



**FAFL**

**TEST & INSPECTION FTTx SOLUTION GUIDE**

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## Fiber-to-the-"X"

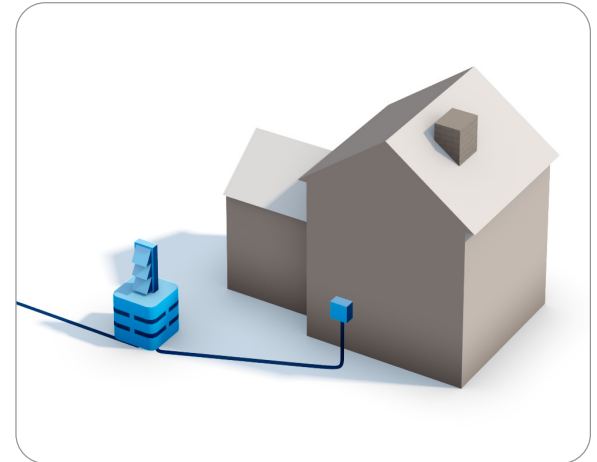
*A common term that is used to describe many types of broadband network architectures, depending on where they terminate. The 'X' in 'FTTx' could be a home, a cabinet or any end-user premise.*

### Introduction

Optical fiber is the future that is here now. There is no comparison for speed, bandwidth and latency in any other transmission medium. With continued advancement in the electronics used over the fiber medium, fiber is a communications pipeline built to last. As wireless advancements like 5G make news headlines, they are increasingly relying on deeper fiber networks to backhaul information. No matter how far fiber is going in your network, trust AFL to provide solutions to meet your needs.

AFL offers unmatched end-to-end solutions to meet the demands of a fiber-to-the-x (FTTx) project. From the central office to the end point of the network, AFL has a wide variety of test and inspection tools to help verify, troubleshoot and maintain these installations. In addition, AFL also boasts industry leading fusion splicers for field ready use.

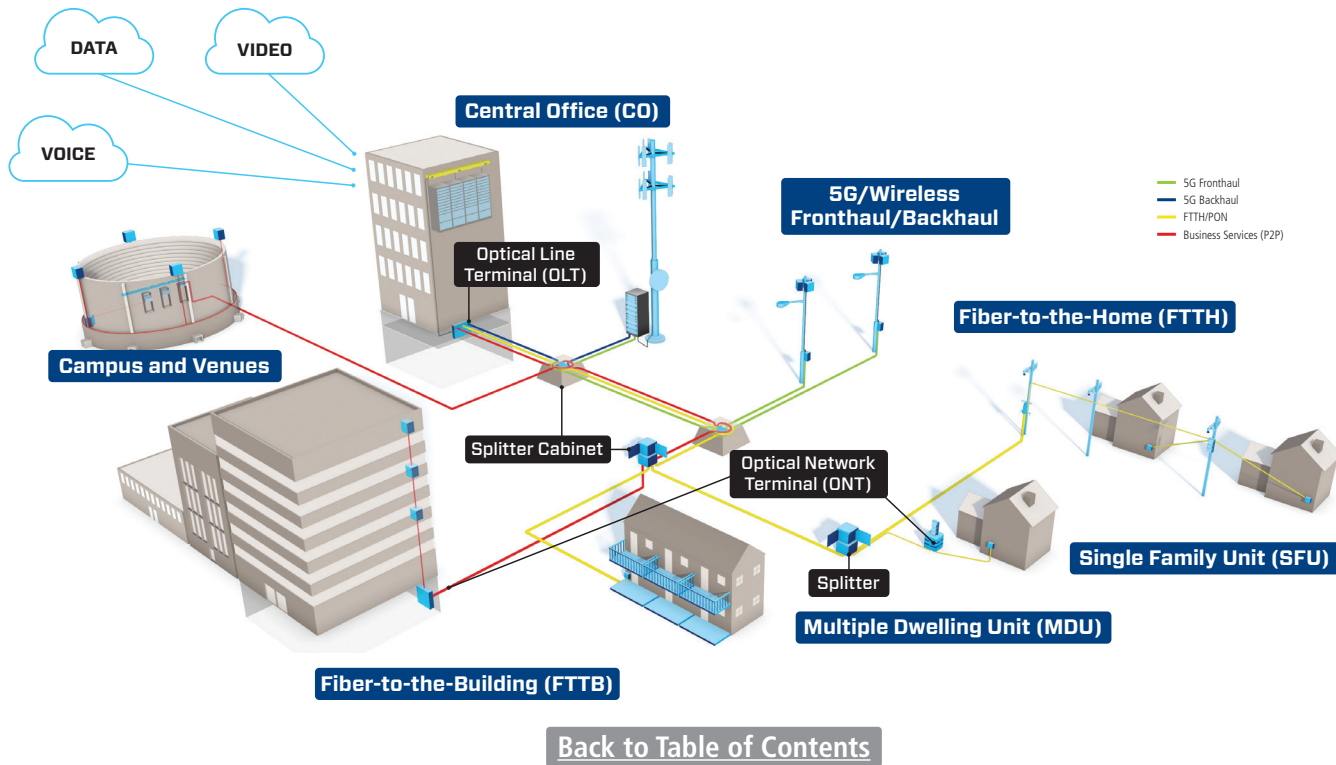
From installation and maintenance through verification and troubleshooting, this guide details our FTTx solutions for maintaining the health of your network.



# Why Choose AFL for Your FTTx Solutions?

Increasing demand for high-speed broadband Internet access, Over-the-Top (OTT) video or TV and telephone/wireless services is driving service providers to invest in or expand upon state-of-the-art fiber optic or “FTTx” networks. FTTx brings signal and bandwidth from service providers to subscribers, whether it is a single-family residence or home (FTTH), a multi-dwelling commercial or residential unit (MDU), warehouse or other building (FTTB), node (FTTN) or desk (FTTD).

