



OTU-5000 (E9E-COTU)

Optical Test Unit

**Rack-based optical test unit for RFTS
(Remote Fiber Test System)**

User Manual

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User Manual



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Notice

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Manual

This guide is a product of OTU-5000's Technical Information Development Department. This manual gives you the main information to install, start and use the OTU-5000.

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 or batteries, 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.



Table of Contents

About This Guide	xi
Purpose and scope	xii
Assumptions	xii
Technical assistance	xii
Recycling Information	xii
Conventions	xii
 Chapter 1 Prerequisites and delivery of the OTU-5000	 1
Prerequisites of the OTU-5000	2
General view of the prerequisites	2
OTU-5000 and rack	2
Overall dimensions of the OTU-5000 in the racks	3
OTU-5000 Power Supply	5
OTU-5000 Consumption	5
Section of electric wires	5
AC Power supply	6
Patchcords & jumpers	7
Network Communication	7
Network access	7
Delivery of the OTU-5000	7
 Chapter 2 OTU-5000 General Description	 11
Front Panel description	12
LEDs description	13
General information on warranty	15
Hardware Warranty	15
 Chapter 3 Safety information	 17
AC/DC safety information	18
Precautions relating to optical connections	18
Laser Safety instructions	18
Laser classes	19
Warning labels for the laser classes	19

Chapter 4	Installation of the OTU-5000	21
	Installation of the OTU-5000 into the rack	22
	Fixing the OTU-5000 into the rack - Referenced E9E-OTU-SHELF	22
	Fixing the OTU-5000 into the rack - Referenced E9E-COTU	23
	Installing the power supply	23
	Front Power supply option	23
	Back power supply - Single feed option	24
	Installing the Dual Rear AC power supplies assembly option	24
	Connector pin-out	26
	Installation of the Ground Terminal	27
	Installing the rear and front frames options	27
	Installing the Front frame	27
	Installing the Rear frame	28
	Setting the plexi protector onto the OTU-5000	28
	Procedure for switching on and off the OTU-5000	29
	Connecting the External Switch (OSX5000) to the OTU-5000	29
	Configuration with one internal optical switch and one OSX5000	30
	Configuration with one internal optical switch and more than one OSX5000	31
	Configuration with more than one OSX5000	31
Chapter 5	Connection to the Web Interface	33
	Introduction	34
	Local connection of the OTU-5000 through USB	34
	OTU-5000 Setup	35
	Quick access bar details	36
	Port view	36
	37
Chapter 6	Configuration	39
	Configuring the LAN	40
	LAN setting edition	40
	External Optical switch configuration	41
	OSX-5000 in cascade mode	42
	OSX-5000 configuration with one OSX-5000 as multiplexer	43
	Advanced mode for a single External Switch	44
	Changing the Login and password	45
Chapter 7	Measurement on demand	47
	Measurement on a port	48
	49
Chapter 8	Trace Viewer	51
	OTDR trace color codes	52
	Overview	52
	Zoom	52

	A & B markers	53
	Multi trace	53
	Details on selected Trace	54
	Showing the events table	54
	Displaying the events details	54
	Setup details	54
Chapter 9	Maintenance	57
	Software update	58
	Adding a License	58
	Show OTU-5000	59
	Generate and download Snapshot	59
Chapter 10	Technical Specifications	61
	Base Unit Technical specifications	62
	Mechanical	62
	I/O Interfaces	62
	Power supply	62
	Power supply AC/DC Converter	62
	Environmental	62
	Storage	63
	OTDR General Technical Specifications	63
	Optical switch technical specifications	63



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 OTU-5000 features and capabilities. This guide includes task-based instructions that describe how to install, configure, use, and troubleshoot the OTU-5000. 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 OTU-5000 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>.

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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.

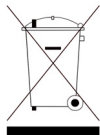


This symbol represents a risk of electrical shock.



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 OTU-5000

This chapter describes the prerequisites useful before installing/configuring the OTU-5000. It also gives a detailed description of all the elements you will receive according to the configuration asked during the order.

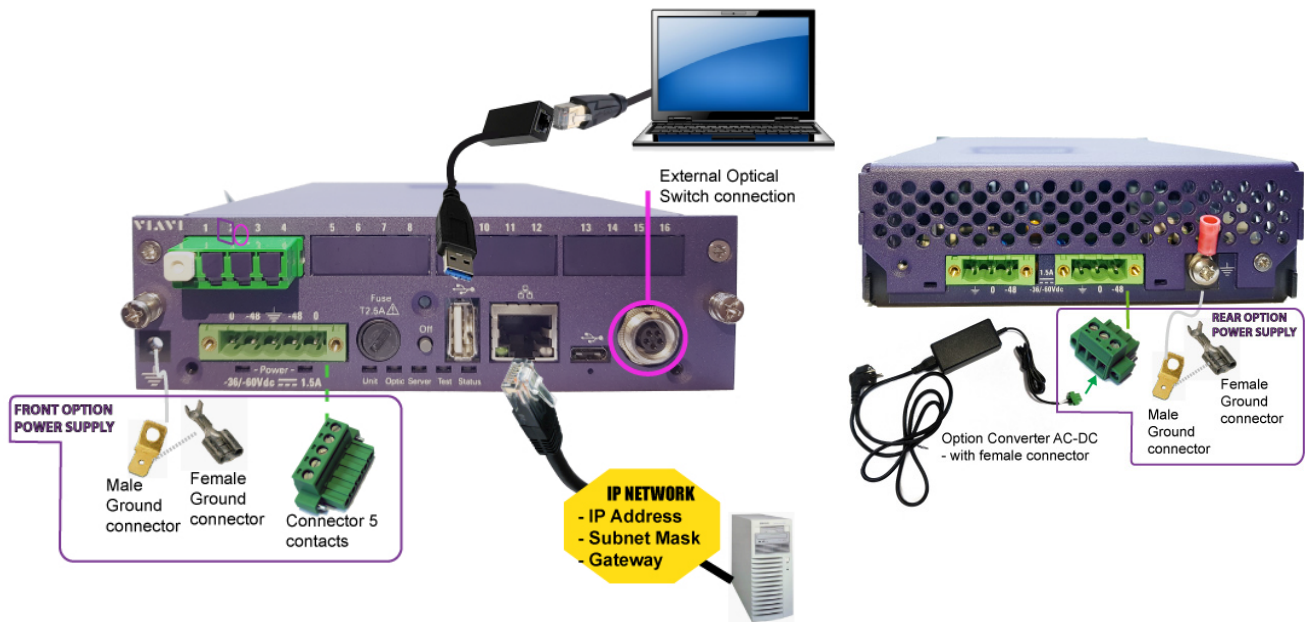
Topics discussed in this chapter are as follows:

- [“Prerequisites of the OTU-5000” on page 2](#)
- [“Delivery of the OTU-5000” on page 7](#)

Prerequisites of the OTU-5000

General view of the prerequisites

Figure 1 View of the prerequisites



OTU-5000 and rack

Specific conditions are required to install the OTU-5000 in a rack. There are different conditions according to:

- the type of rack used
- the options to be added: plexi cover / backplate for battery / front plate for fibers

Overall dimensions of the OTU-5000 in the racks

Floor-space

Figure 2 Rack 21" (ETSI)

