FLEXSCAN® FS200

SINGLE-MODE OTDR

Distribution

PRODUCT OVERVIEW

AFL's FlexScan FS200 OTDR is an all-in-one solution for detecting, identifying, locating, and resolving single-mode optical network issues.

It is designed for both novice and expert technicians working in a range of environments, from FTTH PON to point-to-point networks. It applies industry-standard or user-set pass/fail criteria and displays results using LinkMap colour-coded icons to show the health of the network. FlexScan's automate test setup, shorten test time, and simplify results interpretation improving efficiency and reducing costs.

All-in-one test capability: The FlexScan FS200 includes an integrated VFL, power meter, and light source. It can be easily paired to AFL's award-winning FOCIS family of inspection scopes, ensuring technicians have everything they need to locate and quickly resolve optical network issues.

Performance-packed: With SmartAuto multi-pulse acquisition, up to 37 dB dynamic range, and best-in-class 25m PON dead zone, FlexScan FS200 PON OTDRs test FTTH PONs up to 1:64 while still detecting and measuring events only meters apart.

Fast! FleXpress mode completes dual-wavelength tests in <5 seconds – 10 x faster than conventional OTDRs! For multi-fibre testing, FS200s automatically control AFL's MFS Multi-Fibre Switch (12-fiber MPO switch) to further reduce multi-fibre test time.

Pocket-sized: At 86 x 160 x 43mm (3.5 x 6 x 1.75 in) and less than one pound (0.4 kg), FlexScan FS200 OTDRs truly fit in your pocket, yet still provide a large, bright indoor/outdoor touchscreen display, and all-day operation.

Multiple sharing and reporting options: Results can be stored internally, saved to a USB, or wirelessly uploaded via the free FlexScan App for real-time reporting using the included TRM® 3.0 Test Results Manager software.

Field-replaceable connector: With AFL's optional field-replaceable connector, avoid expensive service repairs to replace connectors damaged due to poor cleaning practices and/or normal wear-and-tear.

Convenient cost-saving kits: Bundle the FlexScan FS200 with your choice of launch cable, FOCIS Flex connector inspection probe and tips, and/or AFL's universal optical fiber identifier (OFI-BIPMe) for significant cost-savings!

PON-optimized FTTH-PRO kits: Combine FS200-303/304 with a FOCIS Flex Inspection probe, 4 adapter tips, and launch cables for both SC/APC and LC/APC networks.

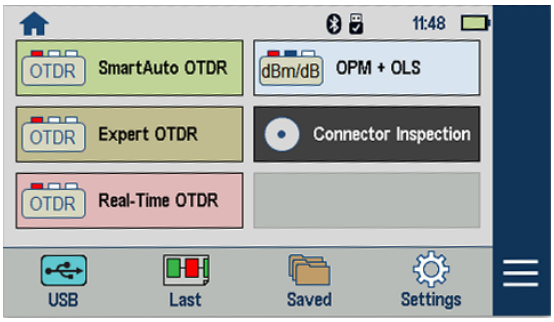
Field-replaceable Port Saver connector: With AFL's optional field-replaceable Port Saver, avoid expensive service repairs to replace connectors damaged due to poor cleaning practices and/or normal wear-and-tear.

Features

- FleXpress® mode completes OTDR tests in <5 seconds
- Test up to 1:64 PON with 25 m PON dead zone
- Easy to understand LinkMap® results with pass/fail indications
- Single, dual or triple wavelength single-mode
- Single port for in- and out-of-service OTDR tests
- Integrated source, power meter, VFL (visual fault locator)
- Integrated MPO Switch control via USB
- Rugged, lightweight, hand-held for field use
- Available with field-replaceable Port Saver connector

Applications

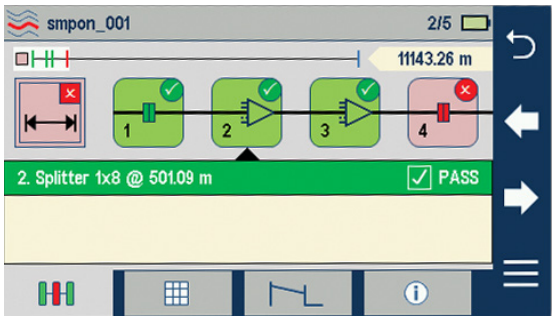
- PON or point-to-point network verification or troubleshooting
- OTDR testing plus insertion loss and power measurements
- Locate faults exceeding industry or user pass/fail thresholds
- Visually pinpoint location of macro-bends or breaks



Dramatically Reduces Test Time

In SmartAuto mode, FlexScan OTDRs automatically analyse and test the network using a variety of network-optimised settings to precisely locate, characterise and identify network events with one button push. Loss and reflectance are measured for connectors, splices, splitters and macro-bends. FlexScan even checks for live fibre and verifies OTDR launch quality before initiating a test.