Across a neighborhood, campus or city, AFL makes FTTx easy. We are the only provider whose portfolio includes end-to-end passive infrastructure. As the world migrates toward a fiber optic foundation, AFL is uniquely poised for the growth of FTTx markets. With an unsurpassed knowledge of end-to-end, cost-effective solutions, AFL can help you bring fiber to the last mile—your subscriber.



# Test and Inspection Solutions

Our test and inspection products offer several features that help with critical FTTx rollouts from the central office to campus/venues, customer premise, MDUs and SFUs. These solutions are focused on ease-of-use, speed of measurements and a deep feature set needed for installing and troubleshooting FTTx and next generation networks.

We provide smart OTDRs that display test results using LinkMap® color-coded icons to easily identify the health of your network. Our [FlowScout™ PON Optical Power Meter](#) detects GPON, XGS-PON and video signals all at once and shares results to any coworker seamlessly. Additionally, our [FlexScan® TS100 Optical Troubleshooter](#) diagnoses faults exceeding industry pass/fail limits and locates bends or breaks in under 3 seconds with the press of a button.

Whether working in the field or at the central office, these durable IP-rated test solutions are a perfect match for daily FTTx network installation, maintenance and troubleshooting.



# Test and Inspection Solutions for FTTx – When to Use

TESTING TYPE	SITUATION	FLEXSCAN® FS200-3XX OTDR	FLEXSCAN TS100 TROUBLESHOOTER	FLOWSCOUT™ PON OPTICAL POWER METER	OFI-BIPM OPTICAL FIBER IDENTIFIER	FOCIS FLEX OR FOCIS LIGHTNING®2 CONNECTOR INSPECTION SYSTEM	AFL CLEANING SOLUTIONS
<b>Key Testing</b>	Verify continuity and visually locate faults (using VFL)	X	X	with VFI4			
	Non-intrusively identify live traffic on fiber before disconnecting				X		
	Inspect and pass/fail certify connector end faces					X	
	Inspect and pass/fail certify MPO connector					FOCIS Lightning2	
	Clean failing connectors						X
<b>Network Build</b>	Verify link length/locate break	X	X				
	Measure insertion loss at 1310/1550 nm	X	1625 or 1650				
	Reduce 1310/1550 insertion loss test time, eliminate setup errors using Wave ID	X					
	Measure optical return loss at 1310/1550 nm	X	1625 or 1650				
	Measure loss, reflectance, and bends in fiber, splices, connectors and splitters	X	X				
	Verify split ratio of installed splitters	X	1st splitter only				
<b>Network Activation</b>	Measure BPON/GPON/EPON (1490 nm) downstream power level where no RF video overlay	X	X	X			
	Measure BPON/GPON/EPON (1490 nm) downstream power level with video overlay present		X	X			
	Measure co-resident GPON and XG(S)-PON downstream power level		X	X			
	Last mile fiber drop certification with splitter continuity and ONT connectivity checks		X	X			
	Measure power levels of individual GPON and XG(S)-PON upstream and downstream wavelengths				X		
	Locate and identify root cause if power levels absent or too low	X	X				
	Identify and evaluate live/in-service PONs	Intrusive	Intrusive	Intrusive	Non-intrusive		

# Test and Inspection Solutions for FTTx – When to Use

TESTING TYPE	SITUATION	FLEXSCAN® FS200-3XX OTDR	FLEXSCAN TS100 TROUBLESHOOTER	FLOWSCOUT™ PON OPTICAL POWER METER	OFI-BIPM OPTICAL FIBER IDENTIFIER	FOCIS FLEX OR FOCIS LIGHTNING®2 CONNECTOR INSPECTION SYSTEM	AFL CLEANING SOLUTIONS
<b>Service Activation</b>	Verify power levels of GPON / XG(S)-PON downstream OLT Tx and ONT Rx		X	X			
	Verify downstream power levels before connecting and activating ONT		X	X			
	Verify downstream power levels at ONT if ONT not responding to OLT		X	X			
	Verify upstream and downstream levels after installing ONT			X			
	Verify upstream and downstream levels if ONT not responding to OLT			X			
	Verify upstream and downstream signal levels at CO/OLT, FDH and ONT			X			
<b>Troubleshooting &amp; Maintenance</b>	Verify link length or locate break	X	X				
	Identify and locate sources of excess loss or reflectance (poor splices, dirty/damaged/mismatched connections, macro-bends, faulty splitters)	X	X				
	Inspect and clean connectors with excess loss or reflectance					X	X
	Measure BPON/GPON/EPON (1490 nm) downstream power level where no RF video overlay	X	X	X			
	Measure BPON/GPON/EPON (1490 nm) downstream power level with video overlay present		X	X			
	Measure GPON and XG(S)-PON downstream power level		X	X			
	Last mile fiber drop troubleshooting with splitter continuity and ONT connectivity checks		X				
	Measure power levels of GPON and XG(S)-PON upstream and downstream wavelengths				X		
	Verify power levels of G-PON / XG(S)-PON downstream OLT Tx and ONT Rx			X	X		
	Measure optical network insertion loss at one or more $\lambda$	X	X				
	Measure TX output power or RX input power at a single $\lambda$	X	X	X			
	Identify active ONU				Intrusive	Non-intrusive	

