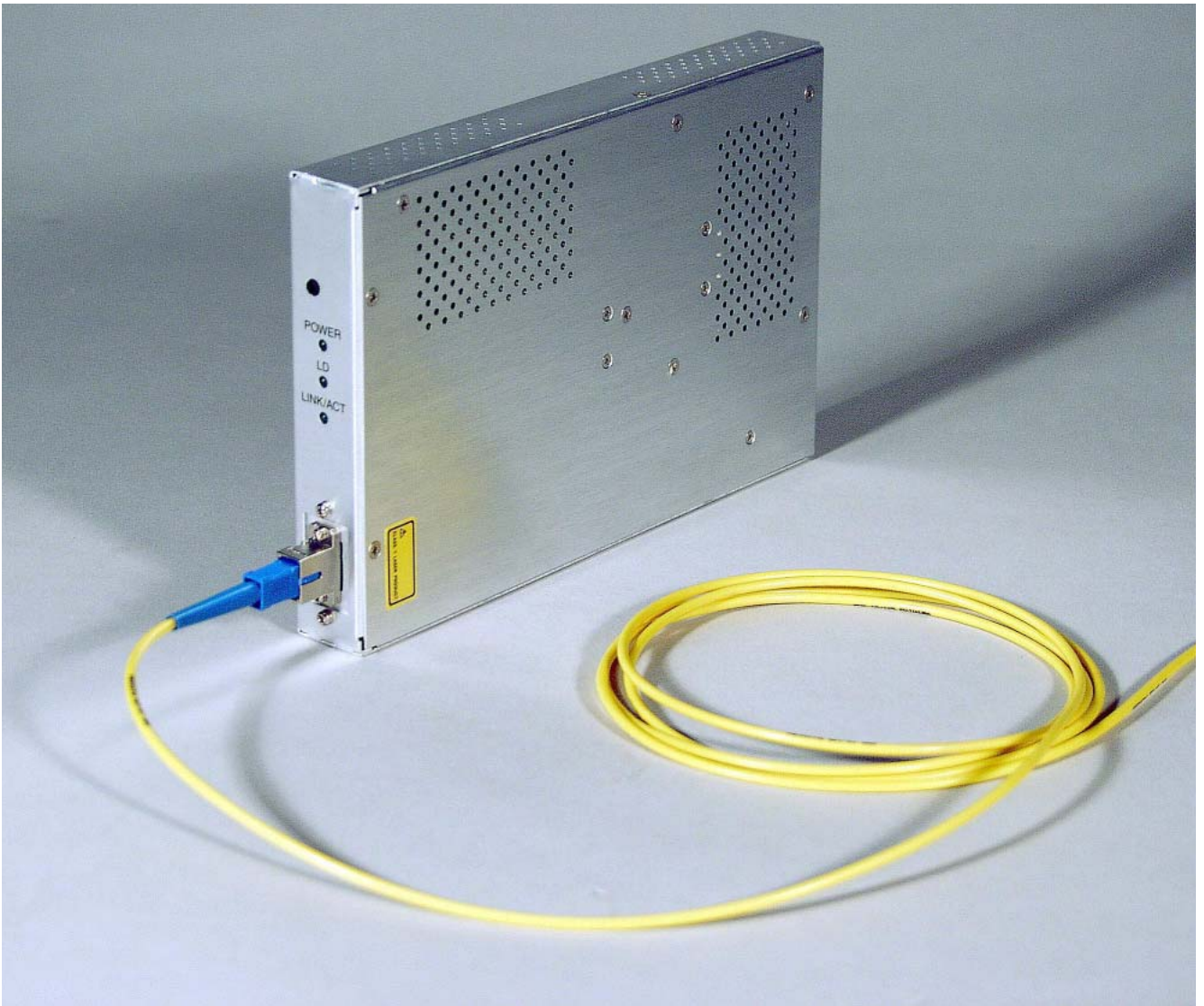


MW9077A/A1/A2/B

OTDR Module

1.31 μm (SM)/1.55 μm (SM)/1.625 μm (SM)