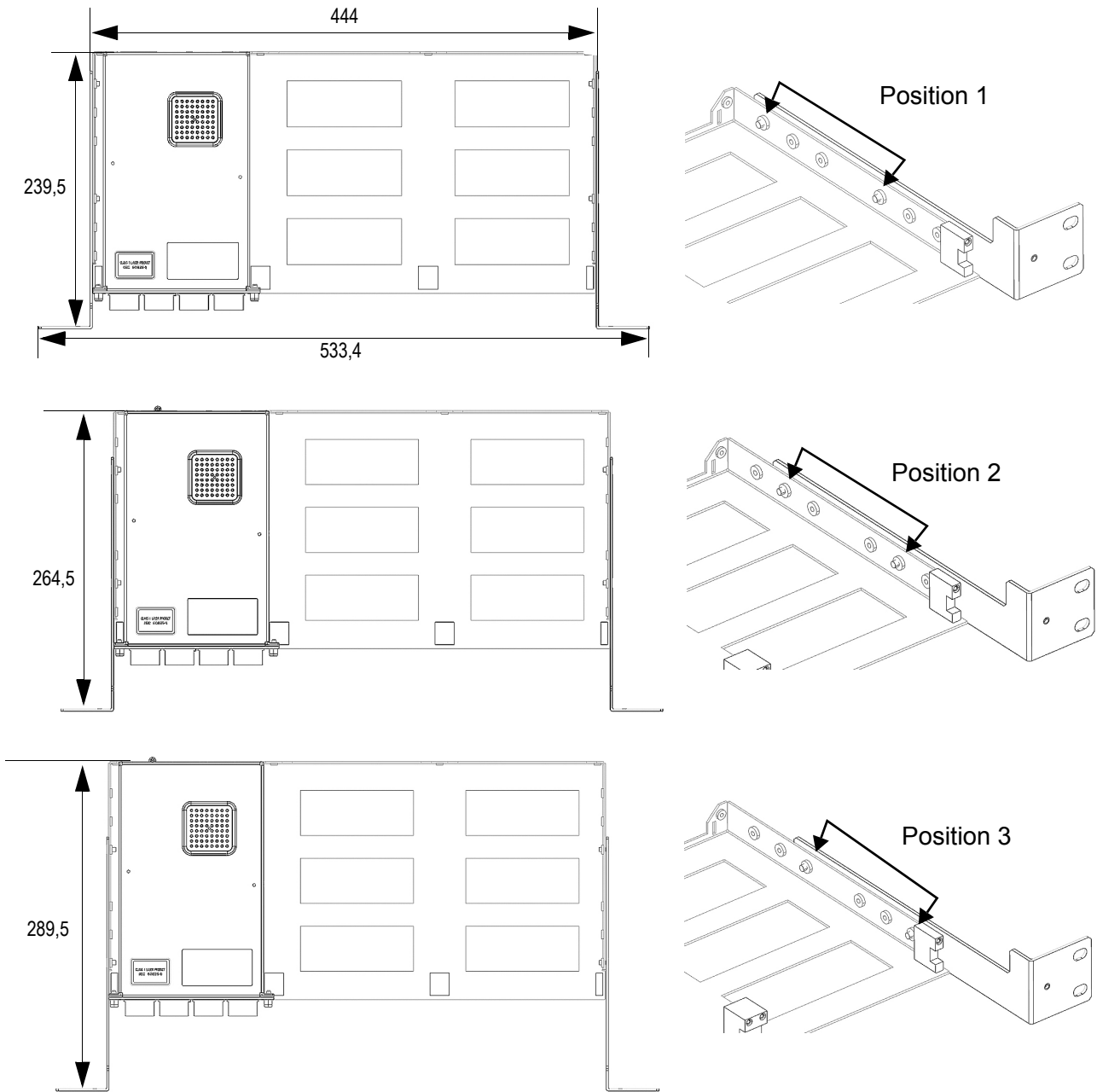
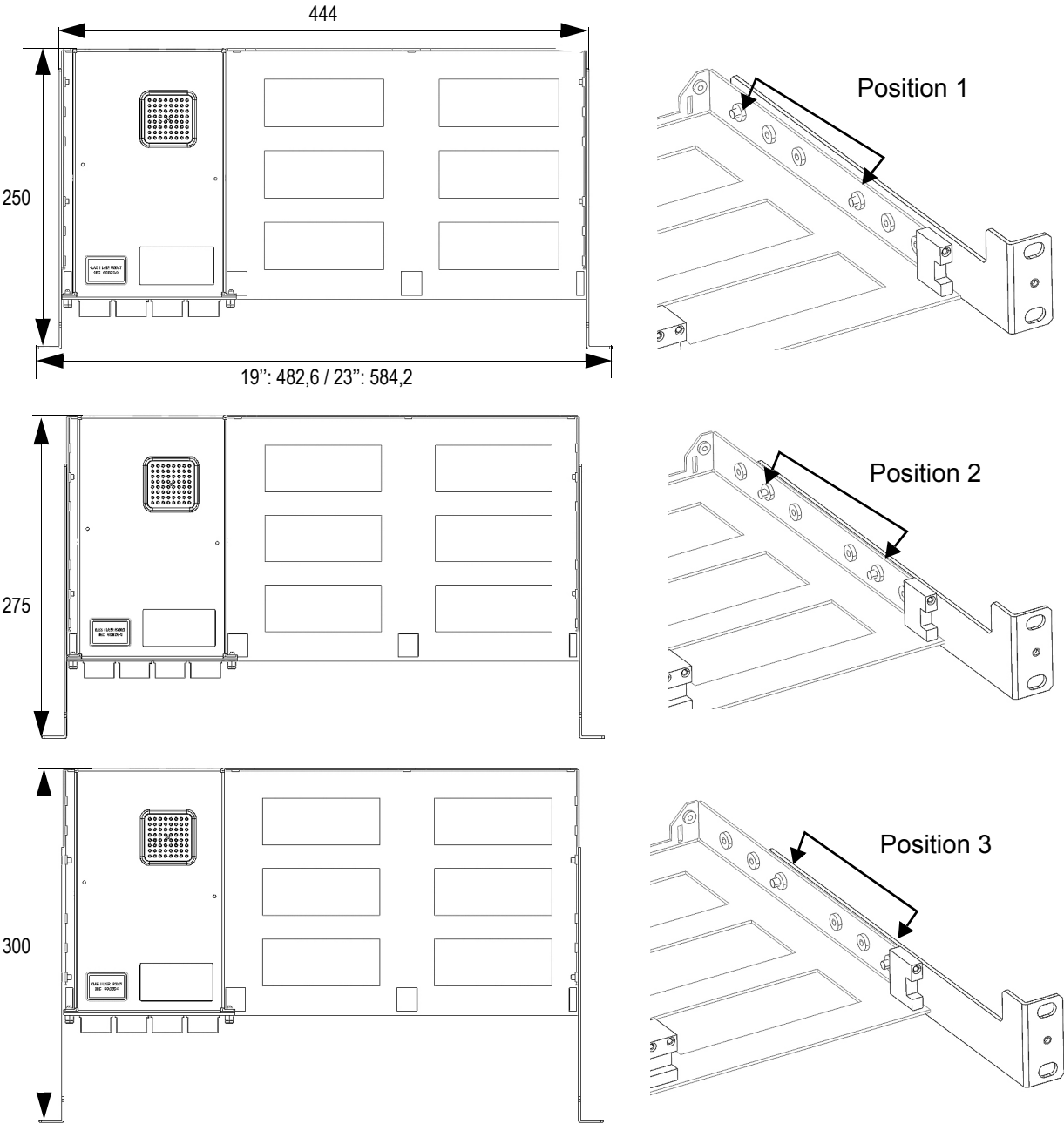
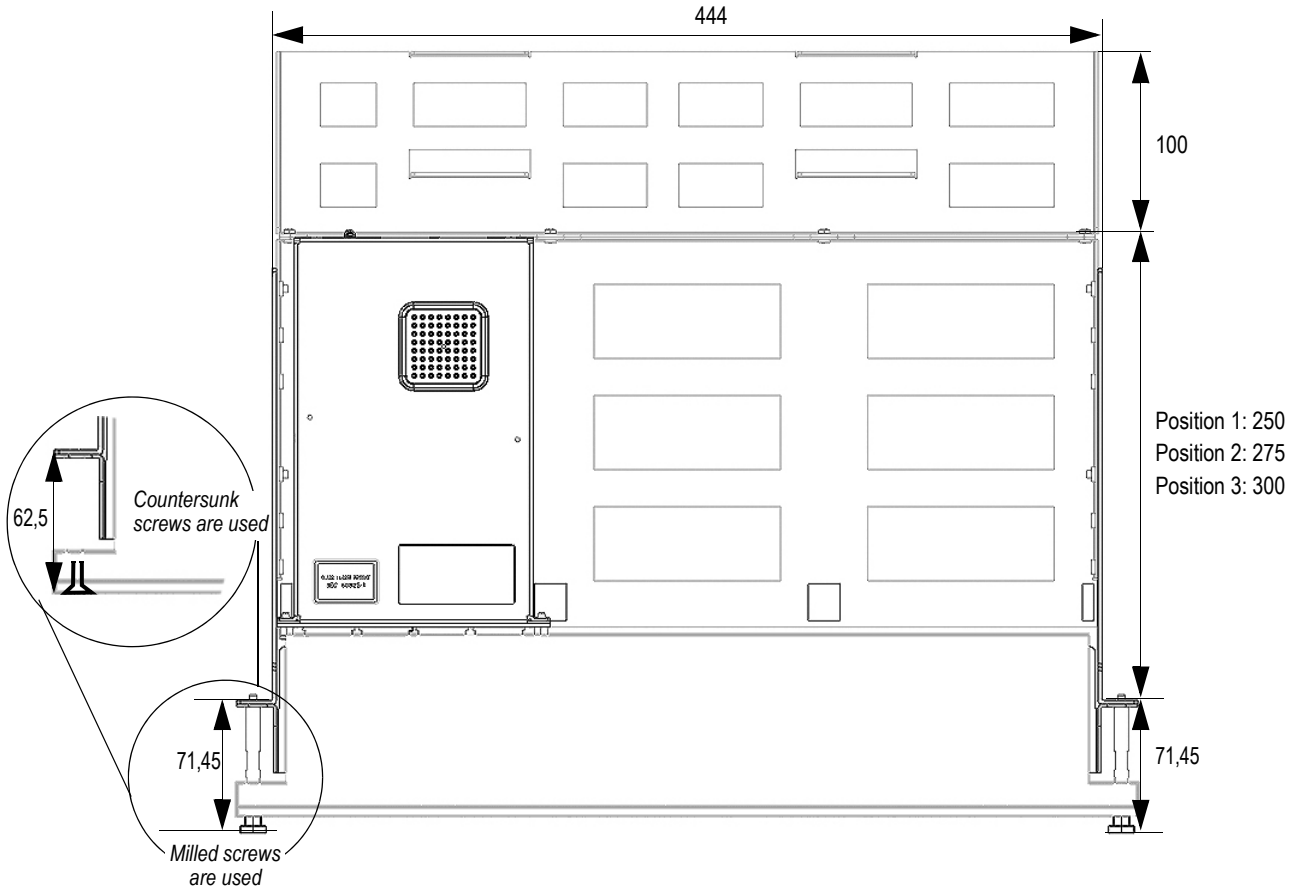


Figure 3 Rack 19" or 23"



Floor-space with front and rear frame

Figure 4 Overall dimensions with back tray support and front fiber support (example 19")



OTU-5000 Power Supply

OTU-5000 Consumption

Your local electrical installation must comply with the OTU-5000 power consumption:

- DC Input: -36 to -60V
- Power consumption: 10W

Section of electric wires

Electric wires plugging into the OTU-5000 must have a section inferior or equal to 1,5mm².

AC Power supply

The OTU-5000 works with an AC/DC Converter.

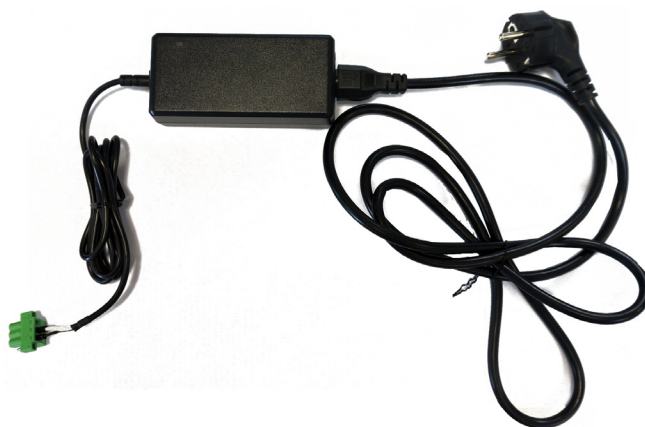
The OTU5K can work with a single AC power supply or with 1+1 AC power supply.

Moreover, the power supply can be done either:

- on the front of the equipment, in which case a female 5 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: ADAPTER TECH

Model/Type: ATS050T-P480

Ratings:

- AC Input: 100-240 V, 1.2A max, 50/60 Hz
- DC Output: -48V, 1.05 A (50W max)



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

Patchcords & jumpers

The Jumper and Cable to be used with the Compact OSX are delivered, if the Compact OSX has been ordered.

Network Communication

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

Network access

The cable used to connect the OTU-5000 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.

Delivery of the OTU-5000

According to the equipment ordered, the elements available are different:

Table 1 OTU-5000





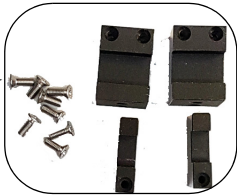

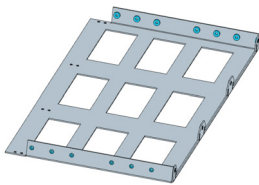

Product Reference	Content
E9E-COTU-SHELF	<div><ul style="list-style-type: none">• 1 OTU-5000• E9E-SHELF<ul style="list-style-type: none">– 1 Shelf– 1 E9E COTU SHELF Mounting Kit:<ul style="list-style-type: none">- 8 screws M3x8- 2 small attaches- 2 big attaches• E9E-KITXX (see page 8)• 1 Ground Terminal (in the bag COTU RING TONGUE)• 8 Power Supply Connectors (in the bag COTU KEYING CAP)</div> <div></div>

Table 1 OTU-5000

Product Reference	Content
E9E-KIT19 E9E-KIT21 E9E-KIT23	<ul style="list-style-type: none">1 Bracket Left 19"/21"/23"1 Bracket Right 19"/21"/23"1 COTU- RACK LOCK SCREW Mounting Kit<ul style="list-style-type: none">4 screws M4x81 COTU MOUNTING RACK Kit<ul style="list-style-type: none">4 screws M6x164 washers4 nuts1 Ground Terminal (in the bag COTU RING TONGUE)8 Power Supply Connectors (in the bag COTU KEYING CAP) 
E9E-COTU	<ul style="list-style-type: none">OTU5000 base unit with E9E-FP-XS (Short Front Panel)E9E-FP-19:<ul style="list-style-type: none">19 inches Front Panel with bracketsE9E-FP-21<ul style="list-style-type: none">21 inches Front Panel with bracketsE9E-FRONT PANEL Mounting Kit:<ul style="list-style-type: none">5 screws M3x81 Ground Terminal (in the bag COTU RING TONGUE)8 Power Supply Connectors (in the bag COTU KEYING CAP) 

Table 1 OTU-5000

Product Reference	Content
E9E-REAR-ACC	<ul style="list-style-type: none">• 1U Rear Frame• 1 E9E REAR ACC Mounting Kit<ul style="list-style-type: none">– Hook and Loop straps– 4 screws M3x8– 4 curved spring washers
E9E-FP-ACC	<ul style="list-style-type: none">• 1 Front Frame Fiber• 1 E9E FP ACC Mounting Kit:<ul style="list-style-type: none">– 2 screws M4x10– 2 washers flat M4– 2 screws M4x8

Table 2 Power Supply

Product Reference	Content
E9E-ACPS	<ul style="list-style-type: none">• 1 Converter AC/DC (with 3 points connector)• 1 ACPS Connector 5 points (in the bag E9E ACPS CONNECTOR Power Supply connector)

Table 2 Power Supply

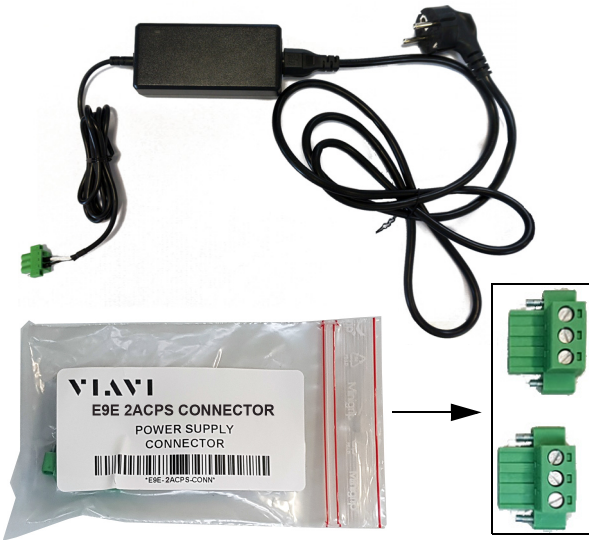

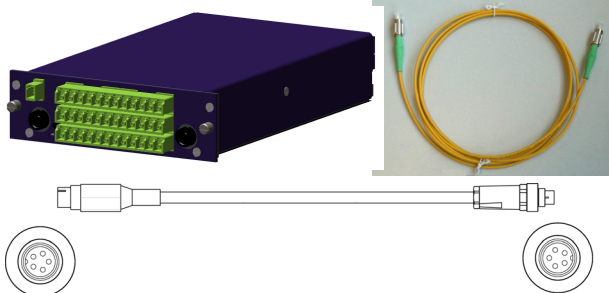
Product Reference	Content
E9E-2ACPS	<ul style="list-style-type: none">1 Converter AC/DC (with 3 points connector)2 ACPS Connector 3 points (in the bag E9E 2ACPS CONNECTOR Power Supply connector)  The image shows an AC/DC converter with a black power cord and a green 3-point connector. Next to it is a clear plastic bag labeled 'E9E 2ACPS CONNECTOR POWER SUPPLY CONNECTOR' with a barcode. An arrow points from the bag to a close-up of two green 3-point connectors.
No power supply	<ul style="list-style-type: none">One the bag COTU PS CONNECTORS:<ul style="list-style-type: none">2 Connectors 3 points1 Connector 5 points  The image shows a clear plastic bag labeled 'E9E 2ACPS CONNECTOR POWER SUPPLY CONNECTOR' with a barcode. An arrow points from the bag to a close-up of three green connectors: two 3-point and one 5-point.

