Anritsu Advancing beyond

Network Master™ Series

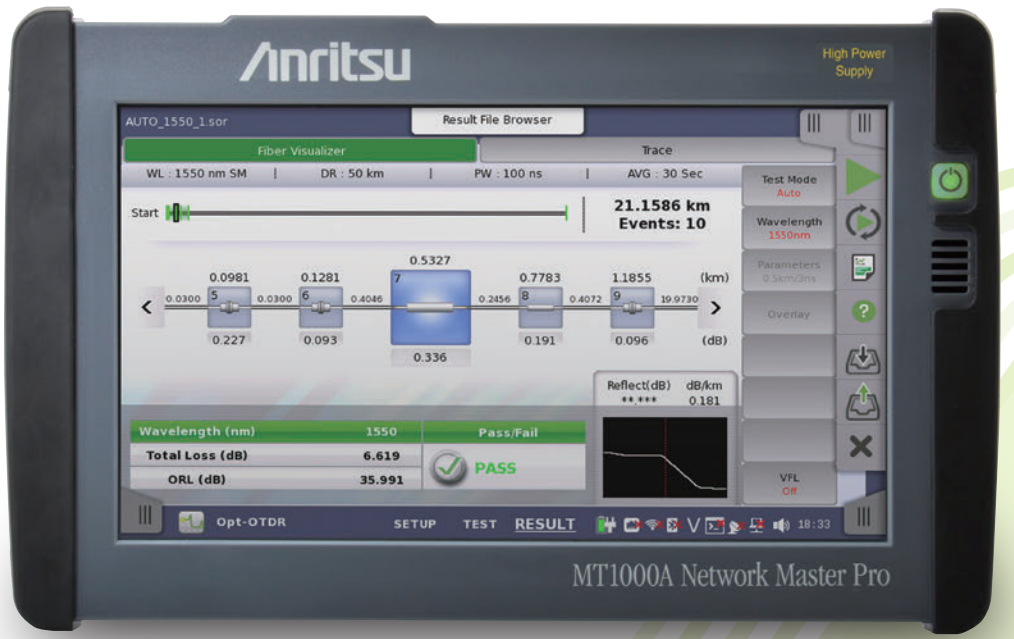
Network Master Pro

MT1000A

OTDR Module

MU100020A 1310/1550 nm SMF
MU100021A 1310/1550 nm SMF, 850/1300 nm MMF
MU100022A 1310/1550/1625 nm SMF
MU100023A 1310/1550 nm SMF, 1650 nm SMF

