

**Anritsu** envision : ensure

# Network Master™ Series

## Network Master Pro

MT1000A

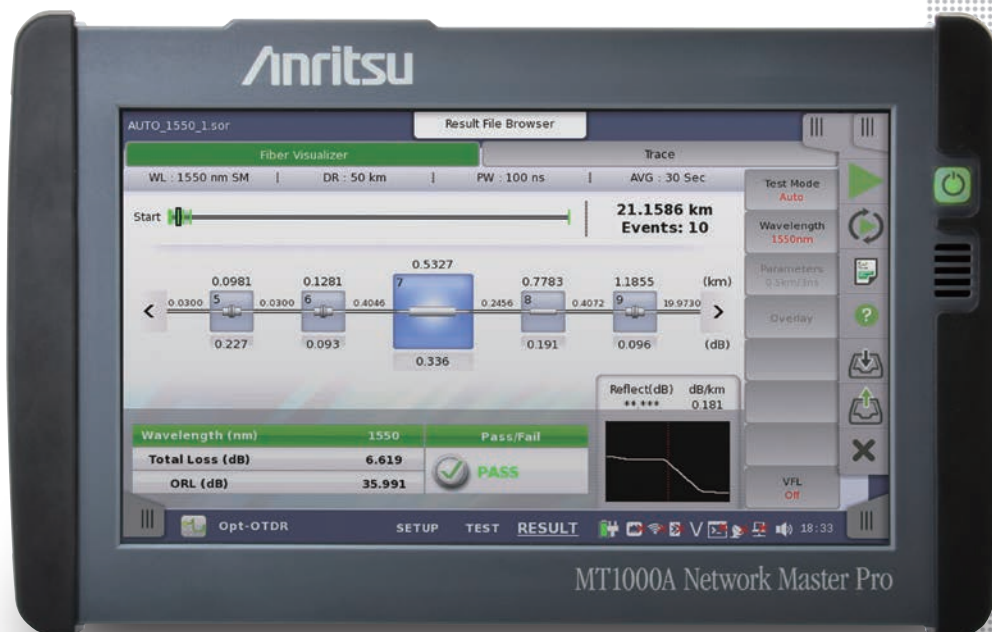
## OTDR Module

MU100020A 1310/1550 nm SMF

MU100021A 1310/1550/850/1300 nm SMF/MMF

MU100022A 1310/1550/1625 nm SMF

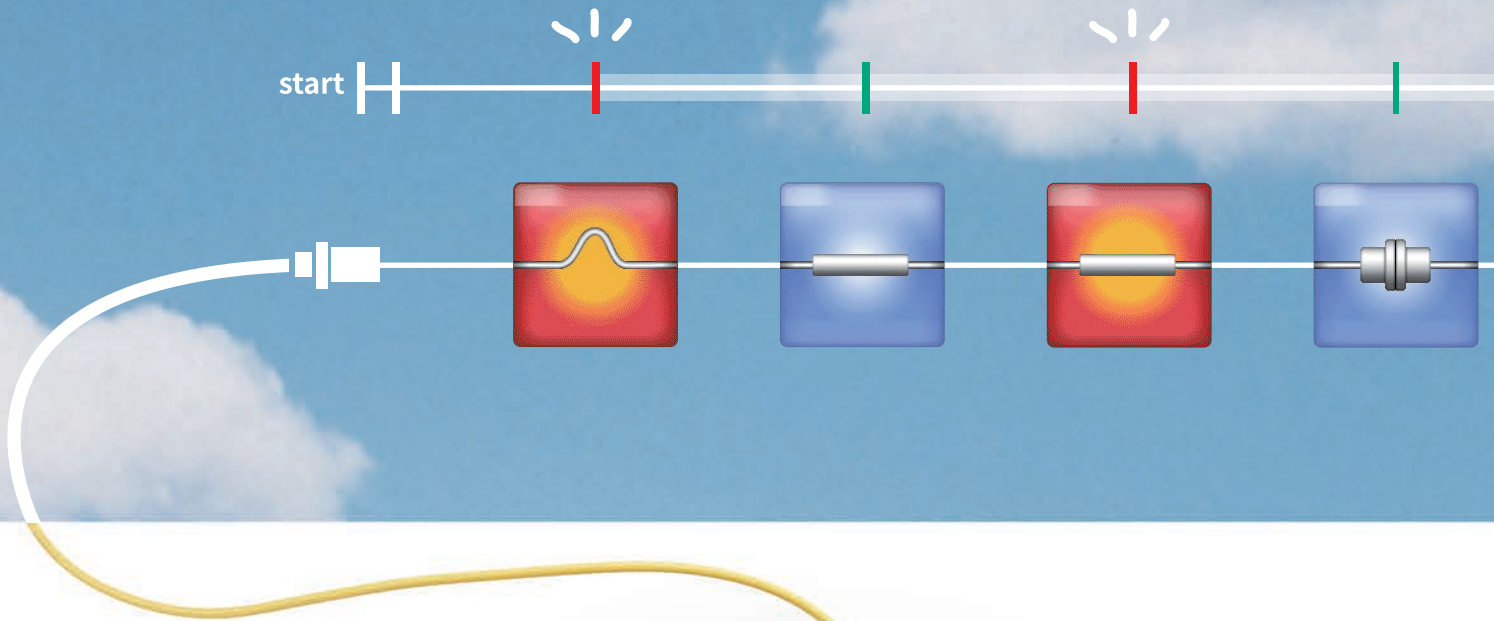
 Network Master Pro



MT1000A Network Master Pro

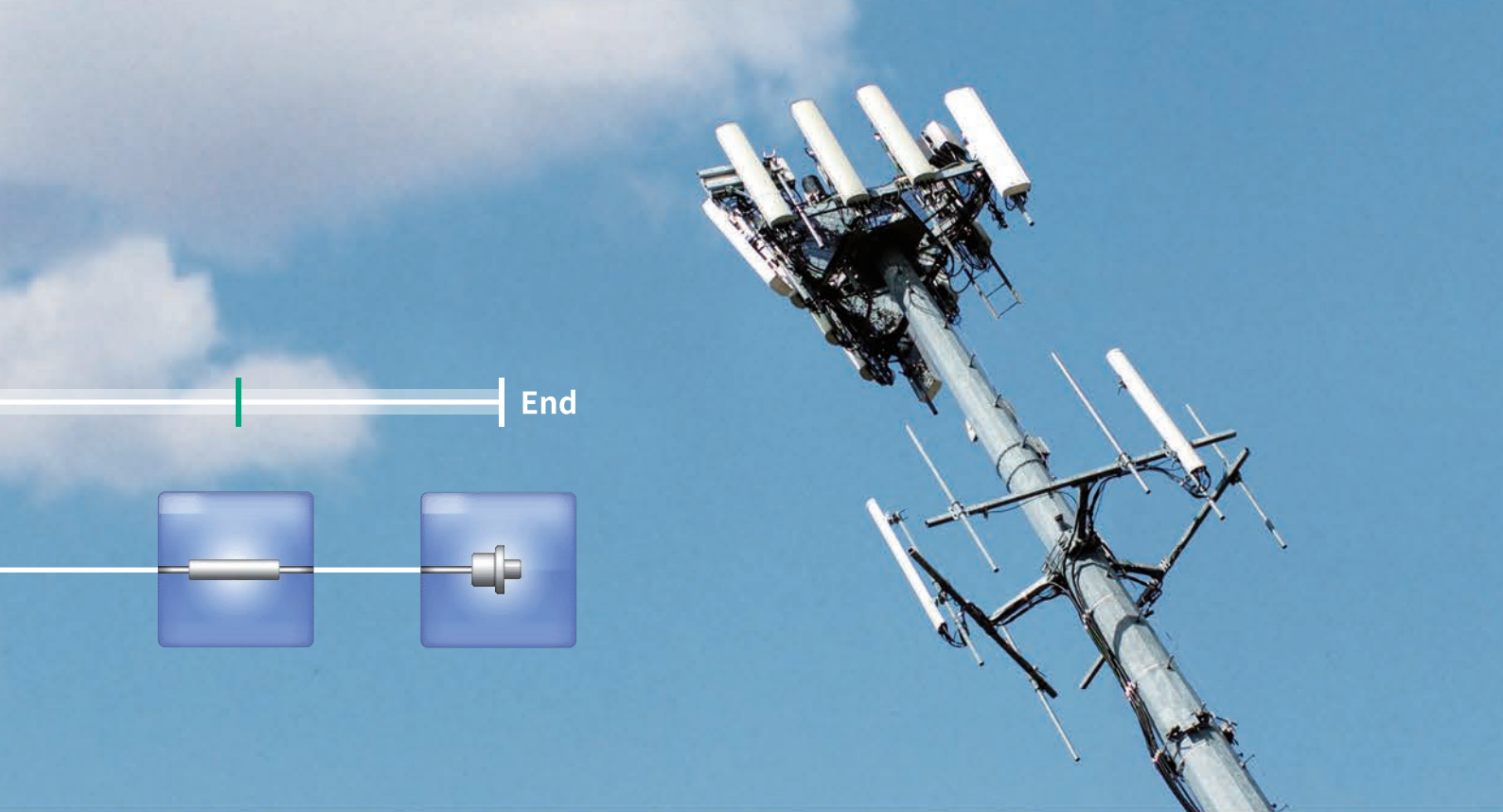
# Intuitive Fiber Status Monitoring

## For Mobile Network I&M



Network Master™ Series MT1000A Network Master Pro  
 MU100020A/21A/22A OTDR Module

# MU100020A/21A/22A



## Installing Complex Mobile Networks

The worldwide spread of mobile devices, such as smartphones and tablets using SNS, video streaming, etc., is causing an explosive increase in data traffic volumes. Mobile network base stations have various configurations; as well as shifting towards using smaller remote radio head (RRH) installations, optical fiber fault-finding and transport quality tests are required as the network environment evolves.

Installing the 10G Multi-rate Module MU100010A and OTDR Module MU100020A/MU100021A/MU100022A in the Network Master Pro MT1000A supports all-in-one optical-fiber fault finding and transport quality tests.

Using the MU100020A/MU100021A/MU100022A, scratched or dirty connectors at fiber cable connections can be detected as fault locations from the excessive optical reflections to support fault finding and troubleshooting of Mobile optical networks. Additionally, work efficiency is greatly improved using the Fiber Visualizer function supporting Easy-to-Use/Easy-to-Report testing.

### Network Master Pro MT1000A Series

**All in One** All-in-One Optical/Transport Tester  
Install OTDR Module and 10G  
Multi-mode Module in one main frame

**Easy to use** Easy-to-Use Intuitive GUI Menus

- Compact Lightweight Design for Onsite Testing
- Modular Design for Maximized Investment Efficiency

### Key Applications

#### Mobile Network I&M



#### Mobile Fronthaul and Backhaul Optical Loss and Reflection Attenuation Measurements

- Supports hybrid SM fiber (1310/1550/1625 nm), MM fiber (850 nm/1300 nm) models
- All-in-one OTDR, light source, optical power meter, visible light source (option)
- Multi-pulse measurement for high-accuracy event detection
- CPRI/OBSAI measurement with simultaneously installed Multi-rate Module MU100010A



