FX150+

Handheld Mini OTDR for Point-to-Point and FTTx/PON Applications

VeEX

Mini OTDR for FTTx and Metro Fiber Networks

With up to 256,000 data points and 3 cm resolution, the FX150+ mini OTDR offers superior measurement accuracy for installation, maintenance and troubleshooting of FTTx, Mobile FrontHaul/ BackHaul and Metro fiber networks. The compact, lightweight PON test set can be incorporated with power meter, light source, fiber inspection probe and VFL test options which add exceptional versatility to the unit.

Platform Highlights

- Robust, handheld design for demanding field test conditions
- Linux operating system
- High resolution, 5" TFT color touch-screen suitable for both indoor and outdoor use
- Fast boot-up for fiber troubleshooting and restoration
- Intuitive display, function keys and touch-screen for fast navigation and easy operation
- Internal data storage
- Micro-USB OTG interface for flash drives, fiber inspection probe connection and test data transfer
- Rechargeable Lithium Polymer battery with capacity indicator, low voltage alarm and Auto-off function
- Continuous operation >9 hours without recharging batteries
- Built-in WiFi option:
  - Perform software upgrades using Windows® PC
  - Upload test data to Fiberizer® Cloud via Internet connection
  - Connect wirelessly to Fiber Inspection Microscope
- Built-in Bluetooth® option:
  - Pair with mobile devices/Windows® PC to transfer test results
- Remote measurement using EZ Remote, VNC, or built-in web based software

Key Features

- Standard OTDRs for Pt-Pt or PON optimized OTDRs available
- Supports up to 4 wavelengths including quad MM/SM
  - MM: 850, 1300 nm
  - SM: 1310, 1490, 1550, 1625 and 1650 nm
- Dynamic range up to 46 dB
  - Testing long point-point fiber links up to 200 km (124 miles)
  - PON OTDR for single or cascaded PON links with up to 1:256 split ratios built using balanced, unbalanced or taps
- Optimized dead zones (DZ) for FTTx/PON applications
  - Event 0.8 m, Attenuation 3.5 m typical
  - PON ≤16.5m (13 dB loss, 25 ns PW, non-reflective splitter)
- Filtered OTDR port for in-service testing at 1625 or 1650 nm
- Telcordia SR-4731.sor file format
- Generate and save results in sor, png or pdf formats
- Auto mode - setup, events detection, and trace diagnostics
- V-Scout option – Smart Link Mapping derived from multiple test acquisitions and displayed using intuitive icons
- PON OTDR Smart Link Mapping for different PON link configurations - balanced, unbalanced and/or Taps
- Markers for distance, attenuation, reflectance and splice loss measurements
- Fixed or universal interface option with interchangeable optical adapters (SC, ST, FC) for OTDR port
- Power meter, light source, fiber inspection probe, and VFL

Loads of Features You Can Depend On

Fast Startup

The FX150+ powers up and is ready to perform OTDR measurements in less than 30 seconds, making it one of the fastest units in the industry. Technicians can select the desired Test Mode from the Fiber Menu and begin work almost immediately or be in the position to locate and restore fiber breaks quickly.

Auto Mode

Intuitive Fiber menu structure simplifies test parameter setup and measurements are fully automated and optimized, so even "OTDR beginners" can test quickly and efficiently. The unit determines total fiber length, total link loss, fiber attenuation and generates full event table.
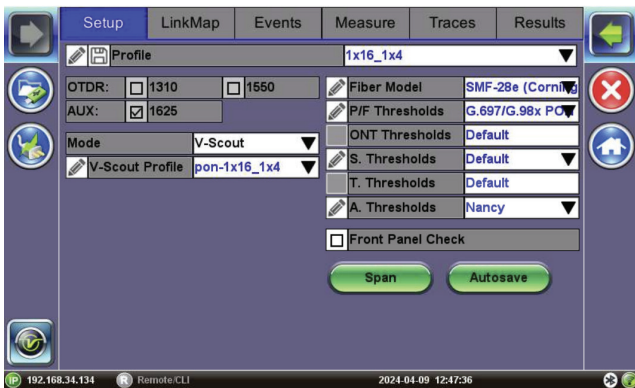

Advanced Analysis for Experts

OTDR test parameters can be set manually or automatically depending on test requirements or technician skill level.

