



FTH-9000

FTH: Fiber Test Head

User Manual



FTH-9000

FTH: Fiber Test Head

User Manual



Viavi Solutions
1-844-GO-VIAVI
www.viavisolutions.com

Notice

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Manual

This guide is a product of FTH-9000's Technical Information Development Department. This manual gives you the main information to install, start and use the FTH-9000.

Product Regulatory Compliance

California Proposition 65

California Proposition 65, officially known as the Safe Drinking Water and Toxic Enforcement Act of 1986, was enacted in November 1986 with the aim of protecting individuals in the state of California and the state's drinking water and environment from excessive exposure to chemicals known to the state to cause cancer, birth defects or other reproductive harm.

For the VIAVI position statement on the use of Proposition 65 chemicals in VIAVI products, see the Hazardous Substance Control section of VIAVI's Standards and Policies web page.

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference

to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

EU WEEE and Battery Directives

This product, and the batteries used to power the product, should not be disposed of as unsorted municipal waste and should be collected separately and disposed of according to your national regulations.

VIAVI has established a take-back processes in compliance with the EU Waste Electrical and Electronic Equipment (WEEE) Directive, 2012/19/EU, and the EU Battery Directive, 2006/66/EC.

Instructions for returning waste equipment and batteries to VIAVI can be found in the WEEE section of [VIAVI's Standards and Policies](#) web page.

If you have questions concerning disposal of your equipment, contact VIAVI's WEEE Program Management team at WEEE.EMEA@VIAVISolutions.com.

EU REACH

Article 33 of EU REACH regulation (EC) No 1907/2006 requires article suppliers to provide information if a listed Substances of Very High Concern (SVHC) is present in an article above a certain threshold.

For information on the presence of REACH SVHCs in VIAVI products, see the Hazardous Substance Control section of [VIAVI's Standards and Policies](#) web page.

EU CE Marking Directives (LV, EMC, RoHS, RE)

This product conforms with all applicable CE marking directives. Please see EU Declaration of Conformity for details.



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About This Guide

Topics discussed in this chapter are as follows:

- “Purpose and scope” on page xii
- “Assumptions” on page xii
- “Technical assistance” on page xii
- “Recycling Information” on page xii
- “Conventions” on page xii

Purpose and scope

The purpose of this guide is to help you successfully use the FTH-9000 features and capabilities. This guide includes task-based instructions that describe how to install, configure, use, and troubleshoot the FTH-9000. Additionally, this guide provides a complete description of VIAVI's warranty, services, and repair information, including terms and conditions of the licensing agreement.

Assumptions

This guide is intended for novice, intermediate, and experienced users who want to use the FTH-9000 effectively and efficiently. We are assuming that you have basic computer and mouse/track ball experience and are familiar with basic telecommunication concepts and terminology.

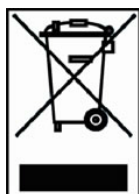
Technical assistance

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

VIAVI SOLUTIONS FRANCE
34 rue Necker
CS 42903
42029 SAINT-ETIENNE Cedex 1
FRANCE

Recycling Information

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



Waste Electrical and electronic Equipment (WEEE) Directive

In the European Union, this label indicates that this product should not be disposed of with household waste. It 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 1 Typographical conventions

Description	Example
User interface actions appear in this typeface .	On the Status bar, click Start
Buttons or switches that you press on a unit appear in this TYPEFACE .	Press the ON switch.
Code and output messages appear in this typeface .	All results okay
Text you must type exactly as shown appears in this typeface .	Type: a:\set.exe in the dialog box.
Variables appear in this typeface .	Type the new hostname .
Book references appear in this typeface .	Refer to Newton's Telecom Dictionary
A vertical bar means "or": only one option can appear in a single command.	platform [a b e]
Square brackets [] indicate an optional argument.	login [platform name]
Slanted brackets < > group required arguments.	<password>

Table 2 Keyboard and menu conventions

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

Table 3 Symbol conventions

This symbol represents a general hazard.

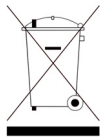


This symbol represents a risk of electrical shock.



NOTE

This symbol represents a Note indicating related information or tip.



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

Table 4 Safety definitions



WARNING

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



CAUTION

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

Prerequisites and delivery of the FTH-9000

This chapter describes the prerequisites useful before installing/configuring the FTH-9000. It also gives a detailed description of all the elements you will receive according to the configuration asked during the order.

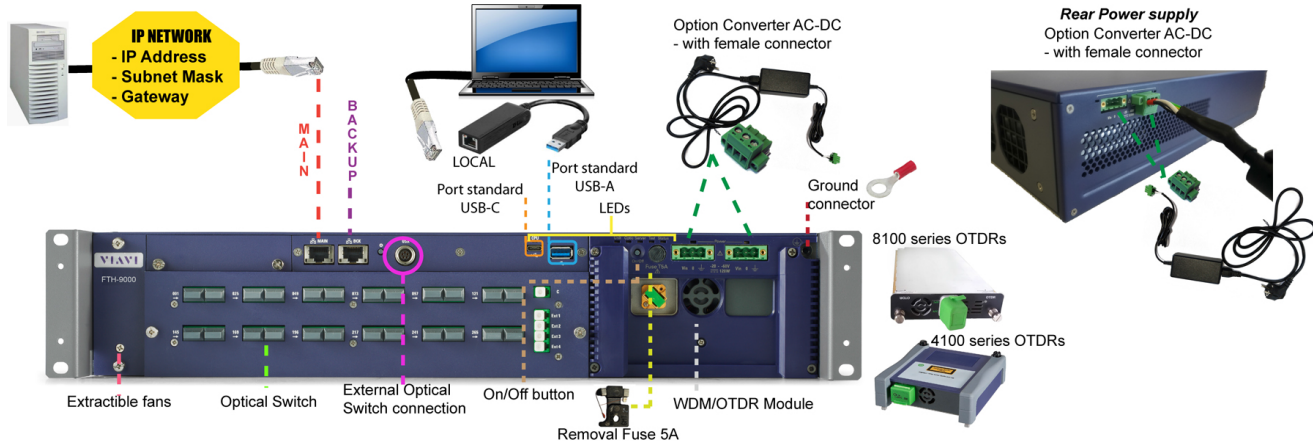
Topics discussed in this chapter are as follows:

- [“Prerequisites of the FTH-9000” on page 2](#)

Prerequisites of the FTH-9000

General view of the prerequisites

Figure 1 View of the prerequisites



FTH-9000 and rack

Specific conditions are required to install the FTH-9000 in a rack. There are different conditions according to:

- the type of rack used
- the options to be added: protect cover, front or rear power supply....

Overall dimensions of the FTH-9000 in the racks

Floor-space

Figure 2 Rack 19"

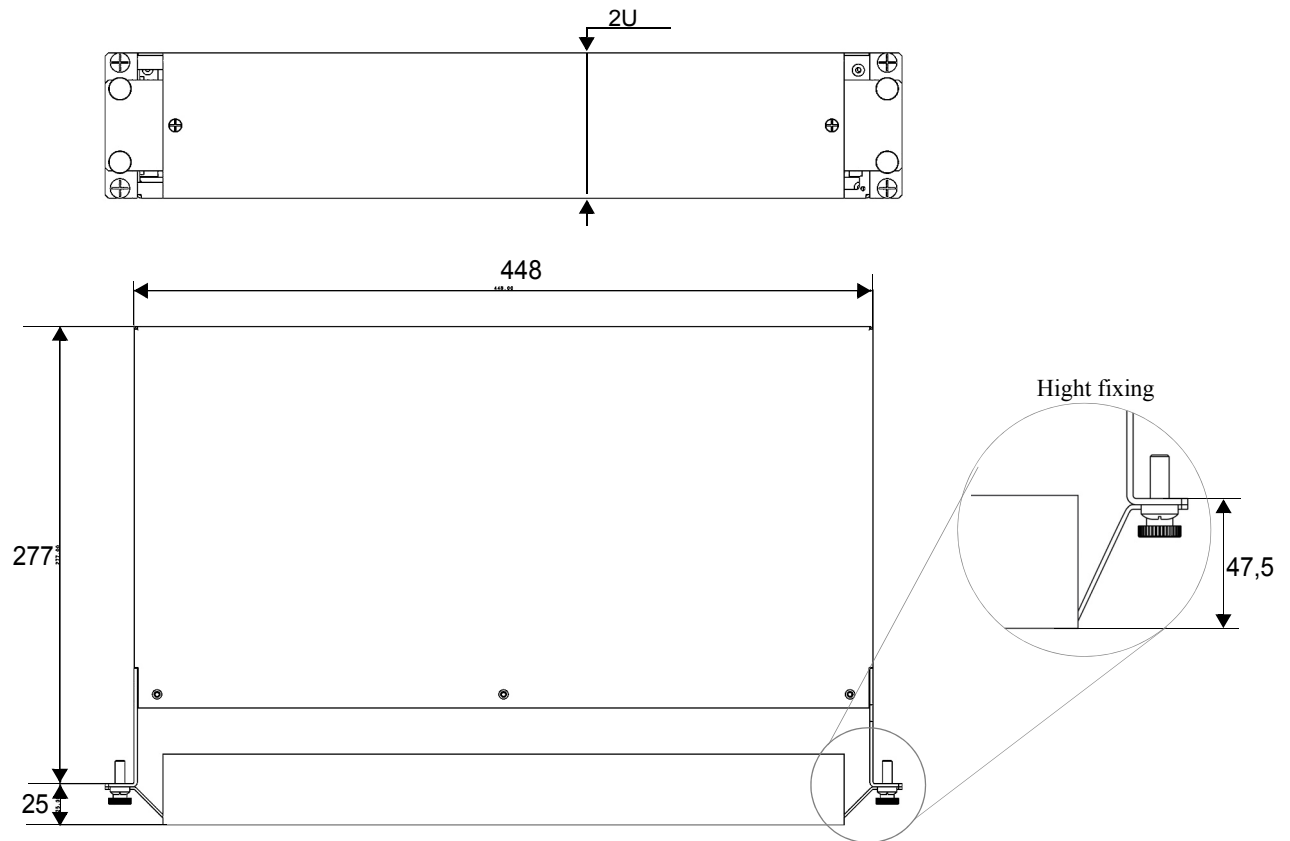


Figure 3 Rack 21" Mounting (optional adaptor)