FlexScan's FleXpress mode completes dual-wavelength tests in seconds, reducing test time by 10x compared to conventional OTDRs. For multi-fibre testing, FlexScan's automatically control AFL's MPO Switch, testing 12 fibres at the touch of a single button.



Simplifies Network Troubleshooting

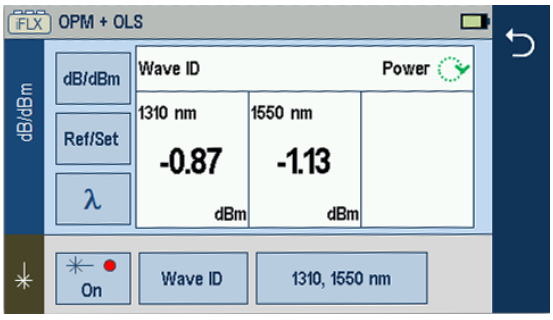
LinkMap with pass/fail enables even novice users to easily and accurately troubleshoot optical networks. LinkMap presents an icon-based view of the tested network clearly identifying fibre start, end, connectors, splices, PON splitters, and macro-bends.

A LinkMap summary provides end-to-end link length, loss and ORL. Loss and reflectance are displayed with clear pass/fail indications. Users can instantly toggle between LinkMap and Trace views.

Connectivity

FlexScan OTDRs easily pair with AFL's ward-winning FOCIS® family of connector inspection probes for fast, easy single-fibre and/or multi-fibre connector end-face inspection.

FlexScan results can then be transferred wirelessly via the free FlexScan App to a smart device for real-time reporting using the included Test Results Manager (TRM 3.0) PC-based software. This real-time monitoring can help avoid mistakes in the field that will require future truck rolls.



OTDR, OLTS, and VFL Testing with a Single Tool

FlexScan optionally includes a Wave ID optical light source (OLS) and optical power meter (OPM). With Wave ID, the OPM auto-synchronises to a single or multi-wavelength Wave ID optical signal transmitted by an AFL light source. The OPM reports detected wavelengths and measures power and loss at each wavelength, saving significant test time and eliminating setup errors.

The integrated VFL's eye-safe red laser enables users to visually pinpoint the location of macro-bends and fibre breaks often found in splice closures and fibre cabinets.

Specifications [a]

Model: FS200-XXX	-50	-60	-100	-300	-303	-304
OTDR						
Emitter Type	Laser					
Safety Class [b]	Class I					
Fibre Type	Single-mode					
Wavelengths	1550	1650	1310 / 1550	1310 / 1550	1310 / 1550 / 1625	1310 / 1550 / 1650
Centre λ Tolerance [c]	1310/1550/1650: ± 20 nm; 1625 +30/-5 nm					
Dynamic Range [d] (dB)	28	37	32/30	37/36	37/36 /37	37/36 /37
Event Dead Zone [e] (m)	1.0	0.8	0.8	0.8	0.8	0.8
Atten. Dead Zone [f] (m)	6.0	3.5	3.6	3.5	3.5	3.5
PON Dead Zone [g] (m)	N/A	30	N/A	25/25	25/25 /30	25/25 /30
Pulse Widths	3, 5, 10, 20, 30, 50, 100, 200, 300, 500 ns; 1, 2, 3, 10 µs; 20 µs (FS200-300/300/304 only)					
Range Settings	250 m to 240 km					
Data Points	Up to 300,000 (Expert mode .SOR file)					
Data Spacing	5 cm to 16 m					
Index of Refraction	1.3000 to 1.7000					
Distance Uncertainty	±(1 + 0.003% x distance + data point spacing) m					
Linearity (dB/dB)	±0.05					
Trace File Format	Telcordia SR-4731 Issue 2 compatible .SOR					
Trace Storage Medium	4 GB internal memory (> 5000 traces typical); External USB memory stick					
Data Transfer to PC	USB cable or Bluetooth® (option)					
OTDR Modes	SmartAuto, Expert, Real-time					
FleXpress Fast Test	FS200-300/303/304					
Display Modes	LinkMap Summary, LinkMap Events, Trace					
Refresh Rate	Up to 4 Hz (Real-time mode)					
Live Fibre Protection	No OTDR damage with input power ≤ +15 dBm for wavelength(s) in range 1260 to 1675 nm					
Live Fibre Detection	Reports live fibre with input signal ≥ -35 dBm for wavelength(s) in range 1260 to 1675 nm					
PON Filter Isolation	>50 dB for 1260 nm ≤ wavelength ≤1600 nm					
Live PON OTDR Test	1625 or 1650 nm using filtered detector					

