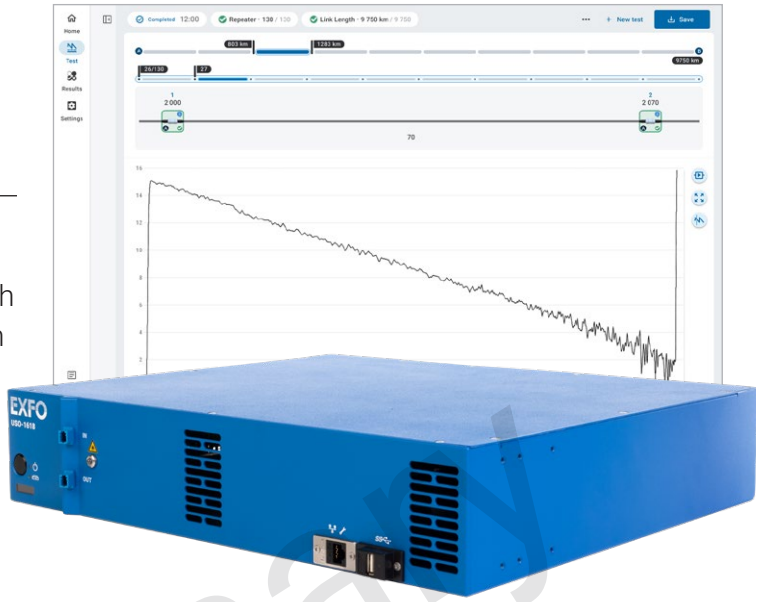
SPEC SHEET

USO-1618

SUBMARINE OTDR

- Industry's first and fastest co-propagation OTDR (C-OTDR) delivering test results within minutes, with simplified workflows that accelerate fault detection and repair for amplified subsea cables.



KEY FEATURES

- Fastest submarine OTDR with 3-minute testing[a] per fiber pair across amplified submarine links
- 5-m resolution (approx.). Industry's highest output power delivers stronger signals and clearer traces up to 20,000 km
- Predefined test configurations for easy, faster and confident execution
- C-band tunable (1527.99 nm – 1567.95 nm)
- Up to 18 dB dynamic range for improved acquisitions
- One platform from landing station (2U rackmount) to repair ship (portable use)
- Compliant with industry standards
- Rugged reliability demanding outdoor use
- Automated analysis reveals fault locations, while icon-based link view eliminates need for manual trace interpretation
- JSON in (test config) and JSON out (results brief) approach for integration with any centralized system
- Linux-based platform

APPLICATIONS

- Amplified submarine cables
- Landing stations (dry plant) and repair vessels (wet plant)
- Amplified cable deployment and commissioning
- Subsea network maintenance (fault detection, troubleshooting and repair validation)
- Capacity upgrades

RELATED PRODUCTS

Optical spectrum analyser (OSA)
FTBx-5243

CD/PMD tester
FTBx-570

Ethernet testing (up to 800G)
FTBx-88811

Remote fiber monitoring
OTH-7000/RTUe-9120

MEMS optical switch
FTBx-9110

Fiber inspection scope
FIP-500

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a. Per 1,000 km.

NEXT-GEN CABLES REQUIRE NEXT-GEN TOOLS

From days to minutes

Reduce mean time to repair by locating faults in just 3 minutes per fiber pair, not hours. Be first to call the repair ship!

Unmatched precision

Highest output power (19 dBm) in the industry delivers clearer traces to locate faults with a 5-m resolution (approx.).

Simplified workflow

Predefined configs pushed via APIs reduce setup; automated fault detection eliminates manual trace analysis; intuitive icon-based link view pinpoints faults.

Compact and versatile

2U form factor saves space in landing stations, while the portable setup supports testing anywhere.

