FlexScan® FS300 Quad OTDR with SmartAuto® & LinkMap®

Pocket-sized, Performance-packed, User-friendly and *Fast*

Features

- Test MM and SM, point-to-point and PON
- Detects closely spaced events without sacrificing range
- LinkMap icons clearly identify event type & pass/fail status
- Best-in-class 25 m PON dead zone
- Print-to-PDF plus internal & external data storage
- Integrated Source, Power Meter, Visual Fault Locator
- Bluetooth & WiFi communications
- Tether-free connector inspection with FOCIS Flex/Duel
- Rugged, lightweight, hand-held for field use
- 5" 800 x 480 color touchscreen LCD

Applications

- OTDR and Insertion Loss test & reporting
- Fast, accurate pt-to-pt & PON verification & troubleshooting
- Locate faults exceeding industry or user pass/fail thresholds
- Visually pinpoint location of macro-bends or breaks

Performance-packed: With SmartAuto multi-pulse acquisition, 37 dB dynamic range and best-in-class dead zones, FlexScan Quad OTDRs test multimode and single-mode networks – including FTTH PONs and POLANs up to 1:64 split ratio – while still detecting and measuring events <2 meters apart.

User-friendly: FlexScan OTDRs enable both expert and novice technicians to quickly, reliably and accurately detect, locate, identify and measure optical network components and faults. After applying industry-standard or user-set pass/fail criteria, the network is displayed using FlexScan's intuitive, icon-based LinkMap view. Results may be printed to PDF and stored internally or externally. FlexScan automates test setup, shortens test time and simplifies results interpretation, improving test efficiency and cost.

Pocket-sized: FlexScan OTDRs truly fit in your pocket, yet still deliver all-day battery operation plus a large, bright, indoor/outdoor, 5-inch 800x480 touchscreen display. With large touch controls, you'll never need a stylus.

All-in-one test capability: With optional connector inspection, integrated optical light source, power meter and VFL, FlexScan provides an all-in one solution, ensuring technicians have everything they need to locate and resolve optical network issues. Uploaded results may be viewed and professional reports may be generated using the included Windows-compatible TRM 3.0 Test Results Manager software.

Available in Convenient, Cost-saving Installation and Troubleshooting Kits: Bundle FlexScan with choice of launch cable, FOCIS Flex connector inspection probe and tips, and/or AFL's universal optical fiber identifier (OFI).

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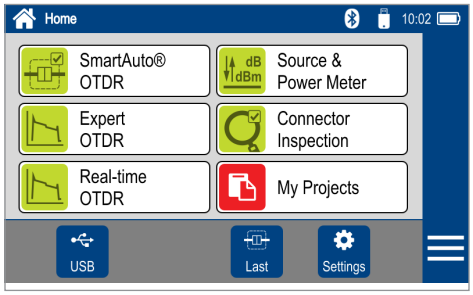

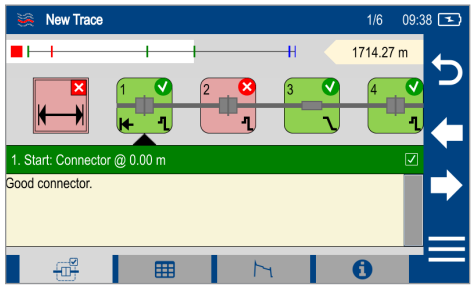

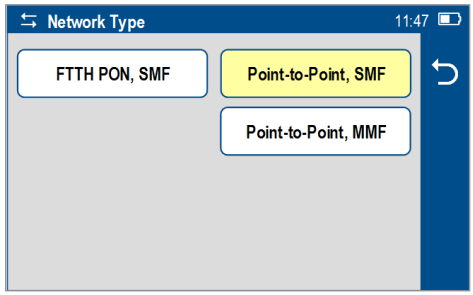

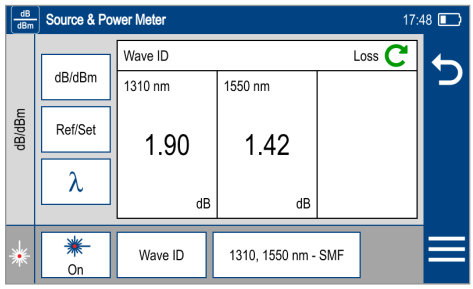

SmartAuto Dramatically Reduces Test Time

In SmartAuto mode, FlexScan OTDRs automatically analyze and test the network using a variety of network-optimized settings to precisely locate, characterize and identify network events. Loss and reflectance is measured for connectors, splices, splitters and macro-bends. For even greater ease-of-use, FlexScan checks for live fiber and verifies OTDR launch quality before initiating a test.

LinkMap Simplifies Network Troubleshooting

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

A LinkMap Summary provides end-to-end link length, loss and ORL. Loss and reflectance of detected events is compared to industry-standard or user-settable pass/fail thresholds and displayed with clear pass/fail indications. Users can instantly toggle between LinkMap and Trace views.