The fiber trace is displayed in 1-way or bi-directional X-view and results are listed in an easy-to read event table that list fiber attenuation, splice loss and reflectance against user defined thresholds for each trace.

LSA loss measurement using 5 markers enable skilled technicians to analyze splices and fiber sections with the highest possible accuracy. The ability to add/delete/edit optical events enhances the event table when events go undetected or landmarks need to be inserted.

Zoom feature allows technicians to pinpoint with greater certainty and precision.

Software and event table displays locations of possible macrobends when multi-wavelength measurements are performed.
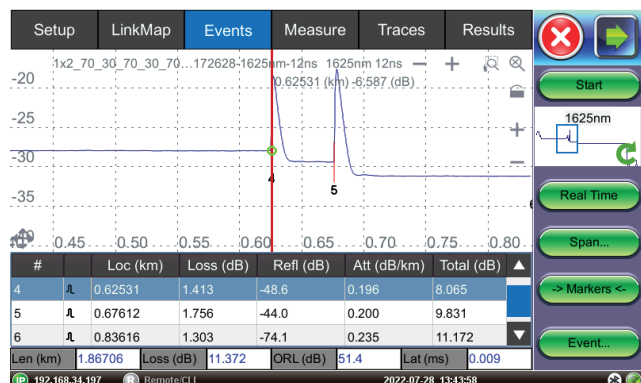

Live Fiber Check

The OTDR automatically checks if light is present on the fiber under test which can interfere with OTDR measurements prior to making any measurement. The unit disables the laser transmitter if an active fiber is detected preventing any possible service disruption and potential receiver damage.

V-Scout Link Mapping

Advanced algorithms evaluate separate acquisitions and characterize Point-to-Point or PON fiber spans with balanced splitters, unbalanced splitters or Taps assigning intuitive symbols for specific network elements. Custom Links Test Profiles can be applied for different network topologies such a balanced splitter or tap routes. This feature eliminates event interpretation and provides greater analysis confidence to the technician, regardless of OTDR skill set.
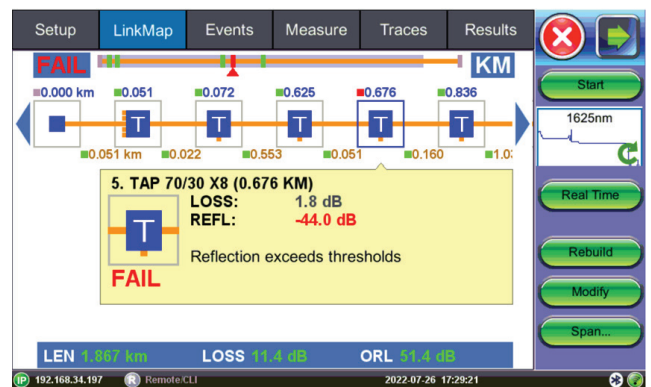
OTDR Results

Traces are saved in industry standard Telcordia SR-4731 sor format. Job, Cable, Fiber and Trace ID information can be defined for each trace which is then used to store data in a logical hierarchy for easy sorting and retrieval afterwards. A flat file naming convention is also supported and can be invoked depending on user preference.
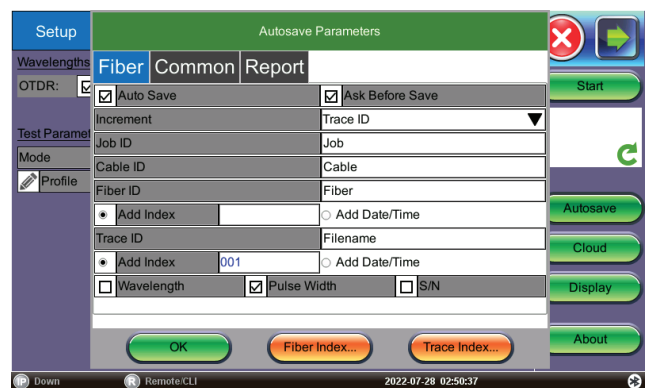
Simple Software Upgrades

Firmware upgrades are performed easily via the micro USB port connected to a PC. Updates are available at no charge for registered users.

