or at our web site ***www.jdsu.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.

JDSU '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. JDSU 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 JDSU without JDSU'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.

JDSU 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 JDSU for repair or replacement shall be borne by customer until delivery to JDSU.

Upon delivery of such product, JDSU 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 JDSU for repair or replacement. JDSU shall pay all transportation costs associated with returning repaired or replaced product to customer.

## Warranty disclaimer

For hardware and/or services furnished by JDSU, the foregoing warranties are in lieu of all other warrantees and conditions, express or implied. JDSU 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 JDSU be liable for any indirect or consequential damages related to breach of this warranty.

# Technical specifications

# 13

This chapter contains the technical specifications of the MTS/T-BERD 4000 mainframe.

The topics discussed in this chapter are as follows:

# Display

**Screen**

- Backlight high visibility color screen
- Size: 7 inches
- Resolution: 800 x 480 pixels
- Standard: high visibility screen for indoor and outdoor use, non-tactile.
- Options: High visibility touchscreen

# Memory

- Standard memory: internal memory, minimum capacity 512 Mb (with a minimum of about 32 Mb are available for data storage)
- Options:

  - Extension memory 1Gb or higher

# Input/Output

- two USB 2.0 Master ports, for printer, mouse, keyboard, memory key, camera, optical microscope, etc.
- one RJ 45 connector for Ethernet interface 10/100/1G
- built-in microphone and loudspeaker + headset

# Power supply

**Battery**

The instrument can be supplied with one Lithium Ion 6 cells (7400 mV) or 9 cells (11100 mV) battery.

### Endurance of the MTS/T-BERD 4000 with battery

Measurement conditions:

- at +25 °C,
- at full battery capacity (6.6 Ah),
- MTS/T-BERD 4000 equipped with one OTDR LM module

**Endurance**

| | Endurance | |
|---|---|---|
| **Conditions of use** | **6 cells battery (7400 mV)** | **9 cells battery (11100 mV)** |
| According to Telcordia GR-196-CORE recommendation:<br>Normal conditons, with normal backlight, 3 acquisition of 30 seconds per quarter of hour, auto off | up to 7 hours | up to 11 hours. |
| Under continuous acquisition, with high screen backlight | Up to 3h15 | Up to 5h15 |

## Mains adapters

| | **Standard Mains Adapter** |
|---|---|
| **Input** | 100-250 V, 50-60 Hz |
| **Output** | 15V DC 3,7 A max |
| **Compliance** | EN 60950 |

Supply or Power assigned in AC and in DC: 35 W

# Dimensions - Weight

| | **Weight** | |
|---|---|---|
| User interface module without options, battery nor module | 1.2 kg | 2.65 lbs |
| User interface module with a 6 cells battery, one OTDR LM Module and one dummy module | 2.2 kg | 4.85 lbs |
| User interface module with a 9 cells battery and one Copper/VDSL module | 2.3 kg | 5.1 lbs |
| OTDR LM Module | 366 g | 0.80 lbs |
| 9 cells battery | 490 g | 1.08 lbs |

| | **Weight** | |
|---|---|---|
| 6 cells battery | 344 g | 0.76 lbs |
| Dummy module | 208 g | 0.46 lbs |
| VFL/PWM option | 26 g | 0.06 lbs |

| | **Dimensions (mm) ( H X W X D ) Bumpers included** | **Dimensions (mm) ( H X W X D ) W/o bumpers** |
|---|---|---|
| Without module | 57.5 x 282 x 153 | 56.5 x 275 x 129 |
| With 2 small modules | 97 x 282 x 153 | 93 x 275 x 129 |

# Environment

## Temperature

| | |
|---|---|
| ● Options not included and modules combined dissipation < 10 Watts:<br>– Operation on mains supply<br>– Operation on 9 cells battery, ventilated version<br>● Options not included and modules combined dissipation < 6 Watts:<br>– Operation on mains supply<br>– Operation on 9 cells battery, water resistant version | -20°C to +50°C<br>(-4°F to +122°F) |
| – Operation including all options (guaranteed specifications) | 0° to +40°C<br>(+32°F to +104°F) |
| – Storage | -20°C to +60°C<br>(-4°F to +140°F) |

## Humidity

– 5 to 95% without condensation

## Climatic pressure

Climatic pressure: 4000 meters

**EMI/ESD**

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

**Electrical Safety**

- EN 61010-1: 2001 Compliant

**Drop test** In accordance with the Telcordia GR-196-CORE recommendations, the MTS/T-BERD 4000 resists the following test:

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

**Shocks** The MTS/T-BERD 4000 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 MTS/T-BERD 4000 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 MTS/T-BERD 4000 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 housing of the MTS/T-BERD 4000 (in ABS, type V0) does not propagate fire.

**IP Protection Index** Index of the IP protection for the 4000 Platform: IP32

**NOTE**

For a higher classification, contact JDSU.

# Characteristics of the options

## Power meter option

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

- Wavelength range: 800 to 1650 nm in steps of 1 nm
- Calibrated wavelengths: 850 / 1310 / 1550 nm
- Accuracy at calibrated wavelengths: ± 0.2 dB (at -30 dBm)
- Input power range : -60 dBm to +10 dBm
- Maximum resolution: 0.01 dB / 0.01nW
- Measurement range:+5 to -50 dBm (-45 dBm from 800 to 1250 nm)
- Linearity within the measurement range: ± 0.2 dB

## High power Power meter option

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

- Wavelength range: 800 to 1650 nm in steps of 1 nm
- Calibrated wavelengths: 850 / 1310 / 1550 nm
- Accuracy at calibrated wavelengths: ± 0.25 dB (at -15 dBm)
- Input power range : +30 dBm to -40 dBm
- Measurement range:+27 to -30 dBm
- Linearity within the measurement range: ± 0.25 dB

## VFL

- Wavelength: 635 nm or 650 nm
- Length of fiber: up to 5 km
- Class 2 laser (standards EN60825-1 and FDA21 CFR Part 1040.10).

