8000i In-Process Test OTDR

A cost effective, comprehensive solution for in-process testing of ribbon and loose tube fibers

- OTDR Loss, Non-Uniformity, Defects
- Fiber Length

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A Perfect Fit for In-Process Cable Testing

The 8000i In-Process Test OTDR is the most recent addition to Photon Kinetics' family of innovative solutions for optical fiber cable testing. Like its parent the 8000 OTDR, the 8000i's "cable test optimized" design is the result of over 25 years working with the world's leading cable manufacturers, addressing new test requirements, and solving manufacturing-related OTDR measurement issues.

"Cable test optimization" means that the 8000i offers the balance of OTDR dynamic range and dead zone performance that's proven to be most effective for accurate characterization of the fiber lengths typically found in cable manufacturing (e.g. 6 to 12 km). Dynamic range has been maximized to reduce measurement time, while resolution has been tuned to ensure that typical cabled fiber defects are detected. The 8000i delivers this optimized measurement capability at a more economical price than our full featured, final QC 8000 OTDRs, which makes it a perfect fit for "in-process" testing on cable ribbon or loose tube production lines.

The 8000i is the best choice for in-process cable testing. Don't be misled by low cost, "telecoms" OTDRs, whose data sheets seem to promise both ultra-high dynamic range and very short dead zones at the same time. The specified dynamic range is usually the maximum range that is only achieved when the OTDR is set in "long range" mode, which produces very long dead zones and poor defect resolution. Similarly, the specified ultra-short dead zones are only achieved when the OTDR is configured for "short range" measurements which drastically reduces the OTDR's dynamic range. In other words, the ultra-high dynamic range and ultra-short dead zone that are specified in the brochures of many "telecoms" OTDRs are not indicative of the actual performance you would obtain on the production floor.

Capabilities that Reduce Measurement Cost

Besides providing high dynamic range that reduces overall measurement time and expense by reducing the time required to average the OTDR signature, the 8000i also offers data acquisition capabilities that can cut measurement time and cost even further. The 8000i's unique, noise-based averaging capability minimizes averaging time on every signature by providing the user with the option of limiting averaging based on achieving a specific level of noise (defect visibility) at the end of the fiber. This method is more efficient than conventional averaging methods that only allow users to specify a fixed averaging time. Fixed averaging times are typically set using worst-case estimates of fiber attenuation and temporary coupling loss, and therefore are excessive for virtually every fiber.

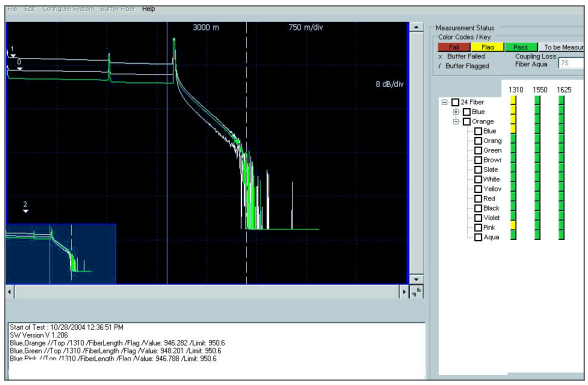
Configurations for Every Requirement

8000i modules are available in a range of single-mode and multimode optical configurations to address the most common testing scenarios found in cable manufacturing today. And, two modules can be accommodated in a single controller, making it possible to have a dual-mode test station. Standard multimode configurations are available for both 850 and 1300 nm measurements and these include internal launch conditioning to improve intra-unit reproducibility and ensure compliance with international measurement standards. A variety of modules for single-mode fibers are available with up to 4 wavelengths. Standard wavelengths include 1310, 1383, 1550 and 1625 nm.

Note that it may be possible for Photon Kinetics to fit your 8000i with tighter wavelength tolerances on standard wavelengths or even custom wavelength lasers to address your company's specific test requirements or newly developing industry test requirements. Contact your local PK Sales Representative for more information.

Cornerstone of a Comprehensive OTDR Test Station

The 8000i comes complete with the same intuitive Windows OTDR Front Panel interface and a comprehensive signature analysis package used in our 8000 OTDR that was designed specifically for fiber and cable manufacturers. Standard analysis capabilities include bidirectional signature generation, automatic defect detection, overall attenuation and length measurement and three loss-uniformity measures. The Front Panel also offers manual event and sliding window measurement capability, as well as two signature-noise measurement utilities.



OASYS.net screen with status, exception & OTDR windows.

If you need to test a number of fibers at the same time, it is worth noting that the 8000i is also compatible with Photon Kinetics' OASYS.net, the new generation of the factory-proven OTDR cable test automation software. OASYS.net gives your operators the ability to define test sequences that include OTDR settings, analysis limits and reporting format and then execute these sequences for single fibers, or for a group of fibers such as those of a tube, ribbon or other cable sub-unit. The software leads your operators through the testing process, prompting for each fiber to be coupled to the OTDR, and then automatically acquiring the data, analyzing and reporting/archiving results per your specific requirements. During the test process, the operator receives real-time test status information, as well as details of any limits failures. Signatures and analysis results can be archived in industry standard formats (e.g. .SOR, .TXT, .XML and .CSV files.