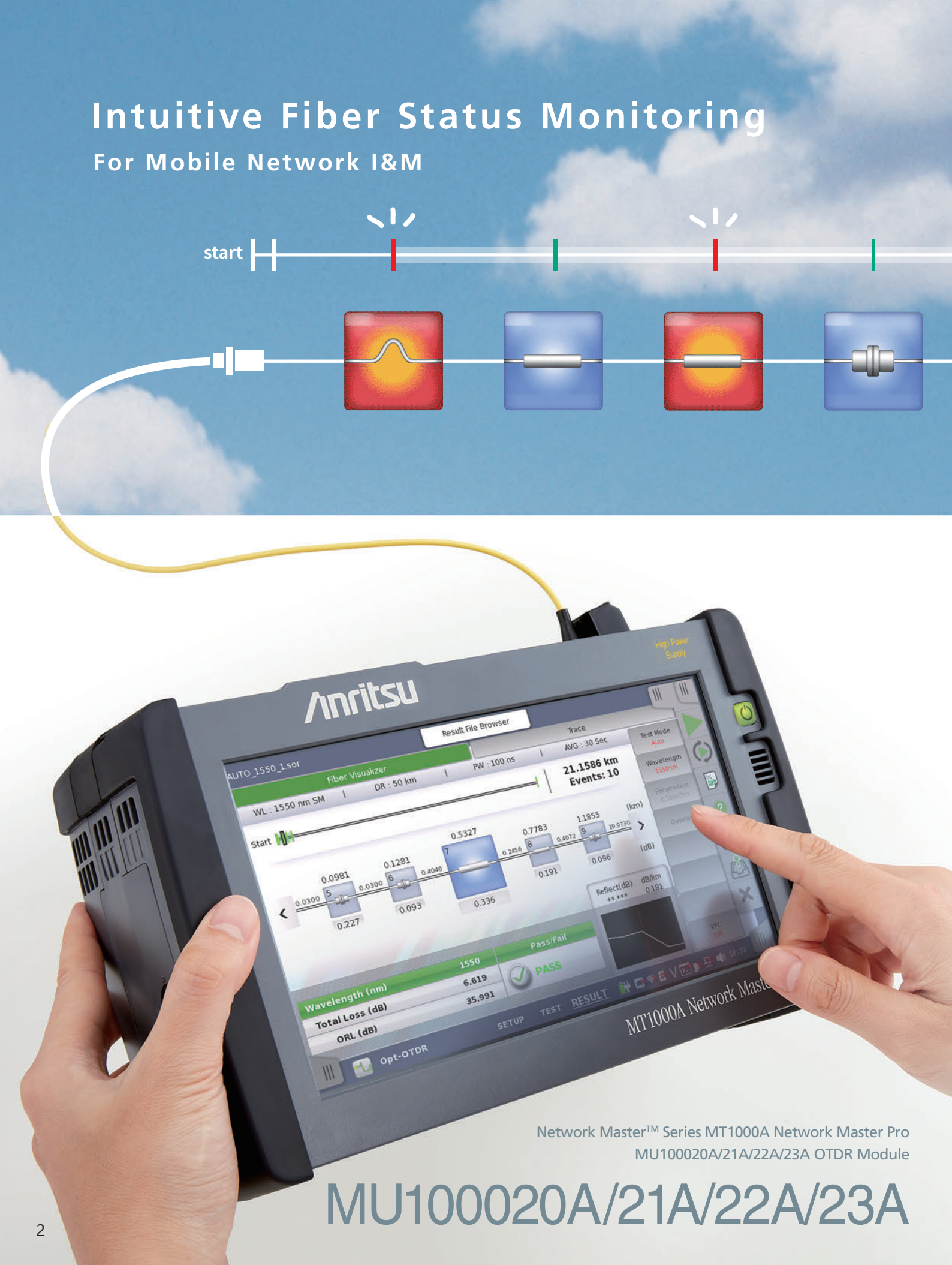
Network Master Pro



Excellent Eco Product

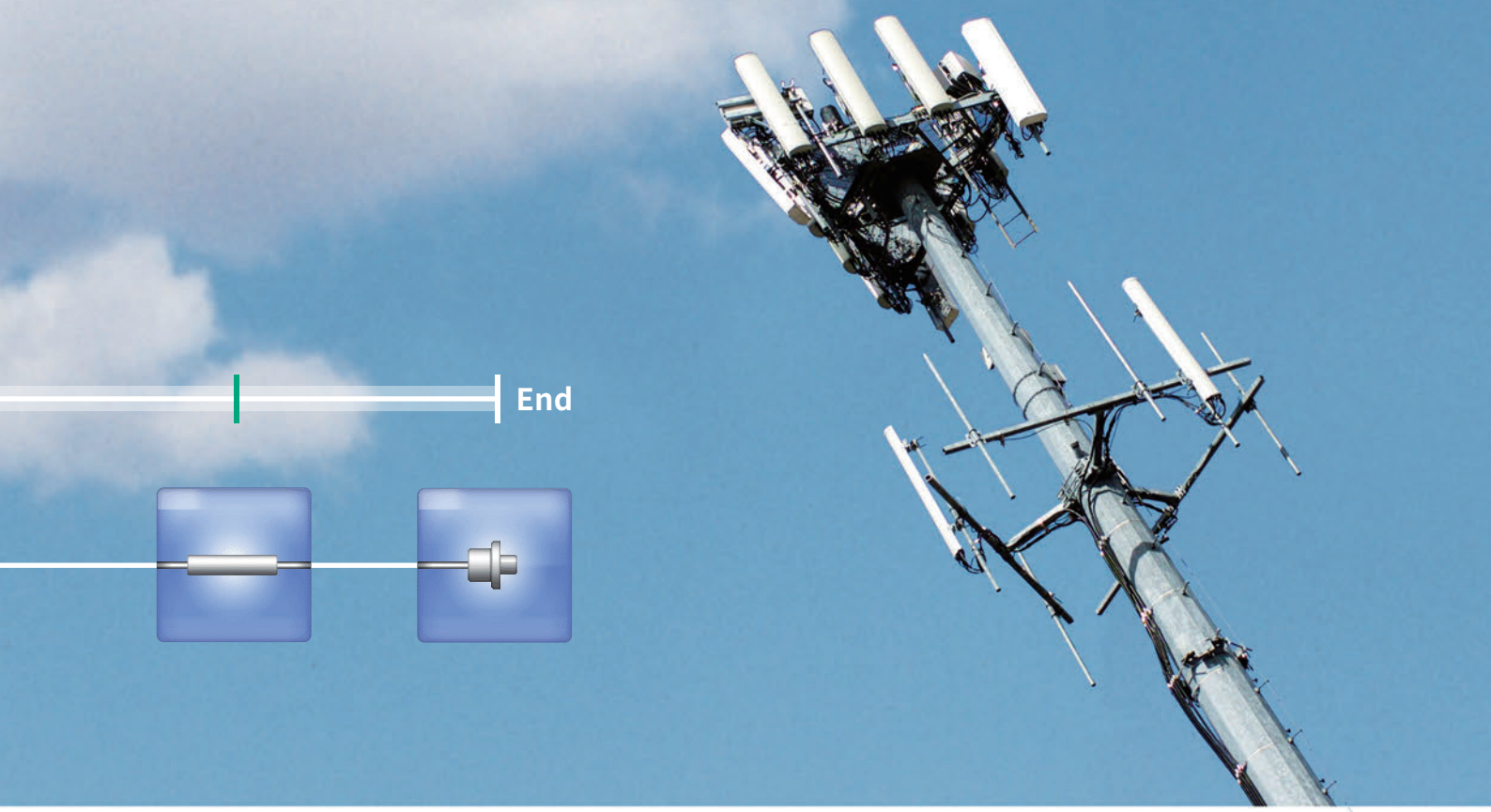
Intuitive Fiber Status Monitoring

For Mobile Network I&M



Network Master™ Series MT1000A Network Master Pro
MU100020A/21A/22A/23A OTDR Module

MU100020A/21A/22A/23A



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 Transport Module MU100010A (10G Multirate)/MU100011A (100G Multirate) and OTDR Module MU100020A/MU100021A/MU100022A/MU100023A in the Network Master Pro MT1000A supports all-in-one optical-fiber fault finding and transport quality tests.
Using the MU100020A/MU100021A/MU100022A/MU100023A, 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 Optical/Transport Tester
Install OTDR Module and 10G/100G Multirate Module in one main frame

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 SM fiber (1310/1550/1625 nm, 1650 nm), MM fiber (850 nm/1300 nm) models
- All-in-one OTDR, light source, optical power meter, visible light source (option)
- High-accuracy event detection
- CPRI/OBSAI measurement with simultaneously installed Multirate Module MU100010A/MU100011A

Easy-to-Use, Easy-to-Report FiberVisualizer

- Graphical summary and Pass/Fail evaluation display using Fiber Visualizer function
- OTDR simple test mode operation using touch panel
- 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