Table 3 COSX Option

Product Reference	Content
E9E-COSX	<ul style="list-style-type: none">1 COSX1 Command Cable OTU-5000 <-> OSX1 Jumper OTU-5000 <-> OSX  The image shows a blue COSX unit with green connectors. Next to it is a yellow command cable with green connectors. Below these is a white jumper cable with circular connectors at both ends.

OTU-5000 General Description

This chapter gives a general view of the OTU-5000 elements.

Topics discussed in this chapter are as follows:

- [“Front Panel description” on page 12](#)
- [“LEDs description” on page 13](#)
- [“General information on warranty” on page 15](#)

Front Panel description

All the connections of the OTU-5000 are located on the front and rear panel. The following components are available:

Figure 6 OTU-5000 Front panel

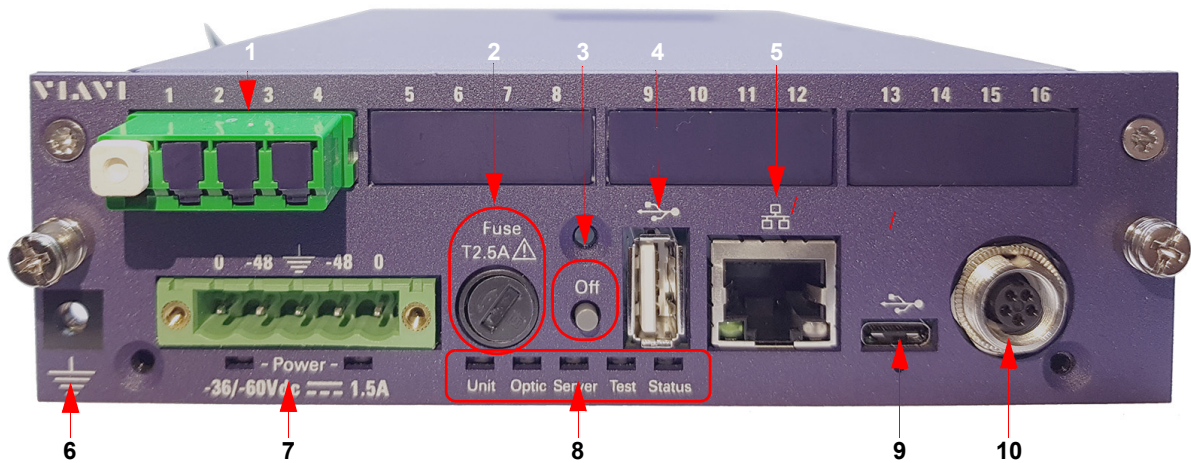


Table 4 Connectors description

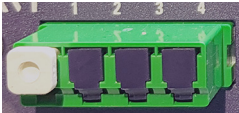



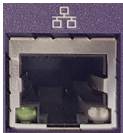

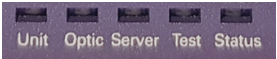

1		Optical Switch
2		T2,5 A L250 V Fuse
3		Off button to switch off the OTU-5000
4		USB port (not used)
5		RJ45 plug for Ethernet access
6		Ground

Table 4 Connectors description

7		Power supply for 5 points connector
8		LEDs - see “LEDs description” on page 13
9		Mini USB port
12		Control of external switch (C-OSX)

LEDs description

The color of the leds and whether they are lit or not depends on the status of the OTU-5000.

Figure 7 LEDs description



Table 5 Description of the LEDs status






















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

Table 6 Description of the device status

LED name	Description
Unit	 The OTU-5000 is ready
	 The configuration or the hardware are not ready to work*
Optic	 No optical alarm
	 Optical alarm
Server	In ONMSi Mode:
	 The connection to the server is valid.
	 The connection to the server has failed*
	In SmartOTU Mode, the LED is always off.
	In Local mode:
	 The connection to the ONMSi server is valid
Test	 The connection to the ONMSi server has failed
	 In SmartOTU Mode, the LED is lit in solid green to indicate the connection in Local mode.
	 The OTU-5000 is in acquisition mode
Status	 The OTU-5000 is not in acquisition mode
	 The OTU-5000 is currently communicating with the server by the backup.
Status	 The latest communication or test by modem failed.*
	 Switch on or switch off process*
Status	 The OTU-5000 software is running
	 The OTU-5000 software is running

*: If all the LEDs except **Status** are solid red and the LED **Status** is flashing green. the OTU-5000 encountered a serious problem. It is in "RESCUE" mode.
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 OTU-5000:

- [“AC/DC safety information” on page 18](#)
- [“Precautions relating to optical connections” on page 18](#)
- [“Laser Safety instructions” on page 18](#)

AC/DC safety information

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

If another adapter is used, it may damage the OTU-5000 itself.

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.
- Take care fans may be accessible on each side of the product. Under normal operation, no injury may occur to the user.
- 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 qualified service personnel for all service.

Precautions relating to optical connections

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

Laser Safety instructions

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

- EN 60825-1: 2001 - Safety of laser products – Part 1: Classification of products, requirements and user guidelines.
- FDA 21 CFR § 1040.10 - Performance standards for light-emitting products - Laser products.

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

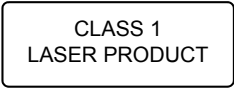



Laser classes

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

- Refer to OTDR User manual for laser classes.

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:

Standard Ref.	EN 60825-1, Edition 1.2, 2001-08	FDA21CFR§1040.10
Class 1		
Class 1M		
Class 2		

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



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

Installation of the OTU-5000

This chapter describes the procedure to install successfully your OTU-5000 and all the options available. It also explains how to connect and configure the OTU-5000 with the Web Interface.

Topics discussed in this chapter are as follow:

- [“Installation of the OTU-5000 into the rack” on page 22](#)
- [“Installing the power supply” on page 23](#)
- [“Setting the plexi protector onto the OTU-5000” on page 28](#)
- [“Connecting the External Switch \(OSX5000\) to the OTU-5000” on page 29](#)

Installation of the OTU-5000 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.

Check first, you have all the following elements: the brackets, the screws, the shelf...

See [“Delivery of the OTU-5000” on page 7](#).



NOTE

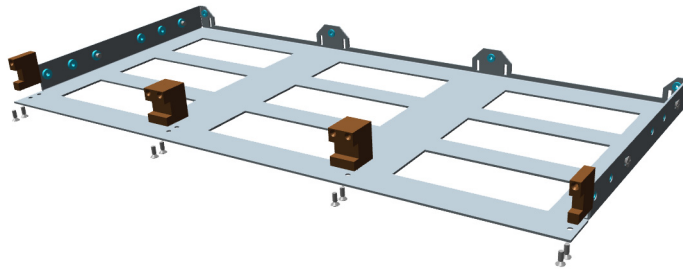
Use a POZI Screwdriver N°1 to fix the brackets for a 21” or 23” rack.

Use a POZI Screwdriver N°2 to fix the brackets for a 19” rack.

Fixing the OTU-5000 into the rack - Referenced E9E-OTU-SHELF

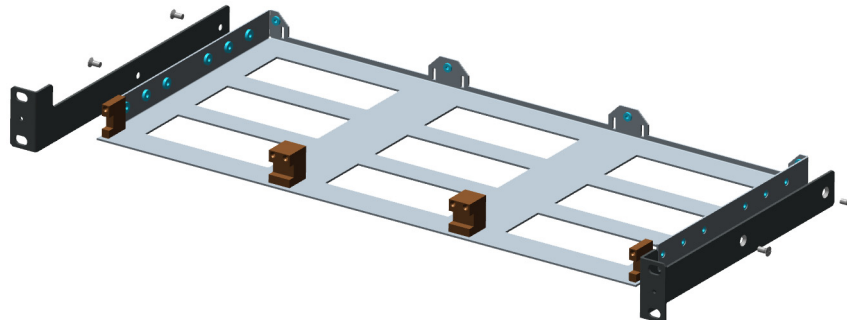
- 1 Fix the 4 attaches (2 small and 2 big) onto the shelf, using the 8 screws M3x8, included into the E9E-COTU-SHELF Kit.

Figure 8 Fixing the attaches on the shelf



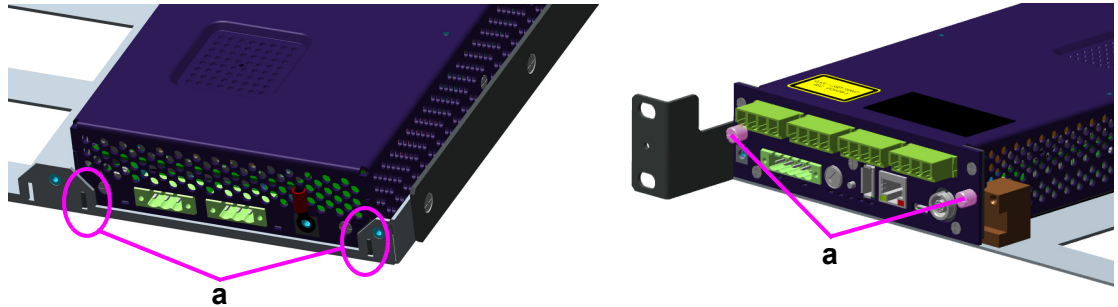
- 2 Fix the brackets on both sides of the shelf, using the 4 screws M4x8, included into the COTU-RACK LOCK SCREW Kit.

Figure 9 Fixing the brackets on the shelf



- 3 Fix the OTU-5000 onto the shelf:
 - a Push the OTU-5000 to the rear of the shelf, so that the fixing features fit correctly into the cuts of the shelf.
 - b Fix the OTU to the shelf, screwing the two captive screws

Figure 10 Fixing the OTU on the shelf



- 4 Fix the whole assembly to the rack using the tools included into the COTU MOUNTING RACK Kit.

Fixing the OTU-5000 into the rack - Referenced E9E-COTU

- 1 Fix the OTU-5000 onto the bracket screwing the 5 screws M3X8, included in the E9E FRONT PANEL Mounting Kit.
- 2 Fix the whole assembly to the rack using the tools included into the COTU MOUNTING RACK Kit.

Installing the power supply

Depending on configuration, the OTU-5000 can be plugged either on the front of the equipment, with a 5 points connector, or at the back of the equipment, in single or dual feed, using one or two 3 points connector.



NOTE

With AC power feed, you must install the converter.



NOTE

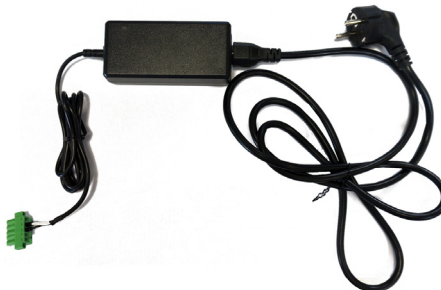
The AC power supply plugs are sectioning devices; they must be easily accessible.

