

## NOYES® FLX380-30x FlexTester3 OTDR

**NEW**



### Features

- 3rd generation hand-held, all-in-one OTDR, OLS, OPM, VFL
- Patented in- or out-of-service testing from a single port
- 42/42 dB dynamic range @ 1310/1550 nm; test up to 1x128 PON
- Industry-leading 0.8/2.5/30 m event / attenuation / PON dead zones
- **ServiceSafe™** live PON detection and OTDR test without service disruption
- Integrated OLS/OPM with **Wave ID** reduces test time 80% and eliminates setup errors
- Rugged, hand-held and lightweight (<1 kg)
- High-contrast display: clear and bright, even in direct sunlight
- Industry leading battery life: over 12 hours operation from a single charge
- It's all about speed: with Instant On, you're ready to test in <5 sec

### Applications

- Certify new FTTx PON or point-to-point fiber installations, including splice, splitter and connector loss and reflectance, end-to-end length, loss and optical return loss (ORL).
- Troubleshoot live FTTx PONs, including live PON detection and PON power measurements plus live PON OTDR testing at 1625 or 1650 nm.
- Complete multi-wavelength end-to-end insertion loss tests faster and eliminate setup errors using AFL's Wave ID loss test feature.
- Generate stable optical source signals (CW, Wave ID or fiber-identifying tones) using the integrated Optical Laser Source.
- Trace fibers or locate fiber bends or breaks using the VFL (visible red laser).

The NOYES FLX380 FlexTester3 is the world's smallest, lightest, most complete single mode fiber optic test set. It combines high-performance, multi-wavelength OTDR / PON OTDR, OLS, OPM, VFL and PON Power Meter in a rugged, hand-held package.

With 42 dB dynamic range, best-in-class event, attenuation, and PON dead zones, macrobend and splitter detection, launch quality check, plus AFL's unique ServiceSafe and Wave ID features, the FLX380 FlexTester3 Series offers an unmatched combination of optical test functions, ease-of-use, portability, and value. FlexTester3 Series is offered in four models to best suit your application requirements:

- **FLX380-304:** Verify both in-service (live) and out-of-service FTTx networks from a single port. Includes 1310/1550/1650 nm live PON OTDR with integrated PON Power Meter.
- **FLX380-303:** Similar to FLX380-304, but with 1625 nm filtered Live PON OTDR, instead of 1650 nm.
- **FLX380-302:** Complete out-of-service testing at all FTTx PON wavelengths (1310/1490/1550 nm).
- **FLX380-300:** Lowest cost, high-performance, all-in-one 1310/1550 nm OTDR for out-of-service installation testing or troubleshooting on both FTTx PON and point-to-point fiber optic networks.
- All models include integrated VFL plus Wave ID source and power meter.

Over 1000 OTDR test results (Telcordia SR-4731 .SOR file format) may be saved in the FLX380's internal 4GB memory. Stored OTDR and OPM results may be transferred to PC via USB cable or wirelessly via Bluetooth®. Windows® compatible TRM® 2.0 Basic Test Results Manager software is included for OTDR and OPM results viewing, analysis, and professional report generation.

## NOYES® FLX380-30x FlexTester3 OTDR

### ServiceSafe™ Testing on Live PONs

In FTTx PONs, it is possible for one user to lose service while other subscribers served by the same OLT continue to remain in service. Attempting to troubleshoot a faulty optical distribution and drop fiber connection from the out-of-service subscriber's location using a 1310 or 1550 nm OTDR, would disrupt service to remaining users. AFL's patented ServiceSafe feature alerts the OTDR user to the presence of live traffic and prevents the initiation of service-disrupting OTDR tests at 1310 or 1550 nm. FLX380-303 and -304 models additionally measure downstream power levels at 1490 and/or 1550 nm, and allow the user to initiate an OTDR test using a non-disruptive 1625 or 1650 nm wavelength. To eliminate unnecessary connector wear and tear, 1625/1650 nm live PON OTDR testing and PON power measurements are performed through the same optical port used for 1310/1550 OTDR testing (US patent 8,411,259).

