Fujikura - AFL OTDR Overview

AFL Test & Inspection

January 15, 2017

OTDRs at a Glance (Networks, Applications, Performance)

OTDR Selection Guide


M310


M710


M210e


FlexScan


FLX380


OFL280


CS260

Model	Point-to-Point Networks/Fiber Type					FTTx PON		OTDR Performance				Integrated Peripherals				Report Gen. TRM 2.0	Inspection
	MMF/SMF		SMF			SMF											
	Data Center	LAN	Core	Metro	Access	Dark	Live	Wavelengths (nm)	Dynamic Range (dB)	Dead Zone EDZ/ADZ (m)	LinkMap®	PON OPM	OLS	OPM	VFL		
M310-20	◆	◆	◆	◆	◆	◆		1310/1550	38/37	0.8/3.5	◆		◆	◆	◆	◆	DFS1
M310-25	◆	◆	◆	◆	◆	◆		850/1300/1310/1550	30/30/38/37	0.8/2.5	◆		◆	◆	◆	◆	DFS1
M210e-20				◆	◆			1310/1550	34/34	1.0/4.0				◆	◆	◆	DFS1
M210e-22		◆						850/1300	28/28	1.0/4.0				◆	◆	◆	DFS1
M210e-25		◆		◆	◆			850/1300/1310/1550	28/28/34/34	1.0/4.0				◆	◆	◆	DFS1
M710-20		◆	◆	◆	◆			1310/1550	40/38	0.8/4				◆	◆	◆	DFS1
M710-21			◆	◆	◆			1310/1550/1625	40/38/38	0.8/4				◆	◆	◆	DFS1
M710-24	◆	◆	◆	◆	◆			850/1300/1310/1550	24/24/39/37	0.8/4	◆			◆	◆	◆	DFS1
M710-40		◆	◆	◆	◆			1310/1550	44/42	0.8/4				◆	◆	◆	DFS1
FS200-50				◆	◆			1550	30	0.8/3.6	◆		◆	◆	◆	◆	FOCIS
FS200-60				◆	◆	◆	◆	1650	37	0.8/3.6	◆		◆	◆	◆	◆	FOCIS
FS200-100				◆	◆	◆		1310/1550	32/30	0.8/3.6	◆		◆	◆	◆	◆	FOCIS
FS200-300			◆	◆	◆	◆		1310/1550	37/36	0.8/3.5	◆		◆	◆	◆	◆	FOCIS
FS200-304			◆	◆	◆	◆	◆	1310/1550/1650	37/36/37	0.8/3.5	◆		◆	◆	◆	◆	FOCIS
FLX380-300			◆	◆	◆	◆		1310/1550	42/42	0.8/2.5	◆		◆	◆	◆	◆	FOCIS
FLX380-302			◆	◆	◆	◆		1310/1490/1550	41/38/41	0.8/2.5	◆		◆	◆	◆	◆	FOCIS
FLX380-303			◆	◆	◆	◆	◆	1310/1550/1625	41/41/38	0.8/2.5	◆	◆	◆	◆	◆	◆	FOCIS
FLX380-304			◆	◆	◆	◆	◆	1310/1550/1650	41/41/38	0.8/2.5	◆	◆	◆	◆	◆	◆	FOCIS
OFL280-100				◆	◆	◆		1310/1550	34/32	0.8/3.5	◆		◆	◆	◆	◆	FOCIS
OFL280-102				◆	◆	◆		1310/1490/1550	34/32/32	0.8/3.5	◆		◆	◆	◆	◆	FOCIS
OFL280-103				◆	◆	◆	◆	1310/1550/1625	34/32/30	0.8/3.5	◆	◆	◆	◆	◆	◆	FOCIS
CS260-10				◆	◆	◆	◆	1625 filtered	35	0.8/3.5	◆	◆			◆	◆	FOCIS

Fujikura - AFL M210e Enterprise OTDR

M210e Hand-held OTDR

Test, Troubleshoot and Document Single-mode and Multimode Fiber Networks

Features

- Industry leading TruEvent™ analysis
- Short dead zones provide precise testing of closely spaced events
- 34 dB dynamic range single-mode
- Crisp bright display for indoor/outdoor viewing
- Integrated Power Meter and VFL (visual fault locator)
- Inspection ready with DFS1 Digital FiberScope
- 16 hours battery life
- Rugged, lightweight (<1 kg)
- Multiple languages supported

Applications

- Enterprise network
- LAN/WAN
- Campus and military fiber networks and more

The M210e is the inspection ready OTDR that combines OTDR, OPM and VFL capability with a proven, easy to operate and understand interface. The M210e offers the intuitive Touch and Test™ user interface in a rugged, lightweight, easy-to-hold package ready for field use. Touch and Test simplifies the M210e user experience, minimizes human errors and reduces training time by providing one-touch access to the all major functions of the OTDR. The M210e allows setting Pass/Fail thresholds to industry standard TIA/ISO or user-values and automatically alerts users of failing fibers, enabling both experts and novice technicians to complete jobs more accurately and in less time.

Available as a single-mode, multimode, or single-mode/multimode model, the M210e comes in either a soft or hard case, also as part of kit for testing, inspection, and certification.

The M210e is ideal for testing, analyzing and troubleshooting enterprise, LAN/WAN campus and military facilities.

Thousands of test results may be stored internally or on the supplied USB drive. Test results are transferable, via USB cable or USB drive, to a computer for viewing, printing, and analyzing with the supplied Windows® compatible TRM® 2.0 Basic Analysis and Documentation Software (Test Results Manager). The supplied TRM 2.0 Basic is licensed for installation on up to 5 PCs.

M210e Hand-held OTDR

Specifications [a]

OTDR	MULTIMODE	SINGLE-MODE
Emitter Type	Laser	Laser
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11; IEC 60825-1:2007-03	Class I FDA 21 CFR 1040.10 and 1040.11; IEC 60825-1:2007-03
Center Wavelengths	850/1300 nm	1310/1550 nm
Wavelength Tolerance	±20/±30 nm	±20/±30 nm
Launch Condition [n]	Controlled Launch at 850 nm [n]	N/A
Live Fiber Detection [m]	Yes	Yes
Dynamic Range (SNR = 1) [b]	28/28 dB	34/33 dB
Event Dead Zone [c]	1.0 m	1.0 m
Attenuation Dead Zone [d]	4.0 m	4.0 m
Pulse Widths	5, 10, 30, 100, 300 ns, 1 µs,	5, 10, 30, 100, 300 ns, 1, 3, 10 µs, 20 µs
Range Settings	250 m to 30 km	250 m to 240 km
Sampling Points	Up to 120,000	Up to 120,000
Minimum Data Point Spacing [e]	3 cm	3 cm
Group Index of Refraction (GIR)	1.4000 to 1.6000	1.4000 to 1.6000
Distance Uncertainty/Accuracy [f]	±(1 +0.005 % x distance + data point spacing)	±(1 +0.005 % x distance + data point spacing)
Linearity [g]	±0.05 dB/dB	±0.05 dB/dB
Loss Threshold	0.02 dB	0.02 dB
Loss Resolution	0.01 dB	0.01 dB
Reflectance Range [p, h]	850 nm: -14 to -58 dB (typical) 1300 nm: -14 to -63 dB (typical)	1310 nm -14 to -65 dB (typical) 1550 nm -14 to -65 dB (typical)
Reflectance Resolution	0.01 dB	0.01 dB
Reflectance Accuracy [h]	±2 dB	±2 dB
Real Time Refresh Rate [j]	>2 Hz	>2 Hz
Units	m, km, ft, kft, mi	
OTDR Modes	Full Auto, Expert, Real-Time	
Trace File Format	Bellcore GR-196 Version 1.1, Telcordia SR -4731 Issue 2	
Trace File Storage Medium	Internal and USB	
Trace File Storage Capacity	>1000 internal, 1000s on USB	
Trace File Transfer to PC	USB	

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.
b. Longest Range and Pulse Width, 3 minutes Averaging Time, normal resolution.
c. Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -40 dB (multimode) or -45 dB (single-mode) event using 10 ns pulse width.
d. Typical distance from event location to point where trace is within 0.5 dB of backscatter.
e. Range <8 km.
f. Does not include GIR uncertainty. Is based on the trace and user positioned cursors.
g. Typical.
h. For a non-saturated event.
j. 2 km Range, 100 ns.
m. Signals greater than -20 dBm MMF and -30 dBm SMF will trigger the Live Fiber Indication warning.
n. Comparable to Encircled Flux loss measurement on OM4 fiber networks.
p. For OM1 fiber typical Backscatter Coefficient @850 nm -68 dB, @1300 nm -76 dB and attenuation coefficient @850 nm 2.77 dB, @1300 nm 0.52 dB. For OS1-OS2 fiber typical Backscatter Coefficient @1310 nm -79.6 dB, 1550 nm -82 dB and attenuation coefficient @1300 nm 0.31 dB, @1550 nm 0.18 dB.

M210e Hand-held OTDR

Specifications [a]

OPM (STANDARD)	
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625, 1650 nm (displays up to 3 simultaneously)
Detector Type	InGaAs 2mm
Display Range [b]	+6 to -70 dBm
Accuracy @ -10 dBm	±0.25 dB
Resolution	0.01 dB
Measurement Units	dB, dBm, mW
Wavelength ID [c]	Yes
Set Reference	Yes
Data Storage	Yes
Tone Detection [d]	270 Hz, 330 Hz, 1 kHz, 2 kHz
VFL (STANDARD)	
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11; IEC 825-1:1993, 60825-1:2007-03
Wavelength	635 nm ±20 nm
Output Power (nominal)	0.8 mW
GENERAL	
Display Type	3.5-inch transflective color, high contrast, high reflectivity (20%) for optimum indoor/outdoor viewing , QVGA with touchscreen
Size (in boot)	23 x 11 x 7 cm (8.8 x 4.3 x 2.8 in)
Weight	<1.4 kg (3 lb)
Power	Removable Li-ion or AC/DC power adapter (input 100-240 V, ~1.5 A 47-63 Hz) output 18 V DC/3.6 A (can test while charging, can operate on AC with battery removed)
Battery Life [e]	16 hours
Recharge Time [f]	4 hours
Auto Shut Off	0-60 minutes
Connectivity	USB host/full speed 1.1
Operating Temperature	-10°C to +50°C
Storage Temperature	-20°C to +60°C
Relative Humidity	0 to 95 % RH (non-condensing)
DFS1 DIGITAL FIBERSCOPE SUPPORT	
Field of View	400 x 300 µm
Optical Resolution	4 µm
Detection Capability	2 µm

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.
b. Measurement Range:
+3 to -65 dBm for 1300 to 1625 nm, and +3 to -60 dBm for 850 nm
c. Wavelength ID Range:
+3 to -50 dBm for 1300 to 1625 nm, and +3 to -40 dBm for 850 nm
d. Tone Detect Range:
+3 to -50 dBm 1300 to 1625 nm, and +3 to -40 dBm for 850 nm
e. Typical with new battery, per GR-196-Core Issue 2.
f. Typical, from fully discharged to fully charged state, unit may be operating.

M210e Hand-held OTDR

M210e Models and Included Adapters

WAVELENGTHS (nm)				DYNAMIC RANGE (dB)	OTDR PORT ADAPTERS	OPM PORT ADAPTERS	AFL BASE MODEL NO.
850	1300	1310	1550				
		◆	◆	34/33	SC, FC	SC, 2.5 mm Universal	M210e-20
◆	◆			28/28	SC, ST	SC, 2.5 mm Universal	M210e-22
◆	◆	◆	◆	28/28/34/33	SC, FC, ST	SC, 2.5 mm Universal	M210e-25

All M210e OTDRs include a USB flash drive, an AC adapter, UCI switchable adapters for OTDR and OPM ports, trace analysis and documentation software and a quick reference guide.

Ordering Information

DESCRIPTION	AFL NO.
M210e QUAD Certification Kit (Tier 1 and 2): M210e QUAD, OLS4, DFS1* in hard case	M210e-25K-01-HC2
M210e QUAD Test and Inspection Kit (Tier 2): M210e QUAD, DFS1* in hard case	M210e-25K-01-HC1
M210e OTDR, SM (1310/1550), OPM, VFL in hard case	M210e-20U-01-HC
M210e OTDR, MM (850/1300) OPM, VFL in hard case	M210e-22U-01-HC
M210e OTDR, QUAD (850/1300/1310/1550), OPM, VFL in hard case	M210e-25U-01-HC
M210e OTDR, SM (1310/1550) OPM, VFL in soft case	M210e-20U-01
M210e OTDR, MM (850/1300) OPM, VFL in soft case	M210e-22U-01
M210e OTDR, QUAD (850/1300/1310/1550), OPM, VFL in soft case	M210e-25U-01

* When ordering, specify DFS1 model (See Accessories Table below).

When ordering, select options as follows: Optical Configuration (NN), (U) for UPC connection and Language (LL). Add (HC) only if ordering the hard case option.

Example: M210e-25U-01-HC -> This model number indicates M210e QUAD with the English/European language pack in the optional hard case.

M210e — NN U — LLL — HC

Optical Configuration (NN)
20 = 1310/1550 nm SM
22 = 850/1300 nm MM
25 = 850/1300 nm MM and 1310/1550 nm SM

OTDR port ferrule (U = UPC)

Hard Case option (HC)
(Select (HC) only if ordering hard case option)

Quick Reference Guide Language (LLL)*

ENG = English
CHS = Chinese, Simplified
CHT = Chinese, Traditional
DEU = German
FRA = French
ITA = Italian
POL = Polish
POR = Portuguese
SPA = Spanish
TUR = Turkish

***Specify Language for OTDR Quick Reference Guide**

Accessories

DESCRIPTION	AFL NO.
DFS1 Digital FiberScope PC/UPC inspection kit	DFS1-00-04XU
DFS1 Digital FiberScope APC inspection kit	DFS1-00-04XA
DFS1 Digital FiberScope kit without adapters	DFS1-00-04XN
Fiber Ring, 50/125 µm multimode, 150 m	FR1-M5-150-x1-x2 [a]
Fiber Ring, Laser Optimized, 50 µm multimode, 150 m	FR1-L5-150-x1-x2 [a]
Fiber Ring, 62.5/125 mm multimode, 150 m	FR1-M6-150-x1-x2 [a]
Fiber Ring, single-mode, 150 m	FR1-SM-150-y1-y2 [a]
Wet Cleaning kit for SC/FC/ST/LC connectors	8500-20-0900
Dry Cleaning kit	8500-20-0901
Basic Cleaning kit with carry case	FCP2-00-0900
Basic Cleaning kit with MPO Cleaners and carry case	FCP2-00-0901
One-Click Cleaner SC, ST, FC (500+ cleans)	8500-05-0001MZ
One-Click Cleaner LC/MU (500+ cleans)	8500-05-0002MZ
One-Click Mini-100 SC, ST, FC (100+ cleans)	8500-05-0005MZ
One-Click Mini-100 LC/MU (100+ cleans)	8500-05-0006MZ
One-Click Cleaner Ultra 2.5 SC, ST, FC (enlarged cleaning)	8500-05-0007MZ
One-Click Ultra Cleaner D-LC (Duplex LC, 500 cleans x 2)	8500-05-0008MZ

Note:
a. When ordering Fiber Rings, specify connector types (x1, x2, y1, y2).

Fujikura - AFL M310 Enterprise OTDR

M310 Enterprise OTDR

Designed for Enterprise Network Testing, Troubleshooting and Documentation

Features

- Industry leading TruEvent™ analysis
- LinkMap™ for easy results interpretation
- Short dead zones provide precise testing of closely spaced events
- Front Panel and First Connector Check
- Live fiber detection
- Inspection ready with DFS1 Digital FiberScope
- Integrated Source, Power Meter and VFL

Applications

- Enterprise network
- Data Center
- LAN/WAN
- Campus and military fiber networks and more

Rugged, lightweight and easy to hold, the M310 has a Touch and Test user interface that makes it easy for experts and novices to test and document fiber networks accurately and quickly. TruEvent technology enables M310 to provide superior event analysis capability for user to verify and troubleshoot even the most complex fiber network. LinkMap visualizes test results for easy and quick interpretation. With dynamic range up to 38 dB, and 16 hour battery run time, M310 provides complete Tier 1 insertion loss and Tier 2 OTDR testing. Using pre-set Industry ISO/TIA standards or user set Pass/Fail thresholds, technicians are alerted to installation problems and failures in easy-to-interpret event table. Pass/Fail event table and trace are displayed on the same screen for easy correlation.

M310 Enterprise OTDR

M310 Models and Included Adapters

WAVELENGTHS (nm)				DYNAMIC RANGE (dB)	OTDR PORT ADAPTERS	OPM PORT ADAPTERS	AFL BASE MODEL NO.
850	1300	1310	1550				
		◆	◆	38/37	SC, LC	SC, 2.5 & 1.25 mm Universal	M310-20
◆	◆	◆	◆	30/30/38/37	SC, LC, ST	SC, 2.5 & 1.25 mm Universal	M310-25

All M310 OTDRs include a USB flash drive, AC adapter, UCI switchable test port adapters, TRM® 2.0 (Basic and Advanced License) and quick reference guide. For customer's convenience, AFL presents several kits options. For detailed contents of each kit, please see page 5.

LinkMap™

LinkMap with Pass/Fail simplifies network troubleshooting and 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 and macro-bends. A LinkMap Summary provides end-to-end link length, loss, loss per distance 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 easily toggle between LinkMap, Trace view, and Event Table.

TruEvent™

The M310's TruEvent technology is the result of extensive research into the properties of fiber optic cable events and provides a new level of event detection accuracy and reliability in field test equipment. Taking full advantage of the unit's short dead zone and adding improved event accuracy, this is the best performing OTDR for enterprise and data center applications. With the push of a single button, users can be confident of obtaining accurate locations and measurements of all events, without the confusing introduction of false events.

Advanced Analysis (AA)

The AA option adds macro/microbend detection and bi-directional trace analysis to the M310 OTDR.

- **Macro/Microbend**
  Macro/Microbend detection helps technicians identify installation problems. Excessive bends or stress on fibers appear as increased attenuation at higher wavelengths. These bends or stresses are indicated on the Event Table with a special icon.
- **Bi-directional Trace Analysis**
  Bi-directional trace analysis, used to resolve splice loss measurement errors due to fiber mismatch, takes the measurement of the loss in both directions, then calculates a two-way average to provide a more accurate loss measurement.

Testing and Inspection

The M310 is easy to use (Touch and Test®) and comes standard with an integrated source, power meter, visual fault locator, and inspection capability. No surprise 'add-on' charges for these commonly needed support functions.

- **Wave ID Source and Power Meter**
  Enables multi-wavelength insertion loss testing with automatic wavelength synchronization, reducing test time and eliminating setup errors.
- **Source with Tone Generation**
  Use with Optical Fiber Identifier to reliably distinguish in-service fibers from out-of-service fibers carrying test tone.
- **Visual Fault Locator**
  Visibly locate far-end of specific fiber; precisely pinpoint macrobends or breaks in splice enclosures and cabinets.

Data storage and reporting

Thousands of test results may be stored internally or on the supplied USB drive. Test results are transferable, via USB cable or USB drive, to a computer for viewing, printing, and analyzing with the supplied Windows® compatible TRM® 2.0 Basic Analysis and Documentation Software (Test Results Manager). The supplied TRM® 2.0 Basic is licensed for installation on up to 5 PCs. With the Advanced Analysis standard feature, customer will also receive one copy of TRM 2.0 Advanced.

M310 Enterprise OTDR

Specifications [a]

OTDR	MULTIMODE	SINGLE-MODE
Emitter Type	Laser	Laser
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11; IEC 60825-1:2007-03	Class I FDA 21 CFR 1040.10 and 1040.11; IEC 60825-1:2007-03
Center Wavelengths	850/1300 nm	1310/1550 nm
Wavelength Tolerance	±20/±30 nm	±20/±30 nm
Launch Condition [k]	Controlled Launch at 850 nm [k]	N/A
Live Fiber Detection [j]	Yes	Yes
Dynamic Range (SNR = 1) [b]	30/30 dB	38/37 dB
Event Dead Zone [c]	0.8 m	0.8 m
Attenuation Dead Zone [d]	2.5/2.7 m	3.0 m
Pulse Widths	5, 10, 30, 100, 300 ns, 1 µs,	5, 10, 30, 100, 300 ns, 1, 3, 10 µs, 20 µs
Range Settings	250 m to 30 km	250 m to 240 km
Sampling Points	Up to 120,000	Up to 120,000
Minimum Data Point Spacing [e]	3 cm	3 cm
Group Index of Refraction (GIR)	1.4000 to 1.6000	1.4000 to 1.6000
Distance Uncertainty/Accuracy [f]	±(1 +0.005 % x distance + data point spacing)	±(1 +0.005 % x distance + data point spacing)
Linearity [g]	±0.05 dB/dB	±0.05 dB/dB
Loss Threshold	0.02 dB	0.02 dB
Loss Resolution	0.01 dB	0.01 dB
Reflectance Range [l, h]	850 nm: -14 to -58 dB (typical) 1300 nm: -14 to -63 dB (typical)	1310 nm -14 to -65 dB (typical) 1550 nm -14 to -65 dB (typical)
Reflectance Resolution	0.01 dB	0.01 dB
Reflectance Accuracy [h]	±2 dB	±2 dB
Real Time Refresh Rate [i]	>2 Hz	>2 Hz
Units	m, km, ft, kft, mi	
OTDR Modes	Full Auto, Expert, Real-Time	
Trace File Format	Bellcore GR-196 Version 1.1, Telcordia SR -4731 Issue 2	
Trace File Storage Medium	Internal and USB	
Trace File Storage Capacity	>1000 internal, 1000s on USB	
Trace File Transfer to PC	USB	

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.
b. Longest Range and Pulse Width, 3 minutes Averaging Time, normal resolution.
c. Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -40 dB (multimode) or -45 dB (single-mode) event using 10 ns pulse width.
d. Typical distance from event location to point where trace is within 0.5 dB of backscatter.
e. Range <8 km.
f. Does not include GIR uncertainty. Is based on the trace and user positioned cursors.
g. Typical.
h. For a non-saturated event.
i. 2 km Range, 100 ns.
j. Signals greater than -20 dBm MMF and -30 dBm SMF will trigger the Live Fiber Indication warning.
k. Comparable to Encircled Flux loss measurement on OM4 fiber networks.
l. For OM1 fiber typical Backscatter Coefficient @850 nm -68 dB, @1300 nm -76 dB and attenuation coefficient @850 nm 2.77 dB, @1300 nm 0.52 dB.
For OS1-OS2 fiber typical Backscatter Coefficient @1310 nm -79.6 dB, @1550 nm -82 dB and attenuation coefficient @1300 nm 0.31 dB, @1550 nm 0.18 dB.

M310 Enterprise OTDR

Specifications [a]

OLS (Standard)	
Emitter Type	Laser, Class 1 (FDA 21 CFR 1040.10 and 1040.11, and IEC 60825-1:2007-03)
Center Wavelengths (nm)	SM – 1310/1550 ±20/30 nm; MM – 850/1300 ±20/30 nm
Spectral Width (FWHM)	5 nm max
Internal Modulation	270 Hz, 330 Hz, 1 KHz, 2 KHz, CW
Wavelength ID (Single/dual)	On/Off
Output Power Stability [b]	SM < ±0.1 dB, MM < ±0.2 dB
Output Power (CW) [c]	-3 dBm ±1.5 dB
OPM (Standard)	
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625, 1650 nm (displays up to 3 simultaneously)
Detector Type	InGaAs 2 mm
Display Range [d]	+6 to -70 dBm
Accuracy @ -10 dBm	±0.25 dB
Resolution	0.01 dB
Measurement Units	dB, dBm, mW
Wavelength ID [e]	Wave ID™
Set Reference	Yes
Data Storage	Yes
Tone Detection [f]	270 Hz, 330 Hz, 1 kHz, 2 kHz
VFL (Standard)	
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11; IEC 825-1:1993, 60825-1:2007-03
Wavelength	635 nm ±20 nm
Output Power [g]	0 dBm (1 mW)

GENERAL	
Display Type	3.5-inch transflective color, high contrast, high reflectivity (20%) for optimum indoor/outdoor viewing with touchscreen
Display Resolution	QVGA 240 x 320
Size (in boot)	23 x 11 x 7 cm (8.8 x 4.3 x 2.8 in)
Weight	<1.0 kg (< 2.0 lb)
Drop Test	GR-196-CORE
Power	Removable Li-ion or AC/DC power adapter (input 100-240 V, ~1.5 A 47-63 Hz) output 18 V DC/3.6 A (can test while charging, can operate on AC with battery removed)
Battery Life [h]	16 hours
Recharge Time [i]	4 hours
Auto Shut Off	0-60 minutes
Connectivity	USB host/full speed 1.1
Operating Temperature	-18°C to +50°C
Storage Temperature	-30°C to +60°C
Relative Humidity	0 to 95 % RH (non-condensing)
DFS1 DIGITAL FIBERSCOPE SUPPORT	
Field of View	400 x 300 µm
Optical Resolution	4 µm
Detection Capability	2 µm

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.
b. Over 1 hour after 15 minute warmup of unit.
c. Single-mode: SMF-2 fiber; Multimode: 50 um fiber
d. Measurement Range: +3 to -65 dBm for 1300 to 1625 nm, and +3 to -60 dBm for 850 nm.
e. Wavelength ID Range: +3 to -50 dBm for 1300 to 1625 nm, and +3 to -40 dBm for 850 nm.
f. Tone Detect Range: +3 to -50 dBm 1300 to 1625 nm, and +3 to -40 dBm for 850 nm.
g. Typical output power.
h. Typical with new battery, per GR-196-Core Issue 2.
i. Typical, from fully discharged to fully charged state, unit may be operating.

M310 Enterprise OTDR

Ordering Information

M310 — NN | P — 01 — HC | O

Optical Configuration (NN)
25 = 850/1300 nm MM and 1310/1550 nm SM
20 = 1310/1550 nm SM

Packaging option (P)
J = Unit
K = Kit

Hard Case option (HC)
Select (HC) only if ordering hard case

Additional Option
blank = no additional hardware
1 = DFS1
2 = DFS1 and OLS

Example: M310-20K-01-HC2

This order is for the M310 single-mode OTDR with 1310/1550 nm optical configuration. It's a kit with hard case, DFS1, and OLS. DFS1 and OLS are additional hardware.

Below is the chart for your ordering convenience:

	INTEGRATED OPTION			ADDITIONAL OPTION		CASE OPTION		AFL NO. [a, c]
	VFL	OPM	OLS	DFS1	OLS	HARD	SOFT	
	◆	◆	◆				◆	M310-25U-01
	◆	◆	◆				◆	M310-20U-01
	◆	◆	◆			◆		M310-25U-01-HC
	◆	◆	◆			◆		M310-20U-01-HC
	◆	◆	◆	◆		◆		M310-25K-01-HC1 [b]
	◆	◆	◆	◆		◆		M310-20K-01-HC1 [b]
	◆	◆	◆	◆	OLS4	◆		M310-25K-01-HC2 [b]
	◆	◆	◆	◆	OLS2-Dual	◆		M310-20K-01-HC2 [b]

Notes:

a. Specify Language for OTDR Quick Reference Guide:
English, Chinese Simplified, Chinese Traditional, German, French, Italian, Polish, Portuguese, Spanish, Turkish and Japanese.

b. When ordering, specify DFS1 model. The DFS1 Digital FiberScope kit is available as either PC/UPC inspection kit (DFS1-00-04XU model) or APC inspection kit (DFS1-004XA model).

c. Specify Language for OTDR operating environment: English, Chinese (Simplified and Traditional), and Japanese.

