



OFL 250 Handheld OTDR

The Noyes OFL 250 from AFL Telecommunications is a single-mode OTDR with an integrated Optical Power Meter (OPM), Laser Source (OLS), and Visual Fault Locator (VFL) in a handheld package weighing only 0.8 kg (1.7 lb). With short dead zone and mid-range dynamic range performance, the OFL 250 is ideal for testing optical fibers in service provider metro areas and FTTx networks.

The OFL 250 provides automatic and manual setup, precision event analysis, multiple-wavelength testing, a 12-hour battery life, internal data storage, and USB connectivity. OTDR and OPM test ports are equipped with tool-free adapters, which can be changed in seconds.

Results are saved as industry standard .SOR files, which can be transferred to a PC for viewing, printing, and analyzing with the supplied Windows® compatible software.

Features

- Handheld, 0.8 kg (1.7 lb)
- Multiple-wavelength single-mode OTDR
- 1.5 m (typ.) event dead zone
- 26 dB dynamic range
- Integrated OPM, OLS, and VFL (650 nm)
- Tool-free, switchable adapters for OTDR & OPM ports (FC, SC, ST, LC, E2000 are available)
- Bellcore (GR-196) .SOR file format
- Rechargeable (> 12 hours) Li-Ion battery or AC power
- 3.5-inch, indoor/outdoor LCD
- Windows® compatible software to view, print, and archive test record
- Mini USB Port (connect to PC with cable)

Ordering Information

MODEL NUMBER	DESCRIPTION	WAVELENGTHS
OFL2-26-0910PR	OFL 250 Single-mode OTDR	1310/1550 nm
OFL2-26-0924PR	OFL 250 Single-mode OTDR	1310/1550/1625 nm

NOTE: All OFL 250 models come with: a carry case, SC and FC adapters for the OTDR/OLS port, 2.5 mm universal adapters for the OPM and VFL ports, USB cable (connects with normal (Type A) USB port on your PC), AC power adapter, country-specific power cord, and a user guide.

OFL 250 Handheld OTDR

Specifications

OTDR SPECIFICATIONS	
Emitter Type	Laser
Safety Class	Class I FDA 21 CFR 1040.0 & 1040.11
Fiber Type	Single-mode
Center Wavelengths	1310 / 1550/ 1625 nm
Wavelength Tolerance	$\pm 20 / \pm 20 / \pm 10$ nm
Dynamic Range (SNR=1)	26 / 26/ 26 dB
Event Dead Zone ¹	1.5 m
Attenuation Dead Zone @ 5ns ²	Typ.6.0 m, max. 6.5 m
Pulse Widths	5, 10, 30, 100, 300 ns, 1, 3, 10 μ s
Range Settings	250 m to 256 km
Data points	Up to 16,000
Data Point Spacing	12.5 cm (range ≤ 4 km), Range/16000 (range > 4 km)
Group Index of Refraction (GIR)	1.4000 to 1.6000
Distance Uncertainty (m)	$\pm (1 + 0.005\% \times \text{distance} + \text{data point spacing})$
Trace File Format	Belcore GR-196 V.1.1
Trace File Storage Medium	Internal memory (>1000 traces)
Data Transfer to PC	USB cable
OTDR Modes	Full Auto, End Locate, Expert, Live

1. Typical distance between the two points 1.5 dB down each side of a reflective spike caused by a -45 dB event using 10 ns pulse width.

2. Typical distance from event location to point where trace is within 0.5 dB of backscatter.

OPTICAL POWER METER SPECIFICATIONS	
Calibrated Wavelengths	1310, 1490, 1550, 1625 nm
Detector Type	InGaAs
Measurement range	+23 to -45 dBm
Tone detect range	+3 to -35 dBm
Wavelength ID range	+3 to -35 dBm
Accuracy	± 0.25 dB
Resolution	0.01 dB
Measurement units	dB, dBm, μ W, nW

OPTICAL LIGHT SOURCE SPECIFICATIONS	
Emitter Type	Laser, Class I (FDA 21 CFR 1040.10 and 1040.11, and IEC 60825-1)
Fiber Type	Single-mode
Center Wavelengths	1310 / 1550 / 1625 nm
Wavelength Tolerance	$\pm 20 / \pm 20 / \pm 10$ nm
Spectral Width (FWHM)	2 nm (max)
Internal Modulation	1 kHz, 2 kHz
Wavelength ID	Compatible with Noyes Optical Power Meters & Light Sources
Output Power Stability	$< \pm 0.25$ dB after 15 min
Output Power	-3 dBm