# FlexScan® TS100 FTTH PON Troubleshooter

## Enables all technicians to test and troubleshoot like experts

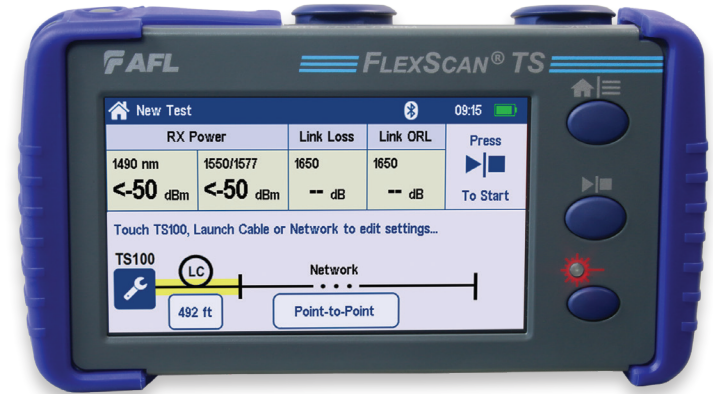
AFL's FlexScan TS100 is a family of pocket-sized optical troubleshooters for frontline service technicians to enable them to quickly verify or diagnose GPON, video and XG/XGS-PON or 10GEPON networks.

It features automated setup, ultra-fast fault location and color-coded icons that enable even novices to diagnose and repair single-mode networks like experts.

The TS100 measures downstream PON power, link length, loss and ORL in under three seconds with the push of a button. Technicians then simply touch any failed measurements to get information on what to do about it.

Test results may be stored internally or externally and easily shared via USB or Bluetooth. The included Windows-compatible TRM® 3.0 Test Results Manager software quickly generates easy-to-understand reports.

For use by service providers, MSOs and contractors, the FlexScan TS100 automates testing, shortens test time, interprets results and recommends corrective actions – improving the efficiency of their frontline technicians and reducing costs.



### Features

- Locate faults in <3 seconds with the press of a button
- Displays link length, loss, ORL and pass/fail results
- Single-ended test reduces time and cost
- Rugged, lightweight, hand-held for field use
- Available with field-replaceable connectors

### Benefits

- Faster readings, quick evaluation
- Measurements at a glance, color-coded icons, little-to-no training required
- Pocket sized, lightweight, rugged, with large touchscreen LCD for daily field use
- Fiber-identifying tone generation and Wave ID insertion loss testing
- TX/RX power measurements, tone detect and Wave ID insertion loss test
- Pinpoint faults in splice closures and cabinets
- Store locally or upload results from field

### Applications

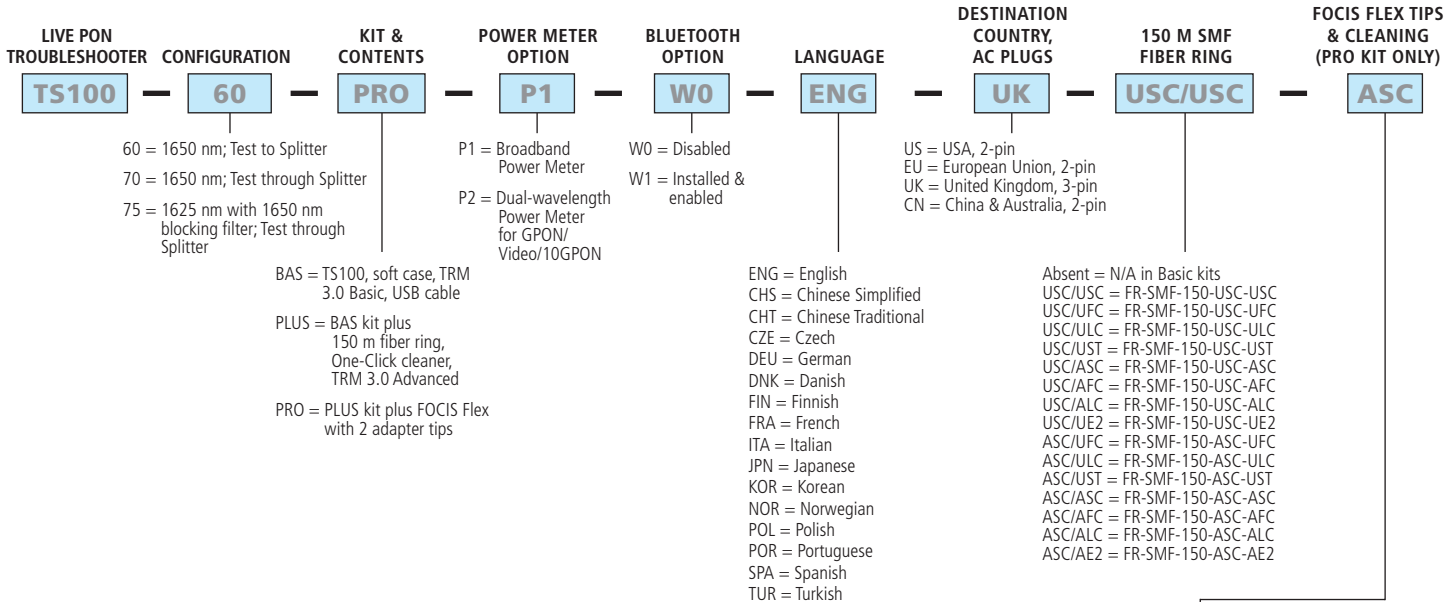
- Troubleshoot PONs or Point-to-Point networks from one end
- Diagnose faults exceeding industry or user pass/fail limits
- Verify loss of PON splitters up to 1:64 split ratio
- Verify GPON, video and XG/XGS-PON or 10GEPON power levels
- Verify insertion loss, TX output or RX input power levels
- Pinpoint location of macro-bends or breaks

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## FlexScan® TS100 Kit Configurations

All kits include selected FlexScan TS100 with AC charger, battery, carry strap, 2.5 mm SC connector adapters, TRM® 3.0, USB cable and soft carry case. **PLUS kits** add a 150 m fiber ring, One-Click® cleaner and upgrade to TRM 3.0 Advanced software. **PRO kits** add a FOCIS Flex auto-focusing connector inspection probe with IEC pass/fail analysis and two adapter tips. TS100s are manufactured with APC connectors.