M310 Enterprise OTDR

Accessories, Upgrades, and Calibration Plans

DESCRIPTION	AFL NO.
Inspection	
DFS1 Digital FiberScope PC/UPC inspection kit	DFS-00-04XU
DFS1 Digital FiberScope APC inspection kit	DFS-00-04XA
DFS1 Digital FiberScope kit without adapters	DFS-00-04XN
Fiber Rings	
50/125 µm multimode, 150 m	FR1-M5-150-x1-x2 [a]
Laser Optimized, 50 µm multimode, 150 m	FR1-L5-150-x1-x2 [a]
62.5/125 mm multimode, 150 m	FR1-M6-150-x1-x2 [a]
Single-mode, 150 m	FR1-SM-150-y1-y2 [a]
Cleaning	
Wet Cleaning kit for SC/FC/ST/LC connectors	8500-20-0900
Dry Cleaning kit	8500-20-0901
Basic Cleaning kit with carry case (includes One-Clicks, FCC2 cleaning fluid, FiberWipes, Cletop SB)	FCP2-00-0900
Basic Cleaning kit with MPO Cleaners and carry case (includes One-Clicks, FCC2 cleaning fluid, FiberWipes, Cletop SB, MPO/MTP Cleaner)	FCP2-00-0901
One-Click Cleaner SC, ST, FC (500+ cleans)	8500-05-0001MZ
One-Click Cleaner LC/MU (500+ cleans)	8500-05-0002MZ
One-Click Mini-100 SC, ST, FC (100+ cleans)	8500-05-0005MZ
One-Click Mini-100 LC/MU (100+ cleans)	8500-05-0006MZ
One-Click Cleaner Ultra 2.5 SC, ST, FC (enlarged cleaning)	8500-05-0007MZ
One-Click Ultra Cleaner D-LC (Duplex LC, 500 cleans x 2)	8500-05-0008MZ
MPO/MTP® Cleaner (MPO-CLK-B)	CS000710

DESCRIPTION	AFL NO.
Reporting software add-on	
TRM 2.0 Basic Software (OTDR Trace/OLTS Viewer, Batch Editor & Reports)	TRM-00-0900PR
TRM 2.0 Advanced Software (Basic TRM plus Advanced Features & Reports)	TRM-00-0910PR
TRM 2.0 upgrade from Basic to Advanced Software	TRM-00-0920PR
Calibration Plan (2 years Calibration plan) [b]	
M310-25K-HC2	CAL2-00-M310-25K-HC2
M310-20K-HC2	CAL2-00-M310-20K-HC2
M310-25U-01, -HC, -HC1	CAL2-00-M310-25
M310-20U-01, -HC, -HC1	CAL2-00-M310-20
Calibration and Warranty plan (2 years Calibration Plus plan) [c]	
M310-25K-HC2	CAL2-01-M310-25K-HC2
M310-20K-HC2	CAL2-01-M310-20K-HC2
M310-25U-01, -HC, -HC1	CAL2-01-M310-25
M310-20U-01, -HC, -HC1	CAL2-01-M310-20

Note:

a. When ordering Fiber Rings, specify connector types (x1, x2, y1, y2).
b. Prepaid Cal plans offer two annual calibrations at a discounted price, calibration expiration email service and express calibration.
c. Cal Plus plans offer the same services as the Cal plans with the addition of a two year extended warranty (three years total coverage).

Fujikura - FlexScan OTDR

FlexScan OTDR with SmartAuto™ and LinkMap®

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

Features

- Fast, accurate SmartAuto OTDR network characterization or fault location
- Easy to understand LinkMap results with pass/fail indications
- 1310/1550/1650 nm PON OTDR (in- or out-of-service testing)
- 1310/1550 nm versions for complete network characterization
- 1550 and 1650 nm versions for cost-effective troubleshooting
- Alerts users to live fibers and poor launch conditions
- Integrated Source, Power Meter, VFL (visual fault locator)
- Bluetooth and WiFi communications
- Compatible with FOCIS Flex connector inspection system
- Rugged, lightweight, hand-held for field use
- Large, bright touchscreen display easily viewed indoors and out
- Internal / external data storage via USB, Bluetooth, or WiFi
- 12-hour Telcordia battery operation

Applications

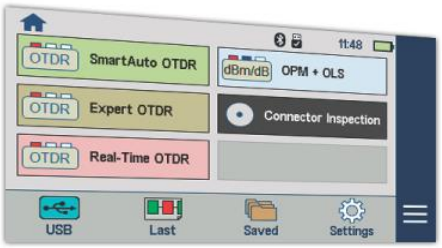
- PON or point-to-point network verification or troubleshooting
- Optical network installation, troubleshooting and maintenance
- OTDR testing plus Insertion Loss and Power measurements
- Locate faults exceeding industry or user pass/fail thresholds
- Visually pinpoint location of macro-bends or breaks inside cabinets and splice closures

FlexScan OTDRs enable both novice and expert technicians to quickly and reliably troubleshoot PON and point-to-point optical networks or fully characterize newly installed or repaired networks. Using FlexScan's innovative SmartAuto mode, multi-pulse, multi-wavelength OTDR scans quickly and accurately detect, locate, identify and measure network components and faults. After applying industry-standard or user-set pass/fail criteria, the characterized network is displayed using FlexScan's intuitive, icon-based LinkMap view. FlexScan automates test setup, shortens test time and simplifies results interpretation, improving efficiency and reducing the cost of test. Acquired results may be stored internally or externally. Internally stored results are easily accessed via USB, Bluetooth or WiFi.

With optional connector inspection, integrated source, power meter and VFL, FlexScan offers an all-in one solution, ensuring technicians have everything they need to locate and resolve optical network issues. Uploaded results may be viewed and reports may be generated using the included Windows-compatible TRM® 2.0 Test Results Manager software.

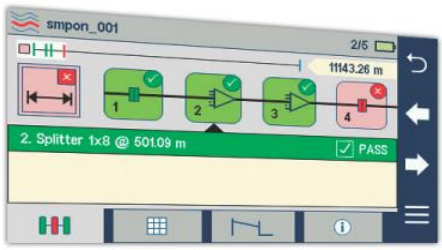
Available in Convenient, Cost-saving Installation and Troubleshooting Kits - Bundle FlexScan with your choice of launch cable, FOCIS Flex connector inspection probe and tips, and/or AFL's universal optical fiber identifier (OFI). The universal OFI works with all fiber types – including bend-insensitive fiber – and is available with or without integrated power meter (OFI-BIPM or OFI-BI).

FLEXSCAN OTDR with SmartAuto™ and LinkMap®



SmartAuto Provides Network-optimized Test Settings

In SmartAuto mode, a FLEXSCAN OTDR automatically determines the characteristics of the network under test and rapidly completes multiple scans using a variety of network-optimized acquisition settings. It precisely locates and identifies network events, as well as measures loss and reflectance for each detected event. SmartAuto supports two test modes: Locate End & Faults (for fast network troubleshooting) and Characterize Fiber (for more complete installation verification). For even greater ease-of-use, FLEXSCAN checks for live fiber and verifies the OTDR launch connection before initiating a test. Dual and triple-wavelength FlexScan OTDRs also provide automatic macro-bend detection.



LinkMap 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 fiber start, end, connectors, splices, PON splitters, and macro-bends.

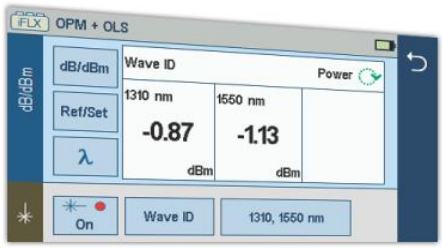
A LinkMap Summary provides end-to-end link length, loss, loss per distance and ORL. Loss and reflectance of detected events is compared to industry-standard or user-settable pass/fail thresholds and displayed with clear pass/fail indications. Users can instantly toggle between LinkMap and Trace views.

Bluetooth and WiFi for Faster Connectivity

Pair FLEXSCAN with AFL's FOCIS Flex connector inspection probe for fast, easy connector end-face inspection.

FOCIS Flex provides auto-focus, auto-centering, integrated IEC pass/fail analysis, and automatic Bluetooth transfer of images and pass/fail results to FLEXSCAN for display and archiving.

FLEXSCAN's built-in WiFi also supports wireless remote control and file transfer to/ from Windows PCs, Android and iOS mobile devices.



Multi-Functionality Ensures Complete Testing Accuracy

FLEXSCAN integrates a Visual Fault Locator (VFL) plus an optional optical laser source (OLS) and optical power meter (OPM) supporting AFL's unique Wave ID capability. With Wave ID, the power meter automatically synchronizes to a single or multi-wavelength Wave ID optical signal sent by an AFL light source. The power meter automatically identifies received wavelengths and measures power and loss at each wavelength, saving significant test time and eliminating setup errors.

The VFL'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 OTDR with SmartAuto™ and LinkMap®

FlexScan OTDRs are available with 1310/1550/1650 nm, 1310/1550 nm or 1550 nm only wavelengths. All versions are available with integrated Optical Light Source (OLS), Optical Power Meter (OPM), Visual Fault Locator (VFL) and Bluetooth/WiFi.

Specifications[a]

MODEL: FS200-#	-50	-60	-100	-300	-304
OTDR					
Emitter Type	Laser				
Safety Class[b]	Class I				
Fiber Type	Single-mode				
Wavelengths (nm)	1550	1650	1310/1550	1310/1550	1310/1550/1650
Center λ Tolerance	±20 nm (CW mode)				
Dynamic Range (dB)[c]	28	37	32/30	37/36	37/36/37
Event Dead Zone[d] (m)	1.0	0.8	0.8	0.8	0.8
Atten. Dead Zone[e] (m)	6.0	3.5	3.6	3.5	3.5
PON Dead Zone[f] (m)	N/A	20	N/A	20	20
Pulse Widths	3, 5, 10, 20, 30, 50, 100, 200, 300, 500 ns; 1, 2, 3, 10, 20 µs				
Range Settings	250 m to 240 km				
Data Points	Up to 300,000 (Expert mode .SOR file)				
Data Spacing	5 cm to 16 m				
Group Index of Refraction	1.3000 to 1.7000				
Distance Uncertainty (m)	±(1 + 0.005% x distance + data point spacing)				
Linearity (dB/dB)	±0.05				
Trace File Format	Telcordia SR-4731 Issue 2				
Trace File Storage Medium	4 GB internal memory (>1000 traces); External USB memory stick				
Data Transfer to PC	USB cable or Bluetooth® or WiFi (option)				
Standard OTDR Modes	SmartAuto, Expert, Real Time				
Display Modes	LinkMap Summary, LinkMap Events, Trace				
Real-time Refresh Rate	Up to 4 Hz				
Live Fiber Protection	No OTDR damage with input power ≤ +3 dBm for wavelength(s) in range 1260 to 1675 nm				
Live Fiber Detection	Reports live fiber with input signal ≥ -35 dBm for wavelength(s) in range 1260 to 1675 nm				
Live PON Filter Isolation	>50 dB for 1260 nm ≤ wavelength ≤ 1600 nm				
Live PON OTDR Test	1650 nm using filtered detector				
VISUAL FAULT LOCATOR (VFL)					
Emitter Type	Visible red laser, 650 ±20 nm				
Safety Class[g]	Class II				

MODEL: FS200-#	-50	-60	-100	-300	-304
Output Power (nominal)	0.8 mW into single-mode fiber				
Modes	CW, 2 Hz flashing				
OPTICAL LASER SOURCE - OLS (Optional)					
Emitter Type	Laser				
Safety Class[b]	Class I				
Fiber Type	Single-mode				
Wavelengths (nm)	1550	1650	1310/1550	1310/1550	1310/1550
Center λ Tolerance	±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, 2 mm diameter				
Measurement Range	+23 to -50 dBm				
Tone Detect Range	+3 to -35 dBm				
Wavelength ID Range	+3 to -35 dBm				
Accuracy[h]	±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	-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-polymer or AC adapter				
Battery Life	>12 hours, Telcordia test conditions				
Display	Color touchscreen 4.3 in LCD, 480x272, backlit				
USB Ports	1 host; 1 micro-USB function				
Bluetooth (optional)	Compatible with Windows PC, Android				
WiFi (optional)	IEEE 802.11 / WLAN				

Notes:

a. All specifications valid at 25 °C unless otherwise specified.
b. FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03.
c. (SNR=1) - Measured using maximum range, widest pulse width and 3 minutes averaging.
d. 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.
e. 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.
f. Recovery to within 0.5 dB of backscatter after 1:16 splitter (≤ 13 dB loss) using 100 ns pulse width.
g. FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03.
h. At calibration wavelengths and power levels of approximately -10 dBm.

FlexScan OTDR with SmartAuto™ and LinkMap®

FlexScan Kit Configurations

FlexScan is available in four kit configurations: Basic, Plus, PRO, and Complete. All kits include FlexScan with AC charger, battery, carry strap, SC/2.5 mm connector adapters, TRM® 2.0, USB cable and carry case. Plus kits add a 150 m fiber ring 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. Complete kits expand on PRO Kits by adding a bend-insensitive fiber identifier with optional power meter (OFI-BI or OFI-BIPM).

Ordering Information

FS200-[MOD]-[KIT]-[PW]-[C]-[LNG]-[AC]-[FR]-[TIP]* where:

[MOD]	FS200 FlexScan OTDR Configuration
50	1550 nm only Troubleshooting OTDR
60	1650 nm filtered Live PON Troubleshooting OTDR
100	1310/1550 nm Verification & Troubleshooting OTDR
300	1310/1550 Pt-to-Pt & PON Verification & Troubleshooting OTDR
304	1310/1550/1650 Pt-to-Pt & PON Verification & Troubleshooting OTDR

[KIT]	FS200 FlexScan Kit Configuration
BAS	Basic kit with soft case, TRM 2.0 Basic, USB cable
PLUS	PLUS kit adds 150 m SMF Fiber Ring and One-Click cleaner
PRO	PRO kit adds Fiber Ring, One-Click cleaner, FOCIS Flex
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, Power Meter, or Bluetooth/WiFi (FS200-50/60/100 only)
P0-W1	No Source or Power Meter; Includes Bluetooth/WiFi (FS200-300/304 only)
P1-W1	Includes Source, Power Meter, Bluetooth/WiFi (all models)

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

[LNG]	Language Option
ENG	English
CHS	Simplified Chinese
CHT	Traditional Chinese
DEU	German
FIN	Finnish

[LNG]	Language Option
FRA	French
ITA	Italian
JPN	Japanese
POL	Polish
SPA	Spanish

[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

[FR]	150 m SMF Fiber Ring
Blank	N/A in Basic 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-FC-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 (PRO only)
Blank	Option not available in Basic & PLUS 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

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

Fujikura - AFL FLX380-30x Flex Tester3 OTDR

FLX380-30x FlexTester3 OTDR

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.

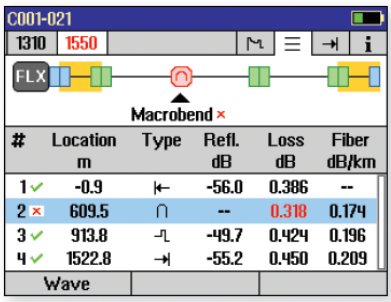
FlexTester3 Series is offered in four models to best suit your application requirements:

- **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

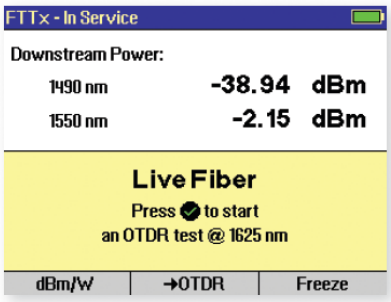
New LinkMap™ Simplifies Network Troubleshooting



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.

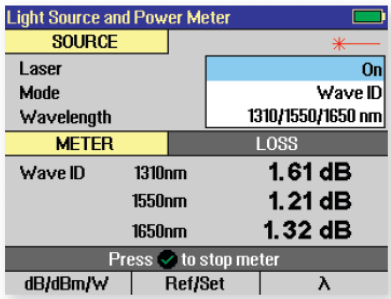
ServiceSafe® Testing on Live PONs



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.

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.

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

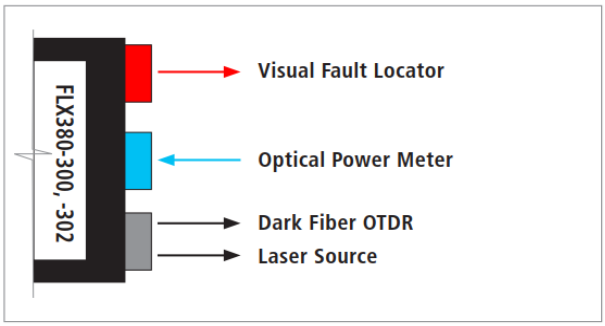
Features and Applications by Model

	FLX380 MODELS			
FEATURES	**-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 and/or 1550 nm PON power levels)			◆	◆

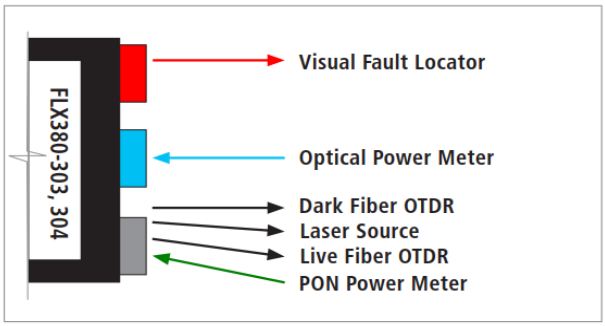
	FLX380 MODELS			
FIBER TESTING APPLICATIONS	**-300**	**-302**	**-303**	**-304**
Point-to-point fiber optic cable installation test and troubleshooting Verify end-to-end length, loss and return loss. Verify splice and connector loss and reflectance. Locate source of excess loss and/or reflections, including micro- or macro-bends.	◆	◆	◆	◆
FTTx PON construction test 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.	◆	◆	◆[a]	◆
FTTx customer fiber troubleshooting – dark fibers Locate cable cuts, open splices, micro- or macro-bends and dirty or damaged 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 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 FlexTester PRO Test and Inspection kit

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® 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™ with Pass/Fail plus TRM 2.0 Advanced is available as an optional upgrade for FLX380 Soft Carry Case kits.

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 [a]

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) [b]	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 [c]	0.8 m
Attenuation Dead Zone [d]	2.5 m
PON Dead Zone [e]	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® 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 [f]	±0.2 dB
Output Power	-1 dBm ±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 [g]	±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 [h]	±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 transflective with backlight and AR coating.

Notes:

a. All specifications valid at 25 °C unless otherwise specified.
b. Measured using 240 km range, 20 µs pulse and 3 minutes averaging.
c. 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.
d. 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.
e. 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.
f. Over 8 hours.
g. At calibration wavelengths and power levels of approximately -5 dBm for 1550 nm and -10 dBm for 1490 nm.
h. 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)

Fujikura - AFL OFL280-10x Flex Tester OTDR

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.

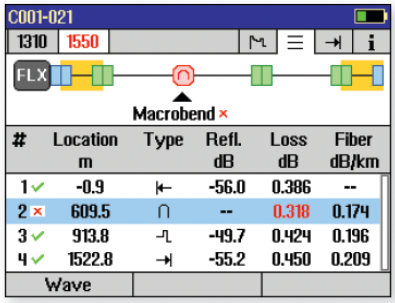
With new LinkMap, pass/fail analysis, macro-bend and splitter detection, launch quality check, plus AFL's unique ServiceSafe and Wave ID features, OFL280 FlexTesters enable even novice users to troubleshoot like pros.

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.

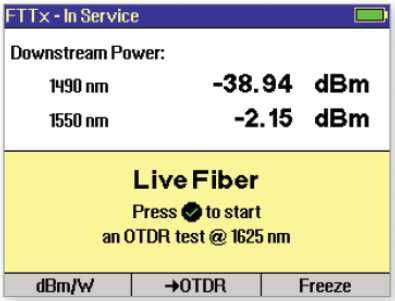
OFL280-10x FlexTester OTDR



New LinkMap™ Simplifies Network Troubleshooting

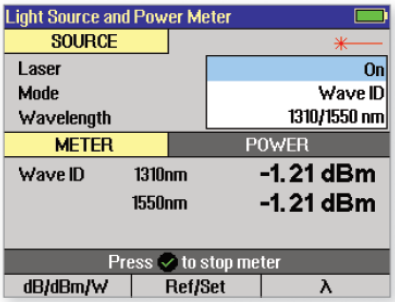
Using the OFL280's new LinkMap capability, even novice users can troubleshoot optical networks like a pro! LinkMap interprets the tested network and presents an icon-based view of network elements clearly identifying fiber start, end, connectors, splices, splitters, and macro-bends. Loss and reflectance 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 Features and Applications by Model

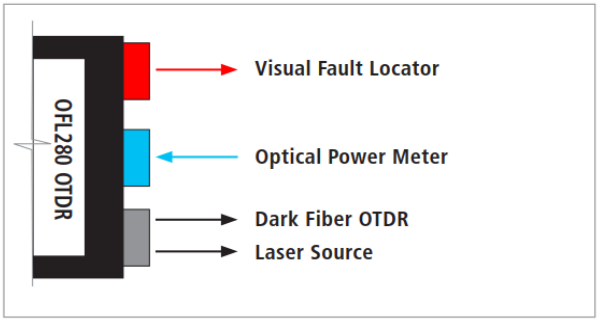
	OFL280 MODELS		
FEATURES	-100	-102	-103
Compatible with all AFL optical power meters and laser sources, including tone and Wave ID features	◆	◆	◆
Compatible with AFL optical fiber identifiers (OFI)	◆	◆	◆
Integrated high-power optical power meter	◆	◆	◆
Integrated visual fault locator (red laser)	◆	◆	◆
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)			◆

	OFL280 MODELS		
FIBER TESTING APPLICATIONS	-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.			◆

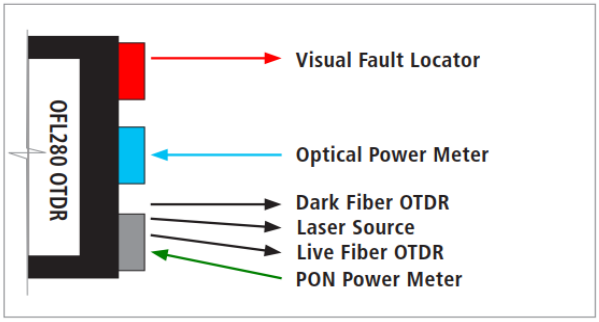
Note:

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



OFL280-103 model



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 5.3. 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	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
OFL280-1XX-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 FOCIS PRO and cleaning supplies)
OFL280-1xx[C]-PRO2-[LNG]-[AC]-[TIP]-[FR]	OFL280-1xx PRO2 Kit (with FOCIS Flex, fiber ring, cleaning supplies)
OFL280-1xx[C]-CMP-[LNG]-[AC]-[FR]	OFL280-1xx Complete Kit (with FOCIS PRO, OFI-200D, fiber ring, cleaning supplies)
OFL280-1xx[C]-CMP2-[LNG]-[AC]-[TIP]-[FR]-[OFI]	OFL280-1xx Complete2 Kit (with FOCIS Flex, OFI choice, fiber ring, 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	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 OFL280 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)

Fujikura - CS260-10 PON OTDR

CS260-10 Contractor Series Live PON OTDR

Features

- Filtered OTDR detector enables OTDR measurements on in-service PON
- Integrated PON Power Meter measures downstream signal levels
- Optional LinkMap upgrade for easy results interpretation
- 35 dB dynamic range @ 1625 nm
- 0.8 m event, and 3.5 m attenuation dead zones
- Auto, Expert, PON, and Real Time OTDR modes
- Integrated Visual Fault Locator (VFL)
- Rugged, hand-held and lightweight
- High-contrast display easily viewed indoors or out
- >12-hour operation, fast charge, Li-Ion battery
- Instant On; Ready to test in <5 sec
- Easy to learn and use

The CS260-10 Contractor Series Live PON OTDR is an ideal tool for fiber optic technicians installing, activating and troubleshooting FTTx PON distribution and drop fibers from the splitter to the ONT.

The CS260-10 provides an out-of-band 1625 nm OTDR with filtered detector, enabling Live PON testing without disrupting service on an active PON. It additionally includes an integrated PON power meter to automatically detect and measure downstream 1490 and 1550 nm signal levels.

The CS260-10 is also suitable for out-of-service testing. As longer wavelengths are more sensitive to bending losses, the CS260-10 OTDR will detect excess losses induced by micro- or macro-bends.

The CS260-10 provides extremely short event and attenuation dead zones (0.8 and 3.5 m, respectively), enabling closely spaced events to be detected and measured in distribution and drop fibers. With 35 dB dynamic range, the CS260-10 is able to test through PON splitters having split ratios up to 1x64, enabling detection of poor splices or excess bending losses at the splitter.

Add optional new LinkMap® upgrade to simplify results interpretation. LinkMap displays the tested network using colored icons to represent passing or failing connectors, splices, splitters, and faults.

To further aid in locating faults within access points, splice closures or indoor cabling, the CS260-10 includes an integrated Visual Fault Locator (visible red laser).

The CS260-10 is extremely easy to use. It provides fully automatic OTDR parameter selection, automatic event table generation, and end-to-end length, loss and ORL summary. For expert users, the CS260-10 also allows full control of OTDR parameters (range, pulse width, averaging time, etc.).

Over 1000 OTDR test results may be saved in industry-standard .SOR file format. Stored OTDR results may be transferred to PC via USB port for viewing, analysis, and professional report generation using included Windows® compatible TRM® 2.0 Basic Test Results Manager software.

Applications

- **Verify FTTx PON fiber installations:** Measure loss and reflectance of individual splices, connectors and splitters, as well as end-to-end length, loss and optical return loss.
- **Troubleshoot Live PONs:** Verify downstream PON power levels. Locate source(s) of excess loss or reflectance in distribution or drop fibers on in-service FTTx PON using out-of-band 1625 nm Live PON OTDR with filtered detector.
- **Visibly trace fibers or locate fiber bends or breaks:** Use integrated VFL visible red laser to visibly detect light emanating from fiber breaks or macrobends.

CS260-10 Contractor Series Live PON OTDR

Specifications [a]

OTDR (PON, LIVE PON, OR POINT-TO-POINT)	
Emitter Type	Laser
Safety Class	Class 1 FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Fiber Type	Single-mode
Wavelength	1625 nm ±10 nm
Dynamic Range (SNR=1) [b]	35 dB
Event Dead Zone [c]	0.8 m
Attenuation Dead Zone [d]	3.5 m
Pulse widths	5, 10, 30, 100, 300 ns; 1, 3, 10 µs
Range Settings	250 m to 120 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 1.6000
Distance Uncertainty (m)	±(1 +0.005 % x distance + data point spacing)
Linearity	±0.05 dB/dB
Trace File Format	Bellcore GR-196 v1.1
Trace File Storage	Internal memory (>1000 traces)
Data Transfer to PC	USB cable
PON OTDR Modes	FTTx – In Service; FTTx PON Construction, Expert, Real Time
Standard OTDR Modes	Full Auto, Expert, Real Time
PON POWER METER	
Calibrated Wavelengths	1490, 1550 nm
Detector Type	Filtered InGaAs
Isolation	>40 dB
Measurement Range	+23 to -50 dBm
Accuracy [e]	±0.5 dB
Resolution	0.01 dB
Measurement Units	dBm or Watts (nW, µW, mW)
VISUAL FAULT LOCATOR (VFL)	
Emitter Type	Laser; 650 nm ±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 transflective with backlight and AR coating

Notes:

a. All specifications valid at 25°C unless otherwise specified.
b. Typical dynamic range measured using 10 µs pulse width with 3 minutes averaging.
c. 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.
d. Typical distance from the location of a -45 dB reflective event to point where trace falls and stays within 0.5 dB of backscatter, using a 5 ns pulse width.
e. At calibration wavelengths and power levels of approximately -5 dBm for 1550 nm and -10 dBm for 1490 nm.

CS260-10 Contractor Series Live PON OTDR

Ordering Information

The CS260-10 comes with a soft carry case, user-specified connector adapters for OTDR and VFL ports, USB cable (connects with Type A USB port on your PC), AC power adapter with a country-specific power cord, rechargeable replaceable Li-Ion battery, and TRM® 2.0 Basic Test Results Manager software for PC-based trace viewing and report generation. When placing an order, select options as follows: OTDR port ferrule type (F), connector adapter (CA), Language Pack (LLL)*, country-specific Power Cord (PC).

Example: CS260-10U-SC-ENG-01 indicates a CS260-10 1625 nm Live PON OTDR with UPC port ferrule, SC OTDR connector adapter, 2.5 mm Universal VFL adapter, English/Euro language pack, quick reference guide in English, and US power cord.

