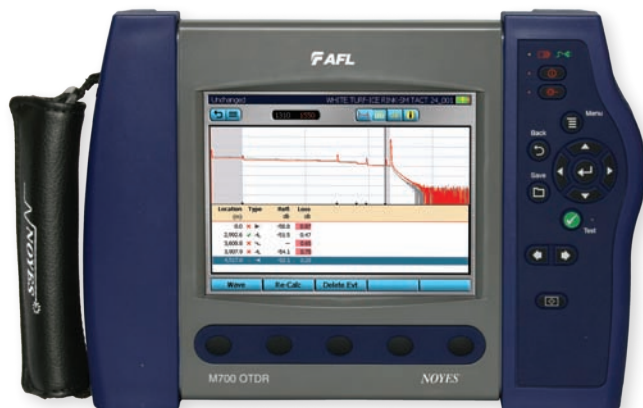# AFL

NOYES®
M700-Series Multifunction OTDR

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

M700 Compact QUAD OTDR

M700 OTDR with DFS1 Digital FiberScope

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 Locator – Red laser for fiber bend and break location

Features

- 40 dB dynamic range single-mode
- 13-hour battery life
- Remote display capable
- Touch and Test™ intuitive user interface
- Crisp bright display for indoor/outdoor viewing
- Integrated OPM standard; integrated VFL standard
- Inspection capable with DFS1 Digital FiberScope
- USB host and function ports
- TRM® (Test Results Manager) reporting software
- Prepaid Calibration plans, Cal and Cal Plus (see page 5)

Languages Supported

• English	• Italian	• Portuguese
• French	• Spanish	• Chinese
• German	• Polish	

The NOYES M700 OTDR from AFL combines ease of use (Touch and Test™) and functionality in a field-rugged, hand-held package. With single-mode dynamic ranges up to 40 dB and multimode dynamic ranges of 26 dB, the M700 OTDR is ideal for testing and troubleshooting LAN/WAN, metro, and long haul networks. Industry leading dead zones of less than 1.0 m enhance users' ability to locate and measure events. Testing at 1310 and 1550 nm is normally sufficient to certify point-to-point fibers and allows the detection of macrobends.

Touch and Test simplifies the M700 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 M700 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. With a full set of testing tools including OTDR, OPM, VFL and end-face inspection capability the M700 is a complete solution for fiber network owners and installers.

FOLS
FIBER OPTICS LAN SECTION

Bicsi®
CORPORATE MEMBER

FTTH
COUNCIL

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

NOYES®
M700-Series OTDR

Specifications [a]

OTDR	SINGLE-MODE OTDR		LONG RANGE QUAD OTDR		QUAD OTDR	
	DUAL-WAVE	TRIPLE-WAVE	MULTIMODE	SINGLE-MODE	MULTIMODE	SINGLE-MODE
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	1310/1550/1625 nm	850/1300 nm	1310/1550 nm	850/1300 nm	1310/1550 nm
Wavelength Tolerance	±25/25 nm	±25/25/10 nm	±25/25 nm	±25/25 nm	±20/30 nm	±20/30 nm
Dynamic Range (SNR = 1)	40/38 dB	40/38/38 dB	24/24 dB [b]	39/37 dB	22/22 dB [b]	26/26 dB
Event Dead Zone	0.8 m [c]	0.8 m [c]	0.9 m [c]	0.9 m [c]	1.5 m [e]	1.5 m [e]
Attenuation Dead Zone	4.5 m [d]	4.5 m [d]	4.5 m [d]	4.5 m [d]	9 m [f]	9 m [f]
Pulse Widths	5, 10, 30, 100, 300 ns; 1, 3, 10, 20 µs		5,10, 30, 100, 300 ns; 1 µs	5,10, 30, 100, 300 ns; 1, 3, 10, 20 µs	10, 30, 100, 300 ns; 1 µs	10, 30, 100, 300 ns; 1, 3, 10 µs
Range Settings	250 m to 256 km		250 m to 64 km	250 m to 256 km	250 m to 64 km	250 m to 208 km
Sampling Points	Max. 64,000 points		Max. 64,000 points		Max. 16,000 points	
Minimum Data Point Spacing	0.125 m		0.125 m		0.25 m	
Group Index of Refraction (GIR)	1.4000 to 1.6000		1.4000 to 1.6000		1.4000 to 1.6000	
Distance Uncertainty (m) [g]	±(1 + 0.0005 % x distance + data point spacing)				±(1 + 0.005 % x distance + data point spacing)	
Linearity [h]	±0.05 dB/dB		±0.05 dB/dB		±0.05 dB/dB	
Loss Threshold	0.05 dB		0.05 dB		0.05 dB	
Loss Resolution	0.01 dB		0.01 dB		0.01 dB	
Reflectance Accuracy [j]	±2 dB		±2 dB		±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 25°C unless otherwise specified.

