



OPTICAL BACKSCATTER REFLECTOMETER (Model OBR™ 4400)

KEY FEATURES AND PRODUCT HIGHLIGHTS

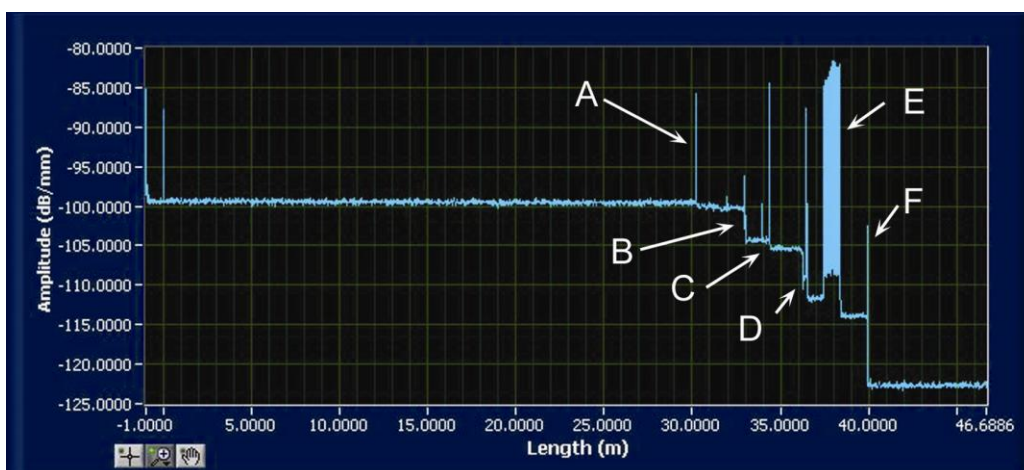
- Easily locate and troubleshoot macro-bends, splices, connectors and breaks
- Locate Insertion Loss points – eliminate cut-back
- Verify PM-components and measure Polarization Extinction Ratio
- Network verification for aircraft and shipboard applications
- Automate pass/fail verification of fiber assemblies
- Monitor temperature and strain profiles inside a component or module

The OBR™ 4400 is the industry's only ultra-high resolution OTDR with backscatter-level sensitivity designed for component- and module-level reflectometry. With a small, easily transportable platform, the capability to “see” reflections out to 2 kilometers with no dead zone, and integrated temperature and strain sensing, the OBR™ 4400 gives you the ultimate in fiber diagnostics.

MEASUREMENT PERFORMANCE HIGHLIGHTS

- -130 dB sensitivity
- 70 dB dynamic range
- 2 kilometer length range with no dead zone
- Micrometer resolution up to 70 meters
- < 0.05 dB insertion loss resolution

The OBR™ 4400 offers unprecedented diagnostic capabilities to designers and manufacturers of fiber optic components and assemblies.



- A. FC/APC connector
- B. Bad splice
- C. Coupler
- D. Optical Switch
- E. Bragg Gratings
- F. End reflection

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OBR™ 4400

PARAMETER	SPECIFICATION	UNITS
Maximum device length:		
Standard Mode	70	meters
Long Range Mode	2000	meters
Spatial resolution (two-point)¹:		
	10 µm over 30 meters	
	20 µm over 70 meters	
	3 mm over 2 km	
Dead Zone:		
	Equals 2-pt spatial resolution	
Wavelength range²:		
	1265-1335 or 1525-1610	nm
Wavelength:		
Resolution (max)	0.02	pm
Accuracy ³	±1.5	pm
Integrated return loss characteristics:		
Dynamic range ⁴	70	dB
Total range	+5 to -125	dB
Sensitivity	-130	dB
Resolution	±0.05	dB
Accuracy	±0.10	dB
Integrated insertion loss characteristics:		
Dynamic range ⁵	18	dB
Resolution	±0.05	dB
Accuracy	±0.10	dB
Group delay:		
Accuracy	1.0	ps
Distributed Sensing⁶:		
Spatial Resolution	±2.0	cm
Temperature Resolution	±0.1	C
Temperature Accuracy ⁷	±0.2	C
Strain Accuracy ⁷	<1	µstrain
Measurement Timing⁸		
	<10	s

Specifications are for single-mode operation.
For multimode operation, specifications are nominal.

- 1 Over entire length range.
- 2 Ranges are nominal.
- 3 Accuracy maintained by an internal NIST-traceable HCN gas cell.
- 4 For the 2000 m option, return loss dynamic range is 60 dB.
- 5 The insertion loss dynamic range is the one-way loss that can be suffered before the scatter level of standard SMF (~100 dB/mm) is lower than the noise floor (~118dB/mm).
- 6 Distributed sensing uses Rayleigh spectral shift method and is relative to reference scan.

- 7 Temperature and strain accuracies are calculated from spectral shift of Rayleigh scatter using 1 GHz = 0.8 C. [Othonos and K. Kalli, Fiber Bragg Gratings (Actech House, Boston, 1999)]. Spatial resolutions listed are ideal to get the Temperature and Strain Accuracies listed; they are not minimums or maximums.
- 8 Combined scan and analysis time in high-resolution mode. The 10 s measurement time holds true for: 30 m, 80 micron resolution (10 nm scan) and 70 m, 160 micron resolution (5 nm scan).