

### FLX380-30x FlexTester3 OTDR



#### 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 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 AFL 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 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.

## 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 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 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 AFL 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.

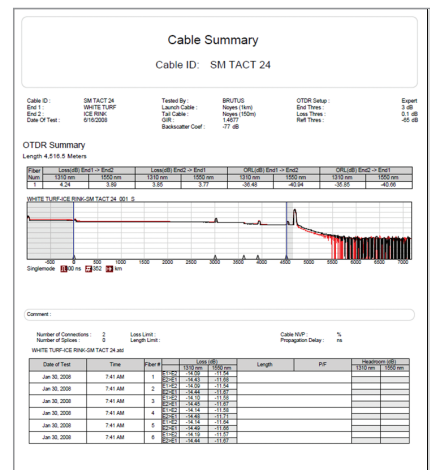
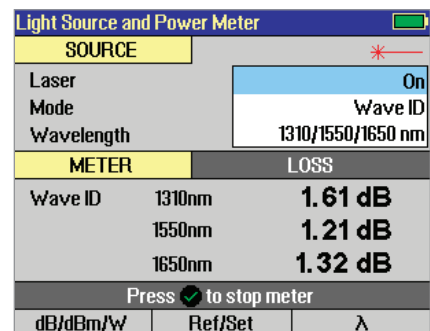
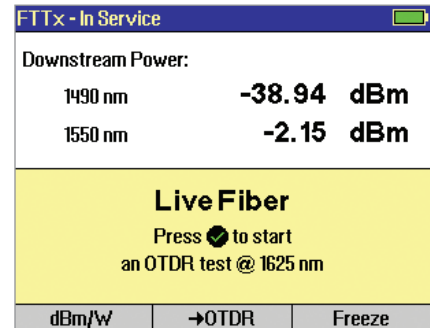
The integrated OLS and OPM also generate and detect fiber-identifying tones to enable positive fiber identification before disconnecting fibers during maintenance.

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.



### FLX380-30x FlexTester3 OTDR

#### Features and Applications by Model

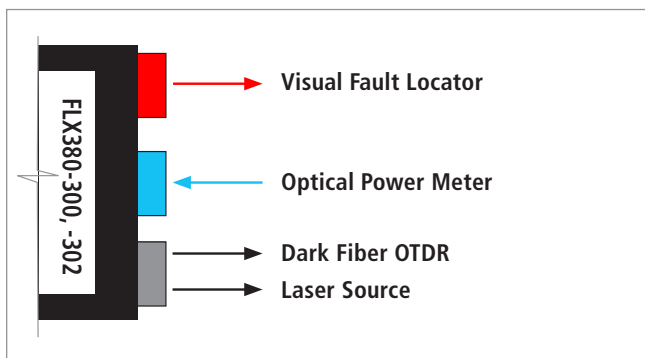
FEATURES	FLX380 MODELS			
	-300	-302	-303	-304
Compatible with all AFL optical power meters and laser sources, including tone and Wave ID features	◆	◆	◆	◆
Compatible with AFL optical fiber identifiers (OFI)	◆	◆	◆	◆
Integrated high-power optical power meter with Wave ID and tone detection	◆	◆	◆	◆
Integrated 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 nm 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.			◆	◆

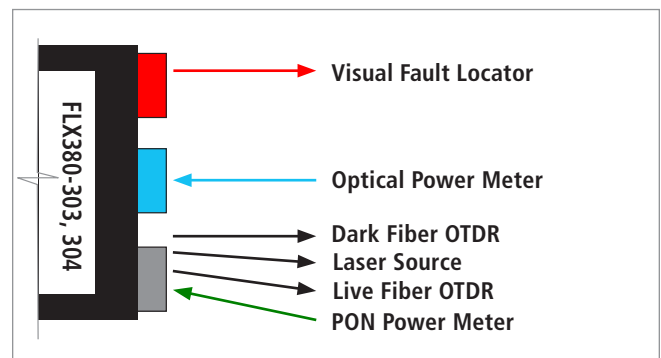
**Note:**

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



### FLX380-30x FlexTester3 OTDR



FLX380 FlexTester PRO Test and Inspection kit



FLX380 FlexTester in Soft Carry Case

#### FLX380 FlexTester3 Kit Configurations

FLX380 FlexTesters are available in the following kit configurations:

- FLX380 FlexTester3 Soft Carry Case kits
- FLX380 FlexTester3 PRO/PRO2 kits
- FLX380 FlexTester3 Complete/Complete2 kits

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 Soft Carry Case Kit

FLX380 FlexTester3 Soft Carry Case kits include the user-selected FLX380, standard accessories plus a One-Click Cleaner, packaged in a convenient soft carry case.

