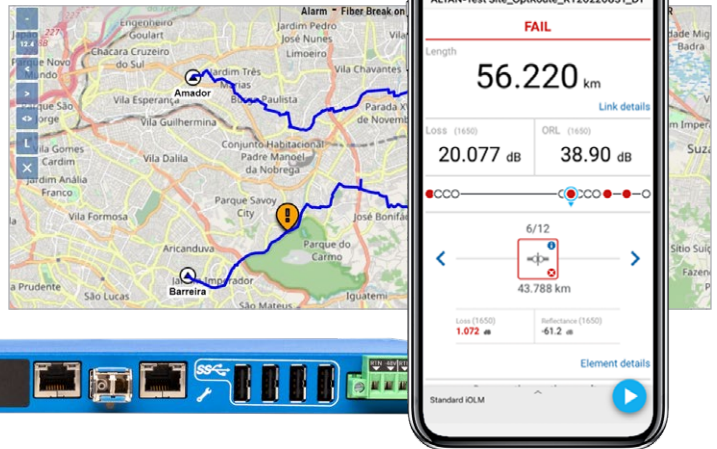


OTH-7000

REMOTE OPTICAL TEST HEAD

Scalable test solution for fiber optic network monitoring and management.



KEY FEATURES

- Smallest footprint in the industry (up to 16 ports in 1/2 RU) with front-only connectivity
- Scalable to hundreds of ports through external switches (local or distributed)
- Multi-vendor capability
- Cost-effective development
- Optical transceiver module SFP port
- Dark and in-service fiber monitoring
- Fault on map (optional GIS)
- Dual power feeds with low power consumption
- On-demand test available anytime, anywhere through mobile app for on-site repair confirmations
- Configurable as client API hardware for direct integration to network management system (NMS) or controlled over EXFO FMS

APPLICATIONS

- Point-to-point (P2P) links certification with pass/fail thresholds and iconic viewer (with iOLM technology)
- Fault analysis and troubleshooting
- Advanced analytics
- Easy integration with third party solutions using the centralized FMS application
- Fiber monitoring for dark-fiber providers, data centers, utilities and service providers

iOLM TECHNOLOGY

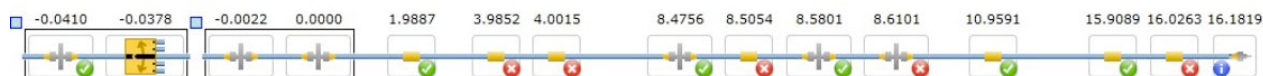
Introducing the OTH-7000

Used with EXFO's fiber monitoring system (FMS), the OTH-7000 is a compact, scalable and cost-effective unit designed for the central office and ideal for point-to-point link testing and monitoring.

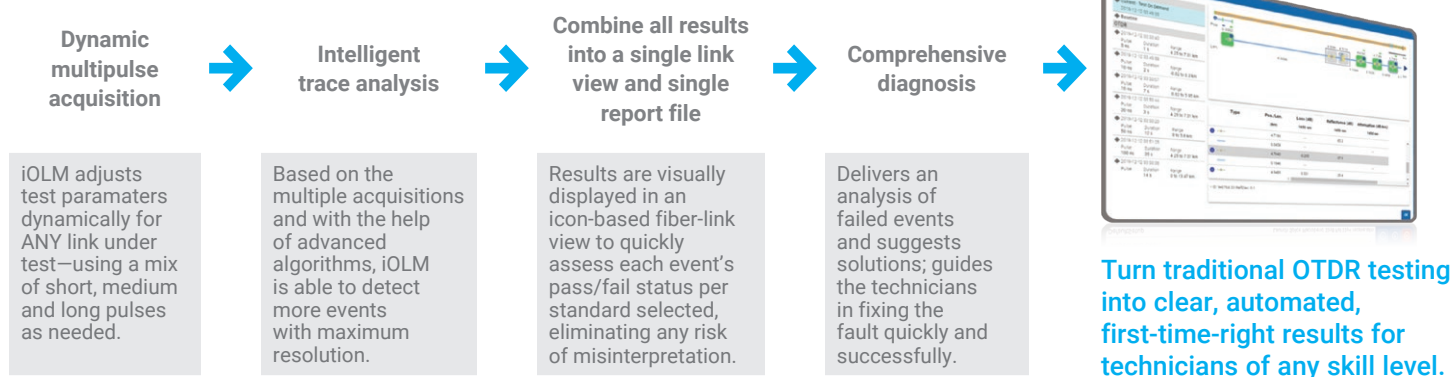
The OTH-7000 uses EXFO's renowned iOLM mode, which allows you to monitor and characterize P2P networks, providing you with a central management view and functions. Automated, expert-level fiber testing eliminates the need to manually configure parameters or analyze and interpret multiple complex OTDR traces.