VISUAL FAULT LOCATOR SPECIFICATIONS	
Emitter type	Laser
Safety Class	Class II (FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1:1994, IEC 825-1:1993)
Wavelength	650 nm
Output Power (nominal)	0.8 mW into SMF-28

GENERAL	
Size (in boot)	19 x 11.2 x 4.7 cm (7.5 x 4.4 x 1.9 in)
Weight	0.8 kg (1.7 lb)
Operational Temperature	-10 to +50°C, 0 to 95% RH (non-condensing)
Storage Temperature	-20 to +60°C, 0 to 95% RH (non-condensing)
Power	Rechargeable Lilon or AC adapter
Battery life (backlight ON in OTDR mode)	> 12 hours
Display	LCD, 320 x 240, 3.5 inch (89 mm) , color, transfective
OTDR and OPM ports	Switchable. See website or contact AFL for available adapter types.



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Features

- Rugged, handheld and light weight
- Standard OTDR, PON OTDR, live fiber OTDR, and FTTx PON meter all from the same test port
- 0.8 m event dead zone, 3.5 m attenuation dead zone
- 34 dB dynamic range
- Fast Real Time OTDR mode
- Internal storage (>1000 OTDR traces in standard .SOR format)
- High-contrast display is clear and bright in any lighting condition, including direct sunlight
- Transfer test results to a PC via USB
- 10-hour operation, fast charge, Li-Ion battery
- Short power-on time (< 5 sec)
- Easy to use and learn



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OFL280 FlexTester

Multifunction OTDR and Loss Test Set

The Noyes OFL280 FlexTester offers an unmatched combination of fiber optic 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.

For many users the two-wavelength OFL280-100 will provide the best balance of functionality and value. Testing at 1310 and 1550 nm is normally sufficient to certify point-to-point or FTTx PON fibers and allows the detection of macro bends. The three-wavelength OFL280-101 and OFL280-102 models add 1625 nm or 1490 nm respectively. Testing at 1625 nm allows testing of the L band. Testing at 1490 nm is required by some network operators to certify FTTx PONs. The filtered, three-wavelength OFL280-103 can certify dark fibers at 1310/1550 nm, fault-locate live FTTx fibers at 1625 nm, and measure FTTx power levels at 1490 and 1550 nm, all from a single test port.

The OFL280 FlexTester user interface provides operating modes suitable for a wide range of users and features a top-down menu structure that is both easy to learn and a pleasure to use.

OTDR test results may be saved as industry standard SOR files, which can be transferred to a PC for viewing, printing, and analysis using supplied Windows® compatible software.

Applications

- **PON OTDR** - FTTx PON construction certification
- **Live Fiber OTDR** - FTTx service turn-up and troubleshooting
- **Full Auto OTDR** - Normal (point-to point) fiber cable construction testing and fault location
- **Expert OTDR** - Full function OTDR for experienced users
- **Real Time OTDR** - Fault location, splice verification, first connector checker
- **End Locator** - Quickly locate breaks or measure fiber length
- **Optical Power Meter** - Measure optical power or fiber loss
- **Laser Source** - Measure end-to-end loss or trace fibers using the tone feature and a Noyes OFI
- **Visual Fault Locator** - Red laser for fiber bend/break location and tracing

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OFL280 FlexTester

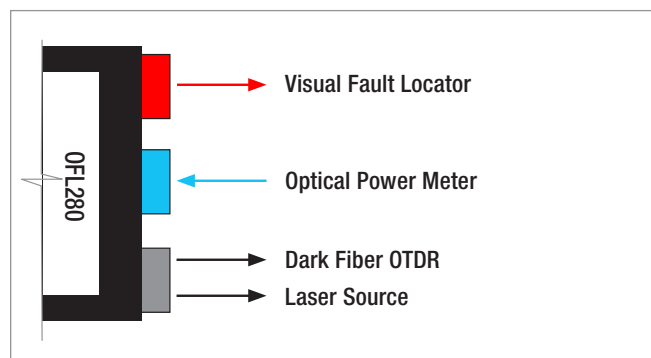
OFL280 Features and Applications by Model

FEATURES	OFL280 MODELS			
	-100	-101	-102	-103
Compatible with all Noyes optical power meters and laser sources (OPM/OLS), including tone and wave ID features	◆	◆	◆	◆
Compatible with Noyes optical fiber identifiers (OFI)	◆	◆	◆	◆
Integrated hi-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 – OTDR, PON OTDR		◆		◆
1625 nm – FTTx live fiber OTDR				◆
1490/1550 nm – FTTx PON Meter				◆