Extended Battery Operation

The OTDR provides over 9 hours of operation on a single charge. A low voltage indicator warns the user when the device power reaches critical levels.

Power Meter, Light Source and VFL Options

The broadband power meter allows users to measure OLTS signals within 0.01 dB and perform accurate signal level measurements with 5% or within ±0.2 dB. Calibrated wavelengths for legacy transmission systems including newer PON systems are all available.

The OTDR port doubles as a stable source when the light source option is ordered. Used in conjunction with the built-in OPM, the unit provides integrated loss test functionality.

An optional visible laser "red light" source allows users to visually troubleshoot splices, connectors and fiber management enclosures.
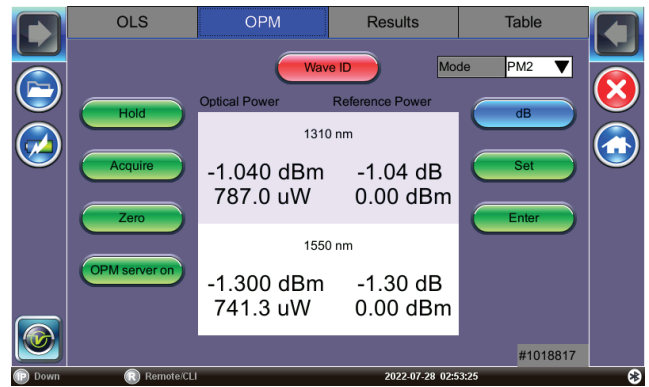
Fiberscope Option

VeEX offers microscopes for checking contamination on single and multi-fiber (MPO/MTP optical connectors). The large color display allows images to be viewed in great detail while the embedded software captures and automatically freezes the focused image before performing end-face analysis. Graphic and Tabular Pass/Fail results per the latest IEC 61300-3-35 standard are also provided.

Inspection of both female bulkhead adapters and male connectors is supported. A wide range of inter-changeable tips including FC, SC, LC, E2000, and other special types are available in either UPC or APC formats. Multi-fiber inspection and analysis of MPO/MTP connectors with Pass/Fail is supported.

Depending on the fiberscope, connection is either via the unit's micro-USB port or WiFi adaptor. Images can be saved internally or they can be transferred to a Fiberizer Scope software application on a Windows® PC for further analysis and reporting. Saved images can also be uploaded to Fiberizer Desktop Plus software or Fiberizer Cloud application.

OTDR Trace Analysis and Documentation

Fiberizer® Desktop Plus

Fiberizer Desktop Plus, is a standalone PC software application to analyze traces acquired by the OTDR. Users can edit traces, view event tables, and generate basic reports.

The version also supports batch processing and advanced report generation for analyzing multiple fibers in a cable.

The software does not require Internet access to operate, but it can be interfaced to Fiberizer Cloud at any time.
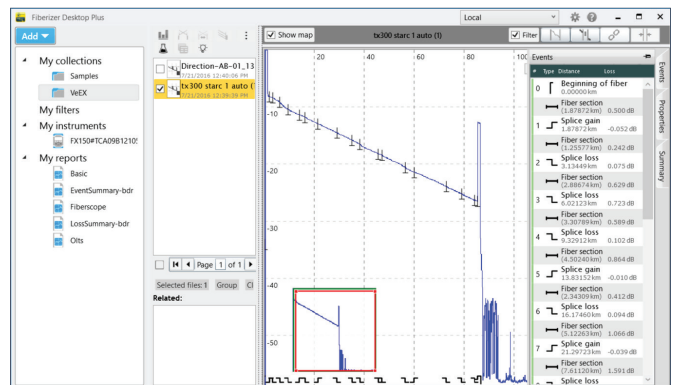
Work from Anywhere, Anytime

Fiberizer® Cloud

Fiberizer™ Cloud not only empowers the OTDR, but also the workforce. Going way beyond traditional OTDR reporting methods, this cloud-based solution provides superior centralized test data management capabilities including powerful web based trace analyses. Traces can be uploaded directly from the OTDR via Internet connection from almost anywhere, at anytime because Fiberizer™ Cloud is a 24/7 full online web service.
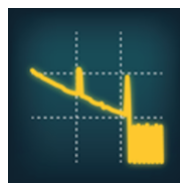
Value added data post processing

Fiberizer Cloud

cloud.fiberizer.com

Streamlining Onsite Data Reporting

Fiber technicians and contractors tasked to validate new fiber installations or restoring cable routes after an outage are generally obliged to submit measured data (.sor files) and related documentation to the network operator as proof of delivery before being paid. Valuable time however is often wasted after the onsite work is completed, because critical test files are usually first stored to some local storage media before being transferred to a colleague via email for verification and further reporting.