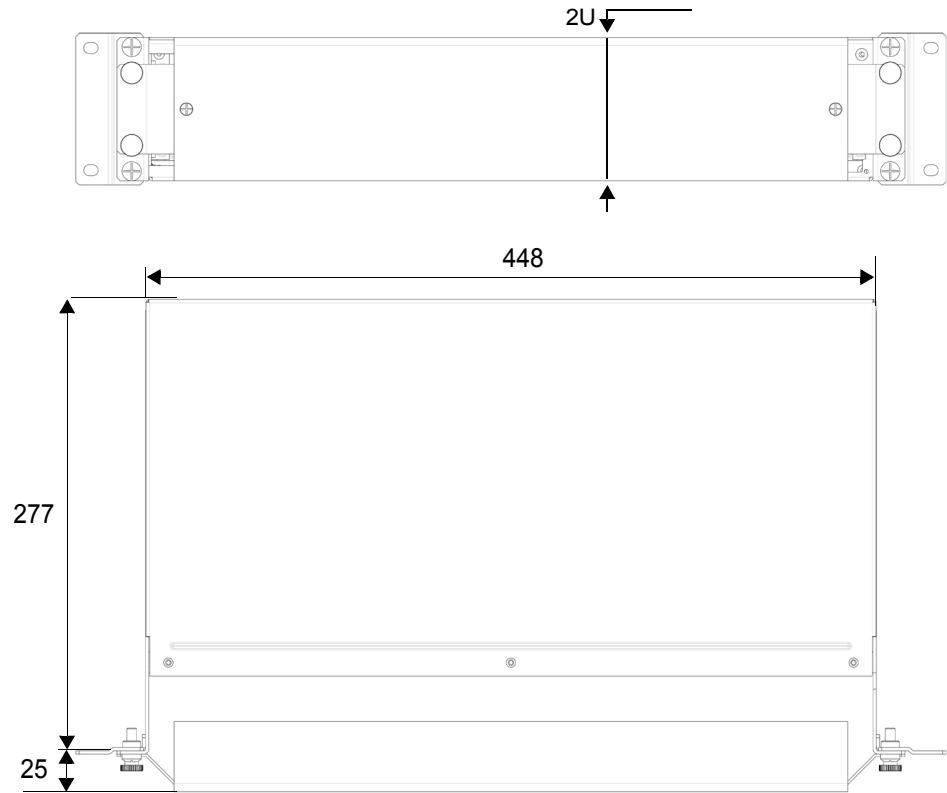
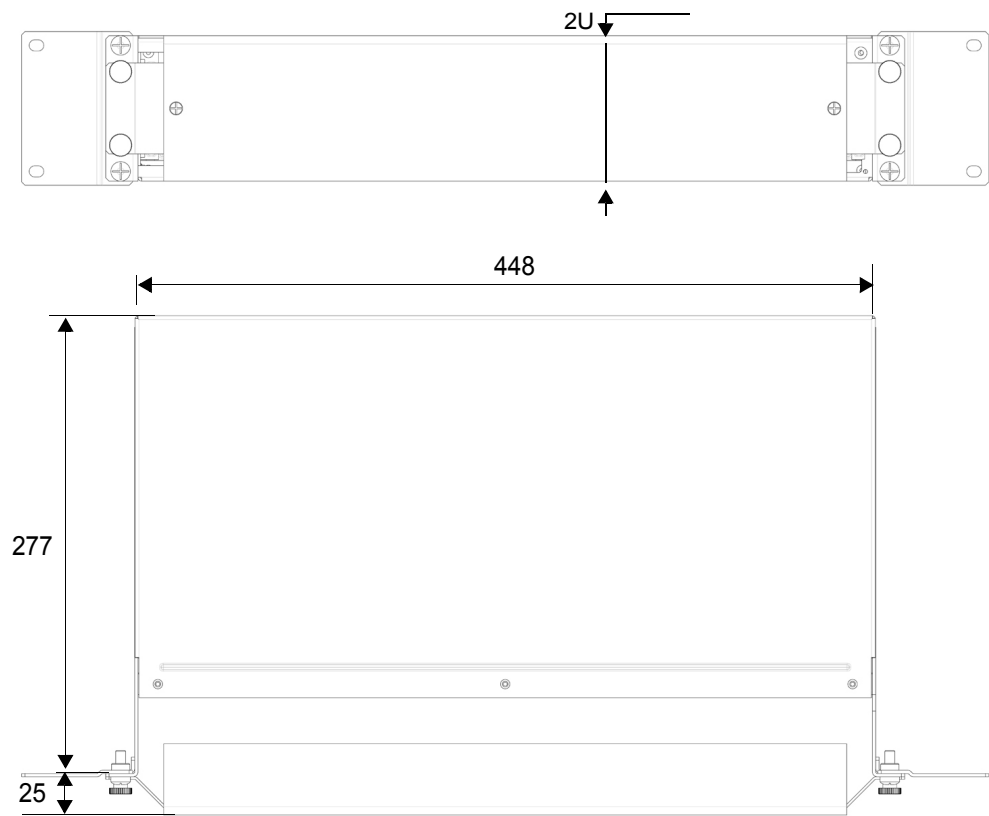


Figure 4 Rack 23" Mounting (optional adaptor)



FTH-9000 Power Supply from local DC network

Your local DC electrical installation must follow the following requirements:

- Must comply with the FTH-9000 power consumption:
 - DC Input: -48V
 - Power consumption: 35W typ. (Max 120W)
- Must comply with §9.4 "Limited-energy circuit" of IEC 61010-1:2010 + A1:2016 standard
- A disconnecting device, which may be a switch or a circuit breaker, must be installed on the supply line, close to the equipment and easily accessible.
- Use of the supplied power connectors is mandatory

Typology and Section of electrical wires

- Authorized wire typology can be copper and/or aluminum.
- Electrical wires plugged into the FTH-9000 must have a section comprised into the following range:
 - 0.83mm^2 (AWG18) < section < $1,65\text{mm}^2$ (AWG15).

AC Power supply

The FTH-9000 works with an AC/DC Converter.

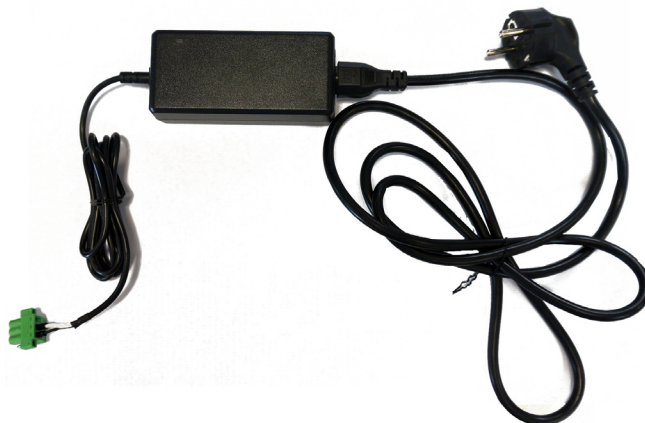
The FTH-9000 can work with a single AC power supply or with 1+1 AC power supply.

Moreover, the power supply can be done either:

- on the front of the equipment, in which case a female 3 point connector must be wired to the converter
- or
- at the back of the equipment, in which case a female 3 points connector is wired to the converter.

In both case, the converter is already wired to a female *3 points connector*.

Figure 5 Converter with female 3 points connector



Converter specifications

Product: AC/DC Power adapter

Manufacturer: XP POWER

Model/Type: AHM150PS48

Ratings:

- AC Input: 100-240 V, 50-60 Hz
- DC Output: -48V, 3.13 A (35W typ. / max 120W)

Power cord specifications

- EUROPEAN:
 - Manufacturer: QUAIL Electronics
 - Reference: 8500.098
- USA/CANADA:
 - Manufacturer: FELLER GMBH
 - Reference: 6900-176.60



Do not use any converter or power cord other than those supplied by VIAVI as an option for the instrument.



NOTE

AC/DC adapter is a class I device with its plug equipped with a earth protective terminal which is intended to be connected to an external protective earthing system.

Network Communication

Make sure you have the correct cables, connectors and required information to setup and configure the network access.

The FTH9000 is equipped with two Ethernet RJ45 ports: main and backup.

The backup is available exclusively with software option.

Network access

The cable used to connect the FTH-9000 to Ethernet is a regular Ethernet cable with a RJ45 connector.

Local access is done via USB with USB/Ethernet converter DLINK DUB1312, also available from VIAVI with PN E9E-USB-ETH.

FTH-9000 General Description

This chapter gives a general view of the FTH-9000 elements.

Topics discussed in this chapter are as follows:

- [“Front Panel description” on page 10](#)
- [“LEDs description” on page 11](#)
- [“General information on warranty” on page 13](#)

Front Panel description

All the connections of the FTH-9000 are located on the front and rear panel. The following components are available:

Figure 6 FTH-9000 Front panel

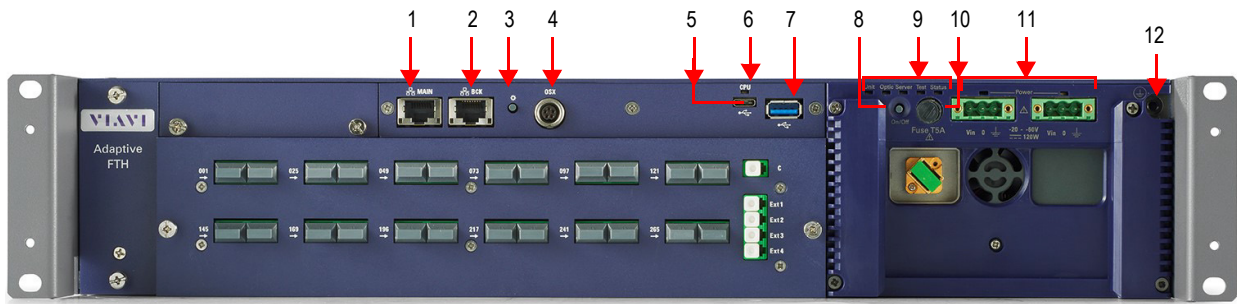


Table 1 Connectors description

1		RJ45 plug for the Ethernet interface
2		RJ45 plug for Ethernet backup
3		Setup button
4		Control of external switch (OSX)
5		Mini USB port
6		CPU LED
7		USB port for local mode or for USB 4G / 5G Modem or mobile device
8		On/Off button to switch on and off the FTH-9000

Table 1 Connectors description

9		LEDs (see “LEDs description” on page 11)
10		T5A L250 V Fuse
11		Dual power supply for 3 points connector
12		Ground
13		8K OTDR / WDM Module or 4K OTDR Module

LEDs description

The color of the leds and whether they are lit or not depends on the status of the FTH-9000.

Figure 7 LEDs description

Unit	Optic	Server	Test	Status

Table 2 Description of the LEDs status


Symbol	Value
	The led is solid red

Table 2 Description of the LEDs status





Symbol	Value
	The led is solid green
	The led is turned off
	The led is flashing red
	The led is flashing green

Table 3 Description of the device status

















LED name	Description
Unit	 The FTH-9000 is ready
	 The configuration or the hardware are not ready to work
Optic	 No optical alarm
	 Optical alarm
Server	In ONMSi Config:
	 The connection to the server is valid.
	 The connection to the server has failed
	In SmartOTU Config , the LED is off, except in local mode.
	In Local mode:
	 Local mode and the connection to the ONMSi server is valid or SmartOTU
	 Local mode and he connection to the ONMSi server has failed
Test	 The FTH-9000 is in acquisition mode
	 The FTH-9000 is not in acquisition mode

Table 3 Description of the device status

LED name	Description
Status	 The FTH-9000 is currently communicating with the server by the backup.
	 The latest communication by backup failed
	 FTH-9000 startup and shutdown Upgrade in progress
	 The FTH-9000 software is running
Note: Rescue	 LEDs Unit, Optic, Server, Test, Status solid red
	 In local mode, Status blinking

If after a restart it is still in the same mode, please contact your service center.

General information on warranty

The warranties described herein shall apply to all commercially available VIAVI products. Any additional or different warranties shall apply only if agreed to by VIAVI in writing. These warranties are not transferable without the express written consent of VIAVI.

Hardware Warranty

VIAVI warrants that Hardware Product sold to customer shall, under normal use and service, be free from defects in materials and workmanship. Information regarding the specific warranty period for this product can be obtained by contacting your local VIAVI Customer Service Representative, or at our web site www.viavisolutions.com. If installation services have been ordered, the warranty period shall begin on the earlier of (1) completion of installation, or (2) thirty (30) days after shipment to customer. If Installation Services have not been ordered, the warranty period shall begin upon shipment to Customer. Hereafter these periods of time shall be collectively referred to as the Initial Warranty Period.

VIAVI's obligation and customer's sole remedy under this Hardware Warranty is limited to the repair or replacement, at VIAVI's option, of the defective product. VIAVI shall have no obligation to remedy any such defect if it can be shown: (a) that the Product was altered, repaired, or reworked by any party other than VIAVI without VIAVI's written consent; (b) that such defects were the result of customer's improper storage, mishandling, abuse, or misuse of Product; (c) that such defects were the result of customer's use of Product in conjunction with equipment electronically or mechanically incompatible or of an inferior quality; or (d) that the defect was the result of damage by fire, explosion, power failure, or any act of nature.

VIAVI performed repairs shall be warranted from defective material and workmanship for a period of ninety (90) days, or until the end of the Initial Warranty Period, whichever is longer. Risk of loss or damage to Product returned to VIAVI for repair or replacement shall be borne by customer until delivery to VIAVI.

Upon delivery of such product, VIAVI shall assume the risk of loss or damage until that time that the product being repaired or replaced is returned and delivered to customer. Customer shall pay all transportation costs for equipment or software shipped to VIAVI for repair or replacement. VIAVI shall pay all transportation costs associated with returning repaired or replaced product to customer.

WARRANTY DISCLAIMER — FOR HARDWARE AND/OR SERVICES FURNISHED BY VIAVI, THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED. VIAVI SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, ON ANY HARDWARE, DOCUMENTATION OR SERVICES INCLUDING BUT NOT LIMITED TO WARRANTIES RELATING TO QUALITY, PERFORMANCE, NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AS WELL AS THOSE ARISING FROM ANY COURSE OF DEALING, USAGE OR TRADE PRACTICE. UNDER NO CIRCUMSTANCES WILL VIAVI BE LIABLE FOR ANY INDIRECT OR CONSEQUENTIAL DAMAGES RELATED TO BREACH OF THIS WARRANTY.

