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

# OFL280-10x FlexTester OTDR

## Hand-held Multifunction OTDR and Loss Test Set

### Features

- Patented in- or out-of-service OTDR testing from a single port
- Icon-based LinkMap® display with pass/fail for easy network analysis
- ServiceSafe® live PON detection and OTDR test without service disruption
- Wave ID reduces insertion loss test time and eliminates setup errors
- 34/32 dB dynamic range at 1310/1550 nm
- Best-in-class 0.8/3.5 m event/attenuation dead zones
- Rugged, hand-held, lightweight (<1 kg)
- High-contrast, backlit display: Easily viewed, even in direct sunlight
- Industry-leading battery life: >12 hours continuous operation
- Instant On: Ready to test in <5 seconds

### Applications

- Cost-effective point-to-point and FTTH PON testing
- Troubleshoot in-service FTTH networks, including live PON power measurements plus PON OTDR testing at 1625 nm.
- Complete multi-wavelength insertion loss tests faster and eliminate setup errors using Wave ID source and power meter.
- Generate fiber-identifying tones and stable CW signals using integrated optical source.
- Trace fibers or locate faults using the Visual Fault Locator (VFL).

The AFL OFL280-10x FlexTester family offers an unmatched combination of optical fiber test functions, ease-of-use, portability, and value. All OFL280 FlexTester models include an integrated single-mode 1310/1550 nm OTDR with PON-optimized and standard test modes, optical power meter, 1310/1550 nm laser source, and visual fault locator.
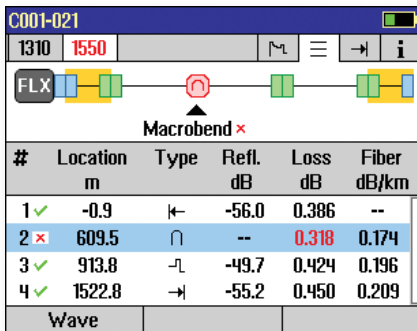
With new LinkMap, pass/fail analysis, macro-bend and splitter detection, launch quality check, plus AFL's unique ServiceSafe and Wave ID features, OFL280 FlexTesters enable even novice users to troubleshoot like pros.

The OFL280 FlexTester family offers four models to best suit your application needs:

- **OFL280-103:** Verify both in-service and out-of-service FTTx networks from a single port. Includes 1310/1550/1625 nm live PON OTDR with integrated PON Power Meter.
- **OFL280-102:** Most complete out-of-service FTTx PON testing at all PON wavelengths (1310/1490/1550 nm).
- **OFL280-100:** Cost-effective 1310/1550 nm OTDR for out-of-service installation testing or troubleshooting 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 OFL280's internal memory. Stored OTDR and OPM results may be transferred to PC via wireless Bluetooth® or USB cable. Windows® compatible TRM 2.0® Test Results Manager software is included for OTDR and OPM results viewing, analysis, and professional report generation.
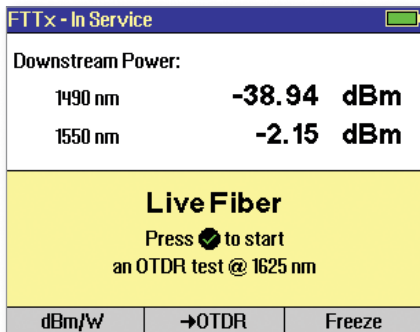
## OFL280-10x FlexTester OTDR



### New LinkMap® Simplifies Network Troubleshooting

Using the OFL280'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 macro-bends. 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 macro-bend and splitter event detection, OFL280 OTDRs offer even greater ease-of-use. OFL280s also provide a Link Summary showing end-to-end link length, loss, loss/distance and ORL.
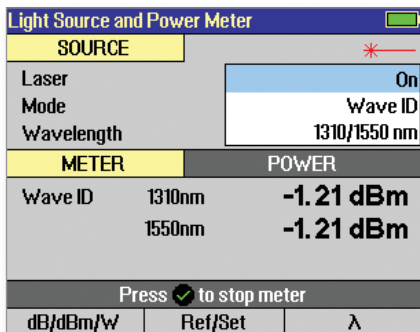


### ServiceSafe® Testing on Live PONs

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 initiation of service-disrupting 1310/1550 nm OTDR tests. The OFL280-103 additionally measures downstream power levels at 1490 and/or 1550 nm, and allows the user to initiate an OTDR test using the non-disruptive 1625 nm OTDR wavelength. To eliminate unnecessary connector wear, 1625 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

OFL280s 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 OFL280, FLX380, or AFL hand-held OLS. The OPM automatically 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.

