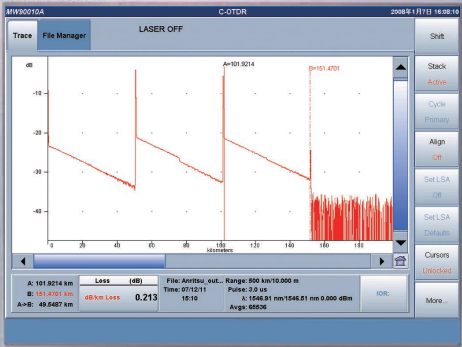
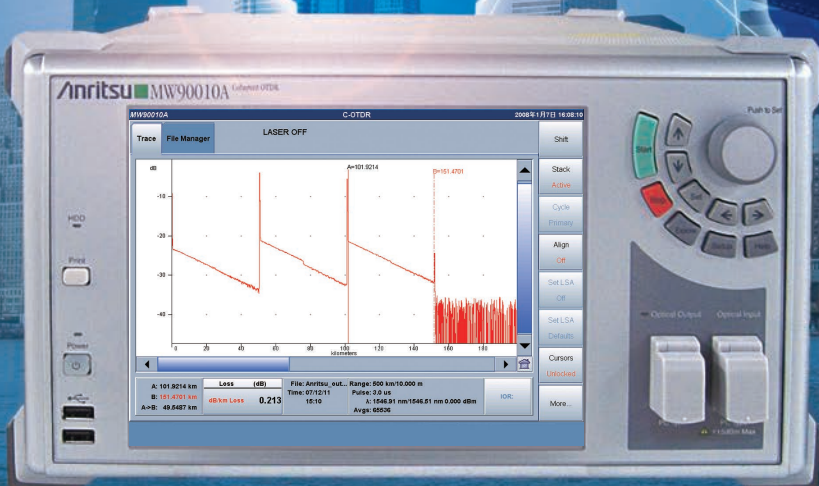


MW90010A

Coherent OTDR



- **Measure submarine cables up to 12,000-km long with 10-m resolution**
- **Unique Solution for Submarine Links Fault Detection**
- **Compact & Lightweight for Easy Transportation.**
- **Easy Operation**
- **Wide Dynamic Range**

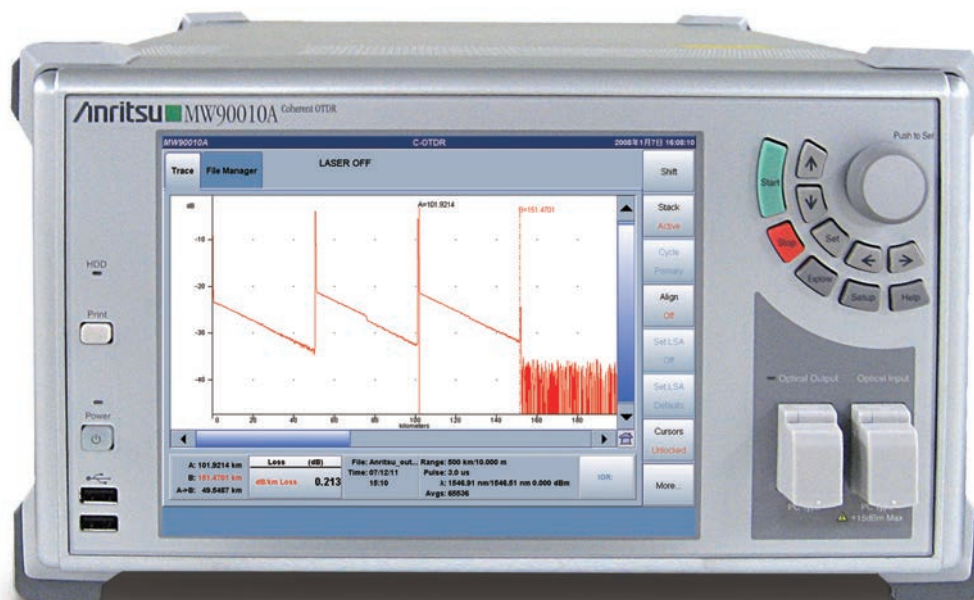
The Anritsu MW90010A Coherent OTDR (C-OTDR) is a measuring instrument for detecting faults in ultra-long optical submarine cables of up to 12,000 km including multiple repeaters (EDFAs). It is the ideal solution for evaluating new cables at service deployment as well as for troubleshooting in-service faults.