CS260 — 10 [F] — [CA] — [LLL] — [PC]

OTDR Port Ferrule (F)

A = APC
U = UPC

Connector Adapters (CA)

SC = SC OTDR adapter plus Universal 2.5 mm VFL adapter
FC = FC OTDR adapter plus Universal 2.5 mm VFL adapter
LC = LC OTDR adapter plus Universal 1.25 mm VFL adapter

Quick Reference Guide Language (LLL)*

ENG = English	**DEU** = German	**JPN** = Japanese	**POR** = Portuguese
CHS = Chinese Simplified	**FRA** = French	**KOR** = Korean	**SPA** = Spanish
CHT = Chinese Traditional	**ITA** = Italian	**POL** = Polish	**TUR** = Turkish

Power Cord (PC)

01 = USA	(IEC320, 115V, Type K)
02 = Euro	(IEC320, 250V, Type B)
03 = UK	(IEC320, 250V, Type D)
04 = Australia	(IEC320, 250V, Type C)
04 = China	(IEC320, 250V, Type C)
05 = Denmark	(IEC320, 250V, Type E)
06 = Japan	(IEC320, 125V, Type M)
07 = Swiss	(IEC320, 250V, Type L)
08 = Italy	(IEC320, 250V, Type I)
09 = Israel	(IEC320, 250V, Type H)
10 = India	(IEC320, 250V, Type G)

*** All CS260-10 models are shipped with the user-specified quick reference guide and language pack installed.**

Available Accessories

DESCRIPTION	AFL NO.
LinkMap upgrade for CS260-10	CS260-10-LM
Standard, 1 single-mode fiber, 150 m (492 ft)	FR1-SM-150-y1-y2 [a, b]
Standard, 1 single-mode fiber, 500 m (1640 ft)	FR1-SM-500-y1-y2 [a, b]
Standard, 1 single-mode fiber, 1000 m (3280 ft)	FR1-SM-1000-y1-y2 [a, b]
FC adapter for OTDR port	2900-50-0002MR
SC adapter for OTDR port	2900-50-0003MR
ST adapter for OTDR port	2900-50-0004MR
LC adapter for OTDR port	2900-50-0006MR
2.5 mm Universal adapter for VFL port	2900-53-0001MR
1.25 mm Universal adapter for VFL port	2900-53-0002MR
Universal flip-top dust cap for UCI outputs	8800-00-0072MR
Upgrade TRM 2.0 Basic to TRM 2.0 Advanced	TRM-00-0920

Notes:

a. y1, y2 – connectors for single-mode cables, specify type as follows: ST, SC, ASC (angled SC), FC, AFC (angled FC), LC.
b. Other connector types, fiber types, and fiber lengths quoted upon request.

Fujikura - AFL M710

M710 Multifunction OTDR

Test, Troubleshoot and Report Single-mode and Multimode Fiber Networks

M710 Compact QUAD OTDR

M710 OTDR with DFS1 Digital FiberScope

Features

- Industry leading TruEvent® analysis
- LinkMap® for easy results interpretation
- Dynamic range up to 44 dB
- Automatic Pass/Fail analysis
- Live fiber detection
- Front Panel and First Connector Check
- Inspection capable with DFS1 Digital FiberScope
- Integrated power meter (OPM) and visual fault locator (VFL)
- Up to 13 hours battery life
- Large 6.5 inch full color touchscreen display

Applications

- Test and certify campus & central office networks and Distributed Antenna Systems (DAS) fiber infrastructure
- Tier 1 and Tier 2 testing and certification of SM and MM networks
- Long Haul Network
- LAN/WAN

The M710 OTDR from AFL combines ease of use (Touch and Test™) and high performance in a rugged, large display package. With single-mode dynamic ranges up to 44 dB and a MM/SM QUAD option, the M710 OTDR is ideal for testing and troubleshooting LAN/WAN, metro and long haul networks. Industry leading dead zones enhance the user's ability to locate and measure events.

The M710 models utilize AFL's industry leading TruEvent technology to provide a new level of accuracy and reliability in event analysis. LinkMap visualizes test results for easy and quick interpretation.

Touch and Test simplifies the M710 user experience, minimizes human errors and reduces training time by providing one-touch access to all OTDR test modes, OPM testing, Results Management and Job Creation menus. The M710 allows setting Pass/Fail thresholds to industry standard TIA/ISO values or user defined criteria and will automatically alert users of failing fibers. Touch and Test enables any technician to complete jobs more accurately and in less time, making it the ideal field test tool.

**M710 series languages supported: English, Chinese, French, German, Italian, Polish, Portuguese, Spanish. Please specify language when ordering.*

M710 Multifunction OTDR

Specifications [a]

OTDR MODEL	SINGLE-MODE OTDR OPTIONS			QUAD OTDR OPTION
	M710-40	M710-20	M710-21	M710-24
Emitter Type	Laser			
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03			
Center Wavelengths	1310/1550 nm	1310/1550 nm	1310/1550/1625 nm	850/1300/1310/1550 nm
Wavelength Tolerance	±25/25 nm	±25/25 nm	±25/25/10 nm	±25/25/25/25 nm
Dynamic Range (SNR = 1) [b]	44/42 dB	41/39 dB	41/39/39 dB	25/24/40/38 dB [c]
Event Dead Zone	0.8 m [d]	0.8 m [d]	0.8 m [d]	0.8 m [d]
Attenuation Dead Zone	4 m [e]	4 m [e]	4 m [e]	4 m [e]
Pulse Widths	5, 10, 30, 100, 300 ns; 1, 3, 10, 20 µs			MM: 5, 10, 30, 100, 300 ns; 1 µs SM: 5, 10, 30, 100, 300 ns; 1, 3, 10, 20 µs
Range Settings	250 m to 256 km			MM: 250 m to 64 km SM: 250 m to 256 km
Sampling Points	Max. 64,000 points			
Minimum Data Point Spacing	0.125 m			
Group Index of Refraction (GIR)	1.4000 to 1.6000			
Distance Uncertainty (m) [f]	±(1 + 0.0005 % x distance + data point spacing)			
Linearity [g]	±0.03 dB/dB	±0.05 dB/dB	±0.05 dB/dB	±0.05 dB/dB
Loss Threshold	0.05 dB			
Loss Resolution	0.01 dB			
Reflectance Accuracy [h]	±2 dB			
Trace File Format	SR-4731 (GR-196-CORE Appendix A & B and SR-4731)			
Trace File Storage Media	Internal flash memory USB flash drive (2 USB host ports) Downloadable from OTDR directly to PC			
Trace File Storage Capacity	Internal 1000 fibers			
Data Transfer to PC	USB			
OTDR Modes	Full Auto, Real Time, Expert			
Tool Free Adapters	SC/ST/FC/LC			

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.
b. Longest Range and Pulse Width, 3 minutes Averaging Time, Filter on, Typical.
c. 62.5 µm fiber for multimode test.
d. Typical distance between the two points 1.5 dB down each side of an unsaturated event with reflection <-45 dB for SM and <-40 dB for MM using a 5 ns pulse width.
e. Typical distance from event location to point where trace is within 0.5 dB of backscatter caused by an unsaturated event with reflection <-45 dB for SM and <-40 dB for MM using a 5 ns pulse width.
f. Does not include GIR uncertainty.
g. Typical.
h. For a non-saturated event.

M710 Multifunction OTDR

Specifications [a]

POWER METER	SINGLE-MODE OTDR OPTIONS			QUAD OTDR OPTIONS
	M710-40	M710-20	M710-21	M710-24
Calibrated Wavelengths	850, 980, 1300, 1310, 1490, 1550, 1625 nm (displays up to 3 simultaneously)			850, 1300, 1310, 1490, 1550, 1625 nm (displays up to 3 simultaneously)
Detector Type	Filtered InGaAs detector			InGaAs 2 mm
Measurement Range (dBm)	+26 to -50 dBm			+3 to -70 dBm
Accuracy [b]	±0.25			
Measurement Units	dB, dBm, mW			
Wavelength ID [c]	Yes			
Set Reference	Yes			
Data Storage	Yes			
Tone Detection	270 Hz, 330 Hz, 1 kHz, 2 kHz			

VISUAL FAULT LOCATOR	ALL M710 OTDR MODELS
Emitter Type	Laser
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Wavelength	635 ±20 nm
Output Power (nominal)	0.8 mW

GENERAL	ALL M710 OTDR MODELS
Display	16.51 cm (6.5 in), color, transflective (indoor/outdoor) touch screen display
Anti-Reflective (AR) Coating	Yes
Size	190.5 x 269.2 x 69.8 mm (7.5 x 10.6 x 2.75 in)
Weight	2.36 kg (5.22 lb)
Operating Temperature	-10°C to+50°C, 0 to 90 % RH (non-condensing)
Storage Temperature	-20°C to+60°C, 0 to 90 % RH (non-condensing)
Power	Rechargeable Li-Ion or AC power adapter
Battery Life [d, f]	13 hours continuous OTDR testing
Recharge Time [e, f]	4 hours

Notes:

a. All specifications valid at 25°C unless otherwise specified.
b. Accuracy measured at -10 dBm per N.I.S.T. standards.
c. Automatic wavelength identification and switching when used with AFL's Wave ID Series Light Sources.
d. Typical, per GR-196-CORE issue 2, depending on display brightness.
e. Typical, from fully discharged to fully charged state, unit may be operating.
f. External battery charger available.

M710 Multifunction OTDR

Ordering Information

The M710 OTDRs work with the DFS1 Digital FiberScope (the DFS1 includes a software update for the OTDR). The M710 models come with an integrated Visual Fault Locator (VFL, 650 nm), Optical Power Meter (OPM), and a large transflective touch screen display. Each model includes an OTDR, USB Flash drive, PC software for OTDR trace analysis and OPM loss reporting, AC adapter [a], switchable test port adapters, and cleaning accessories in a soft carry case. When placing an order, select options as follows: Optical Configuration (NN), OTDR port ferrule (F), and Language (LL). Example: The model number M710-21U indicates M710 SM with UPC OTDR port ferrule, and English language option. Language option will be selected during ordering process.

M710 — NN | F — LL

Optical Configuration (NN)

24 = QUAD LR (long range):
850/1300 nm MM and 1310/1550 nm SM
21 = 1310/1550/1625 nm SM
20 = 1310/1550 nm SM
40 = 1310/1550 nm SM

OTDR Port Ferrule (F)

U = UPC
A = APC [b]

Language (LL) [c]

01 = English, French, German,
Italian, Polish, Portuguese, Spanish
08 = English, Traditional and Simplified Chinese

Accessories

Custom kits may be created by ordering an M710 OTDR model, a pre-configured accessories kit (M700 - H1) and accessories from the table below. The hard carry case has room for up to 6 Fiber Rings, test leads/jumpers, the DFS1 Digital FiberScope kit, OLS2-Dual or OLS4 optical light source, and cleaning accessories (items must be ordered separately).

DESCRIPTION	AFL NO.
Pre-configured Accessories Kit Includes hard case with One-Click Cleaner SC/ST/FC (2.5 mm), One-Click Cleaner LC/MU (1.25 mm), and CleanConnect 500	M700 - H1
Hard carry case,M7x0/C SERIES,W/FOAM	1400-01-0090PZ
DFS1 Digital FiberScope PC/UPC Inspection Kit	DFS1-00-04XU
DFS1 Digital FiberScope APC Inspection Kit	DFS1-00-04XA
DFS1 USB Digital Fiber Inspection Kit without Adapters	DFS1-00-04XN
OLS2-Dual laser light source with Wave ID, 1310/1550 nm	OLS2-Dual
OLS4 integrated LED and laser light source with Wave ID, 850/1300/1310/1550 nm	OLS4
Fiber Ring, standard, 1 fiber, 50/125 µm multimode, 150 m	FR1-M5-150-x1-x2 [d]
Fiber Ring, standard, 1 fiber, Laser Optimized, 50 µm multimode, 150 m	FR1-L5-150-x1-x2 [d]
Fiber Ring, standard, 1 fiber, 62.5/125 µm multimode, 150 m	FR1-M6-150-x1-x2 [d]
Fiber Ring, standard, 1 fiber, single-mode, 150 m	FR1-SM-150-x1-x2 [d]
Zippered Jumper Carry Case	1400-01-0086PZ
All types of fiber optic cleaning supplies are available. Visit www.AFLglobal.com/Cleaning or call factory for details.	

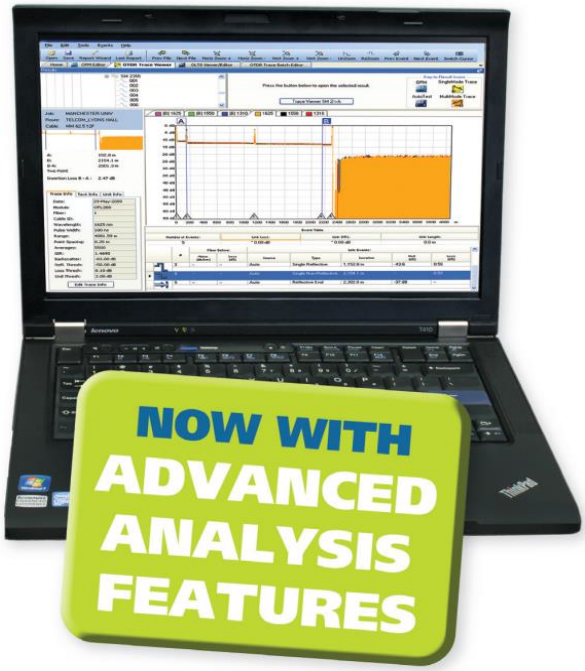
Notes:

a. Specify power cord type (country) when ordering an OTDR. One power cord is included with each AC adapter at no charge.
b. Available on the SM port for -20, -21, -24 models only.
c. When ordering OTDR, indicate language preference for the OTDR Quick Reference Guide.
d. When ordering Fiber Rings, specify connector types (x1, x2).

Fujikura - AFL Test Results Manager 2.0

TRM® 2.0 Test Results Manager

All-In-One Comprehensive Analysis and Reporting Software



TRM 2.0 Basic Software Features

- Generate professional acceptance reports including:
  - OTDR traces
  - Certification loss results/OPM loss results
  - Connector Inspection Results
- Create certification results and apply Pass/Fail
- Document networks to reduce maintenance cost
- Increase productivity with powerful OTDR Batch editing
- Telcordia (GR-196 v1.1, SR-4731 issue 1 & 2) .SOR file formats

TRM 2.0 Advanced Software Features

- Macro/Microbend detection capabilities
  - Identify excess insertion loss due to poor installation and fiber handling
  - Detect insertion loss difference between wavelengths (≥0.2 dB)
- Automatic Bi-directional trace analysis including
  - Bi-directional trace information in the Event table
  - Reverse direction test data for each event
- Reports with Macrobend and Bi-directional trace averaging
- Export .SOR file contents to .CSV format

Software Licensing

- TRM 2.0 Basic software
- TRM 2.0 Advanced software
- TRM 2.0 Upgrade from Basic to Advanced software

Languages supported

- English
- French
- German
- Italian
- Polish
- Portuguese
- Russian
- Spanish
- Turkish
- Chinese
- Japanese

TRM 2.0 Test Results Manager is Windows®-compatible, all-in-one analysis and comprehensive reporting software designed for use with AFL test and inspection products. Three software packages are available, TRM Basic software, TRM Advanced software and upgrade from TRM Basic to TRM Advanced software.

TRM 2.0 enables technicians to quickly view results, analyze or batch edit OTDR traces, and generate acceptance reports including OTDR, insertion loss and inspection results uploaded from AFL OTDRs, power meters, and connector inspection probes.

TRM 2.0 Advanced adds Macro/Microbend detection, automatic Bi-directional trace averaging, and .SOR file export to .CSV file format.

TRM 2.0 Basic and TRM 2.0 Advanced software allow integration of fiber inspection images from AFL's FOCIS Flex, FOCIS WiFi or DFS1 FiberScope to be included in customized test reports. Both versions support Bellcore/Telcordia .SOR file formats.

TRM® 2.0 Test Results Manager

All-In-One Comprehensive Analysis and Reporting Software

Test Results Manager 2.0 Basic Software

TRM 2.0 Basic software is included with all AFL OTDRs and OPM5 optical power meters and additional copies are available for purchase. TRM 2.0 Basic permits technicians to quickly view results, analyze OTDR traces, loss or certification results, batch edit OTDR traces and create acceptance reports conforming to industry guidelines. TRM 2.0 allows users to generate reports showing dual wavelength traces and event tables, end-face images with pass/fail results, event map and loss data for each fiber. Users can apply Pass/Fail thresholds to OTDR events and OLTS measurement; create and apply application rules per industry standards. The OTDR Batch editor allows user to edit and analyze multiple trace files simultaneously.

Test Results Manager 2.0 Advanced Software

TRM 2.x Advanced software includes all Basic software features and adds Bi-directional OTDR trace averaging, Macrobend detection, and export of .SOR files to .CSV file format.

Basic and Advanced Software Comparison

FEATURES	BASIC SOFTWARE	ADVANCED SOFTWARE
OTDR Trace Results	◆	◆
OLTS Viewer/Editor	◆	◆
OTDR Trace Batch Editor	◆	◆
Pre-defined Template for Reports	◆	◆
TRM Trace Comparison	◆	◆
FOCIS Flex Inspection Images and Pass/Fail Table	◆	◆
FOCIS WiFi and DFS1 Inspection Images	◆	◆
Telcordia (GR-196 v1.1, SR-4731 issue 1 & 2) .SOR file formats	◆	◆
Macrobend/Microbend		◆
Automatic Bi-directional OTDR Event Table		◆
Report with Bi-directional OTDR Trace/Event information		◆
Report with Macrobend/Microbend Events		◆
Export .SOR File Contents to .CSV File		◆
License Key	Required (Seat License)	

Ordering Information

TRM 2.0 Basic software is included with M-Series, C-Series, OFL-Series, FlexTester and FlexScan OTDRs and OPM5 (may be installed in up to 5 PCs). Users may download a full working version of TRM 2.0 (Basic plus Advanced features) and try it for 30 days. Once the evaluation period ends, users must purchase and install a TRM 2.0 Basic or Advanced software license to continue to use TRM. To order the TRM 2.0 software, contact your AFL Sales representative or AFL Customer Support. The TRM 2.0 Basic and Advanced software part numbers are listed below.

DESCRIPTION	AFL NO.
TRM 2.0 Basic Software (OTDR Trace/OLTS Viewer, Batch Editor and Reports)	TRM-00-0900PR
TRM 2.0 Advanced Software (Basic TRM plus Advanced Features and Reports)	TRM-00-0910PR
TRM 2.0 Upgrade from Basic to Advanced Software	TRM-00-0920PR

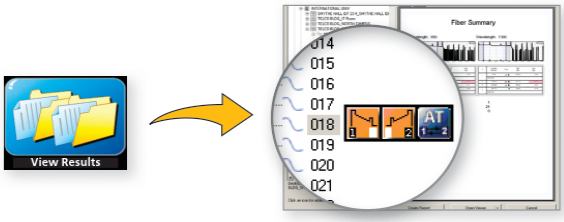
TRM® 2.0 Test Results Manager

All-In-One Comprehensive Analysis and Reporting Software

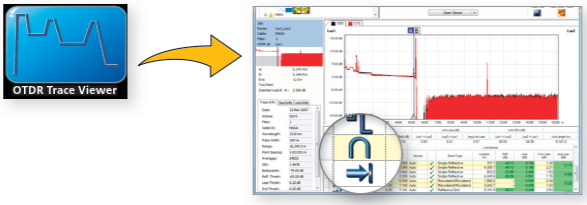
Quickly and easily review test results

TRM's user friendly interface makes reviewing results easy.

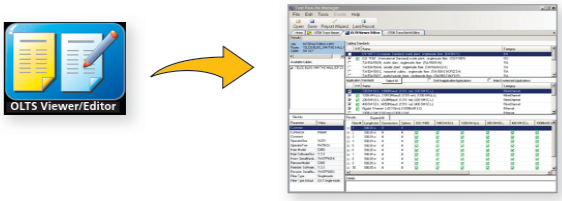
OTDR, Certification, Inspection, and OPM test results are indicated by specific icons to simplify selection of test results to review.



Easily Analyze OTDR, OLTS, and OPM results

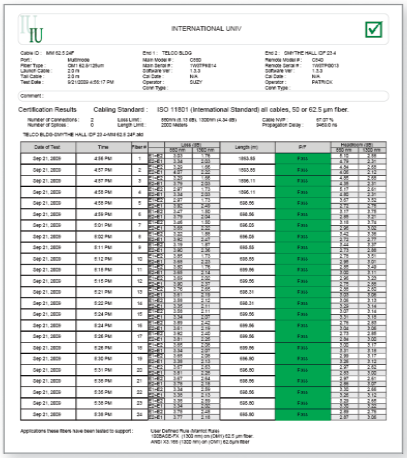


Analyze OTDR traces by selecting the Trace Viewer icon. The automatic Bi-directional and Macrobend/Microbend features enhance OTDR analysis to eliminate splice loss measurement errors related to fiber mismatch and detect excessive bends or stress in the fiber.



Select the OLTS Viewer icon to analyze Auto Test and OPM results. Apply Pass/Fail Rules to Auto Test, OPM and OTDR test results.

Verify Fibers Meet Customer Requirements

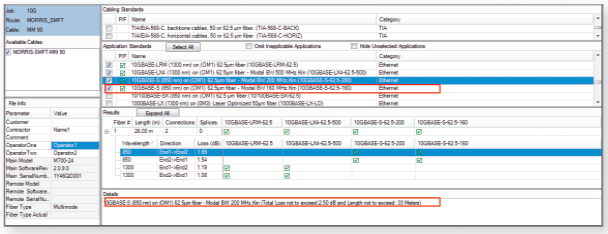


Apply rules to Auto Test and OPM data to ensure fibers meet required specifications. Pass/Fail indication for each test simplifies the review of test results.

Test to Industry Standards (ISO/TIA/EN), Application Rules (IEEE/ANSI), or create User Rules and User Application Rules. As new rules and applications develop, compare existing test results to the new rules, such as emerging Ethernet standards.

10GbE Fiber Certification

Supports industry-standard 10GbE IEEE 802.3ae specification using pre-configured 10GbE application rules. Produces detailed 10GbE test report.



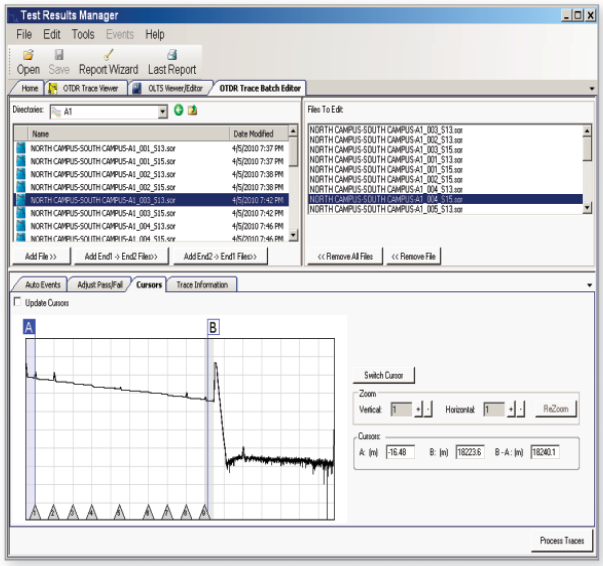
TRM® 2.0 Test Results Manager

All-In-One Comprehensive Analysis and Reporting Software

Optimize Productivity with Powerful Batch Processing

Analysis

- Edit cables or groups of fibers in one batch session
- Modify event pass/fail thresholds:
  Loss, ORL, Link Loss, Link ORL
- Add or remove Launch and Receive cables
- Adjust Launch and Receive cable length
- Adjust the location of the cursors



Documentation

Add and edit

- Trace File Names (Fiber Number, Cable ID, End 1, End 2, and Direction of test),
- Cable Information (Cable Type and GIR)
- Job Information (Company name, Main Operator, Second Operator, and Comment)

Reporting

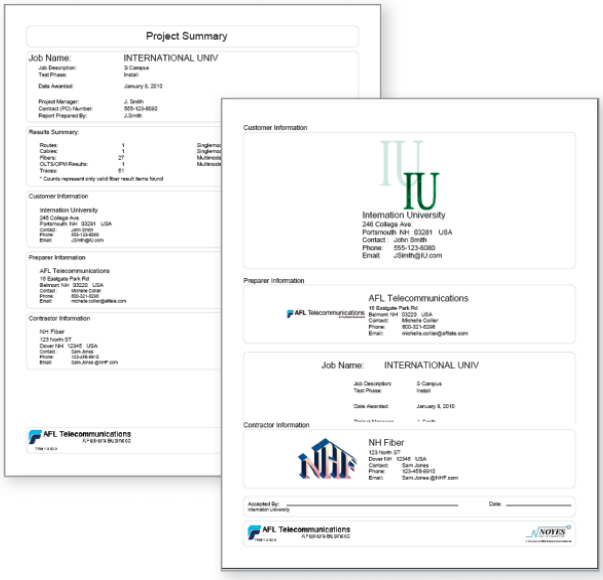
- Generate professional reports by applying edits to a group of fibers for consistency of information and uniformity of results

Create Professional Personalized Reports

Featuring the Report Wizard - a powerful tool for creating test reports, TRM allows users to generate personalized professional reports for customer's job acceptance.

Generated reports meet accepted industry documentation and can be personalized by customizing cover pages to include customer's logos.

Create dedicated inspection, insertion loss and OTDR reports, as well as reports combining OTDR, power meter and inspection results.



TRM® 2.0 Test Results Manager

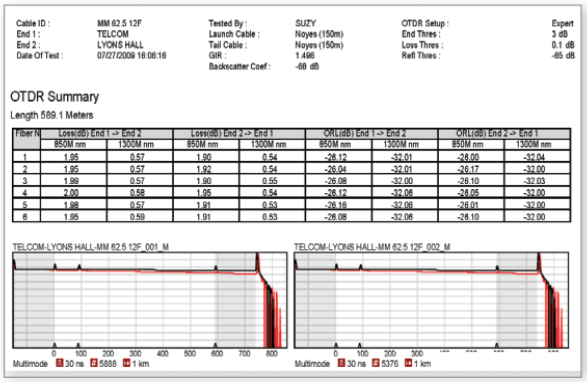
All-In-One Comprehensive Analysis and Reporting Software

Reporting Flexibility

- Create custom cover pages with logos for end-users, installers or consultants
- Generate OTDR summary table with thumbnail OTDR traces
- Combine OTDR trace(s), event table, loss measurements, connector end-face image and pass/fail results, and event map in a single report
- Export jobs to Zip files or save reports as PDF files

OTDR Cable Summary Page

OTDR cable summary page shows job information and test setup, Loss and ORL test results with or without thumbnails of OTDR traces (shown with Loss/ORL table and OTDR thumbnails).



OTDR Summary

Length 589.1 Meters

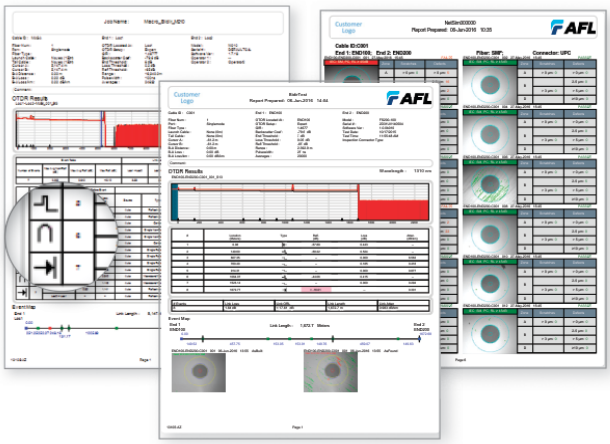
Fiber N	Loss(dB) End 1 -> End 2		Loss(dB) End 2 -> End 1		ORL(dB) End 1 -> End 2		ORL(dB) End 2 -> End 1	
	850M nm	1300M nm	850M nm	1300M nm	850M nm	1300M nm	850M nm	1300M nm
1	1.95	0.57	1.90	0.54	-26.12	-32.01	-26.00	-32.04
2	1.95	0.57	1.92	0.54	-26.04	-32.01	-26.17	-32.00
3	1.99	0.57	1.90	0.55	-26.08	-32.00	-26.10	-32.03
4	2.00	0.59	1.95	0.54	-26.12	-32.06	-26.05	-32.00
5	1.98	0.57	1.91	0.53	-26.16	-32.06	-26.01	-32.00
6	1.95	0.59	1.91	0.53	-26.08	-32.06	-26.10	-32.00

TELCOM-LYONS HALL-MM 62.5 12F_001_M

TELCOM-LYONS HALL-MM 62.5 12F_002_M

Fiber Detail Results Page

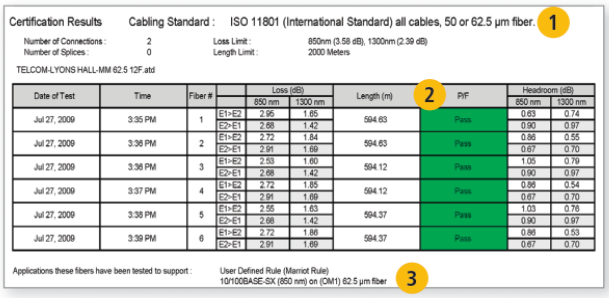
Fiber Detail Results page documents equipment used for testing, job information, test setup, cursor info and OTDR trace with Event map. OPM or Certification results and end-face image and pass/fail results may be included if available (as shown) with an overall Pass or Fail.



Certification Report Page

Certification report page shows overall Pass/Fail report (1) to standards (ISO shown) - with Pass/Fail (2) indicated for each fiber as well as User Rule (3) and Applications for which the fibers have passed.