### Create Professional Test Reports using TRM® 2.0

Stored OTDR and/or OPM results may be uploaded to a PC via USB or Bluetooth®. Uploaded results may be viewed and analyzed using TRM 2.0 Test Results Manager software included with each OFL280 FlexTester. The TRM report generation wizard enables users to easily generate professional, custom acceptance test reports conforming to industry guidelines.

# OFL280-10x FlexTester OTDR
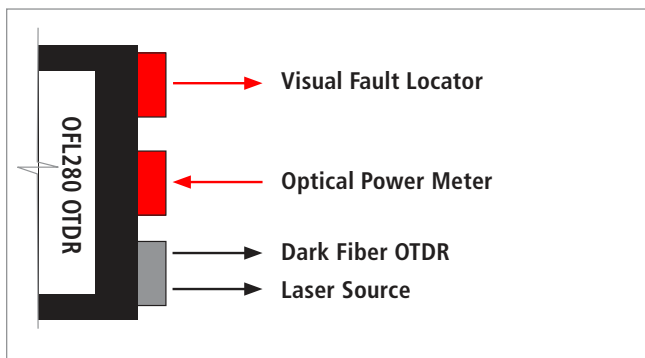
## OFL280 Features and Applications by Model

| FEATURES | OFL280 MODELS | | |
| --- | --- | --- | --- |
| | -100 | -102 | -103 |
| 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 | ◆ | ◆ | ◆ |
| Integrated visual fault locator (red laser) | ◆ | ◆ | ◆ |
| 1310 nm — OTDR, PON OTDR, laser source (CW, wave ID, tone) | ◆ | ◆ | ◆ |
| 1550 nm — OTDR, PON OTDR, laser source (CW, wave ID, tone) | ◆ | ◆ | ◆ |
| 1490 nm — OTDR, PON OTDR, laser source (CW, wave ID, tone) | | ◆ | |
| 1625 nm — FTTx live fiber OTDR with filtered detector for in-service PON testing | | | ◆ |
| 1490/1550 nm — FTTx PON Power Meter (Detects and measures downstream PON power levels) | | | ◆ |

| FIBER TESTING APPLICATIONS | OFL280 MODELS | | |
| --- | --- | --- | --- |
| | -100 | -102 | -103 |
| **Point-to-point cable construction and troubleshooting.** Verify end-to-end length, loss, and ORL. Verify splice and connector loss and reflectance. Locate sources of excess loss and/or reflections, including macro-bends. | ◆ | ◆ | ◆ |
| **FTTx PON construction.** Test to or through splitters. Verify end-to-end length, loss and ORL. Verify splitter, splice and connector loss and reflectance. Locate sources of excess loss and/or reflections, including macro-bends. | ◆ | ◆ [a] | ◆ |
| **FTTx customer fiber troubleshooting - dark fibers (hard faults).** Locate cable cuts, open splices, and bad connections. | ◆ | ◆ | ◆ |
| **FTTx in-service (Live PON) troubleshooting.** 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. | | | ◆ |
| **FTTx service turn-up (commissioning).** Verify PON power levels at the ONT (subscriber) location. Locate faults in the 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 ability to perform OTDR and loss tests at 1490 nm. However, testing at 1310 and 1550 nm is recommended and generally is all that is needed to test or fault-locate inactive (dark) FTTx PONs during construction.

