

FX120 Lite

PON Analyzer



The FX120 Lite is a PON analyzer that supports the ONT service activation process while certifying downstream and upstream PON levels and ONT status for GPON and/or XG(S)-PON coexistent networks. Optional EPON and/or 10G EPON allows for verification of OLT MAC, ONU LLID, ONU Mac, and ONU status. Optional Fault Locator feature allows for verification of drop cables. Optimize testing and report compilation with NoApp® and Flow™.

Product Highlights

- Compatible with GPON, XG(S)-PON, EPON, 10G EPON networks
- Pass-through selective wavelength PON meter for ONT/ONU service verification
- Pass/Fail ITU-T/IEEE thresholds enable fast, efficient, and consistent turn-up of services
- Fault Locator - End of Fiber detection (option)
- Simple and intuitive user interface
- Flow™ for efficient testing and report compilation process
- NoApp® QR code capability for faster result transfer
- Easy report generation and data transfer using R-Server for workflow and results management
- Test set connectivity via micro-B USB and optional built-in WiFi and Bluetooth® wireless interfaces; USB-A and LAN interfaces available via OTG cables
- Remote access/control via web browser and VNC® client. Compatible with VeEX EZ Remote collaboration services.
- Field upgradeable or result transfer using USB stick
- Fiber tool accessory options: OPX-BOXe OTDR, DI-1000/1000MPO/3000 Fiber Scope and FX40/45/80 series OPM
- Fast boot and ready to test in <60 seconds
- Field replaceable Li-Ion battery pack with >12 hour autonomy
- 5-inch LCD color touch screen
- Rugged and compact form factor

Key Features

Basic Mode

- Wavelengths: 1270/1310/1490/1577 nm
- Upstream/downstream LED status indicators for signal and frame status; TC-SYNC status
- ITU-T/IEEE standards
- Low insertion loss: ≤1.5 dB typ.

GPON/XG(S)-PON

- Automatic PON-ID detection including OLT-ID, ODN class, OLT TX power level and ODN link pass/fail per ITU-T
- ONU/ONT ID, ONU/ONT serial number and status per ITU-T

EPON/10G EPON (Option)

- Automatic OLT MAC detection
- ONU LLID, ONU MAC and ONU status per IEEE

Advanced Function Mode

- Track/manage active ONT IDs and serial numbers
- PLOAM DS capture/decode
- OC decode
- Super PM - Advanced Splitter and Distribution Cabinet Analysis (option)
- Flow™ report compilation
- NoApp® QR code capability

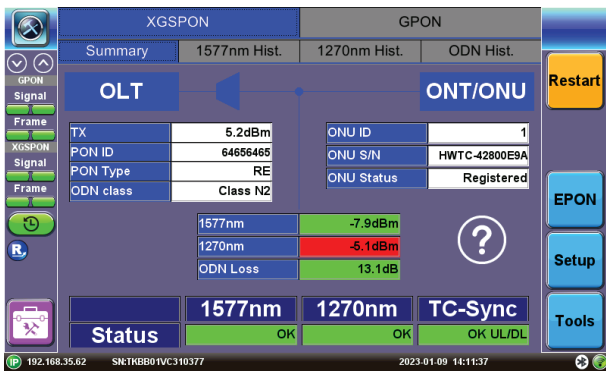
PON Standard Compliance

- G-PON (ITU-T G.984.2)
- XG(S)-PON (ITU-T G.9807.1)

Passive Optical Network Test Set GPON and XG(S)-PON

Basic In-Service Qualification Mode

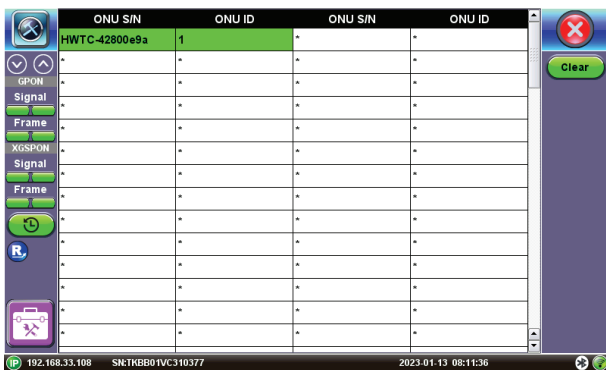
Service activation should be EASY. Simply insert the FX120 PON test set at the customer premises between the ONU/ONT and the last splitter in the ODN. In the OPM Summary view, LEDs indicate if upstream/downstream signals are present and frame quality. PON-ID information such as OLT-ID, OLT TX power and PON class are shown. When TC-Sync is achieved, the technician can verify the ONU-ID and Serial Number and ONT status. Signal levels and ODN Loss will indicate Pass/Fail per ITU-T or user defined limits. If laser instability is suspected, the technician can also monitor signal/ODN loss budget history to verify signal stability over time.