#### Easy-to-Use, Easy-to-Report + Fiber Visualizer

- Graphical summary and Pass/Fail evaluation display using Fiber Visualizer function
- OTDR simple test mode operation using touch pane
- One-touch button PDF report output

#### Core and Metro Network Long Range I&M

- Measures Trunk Fibers of 100 km or more and PON Networks with up to 1×128 Splitters
- Supports three SM fiber (1310 nm/1550 nm) models (Standard, Enhanced, High-Performance)
- Supporting Construction using Multi-core Fiber Cables
- Supports other Mobile network applications

# Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A

## All-in-One

Network I&M is supported by installing the MU100020A/MU100021A/ MU100022A and MU100010A in the MT1000A.

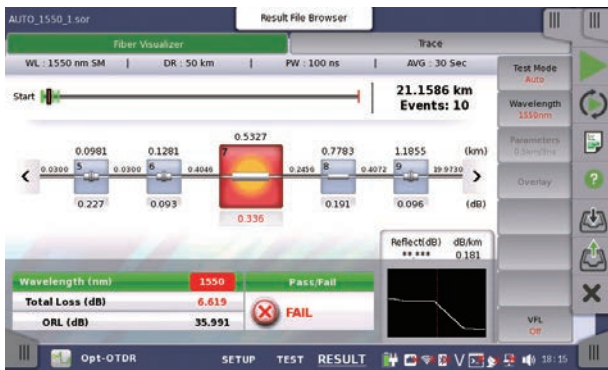
The OTDR Module lineup includes the MU100021A for OTDR measurements of both SM and MM fibers in high demand by the Mobile network I&M, plus the MU100020A/MU100022A for OTDR measurements of SM fiber used by PON networks and long-range measurements in Core/Metro networks.



With 10G Multi-rate Module and OTDR Module

## Easy-to-Use GUI

The MT1000A GUI design simulates onsite operations to help increase evaluation efficiency at network installation and to speed-up fault troubleshooting and isolation. Additionally, the intuitive user interface operations also help cut training time.



## Easy-to-Read and Easy-to-Use 9-inch High-Resolution Touch Screen

The large 9-inch high-resolution, full-color, touch screen is easy to use and displays easy-to-read measurement results, helping improve onsite work efficiency.

## Portable

All test functions required for network verification are built into the compact MT1000A cabinet for easy, all-in-one onsite support of most communications standards; the standard soft carry bag accessory is also ideal for carrying the MT1000A onsite.

## Long Battery Life

Since AC power is not commonly available onsite, the MT1000A can run for up to 6 hours (with OTDR Module) on just one battery charge. And the optional car 12 Vdc adapter offers in-vehicle charging, helping facilitate uninterrupted work when moving between sites.

## All-in-One Functions Required by Physical Layer I&M Tests

The MU100020A/MU100021A/MU100022A built-in light source and power meter functions can be used for optical loss tests in addition to OTDR tests. An optional (Option 002) visible light source can be installed as well.