### EXAMPLE:

**TS100-60-PRO-P1-W0-ENG-UK-USC/USC-ASC** is a TS100 1650 nm filtered Live PON Troubleshooter with Test to Splitter, PRO Kit, Broadband Power Meter with Bluetooth disabled, English language for UK with 2-pin AC plug, USC/USC 150 m single-mode fiber ring and SC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm One-Click Cleaner.

For more information on the TS100 Troubleshooter, refer to the [specification sheet](#).

Blank = Option not available in Basic and PLUS kits

SC = SC-UPC bulkhead tip, 2.5 mm UPC ferrule tip, 2.5 mm One-Click  
 FC = FC-UPC bulkhead tip, 2.5 mm UPC ferrule tip, 2.5 mm One-Click  
 LC = LC-UPC bulkhead tip, 1.25 mm UPC ferrule tip, 1.25 mm One-Click  
 ASC = SC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm One-Click  
 AFC = FC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm One-Click  
 ALC = LC-APC bulkhead tip, 1.25 mm APC ferrule tip, 1.25 mm One-Click

# FlexScan® FS200 Single-mode OTDR

## Provides technicians with everything needed to locate and resolve optical network issues

The FlexScan FS200 is a family of performance-packed single-mode OTDRs which provide fast, accurate fiber characterization and fault location for point-to-point and FTTH PON networks.

FlexScan FS200 OTDRs automate test setup, simplify results interpretation and shorten test time, all at an affordable price point. AFL's SmartAuto® mode requires just the push of a button to test the network. Results are clearly displayed on the large touchscreen using color-coded LinkMap® icons that show network configuration and pass/fail status at a glance. Our new FlexExpress® mode completes dual-wavelength tests in under 5 seconds – 10 x faster than other OTDRs!

The integrated light source, power meter and VFL, along with an optional connector inspection scope, provide both expert and novice technicians everything they need to locate and resolve optical network issues. Results may be stored internally or externally and easily shared via USB or Bluetooth®.



### Features

- Single, dual or triple wavelength single-mode OTDR
- FlexExpress mode completes OTDR tests in <5 seconds
- Easy to understand LinkMap results with pass/fail indications
- Integrated source, power meter and VFL (visual fault locator)
- Accepts field-replaceable Port Saver connectors

### Benefits

- Auto setup, easy to use by novice installers and detects multiple wavelengths automatically
- Integrated VFL, power meter and light source
- Easily paired to AFL's FOCIS family of inspection scopes, ensuring technicians have everything they need to locate and quickly resolve optical network issues.
- All day operation with bright indoor/outdoor touchscreen
- Results stored internally, saved to a USB or wirelessly uploaded via the free FlexScan App

