NOYES®
M210 Multifunction Micro OTDR

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

M210 OTDR with DFS1 Digital FiberScope

Features

- 30 dB dynamic range single-mode
- 16-hour battery life
- Remote display capable
- Touch and Test™ intuitive user interface
- New faster processor
- Crisp bright display for indoor/outdoor viewing
- Integrated OPM standard; integrated VFI standard
- Inspection capable with DFS1 Digital FiberScope
- Rugged, hand-held, lightweight (<1 kg)
- Prepaid Calibration plans, Cal and Cal Plus (see page 6)

Test Modes

- Full Auto OTDR – Normal (point-to-point) fiber cable construction testing and fault location
- Expert OTDR – Full function OTDR for experienced users includes Auto and Auto-Once setup
- Real-Time OTDR – Fault location, splice verification
- Optical Power Meter – Measure optical power or fiber loss
- Visual Fault Identifier – Red laser for fiber bend and break location

Languages supported

- English
- French
- German
- Italian
- Spanish
- Polish
- Portuguese

The NOYES M210 is the only inspection ready QUAD OTDR that combines OTDR, OPM and VFI capability with a proven, easy-to-use and easy-to-learn user interface. The M210 is the latest addition to the M200 family of OTDRs. Like other members of the M200 family, the M210 offers the intuitive Touch and Test user interface in a rugged, lightweight, easy-to-hold package ready for field use. The M210 features a more powerful processing engine, a higher resolution display and, for the first time in an OTDR of its size, an integrated Optical Power Meter.

Touch and Test simplifies the M210 user experience, minimizes human errors and reduces training time by providing one-touch access to the Full-Auto, Expert and Real-Time OTDR test modes, OPM measurement mode as well as the Results Management and Job Creation menus. The M210 allows setting Pass/Fail thresholds to industry standard TIA/ISO or user-values and will automatically alert users of failing fibers. Touch and Test enables both experts and novices alike to complete jobs more accurately and in less time.

NEW

M210 QUAD Certification Kit (Tier 1 and Tier 2)

NEW

M210 QUAD Test and Inspection Kit (Tier 2)

NEW

M210 OTDR in Hard Transit Case

NEW

M210 OTDR in Soft Case

NOYES® M210 Multifunction Micro OTDR

M210 OTDR Soft and Hard Case Options

The M210 micro OTDR is available as a single-mode, multimode or single-mode/multimode model in either a soft or hard case and as part of a QUAD Certification kit or QUAD Test and Inspection kit. M210 OTDRs are ideal for testing, analyzing and troubleshooting enterprise, LAN/WAN, campus and military single-mode and multimode (62.5 and 50 micron) fiber networks.

All M210 models support IEC 61300-3-35 fiber end-face visual inspection practices using a NOYES DFS1 Digital FiberScope. OTDR traces (.sor format), OPM measurement results and fiber end-face images can be saved together in a job. These results can be downloaded to a computer for analyzing and editing using the included companion, NOYES Test Results Manager™ application software.

M210 QUAD Certification Kit in Hard Transit Case

This kit is designed for integrated single-mode and multimode Tier 1 and Tier 2 testing with fiber end-face image capture. The M210 stores OTDR traces, loss readings and end-face images in a logical Job Structure for each fiber. Review results on the M210 and transfer to a PC for analysis and acceptance report documentation using included companion Test Results Manager (TRM) software. In TRM, apply standards and applications to loss readings to assure fibers meet the increasing bandwidth needs of fiber networks such as 10 GbE. This kit includes the QUAD M210, OLS4 LED/Laser Source, DFS1 FiberScope and cleaning accessories in a compact hard transit case. The hard transit case is a rugged, injection molded ABS case with a full length hinge, padlock loops, secure latches and O-ring seal to protect the contents from dust and water. The case is large enough to hold test, inspection and cleaning accessories and small enough to carry on an airplane. See page 3 for available accessories.

M210 QUAD Test and Inspection Kit in Hard Transit Case

This kit is designed for performing Tier 2 OTDR testing and troubleshooting and end-face inspection. This kit includes the QUAD M210, DFS1 FiberScope and cleaning accessories in a compact rugged hard transit case. See page 3 for available accessories.

M210 OTDR in Hard Transit Case

Available in SM, MM or QUAD OTDR models. The hard transit case is large enough for optional test, inspection and cleaning accessories. See page 3 for available accessories.

M210 OTDR in Soft Case

Available in SM, MM or QUAD OTDR models. The soft case has a shoulder strap and a large pocket to simplify carrying equipment in the field. The pocket is large enough to accommodate cleaning and test accessories. See page 3 for available accessories.