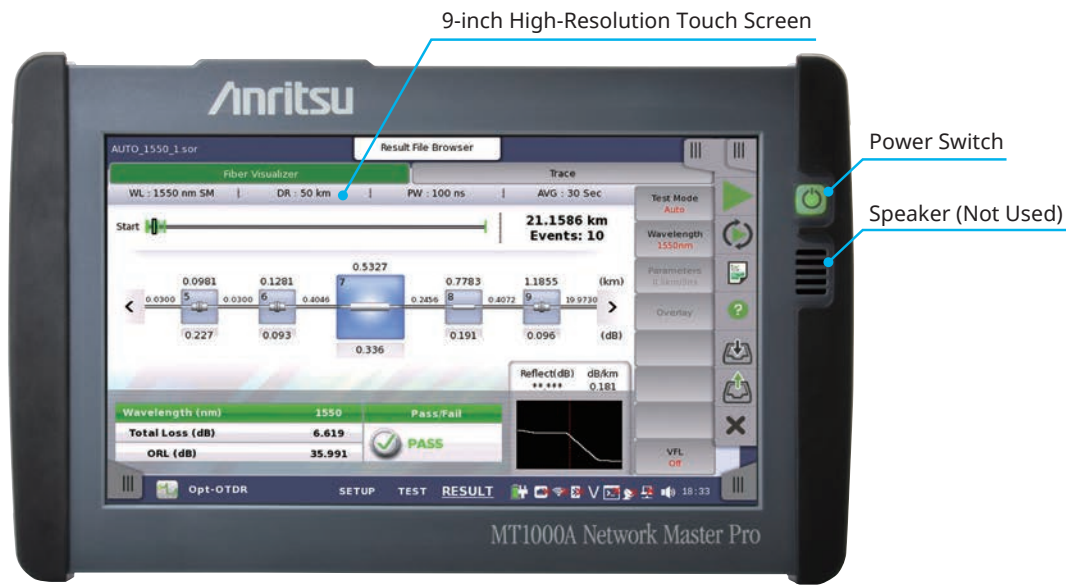
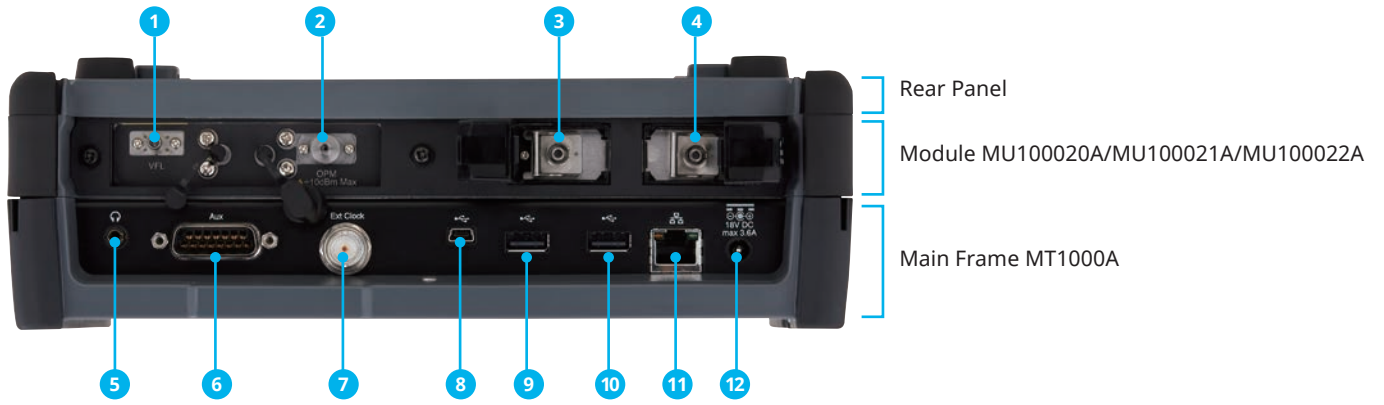
Moreover, the presence of scratches and dirt on the fiber end face can be checked using the Video Inspection Probe (VIP).



\*: Separately sold Video Inspection Probe (External G0306B)

# Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A

## Panel Layout



- 1 Visible Light Option
- 2 Optical Power Meter
- 3 OTDR Multi-mode Port<sup>\*1</sup>
- 4 OTDR Single-mode Port<sup>\*2</sup>
- 5 Audio<sup>\*3</sup>
- 6 AUX (Interface for GPS)<sup>\*3</sup>
- 7 Clock Input<sup>\*3</sup>
- 8 USB Mini-B
- 9 USB A
- 10 USB A
- 11 Ethernet Interface (For Remote Control)
- 12 DC Input (18 Vdc)

\*1: MU100021A Multi-mode (850/1300 nm)  
 \*2: MU100020A/MU100021A/MU100022A Single-mode (1310/1550/1625 nm)  
 \*3: Not Support for OTDR Module Application



Changeable Rechargeable Lithium-Ion Battery Pack

# Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A

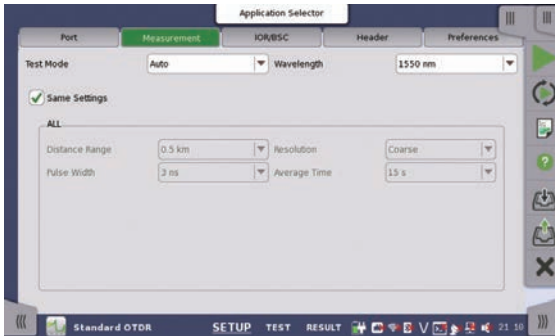
## OTDR Module Applications

Generally, depending on the optical fiber measurement environment, OTDR measurements require multiple settings such as distance range, pulse width, measurement time, etc., making work difficult for technicians who do not generally use an OTDR. When performing Pass/Fail evaluation of an optical network for a report, a simple intuitive GUI is key to improving work efficiency.

The MU100020A/MU100021A/MU100022A emphasizes easy-to-understand operability using three application measurement modes: Standard OTDR Measurement, FTTA Measurement, Construction Mode and OLTS Measurement.

### Standard OTDR Measurements

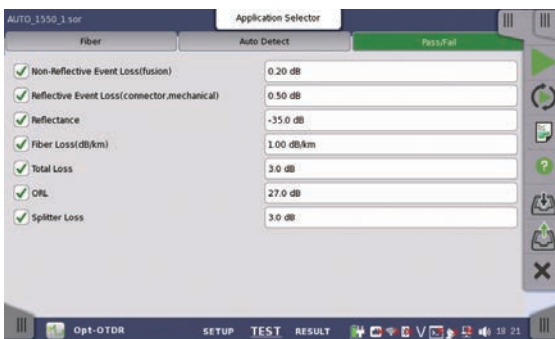
Graphical Display Based on Three-Window Operation: SETUP/TEST/RESULT



SETUP

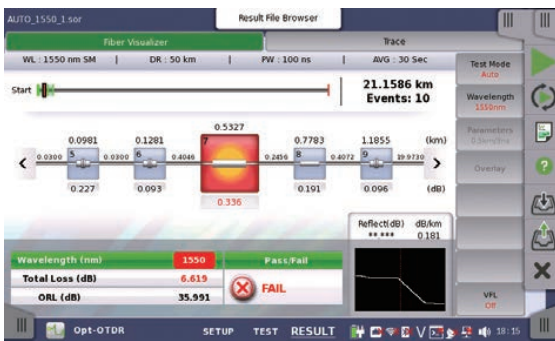
This sets the measurement wavelength.

Other conditions, such as distance range, measurement time, etc., are measured at the Auto setting conditions.



TEST

This sets the detection conditions for optical fiber connectors and splices as well as the Pass/Fail evaluation threshold values, and starts measurement.

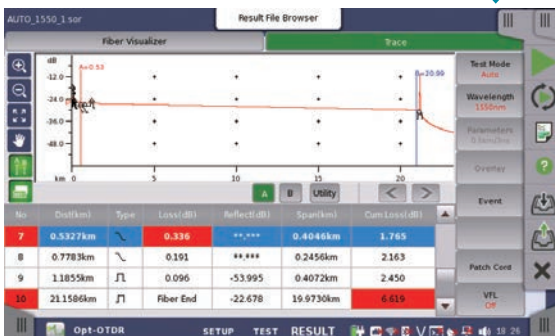


RESULT

This displays the Pass/Fail evaluation results for each event graphically at the Fiber Visualizer screen.

Additionally, waveform analysis is supported by switching to the Trace screen.

One-Button Screen Switch



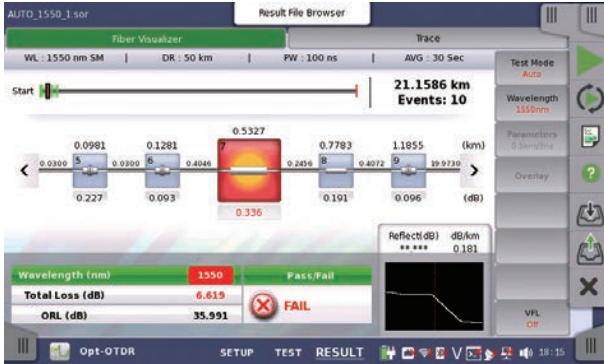
The measured data are output as a PDF report by an easy one-button operation.