Safety information

This chapter gives the main information on the safety conditions when using the FTH-9000:

- [“AC/DC safety information” on page 16](#)
- [“Precautions relating to optical connections” on page 16](#)

AC/DC safety information

Do not use any mains adaptor and detachable main supply cords other than those supplied with the instrument, or supplied by VIAVI as options for this instrument.

If another adapter is used, it may damage the FTH-9000 itself.

In case of replacement, it is imperative to use the part numbers of these products as specified in this manual, [Chapter 1, “Power cord specifications” on page 6](#)

Other basic safety precautions are as follows:

- Do not use AC/Adapter outdoors or in wet or damp locations
- Connect the AC/Adapter to the correct mains voltage, as indicated on the ratings label.
- Do not allow anything to rest on the power cord, and do not locate the product where people can walk on the power cord.
- 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. This includes replacement of specific rating fuse located on the product front panel.

Contact authorized, trained and qualified service personnel for all services.

Precautions relating to optical connections

- The normal operating life of an optical connector is usually of the order of a few hundred manipulations. It is then advisable to manipulate the optical connections of the FTH-9000 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 Attribute/Descriptor using the protective caps.

Laser Safety instructions

The FTH-9000 may be used with optical OTDR modules, including laser: refer to OTDR User manual for laser classes and safety information regarding the laser.

Installation of the FTH-9000

This chapter describes the procedure to install successfully your FTH-9000 and all the options available.

Topics discussed in this chapter are as follow:

- [“Installation of the FTH-9000 into the rack” on page 18](#)
- [“Power supply installation” on page 20](#)

Installation of the FTH-9000 into the rack



CAUTION

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be compromised.

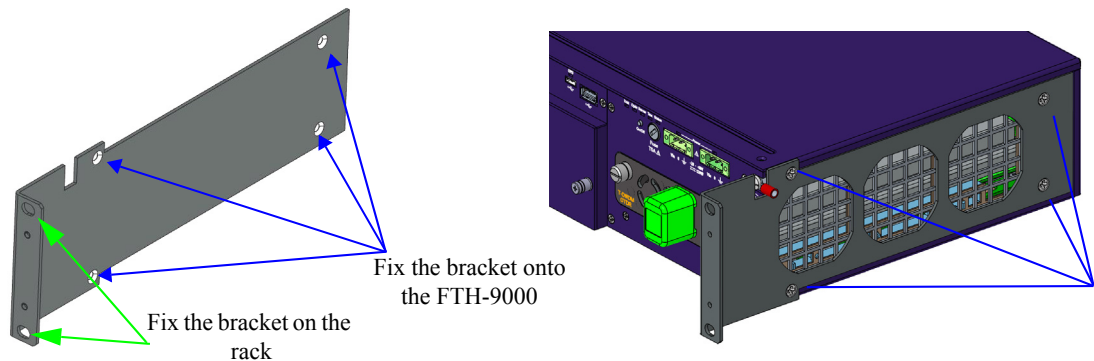
Fixing the FTH into the 19" rack

The FTH-9000 is delivered on standard for mounting in a 19" rack.

To set the FTH onto the 19" rack:

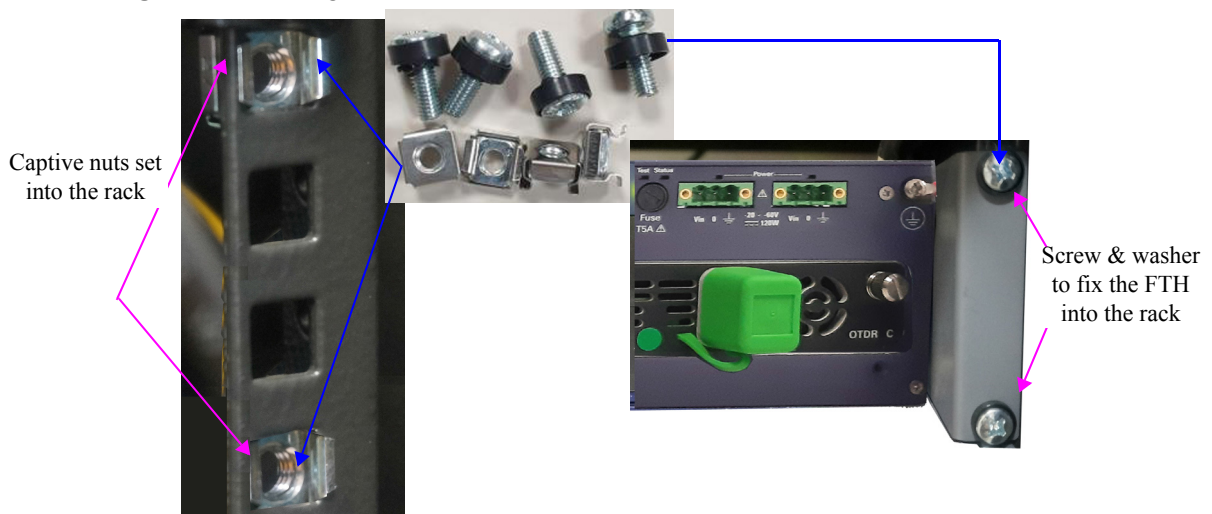
- 1 Fix the brackets to the FTH-9000 using the four M4x8 screws per bracket (POZI Screwdriver N°2).

Figure 8 Fix the brackets of the FTH-9000



- 2 Mount the 4 captive nuts into the rack (2 at each side).
- 3 Position the FTH into the rack, screwing the four screws M6x16 (POZI screwdriver N°3) and the flat washers into the captive nuts previously mounted (2 at each side).

Figure 9 Fixing the FTH-9000 onto the rack 19" with the brackets



Installing the FTH-9000 in a 21" or 23" rack (optional)

To install the product in a 21" or 23" rack, some adapter parts can be supplied. These adapters allow you to enlarge the size of the brackets. It is necessary to pre-assemble the adapters behind the 19" brackets setting the washers and screwing the four M4x16 screws (2 at each side).

Then, follow the same process as the assembly in the 19" rack.

Figure 10 Fixing the 21" or 23" adapters (optional) onto the 19" brackets



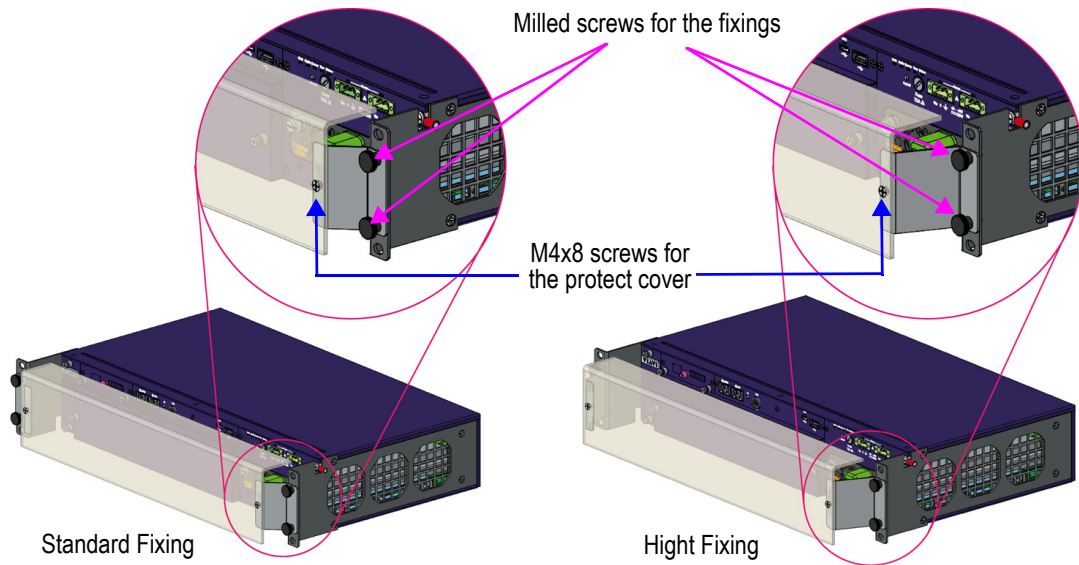
Installing the protect cover (optional)

As an option (E9H-A-PLEXI), a protect cover, to protect the front side of the equipment, could be delivered.

Two types of fixing are available for the cover: a standard one and a high one, to facilitate access to the front of the product.

- 1 With the 4 milled screws (2 at each side), screw the 2 fixings for the protect cover onto the 19" brackets.
- 2 Set the protect cover onto the fixings, and screw it using the two M4x8 screws.

Figure 11 Setting the protect cover onto the FTH-9000 (optional)



Power supply installation

The FTH-9000 can work with -48 V DC or AC.

-48 V DC or AC Power Supply (optional)

The FTH-9000 is manufactured to work on a power supply from -48V.

You need to wire your -48 V power source to the female *3-point connector* supplied with FTH-9000.

With AC power feed, you must install the converter delivered. In this case, the female connector is already set into the converter.

- 1 Connect the female connector to the male connector on the FTH-9000.
- 2 With the cord delivered with the converter (different according to the country), connect the converter to a plug.



NOTE

The AC power supply plugs are sectioning devices; they must be easily accessible.

If the LED onto the converter is solid green, the connection is correctly performed. On the FTH-9000 the LED **Unit** must be solid green.

Figure 12 FTH-9000 with female connector and converter
Front power supply Female connector



Dual power supply (optional)

If you wish to use the dual power feed feature of the FTH-9000, the 2 power cables must be wired as indicated in the photo below, either at the front or the back of the FTH-9000 (see [Table 4](#) to see the pin-out).

Figure 13 Dual power feed installed on front frame



Installing the Dual AC power supplies on tray (optional)

If a dual power feed must be used, at the back or front of the FTH-9000, and the Supply tray is delivered, proceed as follow:

- 1 Insert the connectors of the AC/DC adapter blocks into the front/rear connectors of the FTH-9000 and screw it.
- 2 Position the FTH AC/DC adapter blocks onto the supply tray (the strap must not be under the adapter!)
- 3 Pull one strap and attach it setting the loop into the metallic notch on the tray.
- 4 Repeat step 3 for the second strap.
- 5 Repeat steps 3 and 4 for the second adapter block.

- 6 Check the position of the supply blocks.
- 7 Install the tray onto the rack:
 - a Set the 4 captive nuts on the rack: 2 on each side.
 - b Install the tray screwing the 4 screws M4x16 of the tray in the rack pillars (2 on each side).

Figure 14 Dual power supply Installation on the tray



- 8 For each of AC/DC power supply block, add an AC cord plug.
- 9 Connect the converters to a plug.
If the LED onto the converter is solid green, the connection is correctly performed.

Connector pin-out

The -48 V DC power supply connector pin-out is:

Table 4 Power supply connector pin-out

Pin Number	Function
1	VIN
2	0
3	Ground



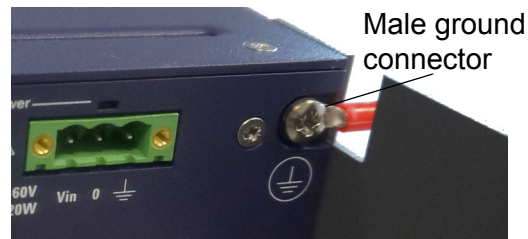
NOTE

The FTH-9000 cover panel clearly states the place of each wire to connect above the male connector.

Installation of the Ground Connector

The FTH-9000 is equipped with a male ground connector.

Figure 15 Ground Connector



Procedure for switching on and off the FTH-9000

Switching on the FTH-9000

- 1 Plug the 3-pin connector.
The FTH-9000 starts automatically.
- 2 Wait that the led *Stand-by* indicates that the switching on procedure is completed, (about 2 min.) (see [“LEDs description” on page 16](#)).



NOTE

If the Equipment, once plugged, has been stopped pressing **On/Off** button, and if it has not been disconnected, press again **On/Off** to restart it.

Switching off the FTH-9000

- 1 Press on the button **On/Off** to turn off the FTH-9000.
- 2 Unplug the 3-pin connector.

Connection to the Web Interface

This chapter describes how to connect to the FTH-9000 Web interface.

Topics discussed in this chapter are as follows:

- [“Connection to the FTH-9000” on page 26](#)
- [“FTH-9000 Overview” on page 27](#)
- [“Port view” on page 28](#)

Connection to the FTH-9000

Before using the FTH-9000 Web interface web application, make sure your FTH-9000 is correctly installed (see the "Quick guide").