Multimode & Single-mode plus PON Testing in One OTDR

FlexScan Quad OTDRs are the ideal test tool for verifying and/or maintaining both single-mode and multimode networks. Unlike most Quad OTDRs, FS300 OTDRs test both point-to-point networks and FTTH PONs/Passive Optical LANs (POLANs).

Bluetooth and WiFi for Faster Connectivity

Pair FlexScan with AFL's FOCIS Flex or FOCIS Duel connector inspection probe for fast, easy connector end-face inspection. FOCIS Flex and FOCIS Duel provide auto-focus, auto-centering, IEC pass/fail analysis, and Bluetooth transfer of images and pass/fail results to FlexScan for display and/or archiving with OTDR results. Additionally, transfer FlexScan results wirelessly in the field to a mobile smart device for sharing via email or archiving in the cloud.

Complete OTDR, OLTS & 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-synchronizes 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 Visual Fault Locator's eye-safe red laser enables users to visually pinpoint the location of macro-bends and fiber breaks often found in splice closures and fiber cabinets.

FlexScan® FS300 Quad OTDR with SmartAuto® & LinkMap®

Specifications[a]

OTDR	MULTIMODE	SINGLE-MODE
Emitter Type	Laser	
Safety Class[b]	Class I	
Fiber Type	Multimode; compatible with OM1-OM5	Single-mode; compatible with all G.65x
Wavelengths[c]	850/1300 ±20 nm	1310/1550 ±20 nm
Network Type	Point-to-point	Point-to-point & PON up to 1:64
Connector Type	User-specified APC or UPC ferrule with interchangeable UCI adapters	
Dynamic Range[d]	≥29/29 dB @ 850/1300 nm	≥37/36 dB @ 1310/1550 nm
Event Dead Zone[e]	≤0.8 m @ 850/1300 nm typical	≤0.8 m @ 1310/1550 nm typical
Attenuation Dead Zone[f]	≤3.0 m	≤3.5 m
PON Dead Zone[g]	Not applicable	≤25 m
Pulse Widths	3, 5, 10, 20, 30, 50, 100, 200, 300, 500 ns; 1 µs	3, 5, 10, 20, 30, 50, 100, 200, 300, 500 ns; 1, 2, 3, 5, 10, 20 µs
Range Settings	250 m to 30 km	250 m to 240 km
Data Points	Up to 300,000	
Data Spacing	≥5 cm to ≤16 m	
Group Index of Refraction	1.3000 to 1.7000	
Distance Uncertainty	±(1 + 0.0025% x distance + data point spacing) m	
Linearity	±0.03 dB/dB	
Loss Resolution	0.001 dB	
Reflectance Range	850: -20 to -58 dB; 1300: -20 to -63 dB	1310: -20 to -65 dB; 1550: -20 to -65 dB
Reflectance Resolution	0.01 dB	
Reflectance Accuracy	±2 dB	
ORL Range	20 to 60 dB	
ORL Resolution	0.01 dB	
ORL Accuracy	±2 dB over range 30 to 55 dB; ±4 dB over range 20-30 dB and 55-60 dB	
Trace File Format	.SOR, Telcordia SR-4731 Issue 2	
OTDR Results Storage	Internal or external USB memory	
Internal Storage	Minimum 4 GB internal non-volatile memory (App SW + > 1000 traces)	
Internal Launch Fiber	≥30 m internal MM launch fiber	≥50 m internal SM launch fiber
OTDR Modes	Supports SmartAuto, Expert, Real-Time for PON & point-to-point networks	
Real-time Refresh Rate	1 to 4 Hz	
Live Fiber Protection	No OTDR damage when connected to live fiber delivering ≤ +10 dBm at wavelength(s) in range 825 to 1675 nm	
Live Fiber Detection	Reports live fiber with input signal ≥ -35 dBm for wavelength(s) in range 825 to 1675 nm	

Notes:

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

b. FDA 21 CFR 1040.10 & 1040.11, IEC 60825-1: 2014.

c. Measured with laser in CW mode at 23 °C ±3 °C.

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 a -45 dB (or smaller) reflectance. Test pulse width is 3 or 5 ns.

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.