### Fast, error-free Loss Tests using Wave ID

All FLX380s integrate an Optical Laser Source (OLS) and Optical Power Meter (OPM) supporting AFL's unique Wave ID capability. With Wave ID, the OPM automatically synchronizes to a single or multi-wavelength Wave ID optical signal sent by another FLX380, OFL280, or NOYES hand-held OLS connected to the other end of the link. The OPM automatically determines which wavelengths are sent and measures power and loss at each wavelength. There is no need for the OPM user to coordinate wavelength settings with the OLS user at the other end, saving significant test time and eliminating setup errors.

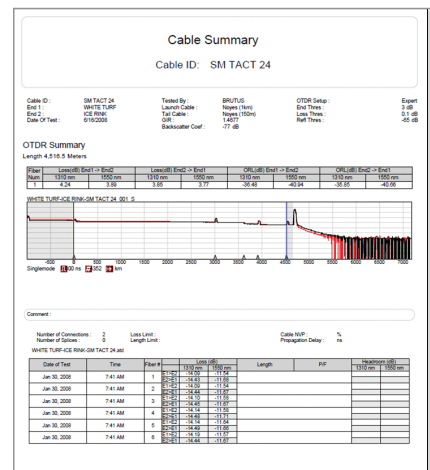
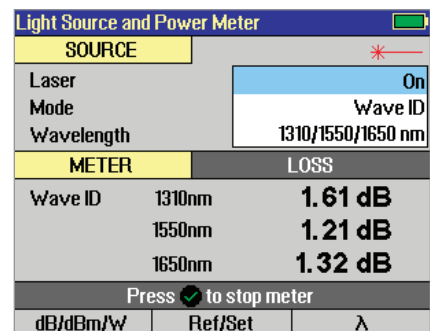
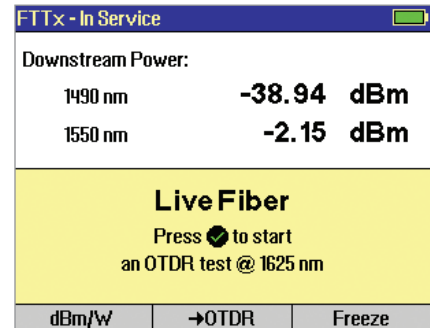
The integrated OLS and OPM also generate and detect fiber-identifying tones to enable positive fiber identification before disconnecting fibers during maintenance.

OPM results may be saved using the same file-naming convention applied to OTDR results. Saved OPM results may be recalled and viewed or uploaded to TRM for report generation.

### Create Professional Test Reports using TRM® 2.0

Stored OTDR and/or OPM results can be uploaded via USB to a PC, then viewed and analyzed using TRM 2.0 Basic Test Results Manager software included with each FLX380 FlexTester3. With TRM, users can generate professional acceptance test reports conforming to industry guidelines. TRM allows users to create customized cover pages with their company logo along with results pages showing dual wavelength traces, event tables, event map, and loss results for each fiber. A report generation Wizard makes custom report generation fast and easy.

TRM also supports OTDR trace analysis providing batch editing features, event add, modify, or delete, trace compare, and advanced event analysis capabilities. Upgrade to TRM 2.0 Advanced to add bi-directional trace averaging.



# NOYES® FLX380-30x FlexTester3 OTDR

## Features and Applications by Model

FEATURES	FLX380 MODELS			
	-300	-302	-303	-304
Compatible with all NOYES optical power meters and laser sources, including tone and Wave ID features	◆	◆	◆	◆
Compatible with NOYES optical fiber identifiers (OFI)	◆	◆	◆	◆
Integrated high-power optical power meter with Wave ID and tone detection	◆	◆	◆	◆
Integrated Visual Vault Locator (VFL with visible red laser)	◆	◆	◆	◆
1310 nm – OTDR, PON OTDR, laser source (CW, Wave ID, tone generation)	◆	◆	◆	◆
1550 nm – OTDR, PON OTDR, laser source (CW, Wave ID, tone generation)	◆	◆	◆	◆
1490 nm – OTDR, PON OTDR, laser source (CW, Wave ID, tone generation)		◆		
1625 nm – FTTx Live PON OTDR with 1625 nm filtered detector for in-service PON testing			◆	
1650 nm – FTTx Live PON OTDR with 1650 nm filtered detector for in-service PON testing				◆
FTTx PON Power Meter (Detects and measures downstream 1490 and/or 1550 nm PON power levels)			◆	◆