The iOLM algorithm discovers elements on the fiber and are tested against pass/fail criteria, with loss/reflectance and distance values included in the same structured data.

Providing single-test baselining and on-demand testing for fault analysis, iOLM mode allows the user to see deviation(s) and an iconic view, as well as the ability to view and extract each single-pulse OTDR trace as part of the iOLM measurement. The user can also specify a golden trace among the test sequence, for expert-level testing and diagnosis.



HOW DOES IT WORK?



INTEGRATED OTDR MODULE AND OPTICAL SWITCH

The OTH-7000 is the smallest footprint ($\frac{1}{2}$ U rackmount space) optical test head with an embedded OTDR module and an optical switch. The EXFO 1650 nm OTDR module is ideal for dark and active monitoring of P2P links.

With its MEMS-based design, the OTH-7000 delivers durable performance in a compact package. Fast switching time and a 1-billion-cycle lifetime expectancy make it ideal for the demanding needs of production testing and monitoring applications. The OTH-7000 is available for single-mode fibers with a choice of 1, 4, or 16-port optical switch.

OPTICAL SWITCHES: SCALING REMOTE TESTING CAPABILITIES

Expansion unit – external 1×N optical switch (RTUe-9120)

Connect the single port OTH-7000 unit directly to the common port of the RTUe-9120 external optical switch unit. The RTUe-9120 is a highly dense switch allowing up to 256 ports (MPO 16f connectors).



Local or remote expansion unit: 1×N optical switch OTAU-9150 with optional built-in live coupler

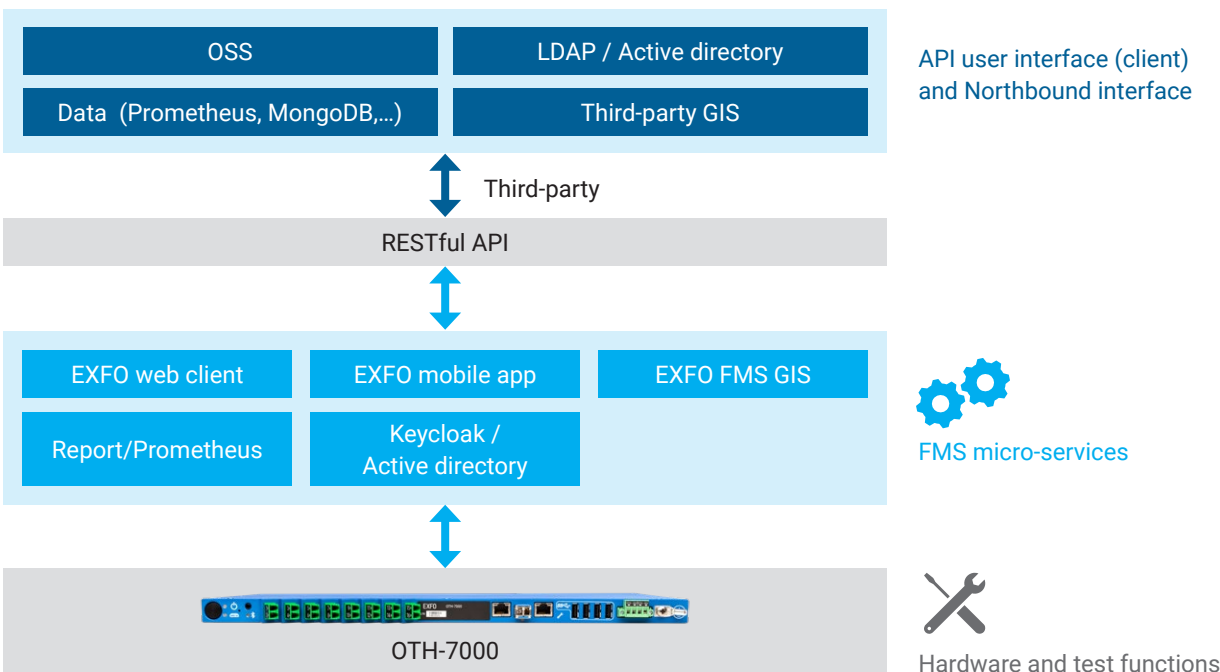
Broaden the reach of the OTH-7000 by using the compact (½ U rack height) OTAU-9150 switch, either locally or in any remote locations within the network: core, metro and access networks. For a cost-effective solution, leverage a single OTDR test head to supervise multiple links located at various edge sites.

