M210e Hand-held OTDR

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

NEW

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.

www.AFLglobal.com or (800) 321-5298, (603) 528-7780

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.

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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.
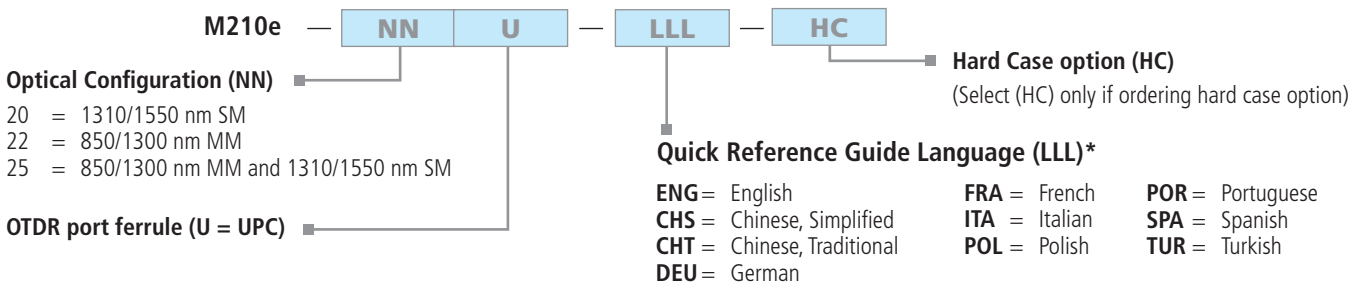
Ordering Information

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**

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

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)

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

DESCRIPTION	AFL NO.
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).

International Sales and Service Contact Information

Available at www.AFLglobal.com/Test/Contacts