

## FLX380-30x FlexTester3 OTDR

**NEW!** Simplify Troubleshooting with LinkMap™!



### Features

- 3rd generation hand-held, all-in-one OTDR, Source, Power Meter, VFL
- Icon-based LinkMap™ display with pass/fail for easy network analysis
- 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 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, Source, Power Meter, 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, LinkMap with pass/fail analysis, 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.

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 Bluetooth or USB. Windows® compatible TRM® 2.0 Test Results Manager software is included for OTDR and Power Meter results viewing, analysis, and professional report generation.

### FLX380-30x FlexTester3 OTDR

#### New LinkMap™ Simplifies Network Troubleshooting

Using the FLX380's new LinkMap capability, even novice users can troubleshoot optical networks like a pro! LinkMap interprets the tested network and presents an icon-based view of network elements clearly identifying fiber start, end, connectors, splices, splitters, and macrobends. Loss and reflectance of network elements is compared to user-settable pass/fail thresholds and displayed with clear pass/fail indications. Users can instantly toggle between LinkMap and Trace view at the press of a button.

With launch quality check, integrated macrobend and splitter event detection, FLX380 OTDRs offer even greater ease-of-use. FlexTester3 OTDRs also provide a Link Summary showing end-to-end link length, loss, loss/distance and ORL.

#	Location m	Type	Refl. dB	Loss dB	Fiber dB/km
1 ✓	-0.9	←	-56.0	0.386	--
2 ✗	609.5	∩	--	0.318	0.174
3 ✓	913.8	-L	-49.7	0.424	0.196
4 ✓	1522.8	→	-55.2	0.450	0.209

#### ServiceSafe® Testing on Live PONs

In FTTx PONs, troubleshooting a faulty fiber connection from one out-of-service subscriber's location using a 1310/1550 nm OTDR could disrupt service to active subscribers. AFL's ServiceSafe feature alerts the OTDR user to the presence of live traffic and prevents the OTDR from initiating service-disrupting tests at 1310/1550 nm.

FLX380-303 and -304 models measure downstream power levels at 1490 nm and/or 1550 nm, and allow the user to initiate an OTDR test using a non-disruptive 1625 nm or 1650 nm OTDR wavelength. Using AFL-patented technology (US patent 8,411,259), live PON OTDR testing is performed through the same optical port used for 1310/1550 nm OTDR testing, eliminating unnecessary connector wear and tear and shortening test time.

Downstream Power:		
1490 nm	-38.94	dBm
1550 nm	-2.15	dBm

**Live Fiber**  
Press to start an OTDR test @ 1625 nm

#### 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 AFL hand-held OLS. The OPM automatically determines which wavelengths are sent and measures power and loss at each wavelength, 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.

SOURCE		
Laser	On	
Mode	Wave ID	
Wavelength	1310/1550/1650 nm	

METER		LOSS
Wave ID	1310nm	1.61 dB
	1550nm	1.21 dB
	1650nm	1.32 dB

#### Create Professional Test Reports using TRM® 2.0

Saved OTDR and OPM results may be uploaded to PC, viewed and analyzed using the included TRM 2.0 Test Results Manager software. With TRM's report generation wizard, users can easily create professional, customized fiber acceptance test reports.

### FLX380-30x FlexTester3 OTDR

#### Features and Applications by Model

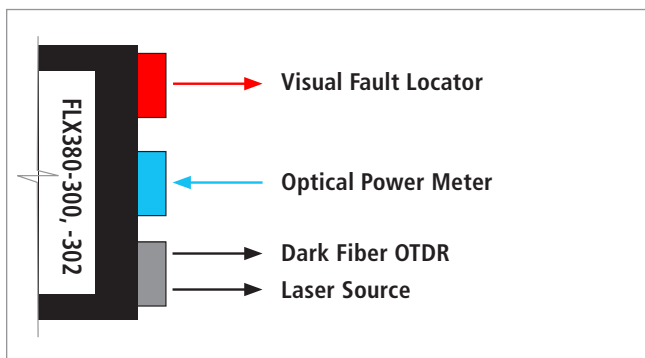
FEATURES	FLX380 MODELS			
	-300	-302	-303	-304
Compatible with all AFL optical power meters and laser sources, including tone and Wave ID features	◆	◆	◆	◆
Compatible with AFL optical fiber identifiers (OFI)	◆	◆	◆	◆
Integrated high-power optical power meter with Wave ID and tone detection	◆	◆	◆	◆
Integrated 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 & laser source with 1625 nm filtered detector for in-service PON testing			◆	
1650 nm – FTTx Live PON OTDR & laser source 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 dirty or damaged 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.			◆	◆