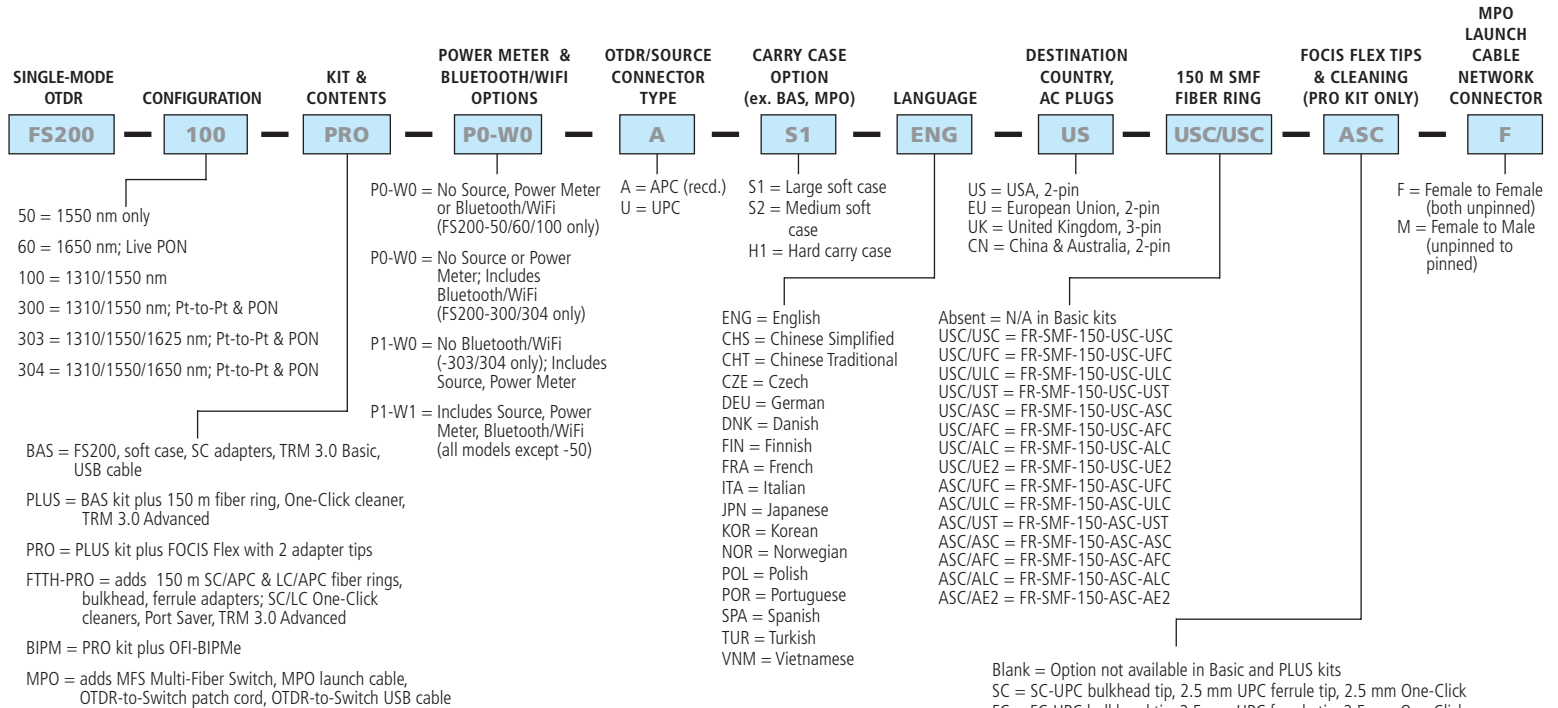
### Applications

- FTTH PON or point-to-point network verification or troubleshooting
- OTDR testing plus insertion loss and power measurements
- Locate faults exceeding industry or user pass/fail thresholds
- Visually pinpoint location of macro-bends or breaks

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## FlexScan® FS200 Single-mode OTDR Configurations

All kits include a FlexScan FS200 with AC charger, battery, carry strap, 2.5 mm SC connector adapters, TRM® 3.0, USB cable and carry case. **PLUS kits** add a 150 m SMF Fiber Ring, One-Click® Cleaner, upgrade to TRM 3.0 Advanced, soft or hard carry case. **PRO kits** add FOCIS Flex with two user-selected adapter tips. **FTTH-PRO** adds 150 m SC/APC and LC/APC Fiber Rings, FOCIS Flex, SC/APC and LC/APC bulkhead and ferrule adapters, SC and LC One-Click Cleaners, Port Saver, TRM 3.0 Advanced, soft or hard carry case (FS200-303/304 only). **BIPM Kit** includes PRO Kit plus OFI-BIPMe. **MPO Kit** includes FlexScan plus MFS Multi-Fiber Switch, MPO launch cable, OTDR-to-Switch patch cord, OTDR-to-Switch USB cable.



### EXAMPLE:

**FS200-60-PRO-P0-W0-A-S1-ENG-US-USC/USC-ASC-F** is a FlexScan FS200 1310/1550 nm OTDR, PRO Kit, without Source/Power Meter/Bluetooth, APC connectors, large-size soft carry case, English language for US with 2-pin, USC/USC 150 m single-mode fiber ring, SC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm One-Click Cleaner and female MPO launch cable network connector.

For more information on the FS200 Single-mode OTDR, refer to the [specification sheet](#).

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# FlowScout™ PON Optical Power Meter

Allows technicians to activate and maintain networks carrying a mix of GPON/EPON, video and next-gen PON (XG/XGS-PON, 10GEPON) wavelengths

AFL's FlowScout PON Power Meter identifies, measures and qualifies both downstream and upstream signal levels in FTtx PON networks. It is perfect for technicians responsible for activating and maintaining networks carrying a mix of GPON/EPON, video and next-gen PON (XG/XGS-PON, 10GEPON) wavelengths.

Unlike competing through-mode PON Power Meters, AFL's FlowScout requires no setup. Technicians simply plug in the fiber under test to see results displayed in seconds on the large color touchscreen. Storage and reporting options are included to verify and document results from the field.

FlowScout's rugged design makes it perfect for outside plant environments where it can be dropped, get dirty or even wet. And because it is so easy to use, FlowScout requires little, if any, training.



## Features

- Detect multiple wavelengths automatically
- Detects GPON, XGS-PON and video signals all at once
- Rugged and water resistant, IP54 rating
- Field-swappable connector adapters
- Large color touchscreen display daylight viewable
- QR code feature easily collects and transfers test data via smart devices
- Rechargeable Li-Polymer battery

## Benefits

- Easy to use – simple interface with clear Pass/Fail results, no setup required, inexperienced technician friendly
- Fast results – auto-detect and measure up to 5 wavelengths in  $\leq 3$  secs!
- PON future proof – measures XG-PON, XGS-PON, 10GEPON, B/E/GPON Video and RFoG
- Upstream and downstream measurements – identifies, measures and qualifies FTtx PONs

## Applications

- Detects and measures FTtx PON upstream and downstream signals
- BPON, EPON, GPON, 10G-EPON, XG-PON, XGS-PON, Video network verification and troubleshooting
- Complete FTtx PON network activation
- Evaluate PON power level Pass/Fail based on limits

## FlowScout™ PON Optical Power Meter Ordering Information

All models include PON optical power meter, rechargeable batteries, SC/APC adapter cap, two SC/APC-SC/APC jumpers, USB-A to USB-C cable for charging and data transfer, AC plug and carry case.

DESCRIPTION	AFL NO.
FlowScout PON optical power meter XGPON/XGSPON	TPPM-XG
<b>INCLUDED ACCESSORIES</b>	
(2) SC/APC to SC/APC Test Jumpers, 2 m	8700-00-0090MR
USB-A to USB-C Charge and Data Transfer Cable	6000-00-0036MR
AC Adapter	4050-00-0034MR
One-Click® Cleaner Mini-500 SC, ST, FC (500+ cleans)	8500-05-0009MZ
<b>AFL ships one power plug (of customer choice) along with the order. Please select one out of the four plugs listed below.</b>	
EU Power Plug for AC charger	4050-00-0034EUMR
US power plug for AC charger	4050-00-0034NAMR
CN/AUS power plug for AC charger	4050-00-0034SAAMR
UK power plug for AC charger	4050-00-0034UKMR

For more information on FlowScout PON Optical Power Meter, refer to the [specification sheet](#).