## OTDR Module Applications

### 1: Easy Pass/Fail Evaluation Using Fiber Visualizer

The OTDR measurement results are displayed as a trace showing the optical fiber length, losses and size of reflections, as well as an easy-to-view summary of the analysis results on the Fiber Visualizer screen.



Fiber Visualizer Screen

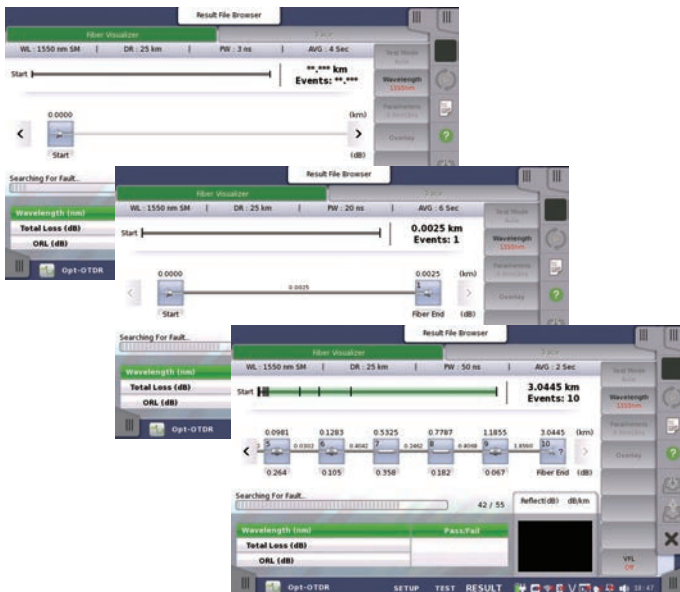
- Event icons showing characteristics of each connector, splice, and far end
- Pass/Fail evaluations based on user-settable threshold values

The user can set any threshold value for each event. If the Pass/Fail evaluation settings prescribed in the engineering manual are set beforehand, the measured optical fiber loss status can be easily distinguished visually at the same time as measurement ends.

### 2: Accurate Event Detection Using Multiple Pulse Widths

This function measures using multiple pulse widths during one measurement.

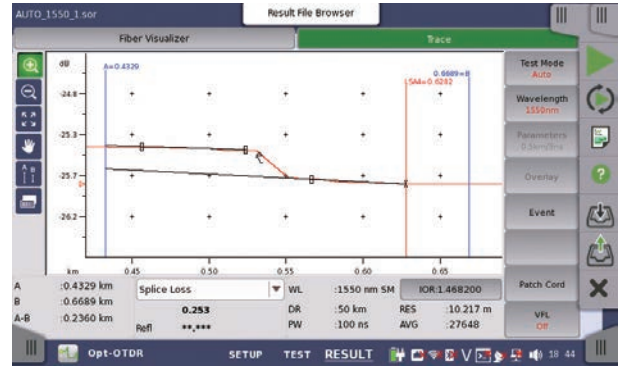
Optical networks are often composed of networks using fibers ranging in lengths from a few meters to several kilometers. Using the MU100020A/MU100021A/MU100022A multi-pulse technology for measurement gives much better and more accurate detection of events in short fibers than previous measurements.



Event Detection Using Multi-pulse Measurements

### 3: Intuitive Manual Waveform Analysis Using Touch Panel Operation

Using the Trace screen, it is also possible to perform manual analysis while moving the cursor on the captured waveform. Since the MT1000A has a touch panel, the optical fiber length, loss, and reflection attenuation can be analyzed manually using intuitive direct operations on the waveform.

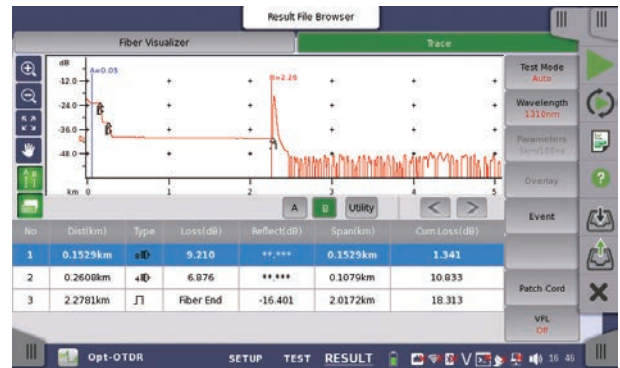


Manual Analysis Screen

### 4: Supports Long-Distance Optical Fibers and PON Network Measurements with 1 x 128 Splitters

OTDR measurements of long optical fibers exceeding 100 km as well as PON networks including many splitters require an OTDR with high dynamic-range performance.

With its high dynamic range of 46 dB (typical), the MU100020A/MU100022A is ideal for evaluating Core/Metro/Access optical fiber networks.



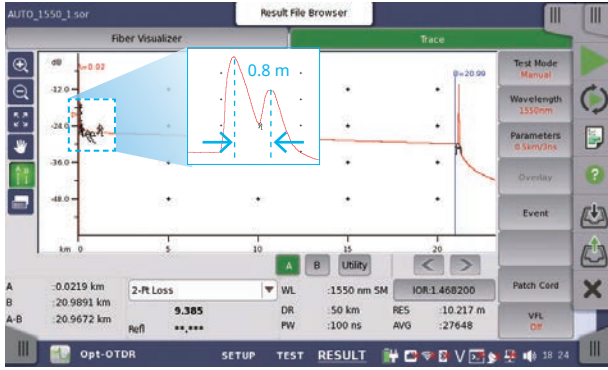
PON Measurement Screen

## OTDR Module Applications

### 5: Various Functions and Performance for Precision OTDR Measurements

#### 0.8-m Event Dead Zone

Events can be detected with a dead zone of just 0.8 m (typical). This is ideal for measurements in a mixed environment including short optical fibers, such as patch cords.



0.8-m Event Dead Zone

#### 250,001 Sampling Points Max.

Up to 250,001 sampling points are supported, offering a minimum resolution of 2 cm, and a resolution of 2 m for a distance range of 300 km.

#### Optical Communications/Connection Check Functions

If an optical data signal is being input to the OTDR from an external source, the optical fiber connection status will be poor, making it impossible to perform accurate measurement and analysis. When an optical data signal is detected at the start of OTDR measurement using these functions, the optical fiber connection status is evaluated as poor, a warning is displayed, and measurement is stopped.

#### Supports OTDR Data Sharing Format

The measured waveform and analysis results data from the Fiber Visualizer and waveform screens are saved in the same common OTDR format described in the Telcordia SR-4731 (issue 2) standards. Not only can saved data be read by these instruments, it can also be read by the "NETWORKS" Analysis Software running on a PC.

\*: The PC Analysis Software does not support the Fiber Visualizer function.

#### Macro Bend Detection/Analysis

Macro bends can be detected and analyzed by comparing two waveform (1310/1550/1625 nm) measurements using wavelength bend characteristics, permitting confirmation of bending faults in optical fibers, which is a difficult evaluation using measurement only one wavelength.

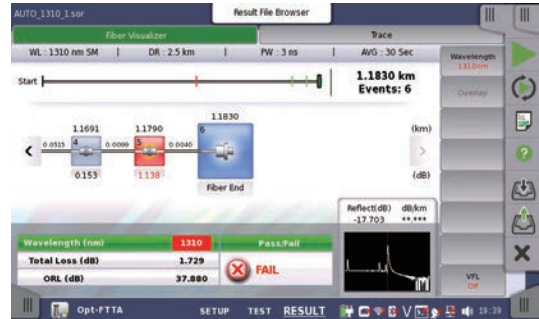
#### Multi-waveform Measurement and Display Functions

This is very convenient for comparison with saved waveform data captured at network commissioning as well as for comparison with abnormal waveform data, such as that captured at macro bend measurements.