Ultra-long optical submarine cables use optical amplifiers to boost signals. Successful OTDR measurement through the repeaters requires configuring a backscatter detection system using up and down links. The C-OTDR can measure the backscatter light through all repeaters by using coherent detection. As a result, it can display every fault condition, such as optical loss between repeaters, bending loss, distances, breaks, etc., on-screen for waveform data analysis.

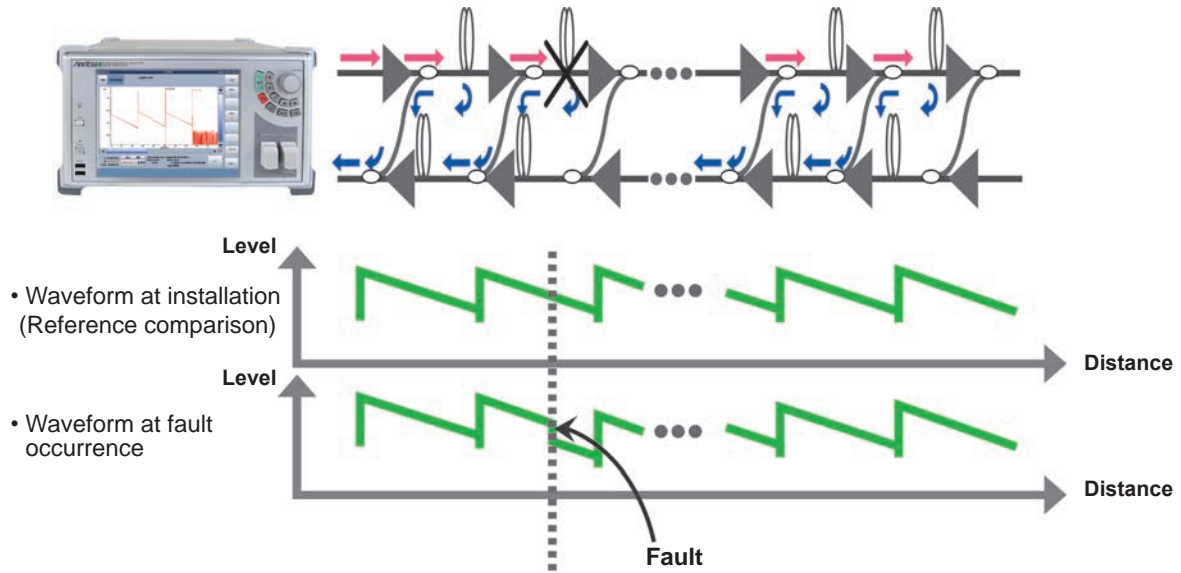
Features

- Fault detection with 10-m distance resolution
- Compact and lightweight all-in-one design for on-site portability (320 (W) × 177 (H) × 451 (D) mm, 17 kg max.)
- Simple and easy touch-panel operation for easy first-time use by any operator
- Wide dynamic range supporting fault detection and troubleshooting of submarine cables with repeaters at 80 km or wider intervals
- Built-in tunable light source with high wavelength accuracy of ± 0.2 nm for wavelength setting range of 1535.03 nm to 1565.08 nm
- Adjustable output power from 0 to +13 dBm