## OFI-BIPM/-BIPMe Optical Fiber Identifiers

Removes the need to access the optical fiber at a connection or splice point without interrupting service to a customer

The OFI-BIPM/-BIPMe optical fiber identifier is an easy-to-use tool that determines if a fiber is live, the transmission direction, and the relative core power on standard and bend-insensitive single-mode and multimode fibers. Its positive stop trigger mechanism provides the right amount of pressure every time to assure proper detection, while keeping loss to a minimum. This ensures that traffic will not be interrupted, and the fiber will not be damaged.



OFI-BIPM

OFI-BIPMe

### Features

- World-class signal detection sensitivity
- Positive stop trigger lock for optimum detection
- Integrated optical power meter
- Up to 4 Tones detection (OFI-BIPMe only)

### Benefits

- Assures live fibers are not connected
- Provides the ability to trace fiber end-to-end
- Embedded Power Meter for user convenience
- Detects 270Hz, 330Hz, 1kHz and 2 kHz tones, traffic, or CW signals indicating signal direction
- Unique trigger lock and positive stop protects fiber from excessive bending and hand fatigue

### Applications

- Maintenance of fiber optic networks
- Troubleshooting network issues
- Identification of live fibers or trace fibers
- Power levels verification
- Confirm the presence of optical signals in specific fibers during installation, maintenance, rerouting and restoration

## OFI-BIPM/-BIPMe Optical Fiber Identifiers Ordering Information

DESCRIPTION	AFL NO.
BI Optical Fiber Identifier with integrated Optical Power Meter. The kit includes one 2.5 mm Universal Power Meter Port Adapter, BIPM-00-25.	OFI-BIPM
BI Enhanced Optical Fiber Identifier with integrated Optical Power Meter. The kit includes one 2.5 mm Universal Power Meter Port Adapter, BIPM-00-25.	OFI-BIPMe
<b>OPTIONAL ADAPTERS (ordered separately)</b>	
2.5 mm Universal Power Meter Port Adapter	BIPM-00-25
SC Power Meter Port Adapter	BIPM-00-SC
FC Power Meter Port Adapter	BIPM-00-FC
ST Power Meter Port Adapter	BIPM-00-ST
LC Power Meter Port Adapter	BIPM-00-LC

For more information on OFI-BIPM/-BIPMe Optical Fiber Identifiers, refer to the [specification sheet](#).

# FOCIS Flex Fiber Optic Connector Inspection System

See, save and share digital fiber inspection with the push of a button.

FOCIS Flex makes connector inspection simple, fast, and convenient. With the press of a single button, FOCIS Flex auto-focuses, captures and centers the end-face image, applies Pass/Fail rules, displays image and Pass/Fail results, saves results internally and/or wirelessly transfers data to a paired FlexScan OTDR or a smart device. It is fast, small, and easy to use to enable 100% connector inspection.



## Features

- One button to auto-focus, center, capture, analyze and save
- IEC, IPC, and user-defined pass/fail analysis
- Untethered, compact, hand-held inspection
- Use independently or pair with OTDR
- Save 10K results internally or share via WiFi or USB

## Benefits

- Tether-free, self-contained inspection with color LCD
- Small, lightweight, and fast with excellent repeatability and accuracy
- Weighs less than 10 ounces and requires a single button push to operate
- 8-hour rechargeable battery – works all day!

## Applications

- Inspect connectors on patch cords or in bulkhead adapters
- Optical network installation, troubleshooting, and maintenance
- Inspect MPO/MTP multi-fiber connectors
- Assure critical fiber infrastructure performs properly
- Keep fiber connections working at optimal performance levels
- Verify proper connector cleaning practices are being used

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## FOCIS Flex Fiber Optic Connector Inspection System

### FlexScan® OTDR PRO and BIPM Kits with FOCIS Flex

**PRO Kits** include the following items:

- FlexScan with accessories (AC charger, carry strap, SC/2.5 mm connector adapters, TRM® 3.0 Advanced Test Results Manager, carry case)
- FOCIS Flex Fiber Optic Connector Inspection System with accessories (AC charger, USB cable, soft carry case/holster)
- Two user-selected adapter tips and one user-selected One-Click® Cleaner
- 150 m Fiber Ring (launch cable) with user-specified connectors

**Complete kits** expand on PRO Kits by adding bend insensitive fiber identifier with optional power meter (OFI-BIPM).

See [FOCIS Flex specification sheet](#) or [FlexScan FS-200 OTDR specification sheet](#) for more information.