#### FLX380 PRO/PRO2 Test and Inspection Kits

FlexTester PRO/PRO2 kits combine a user-selected FLX380 with either a FOCIS PRO or FOCIS Flex Fiber Optic Connector Inspection System, UPC or APC connector inspection adapter tips, selected cleaning supplies, and a rugged, waterproof hard carry case with room for additional fiber rings and cleaning supplies. FOCIS PRO and FOCIS Flex enable inspection of ferrule ends of patch cord connectors, as well as end-faces of connectors mounted inside bulkhead adapters.

**PRO kits** include FOCIS PRO comprising a DFS1 Digital FiberScope and hand-held DFD1 Touchscreen Tablet. FOCIS PRO includes image capture, save, AFL's unique image-pairing

capability, plus IEC and user-adjustable pass/fail analysis. With FOCIS PRO's dedicated Touchscreen Tablet, the FLX380 is available for OTDR and optical loss testing.

**PRO2 kits** include a 150 m fiber ring plus FOCIS Flex, a hand-held, auto-focusing inspection probe with integrated display, rechargeable battery, internal storage and IEC and user-adjustable pass/fail analysis. Its Bluetooth communications enable FOCIS Flex to instantly transfer captured images and pass/fail results to a paired FlexTester for display and/or storage.

#### FLX380 Complete/Complete2 Installation and Maintenance Kits

Select a FlexTester3 Complete or Complete2 Kit to add an Optical Fiber Identifier for an even more complete network installation and maintenance test solution.

**Complete kits** combine an OFI-200D Optical Fiber Identifier with a user-selected FLX380, 150 m single-mode fiber ring (launch cable), FOCIS PRO with UPC or APC adapter tips, two One-Click Cleaners, standard FlexTester accessories and hard carry case.

**Complete2 kits** combine a user-selected FLX380 and choice of any AFL Optical Fiber Identifier with 150 m fiber ring, FOCIS Flex, UPC or APC adapter tips, cleaning supplies, standard FlexTester accessories, and rugged, waterproof, hard carry case.

## 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 + 0.003% 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 <sup>®</sup> 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 AFL 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 minutes 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 with CW power level of approximately -10 dBm.



## FLX380-30x FlexTester3 OTDR

### Ordering Information

FLX380 — MOD F — KIT — LNG — AC — TIP — FR — OFI

MOD	FLX380 Model
300	42/42 dB @1310/1550
302	41/38/41 dB @1310/1490/1550
303	41/41/38 dB @1310/1550/1625
304	41/41/38 dB @1310/1550/1650

F	FLX380 Ferrule Type
U	UPC
A	APC

KIT	Kit Option Description
Blank	Soft case, One-Click cleaner
PRO	Hard case, FOCIS PRO, cleaning supplies
PRO2	Hard case, FOCIS Flex, cleaning supplies, 150 m fiber ring
CMP	Hard case, FOCIS PRO, cleaning supplies, 150 m fiber ring, OFI-200
CMP2	Hard case, FOCIS Flex, cleaning supplies, 150 m fiber ring, OFI-xxxx

LNG	Language Option
ENG	English
CHS	Simplified Chinese
CHT	Traditional Chinese
DEU	German
FRA	French
ITA	Italian

LNG	Language Option
JPN	Japanese
KOR	Korean
POL	Polish
POR	Portuguese
SPA	Spanish
TUR	Turkish