Front Power supply option

If the OTU-5000 must be powered from AC at the front of the equipment:

- 1 Remove the 3 points connector installed by default on the AC/DC converter
- 2 Screw the 5 points connector, available in the E9E ACPS CONNECTOR bag.

Figure 11 Converter with 5 points connector



- 3 Connect it to the front of the OTU-5000.
- 4 Add an AC cord plug.
- 5 The OTU-5000 can be plugged to your power plug.

Back power supply - Single feed option

The converter is delivered by default with the 3 points connector, so you just have to:

- 1 Set the connector at the back of the equipment
- 2 Add the AC cord plug
- 3 Plug the equipment.

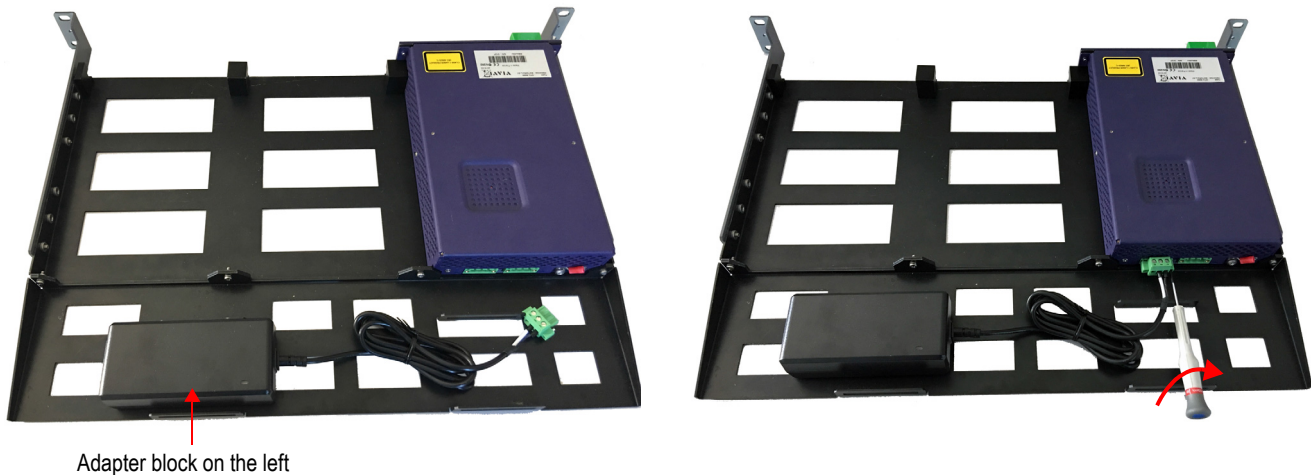
Installing the Dual Rear AC power supplies assembly option

If a dual power feed must be used, at the back of the OTU-5000, and the Rear frame is installed, proceed as follow:

Once the OTU and the rear frame are correctly installed with the shelf:

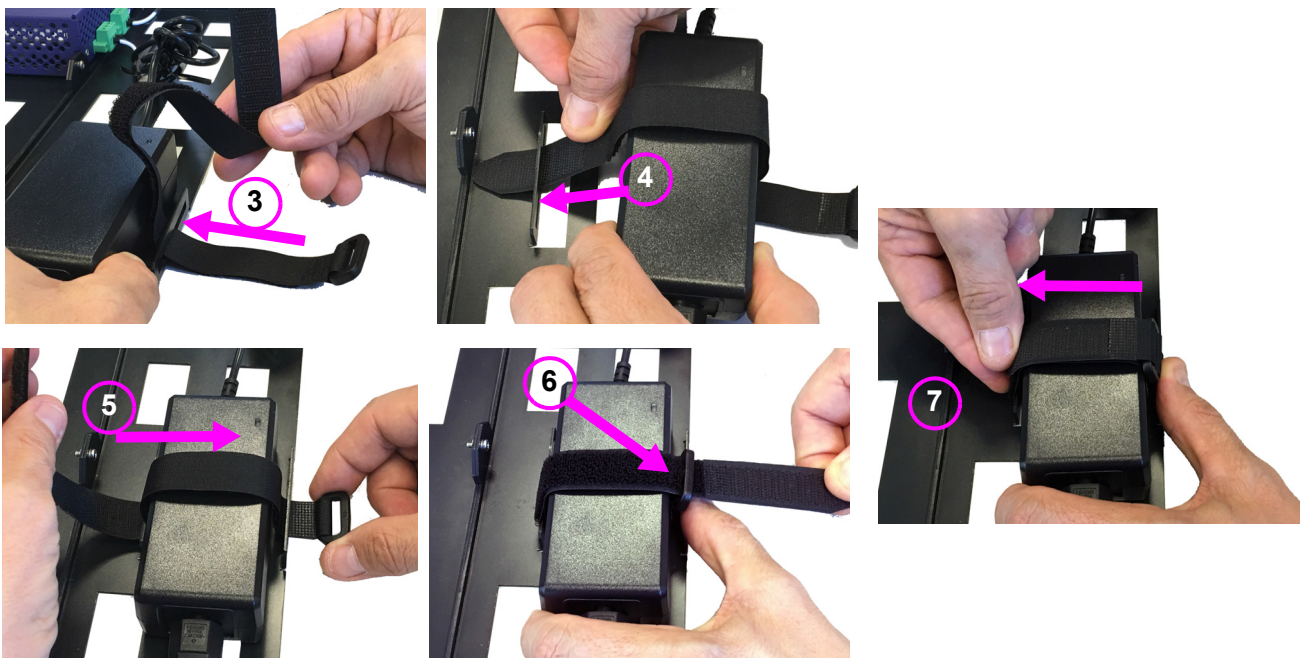
- 1 Position the first COTU AC/DC adapter block onto the left of the rear shelf.
- 2 Insert the connector of the AC/DC adapter block into the left rear connector of the OTU-5000 and screw it.

Figure 12 Installation of the adapter block and connection



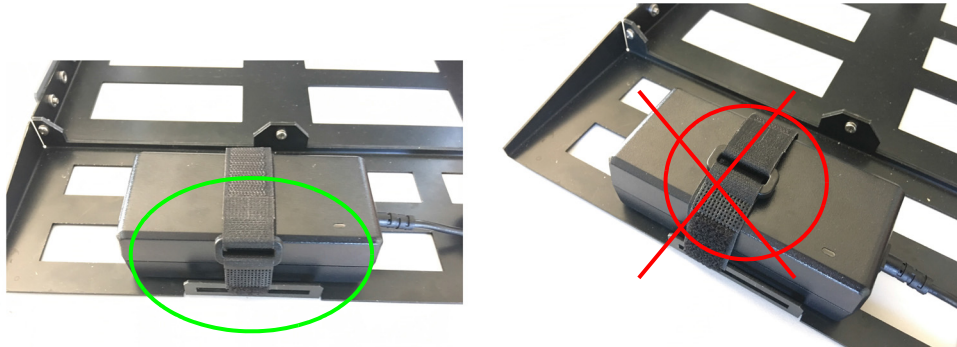
- 3 Insert the hook strap in the first opening, scratch side of the strap on the under-side.
- 4 Insert the hook strap in the 2nd opening.
- 5 Fold down the strap.
- 6 Insert the strap into the strap buckle.
- 7 Complete the assembly by folding down the strap.

Figure 13 Attaching the block onto the frame



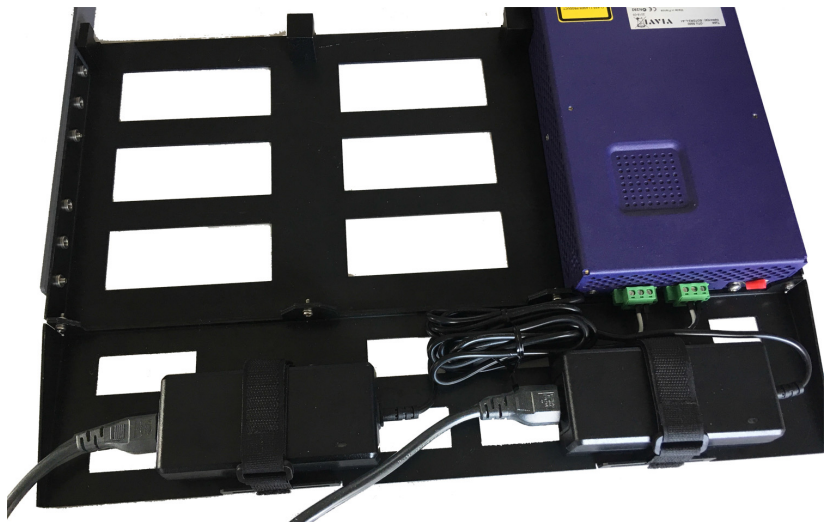
- 8 Check the position of the supply block

Figure 14 Check the installation



- 9 Insert the connector of the 2nd AC/DC power block into the right rear connector of the OTU-5000 product and screw it.
- 10 Assemble the second AC power supply block on right as explained for the first AC power supply block assembly (see [step 2](#)).
- 11 For each of AC/DC power supply block, add an AC cord plug.
- 12 With the cord delivered with the converter, connect the converter to a plug.
If the LED onto the converter is solid green, the connection is correctly performed

Figure 15 Dual power feed installed on rear frame



Connector pin-out

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

Table 7 Power supply connector pin-out

Pin Number	Function
1	0

Table 7 Power supply connector pin-out

Pin Number	Function
2	-48 VDC input A
3	Ground
4	-48 VDC input B
5	0



NOTE

The OTU-5000 cover panel clearly states the place of each wire to connect above the male connector.

Installation of the Ground Terminal

The OTU-5000 is equipped with a ground terminal, delivered in the COTU RING TONGUE Kit, which will be set onto the Ground connector, at the front or the rear side of the OTU-5000 as described in the photo below:

Figure 16 Ground Connector



Ground terminal at the front of the OTU



Ground terminal at the rear of the OTU

Installing the rear and front frames options

A front and a rear frame can be added to the OTU-5000 Shelf:

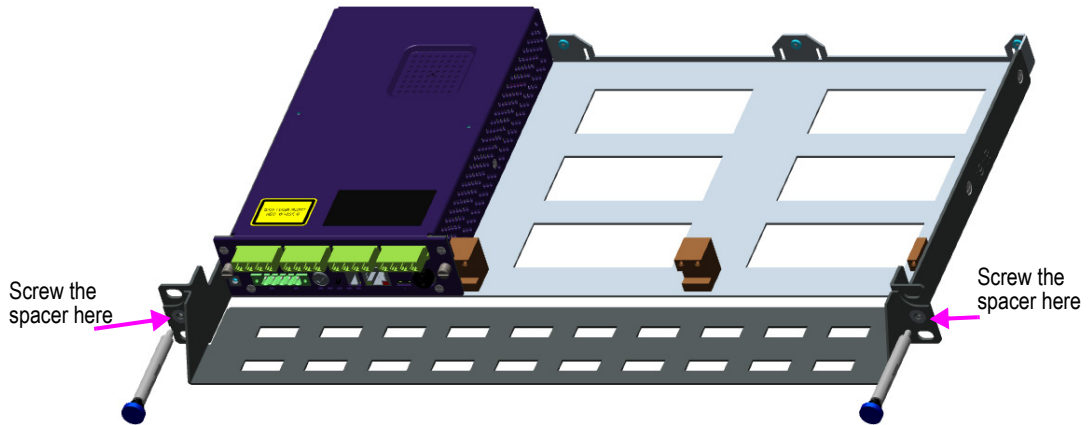
- the front frame is used to set fibers
- the rear frame is used to install the power supply block(s)

Installing the Front frame

Check the brackets are correctly fixed to the shelf, and use the E9E FP ACC Mounting Kit:

- 1 Set the front frame as shown in the figure below
- 2 Screw the 2 spacers on each side of the brackets.
- 3 Screw the milled screws to fix the frame.