DESCRIPTION	AFL NO.
FOCIS Flex Kit, soft carry case/holster, USB cable, AC charger, TRM 3.0 reporting software, reference guide, no tips	FOCIS-FLX-P4XN
FOCIS Flex Kit, soft carry case/holster, USB cable, AC charger, TRM 3.0 reporting software, reference guide, 2 user-selected UPC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner	FOCIS-FLX-P4XU
FOCIS Flex Kit, soft carry case/holster, USB cable, AC charger, TRM 3.0 reporting software, reference guide, 2 user-selected APC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner	FOCIS-FLX-P4XA
FOCIS Flex Kit, soft carry case/holster, USB cable, AC charger, TRM 3.0 reporting software, reference guide, user-selected UPC adapter tips (ferrule and bulkhead), 2 user-selected APC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner	FOCIS-FLX-P4XUA

### FOCIS Flex Adapter Tips (Contact AFL for adapter tips for other connector types)

DESCRIPTION	AFL NO.
SC-UPC bulkhead adapter tip	FFLX-01-SC
FC-UPC bulkhead adapter tip	FFLX-01-FC
ST-UPC bulkhead adapter tip	FFLX-01-ST
LC-UPC bulkhead adapter tip	FFLX-01-LC
Universal 2.5 mm, UPC ferrule adapter tip	FFLX-01-U25
Universal 1.25 mm, UPC ferrule adapter tip	FFLX-01-U125
SC-APC bulkhead adapter tip	FFLX-4S-ASC
FC-APC bulkhead adapter tip	FFLX-4S-AFC
LC-APC bulkhead adapter tip	FFLX-4S-ALC
Universal 2.5 mm, APC ferrule adapter tip	FFLX-01-A25
Universal 1.25 mm, APC ferrule adapter tip	FFLX-01-A125

DESCRIPTION	AFL NO.
FOCIS Flex adapter extension tube, straight, 46 mm	FFLX-01-EXTS46
FOCIS Flex adapter extension tube, straight, 80 mm	FFLX-01-EXTS80
E2000 PC/UPC bulkhead adapter tip	FFLX-4S-E2K
E2000 APC bulkhead adapter tip	FFLX-4S-E2KA
Tip for SC/APC (OptiTap®) bulkhead adapter	FFLX-4S-OTA
Tip for OptiTip® APC ferrule and bulkhead adapter	DFS1-01-0013MR
MTP/PC ferrule & bulkhead adapter extended tip kit (base plus MTP/PC front end tip)	DFS1-00-0037MR
MTP/PC and MTP/APC ferrule & bulkhead adapter extended tip kit (base, MTP/PC, MTP/APC front end tips)	DFS1-00-0042MR
MTP/APC ferrule and bulkhead adapter extended tip kit (base plus MTP/APC front end tip)	DFS1-01-0010MR

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# FOCIS Lightning®2 Multi-Fiber Optic Connector Inspection System

## Lightning-fast digital inspection of the entire MPO end-face with the push of a button

FOCIS Lightning2 is a compact self-contained inspection probe that captures and displays the entire MPO end-face image in less than two seconds. One button provides auto-focusing, centering and Pass/Fail analysis at the connector and individual fiber level. It can be used to inspect MPO-8, -12, -16, -24 and -32 connectors. Results can be easily shared via USB and Bluetooth®.



### Features

- Large, simple-to-use touch screen
- Self-contained, tether-free, compact, hand-held inspection solution
- Auto-focus and auto-centering for fast, easy inspection
- Up to 8x zoom for enhanced fiber end-face viewing
- Stores 10k images or easily shares data via USB or Bluetooth connectivity
- IEC, IPC, AT&T and user-defined auto-analysis
- Wide variety of adapter tips for MPO and single-fiber connector types

### Benefits

- 100x faster than manual single-fiber inspection; inspect 1,000 connectors in 3 .2 hours
- Quickly document connector end-face conditions before and after cleaning
- All-in-one connector inspection solution ready for any job
- Multi-fiber and single fiber inspection – Future proofs your investment
- Fully self-contained – doesn't tie up your OTDR, phone or tablet
- One-handed operation; weighs <10 ounces; single-button operation
- 8-hour rechargeable battery – works all day!

### Applications

- Inspect multi-fiber and single-fiber connectors and adapters
- Data center fiber network installation, turn-up and troubleshooting
- Inspect hardened connectors in FTTx network
- Verify proper connector cleaning practices
- Pair with OTDR for comprehensive reporting

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## FOCIS Lightning®2 Multi-Fiber Optic Connector Inspection System

### Ordering Information

DESCRIPTION	AFL NO.
FOCIS Lightning2 Kit, soft carry case, USB cable, with no tips or One-Click® cleaner	FOCIS-LT2-N
FOCIS Lightning2 Kit, soft carry case, USB cable, (1) UPC ferrule and bulkhead adapter tip, (2) One-Click MPO cleaners	FOCIS-LT2-U
FOCIS Lightning2 Kit, soft carry case, USB cable, (1) APC ferrule and bulkhead adapter tip, (2) One-Click MPO cleaners	FOCIS-LT2-A
FOCIS Lightning2 Kit, soft carry case, USB cable, (1) UPC and (1) APC ferrule and bulkhead adapter tips, (2) One-Click MPO cleaners	FOCIS-LT2-UA
FOCIS Lightning2 Kit, soft carry case, USB cable, (1) UPC and (1) APC ferrule and bulkhead adapter tips, (2) One-Click MPO cleaners, single fiber adapter	FOCIS-LT2-UASF
FOCIS Lightning2 No Wireless Kit, soft carry case, USB cable, with no tips or One-Click cleaner	FOCIS-LT2-NW-N
FOCIS Lightning2 No Wireless Kit, soft carry case, USB cable, (1) UPC ferrule and bulkhead adapter tip, (2) One-Click MPO cleaners	FOCIS-LT2-NW-U
FOCIS Lightning2 No Wireless Kit, soft carry case, USB cable, (1) APC ferrule and bulkhead adapter tip, (2) One-Click MPO cleaners	FOCIS-LT2-NW-A
FOCIS Lightning2 No Wireless Kit, soft carry case, USB cable, (1) UPC and (1) APC ferrule and bulkhead adapter tips, (2) One-Click MPO cleaners	FOCIS-LT2-NW-UA
FOCIS Lightning2 No Wireless Kit, soft carry case, USB cable, (1) UPC and (1) APC ferrule and bulkhead adapter tips, (2) One-Click MPO cleaners, single-fiber adapter	FOCIS-LT2-NW-UASF