Local connection of the FTH-9000

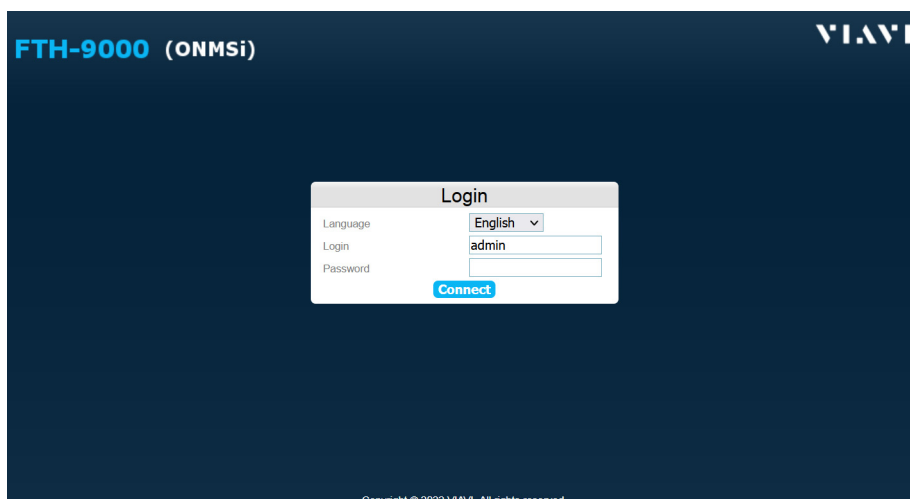
- 1 Plug-in a PC to the FTH-9000 USB port with Ethernet adapter.

Figure 16 Local connection



- 2 Open your web browser `http://192.168.1.1`
The Login `admin` is defined by default.
- 3 Enter the Password `password`.

Figure 17 FTH-9000 Web interface Login page



FTH-9000 Overview

Figure 18 FTH-9000 Web interface configuration

FTH-9000 (ONMSi) fth-9000-00016

Setup

1 Sequencer Running Disk status OK Serial number EBAP00016 Version V22.11 Type FTH-9000 Software options OTU_VPN ONMSI_MON ULTRAFAST_MON OTU_TAPPING LIGHT_SOURCE ONMSI_BUILD PAYG_PORT012@012

2 Network

HostName fth-9000-00016

IPv4

DHCP ☒ Subnet Mask 255.255.252.0 Gateway 10.33.19.254

IP Address 10.33.16.97

IPv6

IPv6 enabled ☒ DHCP ☐ Link address fe80::9e76:a7e9:e3b1:129e Gateway ::1

Ip Address 2001:4888:a06:228d:f1:1ef:9:16 /64

Domain dsu.net DNS ipv4 10.49.2.132 DNS ipv6 ::

3 OTDR module

Configuration

Type	Serial Number	Wavelength (nm)
8116SC-HR-APC	EMAZ00094	1650

4 ONMSi Server (Linux)

Server	IP address	Backup IP address	Active
Server 1	10.33.18.142(topaz-otu-linux)	0.0.0.0	<input checked="" type="checkbox"/>

5 Email

Email enabled ☐

6 Optical Switch

Configuration

Configuration	Serial Number	Inputs	Outputs
External 1	EBAN00022	1	144

OSX External Switch Remote Switch setup

1

Status bar, with:

- The FTH-9000 sequencer: running or stopped.
- The FTH-9000 Disk status: working or not
- The FTH-9000 Serial Number
- The current Web Interface version
- The FTH-9000 type
- The Software options list installed onto the FTH-9000

2

Network Settings

Information on the Network configuration (Hostname, IPV4 or IPV6 configuration)

3

OTDR

Description of the module installed onto the FTH-9000

4

ONMSi Server

Inform if the main ONMSi Server or the secondary one is active, and indicates on which the FTH-9000 is connected

5

Email

Displays the list of the e-mails configured on the ONMSi for this FTH-9000. The **Test** button allows to test the sending of an e-mail and to check if it is received.

6


Optical Switch


Displays a list of all the External and internal optical switches connected to the FTH-9000. Click on **OSX External Switch** or **Remote Switch setup** to configure the OSX/Remote Switch.



Quick access bar details


It offers a menu with the following actions:

FTH-9000 Reload the page and display the main screen (Setup view).

 Selected tab menu: Port view or Setup view,
(Icon color changes from blue (unselected) to blue/light blue (hover) and white (current selected))

 **Help** Icon: A menu pop-ups with **Online help** and **About FTH-9000** choice menu. The first gives access to Online Documentation and the second notifies the FTH-9000 version

 Edit (read-only) user preferences.
Click on  **Edit** for modifying login and password. Click on **Save** to confirm your selection.

 Quick Access for VIAVI website.

Port view

The FTH-9000 monitoring view is divided into 2 parts:



- The Quick access bar provides shortcuts to the main screens:
 - monitoring view 
 - FTH-9000 Web interface Setup 
- The table lists all the ports on the FTH-9000, including the OSX.

Figure 19 Monitoring view



Port	Name	Monitored
1	ftth-9000-00016 OS001	✓
2	SD_COS_1-01	
3	ftth-9000-00016 OS003	✓
4	SD_COS_1-02	
5	ftth-9000-00016 OS005	✓
6		
7	ftth-9000-00016 OS007	✓
8		
9		
10		
11		
12		

Configuration

This chapter describes the procedures for the FTH-9000 configuration.

Topics discussed in this chapter are as follows:

- [“Configuring the LAN” on page 30](#)
- [“External Optical switch configuration” on page 31](#)
- [“DWDM OTDR Module and DWDM DMUX Switch” on page 39](#)
- [“Changing the Login and password” on page 40](#)
- [“Configuring the Read only user Login and password” on page 40](#)

Configuring the LAN

LAN settings are displayed in the Network Panel of the FTH-9000 Setup:

- hostname (used if DHCP enabled)
- DHCP enabled
- IP settings


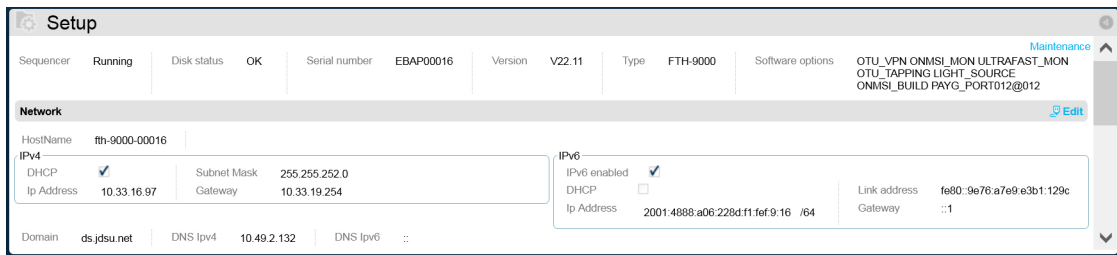
1 Click on the icon  on the upper banner to access to the Network configuration:

Figure 20 Network configuration



LAN setting edition

To change LAN settings:



NOTE

In local mode, your PC with the web browser must be connected on FTH-9000 USB port with Ethernet adapter.



- 1 In local mode: use the url: <http://192.168.1.1/> to connect to FTH-9000 application on your web browser
- 2 Click on **Edit** to configure Network Settings:
 - the FTH-9000 hostname (used when DHCP is enabled)
 - DHCP can be enabled/disabled
 - If DHCP is disabled, IP settings can be modified
- 3 Click on **Save** to save the settings.

Figure 21 Network settings

Network Save Cancel

⚠ Changing ethernet configuration will reboot the device

HostName fth-9000-00016

IPv4

DHCP ☒ Subnet Mask 255.255.252.0

Ip Address 10.33.16.97 Gateway 10.33.19.254

IPv6

IPv6 enabled ☒ DHCP ☐

Link address fe80:a0aa:3772:3c49:a2f

Ip Address 2001:4888:a06:228d:f1 Gateway 1

64 (Prefix)

Domain ds.jdsu.net DNS Ipv4 10.49.2.132 DNS Ipv6 ..

NOTE

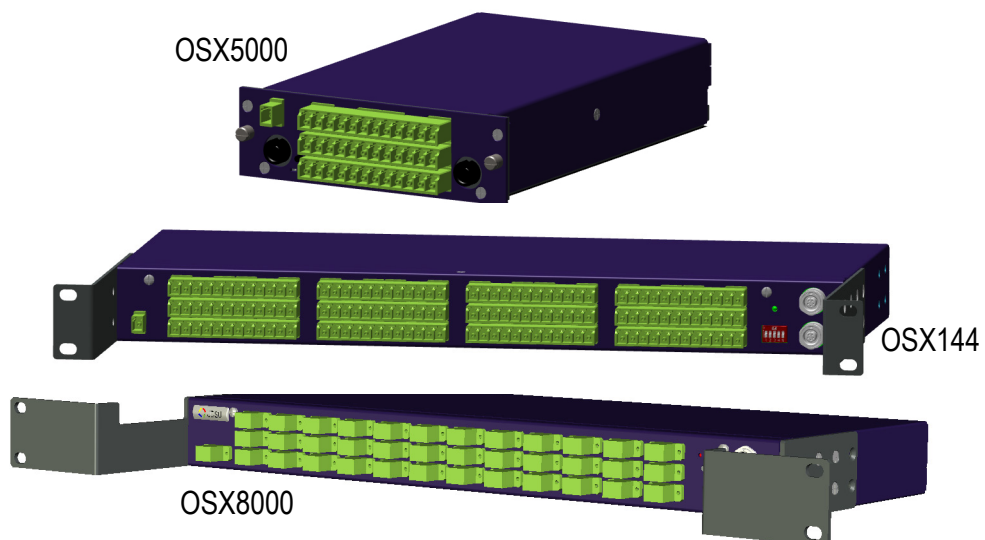
The Backup Ethernet IP can be configured if the software license has been purchased (E9H-LANBCK).

External Optical switch configuration

Three types of External switches can be used with the FTH-9000:

- OSX5000
- OSX144
- OSX8000

Figure 22 The different switches



CAUTION

The OSX5000 or OSX8000 has 24 or 36 optical output ports.

The OSX144 has 144 optical output ports.

All the external switches must have the same number of ports.



NOTE

To get information on the OSX installation and available configurations, refer to the OSX8000/OSX5000 user manual, or to the OSX144 user manual.

Configuring the OSX-5000

On the configuration menu, click on the **OSX > Edit**. The following page displays

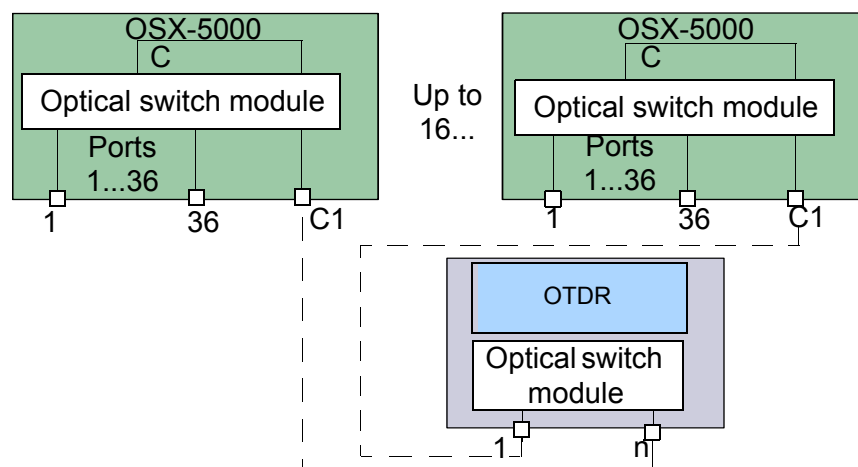
Figure 23 OSX-5000 Address Setup

The OSX-5000 can be configured differently:

- either all the OSX-5000 are in cascade mode (internal switch is the distributor)
- or one OSX-5000 is set as distributor and the other are in cascade.

OSX-5000 in cascade mode

Figure 24 OSX in cascade mode



- 1 Connect all the OSX-5000 that can be connected to the FTH-9000 turned off, before performing the configuration.

2 Follow the instructions displayed on the screen:

- a Click on **Power Off** button to add/remove OSX. OSX power supply is switched off.