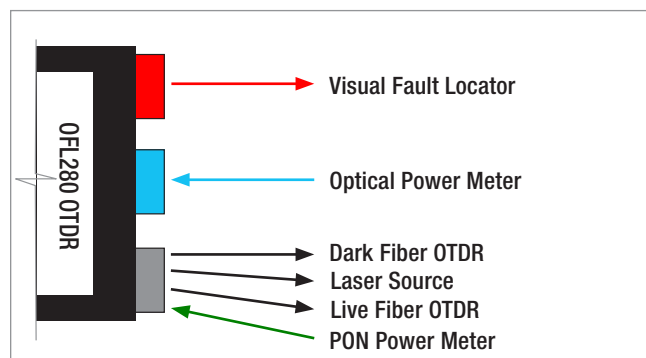
FIBER TESTING APPLICATIONS	OFL280 MODELS			
	-100	-101	-102	-103
Point-to-point cable construction and troubleshooting Fiber loss, splice/connection loss and reflectance, fault-location	◆	◆	◆	◆
FTTx PON construction Fiber loss, splitter loss and reflectance, splice or connection loss and reflectance, fault-location	◆	◆	◆ ¹	◆
FTTx customer fiber troubleshooting - dark fibers (hard faults) Locate cable cuts, open splices, and bad connections	◆	◆	◆	◆
FTTx customer fiber troubleshooting - live fibers (marginal faults) Locate marginal faults such as macro bends, poor splices, high-loss connections, high loss fiber sections due to water intrusion (requires live fiber OTDR)				◆
FTTx service turn-up (commissioning) At the ONT (customer) location, verify network power levels, and if needed, locate faults on the drop cable or customer fiber				◆

1. Adds ability to perform OTDR and loss tests at 1490 nm. However, testing at 1310 and 1550 nm is generally all that is needed and what is recommended to test or fault-locate FTTx PONs during construction, in other words while they are still dark.

OFL280-100, -101, and -102 models



OFL280-103 model



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OFL280 FlexTester

Specifications (All specifications valid at 25°C unless otherwise specified)

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 ¹	0.8 m
Attenuation Dead Zone ²	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 1.6000
Distance Uncertainty (m)	± (1 + 0.005% x distance + data point spacing)
Trace File Format	Bellcore GR-196 V.1.1
Trace File Storage Medium	Internal memory (>1000 traces)
Data Transfer to PC	USB cable
PON OTDR Modes	FTTx - PON Construction, FTTx - In Service
Standard OTDR Modes	Full Auto, Expert, Real Time

1. 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.

2. 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.

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 ¹	± 0.5 dB
Resolution	0.01 dB
Measurement Units	dBm or watts

1. At calibration wavelengths and power levels of approximately -5 dBm for 1550 nm and -10 dBm for 1490 nm.

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 ¹	± 0.25 dB
Resolution	0.01 dB
Measurement Units	dB, dBm or Watts

1. At calibration wavelengths and power level of approximately -10 dBm.

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 (nm)	1310, 1490, 1550
Wavelength Tolerance	± 20 nm
Spectral Width (FWHM)	2 nm (maximum)
Internal Modulation	1 kHz, 2 kHz, CW
Wavelength ID (one, two, or three wavelengths)	Compatible with Noyes Optical Power Meters and Light Sources
Output Power Stability	0.25 dB
Output Power	0 dBm

VISUAL FAULT LOCATOR	
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 into single-mode fiber

GENERAL	
Size (in boot)	19 x 11.2 x 4.7 cm (7.5 x 4.4 x 1.9 in)
Weight	0.8 kg (1.7 lb)
Operational Temperature	-10 to +50°C, 0 to 95% RH (non-condensing)
Storage Temperature	-20 to +60°C, 0 to 95% RH (non-condensing)
Power	Rechargeable Li-Ion or AC adapter
Battery Life	10 hours, backlight ON, continuous operation
Display	LCD, 320 x 240, 3.5 inch (89 mm), color, high-contrast transfective with backlight and AR coating