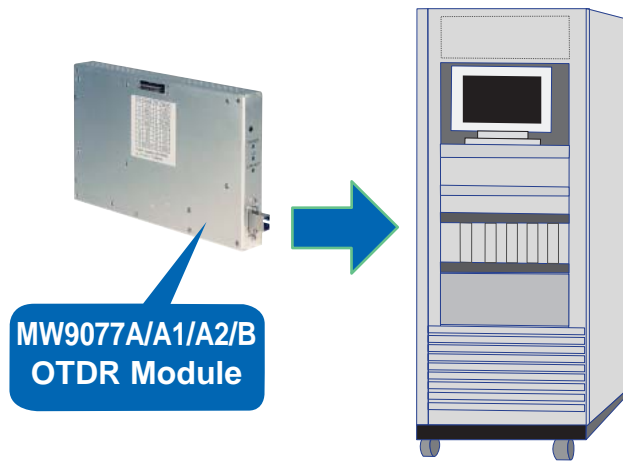
Compact and High-performance OTDR Module for Optical Fiber Monitoring Systems

- **Compact A5-size for monitoring optical fiber systems**
- **Wide operating temperature range**
- **High-performance successor to MW9076 series**
- **Fast data transmission by Ethernet interface**

The MW9077A/A1/A2/B OTDR Module is ideal for monitoring optical fiber systems. In recent years, optical-fiber monitoring is being used in many fields including maintenance of optical-communications networks as well as security sensors, flood sensors and disaster-prevention systems, etc. The MW9077A/A1/A2/B OTDR Module offers a compact and high-performance solution for optical fiber applications.

Compact A5-size for Monitoring Optical Fiber Systems

Space is an important factor in designing a monitoring systems. Factors such as functions, performance, and module size favor use of compact modules. Furthermore, using a compact module helps reduce the size of the whole system, reading to system-wide cost reductions. The compact MW9077A/A1/A2/B OTDR Module is less than A5 size (200 x 130 x 25 mm). Even systems with severe space Limitations can use this module.



High-performance Successor to MW9076 Series OTDR

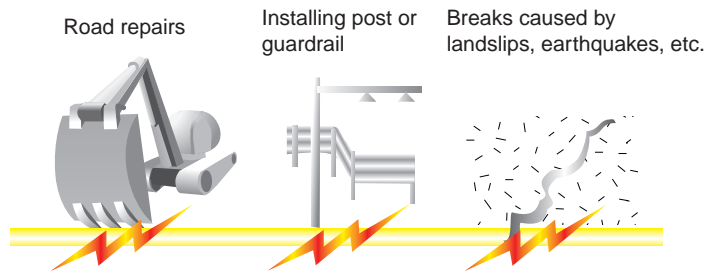
The MW9077A/A1/A2/B OTDR Module is the successor to the MW9076 series Mini-OTDR. It has an event dead zone of 5m and a back-scattered dead zone of 20 m. The dynamic range is 41 dB (1310 nm) and 40 dB (1550 nm). The minimum sampling resolution is 5 cm.

Fast Data Transmission over Ethernet Interface

Optical fibers are monitored for various reasons. For example, to assess long-term changes in optical fiber, the system checks the fiber every several hours using an OTDR. In other cases, such as when there is a network fault, the system checks the fiber immediately using an OTDR to find the fiber break. On the other hand, monitoring is always performed to detect changes in the loss of an optical fiber. The MW9077A/A1/A2/B OTDR Module can perform trace sweep at intervals of about 1 second with smoothing by averaging. The Ethernet interface transmits waveform data to a controller at high speeds, making fiber monitoring much easier.

Wide operating temperature range

The system operating temperature is affected by various environmental factors, such as installation location, and monitored objects. In addition, the heat that the system generates itself influences the operation temperature. As a result, temperature of the monitoring system must also be monitored to assure reliability. The MW9077A/A1 OTDR Module dynamic range is stable from -5° to $+55^{\circ}\text{C}$, supporting its use in a wide range of temperature environments (MW9077A2/B is stable to $+25^{\circ}\text{C}$).