Fiberizer™ Cloud streamlines this information exchange, eliminating costly paper, e-mail or other time consuming communication methods - instead, time wastage can be avoided by transferring traces of jobs completed directly from the OTDR to Fiberizer™ Cloud. Professional PDF or MS Excel reporting functionality is also available, and users can create their own templates for reports. Bidirectional analysis of OTDR traces, tested from both ends of the optical fiber, can also be performed.

Fiberizer Cloud Connectivity

Pair the FX150+ OTDR via Bluetooth to a mobile smartphone, laptop or tablet PC and efficiently upload test data directly to the cloud server using any available wireless technology (3G, WiFi).

Total Compatibility

Fiberizer Cloud fully supports HTML5, and is compatible with all mobile device and macOS® browsers, not limiting users to PC platforms only. OTDR trace files in Telcordia SR-4731 *.sor formats are securely transferred via HTTPS connection, a fast reliable communication protocol commonly used in today's Internet applications. Another outstanding feature is compatibility with other OTDR vendor trace data formats, so users can reference or compare other OTDR traces and vice versa.

Peace of Mind

With Fiberizer Cloud OTDR trace viewer you never need to install or update the application, thus reducing maintenance time and expenses. Fiberizer Cloud is constantly updated, so you always have the most up-to-date analysis capability for your fiber optic network.

Optical Specifications[1]

Parameter	Specification	
Wavelength (±20 nm max)[2]	MM - 850/1300, SM - 1310/1490/1550/1625/1650 (refer to ordering guide)	
SM Live port built-in filter	1625F nm - pass: 1610 to 1680, isolation: 50 dB from 1260 to 1590 1650F nm - pass: 1640 to 1660, isolation: 50 dB from 1270 to 1585	

Parameter	Single Mode	Multimode
Dynamic Range (dB)[3]	Refer to ordering guide	
Pulse width (ns)	3, 5, 10, 25, 100, 200, 300, 500, 1000, 3000, 10000, 20000 (where applicable)	3, 5, 10, 25, 100, 200, 300, 500, 1000
Event dead zone (m)[4]	Refer to ordering guide	
Attenuation deadzone (m)[5]	Refer to ordering guide	
PON dead zone (m)[6]	≤16.5m	n/a
Distance range (km)	0.1 to 400	0.1 to 80
Reflectance Accuracy	±2 dB	
Distance Measurement Accuracy (m)[7]	$\pm(0.5 + \text{resolution} + 3\times10^{-5} \times L)$	
Sampling resolution (m)	0.03 up to 16m (model dependent)	
Loss Resolution	0.01	
Sampling points	Up to 256,000	
Linearity (dB)	±0.03	
Measurement time (seconds)	Live or predefined values	
Memory capacity	>10,000 traces, Telcordia SR-4731 sor format	
Fiber analysis	Automatic, event table, user defined PASS/FAIL thresholds	
Fiber type (µm)	Single mode, 9/125 and/or Multimode 50/125	
Smart Link Mapping (V-Scout)	Smart Link Mapping using intuitive icons derived from multiple test acquisitions	
OTDR Laser safety	Class 1, 21 CFR 1040.10	
Optical connectors (OTDR)	Fixed connector or optional universal interface with interchangeable adaptors	