The button becomes **Power On**:



- b Connect physically the OSX.
- c Once all OSX are physically connected to the FTH-9000; click on **Power On** button.
- d Press **Settings** button onto the OSX-5000 front panel
The LED **Addr.** turns on, in solid green
- e Select the OSX type **OSX24/36**.
- f Enter the Address **1** for the first OSX-5000 plugged (the OSX-5000 connected to the FTH-9000)



The addresses must be consecutive! (1, 2, 3, 4...).

- g Click **APPLY** onto the *OSX Setup* page.

3 Once completed, and if the address has been successfully modified:

- a green text confirm the address modification.
- the LED **Addr.** blinks in green onto the OSX-5000

4 Press back the **Settings** button onto the OSX-5000 to complete the configuration for the first OSX-5000

5 Redo [step 2](#) to [4](#) for all the OSX-5000 to be configured.

6 Once all the OSX-5000 are configured, you must launch a scan to detect all the connected OSX-5000, clicking on **START** in the OSX Scan window.



NOTE

If the number of OSX-5000 detected is false, this may be due to a bad configuration of the addresses (example: two OSX-5000 have the same address).

To ensure that all OSX-5000 connected are configured with the good address:

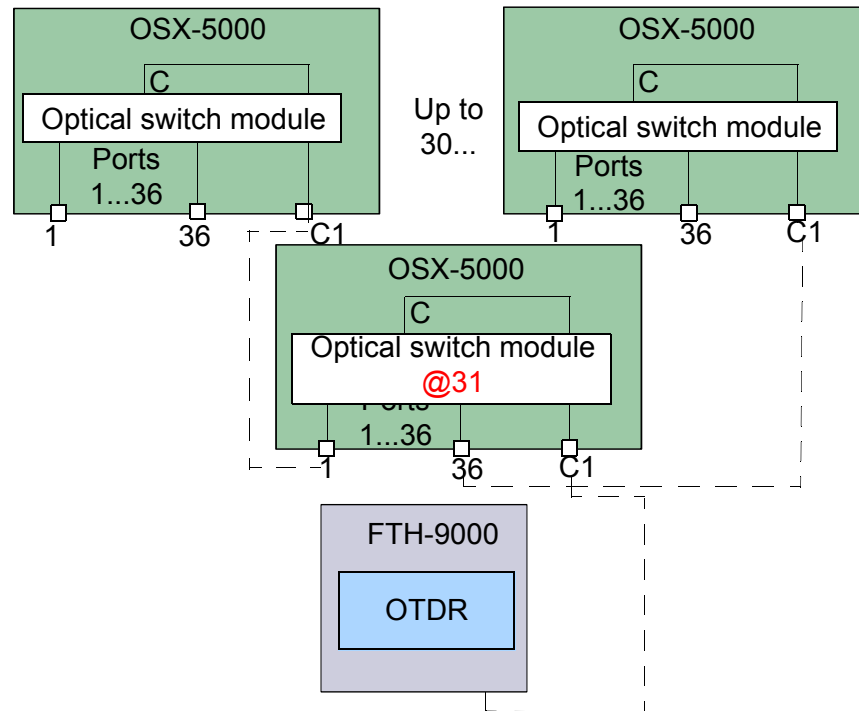
- a Enter the address of one OSX-5000 in the **External Switch Address** box
- b Click on **Blink the OSX**

The LED **Addr.** of the OSX-5000 with this address blinks in green for 20 seconds.


7 Close the OSX Setup window and apply the switch configuration.

OSX-5000 configuration with one OSX-5000 as multiplexer

Figure 25 OSX-5000 configuration with one multiplexer



This configuration is to be done when no internal switch is set into the FTH-9000.

- 1 Click on **Power Off** button to add/remove OSX.
OSX power supply is switched off.
The button becomes **Power On**: 
- 2 Connect the first OSX-5000, which will be used as multiplexer for the others, to the FTH-9000 with the command cable.
- 3 Connect all the others OSX-5000.
- 4 Once all OSX are physically connected to the FTH-9000; click on **Power On** button.
- 5 Press **Settings** button onto the OSX-5000 multiplexer front panel.
The LED **Addr.** turns on, in solid green.
- 6 Select the OSX type **OSX24/36**.
- 7 Enter the **address 31** for the OSX-5000 multiplexer.
- 8 Click on **APPLY** onto the *OSX Setup* page.
- 9 Once completed, and if the address has been successfully modified:
 - a green text confirm the address modification.
 - the LED **Addr.** onto the OSX-5000 turns solid green
- 10 Press the **Settings** button again to complete the address modification for OSX-5000 multiplexer.

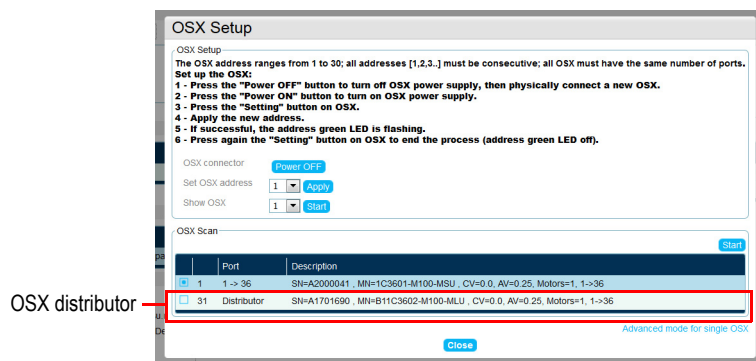
- 11 Follow step 2 to 4 from “OSX-5000 in cascade mode” on page 32 for the configuration of the following OSX-5000.



The first OSX-5000 set after the multiplexer will always have address 1.
The addresses must be consecutive! (1, 2, 3, 4...).

- 12 Once all the OSX-5000 are configured, you must launch a scan to detect all the connected OSXs, clicking on the button **SCAN** in the OSX Scan window.
- 13 Once scan is completed:
- the OSX-5000 Address **31**, which represent the OSX-5000 multiplexer, its serial number and C/P data
 - the OSX-5000 with addresses **1,2, 3** etc., which represent all the OSX-5000 connected to this multiplexer one, their serial numbers and C/P data.

Figure 26 Scan results with one OSX-5000 set as distributor



- 14 Close the OSX Setup window and apply the new switch configuration.

Advanced mode for External Switches used with internal optical switch

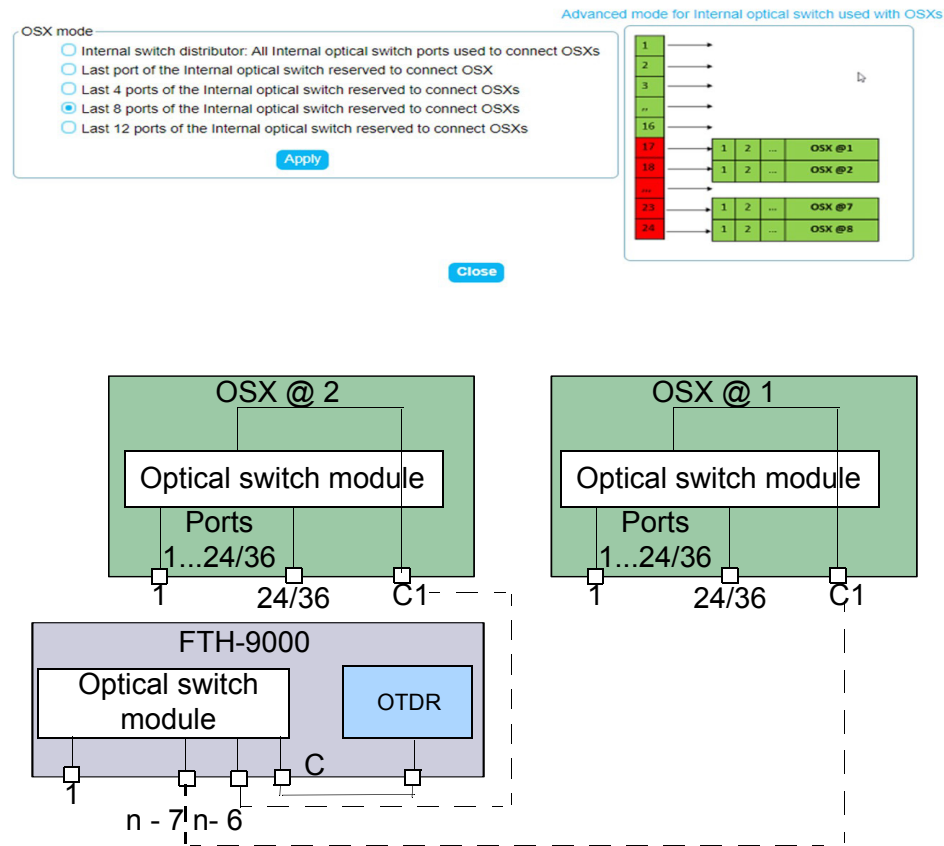
- By default all internal switch ports are used for cascading external switches OSXs.
- Advanced mode: allows to define a fixed number of internal switch ports (the last 1, 4, 8 or 12 ports) for cascading external switches OSXs. Remaining first internal switch ports are used for monitoring.



NOTE

For given FTH unit; all the external switches OSXs must be the same type.

Figure 27 Last 8 ports of internal switch dedicated for OSX cascade

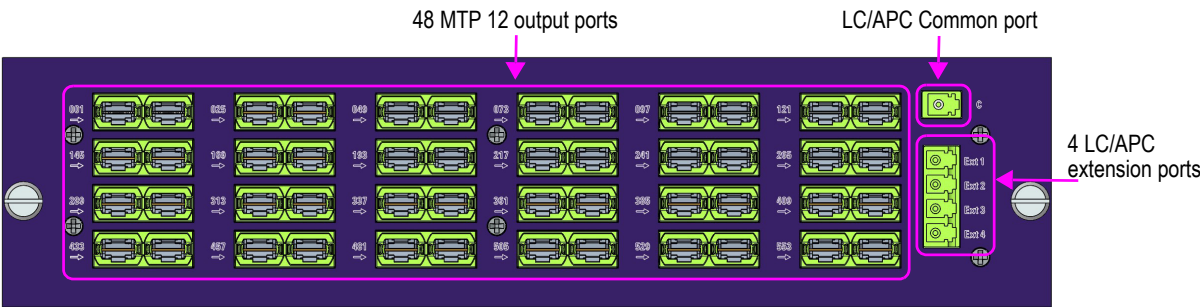


Advanced mode for External Switches used with internal optical switch and dedicated extension ports

MPO high capacity switch (288 or 576 output ports) has 4 LC/APC extension ports dedicated for the cascade of external switches. First external optical switch must be added to extension port 1, second to extension port 2.

The output of the OTDR optical module must be connected to the common port of the high capacity switch (input port).

Figure 28 MPO high capacity switch



Setup of the high capacity internal switch configuration, with or without external optical switches, is same as other optical switches: apply the configuration in the FTH Optical Switch setup screen:

Figure 29 MPO Configuration on Web application



High capacity internal optical switch with Pay As You Grow license

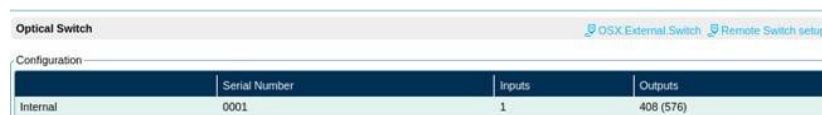
High capacity MPO switch (256/288 output ports) can be bought with Pay As You Grow license:

The high capacity switch is sold with half of the ports disabled. Disabled ports are enabled by bunch of 12, with license PAYG_PORT012-UPG.

	Commercial references	Number of authorized ports without license
Module OTAU MPO 576 ports	E98X576MPO	576
Module OTAU MPO 288 ports	E98X288MPO	288
Module OTAU MPO 576 ports pay as you grow	E98X576MPO-PAYG	288
Module OTAU MPO 288 ports pay as you grow	E98X288MPO-PAYG	144

Additional ports can be added by ordering license E98XMOD12-PAYG which adds 12 more ports to the internal switch.

Figure 30 Example of OTAU MPO 576 ports Pay As You Grow and 10 licenses E98XMOD12-PAYG (288 + 10x12 ports can be used)



Configuring the OSX144

- 1 Once all OSXs are physically connected to the FTH-9000; turn on the FTH.
- 2 Log in to FTH-9000 Web Interface.

- 3 Open the OSX Setup, clicking on **OSX External Switch > Detect** to list the connected 144 ports switches.
- 4 Click on **Apply** if the configuration is as expected.