FlexScan® FS300 Quad OTDR with SmartAuto® & LinkMap®

Specifications[a]

OPM - OPTICAL POWER METER (P1 Option)	
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625, 1650 nm
Detector Type	InGaAs PIN, 2 mm diameter
Measurement Range	+3 to -70 dBm (+3 to -65 dBm @ 850 nm)
Tone Auto-Detect	270 Hz, 330 Hz, 1 kHz, 2 kHz
Tone Detect Range	+3 to -50 dBm @1300, 1310, 1550 nm; +3 to -40 dBm @850 nm;
Wave ID	Auto-synchronizes & measures 1, 2 or 3 wavelengths
Wave ID Range	+3 to -50 dBm @1300, 1310, 1550 nm; +3 to -40 dBm @850 nm
Multi-Fiber Channel ID	Detects and reports Multi-Fiber channel ID (MFI)
MFI Detect Range	+3 to -35 dBm @1550 nm
Accuracy	±5% @ -10 dBm
Linearity	±0.1 dB (-3 to -40 dBm); ±0.25 dB (-40 to -70 dBm)
Resolution	0.01 dB
Measurement Units	Power in dBm, nW, µW, mW; Loss in dB

OLS - OPTICAL LIGHT SOURCE (P1 Option)	
Wavelengths	850/1300/1310/1550 nm
Emitter Type	Laser
Safety Class[b]	Class I
Launch Condition	Controlled Launch at 850 nm (comparable to encircled flux on OM4 fiber)
Center λ (CW Mode)	±20 nm
Spectral Width	5 nm maximum (FWHM, CW Mode)
Internal Modulation	270 Hz, 330 Hz, 1 kHz, 2 kHz, CW, Wave ID
SM Output Stability	Short-term[c]: ±0.1 dB; Long-term[d]: ±0.05 dB
MM Output Stability	Short-term[e]: ±0.20 dB; Long-term[f]: ±0.15 dB
Output Power	1310/1550 nm: -7 dBm ±1.5 dB (CW, G.652.C/D) 1300 nm: -7 dBm ±1.5 dB (CW, 50 µm MMF) 850 nm: 0 dBm ±1.5 dB (CW, 50 µm MMF)

VFL - VISUAL FAULT LOCATOR	
Emitter Type	Laser, Class IIIa (FDA 21 CFR 1040.10 and 1040.11); Class 3R (IEC 60825-1:2014)
Wavelength	635 nm ±10 nm
Output Power	1.5 mW (~+2 dBm ±0.5 dB) into SMF-28
Modes	CW and 1 Hz flashing

Notes:

a. All specifications valid at 25 °C unless otherwise specified.
b. (FDA 21 CFR 1040.10 and 1040.11, and IEC 60825-1:2014).
c. Typical maximum deviation over 15 minute after 15 minute warm-up.
d. Typical maximum deviation over 8 hours after 1 hour warm-up.
e. 15 minutes after 30 minutes warm-up.
f. 8 hours after 1 hour warm-up.

GENERAL	
Size (in boot)	≤98 x 175 x 52.5 mm
Weight	0.8 kg
Operating Temperature	-10 °C to +50 °C, 0 to 95% RH (non-condensing)
Storage Temperature	-30 °C to +70 °C, 0 to 95% RH (non-condensing, battery removed) -20 °C to +60 °C, 0 to 95% RH (non-condensing, battery installed)
Power	Rechargeable Lithium polymer battery; AC adapter
AC Adapter	100-240 VAC, 50-60 Hz input; 5VDC, 2A output
Battery Life (OTDR)	≥12 hours, Telcordia test conditions, 4 hours recharge
Display	5-inch color LCD, 800 x 480 pixels, backlit
Shock and Vibration	GR-196-CORE, drop test, 0.75 m (30 in.), 6 planes
Dust Protection	GR-196-CORE, rubber dust caps for all ports
OTDR/OLS Ports	MM: UPC; SM: UPC or APC; includes tool-free, interchangeable SC adapters
OPM and VFL Ports	Universal, 2.5 mm adapter (SC, FC, ST); others available
USB Ports	USB host port; micro-USB function port
Bluetooth Interface	W1 option; compatible with Windows PC and Android
WiFi Interface	W1 option; compatible with IEEE 802.11 / WLAN
CE Safety	Compliant with EN61010-1
CE EMI/RFI	EN55011, EN61326-1, GR-196-CORE 4.5.1
RoHS	Compliant with RoHS directive 2011/65/EU

FlexScan Accessorie and Connector Adapters

DESCRIPTION	AFL NO.
FlexScan wrist strap	1400-05-0230PZ
FlexScan neck strap, 36"	1400-05-0231PZ
Soft carry case for FlexScan, Fiber Ring, FOCIS Flex, OFI	1400-01-0167PZ
Vehicle charger, 12 VDC to 5 VDC @ 2 A	4050-00-0033MR
AC adapter 100-240 VAC to 5 VDC	4050-00-0931PR
Replacement Li-Pol Battery Pack; 3.7 VDC, 6.8 AH	3900-06-0001MR
Cable, USB-micro B, 5 pin, 6'	6000-00-0031MR
5V USB charging cable type A to barrel	6000-00-0034PR
Bundle of 5V USB charging cable and 10K mAh external USB battery pack	4050-01-0001PR
TRM 3.0 upgrade from Basic to Advanced software	TRM-00-0920PR
One-Clicks, fluid, wipes, etc. See www.AFLglobal.com	Cleaning Supplies