Figure 17 Setting the Front Frame

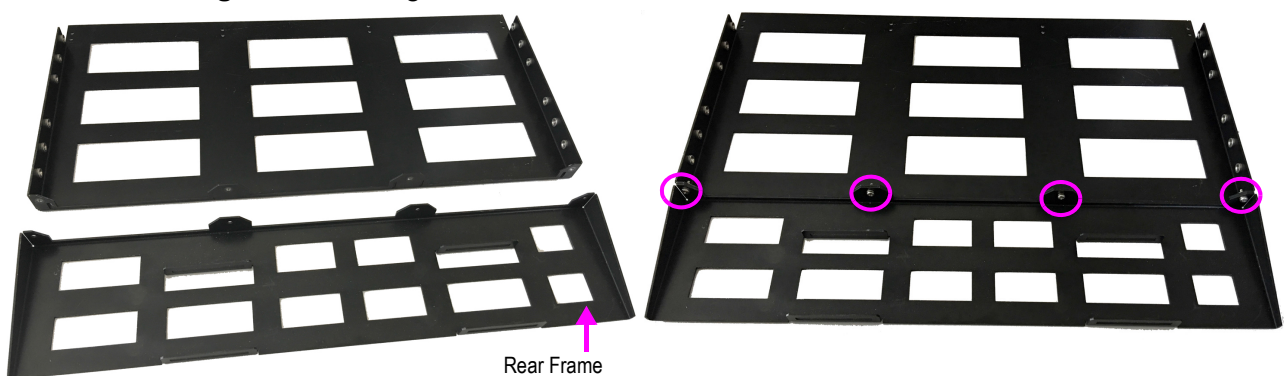


Installing the Rear frame

The Rear frame can be added to the shelf, in order to install the power supply blocks, for single or dual power feed: see [“Installing the Dual Rear AC power supplies assembly option” on page 24](#).

- 1 Fix the Rear frame to the shelf setting the 4 washers and screwing the 4 screws M3x8 at the back of the shelf.

Figure 18 Fixing the rear frame

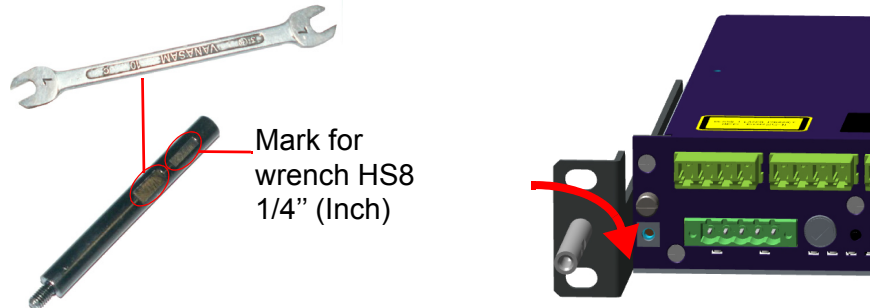


Setting the plexi protector onto the OTU-5000

The OTU-5000 is delivered with a plexi cover to protect the front side of the equipment into the rack.

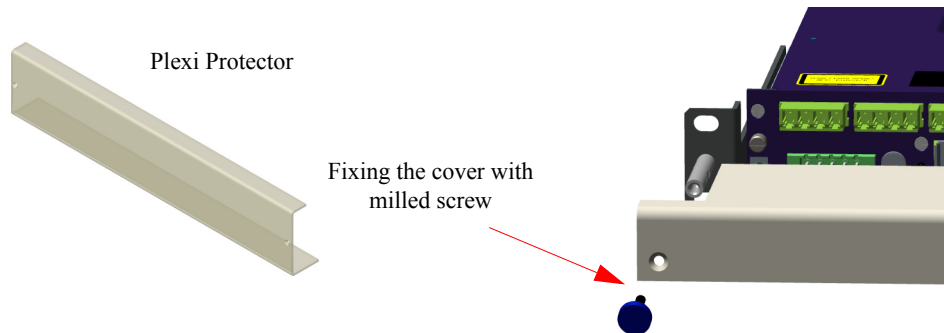
- 1 Set the two spacers on each side of the OTU-5000: manually turn the spacer, then use a wrench 7 (Metric) or a wrench HS8 1/4" (Inch) to fix it.

Figure 19 Spacer onto the OTU-5000



- 2 Fix the plexi protector onto the spacers, using the 2 milled or countersunk screws

Figure 20 Setting the plexi protector onto the OTU-5000



Procedure for switching on and off the OTU-5000

The OTU-5000 is automatically switched on once the power is plugged in.

Switching off the OTU-5000

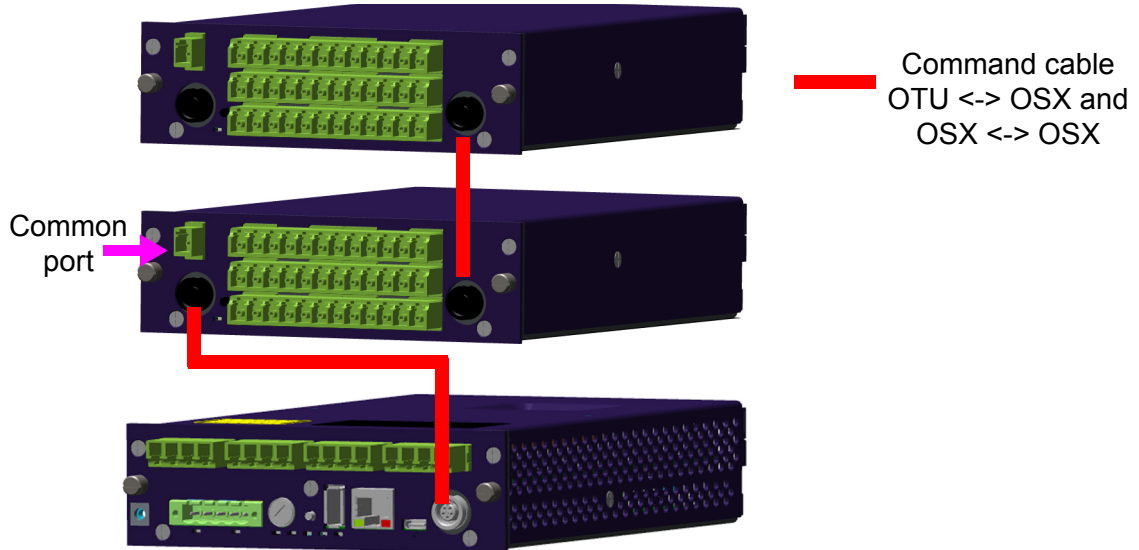
- 1 Keep pressing on the button **Off** for about 5 seconds.
The LED Status is blinking green.
- 2 Wait for all the LEDs to be turned off.
For LEDs description, see [“LEDs description” on page 19](#).
- 3 Unplug the power supply connector.

Connecting the External Switch (OSX5000) to the OTU-5000

- 1 Connect the OTU-5000 to one of the OSX5000, using a command cable.

- 2 Connect this OSX5000 with the second one using the appropriate cable (delivered when 2 OSX5000 or more are ordered).

Figure 21 2 OSX5000 modules connected to one OTU-5000

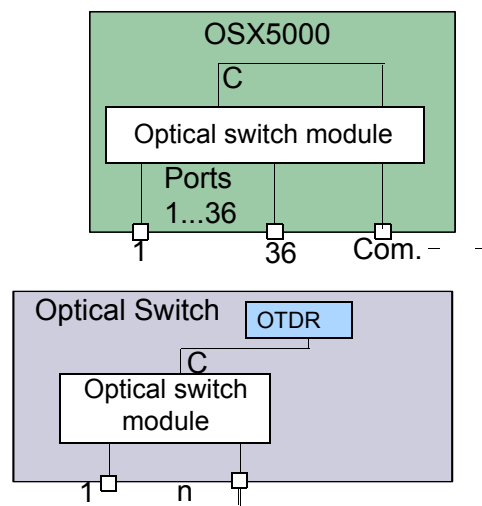


The common port is located on the left of the front panel.

Configuration with one internal optical switch and one OSX5000

- 1 Connect Common port from the OSX5000 to port n of the internal optical switch.
- 2 Connect all fibers to be tested from the ODF to OSX5000 ports.

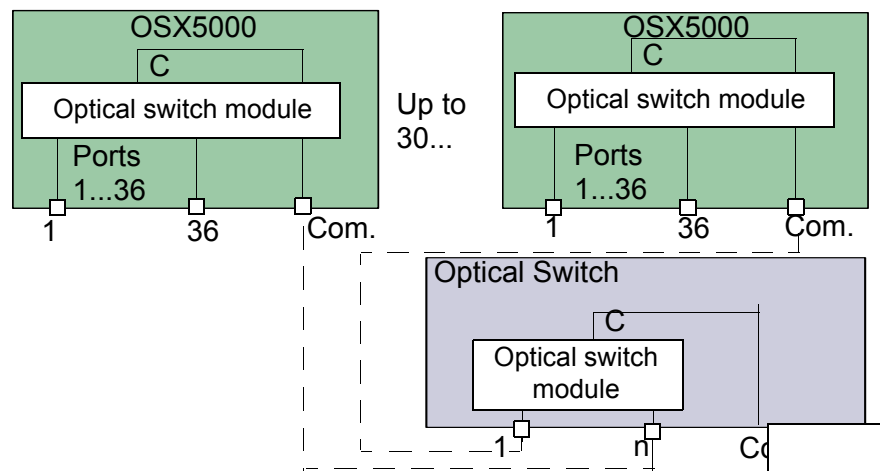
Figure 22 Configuration one Internal Switch and one OSX5000 («n» is the max number of ports of the internal switch)



Configuration with one internal optical switch and more than one OSX5000

- 1 Connect Common port from the first OSX5000 to port 1 of the internal optical switch.
- 2 Connect Common port from the last OSX5000 to port n of the internal optical switch.
- 3 Connect the OTU-5000 to the first OSX5000, the first OSX5000 to the second one, the second one to the third one etc., using command cables.
- 4 Connect all fibers to be tested from the ODF to OSX5000 ports.

Figure 23 Configuration > 1x36 (up to 30 x 36)



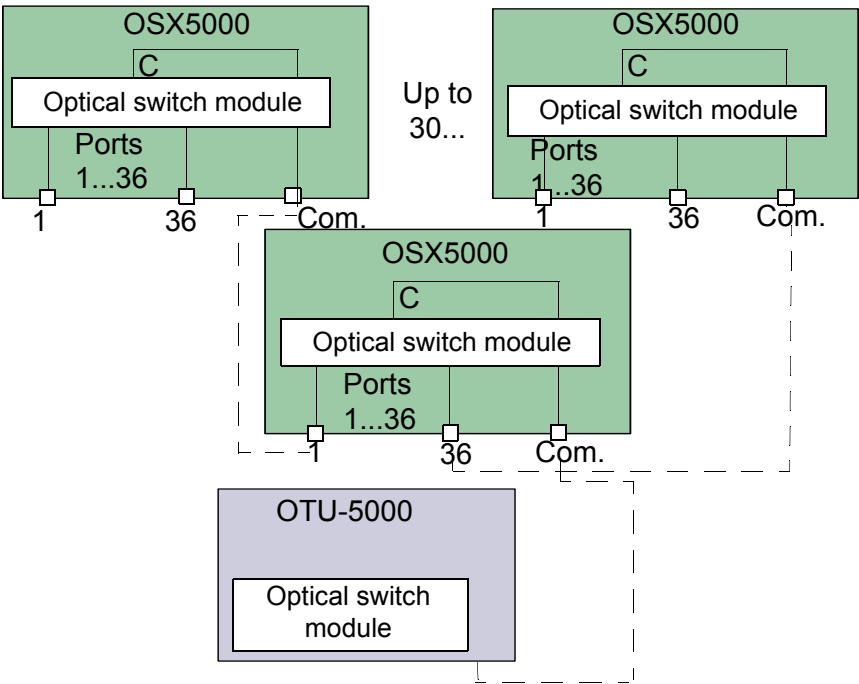
NOTE

The last OSX5000 is not always connected to the «n» of the internal optical switch (example: 3 OSX5000 connected to an internal switch 1 x 4)

Configuration with more than one OSX5000

- 1 Connect Common port from the 2nd OSX5000 to port 1 of the 1st OSX5000.
- 2 Connect Common port from the last OSX5000 to port n of the 1st OSX5000.
- 3 Connect the OTU5000 to the first OSX5000, the first OSX5000 to the second one, the second one to the third one etc., using command cables
- 4 Connect all fibers to be tested from the ODF to OSX5000 ports.

Figure 24 Configuration



Connection to the Web Interface

This chapter describes the OTU-5000 Web interface.