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OFL280 FlexTester

Ordering Information

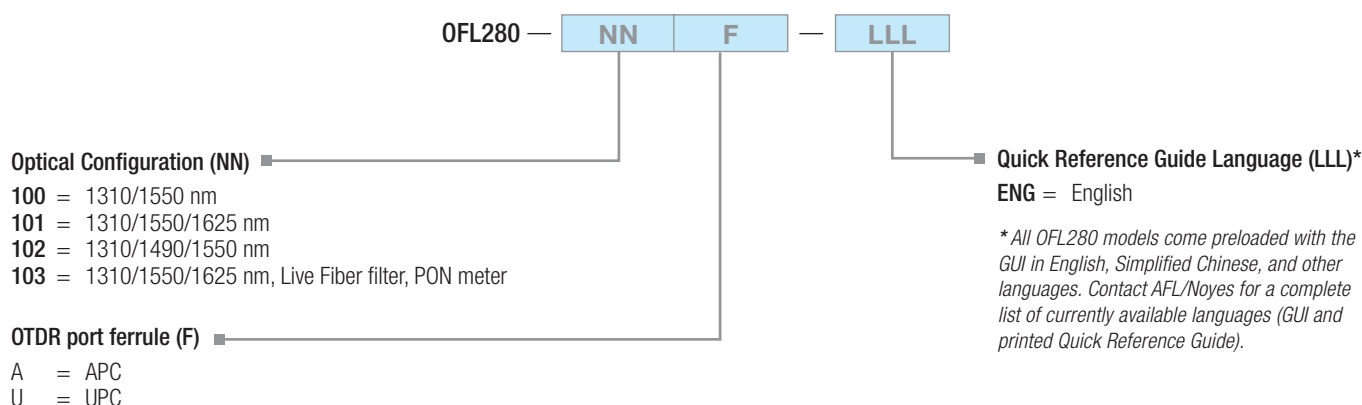
MODEL	WAVELENGTHS AND ADDED FEATURES	NOTES
OFL280-100	1310, 1550 nm	Dual-wavelength OTDR/Loss test set for both point-to-point and PON applications
OFL280-101	1310, 1550, 1625 nm	Adds ability to test at 1625 nm (L band)
OFL280-102	1310, 1490, 1550 nm	Adds ability to test at 1490 nm (FTTx downstream data)
OFL280-103	1310, 1550, 1625 nm, Live Fiber filter, PON meter	Adds ability to test (dark fibers) at 1625 nm (L band), filter to test FTTx live fibers at 1625 nm, and PON meter to measure FTTx downstream power at 1490 and 1550 nm

Note: All OFL280 FlexTester models come with a carry case, (1) SC and (1) FC adapter for the OTDR/OLS port, (1) 2.5 mm universal adapter for the OPM port, (1) 2.5 mm universal adapter for the VFL port, One-Click Cleaner SC/ST/FC (2.5mm), USB cable (connects with Type A USB port on your PC), and AC power adapter with a country-specific power cord.

When placing an order, select options as follows:

Optical Configuration (NN), OTDR port ferrule type (F), and Language of the provided Quick Reference Guide (LLL)*.

Example: OFL280-102U-ENG indicates a three-wavelength (1310/1490/1550 nm) OFL280 with UPC OTDR port ferrule and Quick Reference Guide printed in English.



Available Accessories

Fiber Rings (use as launch or receive/tail fibers)

MODEL	CONFIGURATION	FIBER TYPE	FIBER LENGTH
FR1-SM-150-y1-y2	Standard, one fiber	Single-mode	150 m (492 ft)
FR1-SM-500-y1-y2	Standard, one fiber	Single-mode	500 m (1640 ft)
FR1-SM-1000-y1-y2	Standard, one fiber	Single-mode	1000 m (3280 ft)

y1, y2 — connectors for single-mode cables, specify type as follows:
ST, SC, ASC (angled SC), FC, AFC (angled FC), LC

Other connector types, fiber types, and fiber lengths will be quoted upon request.

Test Port Adapters

MODEL	DESCRIPTION
2900-50-0002MR	FC adapter for OTDR/OLS port
2900-50-0003MR	SC adapter for OTDR/OLS port
2900-50-0004MR	ST adapter for OTDR/OLS port
2900-50-0006MR	LC adapter for OTDR/OLS port
2900-52-0001MR	FC adapter for OPM port
2900-52-0002MR	SC adapter for OPM port
2900-52-0003MR	ST adapter for OPM port
2900-52-0004MR	LC adapter for OPM port
2900-52-0005MR	2.5mm Universal adapter for OPM port
2900-52-0006MR	1.25mm Universal adapter for OPM port
2900-53-0001MR	2.5mm Universal adapter for VFL port
2900-53-0002MR	1.25mm Universal adapter for VFL port
8800-00-0072PR	Universal flip-top dust cap for UCI outputs



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OFL250-50 Handheld, Fault-Locating OTDR



The Noyes OFL250-50 is a 1550 nm single-mode OTDR with an integrated optical power meter (OPM), 1550 nm laser source (OLS), and visual fault locator (VFL) in a handheld package weighing only 0.8 kg (1.7 lb). With short dead zone and mid-range dynamic range performance, the OFL250-50 is ideal for troubleshooting dark single-mode fibers in local area, metro area, and FTTx networks.