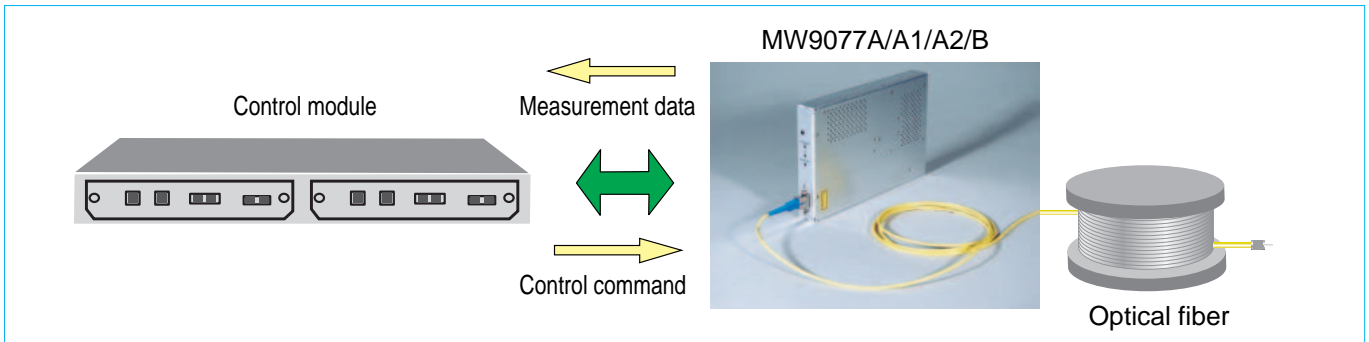
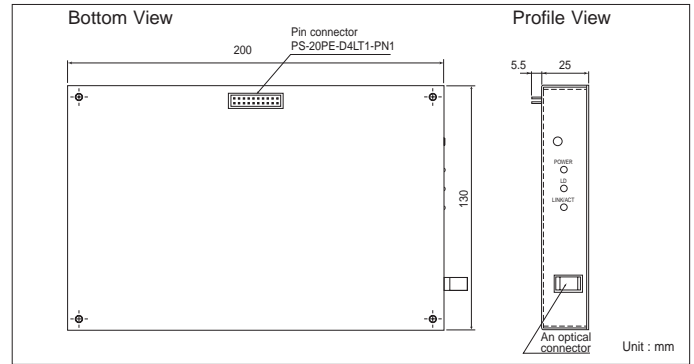


Appearance of MW9077A/A1/A2/B

Fast and Precision Operation from Controller

The MW9077A/A1/A2/B OTDR Module has a 10 Base-T compatible Ethernet interface for control over an Ethernet network. (The IP address is set using RS-232C.)

A comprehensive set of commands is built-in, including commands for setting measurement conditions, transferring measured data to the controller, along with a full range of file formats, making it easy to match settings with the monitored fiber.