Topics discussed in this chapter are as follows:

- [“Introduction” on page 34](#)
- [“OTU-5000 Setup” on page 35](#)
- [“Port view” on page 36](#)

Introduction

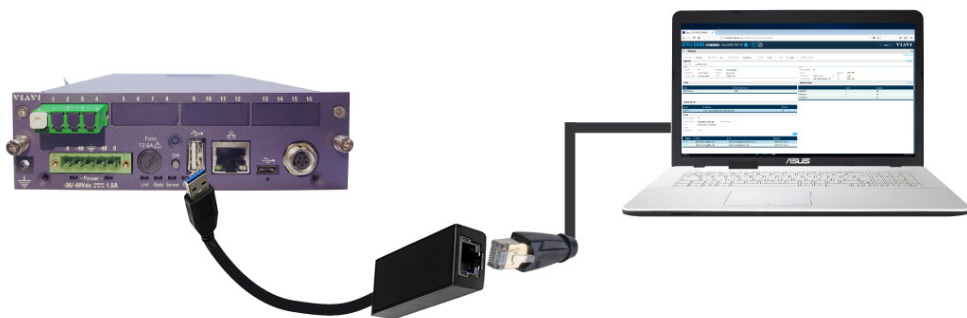
Before using the OTU-5000 Web interface web application, make sure your OTU-5000 is correctly installed (see the "Quick guide").

Local connection of the OTU-5000 through USB

To connect the OTU-5000 in local mode, connect it to the PC using an Ethernet adapter:

- 1 Connect the USB jack to the USB port on the OTU-5000.
- 2 Use an Ethernet cable and plug it to the Ethernet adapter and to the PC.

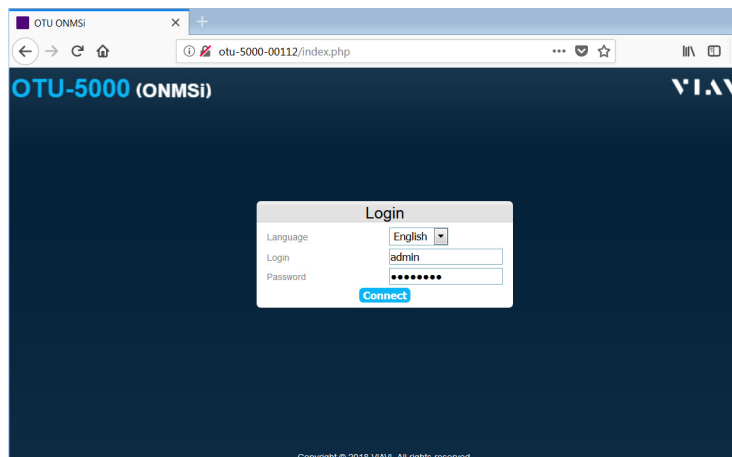
Figure 25 Local connection through USB



Connect to the OTU-5000 Web interface via your web browser (IE9 and higher, Chrome, Firefox) from your PC.

Open your web browser: fill your URL: `http://192.168.1.1`.

Figure 26 OTU-5000 Web interface Login page



On the login page:

- 1 Select the language you wish to use, in the list.
- 2 Enter your Login: **admin**.
- 3 Enter your Password: **password**.

- 4 Click on **Connect**.
The home page is displayed by default



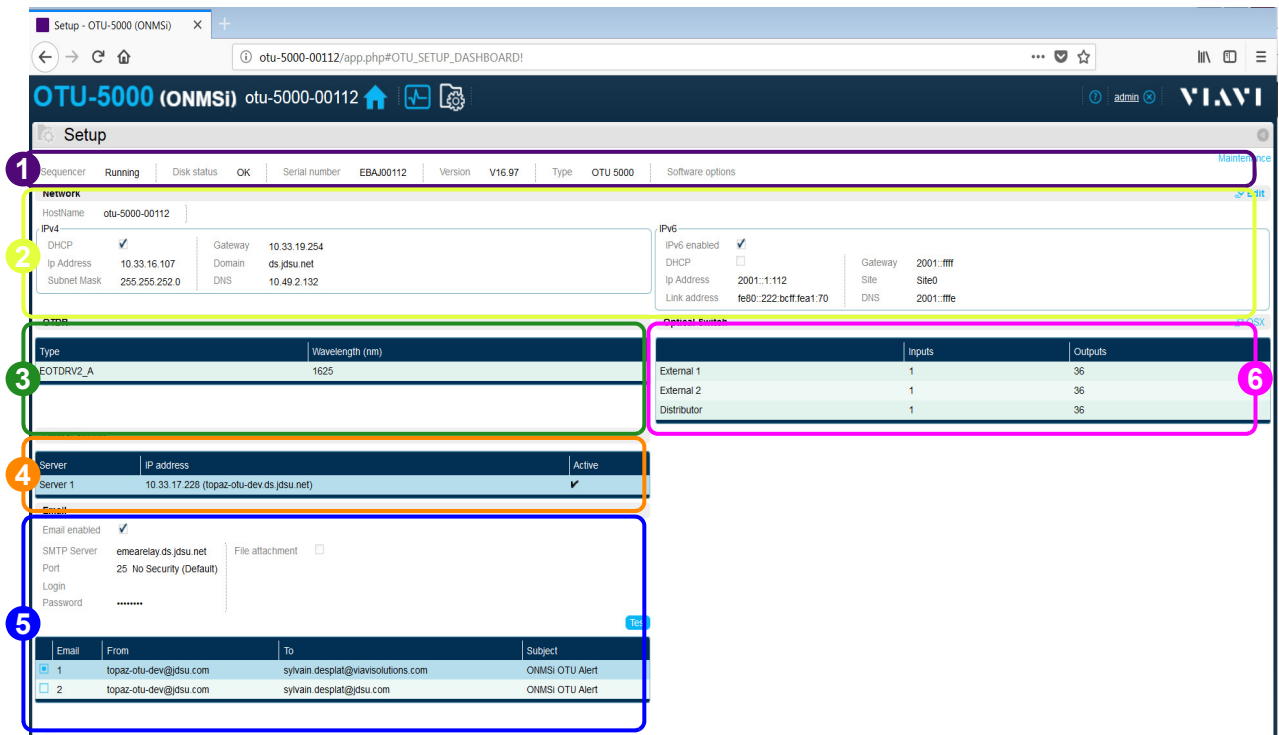
NOTE

To access the OTU via Ethernet port:

- Open your web browser
- Fill your URL: `http://otu-5000-xxxx` where `xxxx` is the serial number of your OTU-5000 or `http://xxx.xxx.xxx.xxx` where `xxx.xxx.xxx.xxx` is the OTU-5000 IP address.

OTU-5000 Setup

Figure 27 OTU-5000 Web interface configuration



1 Status bar, with:

- The OTU-5000 sequencer: running or stopped.
- The OTU-5000 Disk status: working or not
- The OTU-5000 Serial Number
- The current Web Interface version
- The OTU-5000 type
- The Software options list installed onto the OTU-5000 (peak monitoring, Dual O.S...)

2	Network Settings Information on the Network configuration (Hostname, IPV4 or IPV6 configuration)
3	OTDR Description of the OTDR type installed onto the OTU-5000
4	ONMSi Server Inform if the main ONMSi Server or the secondary one is active, and indicates on which the OTU-5000 is connected
5	Email Displays the list of the e-mails configured on the ONMSi for this OTU-5000. 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 OTU-5000. Click on OSX to configure the OSX.

Quick access bar details

It offers a menu with the following actions:

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



Display the main screen.




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 OTU-5000 choice menu. The first gives access to OTU-5000 Online Documentation and the second notifies the OTU-5000 version

Click on  to return to the main Screen (Monitoring view).



Edit user preferences.

Click on  for modifying login and password. Click on **Save** to confirm your selection.

 Quick Access for Viavi website.

Port view

The OTU-5000 monitoring view is divided into 2 parts:



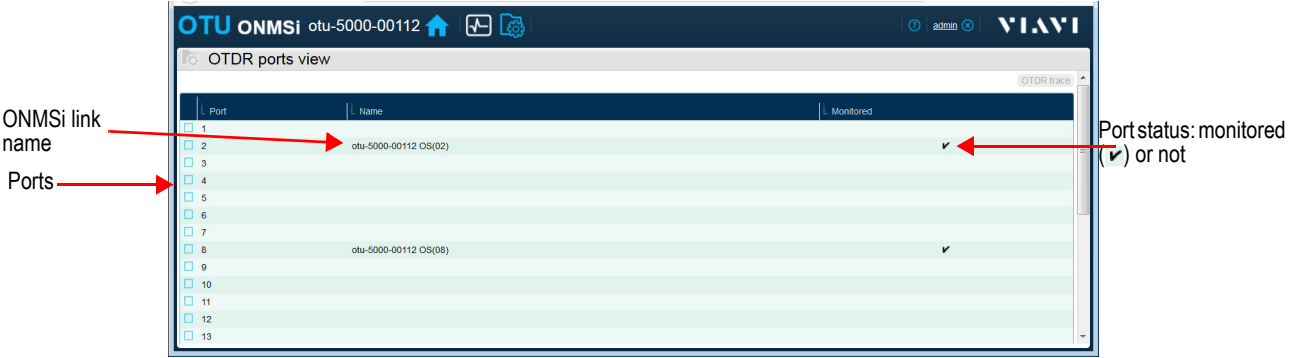
- The Quick access bar provides shortcuts to the main screens:
 - monitoring view 
 - OTU-5000 Web interface Setup 
- The table lists all the ports on the OTU-5000, including the OSX-5000.

Figure 28 Monitoring view



Configuration

This chapter describes the procedures for the OTU-5000 configuration.

Topics discussed in this chapter are as follows:

- [“Configuring the LAN” on page 40](#)
- [“External Optical switch configuration” on page 41](#)
- [“Changing the Login and password” on page 45](#)

Configuring the LAN

LAN settings are displayed in the Network Panel of the OTU-5000 Setup:

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


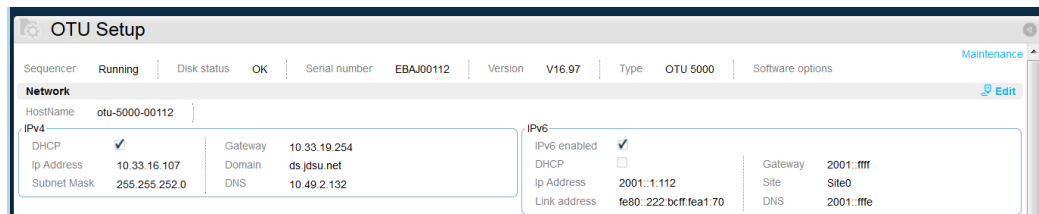
1 Click on the icon  on the upper banner to access to the Network configuration:

Figure 29 Network configuration



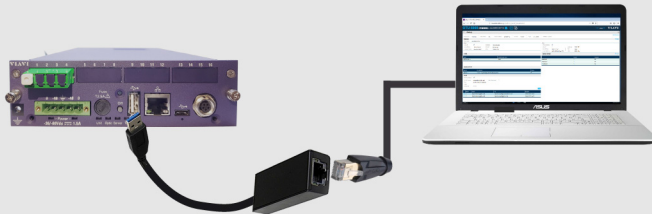
LAN setting edition

To change LAN settings:



NOTE

In local mode, your PC with the web browser must be connected on OTU-5000 USB port with Ethernet adapter.



- 1 In local mode: use the url: <http://192.168.1.1/> to connect to OTU-5000 application on your web browser
- 2 Click on **Edit** to configure Network Settings:
 - the OTU-5000 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 30 Network settings

External Optical switch configuration



CAUTION

OSX-5000 can have 24 or 36 output ports.

Used with the OTU-5000, all the OSX-5000 must be equipped with the same ports number: either 24 ports or 36 ports for all OSX-5000.