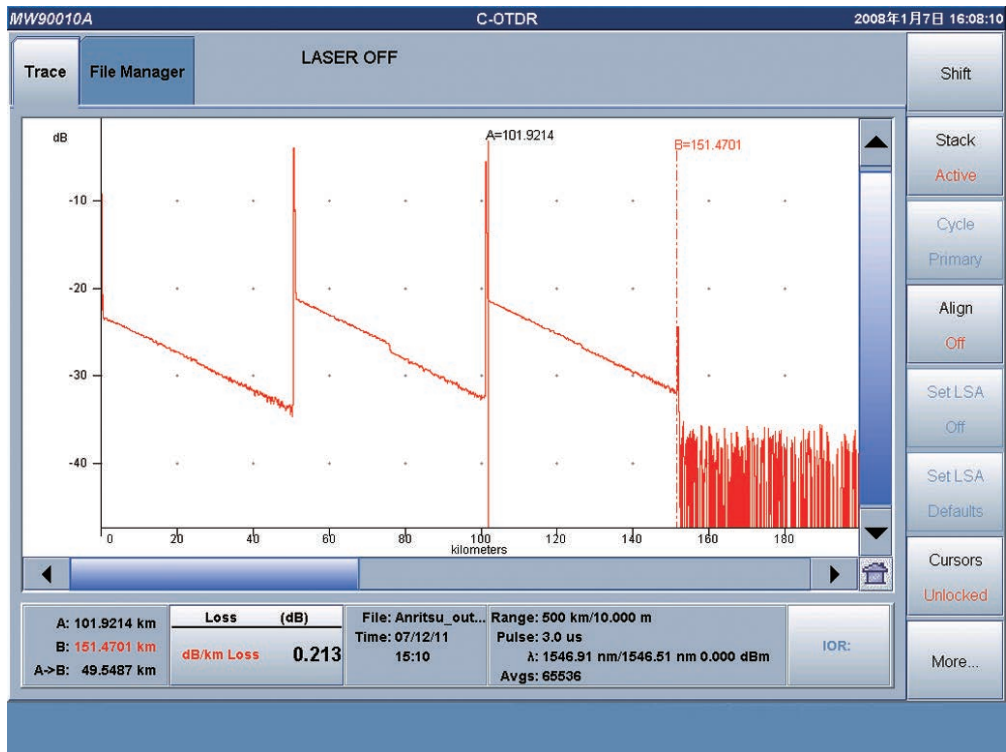
External Appearance



Application



C-OTDR Measurement Example



The unsurpassed, compact, lightweight (17 kg max.), all-in-one design supports every stage of optical submarine cable management from cable installation to fault detection or past data analysis

- **Measure submarine cables up to 12,000-km long with 10-m resolution**

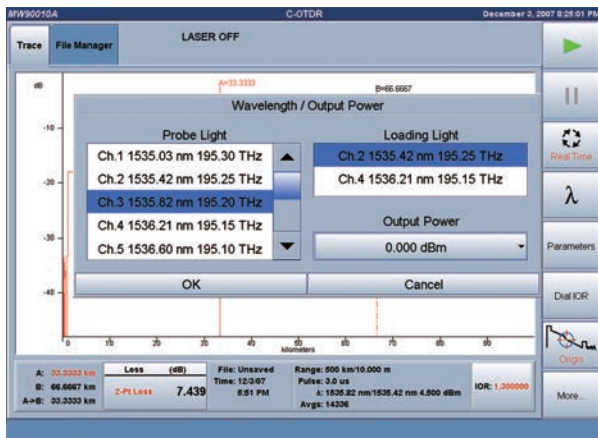
The MW90010A can capture data from up to 1.2 million points on the horizontal axis at a fixed resolution of 10 m with no dependency on measured distance. As a result, faults can be located with very high resolution even in fibers longer than 10,000 km.

- **Lightweight and Compact**

In comparison to previous optical submarine cable measuring equipment, the MW90010A is less than half the weight (17 kg max.) and size. The all-in-one design incorporates a tunable light source for easy on-site portability and troubleshooting.

- **Excellent GUI**

Every stage from setting parameters to starting measurement is made easy using the touch-screen. The rotary knob and keypad can be used for operation too. The easy-to-use design coupled with standard interfaces for USB memory, USB mouse and keyboard, and VGA OUT, makes measurement simple even for novice OTDR operators.

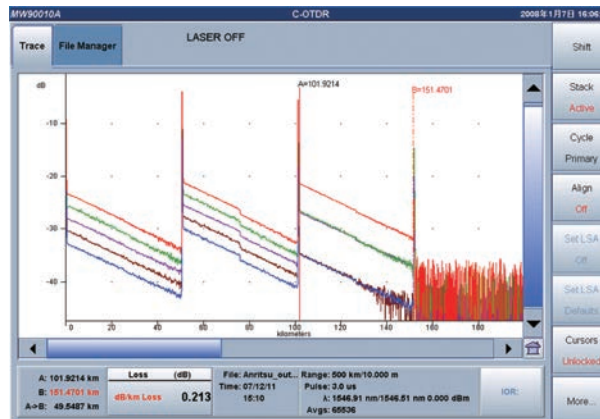


- **Wide Dynamic Range**

Typical optical submarine cables are designed with repeaters every 50 km to 60 km but the high resolution of the MW90010A easily supports fiber loss measurement of these systems as well as fault location of cables with repeaters spaced at more than 80 km.