Advanced PON Functions

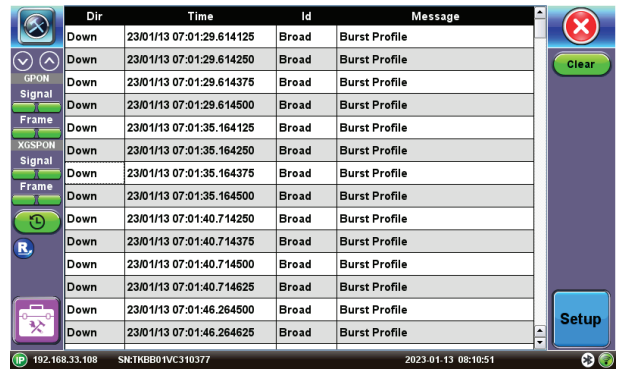
Even when signal levels are good, service quality may still be poor. A Tier2 technician/engineer can remotely connect into a test set to assist the local technician by using advanced features.

- Active PON and XG(S)-PON ONU listing
- PLOAM and XG(S)-PON PLOAM decoder
- OC decode



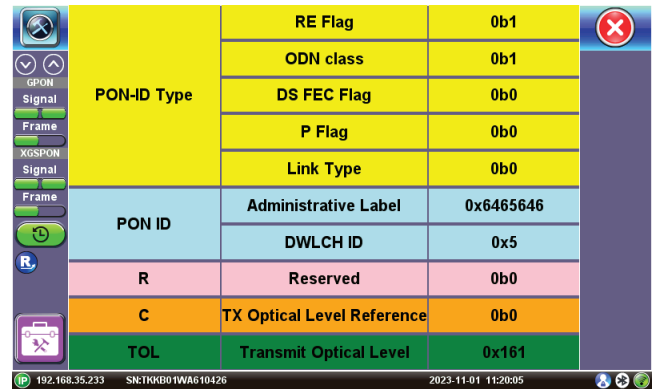
PLOAM Capture/Decode

The PON tester captures and decodes PLOAM messages. PLOAM will display the activation process showing the message exchange from OLT to ONT. The PLOAM messaging can also be used to determine OLT commands to ONT including ONT disconnect commands. Use Setup to filter out unwanted messages to streamline your work.



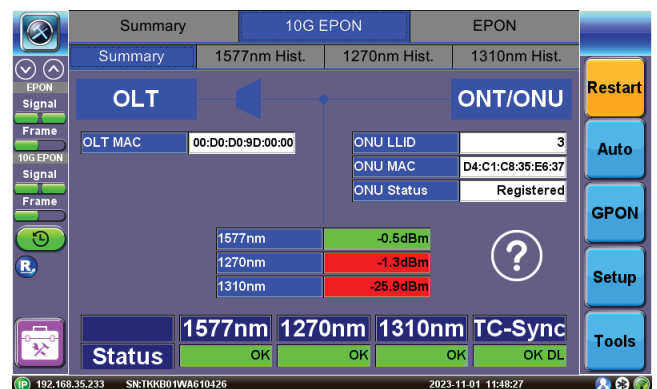
OC Decode

To help services technicians verify their PON network accuracy, OC Decode is included to help monitor and break down the information that is sent from the OLT. Colorcoded for visibility, it is broken down by PON-ID Type, PON ID, Reserved, TX optical Level Reference, and Transmit Optical Level.