- Combine OTDR trace(s), event table, loss measurements, connector end-face image, and event map in a single report.
- Export jobs to Zip files or save reports as PDF files



Certification Results Cabling Standard : ISO 11801 (International Standard) all cables, 50 or 62.5 µm fiber. (1)

Number of Connections : 2 Loss Limit : 850nm (3.58 dB), 1300nm (2.39 dB)

Number of Splices : 0 Length Limit : 2000 Meters

TELCOM-LYONS HALL-MM 62.5 12F.atd

Date of Test	Time	Fiber #		Loss (dB) 850 nm	Loss (dB) 1300 nm	Length (m) (2)	P/F	Headroom (dB) 850 nm	Headroom (dB) 1300 nm
Jul 27, 2009	3:35 PM	1	E1>E2	2.95	1.65	594.63	Pass	0.63	0.74
			E2>E1	2.68	1.42			0.90	0.97
Jul 27, 2009	3:36 PM	2	E1>E2	2.72	1.84	594.63	Pass	0.86	0.55
			E2>E1	2.91	1.69			0.67	0.70
Jul 27, 2009	3:36 PM	3	E1>E2	2.53	1.60	594.12	Pass	1.05	0.79
			E2>E1	2.68	1.42			0.90	0.97
Jul 27, 2009	3:37 PM	4	E1>E2	2.72	1.85	594.12	Pass	0.86	0.54
			E2>E1	2.91	1.69			0.67	0.70
Jul 27, 2009	3:38 PM	5	E1>E2	2.55	1.63	594.37	Pass	1.03	0.76
			E2>E1	2.68	1.42			0.90	0.97
Jul 27, 2009	3:39 PM	6	E1>E2	2.72	1.86	594.37	Pass	0.86	0.53
			E2>E1	2.91	1.69			0.67	0.70

Applications these fibers have been tested to support : User Defined Rule (Marriot Rule) 10/100BASE-SX (850 nm) on (OM1) 62.5 µm fiber (3)

Fujikura - AFL ROGUE iB1 Intelligent Base

Building Better Networks with ROGUE® | aeROS® Test Suite

NEW

ROGUE iB1 Intelligent Base

ROGUE iB1 Base and Module

ROGUE iB1 Intelligent Base

The ROGUE iB1 intelligent base is the latest addition to the ROGUE modular family of test equipment. Ruggedly built to withstand testing in the field, the ROGUE iB1 is hand-held, portable, and comes with a unique kickstand design that allows for portrait or landscape viewing.

Like the ROGUE cB1 compact base, the iB1 intelligent base utilizes interchangeable and hot-swappable test modules for maximum flexibility. The WiFi and Bluetooth® enabled ROGUE iB1 also provides integrated inspection capabilities in addition to the ability to utilize AFL's MFS multi-fiber switches for testing MPO/Multi-fiber links.

The iB1 intelligent base utilizes an Android inspired, icon-based user interface and provides superior ease of use through a large, 7" high resolution color touchscreen display making for an ideal solution for applications where smart devices are prohibited or undesired. All ROGUE devices share test modules and application software such as the TURBO OLTS/Cert test app.

Features

- Flexible, open, and modular architecture
- Android inspired icon-based user interface
- Large 7" high resolution color screen
- Integrated Inspection and MPO multi-fiber test capable
- USB host and function ports
- Bluetooth and WiFi connectivity
- >8 hours Li-ion battery or AC power

Specifications[a]

GENERAL	
Size (H x W x D)	23.5 x 13.3 x 7.6 cm (9.25 x 5.25 x 3.0 in)
Weight	1.16 kg (2.56 lb)
Operating Temperature	-10 °C to +50 °C, 0 to 90 % RH (non-condensing)
Storage Temperature	-20 °C to +60 °C, 0 to 90 % RH (non-condensing)
Power	Rechargeable Li-Ion or AC power adapter
Battery Life	>8 hours continuous testing

Notes:
a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.

Ordering Information

DESCRIPTION	AFL NO.
ROGUE iB1 intelligent base with battery, power supply, and adjustable carry strap	RG-B01

Fujikura - AFL ROGUE cB1 Compact Base

Building Better Networks with ROGUE® | aeROS® Test Suite

ROGUE cB1 Base with Module and smart device

ROGUE cB1 Base ROGUE Module

ROGUE cB1 Base Kick-stand

ROGUE cB1 Compact Base

ROGUE is the modular hardware platform that works seamlessly with aeRos and enables customers to pick and choose the functionality they need. Like aeRos, it is an open system built around you, for both CAPEX and OPEX savings. The ROGUE cB1 compact base is ruggedly built to withstand testing in the field. It is lightweight, portable, and comes with options for carrying and/or placing it on a surface, with a convenient carrying strap and a "kick-stand". The ROGUE cB1 works with most Android tablets and phones.

Features

- Flexible, open, and modular architecture
- Integrated with any Android device (iOS coming soon)
- Inspection capable
- USB host and function ports
- Bluetooth and WiFi connectivity
- >8 hours Li-ion battery or AC power
- Compatible with any ROGUE Module
- Hand-held, low profile, lightweight

Specifications[a]

GENERAL	
Size	23 x 11 x 7 cm (8.8 x 4.3 x 2.8 in)
Weight	0.9 kg (2 lb)
Operating Temperature	-10 °C to +50 °C, 0 to 90 % RH (non-condensing)
Storage Temperature	-20 °C to +60 °C, 0 to 90 % RH (non-condensing)
Power	Rechargeable Li-Ion or AC power adapter
Battery Life	>8 hours continuous testing

Notes:
a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.

Ordering Information

DESCRIPTION	AFL NO.
ROGUE cB1 compact base with battery, power supply, and adjustable carry strap	RG-C01
ROGUE cB1 compact base kick-stand	RGA-STND-01

Fujikura - AFL ROGUE OTDR Modules with Source, Power Meter, VFL

Accelerate Testing with ROGUE® OTDR and aeROS® Workflow Management

ROGUE OTDR Modules with Source, Power Meter, VFL

Features

- Quad single-mode/multimode or Dual single-mode OTDRs
- Fast acquisition plus TruEvent® for accurate event analysis
- Intuitive LinkMap® display for easy results interpretation
- Hot-swappable into ROGUE cB1 or iB1 Base units
- Use with aeRos cloud-based workflow management software
- Integrated Source, Power Meter and Visual Fault Locator (VFL)

Applications

- Installation verification of single-mode or multimode networks
- Unidirectional or bidirectional OTDR testing
- Insertion loss testing using integrated source and power meter
- Pinpoint macro-bends and breaks with integrated VFL
- View results and generate reports anywhere, anytime using aeRos
- Fast MPO multi-fiber testing using optional multi-fiber switch

Accelerate OTDR testing and reporting: Download pre-configured test setups and pass/fail limits for fast, easy troubleshooting or guided unidirectional or bidirectional testing of entire multi-fiber cables. Test results are automatically uploaded for cloud-based reporting using AFL's aeRos Workflow Management software.

Simplify optical network troubleshooting: Avoid test setup errors using aeRos-configured test settings. Simplify results interpretation using LinkMap network display. Color-coded icons easily identify passing and failing network connections. Toggle between LinkMap and Trace view at the touch of an icon.

Control and access from your mobile device: Download and install the free ROGUE LinkMap OTDR App to control and configure OTDR, source, power meter or VFL operation from your smartphone or tablet. View results directly on your mobile device and save or share as you wish.

ROGUE OTDR modules are available in both quad single-mode/multimode and dual single-mode configurations. Select the most appropriate ROGUE OTDR for your application needs:

- RG-2100-Q01/Q02: Quad OTDRs for testing both single-mode and multimode networks.
- RG-2100-S01/S02: Dual single-mode OTDRs for your single-mode only test applications.

OTDR modules include Visual Fault Locator (VFL) and are offered with optional integrated stable Optical Light Source (OLS) and Optical Power Meter (OPM).

ROGUE OTDR Kits are also available, combining OTDR module with ROGUE Carrier or Base and accessories.

Accelerate Testing with ROGUE® OTDR and aeROS® Workflow Management

Specifications[a]

OTDR	MM	SM
OTDR Emitter Type	LED	Laser
Safety Class	Class 1 FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Wavelengths	850/1300 ±20 nm	1310/1550 ±20 nm
Fiber Type	Multimode; Compatible with OM1, OM2, OM3, OM4, OM5	Single-mode; Compatible with all G.652, G.655, and G.657 SMF
Connector Type	User-specified UPC or APC ferrule with interchangeable UCI adapters	
Dynamic Range[b]	≥29/29 dB	≥37/36 dB
Event Dead Zone[c]	≤0.8 m @ 850/1300 nm typical	≤0.8 m @ 1310/1550 nm typical
Attenuation Dead Zone[d]	≤3.0 m	≤3.5 m
Pulse widths	3, 5, 10, 30, 100, 200, 500 ns; 1 µs	3, 5, 10, 30, 100, 200, 500 ns; 1, 2.5, 5, 10, 20 µs
Range Settings	250 m to 30 km	250 m to 240 km
Data Points	Up to 300,000	
Data Point Spacing	≤5 cm to ≤16 m	
Index of Refraction	1.3000 to 1.7000	
Distance Uncertainty (m)	±(1 + 0.0025% x distance + data point spacing)	
Linearity	±0.03 dB/dB	
Loss Threshold	≤0.02 dB	
Loss Resolution	0.001 dB	
Reflectance Range (typical)	850 nm: -20 to -58 dB 1300 nm: -20 to -63 dB Reports saturated/clipped reflections	1310 nm: -20 to -65 dB; 1550 nm: -20 to -65 dB Reports saturated/clipped reflections
Reflectance Resolution	0.01 dB	
Reflectance Accuracy	±2 dB	
Trace File Format	SR-4731 Issue 2	
Internal Launch Fiber	≥50 m internal launch fibers (SMF and MMF)	
OTDR Modes	Supports Auto, Expert, Real-Time	
Live Fiber Protection	No OTDR damage when connected to live fiber delivering ≤ +3 dBm at wavelength(s) in range 825 to 1675 nm	
Live Fiber Detection	Reports live fiber when optical signal detected with wavelength in range 825 to 1675 nm, average power level ≥-35 dBm and either CW or modulation frequency ≥270 Hz	

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.

b. SNR=1, longest range and pulse width, 3 minute averaging

c. Maximum distance between two points 1.5 dB down each side of a trace spike caused by an event with a -45 dB (or smaller) reflectance. Test pulse width is 3 or 5 ns.

d. 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.

Accelerate Testing with ROGUE® OTDR and aeROS® Workflow Management

Specifications[a]

OPTICAL POWER METER (OPM)	
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625, 1650 nm
Detector Type	InGaAs PIN, 2 mm diameter
Measurement Range	+3 to -70 dBm
Wave ID	Automatically synchronizes and measures 1, 2 or 3 λ Wave ID combinations
Range	+3 to -40 dBm @ 850 nm; +3 to -50 dBm @ 1300, 1310, 1550 nm
Tone Detect	Auto-detects 270, 330 Hz; 1, 2 kHz tones;
Accuracy	±5% @-10 dBm
Linearity	±0.1 dB (-3 to -40 dBm); ±0.25 dB (-40 to -50 dBm)
Measurement Units	Power in dBm, nW, µW, mW; Loss in dB; 0.01 dB resolution

OPTICAL LIGHT SOURCE	MULTIMODE	SINGLE-MODE
Emitter Type	LED	Laser
Safety Class	Class 1 FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03	
Center Wavelengths	850/1300 ± 20 nm	1310/1550 ±20 nm
Launch Condition	Controlled Launch at 850 nm (comparable to encircled flux into OM4)	N/A
Spectral Width (FWHM)	N/A	5 nm max
Internal Modulation	270 Hz, 330 Hz, 1 kHz, 2 kHz, CW, Wave ID	270 Hz, 330 Hz, 1 kHz, 2 kHz, CW, Wave ID
Wave ID (nm)	850, 1300, 850/1300	1310, 1550, 1310/1550
Output Power	-20 dBm ± 1.5 dB (CW, 850 or 1300 nm into 50 µm MMF)	-1 dBm ± 1.5 dB (CW, 1310 or 1550 nm into SMF-28)
Output Power Stability	≤± 0.2 dB (15 min. after 30 min. warm-up); ≤ ±0.1 dB (8 hours after 2 hours warm-up)	

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 EN60825-1: 2007-03
Output Power (nominal)	0.8 mW into single-mode fiber
Modes	CW and 2 Hz flashing

GENERAL	
Size	135 x 122 x 43 mm (5.4 x 4.8 x 1.7 in)
Weight	0.4 kg (0.9 lb)
Operating Temperature	-18°C to +50°C, 0 to 95% RH (non-condensing)
Storage Temperature	-30°C, to +60°C, 0 to 95% RH (non-condensing)
CE Safety & EMI/RFI	EN61010-1; EMI/RFI: EN55011, EN61326-1, GR-196-CORE 4.5.1
RoHS	2011/65/EU

Notes:
a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.

Accelerate Testing with ROGUE® OTDR and aeROS® Workflow Management

Ordering Information

ROGUE OTDR Modules

ROGUE OTDR modules must be installed in either a ROGUE cB1 or iB1 Base unit. Each module comes with an aeRos license supporting basic aeRos OTDR functionality.

Each module includes an SC connector adapter for the OTDR/OLS port and universal 2.5 mm adapters for the VFL and OPM (if installed) ports. Specify UPC (U) or APC (A) connector option for single-mode OTDR/OLS port.

DESCRIPTION	AFL NO.
Quad OTDR, 850/1300 MM, 1310/1550 SM UPC or APC with VFL	RG-2100-Q01
Quad OTDR, 850/1300 MM, 1310/1550 SM UPC or APC with Source, Power Meter, VFL	RG-2100-Q02
Dual Single-mode OTDR, 1310/1550 SM UPC or APC with VFL	RG-2100-S01
Dual Single-mode OTDR, 1310/1550 SM UPC or APC with Source, Power Meter, VFL	RG-2100-S02

ROGUE OTDR Kits

ROGUE OTDR Kits bundle together a ROGUE cB1 or iB1 Base unit, dual or quad OTDR module, carry strap, power supply, one-click cleaner, fiber ring launch cable(s), aeRos OTDR Basic license and soft carry case.

DESCRIPTION	AFL NO.
ROGUE iB1 Base Unit, RG-2100-Q02 Quad OTDR, 150m MM fiber ring, 150m SM fiber ring	RGK-OTDR-BQ02
ROGUE iB1 Base Unit, RG-2100-S02 Dual SM OTDR, 150m SM fiber ring	RGK-OTDR-BS02
ROGUE cB1 Base Unit, RG-2100-Q01 Quad OTDR, 150m MM fiber ring, 150m SM fiber ring	RGK-OTDR-CQ02
ROGUE cB1 Base Unit, RG-2100-S01 Dual SM OTDR, 150m SM fiber ring	RGK-OTDR-CS02

ROGUE MFS Multi-fiber Switch OTDR Add-on Kit

For faster testing of single-mode multi-fiber cables terminated in MPO/MTP connectors, add a ROGUE MFS Multi-fiber Switch to your OTDR test kit. Connect the ROGUE MFS to the OTDR's test port, then connect MFS to the network's MPO/MTP connector to automatically test up to 12 fibers terminated in the MPO connector.

INCLUDES			
12F MFS SWITCH	TEST CORD	MPO LAUNCH CABLE	AFL NO.
SM, SC/UPC-MPO/APC	SM, SC-SC, 0.3 m	12F, MPO-APC unpinned conn., 30 m	RGK-MPO-SM-OTDR-ADD

ROGUE OTDR Mobile Apps

The LinkMap OTDR mobile App to configure, control and access results from your Android device is available for free download from Google Play.

AFL LinkMap® OTDR — ANDROID APP ON Google play

Fujikura - AFL ROGUE OLTS/Certification Modules with TURBO App

Building Better Networks with ROGUE® | aeROS® Test Suite

ROGUE OLTS/Certification Modules with TURBO App

Features

- Quad single-mode/multimode, Dual single-mode or Dual multimode
- Hot-swappable into ROGUE cB1 or iB1 units
- Use with aeRos cloud-based workflow management software
- Integrated FOCIS Flex Inspection capability
- Simultaneous, dual-wavelength, bi-directional loss and length testing through Dual Engine technology
- Integrated Source, Power Meter and Visual Fault Locator (VFL)
- Built-in Encircled Flux compliance

Applications

- Tier 1 certification testing of premise/enterprise networks
- Dual-fiber, dual-wavelength, unidirectional or bi-directional OLTS testing
- Multi-fiber testing: loss, length, ORL, certification with one push of a button
- View results and generate reports anywhere, anytime using aeRos
- Integrated multi-wavelength, bi-directional MPO/multi-fiber testing using optional multi-fiber switch

Each ROGUE OLTS test module uses state-of-the-art technology to produce the most accurate results in the shortest amount of time. Modules contain bi-directional test ports as well as an optical power meter port and visual fault locator. All Multimode ports are Encircled Flux compliant as required by ANSI/TIA and ISO/IEC.

By pairing ROGUE modules with smart device apps, AFL's patent pending architecture enables users to control their test hardware directly from any Android smart device. ROGUE users can easily turn the OLTS solution into a full Tier 1 certifier simply by adding our TURBO Certification app.

Test configurations and instructions are pushed from AFL's aeRos cloud solution to the TURBO app to simplify the process for technicians. When the testing is complete, the results automatically and seamlessly synchronize with the cloud for real-time, on-site test data validation. No more waiting for the technician to return with a USB stick and manually transfer the data. With two bi-directional engines, you can even test both fibers in both directions on 2 wavelengths. All with the push of a button on your smart device.

If your network consists of multi-fiber cables and MPO connectors, simply add our Multi-fiber Switch to the ROGUE platform to perform bi-directional, dual-wavelength, multi-fiber testing. AFL's FOCIS Flex wireless inspection probe can also be added for integrated and seamless capture of fiber endface images.

Apps available via Google play store. ANDROID APP ON Google play

Building Better Networks with ROGUE® | aeROS® Test Suite

Specifications[a]

OLTS	MULTIMODE	SINGLE-MODE
Emitter Type	LED	Laser
Wavelengths	850 ±30 nm; 1300 ±20 nm	1310, 1550 ±20 nm
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC EN60825-1: 2007-03	
Detector Type	InGaAs	InGaAs
Launch Condition	Encircled Flux Compliant[b]	N/A
Length Measurement Range	5 km	200 km (SMF28e)
Power Measurement Range	-3 to +60 dBm	-3 to +60 dBm
Output Power	-24/-23 dBm, 62.5/50 µm	-3 dBm, 9 µm
Stability[c]	±0.1 dB over 1 hour ±0.15 dB over 8 hours	±0.1 dB over 1 hour ±0.15 dB over 8 hours
Wave ID Transmit	Yes	Yes
Tone Generation	330 Hz, 1 kHz, 2 kHz	330 Hz, 1 kHz, 2 kHz
Input Connector	Interchangeable connector adapter (LC standard, SC, ST, FC optional)	

OPTICAL POWER METER (OPM)	
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625, 1650 nm
Detector Type	InGaAs PIN, 2 mm diameter
Measurement Range	+3 to -70 dBm
Wave ID	Automatically synchronizes and measures 1, 2 or 3 λ Wave ID combinations
Range	+3 to -40 dBm @ 850 nm; +3 to -50 dBm @ 1300, 1310, 1550 nm
Tone Detect	Auto-detects 270, 330 Hz; 1, 2 kHz tones;
Accuracy	±5% @-10 dBm
Linearity	±0.1 dB (-3 to -40 dBm); ±0.25 dB (-40 to -50 dBm)
Measurement Units	Power in dBm, nW, µW, mW; Loss in dB; 0.01 dB resolution

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 EN60825-1: 2007-03
Output Power (nominal)	0.8 mW into single-mode fiber
Modes	CW and 2 Hz flashing

GENERAL	
Size	135 x 122 x 43 mm (5.4 x 4.8 x 1.7 in)
Weight	0.4 kg (0.9 lb)
Operating Temperature	-18°C to +50°C, 0 to 95% RH (non-condensing)
Storage Temperature	-30°C, to +60°C, 0 to 95% RH (non-condensing)
CE Safety & EMI/RFI	EN61010-1; EMI/RFI: EN55011, EN61326-1, GR-196-CORE 4.5.1
RoHS	2011/65/EU

Notes:
a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.
b. TIA-526-14-B,ISO/IEC 14763-3 and IEC 61280-4-1.
c. After 15 minutes warm-up.

Building Better Networks with ROGUE® | aeROS® Test Suite

Ordering Information

ROGUE OLTS Modules

ROGUE OLTS modules must be installed in either a ROGUE cB1 or ROGUE iB1 unit. Each module comes with a ROGUE OLTS Basic license allowing the OLTS module to be used in a ROGUE cB1 or iB1 and enabling basic aeRos OLTS functionality. Each module includes SC connector adapter for the OLTS/OLS ports and universal 2.5 mm adapters for the VFL and OPM (if installed) ports.

DESCRIPTION	AFL NO.
Module – Quad MM 850/1300 nm, SM 1310/1550 nm	RG-1100-Q01
Module – MM 850/1300 nm, Dual Engine	RG-1100-M01-D
Module – SM 1310/1550 nm, Dual Engine	RG-1100-S01-D

ROGUE Certification Kits

Each ROGUE Certification kit includes two (2) of each: ROGUE cB1 or iB1 unit, battery, adjustable carry strap, power supply, carry case, kickstand. Each kit also includes kit-specific ROGUE Modules and Turbo Certification license(s) (see table below). All kits include (1) One-Click Cleaner SC/2.5 mm and switchable test port adapters and test accessories (see table below).

ROGUE CERTIFICATION KITS	CONTAINS (e.a.)												AFL NO.
	ROGUE BASE		ROGUE MODULES			LICENSE	REFERENCE TEST CORDS		MATING ADAPTERS	TEST PORT ADAPTERS			
										OLS	OPM		
	cB1	iB1	QUAD SM/MM	DUAL ENGINE			SM	50 µM MM	SC	SC	SC	LC	
				SM	MM								
Quad SM/MM	2		2			2	2	2	2	2	2	2	RGK-CERT01
Dual Engine SM and MM	2			2	2	4	4	4	4	8	4	4	RGK-CERT02
Dual Engine SM	2			2		2	4		2	4	2	2	RGK-CERT03
Dual Engine MM	2				2	2		4	2	2	2	2	RGK-CERT04
Quad SM/MM		2	2			2	2	2	2	2	2	2	RGK-CERT01B1
Dual Engine SM and MM		2		2	2	4	4	4	4	8	4	4	RGK-CERT02B1
Dual Engine SM		2		2		2	4		2	4	2	2	RGK-CERT03B1
Dual Engine MM		2			2	2		4	2	2	2	2	RGK-CERT04B1

ROGUE OLTS Mobile Apps

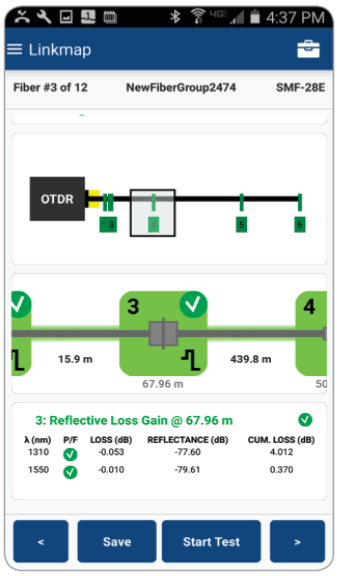
Mobile Apps to configure, control and access results from your Android device are available for free download from Google Play.

AFL TURBO

ANDROID APP ON Google play

Fujikura - AFL Smart Device Apps: LinkMap® OTDR

Building Better Networks with ROGUE® | aeROS® Test Suite



Smart Device Apps: LinkMap® OTDR

Features

- Configure and control ROGUE OTDR tests
- Access and display OTDR test results
- Display results in both LinkMap and Trace views
- Apply Link, Event and Fiber Section pass/fail analysis
- Automatically sync test setup and results with aeRos
- Simple to use, familiar user interface
- Available for any Android smart device

Applications

- Installation verification and troubleshooting
- Multi-function testing: OTDR, power, loss
- Integrate with Multi-fiber switch for MPO testing
- Real-time, on-site test data validation

AFL's apps work seamlessly with the aeRos® cloud and ROGUE hardware platform to configure the test capabilities needed for a particular job. Test configurations and instructions are pushed from AFL's aeRos cloud solution to the smart device app to simplify the process for technicians. Technicians receive a notification on their smart device and can perform required tests. When the testing is complete, the results automatically and seamlessly synchronize with the cloud. No more waiting for the technician to return with the USB stick and manually transfer the data.

The LinkMap OTDR App runs on Android mobile devices and AFL's ROGUE iB1 base unit to configure and control ROGUE RG-2100 OTDR modules, access and display OTDR results, and automatically transfer results to the aeRos cloud for archiving and reporting. The LinkMap OTDR App accepts projects configured in the aeRos Workflow Management Solution, or allows users to locally create projects and initiate tests.

Tested networks may be viewed using either an icon-based LinkMap (with Event Table) or traditional OTDR Trace display. The LinkMap view clearly identifies detected network elements including start, end, connectors, splices, breaks and macro-bends. Color-coded icons highlight passing and failing events when evaluated against either standards-based or user-set pass/fail limits. Both event and end-to-end link performance measurements are provided.

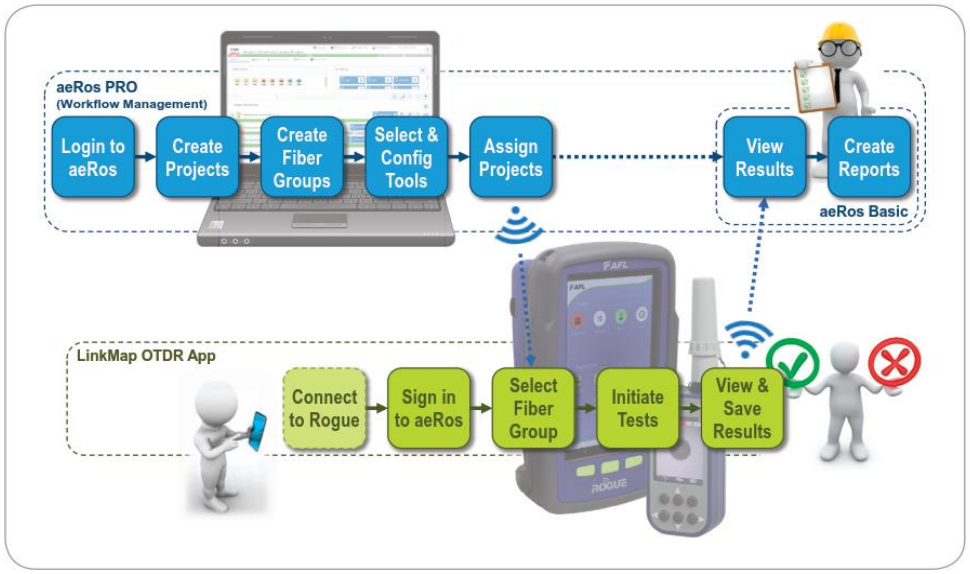
The LinkMap OTDR App also allows users to control and configure OLTS tests using the optional Source and Power Meter integrated into ROGUE RG-2100 OTDR modules.

The LinkMap OTDR App is available for FREE download from Google Play store. Look for the iOS LinkMap OTDR App coming soon in the Apple Store.

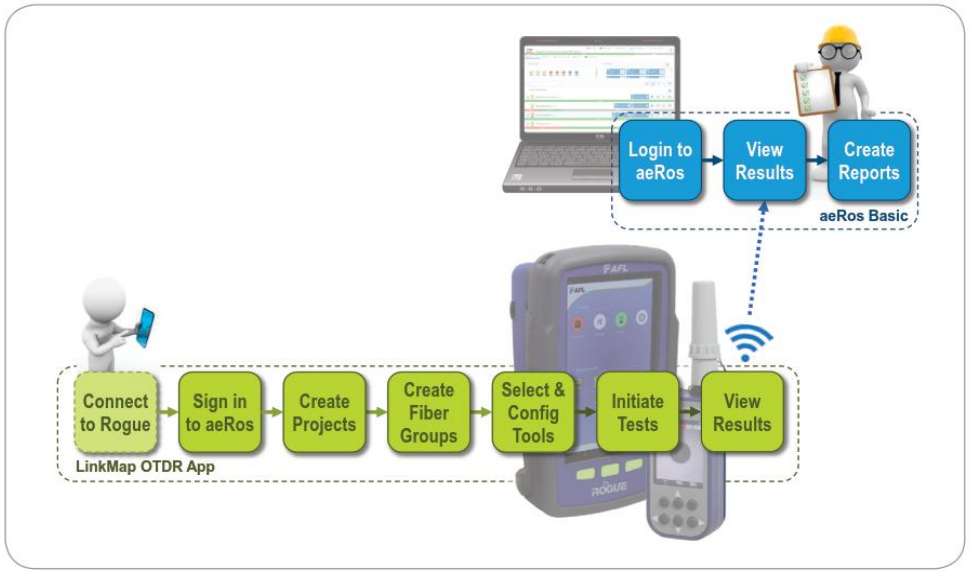
Available on the App Store

ANDROID APP ON Google play

Building Better Networks with ROGUE® | aeROS® Test Suite



aeRos Guided LinkMap OTDR Test



LinkMap OTDR QuickTest

Fujikura - AFL ROGUE OLTS/Certification Modules with TURBO App

Building Better Networks with ROGUE® | aeROS® Test Suite

ROGUE OLTS/Certification Modules with TURBO App

Features

- Quad single-mode/multimode, Dual single-mode or Dual multimode
- Hot-swappable into ROGUE cB1 or iB1 units
- Use with aeRos cloud-based workflow management software
- Integrated FOCIS Flex Inspection capability
- Simultaneous, dual-wavelength, bi-directional loss and length testing through Dual Engine technology
- Integrated Source, Power Meter and Visual Fault Locator (VFL)
- Built-in Encircled Flux compliance

Applications

- Tier 1 certification testing of premise/enterprise networks
- Dual-fiber, dual-wavelength, unidirectional or bi-directional OLTS testing
- Multi-fiber testing: loss, length, ORL, certification with one push of a button
- View results and generate reports anywhere, anytime using aeRos
- Integrated multi-wavelength, bi-directional MPO/multi-fiber testing using optional multi-fiber switch

Each ROGUE OLTS test module uses state-of-the-art technology to produce the most accurate results in the shortest amount of time. Modules contain bi-directional test ports as well as an optical power meter port and visual fault locator. All Multimode ports are Encircled Flux compliant as required by ANSI/TIA and ISO/IEC.