Less fiber utilization to reach end point

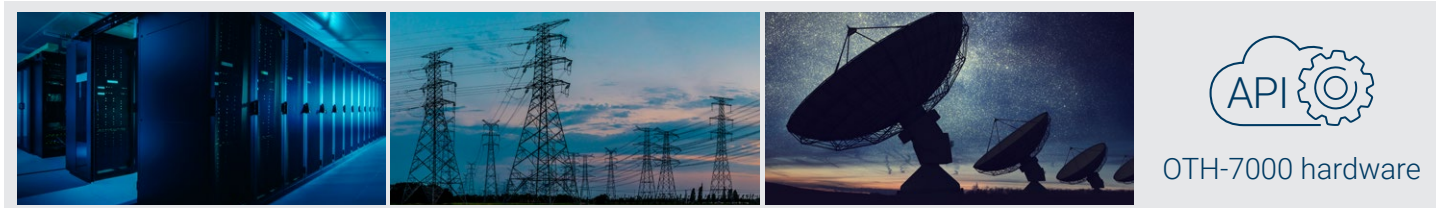
The OTAU-9150 is available with up to 1×128 port count or with optional internal WDMs for live fiber monitoring. This switch achieves outmost port density and low insertion loss to meet tight optical loss budgets.

SCALABLE SYSTEM WITH GREAT FLEXIBILITY

- OTH-7000 platform is managed by EXFO’s FMS, a scalable system that can control and manage up to 1000 units with horizontal scaling capabilities.
- OTH-7000 platform is a true client requiring a minimal outbound firewall to be opened for messaging-based communication using https-encrypted protocol.
- Integration by third parties can be done through micro-services APIs offering the exact functional capability the FMS web and mobile clients (UIs).
- EXFO FMS analytics includes customizable dashboards and customizable APIs. Key fiber metrics such as length, end-to-end loss, dB/km, are trackable in time and/or by domain – allowing pro-active maintenance of the network.
- GIS Integration through standard APIs can be performed to connect to a third-party GIS.



INTEGRATES REMOTE OTDR UNIT DIRECTLY TO YOUR NMS



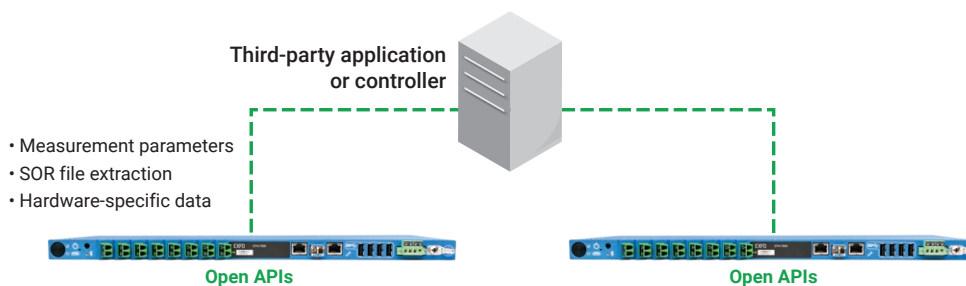
Instead of being controlled by EXFO FMS, the OTH-7000 can be configured to be controlled directly by your network management system (NMS) via open REST APIs on the unit^a.

Integrate the OTH-7000 client API to your corporate system to store OTDR measurements, perform analysis operations (such as fiber loss calculations) or create configuration files and templates for fiber breaks and degradations. The OTH-7000 client API removes fiber monitoring EMS requirements and bundles remote equipment control/management into fewer software instances within the corporate network.

Execute tests to detect and precisely locate any deviation from the initial condition with standard OTDR technology (Bellcore .sor). Testing can be programmed or launched on demand from your OSS or SDN controller to get OTDR measurements and perform further analysis.

Based on a known IP or machine name, you can easily query optical test inventory. For instance, if your NMS or OSS detects a device outage, you can integrate the OTH-7000 client API to determine if the root cause is related to the fiber, hence reducing mean time to understand (MTTU) when a lack of network communication occurs. This helps to create workflows between transport and test equipment.

The OTH-7000 as a client can be integrated into your development software through web API calls to test optical routes. This function is crucial for data centers, utility groups, TELCOs, network operators and so on. Reduce OPEX/CAPEX with less cost and maintenance fees by using an integrated open API solution for your GIS, NMS, OSS or SDN controller.



a. Feature set from EXFO FMS is not available in Client API mode

PLATFORM SPECIFICATIONS

- | | | |
|---------------------|-------------------------------|---------------------------------|
| 1 Power button | 5 Bluetooth status LED | 9 USB 2.0 (4) |
| 2 Power LED | 6 Optical ports (1, 4 or 16) | 10 -48VDC dual feed input |
| 3 Bluetooth button | 7 Ethernet ports | 11 Ground lug |
| 4 System status LED | 8 SFP port (SFP not included) | 12 Removable rackmount brackets |



SPECIFICATIONS

All specifications valid at 23°C ± 2°C unless otherwise specified.