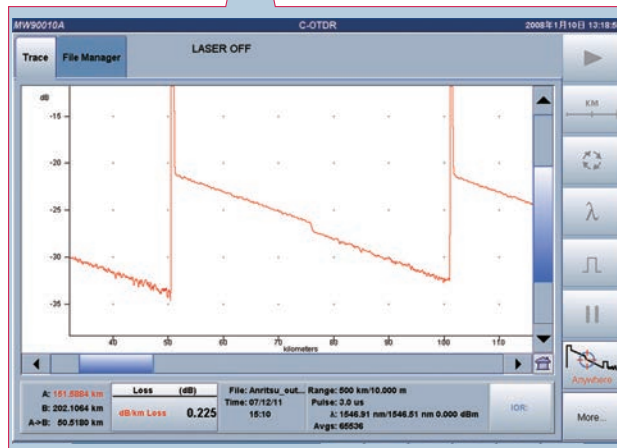
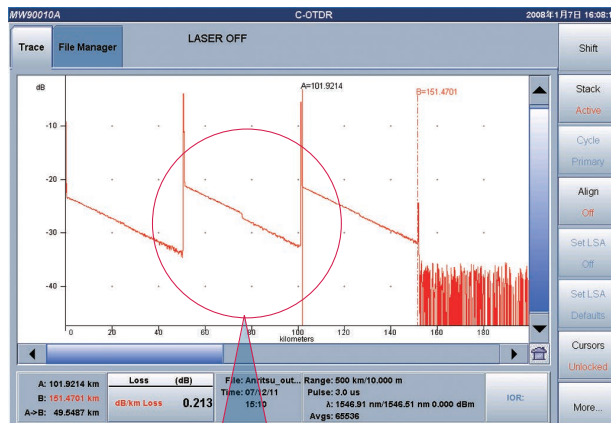
- **Simultaneous Display of 8 Waveforms (max.)**

Installation and maintenance of optical submarine cables requires comparison of current waveform data with data at cable installation to monitor aging changes. The MW90010A makes this comparison easy because it can display up to 8 waveforms simultaneously, allowing faults to be seen at glance by comparing the install waveform with the fault waveform on one screen.



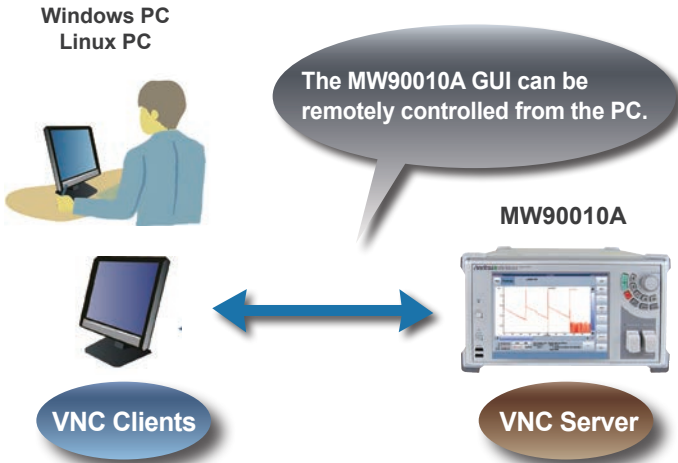
- **Built-in Standard OTDR Functions**

The MW90010A has the full range of versatile built-in applications, including real-time measurement, zoom/shift function, 2-point loss analysis, etc.



• Remote Operation Function

The MW90010A has a built-in VNC server. When the MW90010A (server) is connected over Ethernet to a PC (client) running either a Windows or Linux OS, the MW90010A GUI can be remotely controlled from the PC to transfer files between the server and client.