Passive Optical Network Test Set EPON and 10G EPON

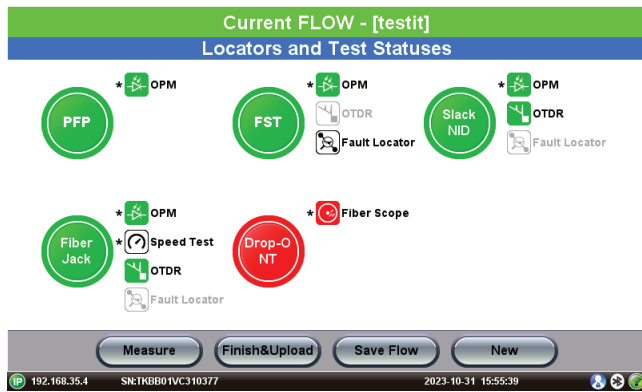
Similar to testing the GPON and XG(S)-PON networks, simply insert the FX120 PON test set at the customer premises between the ONU/ONT and the last splitter in the ODN. On the OPM summary screen, LEDs are shown to indicate upstream/downstream loss of signal and frame status. PON information such as OLT MAC is displayed once connected to the OLT. When TC-Sync is achieved, technicians can then verify their ONU LLID, ONU MAC and ONU status. Signal levels will indicate pass/fail per IEEE or user defined thresholds. Advanced EPON Function includes Active ONU listing.



Advanced PON Features

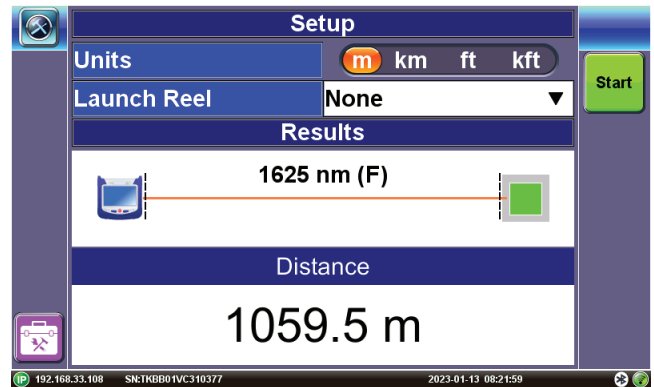
Flow

An advanced work process optimization tool, Flow is a sophisticated feature engineered to facilitate operational efficiency. It offers robust capabilities to define a roadmap, execute batch testing, and generate detailed reports with minimal effort. Flow is designed to streamline complex workflows, enhance task optimization, and expedite result-sharing. It's the ideal solution to simplify your system, improve productivity, and maintain compliance standards.



Fault Locator

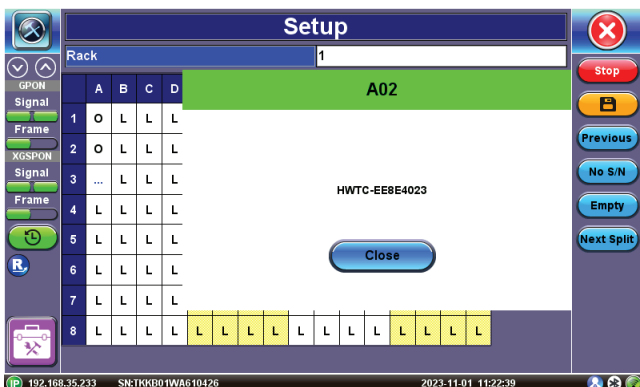
During service activation, most technicians need to be able to measure short fibers links and drop cable fibers for PON, 5G rollout, and FTTH applications. With the built in optional fault locator, users can plug in a drop fiber and find the end of the fiber, or up to the first event. Having a measuring range between 10 m to 20 km, users can find the EOF for most drop cables.



Super PM - Advanced Splitter and Cabinet Analysis

Advanced Splitter and Cabinet analysis is a wizard allowing the field technician to do a full survey of a street cabinet by identifying all the ONTs by serial number and locating each ONT - both on the splitter side and on the distribution panel. The operator can fully update their database according to the field reality from one result file, fixing all the discrepancies caused by massive undocumented changes in the field.

The process is secured with libraries and graphical display, limiting the risk of errors. The user can also bind each ONT to their operator when several operators share the same street cabinet, allowing a full audit.



Fiber Optic Tools

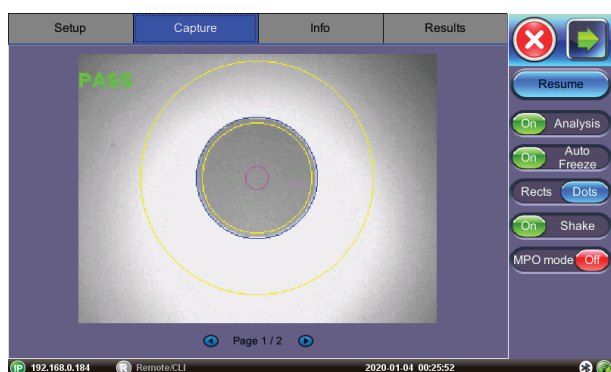
Digital Fiber Inspection Scope

End-face contamination is the leading cause of fiber link failures. Dirty/damaged connectors can increase loss and return loss resulting in poor service quality. Contamination can transfer and damage other connectors through mating. Inspecting and cleaning patch cords and pluggable optics connectors before mating them is always recommended.