## OFL280-100 and -102 models

OFL280 OTDR

- Visual Fault Locator
- Optical Power Meter
- Dark Fiber OTDR
- Laser Source

## OFL280-103 model

OFL280 OTDR

- Visual Fault Locator
- Optical Power Meter
- Dark Fiber OTDR
- Laser Source
- Live Fiber OTDR
- PON Power Meter
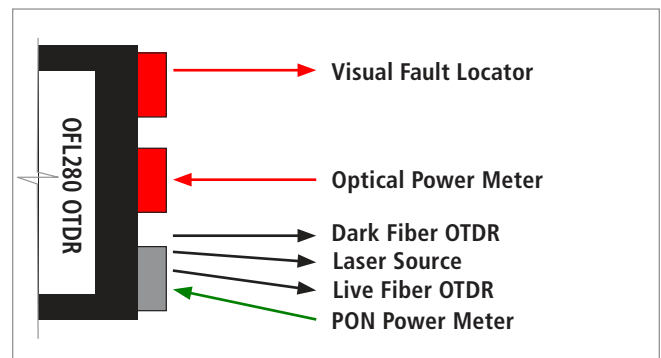
# OFL280-10x FlexTester OTDR



OFL280 FlexTester PRO Test kit



FlexTester PRO2 & Complete2 include FOCIS Flex Inspection



OFL280 FlexTester Soft Case Kit

## OFL280 FlexTester Kit Configurations

OFL280 FlexTesters are available in the following kit configurations:

- OFL280 FlexTester Soft Carry Case Kits
- OFL280 FlexTester PRO/PRO2 Kits
- OFL280 FlexTester Complete/Complete2 Kits

All FlexTester 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® 2.0 Test Results Manager software, USB cable, and a quick reference guide.

## OFL280 FlexTester PRO/PRO2 Test and Inspection Kit

FlexTester PRO & PRO2 Kits combine a user-selected OFL280 with either the FOCIS PRO or FOCIS Flex Fiber Optic Connector Inspection System, UPC or APC connector inspection adapter tips, 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 and end-faces of connectors mounted inside bulkhead adapters. PRO/PRO2 Kits include LinkMap® plus TRM 2.0 Advanced.

**PRO Kits** include FOCIS PRO comprising the 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 OFL280 is available for OTDR and optical loss testing.

**PRO2 Kits** include a 150 m fiber ring plus FOCIS Flex, a hand-held and auto-focusing inspection probe with integrated display, rechargeable battery, internal storage and 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.

## OFL280 Complete/Complete2 Installation & Maintenance Kit

Select a FlexTester Complete or Complete2 Kit to add an Optical Fiber Identifier for an even more complete network installation and maintenance test solution. FlexTester CMP/CMP2 Kits include LinkMap with Pass/Fail plus TRM 2.0 Advanced.

**Complete Kits** combine an OFI-200D Optical Fiber Identifier with a user-selected OFL280, 150 m single-mode fiber ring (launch cable), FOCIS PRO with UPC or APC adapter tips, two One-Click Cleaners, standard FlexTester accessories, hard carry case.

**Complete2 Kits** combine a user-selected OFL280 and choice of 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.

## OFL280 FlexTester Soft Carry Case Kit

OFL280 FlexTester Soft Carry Case kits include the user-selected OFL280, standard accessories plus a One-Click Cleaner, packaged in a convenient soft carry case.

# OFL280-10x FlexTester OTDR

## Specifications [a]

| OTDR | |
|---|---|
| Emitter Type | Laser |
| 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 nm |
| Wavelength Tolerance | ±20/±20/±20/±10 nm |
| Dynamic Range (SNR=1) | 34/32/32/30 dB |
| Event Dead Zone [b] | 0.8 m |
| Attenuation Dead Zone [c] | 3.5 m |
| Pulse Widths | 5, 10, 30, 100, 300 ns, 1, 3, 10 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 (GIR) | 1.4000 to 1.7000 |
| Distance Uncertainty (m) | ±(1 + 0.005 % x distance + data point spacing) |
| Linearity | ±0.05 dB/dB |
| Trace File Format | .SOR per Telcordia SR-4731 Issue 2 |
| Trace File Storage Medium | 4GB Internal memory (>1000 traces) |
| Data Transfer to PC | USB cable |
| PON OTDR Modes | Test to splitter or through splitter |
| Standard OTDR Modes | Full Auto, Expert, Real Time |