By pairing ROGUE modules with smart device apps, AFL's patent pending architecture enables users to control their test hardware directly from any Android smart device. ROGUE users can easily turn the OLTS solution into a full Tier 1 certifier simply by adding our TURBO Certification app.

Test configurations and instructions are pushed from AFL's aeRos cloud solution to the TURBO app to simplify the process for technicians. When the testing is complete, the results automatically and seamlessly synchronize with the cloud for real-time, on-site test data validation. No more waiting for the technician to return with a USB stick and manually transfer the data. With two bi-directional engines, you can even test both fibers in both directions on 2 wavelengths. All with the push of a button on your smart device.

If your network consists of multi-fiber cables and MPO connectors, simply add our Multi-fiber Switch to the ROGUE platform to perform bi-directional, dual-wavelength, multi-fiber testing. AFL's FOCIS Flex wireless inspection probe can also be added for integrated and seamless capture of fiber endface images.

Apps available via Google play store. ANDROID APP ON Google play

Building Better Networks with ROGUE® | aeROS® Test Suite

Specifications[a]

OLTS	MULTIMODE	SINGLE-MODE
Emitter Type	LED	Laser
Wavelengths	850 ±30 nm; 1300 ±20 nm	1310, 1550 ±20 nm
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC EN60825-1: 2007-03	
Detector Type	InGaAs	InGaAs
Launch Condition	Encircled Flux Compliant[b]	N/A
Length Measurement Range	5 km	200 km (SMF28e)
Power Measurement Range	-3 to +60 dBm	-3 to +60 dBm
Output Power	-24/-23 dBm, 62.5/50 µm	-3 dBm, 9 µm
Stability[c]	±0.1 dB over 1 hour ±0.15 dB over 8 hours	±0.1 dB over 1 hour ±0.15 dB over 8 hours
Wave ID Transmit	Yes	Yes
Tone Generation	330 Hz, 1 kHz, 2 kHz	330 Hz, 1 kHz, 2 kHz
Input Connector	Interchangeable connector adapter (LC standard, SC, ST, FC optional)	

OPTICAL POWER METER (OPM)	
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625, 1650 nm
Detector Type	InGaAs PIN, 2 mm diameter
Measurement Range	+3 to -70 dBm
Wave ID	Automatically synchronizes and measures 1, 2 or 3 λ Wave ID combinations
Range	+3 to -40 dBm @ 850 nm; +3 to -50 dBm @ 1300, 1310, 1550 nm
Tone Detect	Auto-detects 270, 330 Hz; 1, 2 kHz tones;
Accuracy	±5% @-10 dBm
Linearity	±0.1 dB (-3 to -40 dBm); ±0.25 dB (-40 to -50 dBm)
Measurement Units	Power in dBm, nW, µW, mW; Loss in dB; 0.01 dB resolution

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 EN60825-1: 2007-03
Output Power (nominal)	0.8 mW into single-mode fiber
Modes	CW and 2 Hz flashing

GENERAL	
Size	135 x 122 x 43 mm (5.4 x 4.8 x 1.7 in)
Weight	0.4 kg (0.9 lb)
Operating Temperature	-18°C to +50°C, 0 to 95% RH (non-condensing)
Storage Temperature	-30°C, to +60°C, 0 to 95% RH (non-condensing)
CE Safety & EMI/RFI	EN61010-1; EMI/RFI: EN55011, EN61326-1, GR-196-CORE 4.5.1
RoHS	2011/65/EU

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F) unless otherwise specified.

b. TIA-526-14-B,ISO/IEC 14763-3 and IEC 61280-4-1.

c. After 15 minutes warm-up.

Building Better Networks with ROGUE® | aeROS® Test Suite

Ordering Information

ROGUE OLTS Modules

ROGUE OLTS modules must be installed in either a ROGUE cB1 or ROGUE iB1 unit. Each module comes with a ROGUE OLTS Basic license allowing the OLTS module to be used in a ROGUE cB1 or iB1 and enabling basic aeRos OLTS functionality. Each module includes SC connector adapter for the OLTS/OLS ports and universal 2.5 mm adapters for the VFL and OPM (if installed) ports.

DESCRIPTION	AFL NO.
Module – Quad MM 850/1300 nm, SM 1310/1550 nm	RG-1100-Q01
Module – MM 850/1300 nm, Dual Engine	RG-1100-M01-D
Module – SM 1310/1550 nm, Dual Engine	RG-1100-S01-D

ROGUE Certification Kits

Each ROGUE Certification kit includes two (2) of each: ROGUE cB1 or iB1 unit, battery, adjustable carry strap, power supply, carry case, kickstand. Each kit also includes kit-specific ROGUE Modules and Turbo Certification license(s) (see table below). All kits include (1) One-Click Cleaner SC/2.5 mm and switchable test port adapters and test accessories (see table below).

ROGUE CERTIFICATION KITS	CONTAINS (e.a.)												AFL NO.
	ROGUE BASE		ROGUE MODULES			LICENSE	REFERENCE TEST CORDS		MATING ADAPTERS	TEST PORT ADAPTERS			
										OLS	OPM		
	cB1	iB1	QUAD SM/MM	DUAL ENGINE			SM	50 µM MM	SC	SC	SC	LC	
				SM	MM								
Quad SM/MM	2		2			2	2	2	2	2	2	2	RGK-CERT01
Dual Engine SM and MM	2			2	2	4	4	4	4	8	4	4	RGK-CERT02
Dual Engine SM	2			2		2	4		2	4	2	2	RGK-CERT03
Dual Engine MM	2				2	2		4	2	2	2	2	RGK-CERT04
Quad SM/MM		2	2			2	2	2	2	2	2	2	RGK-CERT01B1
Dual Engine SM and MM		2		2	2	4	4	4	4	8	4	4	RGK-CERT02B1
Dual Engine SM		2		2		2	4		2	4	2	2	RGK-CERT03B1
Dual Engine MM		2			2	2		4	2	2	2	2	RGK-CERT04B1

ROGUE OLTS Mobile Apps

Mobile Apps to configure, control and access results from your Android device are available for free download from Google Play.

AFL TURBO

ANDROID APP ON Google play

Fujikura - AFL aeRos - Cloud Workflow Management Solution

Building Better Networks with aeROS® | ROGUE® Test Suite

aeRos

ROGUE cB1 Base with Module and smart device

ROGUE iB1 Intelligent Base

Key Features

- Cloud-based, efficient workflow management solution
- Seamless testing using a variety of smart devices
- Automatic sync of test configurations and results
- Real-time, on-site test data validation and progress tracking
- Centralized test management
- Customized reporting

aeRos — Cloud Workflow Management Solution

aeRos, AFL's new cloud solution, combines AFL's ROGUE open hardware platform with a cloud-based workflow management system that enables seamless and efficient communications and data management. aeRos simplifies coordination between the main office and field technicians by providing remote project setup, automatic data collection and reporting, as well as the real-time job monitoring that is independent of technology or location.

With aeRos, data is synchronized from ROGUE field test units automatically, making reporting easier and faster than ever. You'll never again lose data or delay reports, and you can avoid unnecessary truck rolls and costly re-testing by addressing challenges as they arise. That means no more waiting days or repeating tests. Through the aeRos project dashboard, users can quickly receive integrated results from multiple tests (certification, inspection, and OTDR).

With aeRos PRO, projects can be defined remotely with a variety of test activities, configurations, custom or industry pass/fail limits for single fiber or MPO multi-fiber links. Projects can be assigned to a single user or to multiple technicians. Changes to a project can be made remotely while in progress, and updates to all users can be assigned simultaneously through their smart devices.

AFL's cloud solution is available in two options: aeRos and aeRos Pro:

Features	aeRos	aeRos Pro
Multiple Languages	◆	◆
Data Transfer from ROGUE units	◆	◆
Browser based	◆	◆
Support/manage SW updates	◆	◆
View archived projects/data/results	◆	◆
OTDR, Certification, OLTS, Inspection	◆	◆
Basic Reporting	◆	◆
Advanced/Custom Reporting		◆
Remote Project Setup/Management		◆
Real-time Project Status/Monitor		◆
Active User Management		◆
Integrate Competitive Data/Files		◆
Data storage	Limited	Unlimited

aeRos Software Licensing

DESCRIPTION	AFL NO.
aeRos Basic (1) account	aeRos
aeRos PRO (1) account, 1 year subscription	aeRos-PRO-YRL
aeRos PRO (1) account, lifetime subscription	aeRos-PRO-LFT

Fujikura - AFL Multi-fiber Switch

Building Better Networks with ROGUE® | aeROS® Test Suite

Multi-fiber Switch paired with ROGUE

Multi-fiber Switch

The density demands of today's networks are driving more demand for multi-fiber connectivity. As the adoption of multi-fiber connectors becomes more prevalent in data centers, the ability to test these types of connections accurately and quickly has become even more critical. AFL's Multi-fiber switch enables the testing of 12-fiber cables without the need to use a breakout cable. The switch allows you to utilize a single piece of test equipment to seamlessly cycle through all of the fibers in a connector regardless of polarity without having to disconnect and reconnect your test equipment making the testing of your network more efficient, saving you both time and money.

AFL's Multi-fiber switch is compatible with your existing OTDR, OLTS and Certification equipment.

Features

- Stand-alone operation as well as pairing with other testers including OTDRs
- Converts a single port module into a multi-fiber MPO tester
- Dual wavelength, single-mode or multimode
- SC port for connection to test equipment
- 12F MPO port for connection to MPO cable under test
- LCD screen to indicate fiber under test

Applications

- OLTS, OTDR, and VFL testing
- Efficient testing from 1-12 fiber MPO links
- Bi-directional testing without moving cables
- Measure bi-directional Link loss and length with single button AutoTest
- Verify polarity of MPO cables
- Certify MPO links to latest high speed industry standards including base 8 applications

Building Better Networks with ROGUE® | aeROS® Test Suite

Specifications[a]

OPTICAL		
Wavelength	1310/1550 nm, SM dual-wavelength	850/1300 nm, MM dual-wavelength
Insertion Loss	2.8 dB typ. – 3.3 dB max.	1.8 dB typ. – 2.3 dB max.
Optical Return Loss (ORL)	50 dB min.	—
Fiber Length	4.4 ± 0.5 m	
Optical Length Uniformity	± 0.15 m	
GENERAL		
Power	Li-Ion battery or USB interface	
Battery Life	1000 hours continuous operation	
Weight	0.3 kg (0.66 lb)	
Dimensions	12.9 x 6.9 x 3.1 cm (5.1 x 2.7 x 1.2 in)	
Operating Temperature	-20 °C to +60 °C, 0 to 90 % RH (non-condensing)	
Storage Temperature	-20 °C to +70 °C, 0 to 90 % RH (non-condensing)	

Notes:
a. All specifications valid at 23 °C ±2 °C (73.4 °F ±3.6 °F) unless otherwise specified.

Ordering Information

DESCRIPTION	AFL NO.
Multi-fiber Switch, 12 fibers SM, APC–SC, MPO fiber ring (non-pinned), soft case	MFS-12-SM-ASC-FR
Multi-fiber Switch, 12 fibers SM, APC–SC, soft case	MFS-12-SM-ASC
Multi-fiber Switch, 12 fibers SM, UPC–SC, soft case	MFS-12-SM-USC
Multi-fiber Switch, 12 fibers MM, UPC–SC, soft case	MFS-12-MM-USC

ROGUE MFS Certification Add-on Kits

Each ROGUE MFS (Multi-fiber Switch) Certification Add-on kit include (2) Multi-fiber Switches, (2) 6 in. USB-USB mini cables, (1) One-Click Cleaner MPO, (2) MFS carry holsters, (2) MFS kit carry cases plus test cords and mating adapters (see table below).

ADD-ON KIT	CONTAINS (ea.)				AFL NO.
	12F MFS SWITCH	TEST CORDS		MPO-MPO MATING ADAPTERS	
		SC-SC, 0.3 M.	12F MPO-MPO, 2 M.		
SM, SC/UPC-MPO/APC	(2) SM, SC/UPC-MPO/APC	(2) SM	(2) SM, type A unpinned (1) SM, type A pinned (1) SM, type A unpinned/pinned (1) SM, type B unpinned	(2) key Up / key Down	RGK-MPO-SM-CERT-ADD
MM, SC/UPC-MPO/UPC	(2) MM, SC/UPC-MPO/UPC	(2) MM	(2) OM4, type A unpinned (1) OM4, type A pinned (1) OM4, type A unpinned/pinned (1) OM4, type B unpinned	(2) key Up / key Down	RGK-MPO-MM-CERT-ADD

Fujikura - AFL WDM900 Lightwave Test Set

WDM900 Lightwave Test Set

US Patent # 9,515,726

Features

- Health Meter summarizes channel performance in less than 3 seconds
- Detail Display provides one-touch diagnosis of any performance issue
- Automatic compensation for monitor tap ratio
- Onboard report generation
- IEC 61280-2-9 OSNR measurement
- Meets stringent GR-2952-CORE mechanical design criteria

Applications

- Testing node splits in PON and broadband networks
- Testing DWDM overbuilds of CWDM networks
- Commissioning CWDM/DWDM mobile backhaul networks
- DAS installation and troubleshooting
- Restoration of Metro-E wavelength services
- Troubleshooting live mobile backhaul network
- Headend and CO signal path checks

The WDM900 is a rugged, portable and easy-to-use optical test set that simplifies in-service testing of live DWDM and CWDM networks. Within just seconds of connecting to a network port, WDM900 users know the status of each channel, which channels require attention and exactly what action is required.

The WDM900 is engineered to perform under the harsh conditions typically found in a central office, headend, network node and other outside plant locations. Its highly-integrated solid state design features a hermetically-sealed optical path and no moving parts. An internal wavelength reference and temperature-stabilized measurement circuits eliminate long warm-up periods and accuracy drifts induced by sudden temperature and humidity changes. The WDM900 is the only portable WDM measurement system that satisfies Telcordia GR-2952-CORE environmental specifications.

The WDM900's innovative Health Meter is protected by US Patent # 9,515,726.

Two different models of WDM900 are available.

- WDM900-40 – designed for commissioning, testing and troubleshooting of DWDM Access/Metro network links
- WDM900-60 – designed for commissioning, testing and troubleshooting of CWDM and DWDM Access/Metro network links

Ordering Information

DESCRIPTION	AFL NO.
Includes a WDM900 Lightwave Test Set configured for 50 or 100 GHz DWDM C-band operation, SC/FC/LC (UPC) test port adapters, SC/ FC/LC input attenuators, (2) One-Click Cleaners, AC adapter, user's guide and soft carry case.	WDM900-40
Includes a WDM900 Lightwave Test Set configured for CWDM, 50 GHz and 100 GHz DWDM C-band operation, SC/FC/LC (UPC) test port adapters, SC/FC/LC input attenuators, (2) One-Click Cleaners, AC adapter, user's guide and soft carry case.	WDM900-60

WDM900 Lightwave Test Set

U.S. Patent Pending

Specifications [a]

OPTICAL	DWDM		CWDM
	WDM900-40	WDM900-60	
Usable Channel Spacing	50 GHz, 100 GHz		20 nm
Optical Return Loss	30 dB		30 dB
Adjacent Channel Rejection Ratio, ORR @50 GHz	48 dB (typical)		25 dB
Measurement Time	3 sec		3 sec
WAVELENGTH MEASUREMENT			
Wavelength Coverage (ITU Channels)	1527.99 nm to 1568.77 nm 196.2 THz to 191.1 THz		CWDM 1–18
Absolute Accuracy	±0.08 nm (±0.05 nm typical)		
Display Resolution	0.001 nm		
POWER MEASUREMENT			
Range	WDM900-40	WDM900-60	-47 to +6 dBm
	-45 to -4 dBm [b]	-41 to -1 dBm [b]	
Absolute Accuracy	±0.8 dB [b]		±0.8 dB
	±1.2 dB [c]		
Relative Accuracy [d]	N/A	<1.0 dB	
Display Resolution	0.1 dB [b]		0.1 dB
Repeatability	0.1 dB [b]		0.1 dB
OSNR MEASUREMENT			
Standard	IEC 61280-2-9		
Accuracy	±2.1 dB [e]		
Repeatability	± 0.75 dB		
RATINGS	WDM900-40	WDM900-60	
Max Input Power	+21 dBm	+24 dBm	

ENVIRONMENTAL RESILIENCE	
Dust Resistance	Hermetically-sealed Light Path
Shock Resistance, Intended Use	GR-2952-CORE, O4-14: 30 in drop onto hard surface, base
Vibration Resistance	GR-2952-CORE, R4-15: 10 Hz to 500 Hz @1.5 g on 3 principal axes
Operating Environment	GR-2952-CORE, R4-19: -5 °C (@ uncontrolled humidity) to 50 °C (@95% relative humidity)
Non-operating Environment	GR-2952-CORE, R4-18: modified to -30 °C (@ uncontrolled humidity) to 60 °C (@95% relative humidity)
Electromagnetic Emissions	GR-2952-CORE, R4-21 & GR-1089-CORE and EN 5510
Electromagnetic Susceptibility	GR-2952-CORE, R4-22 and GR-1089-CORE and EN 61000-4-6
GENERAL	
Display	6.5 in, high brightness, outdoor enhanced, 640 x 480 color TFT
Touchscreen	Resistive technology, unaffected by moisture or water droplets
Connectivity	2 x USB 2.0 Host 1 x USB 2.0 Client RJ-45 LAN port (hardware only) IEEE 802.11 b/g/n (hardware only) Bluetooth 2.0 (hardware only)
Internal Memory	4 GB Flash
External Storage	Removable USB Flash drive
Report Formats	.csv and .pdf
Battery Type	User replaceable Li-ion, rechargeable
Battery Life	8 hours minimum
AC Adapter	Universal 100 to 240V AC, 47–63 Hz input, 18V DC output
Size	190.5 x 269.2 x 69.8 mm (7.5 x 10.6 x 2.75 in)
Weight	2.34 kg (5.16 lb)

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F).

b. Channel power <-4 dBm, total input power <9 dBm for WDM900-40 model. Channel power <-1 dBm, total input power <12 dBm for WDM900-60 model. When mixed 2.5 Gb/s, 10 Gb/s and 40 Gb/s signals are at non-adjacent channels (power imbalance < 10 dB).

c. Same as (b) - When mixed 40 Gb/s signals are in adjacent channels (power imbalance <5 dB).

d. Between CWDM and DWDM operating modes within 1530, 1550, and 1570 nm spectral regions.

e. When signal OSNR within the range of 8 dB to 25 dB for 10 Gb/s or lower data rate within 50 GHz channel spacing.

Fujikura - AFL OFI-BI/OFI-BIPM Series Optical Fiber Identifiers FID30/32

OFI-BI and OFI-BIPM Series Optical Fiber Identifiers

OFI-BI OFI-BIPM

Features

- World class signal detection sensitivity
- Trigger lock, positive stop for optimum detection
- Integrated optical power meter option (-BIPM model only)
- 2.4" color touchscreen with backlight
- Optional ONU signal detect function - customer ONU wave profile must be provided

Applications

- Maintenance of fiber optic networks
- Troubleshooting network issues
- Identification of live fibers or trace fibers
- Power levels verification (–BIPM model only)

The OFI-BI and –BIPM are easy to use tools that determine if a fiber is live, the transmission direction and the relative core power on standard and bend-insensitive single-mode fibers. Its positive stop plunger mechanism provides the right pressure to assure proper detection while keeping loss to a minimum. The design assures traffic will not be interrupted and fibers will not be damaged.

The OFI-BI fiber identifier eliminates the need to access the optical fiber at a connection or splice point eliminating the possibility of interrupting service to a valued customer. The –BIPM model provides an integrated optical power meter for verification of power levels during installation or troubleshooting activities. The universal head of these OFI's eliminates the need to change adapter heads for jacketed, coated or ribbon fibers, making them extremely easy to use in the field. The touchscreen features provide simple to follow setup and clear to read results.

OFI-BI and OFI-BIPM Optical Fiber Identifiers are warranted against defective material and workmanship for a period of one year from the date of delivery to the end user.

Ordering Information

DESCRIPTION	AFL NO.
BI Optical Fiber Identifier	OFI-BI
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
OPTIONAL OFI-BIPM ADAPTERS (ordered separately)	
OFI-BIPM 2.5 mm Universal Power Meter Port Adapter	BIPM-00-25
OFI-BIPM SC Power Meter Port Adapter	BIPM-00-SC
OFI-BIPM FC Power Meter Port Adapter	BIPM-00-FC
OFI-BIPM ST Power Meter Port Adapter	BIPM-00-ST
OFI-BIPM LC Power Meter Port Adapter	BIPM-00-LC

AFL: OFI-BIPM Series
Fujikura: FID 30/31 Series

OFI-BI Series Optical Fiber Identifier

Specifications[a]

OPTICAL (OFI)	OFI-BI & OFI-BIPM MODELS						
Fiber Type	0.25 mm SM fiber and SM ribbon fiber (up to 12 ribbon fiber) 1.1 mm/1.5 mm/1.7 mm/2.0 mm/3.0 mm SM jacketed fiber						
Optical Characteristic	Wavelength Range	900 to 1700 nm					
	Detectable Light Signals	CW, Traffic or 270 Hz/1 kHz/2 kHz Modulated light[b]					
	ONU Detector[c]; Operating Range[c]	G(E)-PON upper stream signal; -7.5 to +9.0 dBm G(E)-PON down stream signal; -25.5 to -6.2 dBm VCAST down stream signal; -12.0 to +3.3 dBm B-PON upper stream; -5.5 to +4.0 dBm B-PON down stream; -20.6 to -11.7 dBm						
Insertion Loss (IL) & Minimum Detect Level[d] at Normal, Fast or Fine operation mode	Wavelength	1310 nm		1550 nm		1650 nm	
	Fiber Type	IL (dB)	Normal/Fast/Fine (dBm)	IL (dB)	Normal/Fast/Fine (dBm)	IL (dB)	Normal/Fast/Fine (dBm)
	0.25 mm (R=30 mm)	0.2	-58/-53/-64	1.0	-67/-62/-73	2.5	-67/-62/-73
	0.25 mm (R=15 mm), Ribbon	0.1	-44/-39/-50	0.3	-57/-52/-63	1.0	-57/-52/-63
	0.5 mm (R=15 mm)	0.2	-58/-53/-64	1.0	-67/-62/-73	2.5	-67/-62/-73
	1.1 mm/1.5 mm Jacketed	0.3	-43/-37/-53	1.0	-55/-50/-61	2.5	-57/-52/-63
	1.7 mm/2.0 mm Jacketed	0.5	-22/-17/-28	2.0	-27/-22/-33	3.0	-27/-22/-33
	3.0 mm Jacketed	1.0	-20/-15/-25	3.0	-23/-18/-28	3.0	-23/-18/-28

POWER METER (OPM)	OFI-BIPM MODEL (Only)
Wavelength	1310 nm, 1490 nm, 1550 nm
Detectable Light Signal	CW, Traffic or 270 Hz/1 kHz/2 kHz Modulated light
Detector Sensitivity	+10 to -60 dBm at modulated tone; +10 to -40 dBm at CW or Traffic[b]
Accuracy[e]	±0.3 dB @1310/1550 nm; ±0.6 dB @1490 nm

GENERAL	OFI-BI & OFI-BIPM MODELS
Operation Conditions	-10 to +50 °C, 0 to 95 % RH (non-condensing)
Storage Conditions	-20 to +60 °C, 0 to 95 % RH (non-condensing)
Power Supply	2 x AA batteries; 1.2 to 1.5 V DC
Battery Life	8 hours[f]
Dimensions (W x H x D)	5.0 x 11.5 x 21.2 cm (1.9 x 4.5 x 8.3 in)[g]
Weight	230 g (8.1 oz) including battery

Notes:

a. All specifications valid at 25°C unless otherwise specified.
b. Traffic is a light signal modulated by a random data sequence.
c. ONU Signal detection requires waveform optimization. The Operating Range (Core Power) varies due to coating material, color, etc.
d. Typical value. The minimum detect level (core power) an the insertion loss varies due to coating material, color, etc.
e. Under the condition of temperature 25°C with input power at -20 dBm.
f. Using 2 Alkaline AA Batteries.
g. Except protruding part.

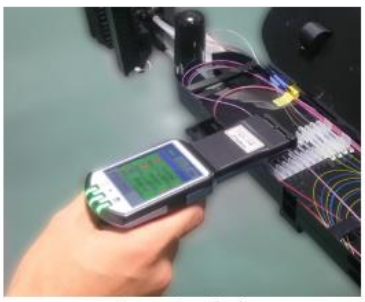
One-Shot, Detects All

Optical Fiber Identifier

FID-30R / FID-31R

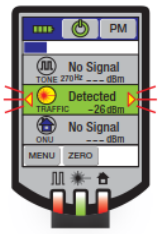
with Optical Power Meter — *Standard Model*

- World's highest signal detection sensitivity
- ONU signal detecting function
- Trigger lock / Robust Body design
- 2.4" color touch screen with backlight
- Adjustable settings
  Result retaining / Buzzer Volume /
  Backlight brightness / Auto dimming / Auto power OFF

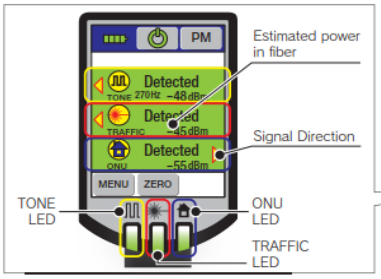


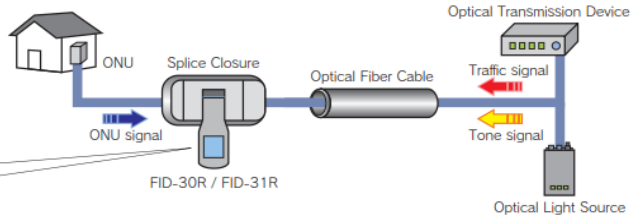
Operation Style

FID-30R / FID-31R Optical Fiber Identifier



Detecting external light





APPLICATION & OPTICAL SPECIFICATION

Fiber application	Detecting all signals indivisually automatically						Insertion loss (dB)			Sensitivity (dBm) *2		
	Traffic (CW)	270 Hz	1 kHz	2 kHz	ONU signal*1	Signal direction	1310 nm	1550 nm	1650 nm	1310 nm	1550 nm	1650 nm
Single fiber 0.25 mm (R30)	✓	✓	✓	✓	✓	✓	0.2	1.0	2.5	-58 (-53 / -64)	-67 (-62 / -73)	-67 (-62 / -73)
Single fiber 0.25 mm (R15)	✓	✓	✓	✓	✓	✓	0.1	0.3	1.0	-44 (-39 / -50)	-57 (-52 / -63)	-57 (-52 / -63)
Single fiber 0.5 mm	✓	✓	✓	✓	✓	✓	0.2	1.0	2.5	-58 (-53 / -64)	-67 (-62 / -73)	-67 (-62 / -73)
Single fiber 0.9 mm	✓	✓	✓	✓	✓	✓	0.3	1.5	2.5	-28 (-23 / -34)	-33 (-28 / -39)	-38 (-33 / -44)
Fiber ribbon up to 12 fibers	✓	✓	✓	✓	✓	✓	0.3	1.0	2.5	-44 (-39 / -50)	-57 (-52 / -63)	-57 (-52 / -63)
Fiber cord 1.1 to 1.5 mm	✓	✓	✓	✓	✓	✓	0.3	1.0	2.5	-43 (-37 / -53)	-55 (-50 / -61)	-55 (-50 / -61)
Fiber cord 1.7 to 2.0 mm	✓	✓	✓	✓	✓	✓	0.5	2.0	3.0	-22 (-17 / -28)	-27 (-22 / -33)	-27 (-22 / -33)
Fiber cord 3.0 mm	✓	✓	✓	✓	✓	✓	1.0	3.0	3.0	-20 (-15 / -25)	-23 (-18 / -28)	-23 (-18 / -28)

NOTE : Insertion loss and Sensitively varies due to coating material / color, etc.