This option allows digital video microscope probes to be connected directly to the test set through a USB port or WiFi. Featuring live video feed on the screen for visual analysis, it offers clear image capture, compare (before and after), IEC 61300-3-3 Sect 5.4 Pass/Fail templates for SMF and MMF, save, export and generate report to USB flash drives.

- Auto-focus detection and analysis option
- Analysis per IEC 61300-3-3
- SMF and MMF templates (core, cladding, adhesive and contact areas)
- Dots or square to highlight contamination, debris, and scratches
- Report generation

**Fiberscope sold separately. See datasheet for details.*



OTDR Viewer

Built-in OTDR Viewer and Client application provides full post-analysis of SOR traces, as well as control of an ultra-compact OPX-BOX OTDR via direct USB connection, WiFi or Bluetooth®. Once paired or connected to the micro OTDR, the test set displays a virtual OTDR user interface that is used to control the OPX-BOXe and perform measurements.

- Traces and Events table view
- Loss calculations
- V-Scout Link Mapper option
- Compatible with Fiberizer Cloud (upload and download)
- Controls external OPX-BOXe OTDR

Since fibers are commonly placed in access, metro, and transport networks, having a companion add-on OTDR to inspect drop fiber reduces dependence on specialized fiber construction crews troubleshooting fiber related problems.

VeSion® R-Server™ Client

Part of VeEX's VeSion centralized monitoring and management solutions, the R-Server Workflow and Asset Management system provides crucial tools to manage fleets of technicians, test equipment, standardized test profiles, thresholds, centralized test results collection, reporting, jobs/ticketing, and software update delivery to create coordinated and efficient disciplined workforce and test procedures. R-Server enhances the workflow to achieve the level of quality and repeatability required by telecommunications service providers, MSOs and their contractors. The flexible R-Server can be deployed in cloud, hosted, and corporate networks, on physical or virtualized servers.

Makes the job simpler for field technicians as they can download test profiles and upload test results. Supervisors can preset and upload test parameters which are provided to the test sets as profiles. Technicians can simply download profiles, run tests, and upload results to a centralized system that stores and secures the data.

Platform Features & Options

Remote Access

The test set offers multiple ways to Remote Control it or access the information remotely (e.g. test results, test profiles, etc.). The test set can be reached via:

- Built-in web browser software (Web Remote Control)
- EZ Remote
- VNC® Client
- Connectivity: Optional 10/100Base-T, WiFi 802.11 b/g/n

EZ Remote

The EZ Remote functionality allows users to quickly connect to VeEX test sets all over the world, without the need for VPN, port forwarding or public IP addresses. This VeEX hosted cloud service takes care of all the complex tasks required, and presents users with a simple application. Connect online anytime, anywhere, with any computer, tablet, or smartphone, using standard web browsers for screen-sharing, remote control and access to test results. Use it for remote control, collaboration, technical support or training purposes.

- Remote Control functionality gives users full control of remote test sets (screen mirroring and control)
- Remote Access functionality allows users to View, Download, Rename, Delete, Convert to PDF the test results
- No VPN required
- Works through firewalls, no ports to open
- Web browser based
- Multi-platform support
- No software to install
- Service included with test set (no extra charge)

File Manager

- Saves results to internal SD card view, rename, delete and lock result files
- Filter and sort by Name, Test Mode, Test Type, Port, Date and Result/Profile
- Report generation: Test results generate in PDF format export test results and profiles via USB memory, Bluetooth, web browser, and retrieve to/from USB
- Screen capture: Screen shots in PNG format

Optical Connector Protector (Hardware Option)



Optical Connector Protector

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.