Options	Single Mode	Multimode
Visual Fault Locator (VFL)	Optional	
-Wavelength (nm)	650 ±10	
-Output (mW)	+1	
-Laser Safety	IEC 60825-1, Class II	
-Mode	CW and 1 Hz	
Light Source (LS) - (O/P shared with OTDR)	Optional	
-Wavelengths (nm)	As per OTDR laser fitted	
-Output power (dBm)	>-2.5 SM and/or >-4 MM	
-Level Instability (dB)	0.03 SM and/or 0.05 MM (15 min); 0.1 dB (8 hr)	
-Modulation (Hz)[8]	270, 330, 1000, and 2000	
Optical Power Meter (OPM)	Optional - InGaAs	
-Calibrated wavelengths (nm)[9]	850/1300	1310/1490/1550/1625/1650
-Power range (dBm)	-65 to +10 or -50 to +26	
-Tone Detection	270, 330, 1000, or 2000 Hz	
-Accuracy, %[10]	±5	

Notes

1. Unless noted, all specifications are valid at 23°C ± 2°C (73.4°F ± 3.6°F) using FC/APC connectors.
2. Typical central/nominal wavelength deviation for 850, 1300, 1310, and 1550 nm is ±20; for 1490/1625/1650 nm it is typically ≤10 nm depending on optical configuration.
3. Typical dynamic range after three-minute averaging and SNR = 1 using longest pulse. Multimode dynamic range specified for 50 µm fiber
4. Typical deadzone using 3 ns pulse with 850 nm multimode reflectance at -45 dB and 1310 nm singlemode reflectance at -45 dB.
5. Typical deadzone using 3 ns pulse: 850 nm multimode reflectance -45 dB and 1310 nm singlemode reflectance -55 dB; 1550/16xxnm may be slightly larger.
6. Typical value for non reflective splitter, 16.5 dB loss and PW 25 ns.
7. Excludes uncertainty due to fiber refractive index (IoR) setting.
8. Modulated Power output ~ 3dB lower than CW power
9. Depends on OTDR - MM 850/1300nm; SM 1310/1490/1550/1625/1650; Quad MM+SM has 7 wavelengths; additional wavelengths options
10. Between 5 to -50 dBm for standard OPM. Between 17 to -35 dBm for high power OM.

Ordering Information

Order #	Wavelength (nm)	Dynamic Range (dB)	Event[4]	Attenuation[5]	PON	Applications
Multimode and Quad Multimode and Singlemode Wavelengths						
Z06-05-095P	850/1300	22	<1	≤5	n/a	Multimode network
Z06-05-026P	850/1300//1310/1550	27/27//38/35	<1	<5	n/a	LAN/WAN networks
Point-to-Point Singlemode - 1 Wavelength						
Z06-05-075P	1650 (F)	32	0.8	<4 typ.	n/a	PON drop
Z06-05-074P	1625 (F)	41	0.8	3.5 typ.	n/a	PON drop, Longhaul Fault Locator
Z06-05-076P	1650 (F)	41	0.8	3.5 typ.	n/a	PON drop, Longhaul Fault Locator
Point-to-Point Singlemode - 2 Wavelengths						
Z06-05-077P	1310/1550	38/36	0.8	<4 typ.	n/a	Short/medium haul, wireless fronthaul and backhaul
Z06-05-078P	1310/1550	40/38	0.8	<4 typ.	n/a	LAN/WAN to Metro Network
Z06-05-079P	1310/1550	43/41	0.8	3.5 typ.	n/a	LAN/WAN to very Longhaul Network
Z06-05-080P	1310/1550	46/44	0.8	3.5 typ.	n/a	LAN/WAN to very Longhaul Network
Point-to-Point Singlemode - 3 Wavelengths						
Z06-05-081P	1310/1490/1550	39/35/36	0.8	<4 typ.	n/a	Short/medium haul, wireless fronthaul and backhaul
Z06-05-082P	1310/1550/1625	39/36/39	0.8	<4 typ.	n/a	Short/medium haul, wireless fronthaul and backhaul
Point-to-Point Singlemode - In-Service Testing*						
Z06-05-083P	1310/1550//1625 (F)	40/38//40	0.8	<4 typ.	n/a	Short/long haul, wireless fronthaul/backhaul
Z06-05-084P	1310/1550//1625 (F)	43/41//41	0.8	3.5 typ.	n/a	Short/long haul, wireless fronthaul/backhaul
Z06-05-085P	1310/1550//1625 (F)	46/44//44	0.8	3.5 typ.	n/a	X-long, wireless front/backhaul
Z06-05-086P	1310/1550//1650 (F)	40/38//39	0.8	3.5 typ.	n/a	Short/long networks
Z06-05-087P	1310/1550/1650 (F)	43/41//39	0.8	3.5 typ.	n/a	Short/long networks
Z06-05-088P	1310/1550//1650 (F)	46/44//40	0.8	3.5 typ.	n/a	X-long, wireless front/backhaul
PON Optimized OTDRs**						
Z06-05-058P	1310/1550//1625 (F)	40/38//40	0.8	<4 typ.	≤16.5 m	Up to 64 PON total splitter
Z06-05-059P	1310/1550//1625 (F)	43/41//41	0.8	3.5 typ.	≤16.5 m	Up to 128 PON total splitter
Z06-05-060P	1310/1550//1625 (F)	46/44//44	0.8	3.5 typ.	≤16.5 m	Up to 256 PON total splitter
Z06-05-061P	1310/1550/1650 (F)	40/38//39	0.8	<4 typ.	≤16.5 m	Up to 64 PON total splitter
Z06-05-062P	1310/1550/1650 (F)	43/41//39	0.8	3.5 typ.	≤16.5 m	Up to 128 PON total splitter
Z06-05-063P	1310/1550/1650 (F)	46/44//44	0.8	3.5 typ.	≤16.5 m	Up to 256 PON total splitter
Z06-05-064P	1625 (F)	41	0.8	3.5 typ.	≤16.5 m	Up to 128 PON total splitter
Z06-05-065P	1650 (F)	41	0.8	3.5 typ.	≤16.5 m	Up to 128 PON total splitter
Z06-05-066P	1310/1550	40/38	0.8	<4 typ.	≤16.5 m	Up to 64 PON total splitter
Z06-05-067P	1310/1550	43/41	0.8	3 typ.	≤16.5 m	Up to 128 PON total splitter
Z06-05-068P	1310/1550	46/44	0.8	3 typ.	≤16.5 m	Up to 256 PON total splitter