ONU Detector Operating range	Wavelength range	ONU Detector Operating range
G(E)-PON upper stream signal	900 - 1700 nm	-7.5 ~ +9.0 dBm
G(E)-PON down stream signal		-25.5 ~ -6.2 dBm
VCAST down stream signal		-12.0 ~ +3.3 dBm
B-PON upper stream		-5.5 ~ +4.0 dBm
B-PON down stream		-20.6 ~ -11.7 dBm

SPECIFICATIONS

Applicable fiber	Fiber type	Singlemode fiber
	Sheath / Count	0.25 mm coating, Ribbon fiber up to 12-fiber, or Fiber cord : 1.1 mm, 1.5 mm, 1.7 mm, 2.0 mm, or 3.0 mm
Optical characteristics	Wavelength range	900 to 1700 nm
	Detectable light signals	Traffic signal (CW), Light signal with modulated tones at 270 Hz, 1 kHz, or 2 kHz (square wave 50 ± 10 % duty cycle)
Shock Resistance		76 cm (30 inch) drop*3
Operating / Storage conditions		-10 to +50 ℃ , 0 to 95 % RH / -20 to +60 ℃ , 0 to 95 % RH
Power supply / Battery Life		1.2 to 1.5 V DC with two AA batteries / Aapproximately 8 hours by alkaline batteries at room temperature
Dimensions and weight		50 (W) × 115 (H) × 212 (D) mm, 230 g including battery
Power meter (FID-30R only)	Wavelength response	1310 nm, 1490 nm, 1550 nm
	Detectable light signals	Traffic signal (CW), Light signal with modulated tones at 270 Hz, 1 kHz, or 2 kHz (square wave 50 ± 10 % duty cycle)
	Detector Sensitivity	+10 to -60 dBm at modulated tone / +10 to -40 dBm at CW light (traffic signal)
	Accuracy	Within ± 0.3 dB at room temperature

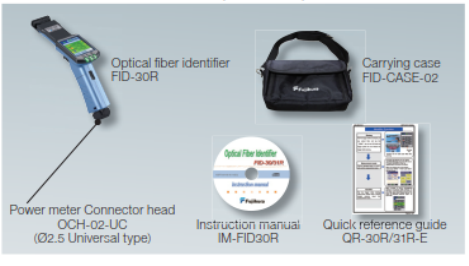
*1 require optimazation for use by authorized distributor.
*2 Normal (Fast / Fine) mode typical data.
*3 Carried out in Fujikura labs in Japan. The test do not guarantee that the product will not be damaged under this condition.

STANDARD PACKAGE

Optical fiber identifier	Plunger	Carrying case	Instruction manual	Quick reference guide	Power meter Connector head
FID-30R	PL-06	FID-CASE-02	IM-FID30R	QR-30R/31R-E	OCH-02-UC (Ø2.5 Universal type)
FID-31R	PL-06	FID-CASE-02	IM-FID30R	QR-30R/31R-E	-

NOTE : FID-30R / 31R standard package doesn't include batteries.

STANDARD PACKAGE (FID-30R)



OPTIONAL ITEMS

Description	Model No.	Use for
Connector head	OCH-02-SC	FID-30R, SC connector
	OCH-02-FC	FID-30R, FC connector
	OCH-02-ST	FID-30R, ST connector
	OCH-02-LC	FID-30R, LC connector

Specifications and descriptions are subject to change without prior notice.

Fujikura - AFL OFI-400 Series Optical Fiber Identifiers

OFI-400 OFI-400C OFI-400HP

Features

- Unique optical head with two-position plunger for use with all fiber types
- Built-in power meter with Set Reference feature
- Low insertion loss for in-service ID tasks
- Indicates direction of traffic
- Detects 270 Hz, 330 Hz, 1 kHz, 2 kHz test tones [2]
- High Power detection (OFI-400HP model)
- Powered by AAA batteries
- Automatic power down feature and battery gauge
- Built-in self-test
- One-hand operation
- Hand-held and lightweight
- Rugged, drop-proof construction
- Three-year calibration interval

OFI-400 Series Optical Fiber Identifiers

NOYES OFI-400 Optical Fiber Identifiers are designed to detect and measure [1] the core power levels of optical signals on single-mode optical fiber without disconnecting or cutting the fiber. These instruments are simply clamped onto a fiber and indicate the presence and direction of traffic, continuous test signals and modulated test tones. This permits network personnel to easily and quickly identify a specific fiber without risk of revenue service disruption. The OLS7, OLS2, CSS1-SM and CSS1-MM series of optical light sources are ideal companions for the OFI-400 optical fiber identifiers.

No Adapters to Purchase, Store, Swap, or Misplace

The OFI-400 uses a unique optical head design featuring a two-position plunger that enables it to be used with 250 µm, 900 µm and ribbon fiber or 2 mm and 3 mm jacketed fiber. Other brands of optical fiber identifiers require users to purchase, store and swap out optical plungers each time a different type of fiber is tested. The OFI-400 optical head induces a safe, repeatable macro-bend to the fiber that allows a small amount of light to escape for analysis. The insertion loss induced by the macro-bend is too small to affect the signal on the fiber and the integrity of the fiber is unaffected by the measurement process.

OFI-400 instruments are designed to be simple, easy- to-use and reliable. Each features an ergonomically designed macro-bend trigger that is comfortable to use. An integrated, backlit LCD display allows OFI-400s to be used in dimly lit spaces. Powered by 1.5 V AAA batteries, the OFI-400 can make thousands of fiber tests before repalcing batteries.

Applications

- Live fiber detection to avoid technician-induced outages
- Fiber identification with CW or tone
- Core power measurements
- Optimized for use on 250 µm, 900 µm and ribbon fiber or 2 mm and 3 mm jacketed fiber

Notes:

1. Core power measurement accuracy is influenced by fiber type, coating material, jacket composition/hardness/color, temperature and other factors.
2. Requires compatible light source.

OFI-400 Series
Optical Fiber Identifiers

OFI-400

The OFI-400 is designed for use with a wide range of single-mode fibers including 250 µm (bare) coated, 900 µm buffered and ribbon fibers or 2 mm and 3 mm jacketed fibers. The OFI-400 is ideal for network personnel involved in installation, reconfiguration, restoration and maintenance tasks that involve bare, buffered, jacketed or ribbon fibers in outside plant pedestals, fiber cabinets, aerial enclosures and inside plant premises demarcation cabinets. The slim design of the OFI-400 head facilitates access in crowded splice trays.

OFI-400C

Designed specifically for use with 2 mm or 3 mm jacketed single-mode fibers,
the OFI-400C is ideal for general purpose maintenance, configuration and installation tasks. The OFI-400C is functionally equivalent to the OFI-400 but includes an optical head design and a calibration scheme optimized for use with jacketed fiber.

OFI-400HP

The OFI-400HP is designed for use where high levels of optical power are present. This includes fibers carrying a single high-power signal, CWDM or DWDM signals with high total power levels, amplified optical signals, or pump lasers associated with EDFA or Raman amplifiers.

When display reaches +23 dBm (200 mW) or greater, the OFI-400HP will display "High" warning indication.

Ordering Information

All OFI-400 products include a user's guide, 2 AAA batteries and a soft carry case. Each carries a 1-year warranty and a 3-year recommended calibration interval.

INCLUDES	AFL NO.
Users guide, 2 AAA batteries, soft carry case	OFI-400
Users guide, 2 AAA batteries, soft carry case	OFI-400C
Users guide, 2 AAA batteries, soft carry case	OFI-400HP

OFI-400 Series Optical Fiber Identifiers

Specifications

DETECTABLE SIGNAL RANGE					
FIBER TYPE [a]	**PARAMETER**	**TEST CONDITIONS** [b]	**OFI-400**	**OFI-400C**	**OFI-400HP**
250 µm coated fiber (SMF-28 with 250 µm CPC6 coating)	Minimum level detected, average power	1310 nm, CW, Tone, Traffic 1550 nm, CW, Tone, Traffic	-45 dBm -50 dBm	N/A	N/A
	Insertion loss (typical/max)	@ 1310 nm @ 1550 nm	0.6 dB/0.8 dB 2.5 dB/2.6 dB	N/A	N/A
3 mm jacketed fiber (SMF-28/28E with 250 µm CPC6 coating and 3 mm, yellow jacket)	Minimum level detected, average power	1310 nm, CW, Tone, Traffic 1550 nm, CW, Traffic 1550 nm, Tone	-30 dBm -33 dBm -33 dBm	-35 dBm -40 dBm -40 dBm	-30 dBm -40 dBm -35 dBm
	Insertion loss (typical)	@ 1310 nm @ 1550 nm	1.0 dB 2.8 dB	1.0 dB 2.8 dB	0.2 to 0.5 dB 0.8 to 1.3 dB

OPTICAL SPECIFICATIONS [c]	**OFI-400**	**OFI-400C**	**OFI-400HP**
Detector Type	InGaAs	InGaAs	InGaAs
Wavelength Range	800 - 1700 nm	800 - 1700 nm	800 - 1700 nm
Calibrated Fiber and Wavelength	250 µm @ 1550 nm (SMF-28/28E)	3 mm @ 1550 nm (SMF-28/28E)	3 mm @ 1550 nm (SMF-28/28E)
Fiber Stress	<100 kPSI max	<100 kPSI max	<100 kPSI max
Working Fiber Size	250 µm, 900 µm, ribbon, 2 mm and 3 mm jacketed	2 mm and 3 mm jacketed	2 mm and 3 mm jacketed
Tone Detection	270, 330, 1000, 2000 Hz (±5 %)	270, 330, 1000, 2000 Hz (±5 %)	270, 330, 1000, 2000 Hz (±5 %)
Core Power Measurement Range	+13 to -50 dBm @ 1550 nm, 250 µm (SMF-28/28E)	+13 to -40 dBm @ 1550nm, 3 mm (SMF-28/28E)	+33 to -40 dBm @ 1550 nm, 3 mm (SMF-28/28E)
Measurement Units	dBm, dB	dBm, dB	dBm, dB

GENERAL SPECIFICATIONS	**ALL OFI-400 MODELS**
User Interface	Multi 7 segment LCD; 3 LEDs; 1 piezo buzzer
Power	2 x 1.5 V AAA alkaline
Battery Life	>10,000 operations typical
Operation Temperature	0°C to 50°C 90 % RH (Non-condensing)
Storage Temperature	-30°C to +60°C 90 % RH (Non-condensing)
Dimensions (H x W x D)	22 x 3.8 x 2.8 cm (8.5 x 1.5 x 1.1 in)
Weight	168 g (6 oz)

Notes:

a. 250 µm coated fiber parameters are specified with OFI plunger in the "250 / 900 / RIB" position.
2 mm / 3 mm jacketed fiber parameters are specified with OFI plunger in the "2 mm / 3 mm" position.

b. CW is a light signal that is not modulated.
Traffic is a light signal modulated by high speed user data.
Tone is a light signal modulated into a nominal 50 % duty cycle square wave.

c. Unless noted otherwise, all specifications are typical.
Actual results can vary by several dB depending on fiber type, coating material, jacket color, jacket hardness, and other factors.
All specifications stated above are as measured at 25°C.

Fujikura - AFL OFI-200 Series Optical Fiber Identifiers

OFI-200

OFI-200 Optical Fiber Identifier

NOYES Optical Fiber Identifiers are rugged, hand-held, and easy-to-use fiber optic test instruments designed to detect optical signals transmitted through a single-mode fiber without disrupting traffic. During installation, maintenance, rerouting or restoration, it is often necessary to isolate a specific fiber. By simply clamping an Optical Fiber Identifier onto a gently-bent fiber, the unit will indicate if there is "No Signal", "Tone", or "Traffic" and identify signal direction.

The OFI-200 model is equipped with a unique two-position head design that can be configured to work with 250 µm, 900 µm, ribbon or jacketed fiber in seconds, without tools or adjustments. When testing coated fibers, the slim design of the OFI-200 allows easier access on a splice tray where the amount of work space is limited. The clamping trigger is ergonomically designed to fit the natural motion of the operator's hand. A high-impact molded plastic case makes the OFI-200 suitable for use outside plant or in the central office.

The OFI-200 is battery operated with a battery indication feature and performs thousands of tests before battery replacement is necessary.

Features

- Rugged, hand-held, lightweight
- Accepts 250 µm, 900 µm coated fiber, 3 mm jacketed fiber cable and ribbon fiber
- No head swapping or adjustments
- Identifies light carrying fiber and indicates direction of traffic
- Low insertion loss, traffic remains uninterrupted
- Indicates Tone signal visually and audibly
- 2 kHz Tone detection
- Low battery indication

Applications

- Live fiber identification - used during installation, maintenance, rerouting or restoration to positively identify fibers prior to cutting and splicing
- Tone detection

Ordering Information

INCLUDES	AFL NO.
Users guide and carry case	OFI-200D

Specifications [a]

DETECTABLE SIGNAL RANGE			
FIBER TYPE [b]	**PARAMETER**	**TEST CONDITIONS [c]**	**OFI-200D**
250 µm coated fiber (SMF-28 with 250 µm CPC6 coating)	Minimum level detected, average power	1310 nm, CW or Traffic 1310 nm, Tone 1550 nm, CW or Traffic 1550 nm, Tone	-40 dBm -43 dBm -45 dBm -50 dBm
	Insertion loss (typical/max)	1310 nm 1550 nm	0.6 dB 2.5 dB
3 mm jacketed fiber (SMF-28 with 250 µm CPC6 coating and 3 mm, yellow jacket)	Minimum level detected, average power	1310 nm, CW or Traffic 1310 nm, Tone 1550 nm, CW or Traffic 1550 nm, Tone	-30 dBm -32 dBm -33 dBm -37 dBm
	Insertion loss (typical)	1310 nm 1550 nm	0.8 dB 2.5 dB

OPTICAL SPECIFICATIONS [d]	
MODEL	**OFI-200D**
Detector Type	InGaAs
Wavelength Range	800 - 1700 nm
Calibrated Size of Fiber and Wavelength	N/A
Fiber Stress	<100 kPSI max
Fiber Size	250 µm, 900 µm, ribbon, 2 mm or 3 mm and jacketed fiber
Tone Detection	2000 ±100 Hz
GENERAL SPECIFICATIONS	
Display Type	N/A
Power	1 9-Volt Alkaline
Battery Life	>10,000 operations typical
Operation Temperature	0°C to 50°C 90 % RH (Non-condensing)
Storage Temperature	-30°C to +60°C 90 % RH (Non-condensing)
Dimensions (H x W x D)	22 x 3.8 x 2.8 cm (8.5 x 1.5 x 1.1 in)
Weight	210 g (7.5 oz)

Notes:

a. All specifications stated above are as measured at 25°C.

b. 250 µm coated fiber parameters are specified with OFI plunger in the "250/900/RIB" position.
2 mm/ 3 mm jacketed fiber parameters are specified with OFI plunger in the "2 mm/3 mm" position.

c. CW is a light signal that is not modulated. Traffic is a light signal modulated by a random data sequence.
Tone is a light signal modulated into a nominal 50% duty cycle square wave.

d. Unless noted otherwise, all specifications are typical. Actual results can vary by several dB depending on fiber type, coating material, jacket color, jacket hardness, and other factors.

Fujikura - AFL One-Click Cleaner Series

One-Click Cleaner Series

Features

- Cleans connectors on jumpers and in adapters
- Low cost per clean
- Effective on a variety of contaminates including dust and oils
- Ergonomic, comfortable design with single action cleaning
- Automatic advance ensures each clean is performed with fresh cleaning tape
- Compliant with EU/95/2002/EC Directive (RoHS)
- Compact One-Click Cleaner Mini versions available
- Available with enlarged cleaning area up to 2 mm
- Duplex LC version available
- MPO/MTP version available

The Original One-Click Cleaner

The One-Click Cleaner is an easy-to-use option for cleaning connectors on jumpers and in adapters. Simply insert the One-Click Cleaner into an adapter and push until an audible "click" is heard. The One-Click Cleaner uses the mechanical push action to advance an optical grade cleaning tape while the cleaning tip is rotated to ensure the fiber end-face is effectively, but gently cleaned. The One-Click Cleaner is a must-have for field technicians. Small enough to fit in a shirt pocket and a great addition to cleaning kits. Save your wrist – no more twist!

Rugged ODC® Version

With the increasing demand of Outdoor Connector (ODC) plug and socket styles, the ODC One-Click Cleaner, which cleans the ferrules in ODC plug, socket and 1.25 mm ferrules, is an essential cleaning tool for WiMax Base Station, Fiber-to-the-Antenna, Broadcasting and Surveillance Video technicians.

Compact One-Click Cleaner Mini

Offering the same technology and performance as the original, the One-Click Cleaner is now available in a smaller, more compact size, which allows for cleaning of connectors in tighter places. Its smaller size also makes it a great addition to test kits and cleaning kits. The One-Click Mini that is offered by AFL as a low cost solution with 100+ cleans per unit is now also available with same 500+ cleans per unit as the standard One-Click. The One-Click Mini is an effective, easy-to-use cleaning solution for SC, ST, FC, LC, MU and TFOCA connectors.


D-LC (Duplex LC)


2.5 Ultra


One-Click Cleaner MPO

One-Click Cleaner Series

One-Click Cleaner Ultra 2.5

The One-Click Cleaner Ultra 2.5 has an enlarged cleaning area to clean more of the connector end-face. Cleaning up to a 2 mm diameter area of the connector end-face, the One-Click Cleaner Ultra 2.5 is a superior cleaner for SC, ST, and FC connectors.

One-Click Cleaner D-LC (Duplex LC)

Reduce cleaning time with the new One-Click Cleaner D-LC. Offering the same performance and easy-to-use one-click technology as the original, the One-Click Cleaner D-LC cuts cleaning time in half by effectively cleaning both LC connectors of a duplex LC at one time. 500+ duplex LC cleans per cleaner (1000+ LC connector cleans).

One-Click Cleaner MPO

Designed to clean MPO and MTP® multi-fiber connectors used in Data Centers and other high density optical networks, the new One-Click Cleaner MPO is a revolutionary push-type cleaner, which simplifies cleaning of the ferrule end-face of both MPO/MTP exposed connectors and connectors in adapters. As with all One-Click Cleaners, the One-Click Cleaner MPO uses the innovative push-to-clean design. The mechanical push action advances the optical grade cleaning tape while effectively and gently cleaning the end-face of the connector.

Ordering Information

MODEL	DESCRIPTION	LENGTH	BASE	AFL NO.
One-Click SC, ST, FC	One-Click Cleaner SC, ST, FC (500 cleans)	172 mm (6.88 in)	17.5 x 17.5 mm (0.7 x 0.7 in)	8500-05-0001MZ
One-Click MU/LC	One-Click Cleaner MU/LC (500 cleans)	172 mm (6.88 in)	17.5 x 17.5 mm (0.7 x 0.7 in)	8500-05-0002MZ
One-Click ODC	One-Click Cleaner ODC (outdoor connector, 500 cleans)	172 mm (6.88 in)	17.5 x 17.5 mm (0.7 x 0.7 in)	8500-05-0004MZ
One-Click Mini-100 SC, ST, FC	One-Click Cleaner Mini-100 SC, ST, FC (100 cleans)	120.65 mm (4.75 in)	17.5 x 30.2 mm(0.7 x 1.2 in)	8500-05-0005MZ
One-Click Mini-100 MU/LC	One-Click Cleaner Mini-100 MU/LC (100 cleans)	120.65 mm (4.75 in)	17.5 x 30.2 mm(0.7 x 1.2 in)	8500-05-0006MZ
One-Click Mini-500 SC, ST, FC	One-Click Cleaner Mini-500 SC, ST, FC (500 cleans)	120.65 mm (4.75 in)	17.5 x 30.2 mm(0.7 x 1.2 in)	8500-05-0009MZ
One-Click Mini-500 MU/LC	One-Click Cleaner Mini-500 MU/LC (500 cleans)	120.65 mm (4.75 in)	17.5 x 30.2 mm(0.7 x 1.2 in)	8500-05-0010MZ
One-Click Ultra Cleaner 2.5	One-Click Ultra Cleaner 2.5 SC, ST, FC (enlarged cleaning area, 500 cleans)	203.2 mm (8 in)	22.2 x 33.3 mm (0.8 x 1.3 in)	8500-05-0007MZ
One-Click D-LC	One-Click Ultra Cleaner D-LC (Duplex LC, 500 cleans x 2)	195 mm (7.7 in)	18 x 30 mm (0.7 x 1.2 in)	8500-05-0008MZ
One-Click MPO	One-Click Cleaner MPO (MPO/MTP®, 500 cleans)	203.2 mm (8 in)	19 x 44.5 mm (0.8 x 1.8 in)	8500-05-0030MZ

Fujikura - AFL NEOCLEAN

NEOCLEAN-E

NEOCLEAN-M

NEOCLEAN

Features

- Simple one-push action cleans connectors on jumpers or in adapters
- NEOCLEAN-E for SC, FC, ST, E2000, LC and MU connectors with UPC or APC polishes
  - Simple to use refillable design features replaceable cleaning cartridge
  - >750 cleans per cartridge; low cost per clean
- NEOCLEAN-M for MPO and MTP connectors
  - 600 cleans per unit; low cost per clean
- RoHS Compliant

NEOCLEAN-E

The NEOCLEAN-E uses a simple one-push action to quickly and effectively clean contamination from the end-face of connectors on jumpers or in adapters, reducing cleaning time. It is effective for removing oil, dust, and dirt particulates that can have a negative impact on fiber optic network performance. The replaceable cleaning cartridge can perform 750 cleans, reducing cleaning cost. Available for SC, FC, ST, E2000, LC and MU connectors with UPC or APC polishes.

NEOCLEAN-M

The NEOCLEAN-M is designed for cleaning MPO and MTP® multi-fiber connectors used in Data Centers and other high density optical networks. It uses a one-push operation, which simplifies cleaning of the ferrule end-face of both MPO and MTP exposed connectors and connectors in adapters. The one-push operation advances the specially designed microfiber tape while effectively and gently cleaning the of the connector.

Specifications

PRODUCT	NEOCLEAN-E1	NEOCLEAN-E2	NEOCLEAN-E3	NEOCLEAN-M
Applicable Connectors	MU, LC UPC/APC	SC, FC UPC/APC	SC, FC, ST, E2000 UPC/APC	MPO/MTP
Number of Cleans	>750	>750	>750	>600
Cleaning Area	0.5 mm	0.8 mm	0.8 mm	
Length (Main Unit)	240 mm	230 mm	230 mm	197 mm
Length (Refill Cartridge)	190 mm	190 mm	190 mm	N/A

Ordering Information

MODEL	APPLICABLE CONNECTORS & DESCRIPTION	AFL NO.
NEOCLEAN-E1	For MU, LC (UPC/APC polishes) connectors	8500-15-0900MZ
NEOCLEAN-E2	For SC, FC (UPC/APC polishes), OpiTap connectors	8500-15-0901MZ
NEOCLEAN-E3	For SC, ST, FC, E2000 (UPC/APC polishes), OpiTap connectors	8500-15-0902MZ
NEOCLEAN-ES1	Pack of 3 replacement cartridges for NEOCLEAN-E1	8500-15-0903MZ
NEOCLEAN-ES2	Pack of 3 replacement cartridges for NEOCLEAN-E2	8500-15-0904MZ
NEOCLEAN-ES3	Pack of 3 Replacement cartridges for NEOCLEAN-E3	8500-15-0905MZ
NEOCLEAN-M	For MPO/MTP connectors	8500-15-0909MZ

Fujikura - FOCIS Flex

FOCIS Flex

U.S. Patent 9,217,688

Fiber Optic Connector Inspection System

Features

- Auto-focus and auto-centering for fast, easy inspection
- Untethered operation simplifies access at patch panels
- IEC, IPC and user-defined pass/fail analysis
- Self-contained, compact, hand-held inspection solution
- Use independently, or pair with FlexScan or FlexTester OTDR
- Configure and access results from Android or Apple App
- Save results internally and upload via Bluetooth or USB
- Ergonomic design fits in the palm of your hand
- Generate inspection reports using aeRos or TRM® 2.0

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

Pass/fail results in seconds: 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, and wirelessly transfers image and results to a paired FlexScan or FlexTester OTDR. All in a matter of seconds!

Independent, untethered operation: With rechargeable battery supply and integrated display, FOCIS Flex can be used independently – without requiring an external OTDR or display unit.

Pair with FlexScan or FlexTester OTDR: Still prefer to view and save images and pass/fail results on your FlexTester OTDR? No problem! Captured images and pass/fail results are immediately displayed and easily saved on the paired device along with associated OTDR and/or insertion loss test results.

Pair with Android or iOS device: Display images on your Android or iOS device using AFL's FOCIS Flex mobile App. Save results to AFL's aeRos cloud-based workflow management system.

Save results internally or externally: FOCIS Flex internally stores thousands of results using file-naming capabilities similar to FlexScan and FlexTester OTDRs. A micro-USB port supports fast upload of internally stored results to PC, and ensures your FOCIS Flex software can be updated to the latest features and supported languages.

Wide range of adapter tips: Interchangeable adapter tips support connector inspection for a wide range of both single-fiber and multi-fiber patchcords and bulkhead-mounted connectors having either PC or APC polished end-faces.

FOCIS Flex is available in standalone kit configurations including soft carry case / holster and user-selected adapter tips. Available FlexScan and FlexTester PRO and Complete Kits bundle FOCIS Flex with the selected OTDR, fiber ring and cleaning supplies.

FOCIS Flex

U.S. Patent 9,217,68

Fiber Optic Connector Inspection System

Specifications [a]

OPTICAL PERFORMANCE	
Field of View (viewed on FOCIS Flex)	Live: 710 x 860 µm; Captured, Zoomed Out: 560 x 600 µm; Captured, Partially Zoomed In: 360 x 390 µm; Captured, Fully Zoomed In: 180 x 195 µm
Field of View (Viewed on a PC)	Stored, Zoomed Out: 700 x 525 µm; Stored, Fully Zoomed In: 240 x 180 µm
Manual Detection Capability	1 µm
Analysis Resolution	1.5 µm
Captured Image Size (Pixels)	648 x 480 VGA; Images stored internally in three .JPG files, one at each FOV
OPERATING FEATURES	
Focus	Auto-focus and manual focus
Centering	Auto-centering after capture
Pass/Fail Analysis	IEC 61300-3-35 (2015), IPC and user-defined criteria
Image Capture and File Storage Capacity	10,000 files
File Format (Image and Pass/Fail Results)	jpg, gif
Bluetooth Characteristics	SPP to FlexScan and FlexTester OTDRs; IAP to iOS devices
USB Characteristics	USB 1.1 mass storage device
Supported Languages	English, French, German, Japanese, Spanish, Polish, Russian
PHYSICAL AND POWER CHARACTERISTICS	
Display size, type, resolution	2.4", TFT, 240 x 320 with brightness control
Battery Type	NiMH, user replaceable
Battery Operating Time (typical)	8 hours (60 tests in 20 minutes each hour; auto-off enabled)
Recharge Time	<4.5 hours
Power Save Features	Auto-off (disabled, 2, 5, 10 minutes)
AC Charger voltage, frequency, current	100-240 V, 50/60 Hz, 5VDC, 2A
Size	47 x 37 x 183 mm (1.8 x 1.5 x 7.2 in)
Weight	240 g (0.5 lb)
ENVIRONMENTAL CHARACTERISTICS	
Operating Temperature	0 to +50 °C
Storage Temperature	-40 to +70 °C
Relative Humidity	95%, non-condensing
Transit and shock	2G vibration, 30G shock

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F).

Ordering Information

DESCRIPTION	AFL NO.
FOCIS Flex Kit, soft carry case / holster, USB cable, AC charger, TRM 2.0 reporting software, reference guide, no tips	FOCIS-FLX-P4XN
FOCIS Flex Kit, soft carry case / holster, USB cable, AC charger, TRM 2.0 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 2.0 reporting software, reference guide, 2 user-selected APC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner	FOCIS-FLX-P4XA

FOCIS Flex

U.S. Patent 9,217,688

Fiber Optic Connector Inspection System

FlexScan OTDR PRO and Complete Kits with FOCIS Flex

PRO Kits include the following items:

- FlexScan with accessories (AC charger, carry strap, SC/2.5 mm connector adapters, TRM® 2.0 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-BI or OFI-BIPM).