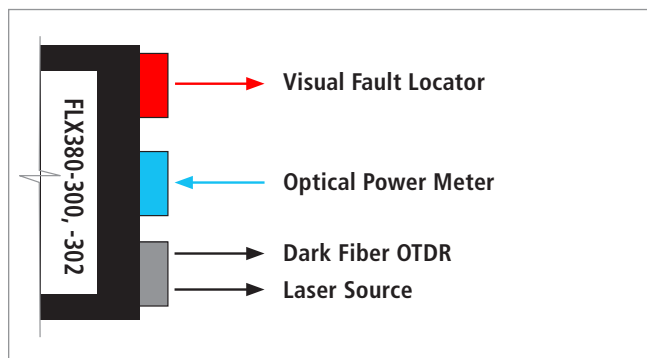
  

FIBER TESTING APPLICATIONS	FLX380 MODELS			
	-300	-302	-303	-304
<b>Point-to-point fiber optic cable installation test and troubleshooting</b> Verify end-to-end length, loss and return loss. Verify splice and connector loss and reflectance. Locate source of excess loss and/or reflections, including micro- or macro-bends.	◆	◆	◆	◆
<b>FTTx PON construction test</b> Test to or through splitters. Verify end-to-end length, loss and return loss. Verify splitter, splice and connector loss and reflectance. Locate source of excess loss and/or reflections, including micro- or macro-bends.	◆	◆	◆ <sup>a</sup>	◆
<b>FTTx customer fiber troubleshooting – dark fibers</b> Locate cable cuts, open splices, micro- or macro-bends and bad connections	◆	◆	◆	◆
<b>FTTx in-service (Live PON) troubleshooting</b> Automatically detect live PONs. Prevent service-disrupting 1310/1550 nm OTDR tests on live PONs. Locate macro bends, poor splices or high-loss connections without disrupting service to active PON subscribers.			◆	◆
<b>FTTx service turn-up (commissioning)</b> Verify PON power levels at the ONT (subscriber) location. Locate faults in distribution or drop cables, or between splitters in PONs built using distributed splitter architecture, all without disrupting service to active PON subscribers.			◆	◆

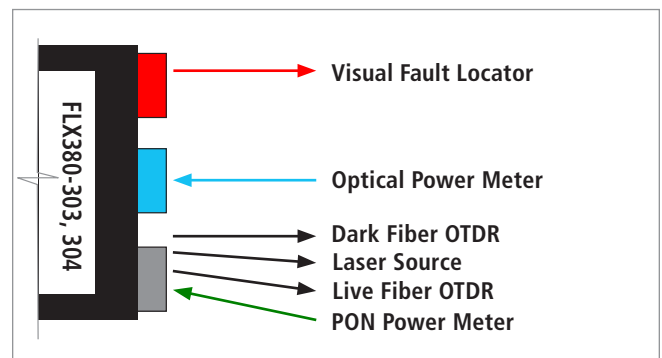
**Note:**

a. Adds 1490 nm OTDR and OLS. Testing at 1310 / 1550 nm is recommended and typically all that is needed to test FTTx PONs during construction.

### FLX380-300 and -302 models



### FLX380-303 and -304 models



## **NOYES<sup>®</sup> FLX380-30x FlexTester3 OTDR**



FLX380 FlexTester PRO Test and Inspection kit



FLX380 FlexTester in Soft Carry Case

### **FLX380 FlexTester3 Configuration Options**

All FlexTester3 kits include rechargeable, replaceable Li-Ion battery pack, AC charger with country-specific power cord, tool-free interchangeable connector adapters with dust caps, TRM 2.0 Basic Test Results Manager software, USB cable, and a quick reference guide in any one of the supported languages. FLX380 FlexTester3 is available in three different kit options.