OTDR TEST MODULE	
Central wavelength (nm) ^a	1650 ± 15
Acquisition mode	OTDR through API or iOLM through FMS
Internally filtered (live port)	Yes
Internal filter width (nm)	High pass at 1620 nm
Event dead zone (m) ^{a,b}	0.9
Attenuation dead zone (m) ^{a,b}	3.5
Sampling points	Up to 132 000 per OTDR acquisition, multiple acquisitions per measurement in iOLM mode
Sampling resolution (m)	0.04 to 10
Pulse width (ns)	3 to 20 000
Distance range (km)	Up to 320
Display resolution (dB)	0.001 – Attenuation/loss 0.01 – Reflectance
ORL uncertainty (dB) ^a	± 2
Reflectance uncertainty (dB) ^{a,c}	± 2
Linearity (dB/dB) ^a	0.05
Dynamic range (dB) ^{a,d,e} OTH-7000-AWAT-01	42
Distance uncertainty (m) ^f	±(0.75 + 0.0025 % × distance + sampling resolution)

a. Typical

b. For reflectance below -55 dB, using the smallest pulse width available, with 45 s averaging.

c. For 3 ns to 1 000 ns pulses, 45 s averaging, -45 dB reflectance, not including RBS uncertainty.

d. Typical dynamic range with longest pulse and three-minute averaging at SNR = 1.

e. 4-port switch, typical IL is 1 dB; 16-port switch, typical IL is 2 dB.

f. Does not include uncertainty due to fiber index or cable characteristics (e.g., helix factor).

GENERAL SPECIFICATIONS

Mainframe	Linux
USB interfaces	USB 2.0 (4)
Number of optical ports	1-port SC/APC or 4-port SC/APC or 16-port duplex LC/APC
Internal optical switch type	MEMS
Internal optical switch lifetime (minimum number of cycles)	1 000 000 000 (10 ⁹)
Wired network interfaces	2x 10/100/1000 Base-T Ethernet IP-V4 and V6 (network and management interfaces) 1x SFP (network interface)
Unit status front LEDs	Power, system status and Bluetooth LEDs
Storage	16 GB
Dual feed power supply	-48VDC 2A (ordering option: external AC-DC adapter for AC operation)
Power consumption	10 W (typical) Over entire operating temperature range
Dimensions (for 19 in or ETSI racks) (H × W × D)	22 mm (1/2 U) × 440 mm × 220 mm (7/8 in × 17 5/16 in × 8 11/16 in) Compatible with ETSI 300 mm deep racks
Weight (includes brackets)	1.4 kg (3.1 lb)
Temperature	Operating ^a Storage
	0 °C to 45 °C (32 °F to 113 °F) -40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity	< 95 % non-condensing
Heat management	No fan
Maximum operation altitude ^a	3000 m (9843 ft)







SOFTWARE OPTIONS AND OPTIONAL ACCESSORIES

SFP-85919	SFP copper, multirate optical transceiver module 10/100/1000 BASE-T
FTB-8591	SFP multirate optical transceiver module LC, SMF, 10 km reach
FTB-8196	SFP multirate optical transceiver module, rates: 155/622 Mbit/s, 1550 nm, LC, SMF, 80 km reach

STANDARD RTU ACCESSORIES

User guide
Rackmount kit

REGULATORY

Certification marks	    
	<small>CSA C22.2 No. 61010-1 UL 61010-1</small>
EMC/EMI	EN 61326-1 (Immunity industrial level), EN 55011, CISPR 11, FCC 47 CFR Part 15 Subpart C, RSS-247, Issue 2, ICES-001, ETSI/EN 300 386
Electrical safety	IEC/EN 61010-1, USA/UL 61010-1, CAN/CSA-C22.2 61010-1-12
Optical safety	IEC 60825-1, 
Nebs	GR-63-CORE, GR-1089-CORE ^b
ETSI (environmental test)	ETSI/EN 300 019-2-1, ETSI/EN 300 019-2-2, ETSI/EN 300 019-2-3
WIRELESS	ETSI/EN 300 328
RoHS (EU)	EN 63000

a. For DC operation.

b. The equipment is NEBS-compliant based on Verizon VZ.TPR.9305 for test and measurement equipment-permanent installation for DC-powered, permanent installation type 2 equipment, and AT&T ATT-TP-76200 (Carrier Grade level 1). Contact factory or visit the following URL for more details about this certification: www.verizonnebs.com/TPRs/VZ-TPR-9305.pdf

ORDERING INFORMATION

OTH-7000-XX-XX-XX-XX

Wavelength

AWAT = 1650 nm (filtered)

Port option

01 = 1 port

04 = 4 ports

16 = 16 ports

Power

AC = External 100-240 VAC converter with power cord

DC = Internal DC 48V power supply

Rackmount option

RK19-HALFU = ½ U rackmount kit (19 inch)

RKET-HALFU = ½ U rackmount kit (ETSI)

Example: OTH-7000-AWAT-16-DC-RK19-HALFU

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In case of discrepancy, the web version takes precedence over any printed literature.