Adding new OSX144

If a new OSX is added to the existing ones, proceed as follows:

- 1 In the **Optical Switch** window, click on **OSX External Switch > OSX Setup**.
- 2 Select **OSX144**.
- 3 Press **Power Off** to turn off OSX power supply.
- 4 Connect physically the new OSX and click on **Power On**.
- 5 Click on **Start** in the OSX Scan.

Figure 31 OSX Setup

- 6 Once Scan is completed, the list of OSX is displayed.

Figure 32 OSX scan results

	Port	Description
1	1 -> 144	EBAND0038,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
2	145 -> 288	EBAND0042,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
3	289 -> 432	EBAND0031,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
4	433 -> 576	EBAND0040,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
5	577 -> 720	EBAND0037,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
6	721 -> 864	EBAND0016,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
7	865 -> 1008	EBAND0024,1834140191,1,0,1,0,0,2020-03-12,2020-03-12,00144
8	1009 -> 1152	EBAND0032,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
9	1153 -> 1296	EBAND0021,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
10	1297 -> 1440	EBAND0034,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
11	1441 -> 1584	EBAND0014,1834140191,1,0,1,0,0,2020-03-11,2020-03-11,00144
12	1585 -> 1728	EBAND0039,1834140191,1,0,1,0,0,2020-03-12,2020-03-12,00144

- 7 Press **Close** to return to Setup page.

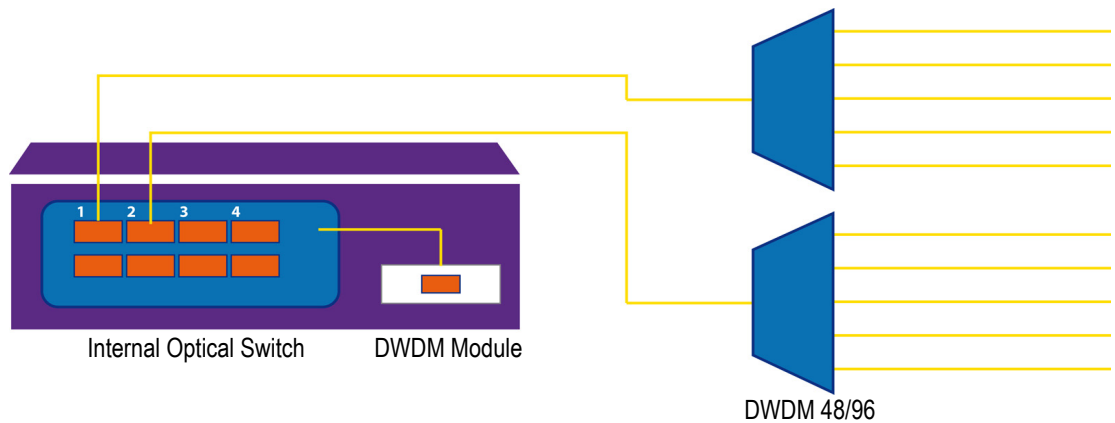
DWDM OTDR Module and DWDM DMUX Switch

If the FTH-9000 is equipped with internal switches and a DWDM OTDR Module, several DWDM DEMUX Switches can be connected.

DWDM DMUX of 48 or 96 channels, associated to DWDM OTDR module, are used as passive optical switches of 48 or 96 ports.

They can be associated to an internal optical switch:

Figure 33 FTH-9000: DWDM OTDR Module and DWDM DMUX switches

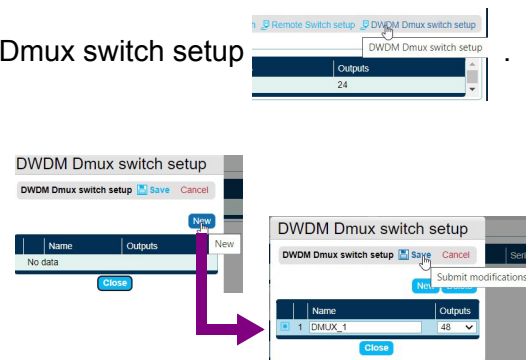


One of those 2 licenses is required:

- E9H-ONMS-DWDM: FTH ONMSI License for emulating a Demux as Remote Switch.
- E9H-ONMS-NCDMUX: FTH ONMSI License, for emulating the VIAVI not temperature calibrated Demux as Remote Switch.

Adding a new DMUX

- 1 From the **Setup** screen, click on DWDM Dmux switch setup
- 2 Click on **Edit**
- 3 Click on **New** to add a new DMUX.
- 4 Define whether it is a **48** or **96** channels DMUX.
- 5 Click on **Save** to save the new declared DMUX.



NOTE

Up to 36 DMUX can be added if the internal switch is 1x36.



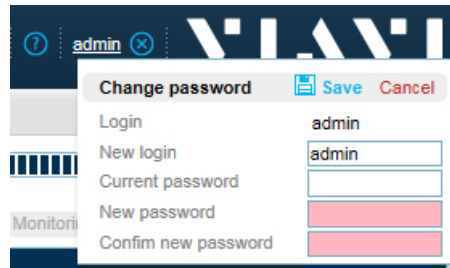
CAUTION

DMUX cannot be mixed with external optical switches.

Changing the Login and password

- 1 From the top menu bar, click on user name
- 2 Click on **Edit** to modify your credentials.

Figure 34 User credentials



NOTE

If user credentials are lost, in FTH-9000 Local Mode, user credentials can be changed without giving the old password and current user login is retrieved.

Configuring the Read only user Login and password

NOTE

The read-only user has no access to Device configuration and Maintenance.

By default, Read-only user is disabled. Modify its credential to activate it.

- 1 From the top menu bar, click on user name.
- 2 Click on **Read-only user** > **Edit** to modify read-only user credential.

Figure 35 Read-only user configuration



NOTE

Command to enable/disable the read-only user:

```
otu:api:user:enaguest TRUE/FALSE
```

Measurement on demand

This chapter describes how to start a measurement from the FTH-9000.

Topics discussed in this chapter are as follows:

- [“Measurement on a port” on page 42](#)

Measurement on a port

OTDR measurement can be used prior the addition of monitoring tests to check that fibers are correctly connected and spliced.



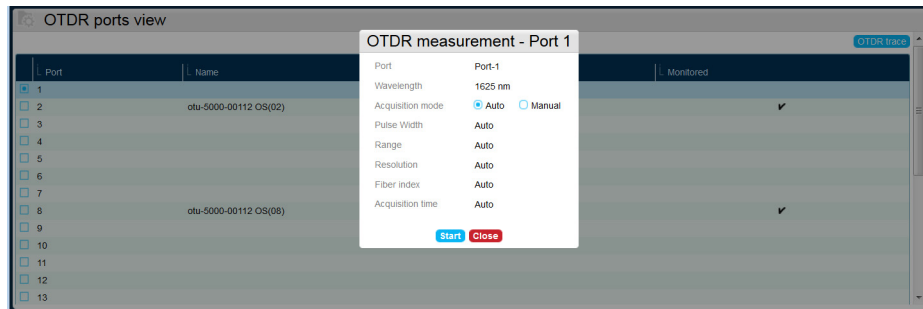
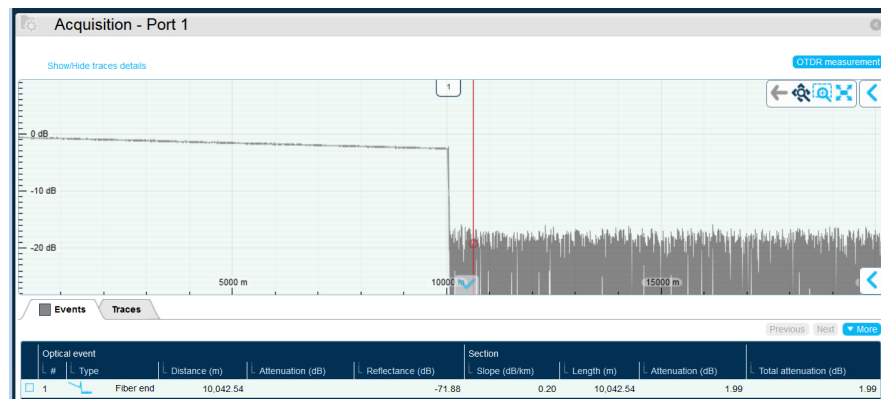
- 1 From the **Home** screen, click on the icon **Monitoring view** .
- 2 Select a monitored **Port** , without monitoring test
- 3 Click the button **OTDR Trace**.
- 4 Modify if necessary the OTDR parameters for the acquisition to be performed.

Figure 36 OTDR parameters for measurement on demand



- 5 Click on **Start** to launch the acquisition.
- When the measurement is completed, the OTDR trace is displayed and a new measurement can be launched by clicking on OTDR measurement button.

Figure 37 OTDR Measurement result





NOTE on DWDM Measurement Setup

With DWDM, only the measurement Setup differs: you have to select the DWDM canal instead of the wavelength.

Figure 38 DWDM Setup

Once the measurement ends, the OTDR trace displays for the corresponding canal.

Figure 39 DWDM acquisition



Trace Viewer

This chapter describes the trace viewer on the FTH-9000.

Topics discussed in this chapter are as follows:

- [“OTDR trace color codes” on page 46](#)
- [“Overview” on page 46](#)
- [“Details on selected Trace” on page 48](#)

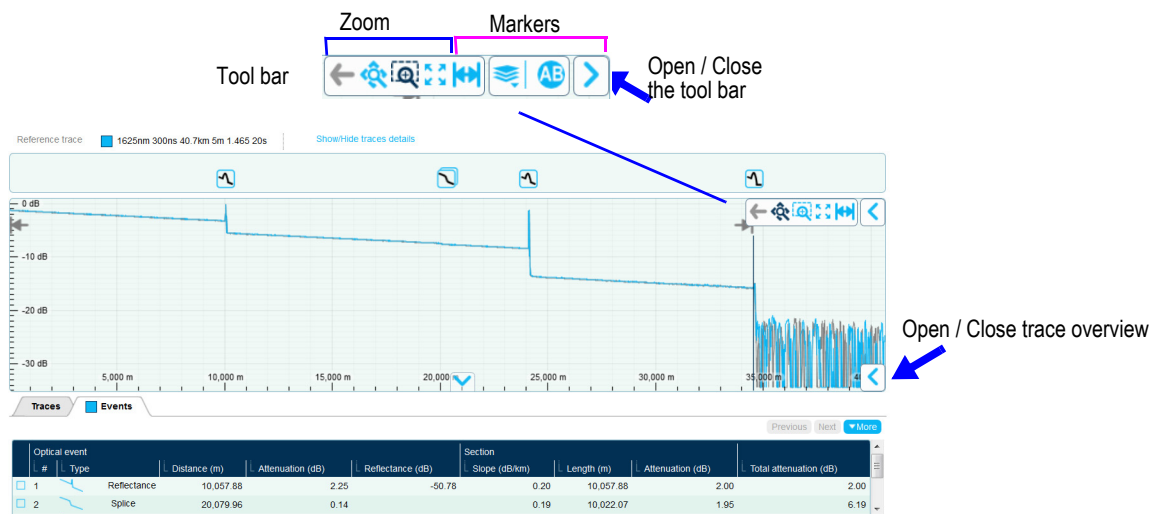
OTDR trace color codes

The color of the OTDR traces are different according to the type of trace:

- Light Blue: reference trace
- Dark blue: latest test
- Grey: Measurement on demand

Overview

Figure 40 Trace overview

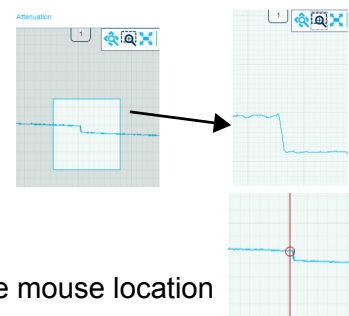


Zoom

The Zoom tool bar allows to apply different zooms on trace:

- Fit to content (zoom release)
- Fit to content (zoom release)
- Pan and Zoom in/out with the mouse wheel

- With any zoom tool, zoom in or out around the mouse location



A & B markers

The markers tool bar allows to get details on markers A & B positions on trace.