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

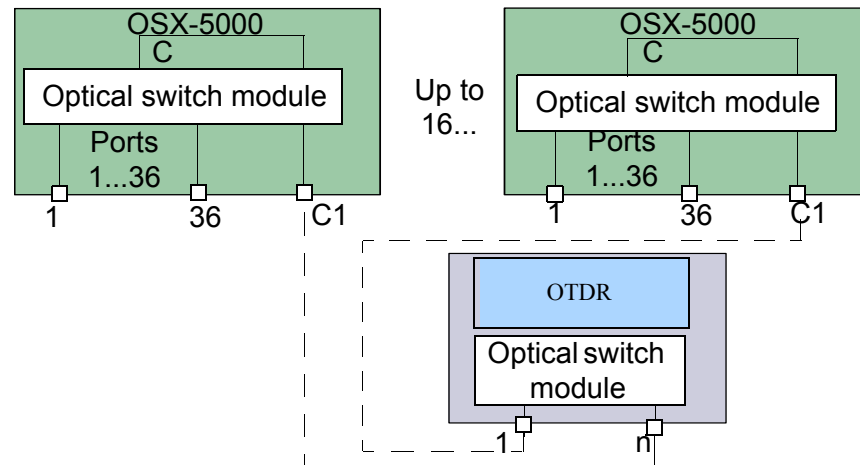
Figure 31 OSX-5000 Setup

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 32 OSX in cascade mode



- 1 Connect all the OSX-5000 that can be connected to the OTU-5000 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**:

OSX connector	Power On
Set OSX address	1 Apply
Show OSX	1 Start
 - b Connect physically the OSX.
 - c Once all OSX are physically connected to the OTU-5000; click on **Power On** button.
 - d Press **Settings** button onto the OSX-5000 front panel
The LED **Addr.** turns on, in solid green
 - e Enter the Address 1 for the first OSX-5000 plugged (the OSX-5000 connected to the OTU-5000)



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

- f 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:

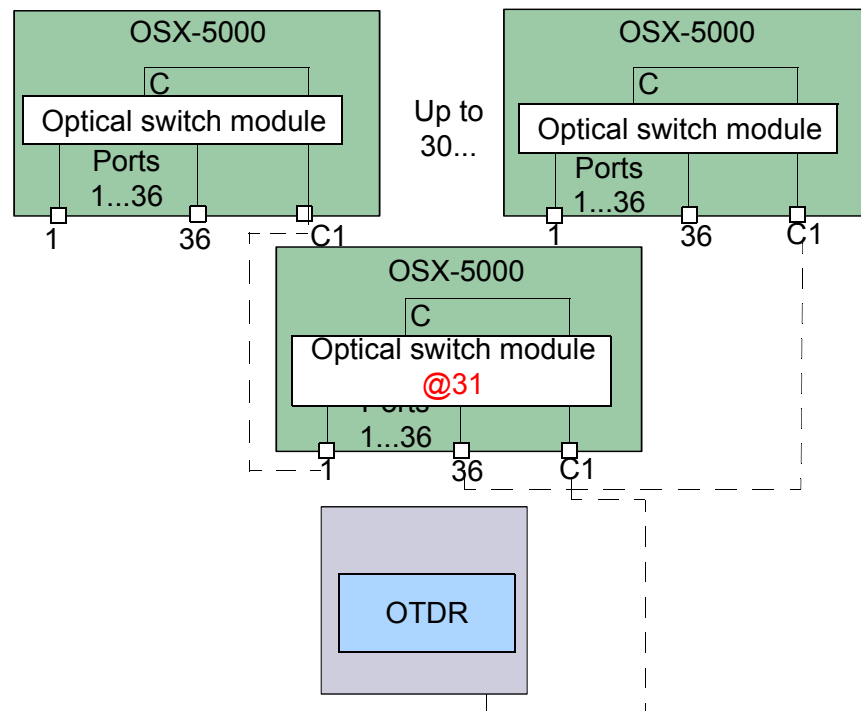
- a Enter the address of one OSX-5000 in the **External Switch Address** box
- b Click on **Blink the OSX**

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 33 OSX-5000 configuration with one multiplexer



This configuration is to be done when no internal switch is set into the OTU-5000.

- 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 OTU-5000 with the command cable.
- 3 Connect all the others OSX-5000.
- 4 Once all OSX are physically connected to the OTU-5000; click on **Power On** button.

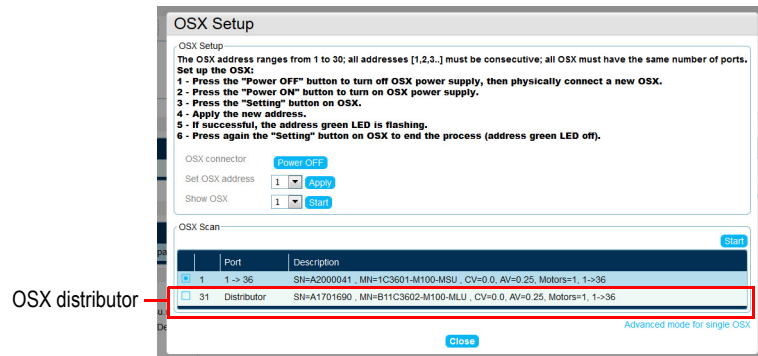
- 5 Press **Settings** button onto the OSX-5000 multiplexer front panel.
The LED **Addr.** turns on, in solid green.
- 6 Enter the **address 31** for the OSX-5000 multiplexer.
- 7 Click on **APPLY** onto the *OSX Setup* page.
- 8 Once completed, and if the address has been successfully modified:
 - a green text confirm the address modification.
 - the LED **Addr.** onto the OSX-5000 turns solid green
- 9 Press the **Settings** button again to complete the address modification for OSX-5000 multiplexer.
- 10 Follow step 2 to 4 from “[OSX-5000 in cascade mode](#)” on page 42 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...).

- 11 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.
- 12 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 34 Scan results with one OSX-5000 set as distributor

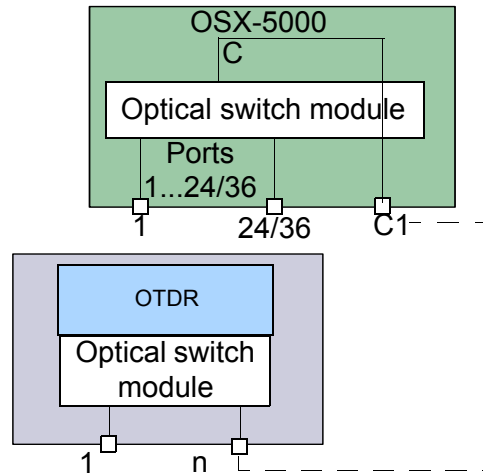


- 13 Close the OSX Setup window and apply the new switch configuration.

Advanced mode for a single External Switch

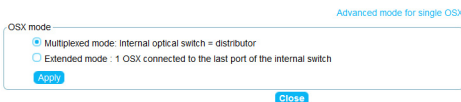
This command allows to connect one single OSX-5000 and the internal switch in two different ways:

Figure 35 Advanced mode for Single External Switch



1 Select the parameter **Advanced mode for a single OSX**.

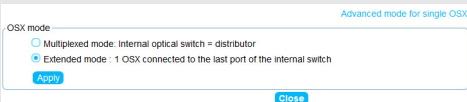
2 Select one of the following configurations:



The **Multiplexed** mode is to be used when it is planned to add other OSX-5000 in the future.

This mode allows to add more OSX-5000 without modifying the optical cabling of the first one.

The other ports «n-1» of the internal switch are consequently unused.



In **Extended** mode (**Default** mode), the last port of the internal switch is linked to the OSX. Only one OSX is then usable for this configuration, the other ports of the internal switch can be used only to connect fibers to be tested (the number of usable ports is then of 59: 23 ports on the internal switch + 36 on the OSX)

This mode can be selected if no other OSX-5000 is planned to be added in the future.

Click on **Apply** to validate the selected mode.

Changing the Login and password

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

Figure 36 User credentials

Change password Save Cancel

Login	admin
New login	admin
Current password	
New password	
Confirm new password	



NOTE

If user credentials are lost, in OTU-5000 Local Mode, user credentials can be changed without giving the old password and current user login is retrieved.

Measurement on demand

This chapter describes how to start a measurement from the OTU-5000.

Topics discussed in this chapter are as follows:

- [“Measurement on a port” on page 48](#)

Measurement on a port

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



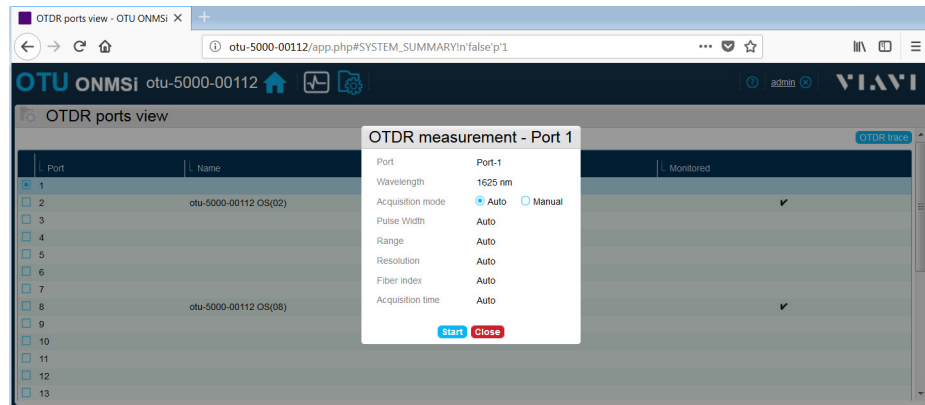
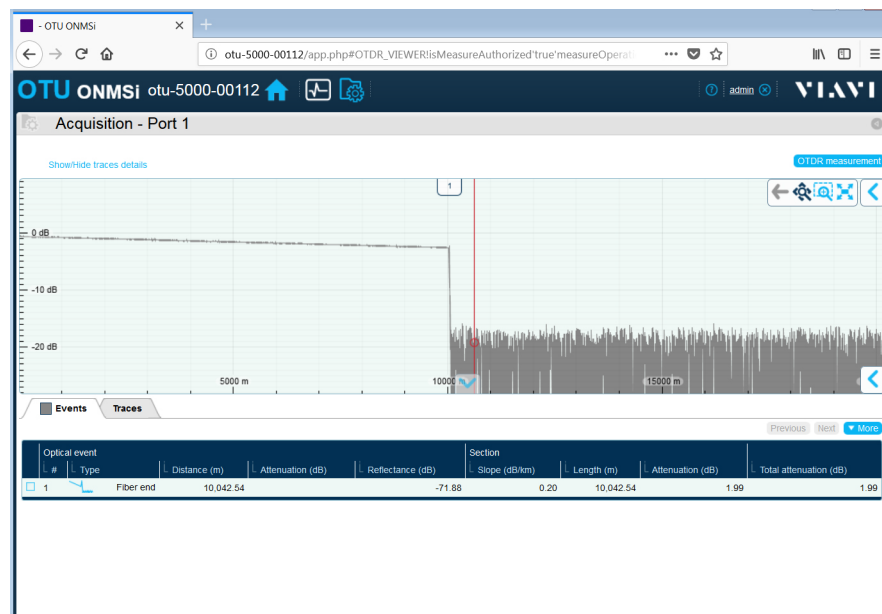
- 1 From the **Home** screen, click on the icon **Monitoring view** .
- 2 Select a monitored **Port** , without monitoring test
- 3 Click the button **OTDR Trace**.
- 4 Modify if necessary the OTDR parameters for the acquisition to be performed.

Figure 37 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 38 OTDR Measurement result



Trace Viewer

This chapter describes the trace viewer on the OTU-5000.