#### FTTA Measurements

Comparatively short optical fibers of around several hundred meters in length are usually installed at the Mobile fronthaul FTFA. In this type of measurement environment, measurements made by different operators under different conditions commonly have inconsistency problems at later data processing. At FTFA measurement, the optical fiber installation measurement conditions are fixed previously, so measurements are always made under the same conditions. Like the OTDR measurement function, each measurement result can be analyzed at the Trace and Fiber Visualizer screens.

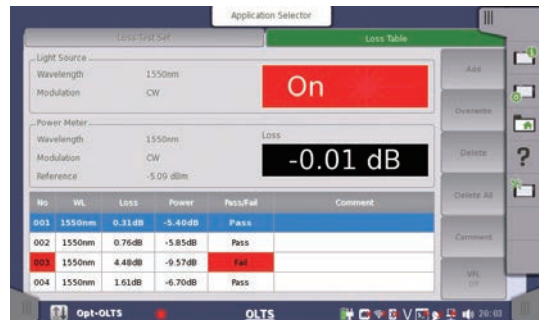


FTFA Measurements



#### OLTS Measurements

At measurement of the optical fiber, the first basic measurement is loss measurement using a light source and power meter. With a built-in light source and power meter as standard, the MU100020A/ MU100021A/MU100022A can be used as an optical loss test set (OLTS). In addition, measurement results can be managed at the Loss Table for Pass/Fail evaluation of individual data based on set threshold values.

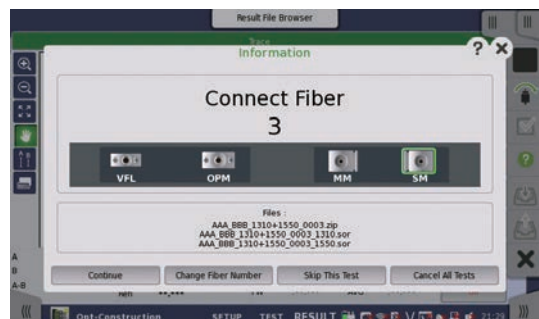


OLTS Measurement Loss Table Screen



#### Construction Mode

The "Construction mode" simplifies installation work and is especially useful when pulling multi-core fiber cables. Work mistakes are eliminated by automated operation using pre-settings, such as project data (number of fibers, file names, etc.) and measurement conditions, to facilitate efficient measurement of multi-core fiber cables.





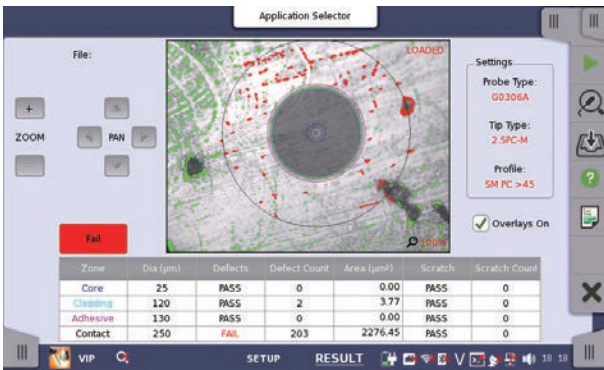
# Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A

## Other Shared Functions

### Optical Connector End Face Inspection

This function is for analyzing the presence and state of scratches and dirt on the fiber end face, which are one factor causing degraded optical communications quality. Additionally, connecting a dirty or scratched optical fiber directly to an OTDR can prevent Pass/Fail evaluation of a previously normal fiber.

The MT1000A has a built-in VIP utility menu for analyzing the end face of optical connectors. When the external optical fiberscope (G0306B sold separately) is connected, scratches and dirt on the optical connector end face can be confirmed visually. Pass/fail evaluation of the end-face status is performed according to the IEC61300-3-35 standard.



Optical Fiber End Face Inspection Screen

### PDF Report Output

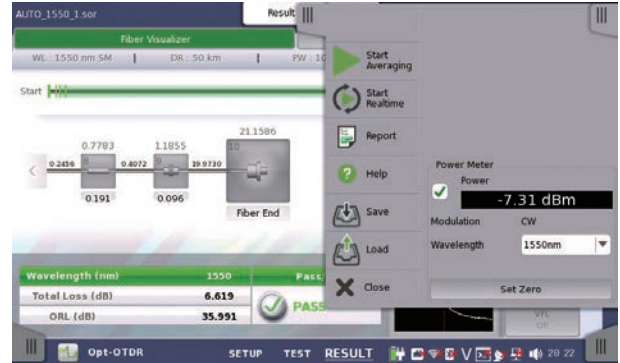
OTDR/FTTA measurement results can be output as a PDF report. In addition to the summary display, the Fiber Visualizer event icons, event table, and a waveform display can also be output. This is useful for easy confirmation of the Pass/Fail evaluation status. In addition, files obtained by VIP measurement can also be read as well, creating a single convenient report.



PDF Report

### Simultaneous Visible Light Option/Optical Power Meter Measurements

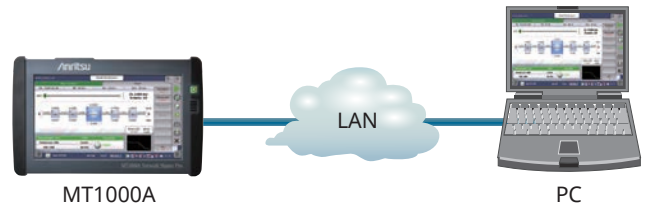
The visible light option (Option 002) can be used jointly with each of the Standard OTDR, FTTA, Construction and OLTS applications, making it possible to visually confirm breaks in the optical fiber. Furthermore, the Standard OTDR, FTTA and Construction applications can also be used jointly with an optical power meter, increasing work efficiency when measuring multi optical fibers.



OTDR Operation with Optical Power Meter

### Remote Operation Function

The OTDR Module MU100020A/MU100021A/MU100022A can also be operated remotely from a PC over a VNC connection via Ethernet.



\*: The Windows Control Software MX100001A does not support this operation for OTDR modules.

# Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A Specifications

## MT1000A Mainframe Common Specifications

Display	9-inch active TFT display (800 × 480 pixels) and touch screen
Supported Languages	User selectable (English, Japanese, Simplified Chinese, Russian, French, Spanish)
USB Data Interface	MT1000A operates as host: USB 2.0 type A (2 ports), MT1000A operates as device: USB 2.0 type Mini-B (1 port)
Ethernet Interface	Ethernet 10M/100M/1000M, Connector: RJ45
Audio Interface	For connection of optional head set, Connector: 3.5-mm diameter jack
AUX Connector	For connection of optional G0325A GPS receiver
Built-in Loudspeaker	Monitors speech of voice channel, Output level: user-controlled from user Interface
Ext. Clock Input	For connection of external clock signals: SETS (E1: 2.048 Mbps), BITS (DS1: 1.544 Mbps) or 2.048 MHz TTL signal in accordance with ITU-T G.703, 10 MHz, Connector: BNC
Dimensions and Mass	MU100020A/MU100021A/MU100022A: 257.6 (W) × 163 (H) × 25 (D) mm (without rear panel), ≤0.8 kg with MT1000A: 257.6 (W) × 163 (H) × 84.3 (D) mm, 2.7 kg including battery (G0310A) with MT1000A/MU100010A: 257.6 (W) × 163 (H) × 102.2 (D) mm, 3.5 kg including battery (G0310A)
Mains Adapter	Input: 100 V (ac) to 240 V (ac), 50 Hz/60 Hz Output: 18 V (dc)
Battery	10.8 V rechargeable and replaceable intelligent Li-ion battery Operating time: 6.0 h (with MU100020A/MU100021A/MU100022A), Telcordia GR-196-CORE Issue2, September 2010, 25°C
Environmental Conditions	Operating Temperature : 0 to +50°C, ≤85%RH (non-condensing) (with MU100020A/MU100021A/MU100022A) Storage Temperature: -30 to +60°C, ≤90%RH (non-condensing) (without battery or AC adapter, with MU100020A/MU100021A/MU100022A) -20 to +50°C, ≤90%RH (non-condensing) (with battery and AC adapter, with MU100020A/MU100021A/MU100022A)
EMC	EN61326-1, EN61000-3-2
LVD	EN61010-1