AC	Destination Country	AC Plugs		
		FlexTester	FOCIS PRO	FOCIS Flex
US	USA	3-wire, 115V, Type K	US, EU, UK, SAA	2-pin, US
EU	European Union	3-wire, 250V, Type B	US, EU, UK, SAA	2-pin, EU
UK	United Kingdom	3-wire, 250V, Type D	US, EU, UK, SAA	3-pin, UK
CN	China, Australia	3-wire, 250V, Type C	US, EU, UK, SAA	2-pin, SAA
DK	Denmark	3-wire, 250V, Type E	US, EU, UK, SAA	2-pin, EU
JP	Japan	3-wire, 125V, Type M	US, EU, UK, SAA	2-pin, US
CH	Switzerland	3-wire, 250V, Type L	US, EU, UK, SAA	2-pin, EU
IT	Italy	3-wire, 250V, Type I	US, EU, UK, SAA	2-pin, EU
IL	Israel	3-wire, 250V, Type H	US, EU, UK, SAA	Select (US, EU, UK, SAA)
IN	India	3-wire, 250V, Type G	US, EU, UK, SAA	

TIP	FOCIS Flex Tips & Cleaning (PRO2 and CMP2 kits only)
Blank	Option not available in standard soft case, PRO and CMP kits
SC	SC-UPC bulkhead tip, 2.5 mm UPC ferrule tip, 2.5 mm cleaning
FC	FC-UPC bulkhead tip, 2.5 mm UPC ferrule tip, 2.5 mm cleaning
LC	LC-UPC bulkhead tip, 1.25 mm UPC ferrule tip, 1.25 mm cleaning
ASC	SC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm cleaning
AFC	FC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm cleaning
ALC	LC-APC bulkhead tip, 1.25 mm APC ferrule tip, 1.25 mm cleaning

FR	150 m SMF Fiber Ring
Blank	N/A in PRO & CMP kits
SC/SC	FR1-SM-150-SC-SC
SC/FC	FR1-SM-150-SC-FC
SC/LC	FR1-SM-150-SC-LC
SC/ST	FR1-SM-150-SC-ST
SC/ASC	FR1-SM-150-SC-ASC
SC/AFC	FR1-SM-150-SC-AFC
SC/ALC	FR1-SM-150-SC-ALC
LC/LC	FR1-SM-150-LC-LC
LC/ASC	FR1-SM-150-LC-ASC
LC/ALC	FR1-SM-150-LC-ALC

FR	150 m SMF Fiber Ring
ASC/FC	FR1-SM-150-ASC-FC
ASC/ST	FR1-SM-150-ASC-ST
ASC/ASC	FR1-SM-150-ASC-ASC
ASC/AFC	FR1-SM-150-ASC-AFC
ASC/ALC	FR1-SM-150-ASC-ALC
ALC/ALC	FR1-SM-150-ALC-ALC
FC/FC	FR1-SM-150-FC-FC
FC/ST	FR1-SM-150-FC-ST
FC/LC	FR1-SM-150-FC-LC
FC/AFC	FR1-SM-150-FC-AFC
AFC/AFC	FR1-SM-150-AFC-AFC

OFI	Optical Fiber Identifier Option Description (CMP2 kit only)
Blank	Option only available in CMP2 kit
200D	OFI-200D - Jacketed & buffered fiber; 2 kHz only
400	OFI-400 - Jacketed & buffered fiber; power & tone display
400C	OFI-400C - Jacketed fiber only OFI-400
400HP	OFI-400HP - High-power OFI-400
FTTx	OFI-FTTx - Active ONT Detector (FTTx PON systems)

### Available Adapters (for OTDR/OLS, OPM, VFL Ports)

DESCRIPTION	AFL NO.
FC (OTDR/OLS)	2900-50-0002MR
SC (OTDR/OLS)	2900-50-0003MR
ST (OTDR/OLS)	2900-50-0004MR
LC (OTDR/OLS)	2900-50-0006MR
FC (OPM)	2900-52-0001MR
SC (OPM)	2900-52-0002MR

DESCRIPTION	AFL NO.
ST (OPM)	2900-52-0003MR
LC (OPM)	2900-52-0004MR
2.5 mm (OPM)	2900-52-0005MR
1.25 mm (OPM)	2900-52-0006MR
2.5 mm (VFL)	2900-53-0001MR



### International Sales and Service Contact Information

Available at [www.AFLglobal.com/Test/Contacts](http://www.AFLglobal.com/Test/Contacts)