

TX300s OTDR

Fiber Optics Test Option



The Fiber Optics test option for the VeEX® VePAL TX300s adds a full range of Optical test features that support OTDR, OPM, Light Source and VFL. Together with Advanced OTN, SDH/SONET, PDH/DSn, Ethernet, Fibre Channel, and Synchronous Packet Networks support, the TX300s offers a complete network test solution from physical layer up to higher layers of multi-service performance testing.



Platform Highlights

Software

- Available in the Automated Testing configuration (100GX + OTDR)
- Flexible software architecture supports dual test applications running simultaneously
- Fiberizer® Desktop+ PC software for fiber trace analysis
- Fiberizer Cloud based trace analysis and data management
- R-server support for centralized work force management and test results repository

Hardware

- High resolution, 7" full color TFT touch-screen viewable in any lighting condition
- Connectivity via 10/100Base-T Management interface, WiFi™, or Bluetooth® for back office applications
- Intelligent fan operation with built-in temperature sensor
- Interchangeable Li-ion battery pack for extended test time
- USB-A Interface for USB flash drives and fiber inspection probe connection
- Universal 2.5 mm optical interfaces with inter-changeable optical adaptors (SC/FC/ST/LC) options
- Optional built-in GNSS/GPS module for geotagging OTDR traces

Key Features

Optical Testing

- Singlemode wavelength test options - 1310, 1490, 1550, 1625 and 1650 nm
- Filtered 1625 nm or 1650 nm OTDR port for in-service measurements
- Live fiber detection with embedded power meter for unfiltered OTDR port
- High dynamic range (up to 45 dB) for long haul fibers
- Sampling points up to 500,000
- Event dead zone 0.8m typ, attenuation dead zone 3m typ
- Telcordia GR-196 and SR-4731.sor file formats
- Optional V-Scout mode – Smart Link Mapping using intuitive icons derived from multiple test acquisitions
- Optional built-in Visual Fault Locator, Optical Power Meter and Light Sources
- Optional Fiber Inspection Scope (USB)

Multi-Service Testing

This factory-installed OTDR option can be combined with the TX340sm or TX300s-100GX modules, making the TX300s platform a well-rounded integrated test solution for construction, validation, diagnostics, troubleshooting, repair, bring-into-service, QoS and QoE for campus, data center, metro, core and transport applications. Refer to their respective datasheets for details.

Optical Time Domain Reflectometer (OTDR)

Intuitive Test Setup

An intuitive menu structure offers simple test setup for novice and expert users alike. Test parameters can be configured manually by the user or set automatically by the unit.

Several wavelength combinations covering both multimode and singlemode applications are available, including short haul, FTTH, Metro and Long Haul networks.



Analysis Thresholds

User defined thresholds for splice loss, connector loss, fiber lengths and reflectance can be preset to assess a fiber's condition. Color coding used in the event table will display events exceeding Pass/Fail thresholds and alert technicians of a potential problem.



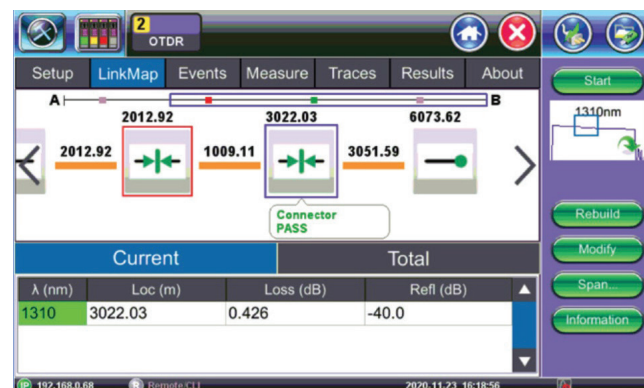
Accurate Event Analysis

Reliable event detection and accurate analysis are crucial to document fiber links properly at the time of installation. These baseline records are essential to troubleshooting faulty fiber networks and reducing system downtime afterwards.



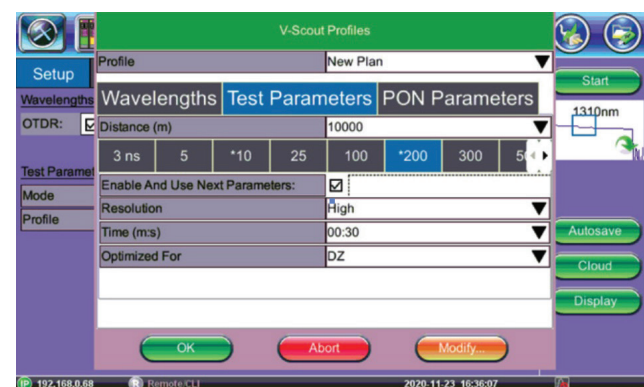
V-Scout Link Mapping

Advanced algorithms evaluate separate acquisitions and characterize the fiber span using intuitive symbols. Each individual acquisition can be customized and user defined as a test profile depending on network type or application. This optional feature eliminates event interpretation and provides greater analysis confidence to the user, regardless of OTDR skill set.



