

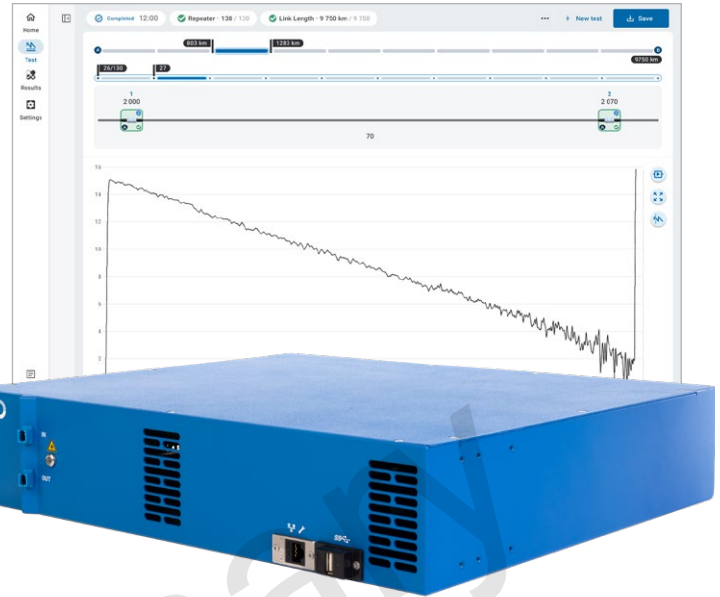
USO-1618

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 per fiber pair across amplified submarine links up to 20,000 km
- 5-m resolution (approx.). Industry's highest output power delivers stronger signals and clearer traces for automated fault location
- 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

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

6 hours per pair

Approximately **6 days** 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.

Be first to call the repair vessel!



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.

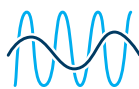
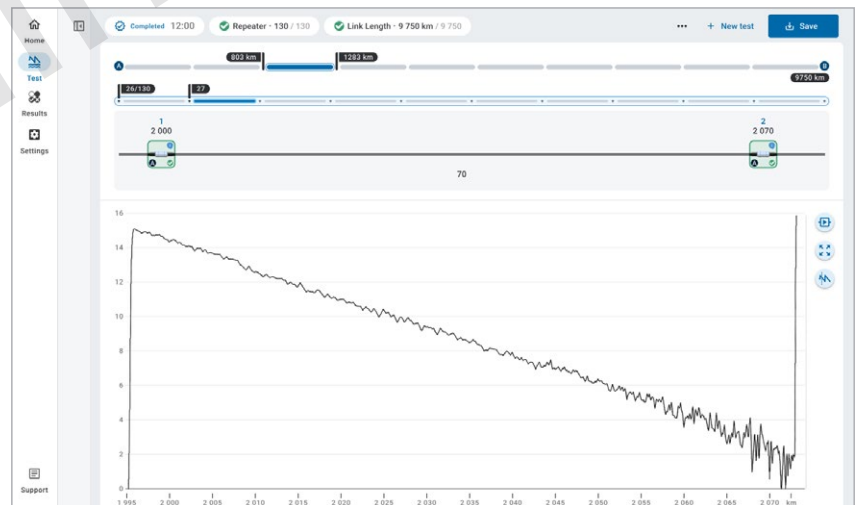
Predefined test configurations enables the overseer to keep control on methods of procedures while allowing flexibility for technicians to run ad-hoc measurements. This builds trust into the troubleshooting process. When in a rackmount, a REST API using the same test config format allows for automation 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.

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**

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**

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.

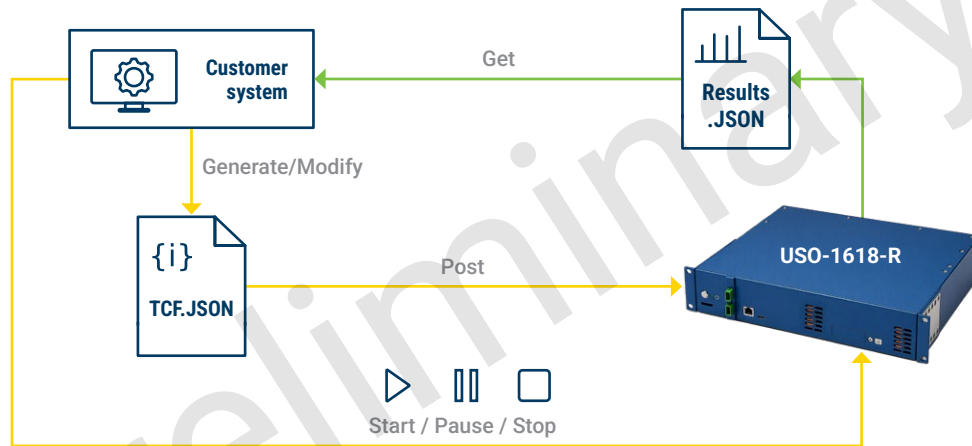
Key benefits

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



PRODUCT OVERVIEW

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



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.

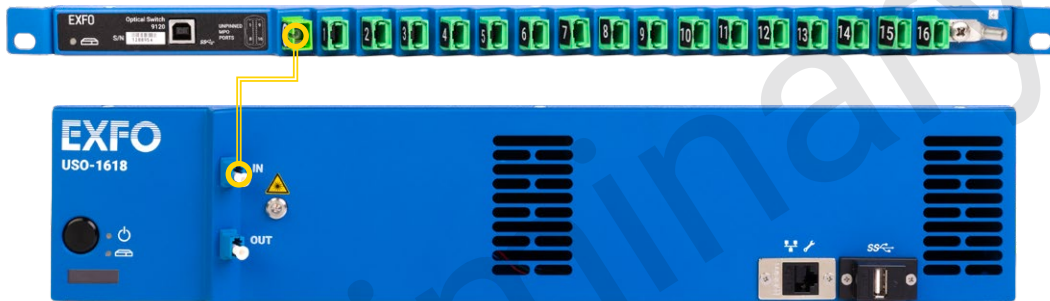


As a first stage switching of the RTUe-9120 external switch or to the OTAU-9150 remote switch, the setup can provide 1024 different optical paths to test.

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.

RTUe-9120
external switch



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.

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 ^g	8.2 kg (18 lb)
Size (H × W × D) ^h	88 mm × 440 mm × 400 mm (3 1/2 in × 17 1/4 in × 15 3/4 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. Portable configuration (same dimensions). Excluding screen size.

h. Two rack unit.

ORDERING INFORMATION

USO-1618-XX

Connector ■

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

Example: USO-1618-EA-EUI-28

Preliminary

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