## WIFI and Bluetooth Options

- WIFI:standard IEEE802.11b/g
- Bluetooth Option
  - Class 2
  - Range: up to 10 meters

# Options and accessories

# 14

This chapter shows the references of the options and accessories of the 4000 Platform.

The topics discussed in this chapter are as follows:

# References of options for the 4000 Platform mainframe[1]

| Base Unit references | Reference |
|---|---|
| MTS-4000 Fiber Platform[a] | M4000SP |
| T-BERD 4000 Fiber Platform[a] | TB4000SP |
| MTS-4000 Fiber/Copper Platform[b] | M4000 |
| T-BERD 4000 Fiber/Copper Platform[b] | TB4000 |
| MTS-4000 Fiber/Copper Platform with touchscreen[b] | M4000T |
| T-BERD 4000 Fiber/Copper with touchscreen[b] | TB4000T |
| MTS-4000 Fiber/Copper/inHome Platform with touchscreen[b] | M4000HPT |
| T-BERD 4000 Fiber/Copper/inHome Platform with touchscreen[b] | TB4000HPT |

a. Delivered with a 6 cells battery
b. Delivered with a 9 cells battery

| Base Unit options | Reference |
|---|---|
| Backplane for 4000 Platform | 40BACKP |

| Memory options | Reference |
|---|---|
| Extended internal Memory | 40EXTMEM |

| Power Meter / VFL / Wifi / Bluetooth options | Reference |
|---|---|
| Optical Power Meter with 2.5 mm UPP connector | 40PM |
| High Power Power meter with universal UPP 2.5MM adapter for 4000 Platform | 40HPPM |
| VFL with UPP connector | 40VFL |
| Optical Power Meter and VFL, with 2.5 mm UPP connectors | 40PMVFL |
| Wifi/Bluetooth Interface | 40WIFIBLU |

1.These options must be ordered together with the instrument.

| Battery options | Reference |
|---|---|
| Additional Li-Ion rechargeable battery | LIION9C |

| Mains options | Reference |
|---|---|
| Additional standard AC/DC adapter/charger (USA) | 40PWUS |
| Additional standard AC/DC adapter/charger (UK) | 40PWUK |
| Additional standard AC/DC adapter/charger (Europe) | 40PWE |
| Additional standard AC/DC adapter/charger (Australia) | 40PWAU |
| Additional standard AC/DC adapter/charger (Switzerland) | 40PWCH |
| Additional standard AC/DC adapter/charger (India/South Africa) | 40PWIN |
| Additional standard AC/DC adapter/charger (Italy) | 40PWIT |
| Additional standard AC/DC adapter/charger (Israel) | 40PWIL |
| Additional standard AC/DC adapter/charger (Japan) | 40PWJP |
| Additional standard AC/DC adapter/charger (Denmark) | 40PWDK |
| Cigarette lighter adapter for 4000 Platform | 40Lighter |

## Reference of Scope

| | Reference |
|---|---|
| Quick Capture Video Microscope, 200x/400x with USB converter, includes FC, SC, SC-APC, LC, U25M, U25MA & U12M tips, Soft Case | EFSCOPE400 |
| Digital Videoscope kit including FBP-P5000 probe (USB2.0) in a small soft case, and 7 tips in a box (FBPT-FC, FBPT-LC, FBPT-SC, FBPT-SC-APC, FBPT-U12M, FBPT-U25M, FBPT-U25MA) | EDFSCOPE5K |

# References of accessories

| Carrying Cases | References |
|---|---|
| Large Soft case for MTS/T-BERD 4000 modules | 40LMODSCASE1 |
| Soft case for small MTS/T-BERD 4000 modules | 40SMODSCASE1 |
| Hard carrying case for the MTS/T-BERD 4000 and various accessories | EHCASE6 |
| Glove Soft Case for MTS/T-BERD 4000 Platform | 40GLOVE |
| Wrap-around Soft Case for MTS/T-BERD 4000 Platform | 40SCASE1 |
| **Straps** | |
| Handstrap for MTS/T-BERD 4000 Platform | 40HANDSTRAP1 |
| Hookstrap for MTS/T-BERD 4000 Platform | 40HOOKSTRAP1 |

| Keyboard/Mouse | Reference |
|---|---|
| USB mouse | E80mouse |
| USB QWERTY keyboard | E80keyB |

# References of manuals

| User manual for 4000 Platform | Reference |
|---|---|
| Printed User manual for 4000 Platform platform (French) | E4000M01 |
| Printed User manual for 4000 Platform platform (English) | E4000M02 |
| Printed User manual for 4000 Platform platform (German) | E4000M03 |
| 4000 Platform user manual (USB stick) | E4000MUSB |

**NOTE**

The USB key countaining all the user manuals (Base and Module) is delivered on standard with the Platform.

The printed versions of the manuals are available on option, in French, English and German.

# References of result processing software[2]

| | Reference |
|---|---|
| Optical Fiber Trace software | EOFS100 |
| Optical Fiber Trace software (5 licences) | EOFS1005L |
| Optical Fiber Trace software (site licence) | EOFS100SL |
| FiberTrace software - update | EOFS100UP |
| Optical Fiber Cable software | EOFS200 |
| Optical Fiber Cable software (5 licences) | EOFS2005L |
| Optical Fiber Cable software (site licence) | EOFS200SL |

2.Free software updates on the Web (but without user manual)

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