Model: FS200-XXX	-50	-60	-100	-300	-303	-304
VISUAL FAULT LOCATOR (VFL)						
Emitter Type	Visible red laser, 650 ±20 nm					
Safety Class [b]	Class II					
Output Power	0.8 mW into single-mode fibre (-1 dBm ±0.5 dB)					
Modes	CW, 2 Hz flashing					
OPTICAL LASER SOURCE - OLS (Optional)						
Emitter Type	Laser					
Safety Class [b]	Class I					
Fibre Type	Single-mode					
Wavelengths (nm)	1550	N/A	1310 / 1550	1310 / 1550	1310 / 1550	1310 / 1550
Centre λ Tolerance [c]	±20 nm (CW mode)					
Spectral Width (FWHM)	5 nm (maximum)					
Internal Modulation	270 Hz, 330 Hz, 1 kHz, 2 kHz, CW, Wave ID					
Wave ID	Compatible with AFL OPM/OLS					
Output Power Stability	≤ ±0.1 dB (15 minutes); ≤ ±0.15 dB (8 hours)					
Output Power	-3 dBm ±1.5 dB					
OPTICAL POWER METER - OPM (Optional)						
Calibrated Wavelengths	1310, 1490, 1550, 1625, 1650 nm					
Detector Type	InGaAs, 1 mm diameter					
Measurement Range	+23 to -50 dBm					
Tone Detect Range	+3 to -35 dBm					
Accuracy	±0.25 dB					
Resolution	0.01 dB					
Measurement Units	dB, dBm or Watts (nW, µW, mW)					
GENERAL						
Size (in boot)	86 x 160 x 43 mm					
Weight	0.4 kg					
Operational Temperature [h]	-10 °C to +50 °C, 0 to 95 % RH (non-condensing)					
Storage Temperature	-40 °C to +70 °C, 0 to 95 % RH (non-condensing)					
Power	Rechargeable Li-Pol or AC adapter					
Battery Life	>12 hours, Telcordia test conditions					
Display	4.3 in color touchscreen LCD, 480x272, backlit					
USB Ports	1 host; 1 micro-USB function					
Bluetooth (optional)	Compatible with Windows PC, Android					

Notes:

a. All specifications valid at 25 °C unless otherwise specified.
b. FDA 21 CFR 1040.10 & 1040.11, IEC 60825-1: 2014.
c. Using 10 ns pulse width.
d. SNR=1, longest range and pulse width, 3-minute averaging.
e. Maximum distance between two points 1.5 dB down each side of a reflective peak caused by an event with reflectance ≤ -45 dB using 3 or 5 ns pulse.
f. Maximum distance from the start of a trace spike caused by an event with a -45 dB (or smaller) reflectance, to the point where the trace returns to and stays within ±0.5 dB of backscatter. Test pulse width is 3 or 5 ns.
g. Recovery to within 0.5 dB of backscatter after 1:16 splitter (≤13 dB loss) using 100 ns pulse width.
h. Max temperature while charging is +45 °C.

Qualifications

Category	Regulation / Standard	Qualification
CE Marking	EU	Compliant to relevant EU Directives on health, safety, and environmental protection, and certified with CE marking
Safety/EMC/EMI	IEC	Compliant to IEC 61010-1 for safety requirements for electrical equipment
	EN	Compliant to EN 61010-1 for safety requirements for electrical equipment
	IEC	Compliant to IEC 61326-1 for EMC requirements for electrical equipment
	EN	Compliant to EN 61326-1 for EMC requirements for electrical equipment
	EN	Compliant to EN 55011 for EMC requirements for industrial, scientific and medical equipment
	Telcordia	Compliant to GR-196-CORE 4.5.1 for requirements on electromagnetic interference
	FCC	Compliant to code of federal regulations FCC 47 CFR 15 on unlicensed transmissions
	FDA	Compliant to code of federal regulations FDA 21 CFR 1040.10 and 1040.11 on laser products
	IEC	Compliant to IEC 60825-1 for safety of laser products
RoHS	EU	Compliant to EU regulations Directive 2011/65/EU (RoHS 2) and Directive 2015/863 (RoHS 3)
Test Method	TIA	Compliant to TIA-568.3-D for test and measurement requirements for premises optical fibre cabling and components
	IEC	Compliant to IEC 11801 for test and measurement requirements for optical fibre cabling for use within premises
	AS/NZS	Compliant to AS/NZS 3080 for test and measurement requirements for optical fibre cabling for use within premises
	TIA	Compliant to TIA-526-7 for test procedures for installed optical fibre cable plant
	TIA	Compliant to TIA-526-14 for test procedures for installed optical fibre cable plant
	IEC	Compliant to IEC 14763-3 for systems and methods for the inspection and testing of installed optical fibre cabling
	AS/NZS	Compliant to AS/NZS 14763.3 for systems and methods for the inspection and testing of installed optical fibre cabling
	IEC	Compliant to IEC 61280-4-1 for test procedures for installed optical fibre cable plant
	IEC	Compliant to IEC 61280-4-2 for test procedures for installed optical fibre cable plant
Generic Requirement	Telcordia	Compliant to GR-196-CORE for generic requirements for OTDR-type equipment
	Telcordia	Compliant to SR-4731 Issue 2 for OTDR data format
	IEC	Compliant to IEC 61315 for requirements on calibration of fibre-optic power meters

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