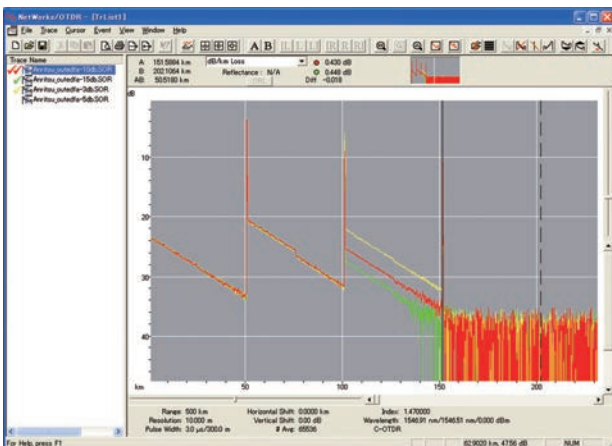


• Additional Averaging Processing

Evaluation of optical submarine communications cables using a C-OTDR can take many hours. However, measurement productivity is greatly increased using the MW90010A Additional Averaging function. For example, after waveform data has been measured for 2¹⁶ averagings, the additional averaging function can be used to increase the measured data to 2¹⁷ averagings.

• Waveform Analysis using Emulation Software

Waveform data measured and saved by the MW90010A can be analyzed on a PC running a Windows OS using the optional NETWORKS (version 4.1 or newer) emulation software (sold separately).



• Support for Telcordia format (SR-4731)

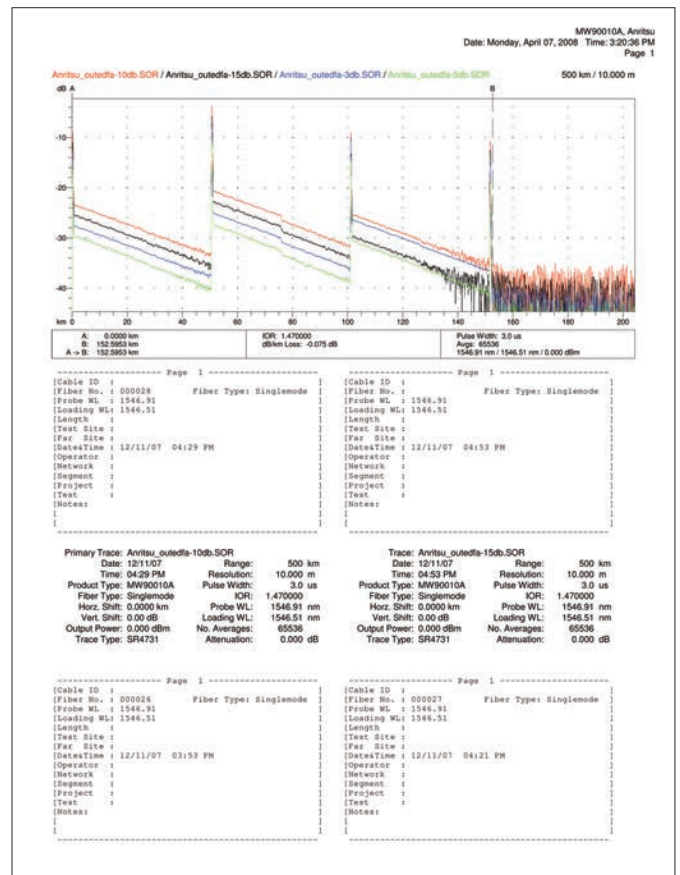
The Telcordia format shared by OTDR is supported.

• 2.8-GB Internal Memory

Measured data is saved in the 2.8-GB internal memory and can be copied to external USB memory stick for processing on a PC.

• PDF-format Reports

Measured data can be saved in PDF format for confirming measurement date, conditions, and waveform data on a single report.

