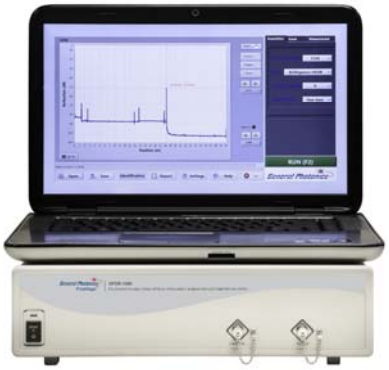
# Polarization Analyzing OFDR -PolaMagic™



The OFDR-1000A is a polarization analyzing optical frequency domain reflectometer (PA-OFDR), a breakthrough instrument capable of analyzing polarization evolution along an optical fiber. The patent-pending technology obtains space-resolved reflection as well as birefringence or polarization mode dispersion (PMD) information for optical paths consisting of optical fibers, micro-optical components, and waveguides.

Users can measure and record stress levels as well as reflected energy and do predictive analysis of reliability. The data gathered by the OFDR-1000A is independent of temperature; therefore, data gathered over time does not require temperature normalization.



OFDR-1000A

The OFDR-1000A can be used with various tunable lasers, such as those from Keysight, Newport, Yenista, or Santec. This flexibility offers the user the opportunity to make full use of his laser resources and reduce the cost of making OFDR measurements.

Making Light Work Lighter
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## Preliminary Specifications:

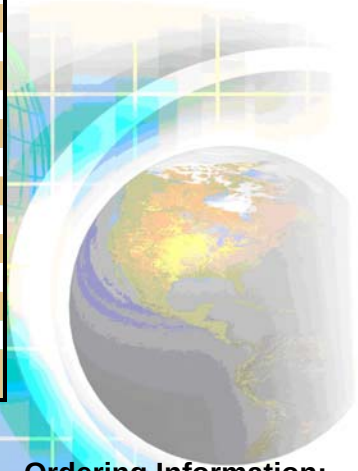
| | |
|---|---|
| Operation Wavelengths[1] | C/ L band |
| Maximum DUT Distance (m) | 100 m |
| Spatial Resolution (two-point)[2] (μm) | 20 μm |
| Distance Uncertainty (m) | ± (0.0005 +0.01% × distance) |
| Dead Zone (μm) | See spatial resolution |
| Return Loss Dynamic Range | 70 dB (for laser input power >5dBm) |
| Return Loss Measurement Range[2] | 0 to – 120 dB |
| Return Loss Sensitivity[4,5] (dB) | −130 dB |
| Return Loss Resolution[5] (dB) | ±0.05 dB |
| Return Loss Uncertainty[5] (dB) | ±0.2 dB |
| Birefringence Spatial Resolution | 2 mm |
| Birefringence Resolution | $5x10^{-7}$ |
| Birefringence Sensitivity | $5x10^{-7}$ |
| Maximum Birefringence | $2x10^{-4}$ |
| Insertion Loss Dynamic Range[4,5,6] (dB) | 18 dB |
| Insertion Loss Resolution[5] (dB) | ±0.05 dB |
| Insertion Loss Uncertainty[5] (dB) | ±0.1 dB |
| Wavelength Range[2,3] | Refer to user laser specs[3] |
| Wavelength Uncertainty (pm) | Refer to user laser specs[3] |
| Center Wavelength[3] (nm) | Refer to user laser specs[3] |
| Optical Power[3] (mW) | Refer to user laser specs[3] |
| Operating Temperature | 10 to 40 °C |
| Storage Temperature | −20 to 60 °C |
| Power Supply | 100-240VAC, 50-60 Hz |
| Communications Interface | USB 2.0 |
| Display | Notebook computer with USB connection |
| Connector Type | FC/APC standard |
| Dimensions | 2U, ¾ 19" rack width<br>3.5" (H) x 14" (W) x 14" (D) |

## Applications:

- Fiber optic component quality inspection
- Fiber optic module/system QA
- Distributed stress sensing
- Structural health monitoring
- Fiber optic component troubleshooting

## Unique Features:

- High spatial resolution for reflection: 20 μm
- High spatial resolution for stress: 2 mm
- −125 dB measurement sensitivity



## Ordering Information:

OFDR – 1000A– XX

Connector Type:
FC/APC standard
FC/PC available

Notes

1. Typical. The user's tunable laser must be a single mode tunable laser without any mode hopping, with a wavelength scanning speed of 10 nm/s.
2. Typical value for wavelength tuning range $\Delta\lambda$ >80 nm for a maximum measurement distance of 5 meters. Otherwise, spatial resolution is $\frac{10\times 80}{\Delta\lambda}$ μm.
3. Refer to technical specifications of user's laser. The laser wavelength must be in the C or L bands.
4. This is a typical range for a two-way value between a strongest reflection greater than −30dB and the noise floor, averaged over ten (10) measurements. Without averaging, the range is reduced by 5 dB.
5. Measured with 0.5 m integrated width.
6. Two-way loss before backscatter reaches the noise floor and insertion loss (IL) measurements are no longer possible.
7. This is for a single scan measurement for a laser wavelength tuning speed of 20 nm/s.