*Can be used to test PON drop fiber or single splitter line with up to 16 split depending on dynamic range

**PON optimized OTDRs are specifically designed and built for cascade PON networks with 3 balanced splitter or numerous unbalanced splitters or Taps

Order #	Additional Options
499-05-638	V-Scout Link Mapper (Standard Option for PON OTDR)
Z06-00-008P	DI-1000 Video Fiber Scope, USB 2.0 version w/PC connectors (1.25 mm, 2.5 mm, LC and SC/FC)
Z06-00-053P	DI-3000 WiFi Digital Fiber Inspection Microscope kit for Single and Multi-Fiber Connectors including standard accessories

Additional optical configurations available upon request with a maximum dynamic range of 46 dB for single mode lasers. Consult factory.

General Specifications

Dimensions	150 x 150 x 70 mm (5.9 x 5.9 x 2.75")
Weight w/battery	0.86 kg (1.89 lbs) nominal for 2 lasers
Weight w/battery	1.04 kg (2.25 lbs) nominal for 3 lasers
Drop Test	1 meter flat drop
Battery	10 Ah smart Li-Poly battery
Battery Autonomy	>9 hours continuous operation
Operating Temperature	-10˚C to 50˚C (14˚F to 122˚F)
Storage Temperature	-40˚C to 60˚C (-40˚F to 140˚F)
Altitude	3000 meters
Humidity	0% to 95%, non-condensing
Display	5" TFT 800 x 480 color touchscreen LCD
Interfaces	Micro-B USB 2.0 OTG
	USB A 2.0 via OTG cable
	10/100Base-T via OTG adapter (optional)
	Built-in: WiFi 802.11b/g/n (optional),
	Bluetooth (optional)
AC Adaptor	Input: 100-240 VAC (50/60 Hz), 1.5A max
	Output: 12 VDC
Memory	Internal 8 Gbyte micro SD card
Languages	English, French, German, Spanish, Chinese, Japanese
	(others supported on demand)
Certifications	CE & ROHS compliant
Safety Standards	FX150+ OTDR - IEC 61010-1, Class III (GOST 12.2.091)
	AC adaptor - IEC 61010-1, Class II (GOST 12.2.091)