See FlexScan data sheet for FlexScan PRO and Complete Kit ordering information.

FlexTester PRO2 and Complete2 Kits with FOCIS Flex

PRO2 Kits include the following items:

- User-selected FLX380-3xx or OFL280-1xx FlexTester with accessories (AC charger, USB cable, TRM® 2.0 Advanced Test Results Manager)
- 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
- Rugged, waterproof carry case

Complete2 Kits include everything in the FlexTester PRO2 kit plus choice of OFI optical fiber identifier.

See FLX380 or OFL280 data sheet for FlexTester PRO2 and Complete2 Kit ordering information.

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-01-ASC
FC-APC bulkhead adapter tip	FFLX-01-AFC
LC-APC bulkhead adapter tip	FFLX-01-ALC
Universal 2.5 mm, APC ferrule adapter tip	FFLX-01-A25
Universal 1.25 mm, APC ferrule adapter tip	FFLX-01-A125
FOCIS Flex adapter extension tube, straight, 46 mm	FFLX-01-EXTS46
FOCIS Flex adapter extension tube, straight, 80 mm:	FFLX-01-EXTS80

DESCRIPTION	AFL NO.
E2000 PC/UPC bulkhead adapter tip	DFS1-00-0023MR
E2000 APC bulkhead adapter tip	DFS1-01-0008MR
Tip for SC/APC (OptiTap®) bulkhead adapter	DFS1-01-0007MR
Tip for OptiTip® APC ferrule and bulkhead adapter	DFS1-01-0013MR
Multi-row MTP/PC ferrule & bulkhead adapter extended tip kit (base plus multi-row MTP/PC front end tip)	DFS1-00-0050MR
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

Fujikura - AFL FOCIS Flex – No Wireless

FOCIS Flex – No Wireless

Fiber Optic Connector Inspection System

Features

- Removes Bluetooth and WiFi features for secure network facility compliance
- Auto-focus and auto-centering for fast, easy inspection
- Untethered operation simplifies access at patch panels
- IEC, IPC and user-defined pass/fail analysis
- Self-contained, compact, hand-held inspection solution
- Save results internally
- Ergonomic design fits in the palm of your hand
- Generate inspection reports using aeRos or TRM® 2.0

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

The FOCIS Flex NW addresses the need of network maintenance contractors operating in secure environments, where devices emitting radio frequency (RF) communication signals are prohibited, such as government and defense facilities and restricted private enterprise network facilities. The FOCIS Flex NW removes, in both hardware and software, Bluetooth and WiFi communications transceiver functions. It includes internal storage for 10,000 ferrule end-face images and pass/fail results, as well as a USB mass storage device interface, so that inspection results can be transferred at the end of the workday.

Pass/fail results in seconds: With the press of a single button, FOCIS Flex NW auto-focuses, captures and centers the end-face image, applies pass/fail rules, and displays image and pass/fail results. All in a matter of seconds!

Independent, untethered operation: With rechargeable battery supply and integrated display, FOCIS Flex NW can be used independently – without requiring an external OTDR or display unit.

Save results internally or externally: FOCIS Flex NW internally stores thousands of results using file-naming capabilities similar to FlexScan and FlexTester OTDRs. A micro-USB port supports fast upload of internally stored results to PC, and ensures your FOCIS Flex NW software can be updated to the latest features and supported languages.

Wide range of adapter tips: Interchangeable adapter tips support connector inspection for a wide range of both single-fiber and multi-fiber patchcords and bulkhead-mounted connectors having either PC or APC polished end-faces.

FOCIS Flex NW is available in standalone kit configurations including soft carry case/holster and user-selected adapter tips.

FOCIS Flex – No Wireless

Fiber Optic Connector Inspection System

Specifications [a]

OPTICAL PERFORMANCE	
Field of View (viewed on FOCIS Flex)	Live: 710 x 860 µm; Captured, Zoomed Out: 560 x 600 µm; Captured, Partially Zoomed In: 360 x 390 µm; Captured, Fully Zoomed In: 180 x 195 µm
Field of View (Viewed on a PC)	Stored, Zoomed Out: 700 x 525 µm; Stored, Fully Zoomed In: 240 x 180 µm
Manual Detection Capability	1 µm
Analysis Resolution	1.5 µm
Captured Image Size (Pixels)	648 x 480 VGA; Images stored internally in three .JPG files, one at each FOV
OPERATING FEATURES	
Focus	Auto-focus and manual focus
Centering	Auto-centering after capture
Pass/Fail Analysis	IEC 61300-3-35 (2015), IPC and user-defined criteria
Image Capture and File Storage Capacity	10,000 files
File Format (Image and Pass/Fail Results)	jpg, gif
USB Characteristics	USB 1.1 mass storage device
Supported Languages	English, French, German, Japanese, Spanish, Polish, Russian
PHYSICAL AND POWER CHARACTERISTICS	
Display size, type, resolution	2.4", TFT, 240 x 320 with brightness control
Battery Type	NiMH, user replaceable
Battery Operating Time (typical)	8 hours (60 tests in 20 minutes each hour; auto-off enabled)
Recharge Time	<4.5 hours
Power Save Features	Auto-off (disabled, 2, 5, 10 minutes)
AC Charger voltage, frequency, current	100-240 V, 50/60 Hz, 5VDC, 2A
Size	47 x 37 x 183 mm (1.8 x 1.5 x 7.2 in)
Weight	240 g (0.5 lb)
ENVIRONMENTAL CHARACTERISTICS	
Operating Temperature	0 to +50 °C
Storage Temperature	-40 to +70 °C
Relative Humidity	95%, non-condensing
Transit and shock	2G vibration, 30G shock

Notes:

a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F).

FOCIS Flex – No Wireless

Fiber Optic Connector Inspection System

Ordering Information

DESCRIPTION	AFL NO.
FOCIS Flex Kit, soft carry case / holster, USB cable, AC charger, TRM 2.0 reporting software, reference guide, no tips, no BT or WiFi wireless functionality	FOCIS-FLX-NW-P4XN
FOCIS Flex Kit, soft carry case / holster, USB cable, AC charger, TRM 2.0 reporting software, reference guide, 2 user-selected UPC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner, no BT or WiFi wireless functionality	FOCIS-FLX-NW-P4XU
FOCIS Flex Kit, soft carry case / holster, USB cable, AC charger, TRM 2.0 reporting software, reference guide, 2 user-selected APC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner, no BT or WiFi wireless functionality	FOCIS-FLX-NW-P4XA

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-01-ASC
FC-APC bulkhead adapter tip	FFLX-01-AFC
LC-APC bulkhead adapter tip	FFLX-01-ALC
Universal 2.5 mm, APC ferrule adapter tip	FFLX-01-A25
Universal 1.25 mm, APC ferrule adapter tip	FFLX-01-A125
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	DFS1-00-0023MR
E2000 APC bulkhead adapter tip	DFS1-01-0008MR
Tip for SC/APC (OptiTap®) bulkhead adapter	DFS1-01-0007MR
Tip for OptiTip® APC ferrule and bulkhead adapter	DFS1-01-0013MR
Multi-row MTP/PC ferrule & bulkhead adapter extended tip kit (base plus multi-row MTP/PC front end tip)	DFS1-00-0050MR
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

Fujikura - AFL FOCIS WiFi2™ Fiber Optic Connector Inspection System

FOCIS WiFi2™ Fiber Optic Connector Inspection System

Features

- Trim, lightweight, ergonomic and highly productive tool
- App-based automatic and manual focus; auto-centering after image capture
- One button workflow using rapid LED feedback on probe
- Multi-color LED on probe for fast pass/fail user inspection feedback
- Pairs with an iOS or Android smart device or the aeRos® cloud-based workflow management platform
- IEC, IPC, AT&T and user-defined pass/fail analysis when paired with a smart device
- Wide range of adapter tips including MPO/MTP multi-fiber connectors and bulkheads
- Over 8 hours operation with rechargeable Li-Ion battery

Applications

- Inspection of connectors on patch cords or in bulkhead adapters
- Installation, troubleshooting and maintenance of fiber network
- Inspection of multi-fiber connectors including MPO16 and MXC®
- Critical fiber infrastructure performance assurance
- Verification of proper connector cleaning methods of procedure

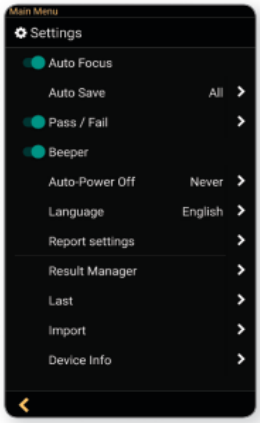
FOCIS WiFi2 is an ergonomic Fiber Optic Connector Inspection System that, when paired with an iOS or Android smart device, provides fast and accurate IEC/IPC/AT&T compliant and user-defined pass/fail end-face cleanliness analysis. Free of charge iOS and Android companion apps support a comprehensive and user-friendly feature set.

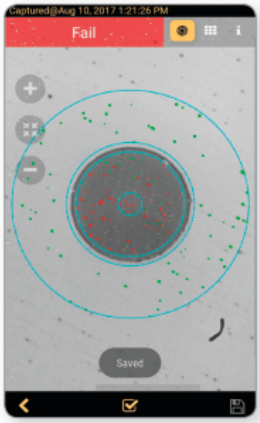
Pass/fail results in seconds: With the press of a single button, FOCIS WiFi2 auto-focuses, captures, centers and analyzes the end-face image to industry standard IEC 61300-3-35 (2015), IPC-8497-1, AT&T TP-76461 and user-defined criteria.

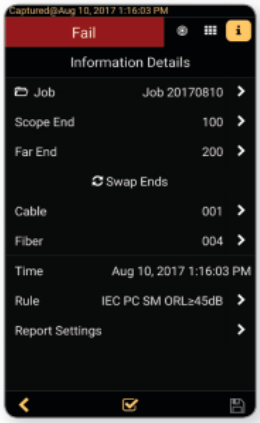
Untethered operation: App-based report generator with results/reports transferable to the aeRos cloud. With rechargeable battery and convenient pass/fail LED feedback, FOCIS WiFi2 can be used semi-independently.

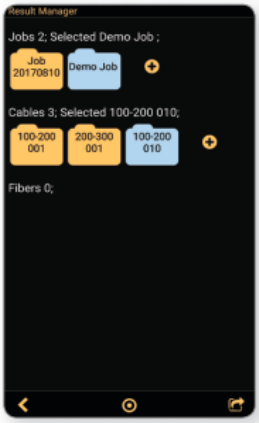
Wide range of adapter tips: Interchangeable adapter tips support single and multi-fiber connector inspection for a wide range of patch cords and bulkhead-mounted connectors having either PC/UPC or APC polished end-faces.

FOCIS WiFi2™ Fiber Optic Connector Inspection System









Smart Device Apps: FOCIS WiFi2

Features

- Live image video streaming
- Auto-focus and auto centering
- IEC, IPC, industry standard, and user-defined inspection rules
- Pinch-to-zoom fiber end-face images
- Report generation
- Multi-language Graphical User Interface (GUI)
- Day/time stamped job saving

FOCIS WiFi2™ Fiber Optic Connector Inspection System

Specifications[a]

OPTICAL PERFORMANCE	
Field of View (FOV)[b]	Live and Captured: 612 x 460 µm;
Manual Detection Capability	1 µm
Analysis Resolution	1.5 µm
Stored[c] Image Size	2592 x 1944 (5M) pixels
End-face Illumination	Coaxial blue LED 476 nm
Maximum No Damage Live Fiber Power Level	+20 dBm (Image cannot be viewed if fiber is live)
OPERATING FEATURES	
WiFi Characteristics	IEEE 802.11BGN
Focus	Auto-focus (≤3 sec) and manual focus
Centering	Auto-centering (<1 sec)
Button Functionality	Power On/Off (>3 secs); Capture/Analysis/Auto-save/Live
Main LED Functionality	Blue = Power On, Green = Pass, Red = Fail, Orange = No Fiber
Live Image Frames per Second	15
Magnification[b]	Variable from 80X to 700X, in Live and Capture modes
Applications Compatibility	Android ≥4.0.3, iOS ≥8.1
Image Capture with Pass/Fail Analysis[c]	IEC 61300-3-35 (2015), AT&T, IPC-8497-1, user-set criteria
Image File Format	JPEG, GIF
Image & Pass/Fail Results Storage[c]	Yes
File Storage Capacity[c]	Unlimited
Result Manager[c]	Storage, rename, delete, transfer
Reporting[c]	Built-in fillable PDF reporter
Supported Languages[c]	English, French, German, Japanese, Polish, Spanish

PHYSICAL AND POWER CHARACTERISTICS	
Battery Type	Li-Ion, non-replaceable by user
Maximum Charger Current Draw	1.2A, battery charge current + device consumption current
Operating Time (typical)	60 hours[d]; 8 hours continuous
Recharge Time	≤4 hours
Low-Battery Warning	Viewed on smart device
Charging LED Status; viewed on smart device	Red = Charging, Green = Fully Charged, Blinking Red/Green = Battery Fault
Power Save Features (Controlled by iOS & Android App)	Probe Auto-Off – disabled, 5, 10, 30, 60 minutes; Probe WiFi Not Connected – 5 minutes
AC Charger Voltage, Frequency, Current	100-240VAC, 50/60Hz, 5VDC, 2A
Charger Jack	0.9 x 3.2 mm barrel, center (tip) positive
Size (Max Diameter x Length)	Ø 40 x 226 mm (Ø 1.6 x 8.9 in)
Weight	150 g (5.3 oz)
Safety & Compliance Certifications	UL, CE, FCC Part 15
ENVIRONMENTAL CHARACTERISTICS	
Operating Temperature	0 to +50 °C
Storage Temperature	-40 to +70 °C
Relative Humidity	95%, non-condensing
Vibration Limits	2G (transportation)

Notes:
a. All specifications valid at 23°C ±2°C (73.4°F ±3.6°F).
b. Viewed on Smart Device.
c. In iOS & Android Apps.
d. Operating conditions: 60 tests in 20 minutes, then auto-off; Repeat each hour

Ordering Information

DESCRIPTION	AFL NO.
FOCIS WiFi2 Kit, soft carry case, AC charger, quick reference guide, no tips	FOCIS-WIFI2-N
FOCIS WiFi2 Kit, soft carry case, AC charger, quick reference guide, 2 user-selected PC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner	FOCIS-WIFI2-U
FOCIS WiFi2 Kit, soft carry case, AC charger, quick reference guide, 2 user-selected APC adapter tips (ferrule and bulkhead), user-selected One-Click cleaner	FOCIS-WIFI2-A

Fujikura - AFL VS300 View Safe Video Microscope

NOYES®
VS300 View Safe Video Microscope

Features

- Safety: The VS300 has no optical path to the user's eye
- Ergonomic: Comfortable molded easy grip case
- 2.5 mm Universal adapter included (accepts FC, ST, FC, etc.)
- View PC and angled connector types including MPO/MTP
- NTSC video output

Applications

- Verify jumper ends are clean prior to connecting to network
- Inspect end-faces for scratches or pits
- Eliminate the most common network fault (bad connectors)

Inspect patch cords with NOYES VS300 from AFL. Designed for field use, the VS300 scope delivers a high quality end-face image at 400x magnification. Quickly identify scratches, dirt or other problems normally associated with poor network performance.

FACT: A large percentage of network failures are caused by dirty or damaged end-faces on fiber optic connectors. Inspecting jumper end-faces prior to connection is critical to network performance. The VS300 scope provides a quality optical inspection tool at an affordable price.

Safety by design: the VS300 Utilizes a camera and micro display to provide an end-face image while eliminating the optical path to the technician's eye. This ensures no harm in the case of inadvertent viewing of live fibers. *

The VS300 features a Universal adapter cap mount that accepts a variety of NOYES thread-on style adapter caps (ordered separately) to ease inspection of many connector style. A momentary power switch located on the top panel keeps one hand free for focusing.

Tri-Pod mount: For stationary work, the tri-pod mount allows the VS300 to attach to any standard camera tri-pod.

Auto time-out feature provides long battery life from standard 2 x AA Alkalines.

*Always follow your company's laser safety procedures and never use an optical microscope to view live fiber optic connectors.

NOYES®
VS300 View Safe Video Microscope

Specifications [a]

OPTICAL	
Magnification	400X equivalent to 8" monitor for 20" distance
Adaptor Mount	Thread-on (Universal)
Safety Filter	Not Required - No optical path to user
Video Output	NTSC
GENERAL	
Operating Temperature	0 °C to +50 °C
Storage Temperature	-20 °C to +60°C
Humidity	0 to 90 % (non - condensing)
Power Supply	2 AA alkaline batteries, optional AC adapter
Battery Life	300 inspections @ 60 seconds each
Indicators	Low battery
Weight	0.42 kg (0.94 lb)
Size (H x W x D)	3.5 x 1.5 x 8.5 in (8.9 x 3.8 x 21.6 cm)

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

Ordering Information

DESCRIPTION	AFL NO
VS300 UPC/APC MPO Inspection and Cleaning Kit. Includes VS300 Inspection Scope, MPO APC (8°) adapter tip, MPO UPC adapter tip, 2.5 mm Universal adapter tip, One-Click MPO Cleaner, Optixx Precision Lens and Instrument Cleaning kit, hard case, 2 x AA batteries, users guide.	MPOK-AU-VIDX
VS300 UPC MPO Inspection and Cleaning Kit. Includes VS300 Inspection Scope, MPO UPC adapter tip, 2.5 mm Universal adapter tip, One-Click MPO Cleaner, Optixx Precision Lens and Instrument Cleaning kit, hard case, 2 x AA batteries, users guide.	MPOK-XU-VIDX
VS300 APC MPO Inspection and Cleaning Kit. Includes VS300 Inspection Scope, MPO APC (8°) adapter tip, 2.5 mm Universal adapter tip, One-Click MPO Cleaner, Optixx Precision Lens and Instrument Cleaning kit, hard case, 2 x AA batteries, users guide.	MPOK-AX-VIDX
VS300 Inspection Kit. Includes VS300 Inspection Scope, 2.5 mm Universal adapter cap, 2 x AA batteries, users guide.	VS300
VS300 UPC/APC MPO Upgrade Kit for VS300 Owners. Includes MPO APC (8°) adapter tip, MPO UPC adapter tip, One-Click MPO Cleaner, Optixx Precision Lens and Instrument Cleaning Kit, hard case.	MPOK-AU-VIDU
VS300 UPC MPO Upgrade Kit for VS300 Owners. Includes MPO UPC adapter tip, One-Click MPO Cleaner, Optixx Precision Lens and Instrument Cleaning lit, hard case.	MPOK-XU-VIDU
VS300 APC MPO Upgrade Kit for VS300 Owners. Includes MPO APC (8°) adapter tip, One-Click MPO Cleaner, Optixx Precision Lens and Instrument Cleaning kit, hard case.	MPOK-AX-VIDU
VS300 angled SC adapter tip.	8800-00-0220
VS300 angled FC adapter tip.	8800-00-0218
VS300 angled E-2000 adapter tip.	8800-00-0229
VS300 angled MTP/MPO adapter tip.	8800-00-0234
VS300 UPC MTP/MPO male adapter tip.	8800-00-0233
VS300 1.25 mm Universal male adapter tip.	8800-00-0236
VS300 2.5 mm Universal male adapter tip.	8800-00-0219
VS300 SMC 0° adapter tip.	8800-00-0235
VS300 1.6 mm (pin) adapter tip.	8800-00-0244
VS300 2.0 mm (pin) adapter tip.	8800-00-0248
VS300 EC (radial) adapter tip.	8800-00-0277
VS300 1.25/2.5 mm (2-position) Universal adapter tip.	8800-00-0265

Fujikura - AFL OLS Optical Light Source

OLS7 Optical Laser Source

OLS4 Optical Laser Source

OLS Series Light Sources

Features

- Rugged, dependable, tools backed with 5-Year Warranty
- Simple user interface minimizes training requirements
- Stabilized outputs for accurate loss measurements
- Wave ID supports testing up to three wavelengths simultaneously
- Field swappable output adapters provide flexibility

Applications

- Link loss measurements
- Certify SM and MM links to industry standards
- Continuity check and fiber identification for maintenance restoration

With more than 25 years of experience in the optical testing industry and thousands of units in use around the world, AFL is a trusted supplier of optical light sources. Backed by 5-year product warranties, these are the quality products you can trust.

Designed for use in outside plant environments

- Splash resistant controls
- Withstands one-meter drop test
- Controls designed for easy operation with gloves
- Field swappable output adapters allow access for cleaning optical port and supports multiple connector styles
- Efficient design provides long test time from globally available AA batteries. External power adapter available for extended testing or lab situations.

Output Modes Supported

- Wave ID (Triple, Dual, or Single) decreases test time while reducing technician errors
- CW mode provides continuous output (no encoding)
- Test Tone (2000, 1000, 330, 270 Hz) for use in fiber identification with *NOYES*® brand power meters (with fiber end access) or *NOYES*® brand Optical Fiber Identifier (OFI) products for non-intrusive, mid-span testing

OLS Series Light Sources

OLS Series Models and Applications

MODEL	MM / SM	WAVELENGTHS (nm)	APPLICATIONS
OLS7-FTTx	SM	1310, 1490, 1625	FTTH Networks
OLS7-FTTH	SM	1310, 1490, 1550	FTTH Networks
OLS7-3	SM	1310, 1550, 1625	Telecom & CATV Networks
OLS4	MM / SM	850, 1300 / 1310, 1550	Loss Testing of SM/MM networks
OLS2-Dual	SM	1310, 1550	SM Networks, LAN/WAN Testing
OLS1-Dual	MM	850, 1300	Ethernet, Token Ring, and FDDI Fiber Links

Specifications [a]

OPTICAL SPECIFICATIONS: OLS7 MODELS									
MODEL	OLS7-FTTX (Single Port)			OLS7-FTTH (Single Port)			OLS7-3 (Single Port)		
Wavelength (±20 nm)	1310 nm	1490 nm	1625 nm	1310 nm	1490 nm	1550 nm	1310 nm	1550 nm	1625 nm
Spectral Width	5 nm	3 nm	2 nm	5 nm	3 nm	5 nm	5 nm	5 nm	2 nm
Emitter Type	Laser								
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03								
Output Power	-5 dBm (typical), 9/125 fiber								
Output Stability	±0.05 dB over 1 hour (after 15 minutes warm-up) ±0.1 dB over 8 hours (after 15 minutes warm-up)								
Tone Output	270 Hz, 330 Hz, 1 kHz, 2 kHz								

OPTICAL SPECIFICATIONS: OLS4, OLS2-DUAL & OLS1-DUAL MODELS								
MODEL	OLS4 (MM Optical Port)		OLS4 (SM Optical Port)		OLS2-DUAL (Single Port)		OLS1-DUAL (Single Port [b])	
Wavelength	850 ±30 nm	1300 +30/-20 nm	1310 ±20 nm	1550 ±20 nm	1310 ±20 nm	1550 ±20 nm	850 ±30 nm	1300 +30/-20 nm
Spectral Width	45 nm (typ)	120 nm (typ)	5 nm (max)	5 nm (max)	5 nm (max)		45 nm (typ)	120 nm (typ)
Emitter Type	LED		Laser		Laser		LED	
Safety Class	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03							
Output Power	>-20 dBm, 62.5 µm multimode [c]		0 dBm, 9 µm single-mode		0 dBm, 9 µm single-mode [d]		>-20 dBm, 62.5 µm multimode [c]	
Output Stability	±0.1 dB over 8 hours (after 5 minutes warm-up)		±0.05 dB over 1 hour (after 15 minutes warm-up) ±0.1 dB over 8 hours (after 15 minutes warm-up)				±0.1 dB over 8 hours (after 5 minutes warm-up)	
Tone Output	N/A		2 kHz		270 Hz, 330 Hz, 1 kHz, 2 kHz		N/A	

GENERAL SPECIFICATIONS: ALL OLS MODELS	
Available Adapters	SC FC, ST, LC
Power	2 AA batteries, optional AC adapter
Battery Life	SM port: 72 hours typical (40 hours minimum). MM port: 30 hours typical (20 hours minimum)
Operating Temperature	-10 °C to 50 °C, 90 % RH (non-condensing)
Storage Temperature	-30 °C to 60 °C, 90 % RH (non-condensing)
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)
Weight	0.29 kg (0.65 lb)

Notes:

a. All specifications valid at 25°C unless otherwise specified.
b. May be used to test 50 or 62.5 µm fiber with supplied mandrels.
c. Output power will be approximately 3 dB less if a 50 µm mandrel-wrapped jumper is used instead of a 62.5 µm mandrel-wrapped jumper.
d. Adjustable 2 dB.

OLS Series Light Sources

Ordering Information

When ordering, specify connector type at the end of model number (e.g. OLS2-DUAL-SC).
All OLS models include protective rubber boot, 2 AA batteries and carry case. AC adapters are available (ordered separately), see table below. Test jumpers and connector adapters are required for operation (purchased separately). Test jumpers with a variety of connector styles and fiber types and adapter caps for most common connectors may be purchased from AFL.

AFL NO.	OUTPUT WAVELENGTHS (nm)						OUTPUT PORTS	EMITTER TYPE	WAVE ID TRANSMIT	AVAILABLE CONNECTORS	POWER
	850	1300	1310	1490	1550	1625					
OLS7-FTTx			◆	◆		◆	1	Laser	◆	FC, SC, ST, LC	(2) AA, AC
OLS7-FTTH			◆	◆	◆		1	Laser	◆	FC, SC, ST, LC	(2) AA, AC
OLS7-3			◆		◆	◆	1	Laser	◆	FC, SC, ST, LC	(2) AA, AC
OLS4	◆	◆	◆		◆		2	LED and Laser	◆	FC, SC, ST, LC	(2) AA, AC
OLS2-DUAL			◆		◆		1	Laser	◆	FC, SC, ST, LC	(2) AA, AC
OLS1-DUAL	◆	◆					1	LED	◆	FC, SC, ST, LC	(2) AA, AC

OLS AC Adapter and Connector Adapters

DESCRIPTION	AFL NO.
FC connector adapter	2900-50-0002MR
SC connector adapter	2900-50-0003MR
ST connector adapter	2900-50-0004MR
LC connector adapter	2900-50-0006MR
Universal flip-top dust cap for UCI outputs	8800-00-0072PR
100-240 VAC to 9 VDC, AC adapter	4050-00-0119PR

Fujikura - AFL OPM4 & OPM5 Optical Power Meter

OPM5 Optical Power Meter

OPM4 Optical Power Meter

OPM5 and OPM4 Optical Power Meters

Features

- Rugged, dependable, tools backed with 5-Year Warranty
- Single-mode and multimode applications
- Wave ID supports testing up to three wavelengths simultaneously
- Field swappable connector adapters provide flexibility
- Large display visible in direct sunlight. Backlight for dim conditions
- Stores optical reference at each calibrated wavelength
- Detection of multiple test tones for fiber identification
- Equipped with five-minute auto-off feature
- Long battery life from globally available 2 x AA (Mignon) batteries
- Fully N.I.S.T. traceable.

Applications

- Passive Optical Networks (PON) testing
- Save test data for Report Generation (OPM5)
- OPM(5/4)-4D (Filtered-InGaAs) for high power (+26 dBm) CATV Broadband networks or DWDM system applications
- OPM(5/4)-3D (InGaAs) for Telecommunications networks
- OPM(5/4)-2D (Ge) for Premises LAN/WAN multimode or single-mode networks
- OPM4-1D (Silicon) for multimode / plastic optical fiber applications

With more than 25 years of experience in the optical testing industry and thousands of units in use around the world, AFL is a trusted supplier of optical power meters. Backed by 5-year product warranties, these are the quality products you can trust.

Designed for use in outside plant environments

- Splash resistant controls
- Withstands one-meter drop test
- Controls designed for easy operation with gloves
- Field swappable optical adapters allow access for cleaning optical port and supports multiple connector styles
- Efficient design provides long test time from globally available AA batteries

OPM5 with Data Storage of Test Results

File Management system allows technicians to organize test results into multiple files and transfer stored results via USB to a PC for analyzing, generating reports, and printing. The supplied powerful PC Analysis and Reporting Tool (TRM® 2.0) allows users to apply industry-standards-based rules to test results and create comprehensive certification reports. Users can generate network Pass/Fail results demonstrating compliance to industry standards and illustrate headroom.