V-Scout Profiles

V-Scout custom profiles put the operator into the driver's seat. Users can now build their own custom V-Scout Test Plan and optimize it for their specific project using the automated V-Scout Profiles test mode. Select a maximum test range and V-Scout Profiles will list available pulse widths.



Live Fiber Check

The OTDR port also functions as an integrated power meter to detect optical power levels. This feature warns the user when the OTDR is connected to a fiber carrying live traffic thus preventing any possible service interruption.

Latency Measurement

VeEX OTDRs can be used to measure latency in a fiber span. Latency is the time it takes for the signal to travel from point A to point B. Within the optical fiber itself, latency is dependent upon the refractive index and remains relatively constant at a specific optical wavelength. These fiber properties allow data center operators, especially those providing co-location services to the financial sector, to "calibrate" and optimize optical links to ensure uniform latency among all customers.

Fiber Inspection Scope

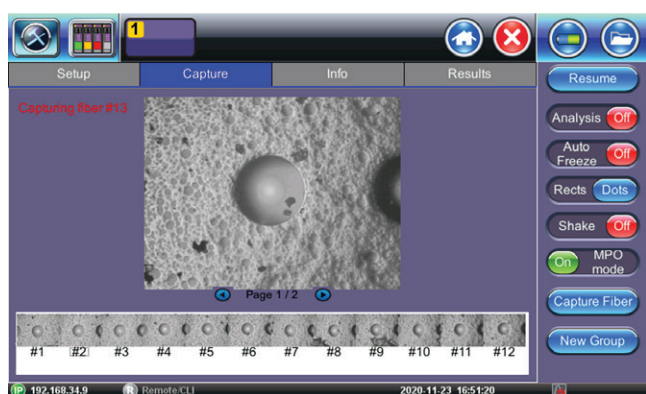
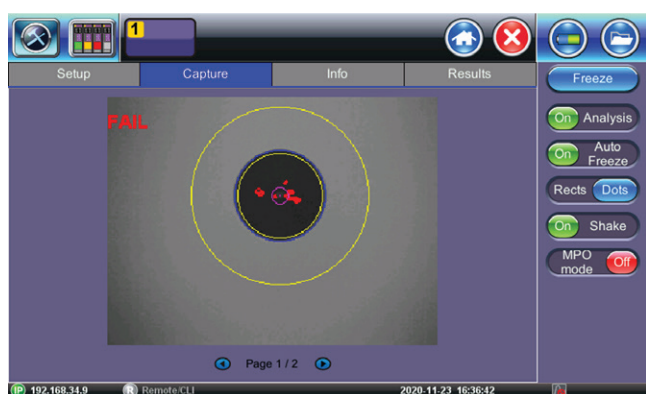
Dirty or damaged optical connectors can lead to serious problems and often account for a large percentage of network failures. Furthermore, bad scratches to the ferrule end face can impact transmission quality because large optical reflections produce bit errors in high data rate systems.

Connector end faces can be viewed safely and images can be captured and stored for future reference. A Pass/Fail analysis function evaluates the connector condition and automatically inspects the end face for defects and scratches in accordance with the IEC61300-3-35 standard.

DI-1000 - USB powered wired fiberscope for simplex and ribbon cable testing; manual focus with external MPO tip with controls.

DI-1000MPO - USB powered wired fiberscope for simplex and ribbon cable testing; manual focus with built-in controls for ribbon cable inspection.

DI-3000 - Wired fiberscope with autofocus for simplex connector inspection; manual focus with external MPO tip with controls. WiFi option not supported by TX300s chassis.



DI-1000



DI-1000MPO



DI-3000



Visual Fault Locator (VFL)

The optional Visual Fault Locator is a useful tool to identify poor connections, bad fusion splices and macrobends in fiber management closures. Operating at 650 nm, this visible source offers up to 5 km (3 miles) of range.

Optical Light Source (OLS)

The OTDR port can also operate as a stabilized light source for loss testing. The output supports WaveID which automatically sets the wavelength when paired with VeEX optical power meters. The source can also be modulated for use with industry standard fiber identifiers.