| LASER SOURCE | |
|---|---|
| Emitter Type | Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03 |
| Fiber Type | Single-mode |
| Available Wavelengths | 1310, 1490, 1550 nm |
| Wavelength Tolerance | ±20 nm |
| Spectral Width (FWHM) | 5 nm (maximum) |
| Internal Modulation | 270 Hz, 330 Hz, 1 kHz, 2 kHz, CW |
| Wavelength ID (one, two, or three wavelengths) | Compatible with AFL Optical Power Meters and Light Sources |
| Output Power Stability | 0.25 dB |
| Output Power | -1 dBm (1310, 1550 nm) ±1.5 dB +3 dBm (1490 nm) ±1.5 dB |

| 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 [d] | ±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 [e] | ±0.25 dB |
| Resolution | 0.01 dB |
| Measurement Units | dB, dBm or Watts (nW, µW, mW) |

| VISUAL FAULT LOCATOR | |
|---|---|
| Emitter Type | Visible red laser |
| Safety Class | Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03 |
| Wavelength | 650 ±20 nm |
| 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 5.5 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 | 12 hours, backlight ON, continuous operation |
| Display | LCD, 320 x 240, 3.5 inch (89 mm) color, high-contrast transflective with backlight and AR coating |

**Notes:**

a. All specifications valid at 25 °C unless otherwise specified.

b. 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.

c. 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.

d. At calibration wavelengths and power levels of approximately -5 dBm for 1550 nm and -10 dBm for 1490 nm.

e. At 1310/1550 nm wavelengths with CW power level of approximately -10 dBm.

# OFL280-10x FlexTester OTDR

## Ordering Information

| ORDER ENTRY FORMAT INCLUDING OPTIONS | KIT CONFIGURATION |
|---|---|
| OFL280-1xx[C]-[LNG]-[AC] | OFL280-1xx Basic Kit |
| OFL280-1xx[C]-LM-[LNG]-[AC] | OFL280-1xx Basic Kit with LinkMap® Upgrade with Pass/Fail plus TRM® 2.0 Advanced |
| OFL280-XXX-LM-[LNG] | LinkMap Upgrade with Pass/Fail plus TRM 2.0 Advanced (for previously shipped OFL280) |
| OFL280-1xx[C]-PRO-[LNG]-[AC] | OFL280-1xx PRO Kit (with LinkMap, FOCIS PRO and cleaning supplies) |
| OFL280-1xx[C]-PRO2-[LNG]-[AC]-[TIP]-[FR] | OFL280-1xx PRO2 Kit (with LinkMap, FOCIS Flex, fiber ring, cleaning supplies) |
| OFL280-1xx[C]-CMP-[LNG]-[AC]-[FR] | OFL280-1xx Complete Kit (with LinkMap, FOCIS PRO, OFI-200D, fiber ring, cleaning supplies) |
| OFL280-1xx[C]-CMP2-[LNG]-[AC]-[TIP]-[FR]-[OFI] | OFL280-1xx Complete2 Kit (with LinkMap, FOCIS Flex, OFI choice, fiber ring, cleaning supplies) |
| OFL280-1xx[C]-CMP2-BI-[LNG]-[AC]-[TIP]-[FR] | OFL280-1xx Complete2 BI Kit (with LinkMap, FOCIS Flex, OFI-BI, fiber ring and cleaning supplies) |
| OFL280-1xx[C]-CMP2-BIPM-[LNG]-[AC]-[TIP]-[FR] | OFL280-1xx Complete2 BIPM Kit (with LinkMap, FOCIS Flex, OFI-BIPM, fiber ring and cleaning supplies) |

## Select OFL280 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 | Select (US, EU, UK) |
| 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) |
| IN | India | 3-wire, 250V, Type G | US, EU, UK, SAA | Select (US, EU, UK) |

## Select OFL280 PRO, PRO2, CMP, CMP2 Kit Options:

| [FR] | 150 m SMF Fiber Ring |
|---|---|
| Blank | N/A in PRO 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