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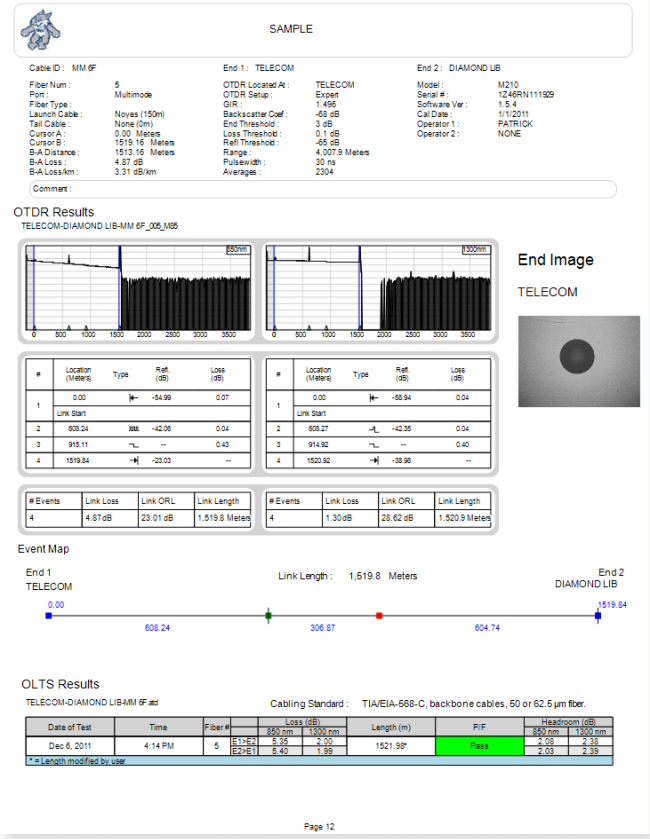
Test Results Manager Software

Using Test Results Manager (TRM), the companion PC software included with all M210 OTDRs, users can create acceptance reports conforming to industry guidelines. TRM allows users to create customized cover pages with their company logos and generate results pages showing dual wavelength traces and event tables, end-face image, Event Map and loss data for each fiber.


SAMPLE

Cable ID : MM 6F
Fiber Num : 5
Port : Multimode
Fiber Type :
Launch Cable : Noyes (150m)
Tail Cable : None (0m)
Cursor A : 0.00 Meters
Cursor B : 1519.16 Meters
B-A Distance : 1513.16 Meters
B-A Loss : 4.87 dB
B-A Loss/km : 3.31 dB/km
Comment :

End 1 : TELECOM
OTDR Located At : TELECOM
OTDR Setup : Expert
GIR : 1.496
Backscatter Coef : -68 dB
End Threshold : 3 dB
Loss Threshold : 0.1 dB
Refl Threshold : -65 dB
Range : 4,007.9 Meters
Pulsewidth : 30 ns
Averages : 2304

End 2 : DIAMOND LIB
Model : M210
Serial # : 1Z46RN111529
Software Ver : 1.5.4
Cal Date : 1/1/2011
Operator 1 : PATRICK
Operator 2 : NONE

OTDR Results
TELECOM-DIAMOND LIB-MM 6F_005_M85

End Image
TELECOM

#	Location (Meters)	Type	Refl. (dB)	Loss (dB)
1	0.00		-54.99	0.07
	Link Start			
2	608.24		-42.06	0.04
3	915.11		--	0.43
4	1519.84		-23.03	--

#	Location (Meters)	Type	Refl. (dB)	Loss (dB)
1	0.00		-58.94	0.04
	Link Start			
2	608.27		-42.35	0.04
3	914.92		--	0.40
4	1520.92		-38.96	--

# Events	Link Loss	Link ORL	Link Length
4	4.87 dB	23.01 dB	1,519.8 Meters

# Events	Link Loss	Link ORL	Link Length
4	1.30 dB	28.62 dB	1,520.9 Meters

Event Map
End 1 TELECOM
Link Length : 1,519.8 Meters
End 2 DIAMOND LIB
0.00
608.24
306.87
604.74
1519.84

OLTS Results
TELECOM-DIAMOND LIB-MM 6F.std
Cabling Standard : TIA/EIA-568-C, backbone cables, 50 or 62.5 µm fiber.