b. 62.5 µm fiber.

c. Typical distance between the two points 1.5 dB down each side of an event with reflection <-45 dB for SM and <-40 dB (unsaturated) for MM using a 5 ns pulse width.

d. Typical distance from event location to point where trace is within 0.5 dB of backscatter caused by an event with reflection <-45 dB for SM and <-40 dB (unsaturated) for MM using a 5 ns pulse width.

e. Typical distance between the two points 1.5 dB down each side of an event with reflection <-45 dB for SM and <-40 dB (unsaturated) for MM using a 10 ns pulse width.

f. Typical distance from event location to point where trace is within 0.5 dB of backscatter caused by an event with reflection <-45 dB for SM and <-40 dB (unsaturated) for MM using a 10 ns pulse width.

g. Does not include GIR uncertainty.

h. Typical.

j. For a non-saturated event.

NOYES®
M700-Series OTDR

Specifications [a]

POWER METER	SINGLE-MODE OTDR		LONG RANGE QUAD OTDR		QUAD OTDR	
	DUAL-WAVE	TRIPLE-WAVE	MULTIMODE	SINGLE-MODE	MULTIMODE	SINGLE-MODE
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)		850, 1300, 1310, 1490, 1550, 1625 nm (displays up to 3 simultaneously)	
Detector Type	Filtered InGaAs detector		InGaAs 2 mm		InGaAs 2 mm	
Measurement Range (dBm)	+26 to -50 dBm		+6 to -70 dBm		+6 to -70 dBm	
Accuracy [b]	±0.25		±0.25		±0.25	
Measurement Units	dB, dBm, mW		dB, dBm, mW		dB, dBm, mW	
Wavelength ID [c]	Yes		Yes		Yes	
Set Reference	Yes		Yes		Yes	
Data Storage	Yes		Yes		Yes	
Tone Detection	270 Hz, 330 Hz, 1 kHz, 2 kHz		270 Hz, 330 Hz, 1 kHz, 2 kHz		270 Hz, 330 Hz, 1 kHz, 2 kHz	

VISUAL FAULT LOCATOR	SINGLE-MODE OTDR	LONG RANGE QUAD OTDR	QUAD OTDR
Emitter Type	Laser		
Safety Class	Class II FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03		
Wavelength	650 nm		
Output Power (nominal)	0.8 mW		

GENERAL	SINGLE-MODE OTDR		LONG RANGE QUAD OTDR		QUAD OTDR	
Display	16.51 cm (6.5 in), color, transflective (indoor/outdoor) touch screen display					
Anti-Reflective (AR) Coating	Yes	Yes	Yes	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 25 °C and -10 dBm per N.I.S.T. standards.

c. Automatic wavelength identification and switching when used with NOYES Wave ID Series Light Sources.

d. Typical, depending on display brightness.

e. Typical, from fully discharged to fully charged state, unit may be operating.

f. External battery charger available.

NOYES®
M700-Series OTDR

Ordering Information

The M700 OTDR works with the DFS1 Digital FiberScope (see page 26; the DFS1 includes software update for the M700 OTDR).
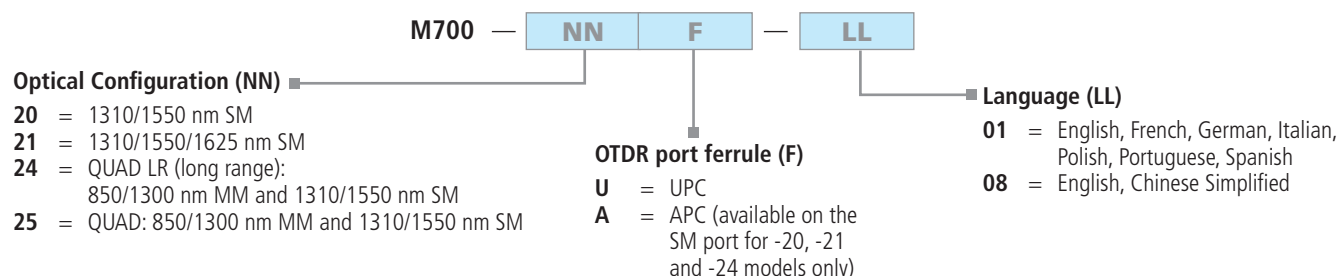
The M700 series are full-featured OTDRs with an integrated Visual Fault Locator (VFL, 650 nm), Optical Power Meter (OPM), and a large transflective touch screen display suitable for both indoor and outdoor operation. Each M700 model includes the M700 OTDR, USB Flash drive, PC software for OTDR trace analysis and OPM loss reporting, AC adapter (specify power cord, page 34 - Table 1), switchable test port adapters, and cleaning accessories in a soft carry case (see table below).