THE SIMPLER PATH TO TRUSTED SUBSEA NETWORKS

EXFO'S SUBMARINE OTDR		CONVENTIONAL SUBMARINE OTDR
3 minutes per pair Approximately **1 hour** to validate a 24-pair amplified submarine cable.	TESTING TIME	**1 hour per pair** Approximately **1 day** to validate a 24-pair amplified submarine cable.
Predefined test configs Managers define approved parameters; technicians load and run tests with minimal setup.	TESTING CONFIGURATION	**Expert-heavy setup** Testing requires skilled experts, but field crews vary in experience.
Cleaner traces, easy interpretation Higher signal quality at the first amplifier delivers clearer traces and faster fault localization.	SIGNAL POWER	**More interpretation required** Lower signal quality can require longer analysis and additional validation before action.
One platform for rackmount or portable use Compact 2U rackmount design maximizes landing-station space, while the portable setup enables testing across multiple locations.	FORM FACTORS	**Limited flexibility** Portable format with little rack-space optimization for landing stations.
Automated fault localization & intuitive interface Find faults automatically. The icon-based link view highlights failed sections.	AUTOMATION	**Legacy OTDR trace viewer** Interpretation requires expertise from a seasoned technician.
Seamless JSON API integration JSON in/out and direct integration with customer cable-management systems.	SYSTEM INTEGRATION	**Integration via third-party proprietary software** Remote desktop integration using third-party software. Incurs complexity and risk.
Linux-based platform Linux-based architecture designed for long-term stability, security and controlled lifecycle management.	OPERATING SYSTEM	**Legacy platforms** May rely on aging operating-system environments, creating additional lifecycle, security and maintenance considerations.

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Be first to call the repair vessel!

EXFO

ACT FAST WITH CONFIDENCE

EXFO's USO-1618 finds faulty fiber pairs in seconds and locates the issue in ~3 minutes.

Featuring rackmount and portable configurations, the USO-1618 is the industry leader in terms of testing time, automation, and ergonomics.

With its high-power C-band tunable light source, the USO-1618 can attain a dynamic range of 18 dB. This allows for fastest submarine OTDR acquisition speed with 3-minute testing per fiber pair. Compared to traditional submarine OTDRs, this greatly reduces mean time to repair and time to get the relevant permit by locating faults in minutes instead of hours.

Predefined test configurations enables the overseer to keep control on methods of procedures while allowing flexibility for technicians to run ad-hoc measurements. This builds trust into the troubleshooting process. When in a rackmount, a REST API using the same test config format allows for automation while maintaining test uniformity across the portable and rackmount setups. Test configuration files also allow for topology specifications that the USO-1618 can then use to validate the cable integrity faster.

This next-gen solution is two times thinner (2U rackmount platform) than traditional submarine OTDRs, allowing for greater scalability in landing station racks.

DID YOU KNOW?

200+
CABLE FAULTS OCCUR WORLDWIDE EVERY YEAR

$1M/day
THAT'S HOW MUCH DAILY REPAIR OPERATIONS CAN COST

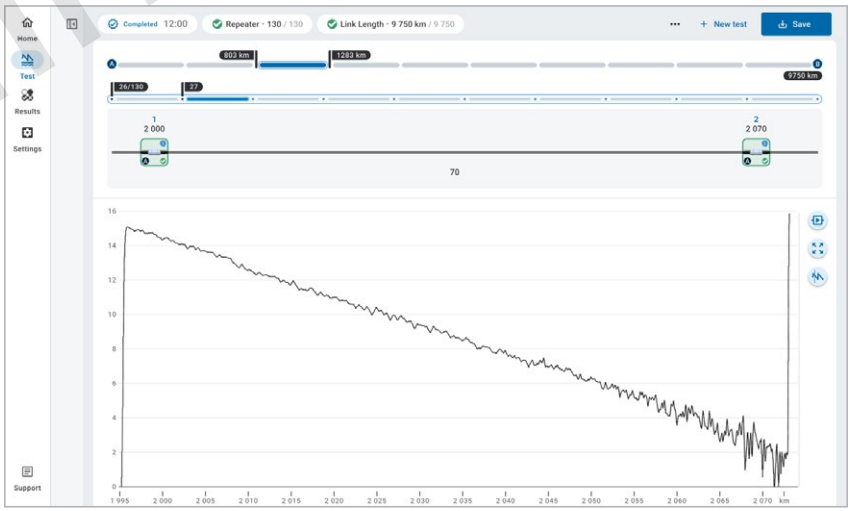
Only ~25
DEDICATED REPAIR VESSELS WORLDWIDE