Specifications

Model	MW9077A	MW9077A1	MW9077A2 ¹	MW9077B
Wavelength ²	1310 ±25 nm	1550 ±25 nm	1625 ±25 nm	1310/1550 ±nm
Fiber under test	10/125 μm single-mode optical fiber (ITU-T G.652)			
Distance Range	1/2.5/5/10/25/50/100/200/250/400 km			
Pulse width	10 ns ±30%, 30 ns ±25%, 100 ns ±10%, 300 ns ±10%, 1 μs ±10%, 3 μs ±10%, 10 μs ±10%, 20 μs ±10%			
Dynamic range	41 dB (+25°C, Pulse width 20 μs) 39 dB at -5° to +55°C (S/N=1)	40 dB (+25°C, Pulse width 20 μs) 38 dB at -5° to +55°C (S/N=1)	37 dB (+25°C, Pulse width 20 μs) (S/N=1)	39 dB (1.31 μm, +25°C, Pulse width 20 μs) ³ 38 dB (1.55 μm, +25°C, Pulse width 20 μs) ³ (S/N=1)
Dead zone(back scattered light) ⁴	≤20 m			
Dead zone(Fresnel reflection) ⁵	≤5 m (Typ. 2m)			
Sampling resolution ⁶	0.05 m to 80 m			
Number of sampling points	Normal : 5001 or 6251 Fine : 20001 or 25001			
IOR	1.400000 to 1.699999 (in 0.000001 steps)			
Distance measurement accuracy	±1 m ±3 x Measurement distance x 10 ⁻⁵ ± Sampling resolution			
Loss Measurement accuracy (linearity)	±0.05 dB/dB or ±0.1 dB (whichever is greater)			
Return loss measurement accuracy	±2 dB			
Automatic measurement ⁷	Measurement items : Total loss, Each event distance, Connection loss, Return loss or reflectance Threshold values : Connection loss : 0.01 to 9.99 dB (in 0.01 dB steps) Reflectance : -14 to -70 dB (in 0.1 dB steps), Fiber end : 1 to 99 dB (in 1 dB steps) Number of detected events : Up to 99 Automatic setting : Distance range, Pulse width, Averaging count (time)			
Manual measurement	Measurement items : Transmission loss and distance between 2 points, Connection loss, Reflectance			
Other functions	Relative distance setting (Zero offset cursor), Calendar clock (without backup), Distance unit : m (Fixed)			
Laser safety specification	21CFR Class 1, IEC Pub60825-1 Class 1			
Power	+12 Vdc ±1 V, 1.5 A max			
Interface	Ethernet interface ⁸ : 10 Base with 20pin connector Serial interface : RS-232C : 115.2 kbps (The IP address is set using RS-232C)			
Dimensions and mass	200 x 130 x 25 mm, ≤0.6 kg			
Environmental conditions	Operating temperature and humidity : -5° to +55°C, ≤95% (no condensation) (MW9077A/A1/B) Operating temperature and humidity : -5° to +50°C, ≤85% (no condensation) (MW9077A2) Storage temperature : -40° to +70°C			

- *1: When an optical pulse from the MW9077A2 (1.625 μm) is input (in-service monitoring) into an optical fiber used for communications at 1.55 μm, the optical communications signal is affected by Raman amplification. Take care when using this setup.
- *2: At 25°C, Pulse width : 1 μs
- *3: The dynamic range specification at a pulse width of 3 μs is shown below.
26.5 dB (1.31 μm, +25°C), 25.5 dB (1.55 μm, +25°C)
(S/N=1)
- *4: at pulse width 10ns
- *5: at pulse width 10ns, Return loss: 35 dB (MW9077A/A1/A2), 40dB (MW9077B)
- *6: IOR=1.500000
- *7: Automatic measurement is support function : Automatic measurement results are not guaranteed. There is a possibility to miss detection of event.
Please check each result at on your own.
- *8: Signal exchange with 10 Base-T

Note: This product outputs the pulse light of a high peak power. When this product is used in the state where it connected with transmission equipment, attaching a wavelength filter etc. should take care about the input of too much OTDR pulse light to Receiver.
There is a possibility of damaging Receiver of transmission equipment.

Ordering Information

Please specify the model/order number, name and quantity when ordering.

Model/Order No	Name	Remarks
MW9077A ^{*1}	Main frame OTDR module	Wavelength 1.31 μm SC connector (Fixed)
MW9077A1 ^{*1}	OTDR module	Wavelength 1.55 μm SC connector (Fixed)
MW9077A2 ^{*1}	OTDR module	Wavelength 1.625 μm SC connector (Fixed)
MW9077B ^{*1}	OTDR module	Wavelength 1.31/1.55 μm SC connector (Fixed)
W2254AE ^{*2}	Standard accessories MW9077A/A1 Operation Manual	
MW9077A-01	Options 1550nm filter	Factory option. 1550nm cut filter inside
MW9077A-33	LC Connector	OTDR main frame + LC connector (Fixed)
MW9077A1-33	LC Connector	OTDR main frame + LC connector (Fixed)

*1: In the case of purchase, Please concluded a sales contract.

*2: A new table is attached at purchase of the MW9077A2/B.



Specifications are subject to change without notice.

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