Figure 41 Markers details



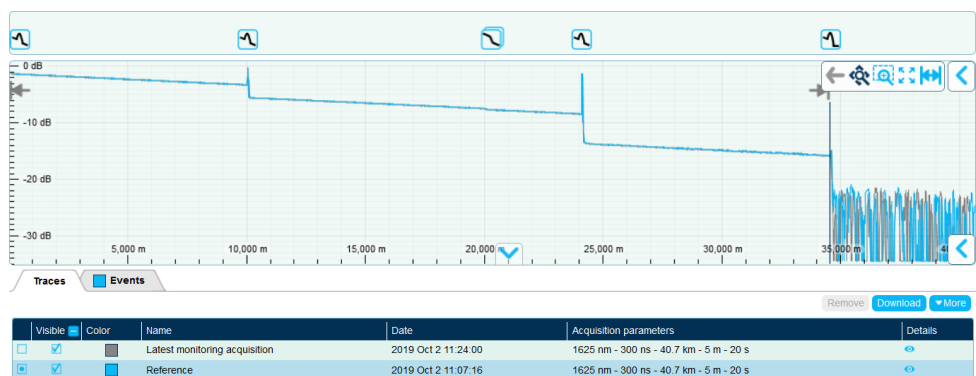
Table 5

A	A marker detail with distance from origin and level Can select this tool to place A marker to a new position then drag and drop
B	B marker detail with distance from origin and level Can select this tool to place B marker to a new position then drag and drop
AB	Distance, attenuation and slope between A and B markers

Multi trace

The multi-trace tool bar allows to change the active trace and to get details related to the selected trace.

Figure 42 Multi trace tool bar



Click on the first check box to select the active trace.

Click on the **Visible** check box to display/hide the trace.

Table 6

	Events, results, acquisition details related to the selected trace
	Can change selected trace by clicking in front of the colored square

Details on selected Trace

Showing the events table



The Events table is accessible clicking on the icon  at the bottom of the trace (click on the icon  to hide the window).

Figure 43 Show the details on selected trace



Displaying the events details

Click on the event of the upper banner or in the event table.

Figure 44 Event details on trace

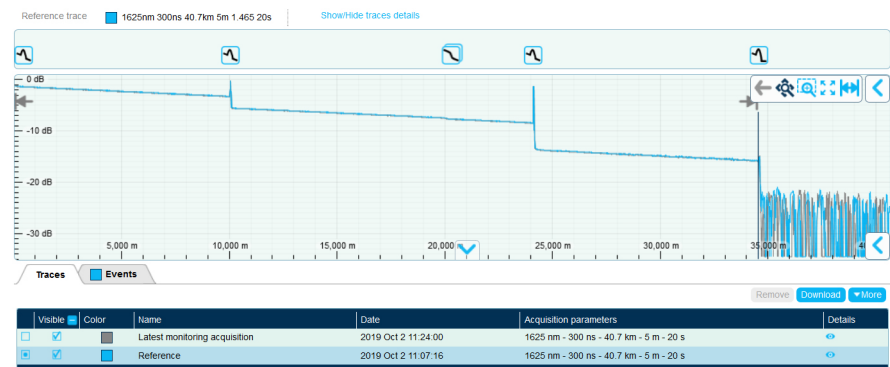


- When multiple events close, can move to the next event from the top box

Setup details

- To display the details on OTDR acquisition, click on the **Traces** tab.

Figure 45 Details on trace

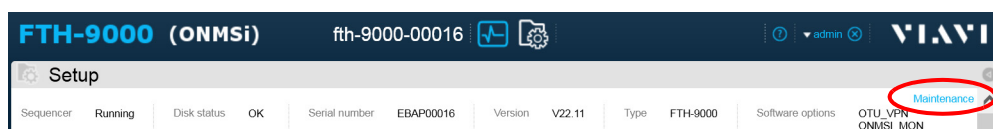


All the acquisition parameters are displayed for all the traces on screen.

Maintenance

This chapter describes the maintenance procedures for the FTH-9000.

To access the maintenance, click on **Maintenance** link from the Setup screen:



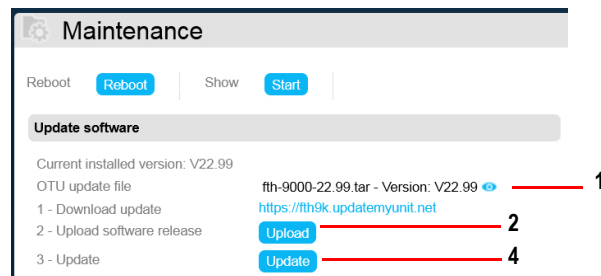
Topics discussed in this chapter are as follows:

- “Software update” on page 52
- “Adding a License” on page 52
- “Show FTH-9000” on page 53
- “Generate and download Snapshot” on page 53

Software update

- 1 From the Software update section of the **Maintenance** screen, download on your PC the new FTH-9000 release from VIAVI <http://fth9k.updatemyunit.net> site.

Figure 46 Update software



- 2 Select the **Upload** button to upload the release from your PC to the FTH-9000. You are asked to select the release to upload to the FTH-9000 with the **Browse** button.
- 3 Select the release (of the form *.tar) and upload it.

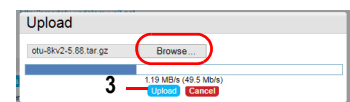
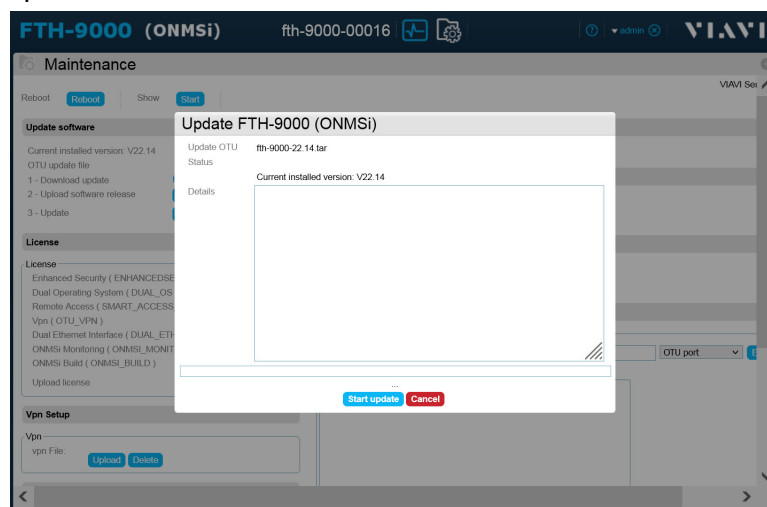


Figure 47 Update FTH-9000



- 4 When the upload is completed, close the upload dialog and select **Update** button. You are asked to start the update.
- 5 Select the **Start update** button. The FTH-9000 starts the update and will reboot at the end of the update.

Adding a License

Licenses are installed when the product is ordered.

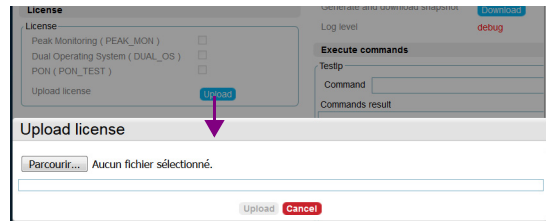
They can also be added later if needed.

Refer to chapter [Chapter 11 “Options and accessories”](#) to get a list of all the software licenses available for the FTH-9000 (“[Software licenses](#)” on page 66).

If the license needs to be added by yourself, click on **Upload**, to install the file provided by VIAVI.

Please consult your sales representative to get it

Figure 48 Upload License file



Show FTH-9000

From the Maintenance screen, the user can make the LED **Status** blink onto the FTH-9000, in order to recognize which FTH-9000 is controlled by the Web Interface:

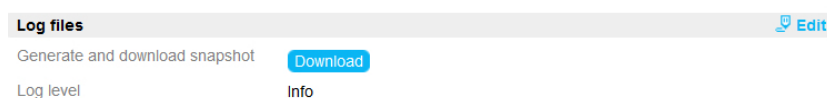
- 1 On the upper part of the screen, click on **Start** button of the **Show FTH** zone.
The LED **Status** of the concerned FTH-9000 starts blinking.

Generate and download Snapshot

On the right of the **Maintenance** screen, click on **VIAVI Service Tools** to display more maintenance actions.

In the window Log files, click on **Download** button in order to generate a snapshot of all the FTH-9000 logs in order to send them to the VIAVI support.

Figure 49 Log files



Technical Specifications

This chapter describes the technical specifications of the FTH-9000.

Topics discussed in this chapter are as follows:

- [“Base Unit Technical specifications” on page 56](#)
- [“Optical switch technical specifications” on page 58](#)

Base Unit Technical specifications

Mechanical

Height	2U
Width	19", on option: 21" or 23"
Depth	260 mm
Weight	5.1 kg without internal switch not OTDR module 7.8 kg with internal switch and OTDR module

I/O Interfaces

Universal serial Interface	1 x USB 2.0 Host
	5V/500mA
	1 x USB C 2.0 Host
	5V/500mA
LAN Interface	2 RJ45 connectors for 10/100/1000 Mbit/s Ethernet
	Not used for power device, only Ethernet signal purpose
OSX Interface	+5VDC, 0.8A
	+12VDC, 0.5A



All external inputs connected to ports shall provide reinforced or double insulation for protection against electrical shock, and shall have voltage below 30 Vrms and 42.4V peak or 60VDC.

Power supply

Typical values, measured at 25°C.

Input Voltage Range	-20 to -60V
Power consumption	Typical 35 W ¹ (Max. 120 W)

1. FTH-9000 equipped with one OTDR module and one Switch

Power supply AC/DC Converter

AC input	100-240 V, 50-60 Hz
DC Output Standard adaptor	48 V DC, 3.13 A

Electrical safety

IEC 62368-1 (ed.2)

Environmental

Operating	-20°C to +50°C (operating, temperature range) indoor use
Storage	-20°C to 60°C
Maximum altitude of use	2000 m
Electrical Safety	IEC 61010-1:2010 + A1:2016 + CENELEC, US deviations, CA, JP
Overvoltage category	II
Pollution degree	2
Humidity	5% to 95% without condensing
EMI/ESD	CE Compliant - Class A (EN61326) FCC Part 15 Compliant
Inflammability	The FTH-9000 metallic housing does not propagate fire
Sinusoidal Vibration 3G	Frequency bandwidth: 5 - 500 Hz Sweep rate: 1 oct./min Sweep number: 6 (3 sweeps up - 3 sweeps down) Duration: 39'52" Number of axes: 3
Random Vibration	Frequency bandwidth: 5 - 500 Hz RMS acceleration: 3,85g Duration per axis: 30 minutes Number of axes: 3
Shock	Pulse shape: Half sine Amplitude: 15g Duration: 11ms Number of shocks per direction: 3 Number of direction: 6
Continuous Bump	Pulse shape: Half sine Amplitude: 15g Duration: 6ms Number of shocks per direction: 1000 Number of direction: 6 Rate: 1 per second

Storage

Solid State Disk: 16GB or higher

Optical switch technical specifications

An optical switch of 4, 8, 12, 24, 36, 48, 288 and 576 ports can be integrated in the FTH-9000.

The integrated optical switch port capacity can be extended with multiple external switches of 24, 36 or 144 ports.

Technical Specifications for switch up to 48 ports¹

Number of Ports	4, 8, 12, 16, 24, 36, 48
Insertion Loss	< 0.7 dB (<1.4 dB for 48 ports)
Return Loss	> 57 dB
Repeatability	+/- 0.01dB sequential switching +/- 0.05dB random switching
Wavelength Operating Range	[1260 nm , 1670 nm]
Connector type	SC/APC up to 24 ports, LC/APC for 36 and 48 ports

1. All specifications referenced excluding connectors

Technical Specifications for 288 and 576 ports switches¹

Number of Ports	576 + 4 additionnal extension ports 288 + 4 additionnal extension ports
Insertion Loss on principal port including one pair of connectors	< 2.5 dB from 1600 nm to 1670 nm < 3.1 dB from 1528 nm to 1600 nm < 3.4 dB from 1500 nm to 1528 nm < 3.7 dB from 1480 nm to 1500 nm
Insertion Loss on extension ports including one pair of connectors	< 1.2 dB from 1600 nm to 1670 nm < 1.6 dB from 1528 nm to 1600 nm < 1.9 dB from 1500 nm to 1528 nm < 2.1 dB from 1480 nm to 1500 nm
Return Loss	> 50 dB
Repeatability	- 0.05 dB min to + 0.05 dB max
Wavelength Operating Range	[1480 nm , 1670 nm]
Connector type	Common port : LC/APC Principal output ports : MPO-12 male extension output ports : LC/APC

1. All specifications referenced against:
MPO connectors compliant with IL < 0,35dB dB and RL > 60 dB performances
LC/APC connectors compliant with IL < 0,3 dB and RL > 65 dB performances

Options and accessories

This chapter describes the references for FTH-9000 mainframes, modules, options and accessories.