Optical Power Meter (OPM)

An optional Optical Power Meter (OPM) can be fitted to measure absolute or relative optical power levels. The OPM incorporates a highly sensitive and stable InGaAs detector with six calibrated wavelengths providing accurate level measurements from +10 to -65 dBm. A high power version is available for CATV applications for levels ranging from +25 to -50 dBm.

WaveID

The OPM employs WaveID, a unique wavelength detection system common to most VeEX optical test products. Using WaveID, the OPM automatically recognizes a single or multi-wavelength signal transmitted by another VeEX optical tester connected to the far end of the link under test. The OPM measures the level at the corresponding wavelength automatically, eliminating setup errors and saving test time.

Test Results

OPM test data can be saved to internal memory using the same file-naming convention applied to OTDR traces. Saved files can be printed directly to pdf or exported to a PC for offline report generation.



Switchable Adapters

The OTDR and OPM interfaces accept VeEX thread-on adapters, which can be swapped out in a matter of seconds. The UCI (Universal Connector Interface) and removable adapters interface with a variety of industry standard connector styles fitted with either angled or non-angled connector versions. A protective dust cap to protect the adapter from dirt and other contaminants is also included.



OTDR Trace Analysis and Documentation

Fiberizer® Desktop+

Fiberizer Desktop+ is a standalone PC software application to analyze traces acquired by the TX300s OTDR. Supplied as a standard accessory, Users can edit traces manually, create event tables, generate reports using built-in templates and much more. This viewer displays trace files conforming to Telcordia (Bellcore) GR-196 & SR-4731 *.sor formats, and offers both 2-point and 5-point loss measurement modes. It also supports batch processing, a very useful feature for analyzing multiple fibers in a single cable. The software does not require Internet access to operate, but it can be interfaced with Fiberizer Cloud OTDR trace viewer at any time.

Work from Anywhere, Anytime

Fiberizer® Cloud

Fiberizer Cloud, powered by Optixsoft, not only empowers the OTDR, but also the Workforce. Going way beyond traditional OTDR reporting methods or concepts, this cloud-based solution provides superior centralized test data management capabilities including powerful web based trace analyses. You can work from almost anywhere, at anytime because Fiberizer Cloud is a full online web service.

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. Bi-directional analysis of OTDR traces, tested from both ends of the optical fiber, can also be performed.

Fiberizer Cloud Connectivity

Pair the TX300s OTDR Multiservice tester via Bluetooth to a mobile Smartphone, Laptop or Tablet PC and efficiently upload OTDR test data directly to the Cloud server using any available wireless technology (3G, WiFi).



Total Compatibility

Based on Microsoft Silverlight technology, Fiberizer Cloud is compatible with both Windows and MacOS browsers, not limiting users to PC platforms only. OTDR trace files in Telcordia (Bellcore) GR-196 & 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.

Optical Connector Protector (Hardware Option)



Optical Connector Protector



Replaceable Ferrule



*Optical Protector Cover
(optional)*

1 Patent pending
2 Spare ferrules available in
pack of 4 for APC or UPC

The innovative, patent pending field-replaceable optical ferrule system¹ adds an extra layer of protection to the internal end-face of calibrated optical test ports, preventing contamination and accidental damage.

Users can quickly replace the ferrule² without the need for any tool while maintaining the integrity of the instrument's factory calibration. This novel approach eliminates the downtime, logistical hurdles and high cost associated with sending test sets to a service center for repair and recalibration.

All components in the system are reusable, with the exception of the small replaceable ferrule, helping to reduce environmental waste.

Field-Replaceable Optical Ferrule System

Universal Adapter

The universal connector adapter allows users to change the optical connector type conveniently whenever needed. Available in FC, SC, ST and LC.

Locking Ring

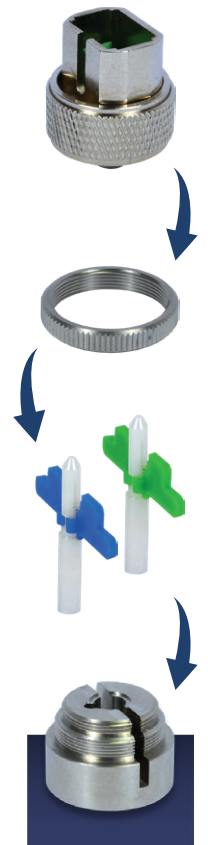
To secure the replaceable ferrule at its optimum location for the best performance.

Replaceable Ferrule with APC or UPC End-face

The self-aligned field-replaceable ferrule can be changed out in seconds. Users can select between APC or UPC end-face, ensuring compatibility with any test application requirement.