All-in-One

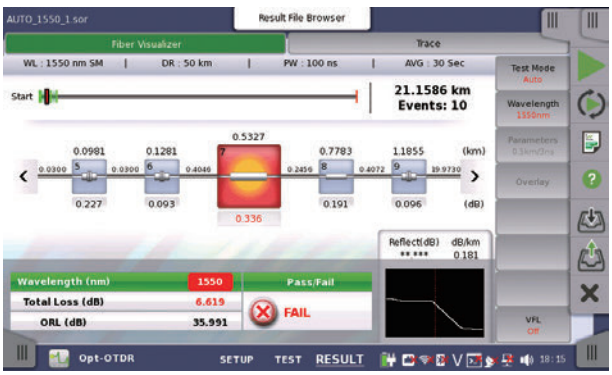
Network I&M is supported by installing the MU100020A/MU100021A/MU100022A/MU100023A and MU100010A/MU100011A in the MT1000A.

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/MU100023A for OTDR measurements of SM fiber used by PON networks and long- range measurements in Core/Metro networks.

With 10G/100G Multirate 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.

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

The MU100020A/MU100021A/MU100022A/MU100023A 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.

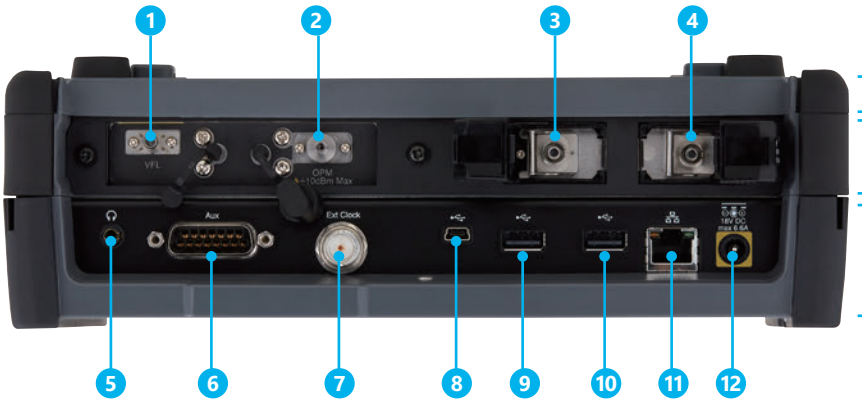
Moreover, the presence of scratches and dirt on the fiber end face can be checked using the Video Inspection Probe (VIP).

*: Separately sold Video Inspection Probe (External G0382A/G0306C)

G0382A

G0306C

Panel Layout



1. **Visible Light Option**
2. **Optical Power Meter**
3. **OTDR Port 1***[1]
4. **OTDR Port 2***[2]
5. **Audio***[3]
6. **AUX (Interface for GPS)***[3]
7. **Clock Input***[3]
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)
MU100023A Single-mode (1650 nm)
*2: MU100020A/MU100021A/MU100023A Single-mode (1310/1550 nm)
MU100022A Single-mode (1310/1550/1625 nm)
*3: Not Support for OTDR Module Application

Changeable Rechargeable Lithium-Ion Battery Pack

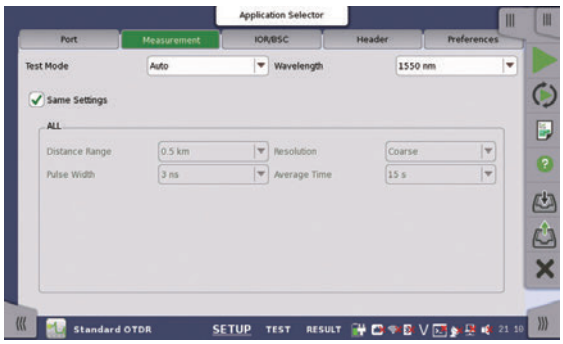
OTDR Module Applications

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/MU100023A emphasizes easy-to-understand operability using four application measurement modes: Standard OTDR Measurement, FTTA Measurement, Construction Mode and OLTS Measurement.