### **FLX380 FlexTester3 PRO Test and Inspection Kit**

FlexTester3 PRO Test and Inspection kits combine a FLX380 with a NOYES FOCIS PRO Fiber Optic Connection Inspection System and selected cleaning supplies. FOCIS PRO includes the DFS1 Digital FiberScope, hand-held DFD1 Touchscreen Tablet for viewing connector end-faces, plus UPC or APC inspection adapter tips (depending on selected OTDR ferrule type). It enables inspection of both the ferrule ends of male connectors and the end-faces of connectors mounted inside bulkhead adapters on equipment panels. FOCIS PRO includes image capture, save, AFL's unique image-pairing capability, plus IEC and user-adjustable pass/fail analysis. FlexTester3 PRO kits also include One-Click cleaners for common 2.5 and 1.25 mm connectors, along with cleaning fluid and cleaning sticks for more stubborn contamination.

With the FOCIS PRO's dedicated Touchscreen Tablet, the FLX380 is always available for OTDR and optical loss testing.

The FLX380, FOCIS PRO kit, accessories and cleaning supplies are packaged in a waterproof, rugged hard carry case. The carry case also accommodates common accessories, such as a single-mode launch fiber ring (FR1-SM) or Optical Fiber Identifier (OFI-400), ordered separately.

### **FLX380 FlexTester3 Complete FTTx Installation and Maintenance Test Kit**

Select a FlexTester3 Complete kit for an even more complete broadband network installation and maintenance test solution. FlexTester3 Complete kits combine an OFI-200D Optical Fiber Identifier and 150 m singlemode fiber ring (launch cable) with a user-selected FLX380-30x, FOCIS PRO, UPC or APC adapter tips, two One-Click cleaners and standard FlexTester3 accessories in the same rugged carry case used for FlexTester PRO kits. The carry case includes room for additional cleaning supplies and an additional fiber ring (receive cable).

FlexTester3 PRO and FlexTester3 Complete kits save money and organize and protect commonly required test sets and accessories in a single lightweight, waterproof carry case.

### **FLX380 FlexTester3 in Soft Carry Case**

FLX380 FlexTester3 kits are also available in a soft carry case, which includes the user-selected FLX380, standard accessories, and One-Click cleaner.

# NOYES® FLX380-30x FlexTester3 OTDR

## Specifications <sup>a</sup>

OTDR (POINT-TO-POINT, PON, LIVE PON)	
Emitter Type	Laser
Safety Class	Class 1 FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Fiber Type	Single-mode
Available Wavelengths	1310 / 1490 / 1550 / 1625 / 1650 nm
Wavelength Tolerance	±20 / ±20 / ±20 / ±10 / ±10 nm
Dynamic Range (SNR=1) <sup>b</sup>	FLX380-300: 42/42 dB @ 1310/1550 FLX380-302: 41/38/41 dB @ 1310/1490/1550 FLX380-303: 41/41/38 dB @ 1310/1550/1625 FLX380-304: 41/41/38 dB @ 1310/1550/1650
Event Dead Zone <sup>c</sup>	0.8 m
Attenuation Dead Zone <sup>d</sup>	2.5 m
PON Dead Zone <sup>e</sup>	30 m
Pulse widths	5, 10, 30, 100, 300 ns; 1, 3, 10, 20 µs
Range Settings	250 m to 240 km
Data Points	Up to 30,000
Data Point Spacing	5.0 cm (range <1.5 km); Range/30,000 (range >1.5 km)
Group Index of Refraction	1.4000 to 1.7000
Distance Uncertainty (m)	±(1 + 0.005% x distance + data point spacing)
Linearity	±0.05 dB/dB
Trace File Format	Telcordia SR-4731 Issue 2
Trace File Storage Medium	4 GB internal memory (>1000 traces)
Data Transfer to PC	USB cable or Bluetooth® wireless
PON OTDR Modes	To Splitter, Through Splitter, Expert
Standard OTDR Modes	Full Auto, Expert, Real Time