OTDR MODEL	CARRY CASE	CLEANING PRODUCTS	OTDR PORT ADAPTERS	OPM PORT ADAPTERS	VFL PORT ADAPTERS
M700-20, M700-21	Soft case	One-Click Cleaner SC/ST/FC, 2.5 mm	SC, FC, LC	SC, 2.5 mm, 1.25 mm	2.5 mm 1.25 mm
M700-24, M700-25	Soft case	One-Click Cleaner SC/ST/FC, 2.5 mm	SC, ST, LC	SC, 2.5 mm, 1.25 mm	2.5 mm 1.25 mm

Model Configurator

When placing an order, select options as follows: Optical Configuration (NN), OTDR port ferrule (F), and Language (LL).

Example: The model number M700 — 25U — 01 indicates M700 QUAD with UPC OTDR port ferrule and English/ European language option.

M700 — **NN** **F** — **LL**

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

OTDR port ferrule (F)
U = UPC
A = APC (available on the SM port for -20, -21 and -24 models only)

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

Specify Language when ordering an M700 OTDR to indicate language preference of OTDR Quick Reference Guide.
Specify power cord type (country) when ordering an M700 OTDR. One power cord is included with each AC adapter at no charge. Additional power cords may be purchased separately.

DESCRIPTION	COUNTRY	AFL NO.
3-conductor, IEC320, 115V, Type K	USA	6000-00-0001MR
3-conductor, IEC320, 250V, Type B	Europe	6000-00-0012MR
3-conductor, IEC320, 250V, Type D	UK	6000-00-0015MR
3-conductor, IEC320, 250V, Type C	Australia, China	6000-00-0016MR
3-conductor, IEC320, 250V, Type E	Denmark	6000-00-0017MR
2-conductor, IEC320, 125V, Type M	Japan	6000-00-0018MR
3-conductor, IEC320, 250V, Type L	Switzerland	6000-00-0019MR
3-conductor, IEC320, 250V, Type I	Italy	6000-00-0020MR
3-conductor, IEC320, 250V, Type H	Israel	6000-00-0021MR
3-conductor, IEC320, 250V, Type G	India	6000-00-0022MR

NOYES®
M700-Series OTDR Accessories

Preconfigured Accessories Kit M700 - H1

The M700 - H1 is a preconfigured accessories kit (M700 OTDR is not included).

DESCRIPTION	AFL NO.
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

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

Accessories

DESCRIPTION	AFL NO.
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 [a]
Fiber Ring, standard, 1 fiber, Laser Optimized, 50 µm multimode, 150 m	FR1-L5-150-x1-x2 [a]
Fiber Ring, standard, 1 fiber, 62.5/125 µm multimode, 150 m	FR1-M6-150-x1-x2 [a]
Fiber Ring, standard, 1 fiber, single-mode, 150 m	FR1-SM-150-y1-y2 [a]
Wet Cleaning Kit (shown) for SC/FC/ST/LC connectors	8500-20-0900
Dry Cleaning Kit	8500-20-0901
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
Zippered Jumper Carry Case	1400-01-0086PZ

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

Calibration Plans

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).

MODEL	2 YR CAL PLAN	2 YR CAL PLUS PLAN
	AFL NO.	AFL NO.
M700-20	CAL2-00-M700-20	CAL2-01-M700-20
M700-21	CAL2-00-M700-21	CAL2-01-M700-21
M700-24	CAL2-00-M700-24	CAL2-01-M700-24
M700-25	CAL2-00-M700-25	CAL2-01-M700-25

NOYES International Sales and Service Contact Information

Available at www.AFLglobal.com/NOYES/Contacts