Topics discussed in this chapter are as follows:

- [“FTH-9000 Main frame references” on page 60](#)
- [“Power Supply references” on page 60](#)
- [“Rack Mounting Kit” on page 60](#)
- [“Optical Switch” on page 60](#)
- [“OTDR Modules supported” on page 61](#)
- [“Spares” on page 62](#)
- [“External Switches” on page 62](#)
- [“Accessories” on page 63](#)
- [“Software licenses” on page 63](#)

FTH-9000 Main frame references

Designation	References
Mainframe FTH-9000 with left fans and 4K OTDR	E9H-A-LF-4KMOD
Mainframe FTH-9000 with left fans and 6K V1 OTDR with TACB	E9H-A-LF-6K1MOD
Mainframe FTH-9000 with left fans and 6K V2 OTDR	E9H-A-LF-6K2MOD

Power Supply references

Designation	References
FTH-9000 AC/DC converter 90-264V to 48V without power cord (input C14)	E9H-A-ACDC
FTH-9000 DUAL AC/DC converter 90-264V to 48V without power cord (input C14)	E9H-A-ACDC-DUAL
1U Power Supply Tray	E9H-A-ACDC-TRAY
Power Cord 3C L2.5m STR Black EURO to C13 (power supply input type C14)	E9H-A-PC-C13-EU
Power Cord 3C L2m STR Black UK to C13 (power supply input type C14)	E9H-A-PC-C13-UK
Power Cord 3C L2m STR Black USA to C13 (power supply input type C14)	E9H-A-PC-C13-US

Rack Mounting Kit

Designation	References
2RU Bracket Kit Adaptor 19 to 21P	E9H-A-ADP2RU21P
2RU Bracket Kit Adaptor 19 to 23P	E9H-A-ADP2RU23P
FTH-9000 Front Panel Plexi Protection	E9H-A-PLEXI

Optical Switch

Designation	References
FTH-9000 No Optical Switch Front Panel	E9H-A-X01
Optical switch 1X4 plug in module (SC/APC)	E98X04
Optical switch 1X8 plug in module (SC/APC)	E98X08
Optical switch 1X12 plug in module (SC/APC)	E98X12

Optical switch 1X16 plug in module (SC/APC)	E98X16
Optical switch 1X24 plug in module (SC/APC)	E98X24
Optical switch 1X36 plug in module (LC/APC)	E98X36LCAPC
Optical switch 1X48 plug in module (LC/APC)	E98X48LCAPC
Optical switch 1X288 plug in module with MPO-12 connectors	E98X288MPO
Initial configuration with 144 ports for 288 optical switch ports	E98X288MPO-PAYG
Optical switch 1X576 plug in module with MPO-12 connectors	E98X576MPO
Initial configuration with 288 Ports for 576 optical switch ports	E98X576MPO-PAYG
Additional 12 ports switch for 144/288/576 optical switch ports with MPO-12 connectors	E98XMOD12-PAYG
SW license for 12 additional ports for existing 288 or 576 internal switch	E98XMOD12-PAYG-UPG

OTDR Modules supported

4100 OTDR Modules

Designation	References
4100 Module B OTDR - Filtered 1650 nm - APC	E4118FB65-APC
4100 Module A OTDR - 1310/1550 nm - APC	E4126A-APC
4100 Module B OTDR - 1310/1550 nm - APC	E4126B-APC
4100 Module C OTDR - 1310/1550 nm - APC	E4126C-APC
4100 Module A OTDR - 1310/1550/1625 nm - APC	E4136A-APC
4100 Module B OTDR - 1310/1550/1625 nm - APC	E4136B-APC
4100 Module C OTDR - 1310/1550/1625 nm - APC	E4136C-APC
4100 Module C OTDR - 1310/1550/F1625 nm - APC	E4136FC-APC
4100 Module B OTDR - 1310/1550/F1650 nm - APC	E4138FB65-APC
4100 Module C OTDR - 1310/1550/F1650 nm - APC	E4138FC65-APC

8100 OTDR Modules

Designation	References
OTDR Module B 1550nm APC connector - SC adapter Std	E8115B-APC
OTDR Module C 1550nm APC connector - SC adapter Std	E8115C-APC
OTDR Module D 1550nm APC connector - SC adapter Std	E8115D-APC
OTDR Module C filtered 1625nm APC connector - SC adapter Std	E81162C-APC

Designation	References
OTDR Module D filtered 1625nm APC connector - SC adapter Std	E81162D-APC
OTDR Module B filtered 1650nm APC connector - SC adapter Std	E81165B-APC
OTDR Module C filtered 1650nm APC connector - SC adapter Std	E81165C-APC
OTDR MODULE C 1650NM High resolution Filtered	E81165C-HR-APC ¹
OTDR Module D Filtered 1650nm APC connector - SC adapter Std	E81165D-APC
OTDR Module B 1310/1550nm APC connector - SC adapter Std	E8126B-APC
OTDR Module C 1310/1550nm APC connector - SC adapter Std	E8126C-APC
OTDR Module D 1310/1550nm APC connector - SC adapter Std	E8126D-APC
OTDR Module D 1550/Filtered 1625nm APC connector - SC adapter Std	E8129D-62-APC
OTDR Module B 1310/1550/1625nm APC connector - SC adapter Std	E8136B-APC
OTDR Module C 1310/1550/1625nm APC connector - SC adapter Std	E8136C-APC
OTDR Module D 1310/1550/1625nm APC connector - SC adapter Std	E8136D-APC
Tunable DWDM OTDR Module C BAND FOR FTH-9000	E81WDM-C

1. Depend on Module Serial Number. Check with VIAVI Support

Spares

Designation	References
Spare FTH-9000 Left Fan Kit	E9H-A-SP-LF-Kit
Spare Sets Rack Assembly Kit (4xM6X16 Screw+ 4xWasher + 4xNut) (Qty = 10)	E9H-A-SP-RCKKIT
Spare Sets of electrical connectors Kit (DC input connector, Grounding kit) (Qty = 10)	E9H-A-SP-CONKIT
Spare 19P Rack Mounting Kit for FTH-9000 Left Fan	E9H-A-SP-RK-LF

External Switches

External Switch 24 or 36 ports	References
24 Ports external switch (OSX5000)	E9E-EXTX-24
36 Ports external switch (OSX5000)	E9E-EXTX-36

OSX144	References
Optical Switch of 144 ports	E98OSX144

OSX144	References
Connection Kit to cascade OSX	E98OSXXOSX
Long connection cable to cascade OSX	E9EOSXXOSX-LG1
Short cable - 75 mm - for External Switch	E9OSXXOSX-XS
19/23 Inches Rack Mounting Adapter	E9ADAPTER19-23
19/21 Inches Rack Mounting Adapter	E9ADAPTER19-21

Accessories

Designation	References
Ethernet/USB Converter for FTH-9000 Local Configuration	E9E-USB-ETH

Software licenses

Software licenses	References
ONMSI Monitoring	E9-ONMS-MONITOR
ONMSI Build	E9-ONMS-BUILD
Dual Ethernet	E9H-LANBCK
Dual Ethernet Upgrade	E9H-LANBCK-UPG
Light Source on 1650 OTDR module	E9-LIGHTSOURCE
Light Source on 1650 OTDR module Upgrade	E9-LIGHTSOURCE-UPG
Tapping Monitoring (high sensitivity monitoring)	E9-HS-MON
Open VPN for FTH-9000 (ONMSi Cloud)	E9-OPENVPN
Open VPN for FTH-9000 (ONMSi Cloud) Upgrade	E9-OPENVPN-UPG
Peak Monitoring for SmartOTU	E9-PEAK-MON
Smart Access Anywhere - Level 2	E9-SAA
Smart Access Anywhere - Level 2 Upgrade	E9-SAA-UPG
Dual Operating System	E9-DUAL-OS
Dual Operating System Upgrade	E9-DUAL-OS-UPG
Ultra Fast Otdr Monitoring	E9-UF-MON
Ultra Fast Otdr Monitoring Upgrade	E9-UF-MON-UPG
Enhanced Security	E9-SECPACK
Enhanced Security Upgrade	E9-SECPACK-UPG
SmartOTU Root Access using SSH key License	E9-SSHKEYROOT
SmartOTU Root Access using SSH key License Upgrade	E9-SSHKEYROOT-UPG
SmartOTU Rest API License	E9-SMART-API
SmartOTU Rest API License Upgrade	E9-SMART-API-UPG
ONMSi Build (P2P & PON P2P) and Monitor License	E9-ONMS-BUIMON

Software licenses	References
ONMSi Build (P2P & PON P2P) and Monitor License Upgrade	E9-ONMS-BUIMON-UPG
High capacity internal switch 288/576: Add 12 ports on Optical Switch	E98XMOD12-PAYG
FTH ONMSI License for emulating a Demux as Remote Switch	E9H-ONMS-DWDM
FTH ONMSI License, for emulating the VIAVI not temperature calibrated Demux as Remote Switch	E9H-ONMS-NCDMUX

RoHS Information

This appendix describes the RoHS (Restriction of Hazardous Substances) information, which are mandatory requirements from China.

The RoHS directive consists in the restriction on the use of certain hazardous substances in electrical or electronic equipment sold or used in the European Union, after July 1, 2006. These substances are: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers.

The following chapter is described:

- [“Declaration of Conformance: China RoHS Material Disclosure” on page 66](#)

Declaration of Conformance: China RoHS Material Disclosure

AVI 1445 S Spectrum Blvd, Ste 102 Chandler, AZ 85286, USA 22167860-138 Rev 000

“中国 RoHS”
《电子信息产品污染控制管理办法》（信息产业部，第 39 号）
附录 (Additional Information required for the Chinese Market only)

本附录按照“中国 RoHS”的要求说明了有关电子信息产品环保使用期限的情况，并列出了产品中含有的有毒、有害物质的种类和所在部件。本附录适用于产品主体和所有配件。

产品系列: Mainframe FTH-9000
(Product Family)

环保使用期限:

25
本标识标注于产品主体之上，表明该产品或其配件含有有毒、有害物质（详情见下表）。
其中的数字代表在正常操作条件下至少在产品生产日期之后数年内该产品或其配件内含有的有毒、有害物质不会变异或泄漏。该期限不适用于诸如电池等易耗品。
有关正常操作条件，请参见产品用户手册。
产品生产日期请参见产品的原始校准证书。

有毒、有害物质的类型和所在部件

元器件 (Component)	有毒、有害物质和元素					
	铅(Pb)	汞 (Hg)	镉(Cd)	六价铬 (CR ⁶⁺)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
产品主体 (Main Product)						
印刷电路板组件 (PCB Assemblies)	X	O	O	O	O	O
内部配线 (Internal wiring)	X	O	O	O	O	O
电池 (Batteries)	O	O	O	O	O	O
电源 (Power Supply)	X	O	O	O	O	O
电工零件 (Electro-mechanical parts)	O	O	O	O	O	O
硬盘 (Hard Drive)	X	O	O	O	O	O
光模块 / 辅助模块 (Optical modules) / (Auxiliary modules)	X	O	O	O	O	O
金属外壳零件和紧固件 (Metal case parts and fixings)	X	O	O	O	O	O
塑料外壳零件 (Plastic case parts)	O	O	O	O	O	O
标签和胶带 (Labels and tapes)	O	O	O	O	O	O
配件 (Accessories)						
外接电缆和适配器 (External cables and adapters)	X	O	O	O	O	O
手册和其它印刷材料 (Handbooks and other printed material)	O	O	O	O	O	O
本表是按照 SJ / T 11364 的规定编制的: O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。 X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。						



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English

VIAVI Solutions

North America:	1.844.GO VIAVI / 1.844.468.4284
Latin America	+52 55 5543 6644
EMEA	+49 7121 862273
APAC	+1 512 201 6534
All Other Regions:	viavisolutions.com/contacts
email	TAC@viavisolutions.com
address	6001 America Center Drive, San Jose, CA, 95002, USA