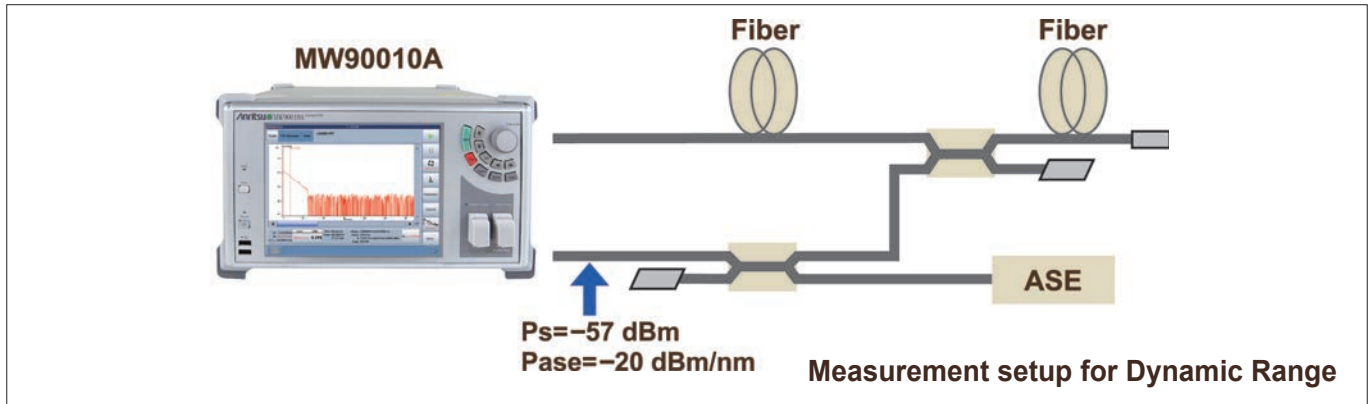


• Windows® is a registered trademark of Microsoft Corporation in the USA and other countries.

Specifications

MW90010A Coherent OTDR

Items	Specifications	Remarks
Fiber under test	ITU-T G.653 (DSF)	
Optical connector	FC, SC, DIN, HSM-10/A, ST	Replaceable, PC type
Wavelength (Probe light)	1535.03 nm to 1565.08 nm	ITU-T Grid Wavelength in vacuum setting with 50 GHz steps
Wavelength accuracy	±0.2 nm	+20° to +30°C
Warm-up time	30 minutes	+20° to +30°C
Loading light source (Dummy)	" wavelength of probe light " +50 GHz or -50 GHz	The loading wavelength can be selectable at +50 GHz or -50 GHz of the probe (OTDR) wavelength.
Pulse width	3, 10, 30, 60, 100 μs	
Optical output power	0 to +13 dBm (0.5 dB steps)	
Dynamic range (one way, S/N=1) (See the block diagram on Page7)	>17 dB	Measurement Conditions: <ul style="list-style-type: none"> • Pulse width: 10 μs • Average times: 2¹⁶ • Distance range: 1000 km • Smoothing: On • Ps: -57 dBm @ Pin *1 • Pase: -20 dBm/ nm @ Pin *1
Dead zone	0.5 km	Pulse width: 3 μs
Distance measurement accuracy	±10 m ±0.5 x 10 ⁻⁶ x measurement value (m)	This does not include optical fiber refraction index (IOR) based uncertainty.
Vertical scale	0.02, 0.05, 0.1, 0.2, 0.5, 1.0, 2.0, 5.0, 10.0 dB/div	
Distance range	100 km, 500 km to 12,000 km (500 km steps)	
Sampling resolution (IOR=1.500000)	10 m	
Measurement time	15 minutes	Distance Range: 1000 km Average times: 2 ¹⁶
Average times	2 ⁸ to 2 ²⁴	
IOR settings	1.300000 to 1.700000 (0.000001 steps)	
Monitor output	-25 to -15 dBm	For OTDR Wavelength Monitor
Other functions	<ul style="list-style-type: none"> • Real Time Measurement • Multiple Trace Display (8 Waveforms maximum) • Zoom & Shift • Loss Calculation Splice Loss, 2Pt Loss, 2Pt LSA, dB/ km Loss, dB/ km LSA, 2Pt & dB/ km, 2Pt & dB/ km LSA • File Save formats GR-196, SR4731 • USB Memory support 	<ul style="list-style-type: none"> • Internal Memory (2.8 GB) • Print External printer, Hard Copy (file: PDF) • Distance Unit miles, feet, kilofeet, meters, kilometers • File Utility File: Copy, Paste, Delete Folder: Create New • Help function
Display	8.4 inch, XGA (1024 x 768) color LCD with touch panel	
Interface	USB (2 ports, REV1.1), Mouse (USB), Keyboard (PS/2), VGA	
Power supply	100 V(ac) to 120 V(ac)/200 V(ac) to 240 V(ac), 50 to 60 Hz, ≤300 VA	
Dimensions and Mass	320 (W) x 177 (H) x 451 (D)mm, <17 kg	
Enviromental conditions	Temperature and Humidity: +10° to +35°C (Operating), -10° to +50°C (Storage), <85% RH Vibration: Conforms to MIL-STD-810D	
EMC/LVD	EN61326-1, EN61000-3-2 EN61010-1	
Laser safety level *2	IEC 60825-1: 2007 CLASS 1M: Optical Output Port CLASS 1: Monitor Port 21CFR1040.10 Excludes deviations caused by conformance to Laser Notice No. 50 dated June 24, 2007	



*1: P_s : Maximum backscatter level at the input [dBm]

P_{ase} : ASE level at the input [dBm]

*2: Safety measures for laser products

This product complies with optical safety standards in 21CFR1040.10 and IEC 60825-1; the following descriptive labels are affixed to the product.