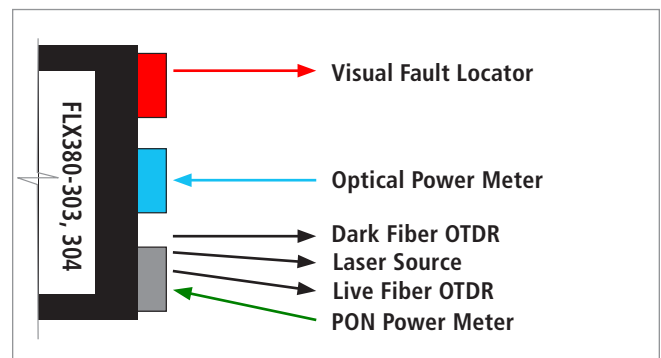
**Note:**

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 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 a rechargeable, replaceable Li-Ion battery pack, AC charger with country-specific power cord, tool-free interchangeable connector adapters with dust caps, TRM<sup>®</sup> 2.0 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, TRM 2.0 Basic, plus a One-Click Cleaner, packaged in a convenient soft carry case. LinkMap<sup>™</sup> with Pass/Fail plus TRM 2.0 Advanced is available as an optional upgrade for FLX380 Soft Carry Case kits.



FLX380 FlexTester PRO Test and Inspection kit

#### 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. FlexTester PRO/PRO2 Kits include LinkMap with Pass/Fail plus TRM 2.0 Advanced.

**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. FlexTester Complete/Complete2 Kits include LinkMap with Pass/Fail plus TRM 2.0 Advanced.

**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

ORDER ENTRY FORMAT INCLUDING OPTIONS	KIT CONFIGURATION
FLX380-3xx[C]-[LNG]-[AC]	FLX380-3xx Basic Kit
FLX380-3xx[C]-LM-[LNG]-[AC]	FLX380-3xx Basic Kit with LinkMap™ Upgrade with Pass/Fail plus TRM® 2.0 Advanced
FLX380-3XX-LM-[LNG]	LinkMap Upgrade with Pass/Fail plus TRM 2.0 Advanced (for previously shipped FLX380)
FLX380-3xx[C]-PRO-[LNG]-[AC]	FLX380-3xx PRO Kit (with FOCIS PRO and cleaning supplies)
FLX380-3xx[C]-PRO2-[LNG]-[AC]-[TIP]-[FR]	FLX380-3xx PRO2 Kit (with FOCIS Flex, fiber ring and cleaning supplies)
FLX380-3xx[C]-CMP-[LNG]-[AC]-[FR]	FLX380-3xx Complete Kit (with FOCIS PRO, OFI-200D, fiber ring and cleaning supplies)
FLX380-3xx[C]-CMP2-[LNG]-[AC]-[TIP]-[FR]-[OFI]	FLX380-3xx Complete2 Kit (with FOCIS Flex, OFI choice, fiber ring and cleaning supplies)

### Select FLX380 Options:

[C]	OTDR/Source Connector Type
U	UPC
A	APC

[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	Select (US, EU, UK, SAA)

### Select FLX380 PRO, PRO2, CMP, CMP2 Kit Options:

[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-SC-ST
FC/LC	FR1-SM-150-FC-LC
FC/AFC	FR1-SM-150-FC-AFC
AFC/AFC	FR1-SM-150-AFC-AFC

[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

[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)



### International Sales and Service Contact Information

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