~1.5 months
IN AVERAGE DELAY BEFORE REPAIR BEGINS

LOOK AND FEEL

USO-1618 leverages EXFO's innovative interface features:

- Clear automatic fault identification
- Optical link map
- Optical test configuration files
- End-to-end link continuity assessment
- Automatic pass/fail verdict



TUNABLE WAVELENGTH

CLEAR CONSOLIDATED LINK DISPLAY

JSON IN/OUT PROCESSES

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ILLUSTRATION OF USO-1618 INTEGRATION WITH CENTRALIZED SYSTEM

The JSON in (test config) and JSON out (results brief) approach ensures easy integration with any centralized system.

The USO-1618 uses the universal JSON file format so that integration with any system is easy and guaranteed. The JSON format can also be used by third-party AI systems for result compilation and business intelligence.

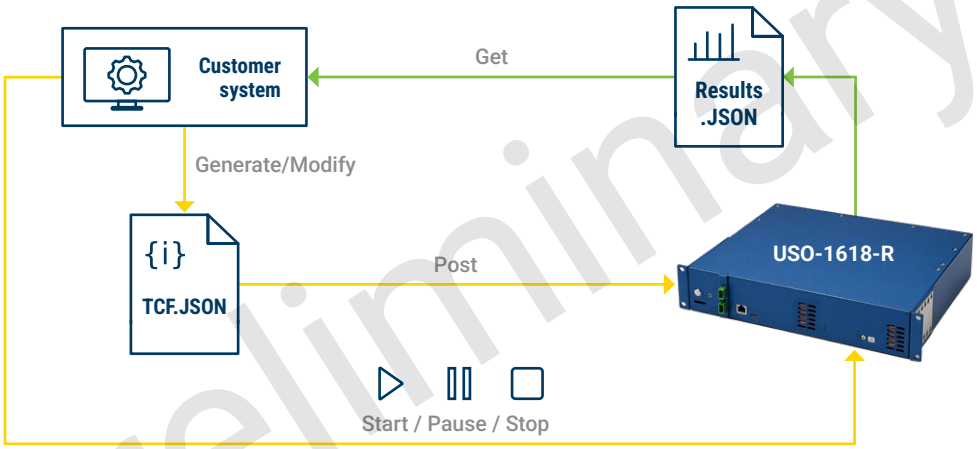
Key benefits

API can start, stop and restart acquisition as needed

JSON in (test config) and JSON out (results brief) for easy integration with any centralized system

JSON format can also be used by third-party AI systems for result compilation and business intelligence

Alarm when a fault is detected



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PRODUCT OVERVIEW

1. Power button
2. Power LED
3. System information display
4. System LED
5. Unit input
6. Unit output
7. Laser active LED
8. Ethernet management port
9. USB 3.0 ports
10. Removable mounting feet
11. Removable rackmount brackets
12. −48V input circuit fuses
13. Main power switch
14. −48V dual feed input
15. Ground lug
16. Ethernet ports
17. Dry contact relays (3)
18. USB 3.0 ports (5)

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OPTICAL SWITCHES: INCREASE USO-1618 CAPACITY