Ordering Information

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

The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Model/order No.	Name
	Main frame
MW90010A	Coherent OTDR
	Standard accessories
	Power Cord
W3030AE	MW90010A Operation Manual (CD-R)
	Options
MW90010A-001	Remote Control Function
MW90010A-101*2	Remote Control Function Retrofit
MW90010A-002*1	OS Upgrade to WES2009
MW90010A-102*2	OS Upgrade to WES2009 Retrofit

*1: Please be sure to specify.

*2: Factory (in Japan) option.

Model/order No.	Name
	Options (Optical Connector)
MW90010A-037*3	FC Connector
MW90010A-038*3	ST Connector
MW90010A-039*3	DIN 47256 Connector
MW90010A-040*3	SC Connector
MW90010A-043*3	HMS-10/A Diamond Connector

*3: Required option

Specify the optical connector type. The same type of connector will be supplied for the optical output port, optical input port, and optical monitor port.

Model/order No.	Name	Remarks
	Application parts	
NETWORKS		Emulation Software (Version 4.1 or newer).
B0335C	Carrying Case	
B0604A	Rack Mount Kit	
J0617B	Replaceable Optical Connector (FC-PC)	
J1409A	Replaceable Optical Connector (ST)	
J1410A	Replaceable Optical Connector (DIN)	
J1411A	Replaceable Optical Connector (SC)	
J1412A	Replaceable Optical Connector (HMS-10/A)	
J0057	Optical Adapter FC Type	
J0635	Optical Fiber Cord with FC-PC at Both Ends (SM, with FC-PC at both ends)	Specify the optical fiber length as A, B or C (A: 1 m, B: 2 m, C: 3 m)
J0952A	FC • PC-FC • APC(SG)-1M-SM	
Z0914A	Ferrule Cleaner	
Z0915A	Replacement Reel for Ferrule Cleaner	(6 pcs/set)
Z0284	Adapter Cleaner	Stick type, 200 pcs/set
W3024AE	MW90010A Operation Manual (Printed version)	
Z0397A	FC Adapter Cap	
Z0411A	ST Adapter Cap	
Z0412A	DIN Adapter Cap	
Z0413A	SC Adapter Cap	
Z0414A	HMS-10 Adapter Cap	
		Monitor Output Port optical connector cap. Specify exchangeable optical connectors (J1409A, J1410A, J1411A, J1412A, J0617B) as a pair.

MT9090 Series Network Master

MU909020A OCA Module

Compact CWDM channel analyzer to verify power levels, drift and channel presence of CWDM networks.

MU909060A GigE Module

Dedicated field test solution for installation and troubleshooting Ethernet links in the access network.

MU909014/15 μ OTDR

Compact OTDR for full automatic verification of optical networks, FTTH-PON, Metro and Core.

MU909011A3 Fault Locator Module

Compact fault locator instrument for an easy and accurate verification of drop cable installation.



CMA5 Series

For Optical Fiber Installation and Maintenance.



MT9083 Series

ACCESS Master Mini-OTDR

All-in-one test tool for fiber construction and maintenance.



MT1000A Network Master Pro

All-in-one easy-to-use, dual-port transport tester supporting from 1.5 Mbps to 10 Gbps including OTN, Ethernet, Fibre Channel, SDH/SONET and PDH/DSn.



MT1100A Network Master Flex

All-in-one, up to 4-port transport tester supporting from 1.5 Mbps to 100 Gbps including OTN, Ethernet, Fibre Channel, SDH/SONET and PDH/DSn.



Anritsu

Specifications are subject to change without notice.

● United States

Anritsu Company

1155 East Collins Blvd., Suite 100, Richardson,
TX 75081, U.S.A.
Toll Free: 1-800-267-4878
Phone: +1-972-644-1777
Fax: +1-972-671-1877

● Canada

Anritsu Electronics Ltd.