Optical Connector Protector Base

The panel mount protector base is made from high-grade stainless steel using a precision CNC process. This achieves proper alignment of the replaceable ferrule, minimizing insertion loss.



Optical Specifications¹

		Singlemode
Wavelength (± 20 nm) ²		1310/1490/1550/1625/1650 ³
Laser safety class (21 CFR)		Class 1
Dynamic range ⁴ (dB)		Refer to ordering guide
Display range (dB)		0.1 to 54.165
Event dead zone ⁵ (m)		Refer to ordering guide
Attenuation dead zone ⁶ (m)		Refer to ordering guide
Distance range ⁷ (km)	TX340s	0.5 to 400 km
	TX300s/320s	1 to 400 km
Distance units		Meter, km, feet, kfeet, or mile
Readout resolution (m)		0
Sampling resolution (m)	TX340s	0.03 to 16
	TX300s/320s	0.16 to 7
Sampling points	TX340s	Up to 500,000
	TX300s/320s	Up to 128,000
Distance uncertainty ⁸ (m)		$\pm(0.5 + \text{resolution} + 5 \times 10^{-5} \times L)$
Group index range		1.2000 to 1.8000 in 0.0001 steps
Linearity (dB/dB)		0.03
Loss threshold (dB)		0.0001 to 100.0000 in 0.0001 step
Loss resolution (dB)		0.001
Measurement time		Realtime, auto or user defined presets (5s, 15s, 30s, 1 min, 2 min, 3 min, 10 min)
Measurement modes		Loss (2-PT or LSA, dB/km), Reflectance, ORL, Latency
Reflectance accuracy (dB)		± 2.0
Reflectance display resolution		0.1 dB
Reflectance threshold		-0.10 to -99.9 dB in 0.1 dB step
Typical real-time refresh (sec)		0.2
Optical interface		Fixed connector or optional universal interface with interchangeable adaptors

Optical Test Options		
Visual Fault Locator (VFL)		Optional
Wavelength (nm)		650 nm ± 10 nm
Output (mW) ⁹		+1
Laser safety class		IEC 60825-1, Class II
Optical connector		Universal 2.5mm interface; Optional 2.5mm to 1.25mm converter
Optical light source ¹⁰		Optional
Wavelength (nm)		Same as OTDR wavelengths
Output power (dBm)		> -2.5
Source mode		CW, 270, 330, 1000, 2000 Hz
WaveID		Standard feature; Auto detection of OLS wavelength
Optical Power Meter ¹¹ (Optional)	Multimode	Singlemode
Calibrated wavelengths (nm)	850, 1300, 1310, 1490, 1550, 1625, 1650	
Power level range (dBm)	-60 to +3 (PM1) or -40 to +23 (PM2)	-65 to +10 (PM1) or -50 to +25 (PM2)
Accuracy, % (dB)	± 8 (0.36 dB)	± 5 (0.22 dB)
Linearity, % (dB)	± 6 (0.27 dB)	± 2.5 (0.11 dB)
Optical connector adaptor	Universal FC, SC, ST, or LC	

TX300s OTDRs

TX300S/320S OTDRs			Deadzone (m)		
Order #	Wavelength (nm)	Dynamic Range (dB)	Event	Attenuation	Applications
Singlemode - 2 Wavelengths					
Z66-00-182P	1310/1550	36/34	<1m	<4m	Short/Medium haul, wireless fronthaul and backhaul
Z66-00-137P	1310/1550	39/36	<1m	<4m	Short/Medium/long haul
Z66-00-141P	1310/1550	43/43	<1m	<5m	Short/very Long haul
Z66-00-145P	1310/1550	45/44	<1m	<5m	Short/very Long haul
Singlemode - 3 Wavelengths					
Z66-00-138P	1310/1490/1550	39/35/36	<1m	<4m	Short/Medium haul, wireless fronthaul and backhaul
Z66-00-139P	1310/1550/1625	39/36/39	<1m	<4m	Short/Medium haul, wireless fronthaul and backhaul
Z66-00-142P	1310/1490/1550	43/38/43	<1m	<5m	Short/Medium haul
Z66-00-143P	1310/1550/1625	43/43/39	<1m	<5m	Short/Long haul
Z66-00-146P	1310/1550/1625	45/44/41	<1m	<5m	Short/very Long haul, wireless fronthaul and backhaul
Singlemode - In-Service Testing					
Z66-00-140P	1310/1550//1625 (F)	39/36//39	<1m	<4m	Short/Medium/Long haul Networks
Z66-00-167P	1310/1550//1650 (F)	39/36//39	<1m	<4m	Short/Medium/Long haul Networks
Z66-00-144P	1310/1550//1625 (F)	43/43//39	<1m	<5m	Short/Long Networks
Z66-00-147P	1310/1550/1625 (F)	45/44//41	<1m	<5m	Short/very Long Networks