OPTICAL LASER SOURCE (OLS)	
Emitter Type, Safety Class	Class I, FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Fiber Type	Single-mode
Available Wavelengths	1310, 1490, 1550, 1625, 1650 nm
Wavelength Tolerance	±20 nm (1310/1490/1550) ±10 nm (1625/1650)
Spectral Width (FWHM)	5 nm (maximum)
Internal Modulation	270 Hz, 330 Hz, 1 kHz, 2 kHz, CW
Wave ID (one, two, or three wavelengths)	Compatible with NOYES Optical Power Meters and Light Sources
Output Power Stability <sup>f</sup>	±0.2 dB
Output Power	-1 dBm ±1.5 dB

### Notes:

- All specifications valid at 25 °C unless otherwise specified.
- Measured using 240 km range, 20 µs pulse and 3 min averaging.
- Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -45 dB event using 5 ns pulse width.
- Typical distance from the location of a -45 dB reflective event to the point where the trace falls and stays within 0.5 dB of backscatter, using a 5 ns pulse width.

PON POWER METER FOR SINGLE-MODE ONLY	
Calibrated Wavelengths	1490, 1550 nm
Detector Type	Filtered InGaAs
Isolation	>40 dB
Measurement Range	+23 to -50 dBm
Accuracy <sup>g</sup>	±0.5 dB
Resolution	0.01 dB
Measurement Units	dBm or Watts (nW, µW, mW)

OPTICAL POWER METER	
Calibrated Wavelengths	1310, 1490, 1550, 1625, 1650 nm
Detector Type	InGaAs
Measurement Range	+23 to -50 dBm
Tone Detect Range	+3 to -35 dBm
Wavelength ID Range	+3 to -35 dBm
Accuracy <sup>h</sup>	±0.25 dB
Resolution	0.01 dB
Measurement Units	dB, dBm or Watts (nW, µW, mW)

VISUAL FAULT LOCATOR (VFL)	
Emitter Type	Visible red laser, 650 ±20 nm
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Output Power (nominal)	0.8 mW into single-mode fiber
Modes	CW, 2 Hz flashing

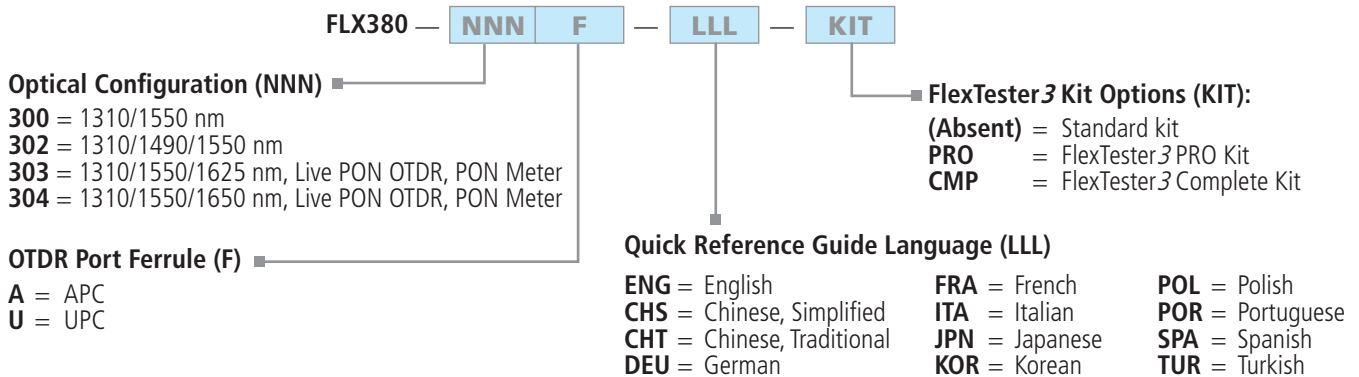
GENERAL	
Size (in boot)	20.1 x 13.0 x 5.3. cm (7.9 x 5.1 x 2.1 in)
Weight	0.8 kg (1.8 lb)
Operational Temperature	-10 °C to +50 °C, 0 to 95 % RH (non-condensing)
Storage Temperature	-20 °C to +60 °C, 0 to 95 % RH (non-condensing)
Power	Rechargeable Li-Ion or AC adapter
Battery Life	13.5 hours, Telcordia test conditions 12.5 hours, backlight on, continuous test
Display	LCD, 320 x 240, 3.5 in (89 mm), color, high-contrast transfective with backlight and AR coating.