## MU100020A/MU100021A/MU100022A OTDR Module Common Specifications

IOR Setting	1.300000 to 1.700000 (0.000001 steps)
Units	km, m, kft, ft, mi
Sampling Points	Up to 250,001
Sampling Resolution	0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 40 m
Loss measurement accuracy (linearity)	±0.05 dB/dB or ±0.1 dB (whichever is greater)
Reflectance Accuracy	Single mode: ±2 dB, Multimode: ±4 dB
Distance Accuracy	±1 m ±3 × measurement distance × 10 <sup>-5</sup> ± marker resolution (excluding IOR uncertainty)
Distance Range (IOR = 1.50000)	Single mode: 0.5, 1, 2.5, 5, 10, 25, 50, 100, 200, 300 km Multimode: 0.5, 1, 2.5, 5, 10, 25, 50, 100 km
Realtime Sweep Time	≤0.2 sec. (Test Mode: Manual, Distance Range: 50 km, Resolution: Coarse )
Testing Modes	Standard OTDR application: Selectable automatic or manual set-up, Fiber Visualizer, Trace analysis, Light source, Power meter, Visual fault locator (Optional) FTTA application: Automatic set-up, Fiber Visualizer, Trace analysis, Light source, Power meter, Visual fault locator (Optional) Construction application: OTDR Measurement, Auto Save, Multi-core fiber measurements, Power meter, Visual fault locator (Optional) OLTS application: Power meter and Light source, Loss Table, Visual fault locator (Optional)
Fiber Event Analysis	Fiber condition setup: Patch-cord setup (Launch/Receive), Splitter Setup (Up to 128 branch) User defined Auto detect threshold: Event loss (Reflective and non-reflective), Reflectance, Fiber end, Macro bend detect ON/OFF, Splitter detect: Up to 128 branch User defined PASS/FAIL thresholds: Non-reflective event loss (fusion), Reflective event loss (connector, mechanical), Reflectance, Fiber loss (dB/km), Total loss, ORL, Splitter loss (Up to 128 branch)
OTDR Trace Format	Telcordia universal. SOR, issue 2 (SR-4731)
Other Functions	Loss modes: Splice loss, 2-pt loss, 2-pt LSA, dB/km loss, dB/km LSA, ORL Averaging modes: Timed (5, 10, 15, 30 sec, 1, 2, 3, 5, 10 min.) Live Fiber detect : Verifies presence of communication light in optical fiber Connection check: Automatic check of OTDR to FUT connection quality, Remote Operation, Both-End Measurement

# Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A Specifications

## MU100020A OTDR Module

Options	Wavelength*1	Fiber Type	Pulse Width	Dynamic Range*2, *3	Deadzone (Fresnel)*4 (IOR = 1.500000)	Deadzone (Backscatter)*5 (IOR = 1.500000)
MU100020A-020	1310 nm/1550 nm ±25 nm	Single Mode Fiber (SMF) 10 μm/125 μm ITU-T G.652	3, 10, 20, 50, 100, 200, 500, 1000, 2000, 4000, 10000, 20000 ns	39 dB/37.5 dB*6	≤80 cm (typ.)	≤3.8 m/4.3 m
MU100020A-021				42 dB/41 dB*6		
MU100020A-022				46 dB/46 dB*6 25 dB/25 dB*6 (Pulse width: 100 ns)		

## MU100021A OTDR Module

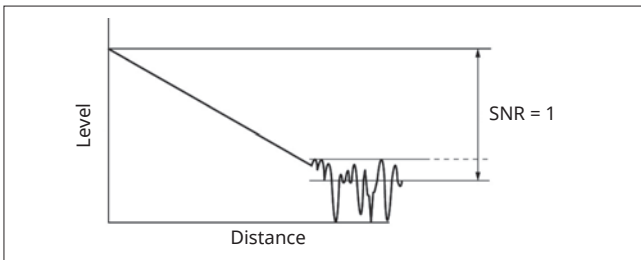
Options	Wavelength*1	Fiber Type	Pulse Width	Dynamic Range*2, *3	Deadzone (Fresnel)*4 (IOR = 1.500000)	Deadzone (Backscatter)*5 (IOR = 1.500000)
MU100021A-021	1310 nm/1550 nm ±25 nm 850 nm/1300 nm ±30 nm	Single Mode Fiber (SMF) 10 μm/125 μm ITU-T G.652  GI Fiber 62.5 μm/125 μm*7	SMF: Same as MU100020A 1300 nm (MMF): 3, 10, 20, 50, 100, 200, 500, 1000, 2000, 4000 ns 850 nm (MMF): 3, 10, 20, 50, 100, 200, 500 ns	42 dB/41 dB*6 29 dB/28 dB*6	≤80 cm (typ.)	≤3.8 m/4.3 m ≤4.0 m/5.0 m

## MU100022A OTDR Module

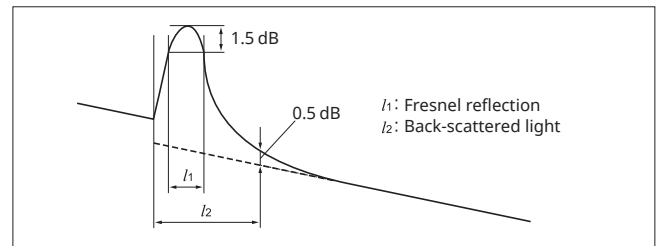
Options	Wavelength*1	Fiber Type	Pulse Width	Dynamic Range*2, *3	Deadzone (Fresnel)*4 (IOR = 1.500000)	Deadzone (Backscatter)*5 (IOR = 1.500000)
MU100022A-022	1310/1550/1625 nm ±25 nm	Single Mode Fiber (SMF) 10 μm/125 μm ITU-T G.652	3, 10, 20, 50, 100, 200, 500, 1000, 2000, 4000, 10000, 20000 ns	46/46/44 dB*6 25/25/23 dB*6 (Pulse width: 100 ns)	≤80 cm (typ.)	≤3.8/4.3/4.8 m

Laser Safety*8	IEC 60825-1: 2007 CLASS 1M: 21 CFR1040.10 Excludes deviations caused by conformance to Laser Notice No. 50 dated June 24, 2007
----------------	-----------------------------------------------------------------------------------------------------------------------------------

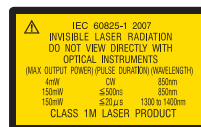
- \*1: 25°C, Pulse width: 1 μs (1310/1550/1625 nm), 100 ns (850 nm/1300 nm), Except for when charging the battery.
- \*2: Pulse widths: 20 μs (1310/1550/1625 nm), 500 ns/4 μs (850 nm/1300 nm)  
Distance range: 100 km (1310/1550/1625 nm), 25 km (850 nm/1300 nm)  
Averaging: 180 sec., SNR = 1, 25°C  
Except for when charging the battery.
- \*3: Dynamic range (one-way back-scattered light), SNR = 1: The level difference between the RMS noise level and the level where near end back-scattering occurs.



- \*4: Pulse width: 3 ns, Return loss: 40 dB, 25°C (Refer to the figure below)  
Except for when charging the battery.