OPM5 and OPM4 Optical Power Meters

Specifications [a]

OPTICAL				
MODEL	**OPM5-4D, OPM4-4D**	**OPM5-3D, OPM4-3D**	**OPM5-2D, OPM4-2D**	**OPM4-1D**
Calibrated Wavelengths	850, 980, 1300, 1310, 1490, 1550, 1625 nm	850, 1300, 1310, 1490, 1550, 1625 nm	850, 1300, 1310, 1490, 1550 nm	650, 660, 780, 850 nm
Detector Type	Filtered InGaAs	InGaAs	Germanium (Ge)	Silicon (Si)
Measurement Range	+26 to -50 dBm	+10 to -75 dBm	+6 to -60 dBm	+6 to -70 dBm
Tone Detect Range	+6 to -30 dBm +6 to -25 dBm for 850 nm	+10 to -50 dBm +10 to -45 dBm for 850 nm	+6 to -50 dBm +6 to -45 dBm for 850 nm	+6 to -45 dBm
Wavelength ID Range	+6 to -30 dBm +6 to -25 dBm for 850 nm	+10 to -50 dBm +10 to -45 dBm for 850 nm	+6 to -50 dBm +6 to -45 dBm for 850 nm	—
Accuracy [b]	±0.25 dB			
Resolution	0.01 dB			
Measurement Units	dB, dBm, µW			
GENERAL				
Power	2 x AA batteries, accepts standard mini-USB power adapter			
Adapter Caps	Order with one: 1.25 mm Universal, 2.5 mm Universal, FC, SC, ST, LC. Other connector adapters available			
Battery Life	300 hours			
Operating Temperature	-10 °C to 50 °C, 90 % RH (non-condensing)			
Storage Temperature	-30 °C to 60 °C, 90 % RH (non-condensing)			
Size (H x W x D)	14.0 x 8.1 x 3.8 cm (5.5 x 3.2 x 1.5 in)			
Weight	0.26 kg (0.58 lb)			

Notes:

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

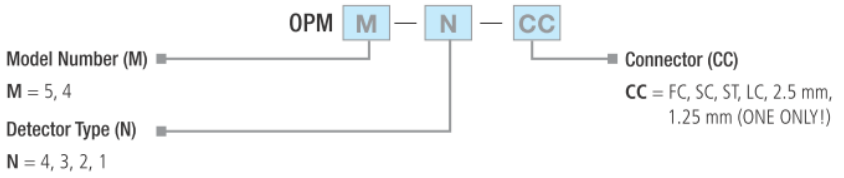
b. Accuracy measured at 25 °C and -10 dBm per N.I.S.T. standards.

Ordering Information

All OPM models include optical power meter, 2 AA batteries, protective rubber boot, customer specified adapter cap, and carry case. OPM5 models also include TRM® 2.0 software (Basic License). Quick Ref Guides (PDF format) are available in Chinese Simplified, Chinese Traditional, French, German, Italian, Japanese, Korean, Portuguese, Spanish and Turkish on www.AFLglobal.com/OPMQRG.

When placing an order, select options as follows:

- Model Number (M),
- Detector Type (N),
- Connector Configuration (CC)



MODEL	CALIBRATED WAVELENGTHS (nm)										DETECTOR TYPE	MEASUREMENT RANGE (dBm)	PC SOFTWARE
	650	660	780	850	980	1300	1310	1490	1550	1625			
OPM5-4D				◆	◆		◆	◆	◆	◆	InGaAs	+26 to -50	TRM 2.0
OPM5-3D				◆		◆	◆	◆	◆	◆	InGaAs	+10 to -75	TRM 2.0
OPM5-2D				◆		◆	◆	◆	◆		Germanium	+6 to -60	TRM 2.0
OPM4-4D				◆	◆		◆	◆	◆	◆	InGaAs	+26 to -50	
OPM4-3D				◆		◆	◆	◆	◆	◆	InGaAs	+10 to -75	
OPM4-2D				◆		◆	◆	◆	◆		Germanium	+6 to -60	
OPM4-1D	◆	◆	◆	◆							Silicon	+6 to -70	

OPM5 and OPM4 Optical Power Meters

OPM Accessories

DESCRIPTION			AFL NO.
ADAPTER CAPS			
2.5 mm Universal (accepts FC, SC, and ST ferrules)			8800-00-0214
1.25 mm Universal (accepts LC and MU ferrules)			8800-00-0224
FC			8800-00-0200
SC			8800-00-0209
ST®			8800-00-0202
LC simplex/duplex			8800-00-0225
E-2000			8800-00-0221
MU simplex			8800-00-0226
2.5 mm open Universal. Accepts SC duplex, OptiTap connector for measuring optical power.			8800-00-0219
SMA			8800-00-0203
D4			8800-00-0201
Biconic			8800-00-0204
DIN 47256			8800-00-0211
Radiall PFO/VFO			8800-00-0212
ADAPTERS FOR PLASTIC OPTICAL FIBER (POF)			
1000 mm bare fiber (plastic)			8800-00-0223
HP-HFBR-45XX POF Universal			8800-00-0271PR
USB CABLE			
USB Cable: PC (USB-A) to OPM (USB-MINI B): • Connect OPM to PC for data upload to TRM ® 2.0 • External Power for OPM (when used with customer supplied USB-A power source)	**OPM5 MODEL** Connect to PC and External power	**OPM4 MODEL** External power only	6000-00-0024MR

Fujikura - AFL Fiber Rings

FR1-M6-150-SC-ST

FR1-SM-1000-SC-ST

FR1-SM-150-SC-SC

OTDR Fiber Rings

Measuring an insertion loss of the near-end and/or far-end connection of a fiber optic link with an OTDR requires a launch and/or receive test cable. A launch cable, which connects the OTDR to the link under test, reveals the insertion loss and reflectance of the near-end connection. A receive cable, which connects to the far-end of the link, reveals the insertion loss and reflectance of the far-end connection. Launch and receive test cables can range from 150 m to 1 km (or longer) in length. Because very long test cables are impractical to transport and use, AFL offers coiled lengths of 50 µm multimode, 62.5 µm multimode, or single-mode fiber packaged in compact rings.

Fiber Rings of 150 m of fiber are ideal for premises fiber network test applications. Fiber Rings of 500 m and 1 km of single-mode fiber are designed for broadband, long haul fiber network test applications.

Fiber Ring Models

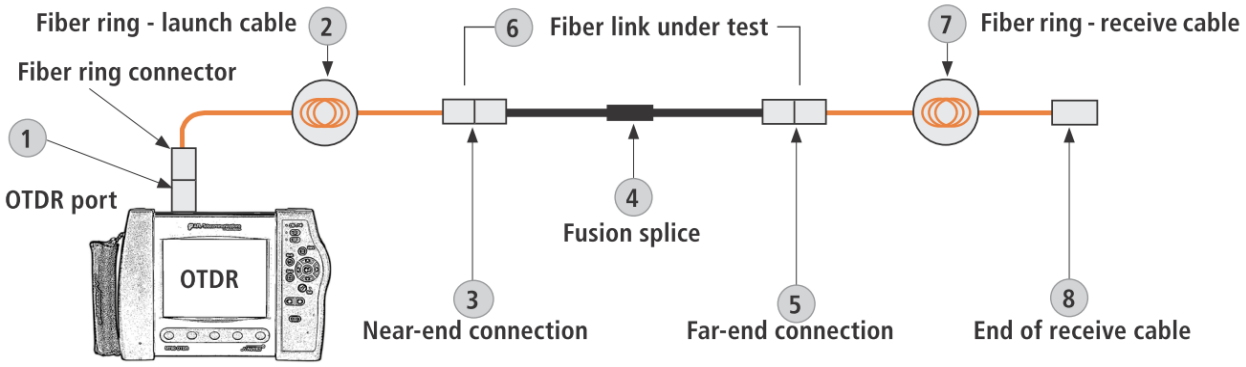
CONFIGURATION	FIBER TYPE	FIBER LENGTH	AFL NO.
Standard, one fiber	Multimode, 50 µm, OM2	150 m (492 ft)	FR1-M5-150- x1- x2
Standard, one fiber, Laser Optimized	Multimode, 50 µm, OM3	150 m (492 ft)	FR1-OM3-150-x1-x2
Standard, one fiber, Laser Optimized	Multimode, 50 µm, OM4	150 m (492 ft)	FR1-OM4-150-x1-x2
Standard, one fiber	Multimode, 62.5 µm	150 m (492 ft)	FR1-M6-150- x1- x2
Standard, one fiber	Single-mode	150 m (492 ft)	FR1-SM-150-y1-y2
Standard, one fiber	Single-mode	500 m (1640 ft)	FR1-SM-500-y1-y2
Standard, one fiber	Single-mode	1000 m (3280 ft)	FR1-SM-1000-y1-y2
Standard, one fiber, Bend Insensitive	Single-mode, G.657.A2 BIF	150 m (492 ft)	FR1-BIF-150-y1-y2
Standard, one fiber, Bend Insensitive	Single-mode, G.657.A2 BIF	500 m (1640 ft)	FR1-BIF-500-y1-y2
Standard, one fiber, Bend Insensitive	Single-mode, G.657.A2 BIF	1000 m (3280 ft)	FR1-BIF-1000-y1-y2

x1, x2 — connectors for multimode cables, specify type [ST, SC, ASC (angled SC), FC, AFC (angled FC), LC]
y1, y2 — connectors for single-mode cables, specify type [ST, SC, ASC (angled SC), FC, AFC (angled FC), LC]
Other connector types, fiber types, and fiber lengths will be quoted upon request.

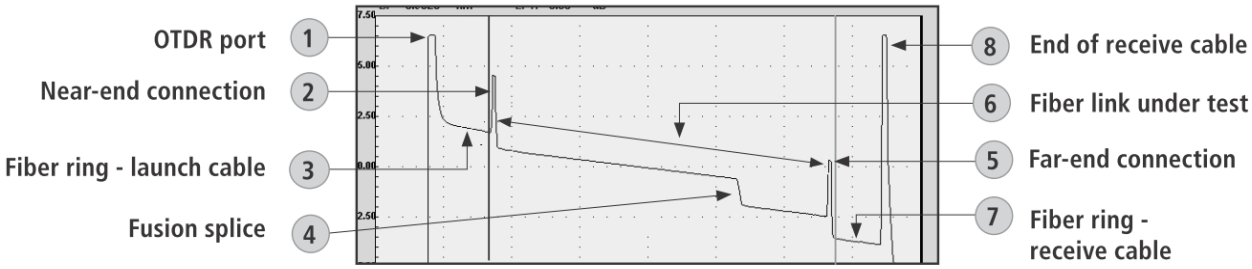
OTDR Fiber Rings

How to Generate a Baseline Trace Using Fiber Rings

- Use the Fiber Ring as a launch cable.
  Connect the Fiber Ring between your OTDR and the fiber link under test. This will allow you to measure the loss of the near-end connection.
- Use the Fiber Ring as a receive cable.
  Connect the Fiber Ring to the far-end connector of your fiber link under test. This will allow you to measure the loss of the far-end connection.
- By using Fiber Rings as both launch and receive cables, as shown in the diagram below, you can measure total insertion loss of the fiber link under test.

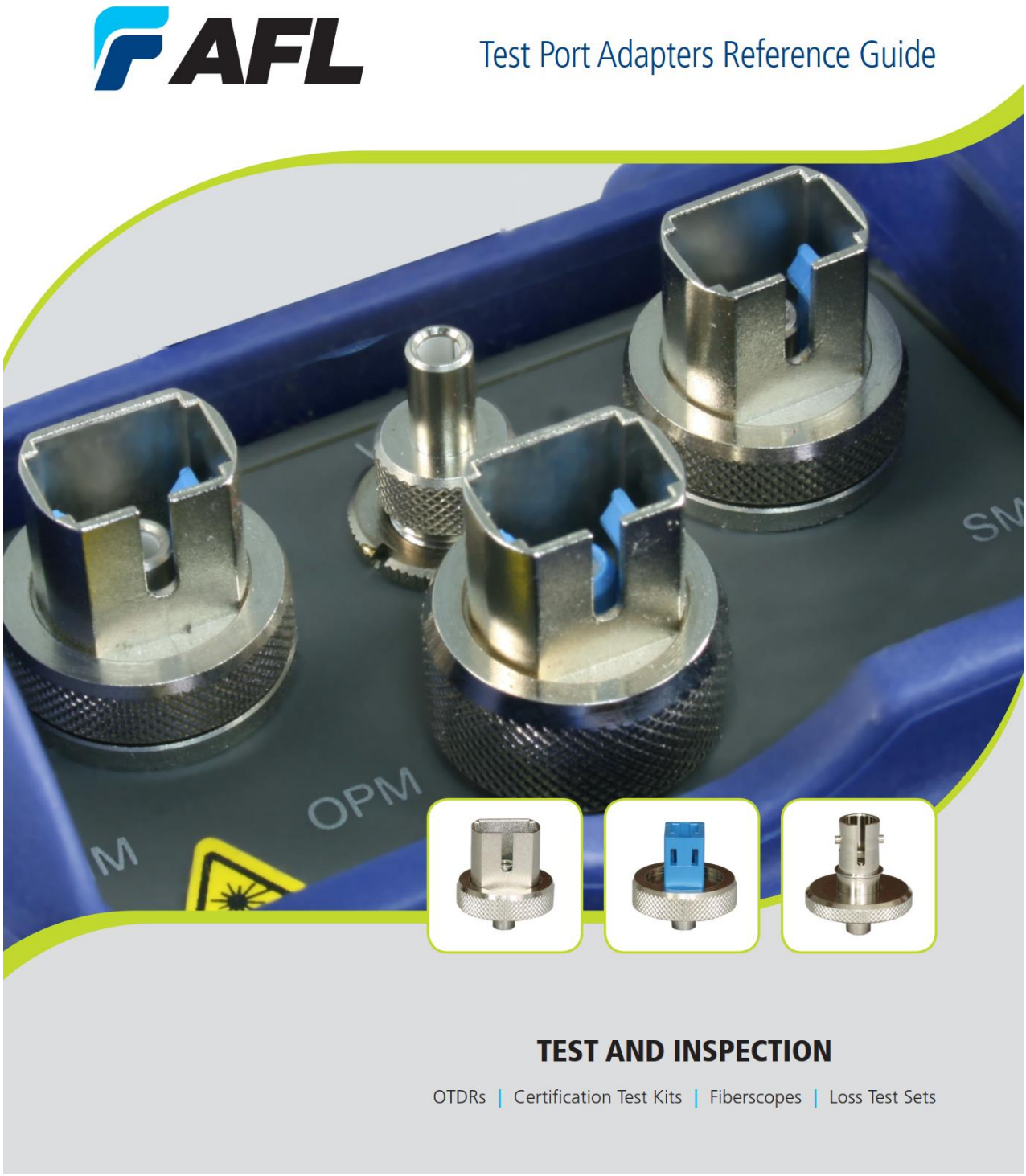


Example OTDR Test Configuration with Launch and Receive Cables



OTDR Trace Made using Launch and Receive Cables

Fujikura - AFL Adapter Guide



OFL280 and OFL250 Series Hand-held OTDRs

Connector Adapters for the OTDR, OPM, and VFL Test Ports

Test ports on OFL280 and OFl250 series OTDRs are equipped with tool-free switchable adapters, which can be changed in seconds. The fast change switchable adapters allow OTDRs to interface launch cables with a variety of connector styles.

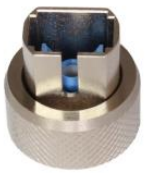
IMAGE	MODEL	TYPE	PORT
	2900-50-0002MR	FC	OTDR
	2900-50-0003MR	SC	OTDR
	2900-50-0004MR	ST	OTDR
	2900-50-0006MR	LC	OTDR
	2900-52-0001MR	FC	OPM
	2900-52-0002MR	SC	OPM

IMAGE	MODEL	TYPE	PORT
	2900-52-0003MR	ST	OPM
	2900-52-0004MR	LC	OPM
	2900-52-0005MR	2.5 mm Universal	OPM
	2900-52-0006MR	1.25 mm Universal	OPM
	2900-53-0001MR	2.5 mm Universal	VFL
	2900-53-0002MR	1.25 mm Universal	VFL

M200 Series Hand-held OTDRs

Connector Adapters for the OTDR and VFL Test Ports

Test ports on M200 series OTDRs are equipped with tool-free switchable adapters, which can be changed in seconds.
The fast change switchable adapters allow OTDRs to interface launch cables with a variety of connector styles.

IMAGE	MODEL	TYPE	PORT
	2900-50-0002MR	FC	OTDR
	2900-50-0003MR	SC	OTDR
	2900-50-0004MR	ST	OTDR
	2900-50-0006MR	LC	OTDR

IMAGE	MODEL	TYPE	PORT
	2900-50-0007MR	2.5 mm Universal	VFL
	2900-50-0010MR	1.25 mm Universal	VFL

M700, M650, and C850 Series Compact OTDRs

Connector Adapters for the OTDR, OPM, and VFL Test Ports

Test ports on NOYES OTDRs are equipped with tool-free switchable adapters, which can be changed in seconds. The fast change switchable adapters allow OTDRs to interface launch cables with a variety of connector styles.

IMAGE	MODEL	TYPE	PORT
	2900-50-0002MR	FC	OTDR
	2900-50-0003MR	SC	OTDR
	2900-50-0004MR	ST	OTDR
	2900-50-0006MR	LC	OTDR
	8800-00-0200	FC	OPM
	8800-00-0209	SC	OPM

IMAGE	MODEL	TYPE	PORT
	8800-00-0202	ST®	OPM
	8800-00-0225	LC	OPM
	8800-00-0214	2.5 mm Universal	OPM
	8800-00-0224	1.25 mm Universal	OPM
	2900-53-0001MR	2.5 mm Universal	VFL
	2900-53-0002MR	1.25 mm Universal	VFL

C840 Series QUAD Certification Testers

Connector Adapters for the OLS, OPM, and VFL Test Ports

Test ports on NOYES C840 Certification Testers are equipped with tool-free switchable adapters, which can be changed in seconds. The fast change switchable adapters allow Certification Testers to interface launch cables with a variety of connector styles.

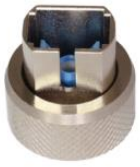
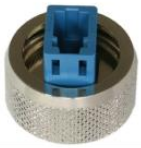
IMAGE	MODEL	TYPE	PORT
	2900-50-0002MR	FC	OLS
	2900-50-0003MR	SC	OLS
	2900-50-0004MR	ST	OLS
	2900-50-0006MR	LC	OLS
	2900-52-0001MR	FC	OPM
	2900-52-0002MR	SC	OPM

IMAGE	MODEL	TYPE	PORT
	2900-52-0003MR	ST	OPM
	2900-52-0004MR	LC	OPM
	2900-52-0005MR	2.5 mm Universal	OPM
	2900-52-0006MR	1.25 mm Universal	OPM
	2900-50-0007MR	2.5 mm Universal	VFL
	2900-50-0010MR	1.25 mm Universal	VFL

Optical Light Sources and Optical Power Meters Series

OLS Series Test Port Adapters

Test ports on the NOYES light sources are equipped with tool-free switchable adapters, which can be changed in seconds. The fast change switchable adapters allow light sources to interface launch cables with a variety of connector styles.

Light sources manufactured in 2007 or newer use the threaded connector adaptors pictured below. For older units, please contact NOYES to select the proper adaptor for your unit.

IMAGE	MODEL	TYPE	PORT
	2900-50-0002MR	FC	OTDR
	2900-50-0003MR	SC	OTDR
	2900-50-0004MR	ST	OTDR
	2900-50-0006MR	LC	OTDR

FTTx Wavelength Selective Adapter Cap for OPM Series Optical Power Meters

The NOYES FTTx Wavelength Selective Adapter Cap allows any NOYES Optical Power Meter (OPM), including all OPM1, OPM4, and OPM5 models, to measure downstream signal power on FTTx networks carrying both 1490 nm and 1550 nm signals. To operate, the user simply sets the adapter cap and power meter to the same wavelength, either 1490 or 1550 nm. A third 'unfiltered' adapter cap position is provided to measure optical power at 1310 nm or any other wavelength supported by the power meter. The new adapter cap is compatible with SC or angled SC connectors.

Features

- Compatible with SC or Angled SC connectors
- Fits standard NOYES OPM ports
- Uses thin-film, band-pass filters at 1490 and 1550 nm
- Provides unfiltered position to measure other wavelengths

Applications

- Verify 1490 and 1550 nm power levels before connecting the ONT
- Troubleshooting FTTx problems at the ONT (premise) or FDH (hub)

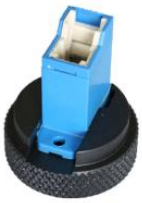
IMAGE	MODEL	DESCRIPTION
	8800-00-0270PR	SC, FTTX 3-WAVE, A selectable Pass Filter - All Pass - 1490 nm - 1550 nm

Optical Power Meter Test Ports

Adapter Caps for OPM Ports on the OPM, T400, T500, and ORL3 Series Test Sets

The NOYES standard thread-on adapter caps are used to mate non-angled single-fiber and dual-fiber connectors to optical power meter ports on the OPM, T400, T500B, and ORL 3B series test sets.

IMAGE	MODEL	DESCRIPTION
	8800-00-0214	2.5 mm Universal Accepts FC, SC, ST ferrules
	8800-00-0224	1.25 mm Universal Accepts LC and MU ferrules
	8800-00-0200	FC
	8800-00-0209	SC
	8800-00-0202	ST®

IMAGE	MODEL	DESCRIPTION
	8800-00-0225	LC Simplex/Duplex
	8800-00-0221	E-2000
	8800-00-0226	MU Simplex
	8800-00-0219	2.5 mm open Universal Accepts OptiTap connector for measuring optical power
	8800-00-0230	MT-RJ (A side only) When used for loss testing "A side only" adapter verifies system polarity

Optical Power Meters Series

Adapter Caps for OPM Ports on the OPM, T400, T500, and ORL3 Series Test Sets

IMAGE	MODEL	DESCRIPTION
	8800-00-0231	MT-RJ (A side or B side)
	8800-00-0203	SMA
	8800-00-0201	D4
	8800-00-0204	Biconic
	8800-00-0210	ESCON®

IMAGE	MODEL	DESCRIPTION
	8800-00-0205	FDDI
	8800-00-0211	DIN 47256
	8800-00-0212	PFO/VFO (Radiall)
ADAPTERS FOR PLASTIC OPTICAL FIBER (POF)		
	8800-00-0223	1000 µm bare fiber (plastic)
	8800-00-0271PR	HP-HFBR-45XX POF Universal

Notes:
1. ESCON is a registered trademark of IBM.
2. MPX is a registered trademark of Tyco Electronics.
3. MTP is a registered trademark of US Conec.
4. ST is a registered trademark of Lucent Technologies.

Inspection Scopes

Adapter Caps for the OFS 300-200C and VS 300 Series Inspection Scopes

NOYES thread-on angled and multifiber adapter caps are used to mate angled single-fiber as well as angled or non-angled multifiber connectors to inspection ports on our OFS 300-200C and VS 300 microscopes.

IMAGE	MODEL	DESCRIPTION
	8800-00-0214	2.5 mm Universal Accepts FC, SC, ST ferrules
	8800-00-0224	1.25 mm Universal Accepts LC and MU ferrules
	8800-00-0200	FC
	8800-00-0209	SC
	8800-00-0202	ST®

IMAGE	MODEL	DESCRIPTION
	8800-00-0225	LC Simplex/Duplex
	8800-00-0221	E-2000
	8800-00-0226	MU Simplex
	8800-00-0219	2.5 mm open Universal
	Note: For Inspecting backplane and duplex connectors with 2.5 mm ferrules such as FC, SC, and ST. Not recommended for Measuring Optical Power (except OptiTap).	
	8800-00-0230	MT-RJ (A side only) When used for loss tesing "A side only" adapter verifies system polarity

Inspection Scopes

Adapter Caps for the OFS 300-200C and VS 300 Series Inspection Scopes

IMAGE	MODEL	DESCRIPTION
	8800-00-0231	MT-RJ (A side or B side)
	8800-00-0203	SMA
	8800-00-0201	D4
	8800-00-0204	Biconic
	8800-00-0210	ESCON®

IMAGE	MODEL	DESCRIPTION
	8800-00-0205	FDDI
	8800-00-0211	DIN 47256
	8800-00-0212	PFO/ VFO (Radiall)
	8800-00-0223	1000 µm bare fiber (plastic)
	8800-00-0271PR	HP-HFBR-45XX POF Universal

Inspection Scopes

Adapter Caps for the OFS 300-200C and VS 300 Series Inspection Scopes

IMAGE	MODEL	DESCRIPTION
	8800-00-0220	Angled SC
	8800-00-0218	Angled FC
	8800-00-0229	Angled E-2000
	8800-00-0237	MPX®
	8800-00-0234	MTP® / MPO Angled ferrule (8°) typically single-mode
	8800-00-0233	MTP® / MPO Flat ferrule (0°) typically multi-mode

IMAGE	MODEL	DESCRIPTION
	8800-00-0242	MT Ferrule Angled ferrule (8°)
	8800-00-0241	MT Ferrule Flat ferrule (0°)
	8800-00-0236	1.25 mm open Universal [1]
	Note: For Inspecting backplane and duplex connectors with 1.25 mm ferrules such as LC and MU. Not recommended for Measuring Optical Power.	
	8800-00-0219	2.5 mm open Universal
	8800-00-0235	SMC 0°

Notes:
1. ESCON is a registered trademark of IBM.
2. MPX is a registered trademark of Tyco Electronics.
3. MTP is a registered trademark of US Conec.
4. ST is a registered trademark of Lucent Technologies.

Inspection Scopes

Adapter Caps for the OFS 300-200C and VS 300 Series Inspection Scopes

IMAGE	MODEL	DESCRIPTION
	8800-00-0215	FDDI Kit
	8800-00-0244	1.6 mm Ferrule (pin)

IMAGE	MODEL	DESCRIPTION
	8800-00-0248	2.0 mm Ferrule (pin)
	8800-00-0227	EC (Radiall)

Adapter Caps for the OFS 300-400 Series Microscopes

NOYES snap-on adapter caps are used only with the OFS-300-400C microscope.

IMAGE	MODEL	DESCRIPTION
	8800-02-0252	1.25 mm Universal Accepts LC and MU ferrules
	8800-02-0019	2.5 mm Universal Accepts FC, SC, and ST ferrules
	8800-02-0007	FC

IMAGE	MODEL	DESCRIPTION
	8800-02-0030	Angled FC
	8800-02-0009	SC
	8800-02-0031	Angled SC

Inspection Scopes

Adapter Caps for the OFS 300-400 Series Microscopes

NOYES snap-on adapter caps are used only with the OFS-300-400C microscope.

IMAGE	MODEL	DESCRIPTION
	8800-02-0014	ST® * ST is a registered trademark of Lucent Technologies
	8800-02-0012	SMA

IMAGE	MODEL	DESCRIPTION
	8800-02-0032	EC series (Radiall)
	8800-02-0057	2.0 mm Ferrule (pin)

Adapter Tips for the VFS2 Series Video Fiberscope

The VFS2 Inspection Probe requires an adapter tip that matches the connector type being inspected. The VFS2 precision adapter tips ease getting fiber images in the viewing area and ensure the optics will view into the alignment sleeve.

IMAGE	MODEL	TYPE
	VFS2-02-0100	FC
	VFS2-02-0101	SC

IMAGE	MODEL	TYPE
	VFS2-02-0102	ST® * ST is a registered trademark of Lucent Technologies
	VFS2-02-0103	2.5 mm Universal (for patch cords) Accepts FC, SC, and ST ferrules

Inspection Scopes

Adapter Tips for the VFS2 Series Video Fiberscope

IMAGE	MODEL	TYPE
	VFS2-02-0104	1.25 mm Universal for patch cords) Accepts LC and MU ferrules
	VFS2-02-0105	2.0 mm Universal for male Mil C 28876
	VFS2-02-0106	2.0 mm socket for female Mil C 28876
	VFS2-02-0108	1.6 mm Universal for male Mil C 38999

IMAGE	MODEL	TYPE
	VFS2-02-0109	1.6 mm socket for female Mil C 38999
	VFS2-02-0110	AFC
	VFS2-02-0111	ASC
	VFS2-02-0112	LC

Inspection Scopes

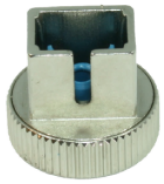
Adapter Sips for the VFS2 Series Video Fiberscope

IMAGE	MODEL	TYPE
	VFS2-02-0113	SC2
	VFS2-02-0114	D4
	VFS2-02-0115	E-2000
	VFS2-02-0117	MU

IMAGE	MODEL	TYPE
	VFS2-02-0118	Biconic
	VFS2-02-0127	ELIO
	VFS2-00-0108	Converter to allow VFS2 to accept OFS300/ VS300 adapter caps

Attenuators

Adapter Caps for the VOA6-SM Variable Optical Attenuator

IMAGE	MODEL	DESCRIPTION
	2900-FT-LS-FC	FC connector
	2900-FT-LS-SC	SC connector
	2900-FT-LS-ST	ST connector

AFL Test Port Adapters Reference Guide