The OFL250-50 provides automatic and manual setup, precision event analysis, 12-hour battery life, internal data storage, and USB connectivity. OTDR and OPM test ports are equipped with tool-free adapters, which can be changed in seconds.

OTDR test results are saved as industry standard .SOR files, which can be transferred to a PC for viewing, printing, and analyzing with the supplied Windows® compatible software.

Applications

- Locate cable cuts, open or high-loss splices, fiber bends, and high-loss/high-reflectance connections
- Measure optical power (OPM port)
- Short-range fault-location (VFL port)
- Trace fibers and measure end-to-end loss at 1550 nm (working with a Noyes optical power meter or light source)
- Identify fibers (working with a Noyes optical fiber identifier)

Features

- Rugged, handheld and light weight
- 1.5 m event dead zone
- 26 dB dynamic range
- Integrated OPM, OLS, VFL
- Tool-free, switchable adapters for OTDR and OPM ports
- Internal storage (>1000 OTDR traces in standard .SOR format)
- High-contrast display is clear and bright in any lighting condition, including direct sunlight
- Transfer test results to a PC via USB
- Rechargeable 12-hour Li-Ion battery or AC power
- Windows® compatible software to view, print, and archive test records



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Ordering Information

MODEL NUMBER	DESCRIPTION
OFL250-50U-ENG	1550 nm, single-mode OTDR

Note: The OFL250-50 OTDR comes with a carry case, (1) SC and (1) FC adapter for the OTDR/OLS port, 2.5 mm adapter for the OPM and VFL ports, One-Click Cleaner SC/FC/ST (2.5 mm), USB cable (connects with Type A USB port on your PC), and AC power adapter with country-specific power cord.

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OFL250-50 Handheld, Fault-Locating OTDR

Specifications

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
Center Wavelength	1550 nm
Wavelength Tolerance	± 20 nm
Dynamic Range (SNR=1)	26 dB
Event Dead Zone ¹	1.5 m
Attenuation Dead Zone ²	7 m
Pulse Widths	5, 10, 30, 100, 300 ns, 1, 3, 10 µs
Range Settings	250 m to 256 km
Data Points	Up to 16,000
Data Point Spacing	12.5 cm (range ≤ 4 km), Range/16,000 (range > 4 km)
Group Index of Refraction (GIR)	1.4000 to 1.6000
Distance Uncertainty (m)	± (1 + 0.005% x distance + data point spacing)
Trace File Format	Belcore GR-196 V.1.1
Trace File Storage Medium	Internal memory (>1000 traces)
Data Transfer to PC	USB cable
OTDR Modes	Full Auto, End Locate, Expert, Live

1. 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.

2. Typical distance from event location to point where trace is within 0.5 dB of backscatter at 5 ns pulse width.

OPTICAL POWER METER	
Calibrated Wavelengths	1310, 1490, 1550, 1625 nm
Detector Type	Filtered InGaAs
Measurement Range	+23 to -45 dBm
Tone Detect Range	+3 to -35 dBm
Wavelength ID range	+3 to -35 dBm
Accuracy	± 0.25 dB
Resolution	0.01 dB
Measurement Units	dB, dBm, µW, nW

OPTICAL LIGHT SOURCE	
Emitter Type	Class I FDA 21 CFR 1040.10 and 1040.11, IEC 60825-1: 2007-03
Fiber Type	Single-mode
Center Wavelength	1550 nm
Wavelength Tolerance	± 20 nm
Spectral Width (FWHM)	5 nm (max)
Internal Modulation	1 kHz, 2 kHz
Output Power Stability	< ± 0.25 dB after 15 min
Output Power (nominal)	-3 dBm

VISUAL FAULT LOCATOR	
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 into single-mode fiber

GENERAL	
Size (in boot)	19 x 11.2 x 4.7 cm (7.5 x 4.4 x 1.9 in)
Weight	0.8 kg (1.7 lb)
Operational Temperature	-10 to +50°C, 0 to 95% RH (non-condensing)
Storage Temperature	-20 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-performance transfective with backlight and AR coating



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