Topics discussed in this chapter are as follows:

- [“OTDR trace color codes” on page 52](#)
- [“Overview” on page 52](#)
- [“Details on selected Trace” on page 54](#)

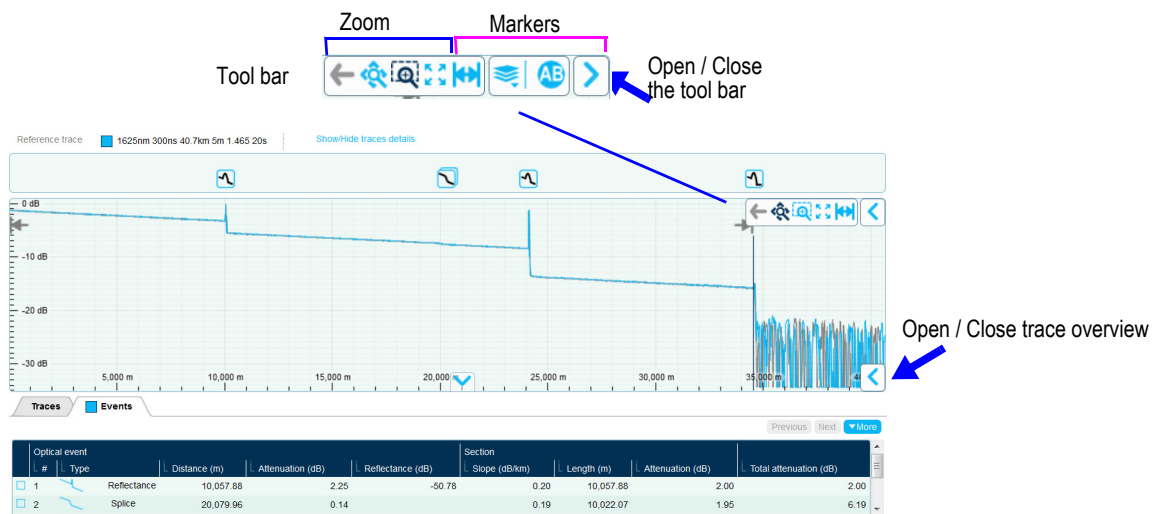
OTDR trace color codes

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 39 Trace overview

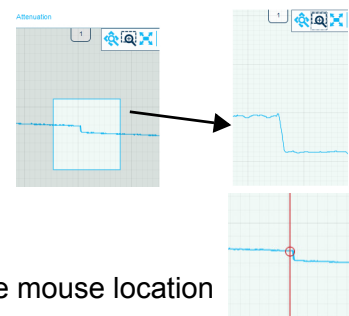


Zoom

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 40 Markers details



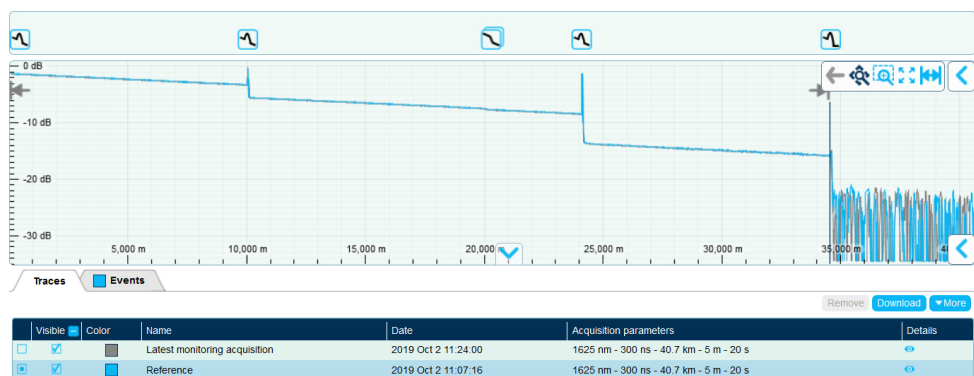
Table 8

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 41 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 9

	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



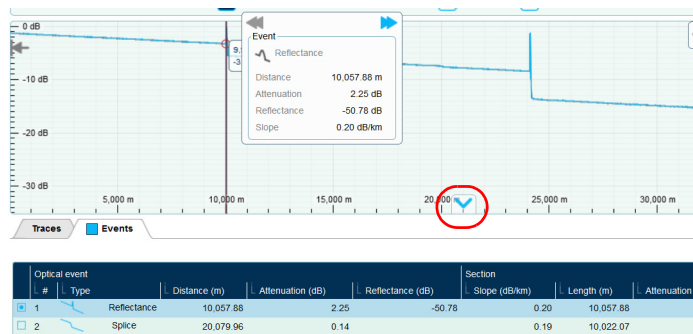
The Events table is accessible clicking on the icon  at the bottom of the trace (click on the icon  to hide the window).

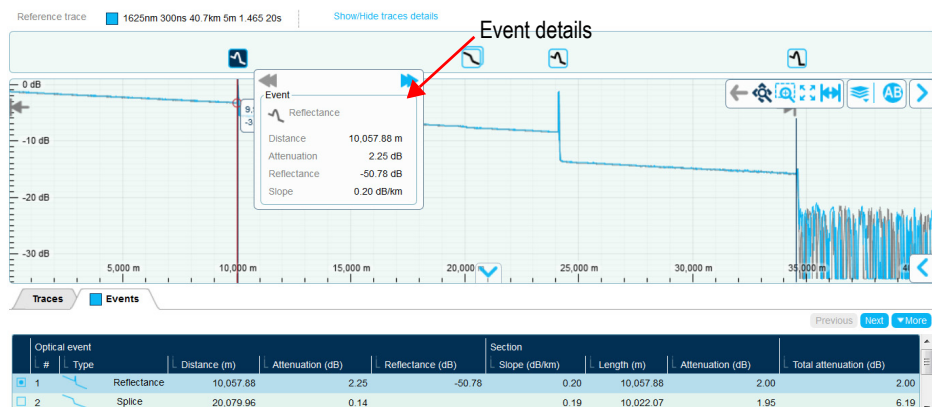
Figure 42 Show the details on selected trace



Displaying the events details

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

Figure 43 Event details on trace

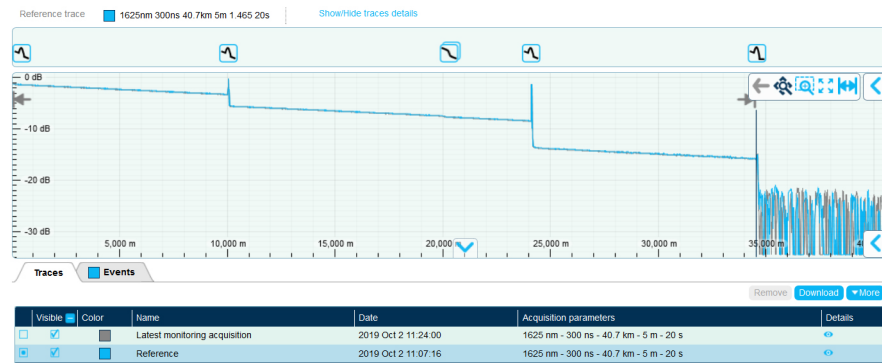


- When multiple events close, can move to the next event from the top box

Setup details

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

Figure 44 Details on trace

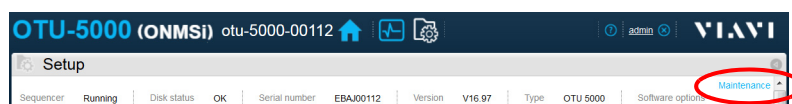


All the acquisition parameters are displayed for all the traces on screen.

Maintenance

This chapter describes the maintenance procedures for the OTU-5000.

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



Topics discussed in this chapter are as follows:

- “Software update” on page 58
- “Adding a License” on page 58

Software update

- 1 From the Software update section of the **Maintenance** screen, download on your PC the new OTU-5000 release from Viavi <http://otu5k.updatemyunit.net> site.

Figure 45 Update software



- 2 Select the **Upload** button to upload the release from your PC to the OTU-5000. You are asked to select the release to upload to the OTU-5000 with the **Browse** button.
- 3 Select the release (of the form *.tar) and upload it.

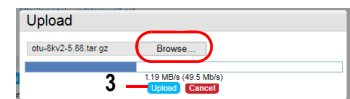
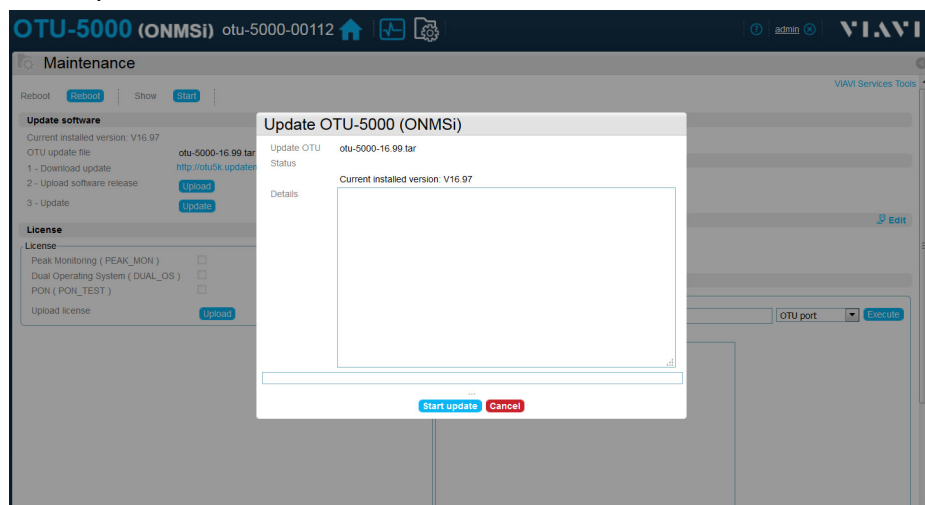


Figure 46 Update OTU-5000



- 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 OTU-5000 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.

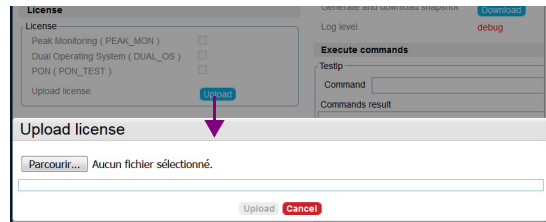
Current available license is:

- PEAK MONITORING FOR OTU-5000 (Ref: E9E-PEAK-MON)

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 47 Upload License file



Show OTU-5000

From the Maintenance screen, the user can make the LED **Status** blink onto the OTU-5000, in order to recognize which OTU-5000 is controlled by the Web Interface:

- 1 On the upper part of the screen, click on **Start** button of the **Show OTU** zone.
The LED Status of the concerned OTU-5000 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 OTU-5000 logs in order to send them to the VIavi support.

Figure 48 Log files



Technical Specifications

This chapter describes the technical specifications of the OTU-5000.

Topics discussed in this chapter are as follows:

- [“Base Unit Technical specifications” on page 62](#)
- [“OTDR General Technical Specifications” on page 63](#)
- [“Optical switch technical specifications” on page 63](#)

Base Unit Technical specifications

Mechanical

Height	1U
Width	19", 21"(ETSI) or 23"
Depth	260mm (ETSI), 280mm (19" or 23")
Weight	

I/O Interfaces

Universal serial Interface	1 x USB 2.0 Host 1 x Mini USB 2.0 device
LAN Interface	1 RJ45 connectors for 10/100/1000 Mbit/s Ethernet

Power supply

Typical values, measured at 25°C.

Input Voltage Range	-36 to -60V
Power consumption	10 W

Power supply AC/DC Converter

AC input	100-240 V, 50/60 Hz
DC Output Standard adaptor	48 V DC, 1.05 A
Electrical safety	EN 60950 Compliant

Environmental

Operating	-20°C to 50°C (operating, temperature range)
Storage	-20°C to 60°C
Maximum altitude of use	2000 m
Overvoltage category	II
Pollution degree	2
Humidity	5% to 95% without condensing

EMI/ESD	CE Compliant FCC Part 15 Compliant
Inflammability	The OTU-5000 metallic housing does not propagate fire

Storage

Solid-state disk

OTDR General Technical Specifications

Laser Safety	Class 1
Number of data points	Up to 512 000
Sampling Resolution	From 4 cm
Distance Accuracy	$\pm 1\text{m} \pm \text{sampling resolution} \pm \text{distance} \times 1.10^{-5}$

Optical switch technical specifications

The OTU-5000 can house a field interchangeable optical switch module having up to 36 ports.

If higher ports count is required, the 36 ports can be extended to more than 1000 ports by adding chassis of 36 ports each.

Technical Specifications ¹	
Number of Ports	2, 4, 8, 12, 16, 24, 36, n x 36 more than 1000 ports by cascading 36 ports
Insertion Loss	
Up to 16 ports	1.2 dB (1500 - 1660 nm)
24 to 36 ports	1.0 dB
Back reflection	- 55 dB
Repeatability	+/- 0.02 dB
Wavelength Operating Range	1260 nm - 1660 nm
Lifetime	100 million cycles
Housing	
Up to 72 ports	Included in the OTU-5000
Higher port counts	External 1RU containing up to 108 ports

1. All specifications referenced excluding connectors



78COTU010/UM/07-19/AE
Rev. 003
English



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