To make testing even easier and faster, add an 1120 Bare Fiber Aligner to your test station to simplify the process of coupling fibers to be tested to the 8000i. The 1120 quickly aligns fibers with low optical loss and reflectance thereby ensuring the quality and consistency of the OTDR signatures acquired, in addition to minimizing measurement time. And because it performs this alignment with virtually no manual adjustment overall measurement time is also reduced. Just strip, break or cleave the fiber and insert it into the 1120 input. The 1120 is available with both external or integrated buffer fibers ranging in length from 1 to 1500 meters.

Features and Benefits

Optical Performance Optimized for In-process Testing

- Provides high quality signatures in the shortest possible time

Cost Effective Optical Design

- Ensures favorable ROI

Comprehensive Signature Analysis

- Locates both discrete and distributed cable defects

Compatibility with OASYS.net Software and 1120 Bare Fiber Aligner

- Enables low cost, high quality in-process testing

Available Options

- OASYS.net OTDR Automation Software
- 1120 Bare Fiber Aligner

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Optical Specifications [1]

		Single-mode				Multimode	
	Source Characteristics [2]						
	Nominal Wavelength (nm)	1310	1383	1550	1625	850	1300
	Tolerance (nm)	± 20	± 3	± 20	± 10	± 20	± 20
Standard Cabler	**Dynamic Range (dB)** [3,4]						
	8000i-M2-SXLX					29.0	26.0
	8000i-C1-OC	25.5		23.5			
	8000i-C1-OCL	25.0		23.0	20.0		
	8000i-C1-OECL	25.0	20.5	23.0	20.0		
	Dead Zone (m) [5]						
	Attenuation	< 50					
	Event	< 25					
	Distance Accuracy (m) [6]	2.5 + 0.01 %					
	Linearity (dB/dB) [7]	0.025					
General Purpose	**Dynamic Range (dB)** [4,8]						
	8000i-G3-OC	39.0		40.0			
	8000i-G3-OCL	39.0		40.0	37.0		
	8000i-G3-OECL	39.0	31.0	40.0	37.0		
	Dead Zone (m) [5]						
	Attenuation	< 25					
	Event	< 5					
	Distance Accuracy (m) [6]	0.8 + 0.01 %					
	Linearity (dB/dB) [7]	0.025					

General Specifications

Automated Analysis	Attenuation coefficient, length, event loss, location and reflectance, attenuation uniformity (sliding window and LSA deviation)
Available Pulse Widths (m)	Single-mode: 5, 10, 20, 50, 100, 200, 500, 1000 Multimode: 5, 10, 20, 50
Data Point Spacings (m)	0.0625, 0.125, 0.25, 0.5, 1, 2, 4
Data Acquisition Ranges (km)	4, 8, 16, 32, 64, 128, 256 (or user-specified)
Group Index Range	1.4000 to 1.7000
Display Limits	0.040 to 320 km, 0.3 to 48 dB full screen
Operating Temperature	5 to 45 °C
Specification Temperature	25 °C
Laser Safety Compliance	IEC 60825-1 Class 1M
Input Voltage Required	90-132 VAC or 175-264 VAC at 47-63 Hz

Notes:
1. *25° C*
2. *100 m pulse width*
3. *Single-mode (IEC Type B1): 100m pulse , 20 minutes averaging, SNR=1 . Multimode (IEC Type A1b): 50 m pulse, 30 seconds averaging, SNR=1.*
4. *1383 nm laser may contribute up to 0.03 dB (typical) RMS noise from the front panel to 12 dB above RMS noise floor. Actual noise will be dependent on fiber characteristics.*
5. *Minimum at -45 dB reflectance, 0.5 dB (attenuation), 1.5 dB (event)*
6. *Point spacing less than 5m, pulse widths 5 to 100 m, unclipped event with > -45 dB reflectance, < 0.5 dB loss , SNR > 10 dB.*
7. *Measured at 20 m pulse width from 1 dB down from upper clip level to 12 dB above the RMS noise floor.*
8. *Single-mode (IEC Type B4), 1000m pulse width 3 minute averaging, SNR=1.*

Dynamic Range Adjustment Factors (dB)		
Shorter Pulsewidth	**vs. 100 m**	**vs. 1000 m**
500 m	-	- 1.5
200 m	-	- 3.5
100 m	-	- 5.0
50 m	- 1.5	- 6.5
20 m	-3.5	- 8.5
10 m	- 5.0	- 10.0
5 m	- 6.5	- 11.5
Shorter Averaging Time, vs. 20 min.		
3 min.	- 2.0	
1 min.	- 3.2	
30 sec.	- 4.0	

Photon Kinetics includes products formerly branded as York Technology, PK Technology, GN Nettest and NetTest.

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