- \*5: Pulse width 10 ns, return loss 55 dB, Deviation ±0.5 dB, 25°C ±5°C
- \*6: Typical. Subtract 1 dB for guarantee
- \*7: At measurement of 50 μm/125 μm MM Fiber, the dynamic range drops by about 3.0 dB
- \*8: Safety measures for laser products  
This product complies with optical safety standards in IEC 60825-1, 21CFR1040.10 and 1040.11; the following descriptive labels are affixed to the product.



THIS PRODUCT COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 50, DATED JUNE 24, 2007

# Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A Specifications

## Light Source Specifications

Standard on all models

Stabilized Light Source (through OTDR port)			
Options	MU100020A	MU100021A	MU100022A
Wavelength*1	1310 nm/1550 nm ±30 nm	1310 nm/1550 nm ±30 nm 850 nm/1300 nm ±30 nm	1310/1550/1625 nm ±30 nm
Spectral Width*1	≤5 nm (1310 nm) ≤10 nm (850/1300/1550/1625 nm)		
Fiber Type	Single Mode Fiber (SMF) 10 μm/125 μm ITU-T G.652	Single Mode Fiber (SMF) 10 μm/125 μm ITU-T G.652 GI Fiber 62.5 μm/125 μm	Single Mode Fiber (SMF) 10 μm/125 μm ITU-T G.652
Optical Connector	Same as OTDR		
Output Power*1	-5 ±1.5 dBm		
Output Stability*2	≤0.1 dB (1310/1550/1625 nm)		
Modes of Operation	CW, 270 Hz, 1 kHz, 2 kHz		
Warm up time	10 min.		
Laser Safety	Same as OTDR		

## Power Meter Specifications

Standard on all models

Standard Power Meter (Dedicated port)	
Fiber Type	Single Mode (SMF) 10 μm/125 μm ITU-T G.652, GI Fiber 62.5 μm/125 μm
Wavelength Range	800 nm to 1700 nm
Setting Wavelengths	1310, 1490, 1550, 1625, 1650, 850, 1300 nm
Measurement Range	-67 to +6 dBm (CW, 1550 nm, -60 to +3 dBm @850 nm) -70 to +3 dBm (Modulation, 1550 nm, -63 to 0 dBm @850 nm)
Optical Connector	2.5 mm/1.25 mm Universal
Accuracy*3	±5% (-10 dBm, 1310 nm/1550 nm, CW, 25°C, Using Master FC fiber and 2.5 mm universal connector) ±10% (-10 dBm, 850 nm, CW, 25°C, Using Master FC fiber and 2.5 mm universal connector)
Modes of Operation	CW, 270 Hz, 1 kHz, 2 kHz

Visible Light Source (Option 002)	
Central Wavelength	650 nm ±15 nm (at 25°C)
Optical Output	0 ±3 dBm (CW, 25°C)
Output Optical Fiber	10 μm/125 μm, SMF (ITU-T G.652)
Optical Connector	2.5 mm universal
Output Function	OFF, CW, Blink
Laser Safety*4	IEC 60825-1: 2007 CLASS 3R 21CFR1040.10 and 1040.11 Excludes deviations caused by conformance to Laser Notice No. 50 dated June 24, 2007

\*1: CW, 25°C

\*2: CW, -10° to +50°C (±1°C) difference between max/min. values over 1 minute, SM fiber 2 m, when an optical power meter with 40 dB or greater return loss is used (SM), after warming up.

\*3: After zero offset

\*4: Safety measures for laser products

This option complies with optical safety standards in IEC 60825-1, 21CFR1040.10 and 1040.11; the following descriptive labels are affixed to the product



THIS PRODUCT COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 50, DATED JUNE 24, 2007

# Ordering Information

## Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A

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.

### 1) Mainframe

Model/Order No.	Name
MT1000A	Network Master Pro
<b>Standard Accessories</b>	
B0690A*2	Line Cord*1: 1 pc
	Softbag: 1 pc
B0728A*3	Rear Panel Kit: 1 pc
G0309A	AC Adapter: 1 pc
G0310A	Li-ion Battery: 1 pc
Z1746A	Stylus: 1 pc
Z1747A*4	Carrying Strap: 1 pc
Z1748A*5	Handle: 1 pc
Z1817A*6	Utilities ROM: 1 pc
<b>Main Frame Option</b>	
MT1000A-003	Connectivity for WLAN/Bluetooth
MT1000A-005*7	AUX I/O

- \*1: One line cord is attached to the area to shipment
- \*2: In addition to accommodating the MU100020A (or MU100021A or MU100022A) installed in the MT1000A, this bag can also accommodate the MU100010A.
- \*3: Set of B0720A (Rear Panel) and B0732A (Screw Set). Please refer to next page "Module Configuration" for details.
- \*4: Shoulder strap for MT1000A.
- \*5: Hand strap for MT1000A.
- \*6: DVD ROM containing operation manual, remote script instruction manual, etc.
- \*7: It is required when using MU100090A.

### 2) Select OTDR Module

Select the OTDR module configuration according to the procedures in items 2-1) and 2-2) below.

#### 2-1) Select Base Module

Select one of the following models.

Model/Order No.*8	Name
MU100020A	OTDR Module (1310/1550 nm SMF)
MU100021A	OTDR Module (1310/1550/850/1300 nm SMF/MMF)
MU100022A	OTDR Module (1310/1550/1625 nm SMF)
<b>Standard Accessories</b>	
J1693A	Universal Connector 2.5 mm for OPM: 1 pc
J1694A	Universal Connector 1.25 mm for OPM: 1 pc
W3811AE	Quick Reference Guide: 1 pc

- \*8: Factory installed option only and cannot be retrofitted.

#### 2-2) Select Dynamic Range Type

Select one of the following models.

Model/Order No.*9	Name
MU100020A-020	Standard Dynamic Range (1310/1550 nm: 39/37.5 dB)
MU100020A-021	Enhanced Dynamic Range (1310/1550 nm: 42/41 dB)
MU100020A-022	High-Performance Dynamic Range (1310/1550 nm: 46/46 dB)
MU100021A-021	Enhanced Dynamic Range (1310/1550/850/1300 nm: 42/41/29/28 dB)
MU100022A-022	High-Performance Dynamic Range (1310/1550/1625 nm: 46/46/44 dB)

- \*9: Factory installed option only and cannot be retrofitted.

### 3) Select Connector Types

Select a module polish type and connector adapter according to the procedures in items 3-1) and 3-2).

#### 3-1) Polish Types

Specify one connector polish type.

Model/Order No.*10	Name
MU100020A-010	UPC Polish
MU100020A-011*11	APC Polish
MU100021A-010	UPC Polish
MU100021A-011*11	APC Polish
MU100022A-010	UPC Polish
MU100022A-011*11	APC Polish

- \*10: Factory installed option only and cannot be retrofitted.
- \*11: Used by SM port. An APC connector cannot be specified for the MM port, which uses a UPC connector.

#### 3-2) Select Connector Adapter type

Specify one type of connector adapter.

Model/Order No.	Name
<b>For UPC Polish with Option 010</b>	
MU100020A-037*12	FC Connector
MU100020A-039*12	DIN 47256 Connector
MU100020A-040*12	SC Connector
MU100021A-037*13	FC Connector
MU100021A-039*13	DIN 47256 Connector
MU100021A-040*13	SC Connector
MU100022A-037*12	FC Connector
MU100022A-039*12	DIN 47256 Connector
MU100022A-040*12	SC Connector
<b>For APC Polish with Option 011</b>	
MU100020A-025*12	FC Connector key width 2.0 mm
MU100020A-026*12	SC Connector
MU100021A-025*14	FC Connector key width 2.0 mm
MU100021A-026*15	SC Connector
MU100022A-025*12	FC Connector key width 2.0 mm
MU100022A-026*12	SC Connector

- \*12: One specified connector adapter supplied free of charge.
- \*13: One each of same connector adapter for SM port and MM port supplied free of charge. Cannot specify different connector adapters for each port.
- \*14: One connector adapter for SM port supplied free of charge. One connector adapter equivalent to Option 37 (FC/UPC) for MM port supplied free of charge.
- \*15: One specified connector adapter for SM port supplied free of charge. One connector adapter equivalent to Option 40 (SC/UPC) for MM port supplied free of charge.