Standard OTDR Measurements

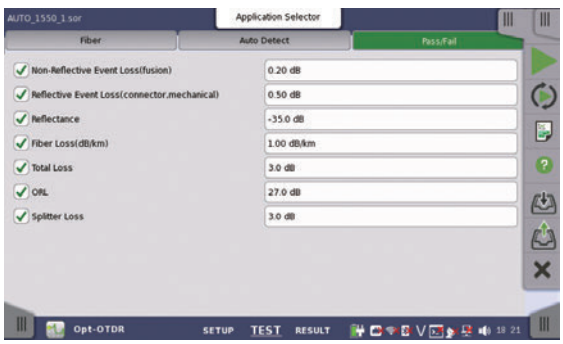
Graphical Display Based on Three-Window Operation: SETUP/TEST/RESULT



SETUP

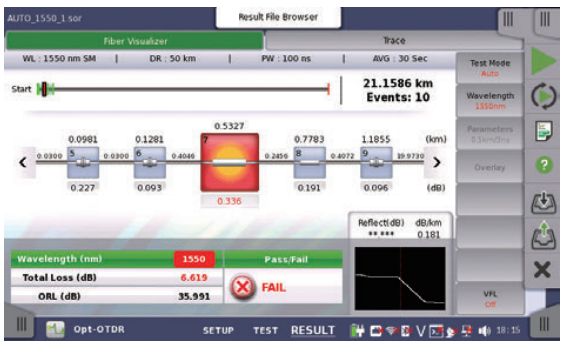
This sets the measurement wavelength.

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.

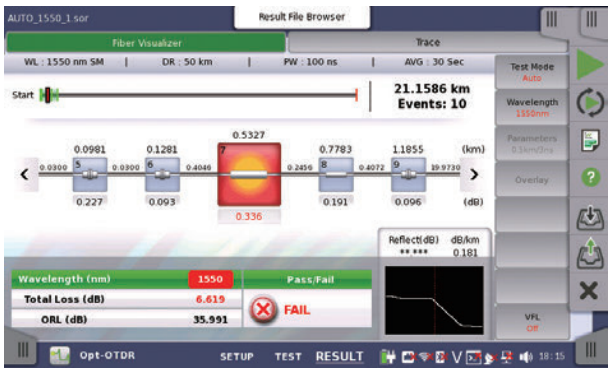
One-Button Screen Switch

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.



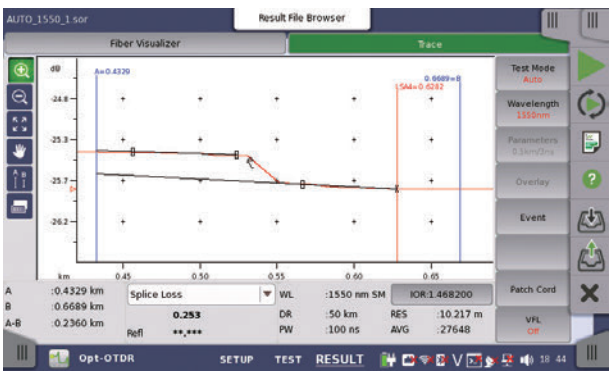
Fiber Visualizer Screen

- 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: 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.

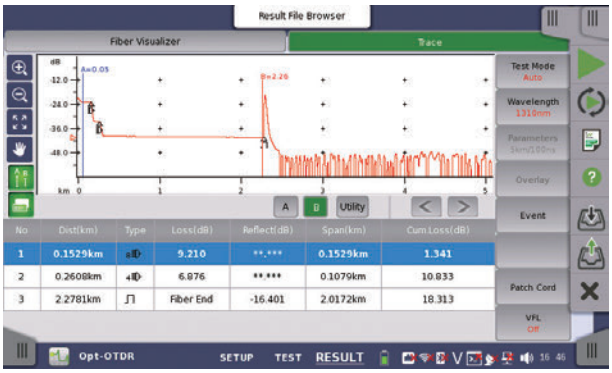


Manual Analysis Screen

3: Supports Long-Distance Optical Fibers and PON Network Measurements with 1 × 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.