### FOCIS Lightning2 Adapter Tips and Accessories

DESCRIPTION	TIP ID	AFL NO.
Adapter tip for MPO-12/24 APC bulkhead (with key)	M12A	FLTNG-01-M12A
Adapter tip for MPO-12/24 UPC bulkhead (with key)	M12U	FLTNG-01-M12U
Adapter tip for MPO-16/32 UPC bulkhead (with key)	M16U	FLTNG-01-M16U
Adapter tip for MPO-12/16/24/32 UPC bulkhead (no key)	MPOU	FLTNG-01-MPOU
Adapter Tip for MPO-12/16/24/32 APC connector (with key)	MAC	FLTNG-01-MAC
Adapter Tip for MPO-12/16/24/32 UPC connector (with key)	MUC	FLTNG-01-MUC
Adapter Tip for OptiTip male (pinned) connector	OPTM	FLTNG-01-OPTM
Adapter Tip for OptiTip female (unpinned) connector	OPTF	FLTNG-01-OPTF
Coupler for most 'FFLX' single fiber connector adapter tips	SFC	FLTNG2-01-SFC
Extended adapter tip for LC-APC bulkhead	ALCM	FLTNG-01-ALCM
Extended adapter tip for LC-UPC bulkhead	ULCM	FLTNG-01-ULCM
MPO extender barrel	MPE	FLTNG-01-MPE
Adapter tip for Large Field of View (LFOV) - UPC	LVU	FLTNG2-01-LVU
MPO extender barrel	MPE	FLTNG-01-MPE

For more information on FOCIS Lightning2, refer to the [specification sheet](#).

# Fiber Optic Cleaning

Dirty connectors are one of the MOST COMMON reasons for network outages

## Push-type Cleaners

### One-Click® Cleaners

- 500+ cleans
- Ergonomic design with single action cleaning
- Cleans jumper and bulkhead connectors



## FCP Field-portable Connector Cleaning Kits

### Basic Cleaning Kit

- One-Click Cleaners
- FCC2 Cleaning Fluid
- FCC3 Debris Destroyer®
- FiberWipes
- Cletop SB
- Duffle Bag



## NEOCLEAN Cleaners

- 750 cleans
- Simple push action
- Replaceable cleaning cartridge



## Enterprise Easy-Access Cleaning Kit

- One-Click Cleaners
- FCC2 Cleaning Fluid
- FCC3 Debris Destroyer
- Connector Cleaning Sticks
  - CCTS-12 for 1.25 mm ferrule in adapters or sockets (LC, MU, etc.)
  - CCTS-25 For 2.5 mm ferrule in adapters or sockets (SC, FC, ST, etc.)
- Cletop-S
- Soft Carry Case



## Reel-type Cleaners

### CLETOP Series

- 400 Cleans
- Roll and cassette tape replacement
- Side or top mounted tape advancement

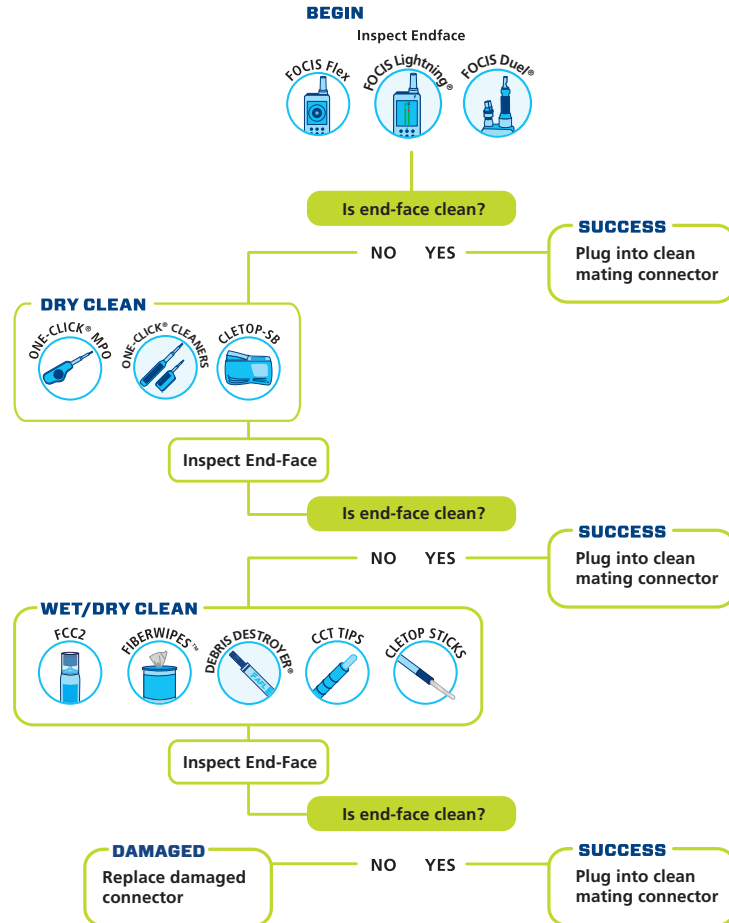


For more information, see the specification sheets for [One-Click Cleaners](#), [NEOCLEAN Cleaners](#), [CLETOP Series](#) and [Cleaning Kits](#).

## Cleaning Best Practices

Proper cleaning minimizes damage to connectors and equipment, helps provide accurate loss measurements and ensures the network will operate properly.

**85%**  
OF ALL  
**NETWORK FAILURES**  
ARE DUE TO  
**DIRTY CONNECTORS**



# **F AFL**



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