Date of Test	Time	Fiber #		Loss (dB) 850 nm	Loss (dB) 1300 nm	Length (m)	P/F	Headroom (dB) 850 nm	Headroom (dB) 1300 nm
Dec 6, 2011	4:14 PM	5	E1>E2	5.35	2.00	1521.98*	Pass	2.08	2.38
			E2>E1	5.40	1.99			2.03	2.39

* = Length modified by user

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TRM Certification report page

Test, Inspection and Cleaning Accessories


DFS1 FiberScope Inspection Kit

FCP2-00-0900 Basic Cleaning Kit

SC, ST, FC LC/MU D-LC Ultra 2.5 Mini-100 SC, ST, FC, LC/MU
One-Click Cleaner Series

Accessories Ordering Information

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 (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

Note:

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

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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
Dynamic Range (SNR = 1) [b]	26 dB	30 dB
Event Dead Zone [c]	1.5 m	1.5 m
Attenuation Dead Zone [d]	9 m	9 m
Pulse Widths	10, 30, 100, 300 ns, 1 µs	10, 30, 100, 300 ns, 1, 3, 10 µs
Range Settings	250 m to 32 km	250 m to 208 km
Sampling Points	Up to 16,000	Up to 16,000
Minimum Data Point Spacing [e]	0.25 m	0.25 m
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 Resolution	0.01 dB	0.01 dB
Reflectance Accuracy [h]	±2 dB	±2 dB
Real Time Refresh Rate	1 Hz [j]	1 Hz [k]
Units	m, km, ft, kft, mi	
OTDR Modes	Full Auto, Expert, Real-Time	
Trace File Format	Bellcore GR-196 Version 1.1	
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, Filter on.
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.
g. Typical.
h. For a non-saturated event.
j. 16 km Range, Filter off.
k. 32 km Range, Filter off.

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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
VFI (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.

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M210 Models and Included Adapters

WAVELENGTHS (nm)				DYNAMIC RANGE (dB)	OTDR PORT ADAPTERS	OPM PORT ADAPTERS	AFL BASE MODEL NO.
850	1300	1310	1550				
		◆	◆	30/30	SC, FC	SC, 2.5 mm Universal	M210-20
◆	◆			26/26	SC, ST	SC, 2.5 mm Universal	M210-22
◆	◆	◆	◆	26/26/30/30	SC, FC, ST	SC, 2.5 mm Universal	M210-25

All M210 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.
M210 QUAD Certification Kit (Tier 1 and 2): M210 QUAD, OLS4, DFS1* in hard case	M210-25K-01-HC2
M210 QUAD Test and Inspection Kit (Tier 2): M210 QUAD, DFS1* in hard case	M210-25K-01-HC1
M210 OTDR, SM (1310/1550), OPM, VFI in hard case	M210-20U-01-HC
M210 OTDR, MM (850/1300) OPM, VFI in hard case	M210-22U-01-HC
M210 OTDR, QUAD (850/1300/1310/1550), OPM, VFI in hard case	M210-25U-01-HC
M210 OTDR, SM (1310/1550) OPM, VFI in soft case	M210-20U-01
M210 OTDR, MM (850/1300) OPM, VFI in soft case	M210-22U-01
M210 OTDR, QUAD (850/1300/1310/1550), OPM, VFI in soft case	M210-25U-01

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

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: M210-25U-01-HC -> This model number indicates M210 QUAD with the English/European language pack in the optional hard case.

M210 — NN U — LL — 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)

Language (LL)
01 = English, French, German, Italian, Polish, Portuguese, Spanish

Calibration Plans NEW

M210 OTDR AND/OR KIT MODEL	2 YR CAL PLAN AFL NO.	2 YR CAL PLUS PLAN AFL NO.
M210-25K-01-HC1	CAL2-00-M210-25K-HC1	CAL2-01-M210-25K-HC1
M210-25K-01-HC2	CAL2-00-M210-25K-HC2	CAL2-01-M210-25K-HC2
M210-20U-01-HC	CAL2-00-M210-20	CAL2-01-M210-20
M210-22U-01-HC	CAL2-00-M210-22	CAL2-01-M210-22
M210-25U-01-HC	CAL2-00-M210-25	CAL2-01-M210-25
M210-20U-01	CAL2-00-M210-20	CAL2-01-M210-20
M210-22U-01	CAL2-00-M210-22	CAL2-01-M210-22
M210-25U-01	CAL2-00-M210-25	CAL2-01-M210-25

AFL recommends annual calibrations on NOYES Test and Inspection products. Prepaid Cal plans offer two annual calibrations at a discounted price, a convenient calibration expiration email service, express calibration services and access to the NOYES product knowledge base. Cal Plus plans offer the same services as the Cal plans with the addition of a two year extended warranty (three years total coverage).

NOYES International Sales and Service Contact Information

Available at www.AFLglobal.com/NOYES/Contacts