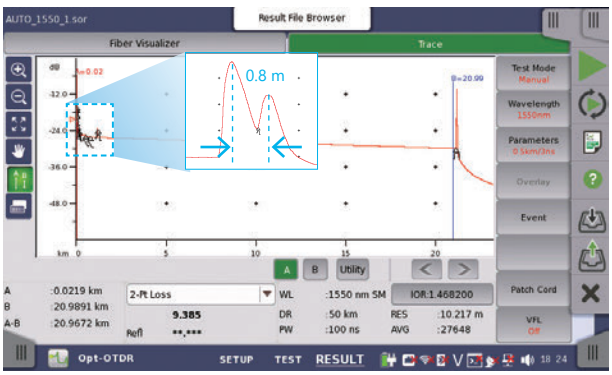


PON Measurement Screen

4: 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.

OTDR Module Applications

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 nm, 1310/1625 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

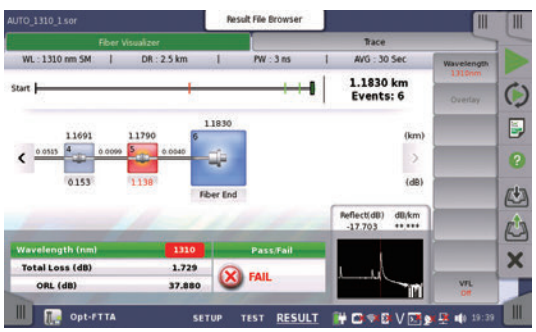
This is very convenient for comparison with saved waveform data captured at network commissioning as well as for comparison with abnormal waveform data, such as that captured at macro bend measurements.

FTTA Measurements

Comparatively short optical fibers of around several hundred meters in length are usually installed at the Mobile fronthaul FTTA. In this type of measurement environment, measurements made by different operators under different conditions commonly have inconsistency problems at later data processing.

At FTTA 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.

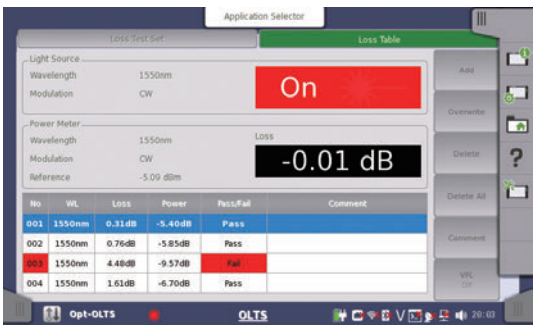


FTTA Measurements

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/MU100023A can be used as an optical loss test set (OLTS).

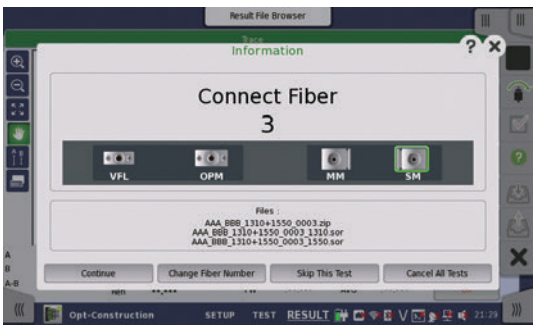
In addition, measurement results can be managed at the Loss Table for Pass/Fail evaluation of individual data based on set threshold values.



OLTS Measurement Loss Table

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.



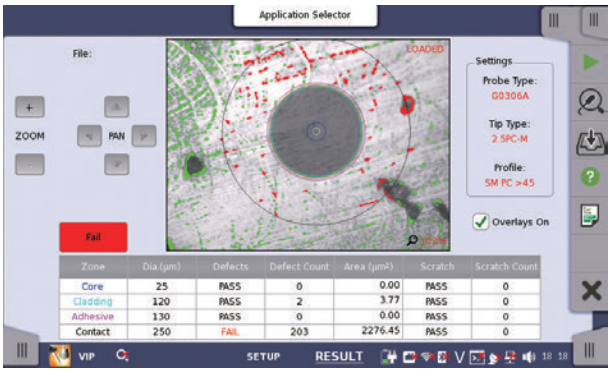
Construction Mode

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.