700 Silver Seven Road, Suite 120, Kanata,
Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

● Brazil

Anritsu Eletrônica Ltda.

Praça Amadeu Amaral, 27 - 1 Andar
01327-010 - Bela Vista - São Paulo - SP - Brazil
Phone: +55-11-3288-2511
Fax: +55-11-3288-6940

● Mexico

Anritsu Company, S.A. de C.V.

Av. Ejército Nacional No. 579 Piso 9, Col. Granada
11520 México, D.F., México
Phone: +52-55-1101-2370
Fax: +52-55-5254-3147

● United Kingdom

Anritsu EMEA Ltd.

200 Capability Green, Luton, Bedfordshire, LU1 3LU, U.K.
Phone: +44-1582-433200
Fax: +44-1582-731303

● France

Anritsu S.A.

12 avenue du Québec, Bâtiment Iris 1- Silic 612,
91140 VILLEBON SUR YVETTE, France
Phone: +33-1-60-92-15-50
Fax: +33-1-64-46-10-65

● Germany

Anritsu GmbH

Nemetschek Haus, Konrad-Zuse-Platz 1
81829 München, Germany
Phone: +49-89-442308-0
Fax: +49-89-442308-55

● Italy

Anritsu S.r.l.

Via Elio Vittorini 129, 00144 Roma, Italy
Phone: +39-6-509-9711
Fax: +39-6-502-2425

● Sweden

Anritsu AB

Kistagången 20B, 164 40 KISTA, Sweden
Phone: +46-8-534-707-00
Fax: +46-8-534-707-30

● Finland

Anritsu AB

Teknobulevardi 3-5, FI-01530 VANTAA, Finland
Phone: +358-20-741-8100
Fax: +358-20-741-8111

● Denmark

Anritsu A/S

Kay Fiskers Plads 9, 2300 Copenhagen S, Denmark
Phone: +45-7211-2200
Fax: +45-7211-2210

● Russia

Anritsu EMEA Ltd.

Representation Office in Russia

Tverskaya str. 16/2, bld. 1, 7th floor.
Russia, 125009, Moscow
Phone: +7-495-363-1694
Fax: +7-495-935-8962

● United Arab Emirates

Anritsu EMEA Ltd.

Dubai Liaison Office

P O Box 500413 - Dubai Internet City
Al Thuraya Building, Tower 1, Suit 701, 7th Floor
Dubai, United Arab Emirates
Phone: +971-4-3670352
Fax: +971-4-3688460

● India

Anritsu India Private Limited

2nd & 3rd Floor, #837/1, Binnamangla 1st Stage,
Indiranagar, 100ft Road, Bangalore - 560038, India
Phone: +91-80-4058-1300
Fax: +91-80-4058-1301

● Singapore

Anritsu Pte. Ltd.

11 Chang Charn Road, #04-01, Shriro House
Singapore 159640
Phone: +65-6282-2400
Fax: +65-6282-2533

● P.R. China (Shanghai)

Anritsu (China) Co., Ltd.

Room 2701-2705, Tower A,
New Caohejing International Business Center
No. 391 Gui Ping Road Shanghai, 200233, P.R. China
Phone: +86-21-6237-0898
Fax: +86-21-6237-0899

● P.R. China (Hong Kong)

Anritsu Company Ltd.

Unit 1006-7, 10/F., Greenfield Tower, Concordia Plaza,
No. 1 Science Museum Road, Tsim Sha Tsui East,
Kowloon, Hong Kong, P.R. China
Phone: +852-2301-4980
Fax: +852-2301-3545

● Japan

Anritsu Corporation

8-5, Tamura-cho, Atsugi-shi, Kanagawa, 243-0016 Japan
Phone: +81-46-296-1221
Fax: +81-46-296-1238

● Korea

Anritsu Corporation, Ltd.

5FL, 235 Pangyoyeok-ro, Bundang-gu, Seongnam-si,
Gyeonggi-do, 463-400 Korea
Phone: +82-31-696-7750
Fax: +82-31-696-7751

● Australia

Anritsu Pty. Ltd.

Unit 21/270 Ferntree Gully Road, Notting Hill,
Victoria 3168, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

● Taiwan

Anritsu Company Inc.

7F, No. 316, Sec. 1, NeiHu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817