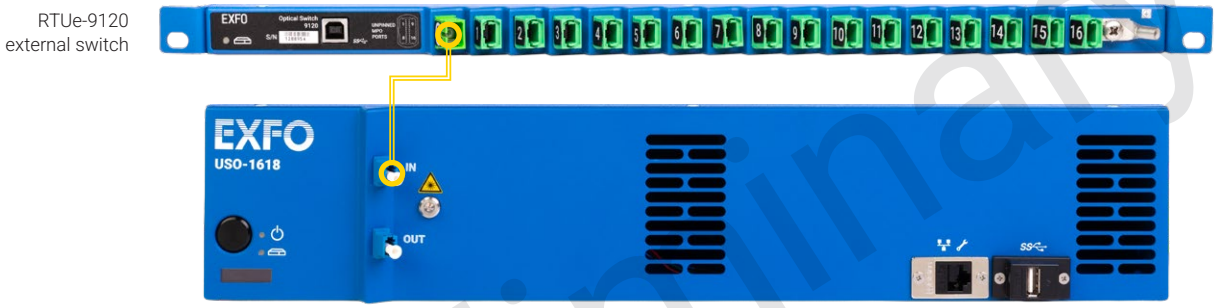
Module: 1×N FTBx optical switch

With its MEMS-based design, the FTBx optical switch 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 FTBx MEMS optical switch is available for singlemode fibers with a choice of 1×4 and 1×12 modules.

As a first stage switching of the RTUe-9120 external switch or to the OTAU-9150 remote switch, the setup can provide 1024 different optical paths to test.

Local expansion unit: external 1×N optical switch RTUe-9120

Connect the OTDR module port directly to the common port of RTUe-9120 external optical switch unit for up to 256 ports in ½U rack height or add up to four units by first connecting the OTDR port to the common port of a 1×4 optical switch module, allowing up to 1024 ports.



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

Broaden the reach of the USO-1618 by using the compact (½U rack height) OTAU-9150 switch, either locally or in any remote locations. 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 1×144 port count. This switch achieves outmost port density and low insertion loss to meet tight optical loss budgets.

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SPECIFICATIONS

TECHNICAL SPECIFICATIONS[a]	
Fiber under test	ITU-T G.654
Optical connector	FC, SC, LC and more
Operating wavelength (probe)	C-band (1527.99 nm to 1567.95 nm)
Operating wavelength (dummy)[b]	C-band (1527.99 nm to 1567.95 nm)
Wavelength accuracy (nm)	±0.05
Warm-up time (minutes)[c]	2
Pulse width (µs)	1/3/10/30/100
Optical output power (dummy and probe)[d]	0 to 19 dBm, 0.5 dB steps
Dynamic range (dB)[e]	18 dB
Dead zone (km)[f]	0.15
Distance range	Adjustable up to 20,000 km (5 m resolution)
Measurement time	1 minute to 24 hours

GENERAL SPECIFICATIONS	
Interfaces	3 Ethernet ports (2 back, 1 front)
Storage (To)	1
Power supply	External AC-DC 48V power supply with power cord
Weight	8.2 kg (18 lb)
Size (H × W × D)[g]	88 mm × 440 mm × 400 mm (3 ½ in × 17 ¼ in × 15 ¾ in)
Temperature (operating)	10°C to 35°C (50°F to 95°F)
Temperature (storage)	−40°C to 50°C (−40°F to 122°F)
Relative humidity	95% non-condensing
Operating system	Linux

LASER SAFETY (complies with FDA 1040.10 and IEC 60825-1:2014-05)

IEC 60825-1:2014-05

DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS

Applicability: Class 1M

WARNING: Viewing the laser output with telescopic optical instruments (for example, telescopes and binoculars) may pose an eye hazard and thus the user should not direct the beam into an area where such instruments are likely to be used.

a. Typical.
b. Minimum 50 GHz and maximum 100 GHz aside from OTDR probe wavelength.
c. Time from power-up until the device is ready to make a valid first measurement.
d. Typical, at 1550 nm.
e. Typical, 15 min, 1000 km range, 10 µs PW. Ps = −51 dBm, ASE = −20 dBm/nm.
f. Typical, 1 µs pulse.
g. Two rack unit.

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ORDERING INFORMATION

USO-1618-XX

Connector
EI-EUI-28 = APC/DIN 47256
EI-EUI-89 = APC/FC narrow key
EI-EUI-91 = APC/SC
EI-EUI-95 = APC/E-2000
EI-EUI-98 = APC/LC

Example: USO-1618-EI-EUI-28

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