Replaceable Ferrule



*Optical Protector Cover
(optional)*

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

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

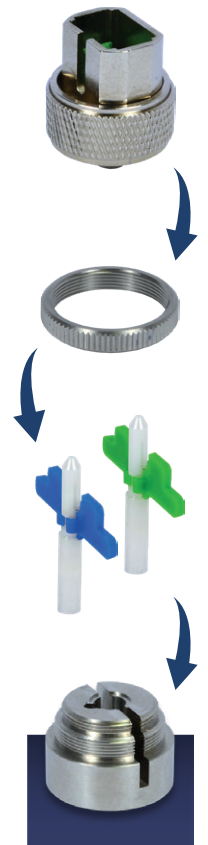
To secure the replaceable ferrule at its optimum location for the best performance.

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

FTTx Specifications		Spectral passband (nm)	Power measurement range (dBm) ⁴	Calibrated wavelength (nm)	Max power (dBm)
OLT	Downstream 1490 nm	1470-1510	-35 to 2	1490	2
	Downstream 1577-1578 nm	1572-1582	-35 to 2	1577	2
ONT/ONU	Upstream 1270 nm, burst mode	1260-1280	-27 to 12	1270	13
	Upstream 1310 nm, burst mode	1300-1320	-28 to 12	1310	
Isolation (dB)		40			
ORL (dB)		50			
Pass-through insertion loss (dB) ²		≤1.5			
Power uncertainty (dB) ³		±0.5			
Auto Pass/Fail levels by Class or user threshold		ITU-T or user specified			
Fiber Inspection		Optional fiberscope via OTG cable			

ITU-T PON Data Analysis	
ONT serial numbers identification	Standard offering
PON identification ⁵ (OLT-ID, OLT-Class, OLT-Tx, ONU/ONT SN)	Standard offering
Active ONU/ONT List	Standard offering
PLOAM Decoder	Standard offering

Fault Locator (option)	
Wavelength (nm)	1625 ± 10 nm
Passband (nm)	1610 to 1680
Filter Isolation	50
Distance Range ⁶ (dB)	10 m to 20 km
Distance Measurement Accuracy (m) ^{7,8}	±(1 + .01 x L)
Laser Safety	Class 1 per 60825-1:2014 edition

Notes:

1. At 23°C ± 3°C using SC/APC
2. Measured at 2 dBm
3. Measured at -10 dBm
4. Data recovery range is reduced but meets ITU-T standards
5. Requires activation of PON-ID functionality in PON system per ITU-T G.984.3 Amd 3
6. 10m distance range assuming initial reflection at most -55dBm
7. For fiber length <10km and reflectance ≥-42 dBm with refractive index 1.468.
8. For non-reflectance, distance measurement accuracy can be up to ±2.5%.

Ordering Information

P/N	Description
PON Analyzer Models	
Z06-05-091P	FX120-Lite GPON and XG(S)-PON Analyzer, 1270/1310//1490/1577 nm
Z06-05-101P	FX120-Lite EPON and 10G-EPON Analyzer, 1270/1310//1490/1577 nm
PON Software Options	
499-05-896	EPON and 10G-EPON Protocol Support (for GPON and XG(S)-PON Analyzer)
499-05-945	GPON and XG(S)-PON Protocol Support (for EPON and 10G-EPON Analyzer)
499-05-865	Super PM - Advanced Splitter and Cabinet Analysis
499-05-882	OPM Mode Setting (Advanced if off)
Hardware Options	
Z66-00-106G	WiFi and Bluetooth for Remote Control and File Transfer
Z66-00-339P	Optical Fault Locator, 1625 nm (F), 10m to 20 km, Fixed SC/APC
Z66-00-349P	Optical Fault Locator, 1625 nm (F), 10m to 20 km, Fixed SC/UPC

General Specifications

Storage	Internal 16 GB flash	Battery	56 Wh smart Li-Ion battery
Connectivity	Built-in: WiFi 802.11b/g/n (optional), Bluetooth® (optional) micro-B USB 2.0 OTG USB A 2.0 via OTG cable	Battery Autonomy	Application dependent (>12h idle)
Languages	Multiple languages supported	AC Adaptor	Input: 100-240 VAC, 50/60 Hz, 1.5A Output: 15 VDC, 4A
Size (H x W x D)	150 x 150 x 80 mm (5.9 x 5.9 x 3.15")	Operating Temperature	-5°C to 45°C (23°F to 113°F)
Weight	1.0 kg (2.2 lb)	Storage Temperature	-25°C to 55°C (-13°F to 131°F)
		Humidity	0% to 95% non-condensing
		Certifications	CE & ROHS compliant



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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