## Typical Performance Data:

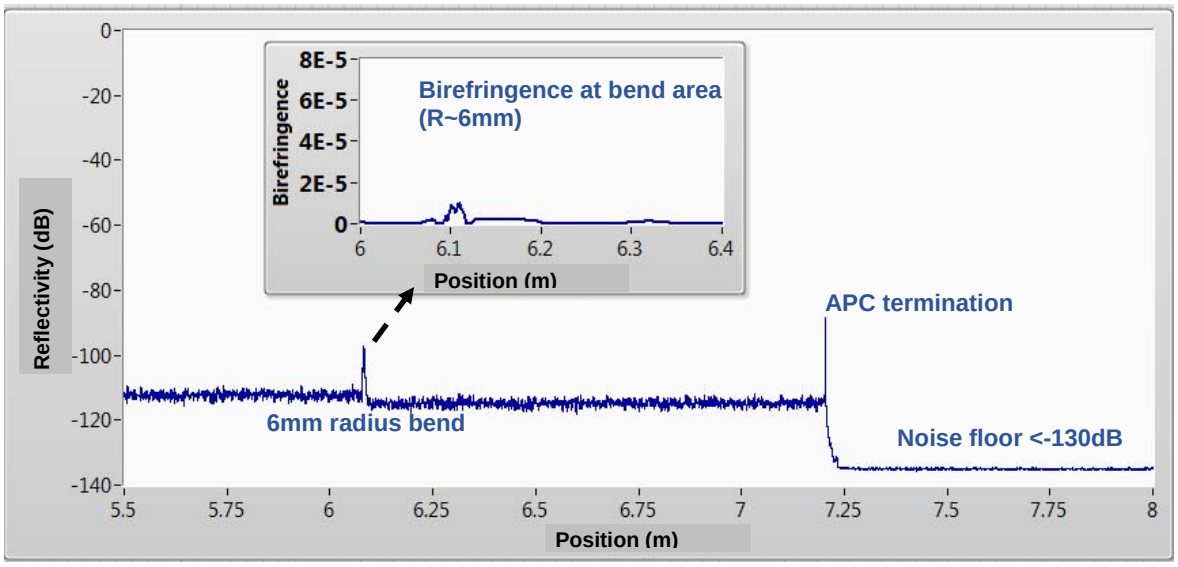



Figure 1 SMF-28 fiber test results

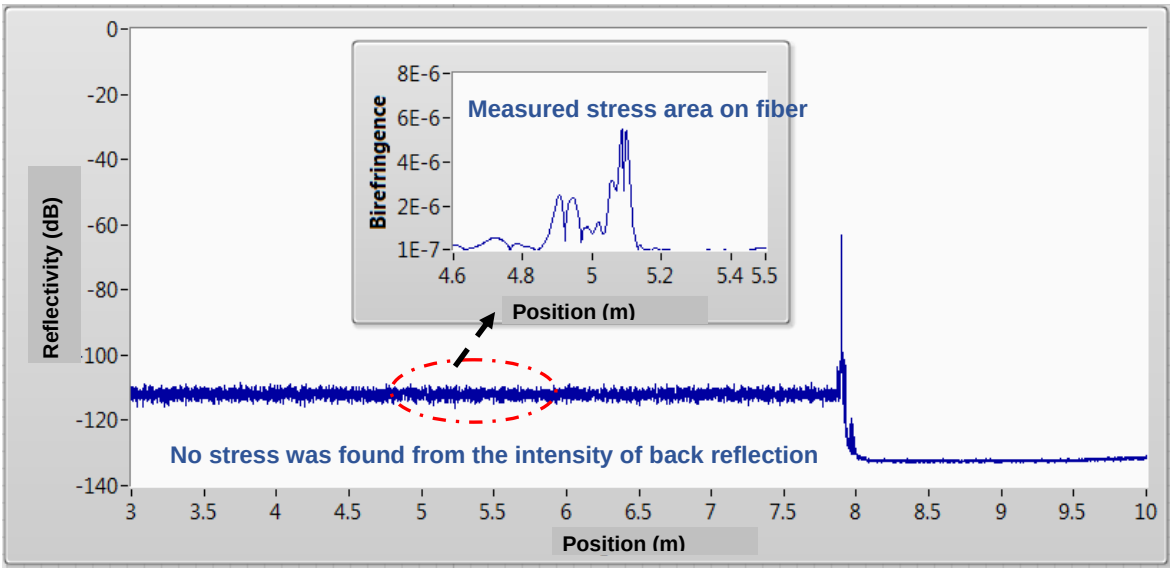



Figure 2 Bend insensitive fiber test results