CONNECTOR ADAPTER	AFL NO.		
	OTDR/OLS PORT	OPM PORT	VFL PORT
FC	2900-50-0002MR	2900-52-0001MR	N/A
SC	2900-50-0003MR	2900-52-0002MR	N/A
ST	2900-50-0004MR	2900-52-0003MR	N/A
LC	2900-50-0006MR	2900-52-0004MR	N/A
SC/APC	2900-50-0011MR	N/A	N/A
2.5 mm Universal	N/A	2900-52-0005MR	2900-50-0007MR
1.25 mm Universal	N/A	2900-52-0006MR	2900-50-0010MR

FlexScan® FS300 Quad OTDR with SmartAuto® & LinkMap®

FlexScan FS300 models are available in four kit configurations: Basic, PLUS, PRO and BI/BIPM. All kits include FS300 with AC charger, battery, carry strap, SC/2.5 mm connector adapters, TRM 3.0, quick reference user guide and carry case. PLUS Kits add 150 m fiber rings and One-Click cleaner. PRO kits additionally include a FOCIS Flex auto-focusing connector inspection probe with IEC pass/fail analysis and two adapter tips. BI/BIPM kits expand on PRO Kits by adding a bend-insensitive fiber identifier with optional power meter.

Ordering Information

FS300-[MOD]-[KIT]-[PW]-[C]-[LNG]-[AC]-[FR1]-[FR2]-[TIP]* where:

[MOD]	FS300 FlexScan OTDR Configuration
325	Quad OTDR (850/1300 nm Multimode + 1310/1550 nm Single-mode)

[KIT]	FS300 FlexScan Kit Configuration
BAS	Basic kit with soft case, TRM 3.0 Basic, USB cable
PLUS	PLUS kit adds 150 m SMF & MMF fiber rings and One-Click cleaner
PRO	PRO kit adds fiber rings, One-Click cleaner, FOCIS Flex with 2 tips
BI	BI Complete Kit adds OFI-BI to PRO Kit
BIPM	BIPM Complete Kit adds OFI-BIPM to PRO Kit

[PW]	Power Meter / Wireless option
P0-W0	No Source or Power Meter; No Bluetooth/WiFi; includes soft case
P0-W1	No Source or Power Meter; includes Bluetooth/WiFi, soft case
P1-W0	Includes Source, Power Meter; No Bluetooth/WiFi; includes soft case
P1-W1	Includes Source, Power Meter, Bluetooth/WiFi, soft case

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

[LNG]	Language
ENG	English
CHS	Chinese Simp.
CHT	Chinese Trad.
CZE	Czech
DEU	German
DNK	Danish

[LNG]	Language
FIN	Finnish
FRA	French
ITA	Italian
JPN	Japanese
KOR	Korean
NOR	Norwegian

[LNG]	Language
POL	Polish
POR	Portuguese
SPA	Spanish
TUR	Turkish

[AC]	Destination Country	AC Plugs
US	USA	2-pin, US
EU	European Union	2-pin, EU
UK	United Kingdom	2-pin, UK
CN	China, Australia	2-pin, SAA

[FR1]	150 m SMF Fiber Ring
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
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
ASC-AE2000	FR1-SM-150-ASC-AE2000
SC-E2000	FR1-SM-150-SC-E2000

[FR1]	150 m SMF Fiber Ring
Blank	N/A in Basic kits

[FR2]	150 m OM1 (62.5 µm)
SC/ST1	FR1-M6-150-SC-ST
SC/SC1	FR1-M6-150-SC-SC
ST/ST1	FR1-M6-150-ST-ST
ST/LC1	FR1-M6-150-ST-LC
SC/LC1	FR1-M6-150-SC-LC

[FR2]	150 m OM2 (50 µm)
Blank	N/A in Basic kits
SC/ST2	FR1-M5-150-SC-ST
SC/SC2	FR1-M5-150-SC-SC
ST/ST2	FR1-M5-150-ST-ST
ST/LC2	FR1-M5-150-ST-LC
SC/LC2	FR1-M5-150-SC-LC

[FR2]	150 m OM3/4/5-compatible
SC/ST3	FR1-OM3-150-SC-ST
SC/SC3	FR1-OM3-150-SC-SC
ST/ST3	FR1-OM3-150-ST-ST
ST/LC3	FR1-OM3-150-ST-LC
SC/LC3	FR1-OM3-150-SC-LC

[TIP]*	FOCIS Flex Tips & Cleaning (PRO only)
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 mmOne-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

*For additional FOCIS Flex adapter tips, see FOCIS Flex data sheet or Buyer's Guide.

International Sales and Service Contact Information

Available at www.AFLglobal.com/Test/Contacts