### 4) VFL

Model/Order No.*16	Name
MU100020A-002*17	Visual Fault Locator
MU100021A-002*17	Visual Fault Locator
MU100022A-002*17	Visual Fault Locator

- \*16: Factory installed option only and cannot be retrofitted.
- \*17: Installs dedicated port for visible light source; 2.5 mm universal light receiver type (connector adapter not required). J1335A required to connect 1.25 mm fiber.

### 5) Replacement Adapters

Model/Order No.	MU100020A/MU100022A	MU100021A	
<b>For UPC Polish</b>			
	SM port	SM port	MM port
J0617B (FC/UPC)	✓	✓	✓
J0618E (DIN/UPC)	✓	✓	✓
J0619B (SC/UPC)	✓	✓	✓
<b>For APC Polish</b>			
	SM port	SM port	MM port
J0739A (FC/APC)	✓	✓	N/A
J1697A (SC/APC)	✓	✓	N/A

# Ordering Information

## Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A

### 6) Select Accessories & Replacement Items

Model/Order No.	Name	Description
<b>For MT1000A Mainframe</b>		
B0691B	Hard Case	Up to two installed modules
B0733A	Hard Case	Up to three installed modules
G0324A	Battery Charger	
J1569A	Car 12 Vdc Adapter	
G0306B	Video Inspection Probe (X400)	Fixed x400 magnification. For visually verifying fiber end-face condition using MT1000A Utility application
B0720A	Rear Panel	MT1000A Rear Panel
B0728A	Rear Panel Kit	Rear Panel and Screw kit (Same as Standard accessory)
B0729A	Screw 1U	1 unit screw set (Total 4 pcs)
B0730A	Screw 2U	2 units screw set (Total 4 pcs)
B0731A	Screw 3U	3 units screw set (Total 4 pcs)
B0732A	Screw Kit	1U, 2U, 3U screw set (Total 12 pcs)
<b>For MU100020A/MU100021A/MU100022A OTDR Modules</b>		
W3810AE	MT1000A MU100020A Network Master Pro Operation Manual	Printed Matter
J1335A	MU/LC Connector Adapter	Converts ferrule connector diameter from 2.5 mm → 1.25 mm for visible light source (Option 002)
J1530A	SC Plug-in Converter (UPC(P)-APC(J))	SC/UPC → SC/APC Adapter
J1531A	SC Plug-in Converter (APC(P)-UPC(J))	SC/APC → SC/UPC Adapter
J1532A	FC Plug-in Converter (UPC(P)-APC(J))	FC/UPC → FC/APC Adapter
J1533A	FC Plug-in Converter (APC(P)-UPC(J))	FC/APC → FC/UPC Adapter
J1534A	LC-SC Plug-in Converter (for SM, SC(P)-LC(J))	SC/UPC → LC/UPC Adapter for SM fiber
J1535A	LC-SC Plug-in Converter (for MM, SC(P)-LC(J))	SC/UPC → LC/UPC Adapter for MM fiber
NETWORKS	PC Emulation Software for Data Analysis and Reporting	
J1579A	Optical cable SM LC/PC to LC/PC 3 m	
J1581A	Optical cable MM LC/PC to LC/PC 3 meter	
J1575A	Optical cable SM LC/PC to FC/PC 3 m	
J1571A	Optical cable SM LC/PC to SC/PC 3 m	

### 7) Maintenance Service

Model/Order No.	Description
MT1000A-ES210	2 Years Extended Warranty Service
MT1000A-ES310	3 Years Extended Warranty Service
MT1000A-ES510	5 Years Extended Warranty Service
MU100020A-ES210	2 Years Extended Warranty Service
MU100020A-ES310	3 Years Extended Warranty Service
MU100020A-ES510	5 Years Extended Warranty Service
MU100021A-ES210	2 Years Extended Warranty Service
MU100021A-ES310	3 Years Extended Warranty Service
MU100021A-ES510	5 Years Extended Warranty Service
MU100022A-ES210	2 Years Extended Warranty Service
MU100022A-ES310	3 Years Extended Warranty Service
MU100022A-ES510	5 Years Extended Warranty Service

### Example of Ordering Configuration

1)	MT1000A	Network Master Pro
2-1)	MU100020A	OTDR Module (1310/1550 nm SMF)
2-2)	MU100020A-020	Standard Dynamic Range
3-1)	MU100020A-010	UPC Connector
3-2)	MU100020A-037	FC Connector

1)	MT1000A	Network Master Pro
2-1)	MU100021A	OTDR Module (1310/1550/850/1300 nm SMF/MMF)
2-2)	MU100021A-021	Enhanced Dynamic Range
3-1)	MU100021A-011	APC Connector
3-2)	MU100021A-025	FC Connector key width 2.0 mm
4)	MU100021A-002	Visual Fault Locator Option
5)	J0619B	Replaceable Optical Connector (SC)

- One must be specified from items 1), 2-1), 2-2), 3-1), and 3-2), but specification from 1) is not required if the MT1000A main frame is not required.
- When the MU100020A is specified in item 2-1), select from the MU100020A options for models for item 2-2) and later.

### Module Configuration\*18

\*18: Any modular combination as shown in a figure.

\*19: Required if the MU100010A module (10G transport) is not used rear cover.

# Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A

## Related Products

### Network Master Pro MT1000A



#### 10G Multirate Module MU100010A

Installing the MU100010A in the MT1000A supports commissioning and maintenance tests of communications networks operating at speeds from 1.5 Mbps to 10 Gbps. In addition to Ethernet, OTN, etc., networks, the CPRI, OBSAI, and SyncE protocols used by mobile-network base stations are supported too.



### Network Master Flex MT1100A



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



### MT9090A Series



#### μOTDR Module MU909014/15

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



MU909014/15

#### Optical Channel Analyzer Module MU909020A

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



MU909020A

#### Gigabit Ethernet Module MU909060A

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



MU909060A

### Light Source/Optical Power Meter CMA5 Series

For optical fiber installation and maintenance.



### ACCESS Master Mini-OTDR MT9083 Series

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



## • 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 Eletronica Ltda.

Praça Amadeu Amaral, 27 - 1 Andar

01327-010 - Bela Vista - Sao Paulo - SP

Brazil

Phone: +55-11-3283-2511

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.

Moscow, 125009, Russia

Phone: +7-495-363-1694

Fax: +7-495-935-8962

## • Spain

### Anritsu EMEA Ltd.

#### Representation Office in Spain

Edificio Cuzco IV, Po. de la Castellana, 141, Pta. 5

28046, Madrid, Spain

Phone: +34-915-726-761

Fax: +34-915-726-621

## • United Arab Emirates

### Anritsu EMEA Ltd.

#### Dubai Liaison Office

902, Aurora Tower,

P O Box: 500311 - Dubai Internet City

Dubai, United Arab Emirates

Phone: +971-4-3758479

Fax: +971-4-4249036

## • 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: +81-46-296-6509

Fax: +81-46-225-8359

## • Korea

### Anritsu Corporation, Ltd.

5FL, 235 Pangyoyeok-ro, Bundang-gu, Seongnam-si,

Gyeonggi-do, 13494 Korea

Phone: +82-31-696-7750

Fax: +82-31-696-7751

## • Australia

### Anritsu Pty. Ltd.

Unit 20, 21-35 Ricketts Road,

Mount Waverley, Victoria 3149, 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