



**Manufacturer:**  
OPT Gate

**Product Name:**  
GreenKonnec+ APEX Optical Component Coherence Reflectometer - 1,200mm

**Manufacturer Part Number:**  
OCCR-APEX

# Detect Fiber micro crack

For optical connectors and components



**[OCCR]** | Optical Component Coherence Reflectometer

**TD-OCT** based on Michelson's interferometer  
Time Domain Optical Coherence Tomography



## Features

World highest class detection for  
**Ultra low Return loss**

- to **-100dB**

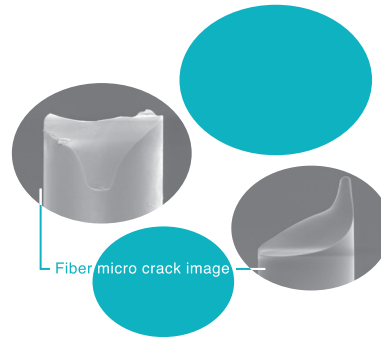
**Accurate measurement**

of micro crack position

- **resolution 0.001mm**

**High speed measurement**

- **3sec**



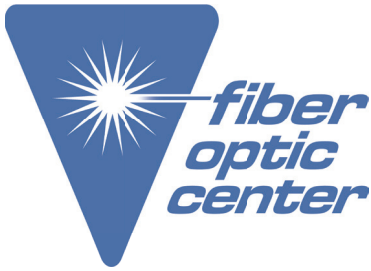
## OCCR Specification

Parameter		Specification		Note
		Single	Premium	
Measurement range	Distance	0~20mm	0~100mm	
	Reflection	14~85dB	14~100dB	
Optical fiber	Optical fiber	10/125μm SM		
	Optical connector	FC, SC, MU, LC		One connector included (standard) Other connectors : (option)
Function	Pass/Fail	PASS/FAIL Judgement		One button operation
	Memory	PASS/FAIL results, Reflection data Measurement waveform		SD card, Hard disc on PC
Size Weight		431x89x350mm, Approx.6kg		

Contact the professionals at Fiber Optic Center for a quote or to get more details.

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# Danger of Fiber micro crack

## 1. Danger of fiber micro crack

The condition of optical fiber soon after the fiber micro crack (Fig.1(a)) is not detected by general inspections such as IL and RL. Though, there is little gap at the point of fiber micro crack, this can be used as if it is a normal product. However, the repetition of thermal expansion and shrinkage cause the bigger gap between fibers after a long period (Fig.1(b)). It is concerned that the IL value becomes abnormal and serious performance deterioration occurs (Fig. 1 (b)). Fig.2 shows the result of temperature cycle testing of fiber micro crack product. IL value increased significantly at the timing of approximately 100 hours, in other words, temperature cycle 27th (red arrow ↑ in Fig.2). This indicates the change from (a) to (b) in Fig.1. It is concerned that fiber micro crack might trigger a fatal performance deterioration of optical fiber in the future, therefore it should be eliminated.

## 2. Inspection of fiber micro crack by OCCR

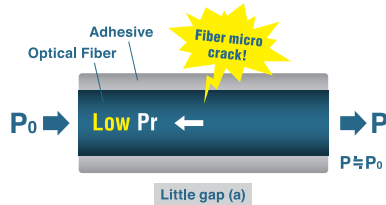
Fig.3 is a waveform of optical connector with a fiber micro crack measured by OCCR. Approx. 60dB reflection point is detected at the point of approx. 8mm.

Fig.4 shows a SEM images of removed fiber micro crack from the optical connector.

There are two sides on one fiber micro crack. One is (a), and the other one is (b). It is predicted that this fiber micro crack is occurred from bending stress by analyzing these cross sections.

OCCR detects the fiber micro crack accurately.

The condition of optical fiber after the Fiber micro crack



The condition of optical fiber after the Fiber micro crack After a long period

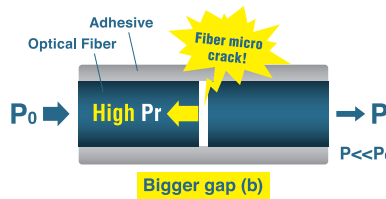


Fig.1

Temperature Cycle of Fiber micro crack products  $\Delta$ IL @1310nm

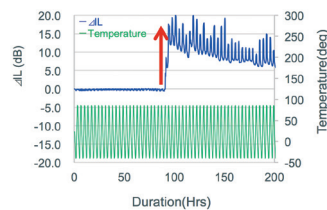


Fig.2

Measurement waveform of OCCR

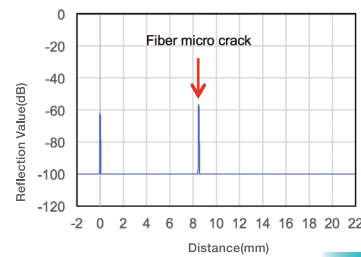


Fig.3

SEM images of Fiber micro crack

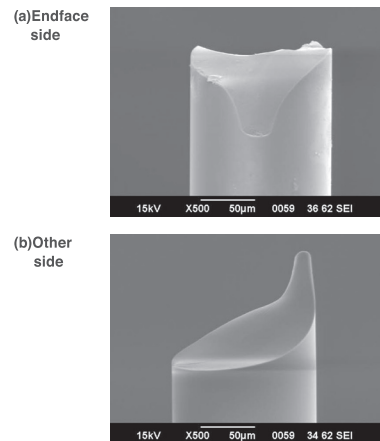


Fig.4

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