TX340 OTDRs	OTDR Configurations		Deadzone (m)		
Order #	Wavelength (nm)	Dynamic Range (dB)	Event	Attenuation	Applications
Singlemode - 2 Wavelengths					
Z66-00-283P	1310/1550	38/36	0.8 typ.	3 typ.	Short/Medium haul, wireless fronthaul and backhaul
Z66-00-245P	1310/1550	40/38	0.8 typ.	3 typ.	Short/Medium/long haul
Z66-00-274P	1310/1550	43/43	0.8 typ.	3 typ.	Short/very Long haul
Z66-00-278P	1310/1550	45/44	0.8 typ.	4 typ.	Short/very Long haul
Singlemode - 3 Wavelengths					
Z66-00-271P	1310/1490/1550	39/35/36	0.8 typ.	3 typ.	Short/Medium haul, wireless fronthaul and backhaul
Z66-00-272P	1310/1550/1625	39/36/39	0.8 typ.	3 typ.	Short/Medium haul, wireless fronthaul and backhaul
Z66-00-275P	1310/1490/1550	43/38/43	0.8 typ.	4 typ.	Short/Medium haul
Z66-00-276P	1310/1550/1625	43/43/39	0.8 typ.	4 typ.	Short/Long haul
Z66-00-279P	1310/1550/1625	45/44/41	0.8 typ.	4 typ.	Short/very Long haul, wireless fronthaul and backhaul

Notes

1. Unless noted, all specifications are valid at 23°C ±2°C (73.4°F ±3.6°F) using FC/UPC 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. SM Filter passband and isolation: 1625nm isolation >30 dB from 1270 to 1585 nm; 1650 nm isolation >30 dB from 1270 to 1610 nm.
4. Typical dynamic range using longest pulse and three-minute averaging is the difference between extrapolated backscatter level at the start of test fiber to SNR = 1 reflective end.
5. Typical 1310 nm SM for reflection -45 dB singlemode, using 3 ns pulse measured 1.5 dB down from either side of the peak of an unsaturated reflective event.
6. 3m typ. with reflectance -55 dB at 1310 nm and 0.5 dB above linear regression.
7. Distance display auto-scale setting for FUT.
8. Does not include uncertainty due to fiber refractive index (IoR) setting.
9. +1 mW using SMF
10. OLS shares the sme test port as the OTDR.
11. mm specifications are improved if EF conditioner used in measurements.

TX340 OTDRs	OTDR Configurations		Deadzone (m)		
Singlemode - In-Service Testing					
Z66-00-273P	1310/1550//1625 (F)	40/38//39	0.8 typ.	3 typ.	Short/Medium/Long haul Networks
Z66-00-277P	1310/1550//1625 (F)	43/43//39	0.8 typ.	3 typ.	Short/Long Networks
Z66-00-280P	1310/1550/1625 (F)	45/44//41	0.8 typ.	4 typ.	Short/very Long Networks
Z66-00-281P	1310/1550//1650 (F)	40/38//39	0.8 typ.	3 typ.	Short/Long haul Networks

Ordering Information

Order #	Additional Options
Z66-00-149P	Standard OPM, +10dBm to -65dBm, incl. one set of FC and SC adaptors
Z66-00-150P	High Power (CATV) OPM, +25dBm to -50dBm, incl. FC and SC adaptors
Z66-00-148P	VFL, 1mW, equipped with universal 2.5 mm receptacle with dust cap
Z66-00-287P	Light Source, shares optical connector with OTDR port
499-05-638	V-Scout Link Mapper
Z06-00-008P	DI-1000 Video Fiber Scope, USB 2.0 Version w/PC connectors (1.25mm, 2.5mm, LC and SC/FC)
Z06-00-040P	DI-1000MPO Digital Fiber Inspection Microscope kit for Single and Multi-Fiber Connectors including standard accessories
Z06-00-043P	DI-3000 Video Fiber Scope, WiFi/USB 2.0 version including standard tips



VeEX Inc.
 2827 Lakeview Court
 Fremont, CA 94538 USA
 Tel: +1.510.651.0500
 Fax: +1.510.651.0505
 www.veexinc.com
 customercare@veexinc.com

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