- Typical distance from the start of a 1x16 splitter (13 dB loss) to the point where the trace falls and stays within 0.5 dB of backscatter, using a 100 ns pulse width with high resolution.
- Over 8 hours.
- At calibration wavelengths and power levels of approximately -5 dBm for 1550 nm and -10 dBm for 1490 nm.
- At 1310/1550 nm wavelengths with CW power level of approximately -10 dBm.

# NOYES® FLX380-30x FlexTester3 OTDR

## Ordering Information

FLX380 PRO kits include hard carry case, FOCIS PRO kit, and cleaning supplies. FlexTester3 Complete kits add fiber ring and OFI-200D Optical Fiber Identifier. FLX380 with soft carry case option includes a 2.5 mm One-Click cleaner. All FLX380 FlexTester3 models come with (1) SC adapter for the OTDR/OLS port, (1) 2.5 mm OPM port universal adapter, (1) 2.5 mm VFL port universal adapter, USB cable (connects with Type A USB port on your PC), TRM 2.0 Basic software, rechargeable, replaceable Li-Ion battery and AC adapter with power cord. Select options as follows: Optical Configuration (NNN), OTDR port type (F), Language Package (LLL), optional PRO kit configuration. Example: FLX380-303U-ENG-PRO indicates a three-wavelength (1310/1550/1625 nm) FLX380 FlexTester3 with UPC OTDR port ferrule, English / Euro language package with English QRG, PRO Kit configuration with FOCIS PRO and cleaning supplies.



## Available Accessories

DESCRIPTION	AFL NO.
FC adapter for OTDR / OLS port	2900-50-0002MR
SC adapter for OTDR / OLS port	2900-50-0003MR
ST adapter for OTDR / OLS port	2900-50-0004MR
LC adapter for OTDR / OLS port	2900-50-0006MR
FC adapter for OPM port	2900-52-0001MR
SC adapter for OPM port	2900-52-0002MR
ST adapter for OPM port	2900-52-0003MR
LC adapter for OPM port	2900-52-0004MR
2.5 mm Universal adapter for OPM port	2900-52-0005MR
1.25 mm Universal adapter for OPM port	2900-52-0006MR
2.5 mm Universal adapter for VFL port	2900-53-0001MR
1.25 mm Universal adapter for VFL port	2900-53-0002MR
Fiber Ring, Single-mode, 150 m (492 ft)	FR1-SM-150-y1-y2
Fiber Ring, Single-mode, 500 m (1640 ft)	FR1-SM-500-y1-y2
Fiber Ring, Single-mode, 1000 m (3280 ft)	FR1-SM-1000-y1-y2

y1, y2 – connectors for single-mode cables, specify type as follows:  
ST, SC, ASC (angled SC), FC, AFC (angled FC), LC  
Other connector types, fiber types, and fiber lengths quoted upon request.

## Calibration Plans

AFL recommends annual calibrations on NOYES Test and Inspection products. Prepaid Cal plans offer two annual calibrations at a discounted price, a convenient calibration expiration email service, express calibration services and access to the NOYES product knowledge base. Cal Plus plans offer the same services as the Cal plans with the addition of a two year extended warranty (three years total coverage).

FLX380 MODEL	2 YR CAL PLAN, AFL NO.	2 YR CAL PLUS PLAN AFL NO.
FLX380-300	CAL2-00-FLX3-300	CAL2-01-FLX3-300
FLX380-302	CAL2-00-FLX3-302	CAL2-01-FLX3-302
FLX380-303	CAL2-00-FLX3-303	CAL2-01-FLX3-303
FLX380-304	CAL2-00-FLX3-304	CAL2-01-FLX3-304

