



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

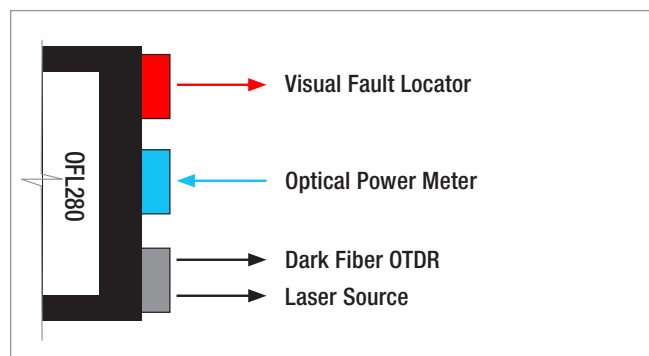
OFL280 Features and Applications by Model

| 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 | | | | ◆ |

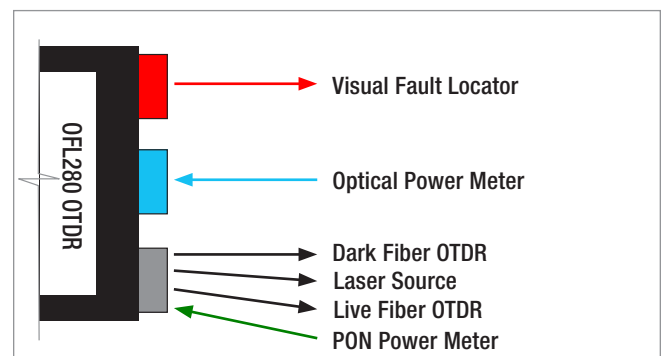
| FIBER TESTING APPLICATIONS | OFL280 MODELS | | | |
|---|---------------|------|----------------|------|
| | -100 | -101 | -102 | -103 |
| Point-to-point cable construction and troubleshooting Fiber loss, splice/connection loss and reflectance, fault-location | ◆ | ◆ | ◆ | ◆ |
| FTTx PON construction 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 | $\pm 20/\pm 20/\pm 20/\pm 10$ 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 μ s |
| 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) | $\pm (1 + 0.005\% \times \text{distance} + \text{data point spacing})$ |
| 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

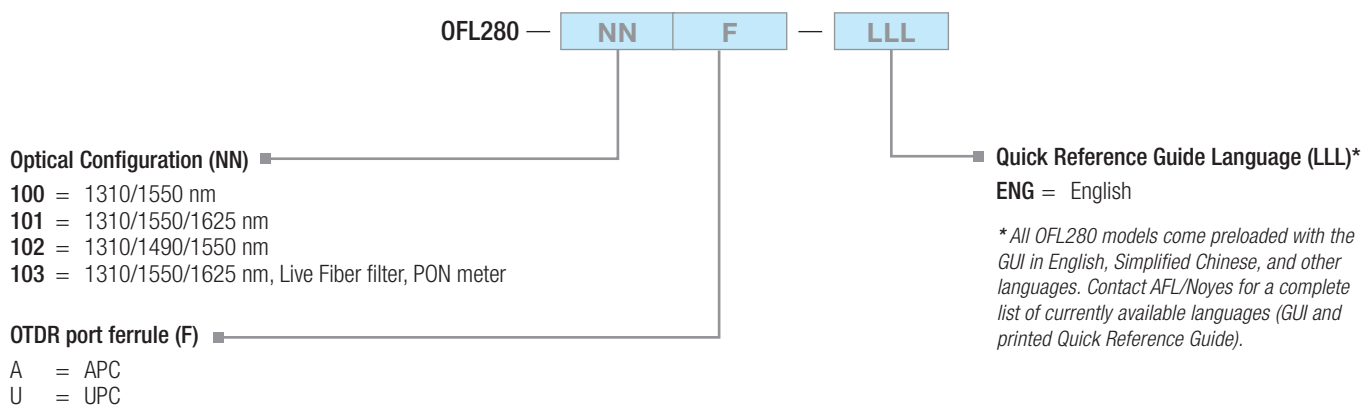
| MODEL | WAVELENGTHS AND ADDED FEATURES | NOTES |
|------------|---|--|
| OFL280-100 | 1310, 1550 nm | Dual-wavelength OTDR/Loss test set for both point-to-point and PON applications |
| OFL280-101 | 1310, 1550, 1625 nm | Adds ability to test at 1625 nm (L band) |
| OFL280-102 | 1310, 1490, 1550 nm | 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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