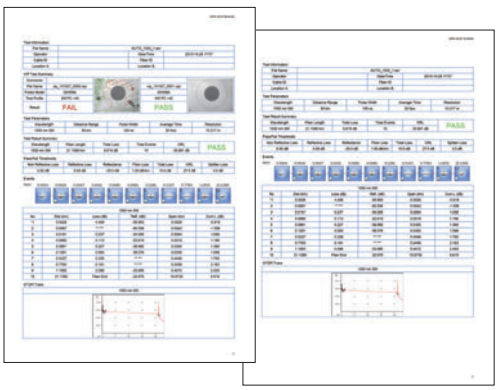
The MT1000A has a built-in VIP utility menu for analyzing the end face of optical connectors. When the external optical fiberscope (G0382A USB Autofocus type, G0306C USB Standard type: sold separately) is connected, scratches and dirt on the optical connector end face can be confirmed visually. Pass/Fail evaluation of the end-face status is performed according to the IEC61300-3-35 standard.



Optical Fiber End Face Inspection Screen

PDF Report Output

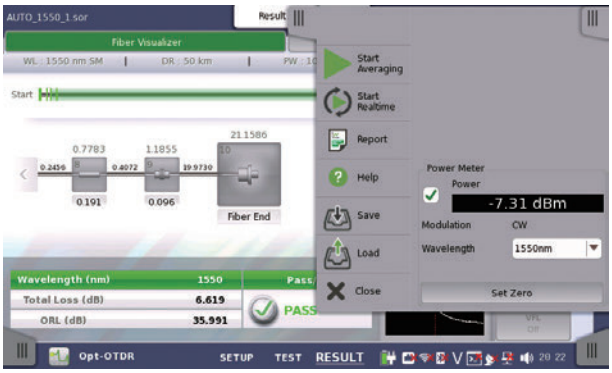
OTDR/FTTA measurement results can be output as a PDF report.
In addition to the summary display, the Fiber Visualizer event icons, event table, and a waveform display can also be output. This is useful for easy confirmation of the Pass/Fail evaluation status.
In addition, files obtained by VIP measurement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



PDF Report

Simultaneous Visible Light Option/Optical Power Meter Measurements

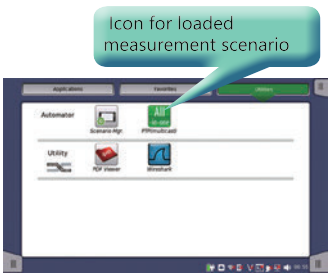
The visible light option (Option 002) can be used jointly with each of the Standard OTDR, FTTA, Construction and OLTS applications, making it possible to visually confirm breaks in the optical fiber. Furthermore, the Standard OTDR, FTTA and Construction applications can also be used jointly with an optical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



OTDR Operation with Optical Power Meter

Value of Offering Automatic Measurement Solutions

Simplifies multiple testing work, shortens on-site test time, and eliminates human operation errors. Supports simultaneous multiple tests. Download free editing software (MX100003A) to create scenarios without need for programing skills.



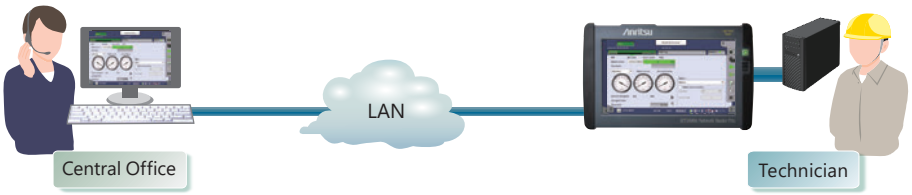
Automation Test Select

SEEK (Scenario Edit Environment Kit) MX100003A

Other Shared Functions

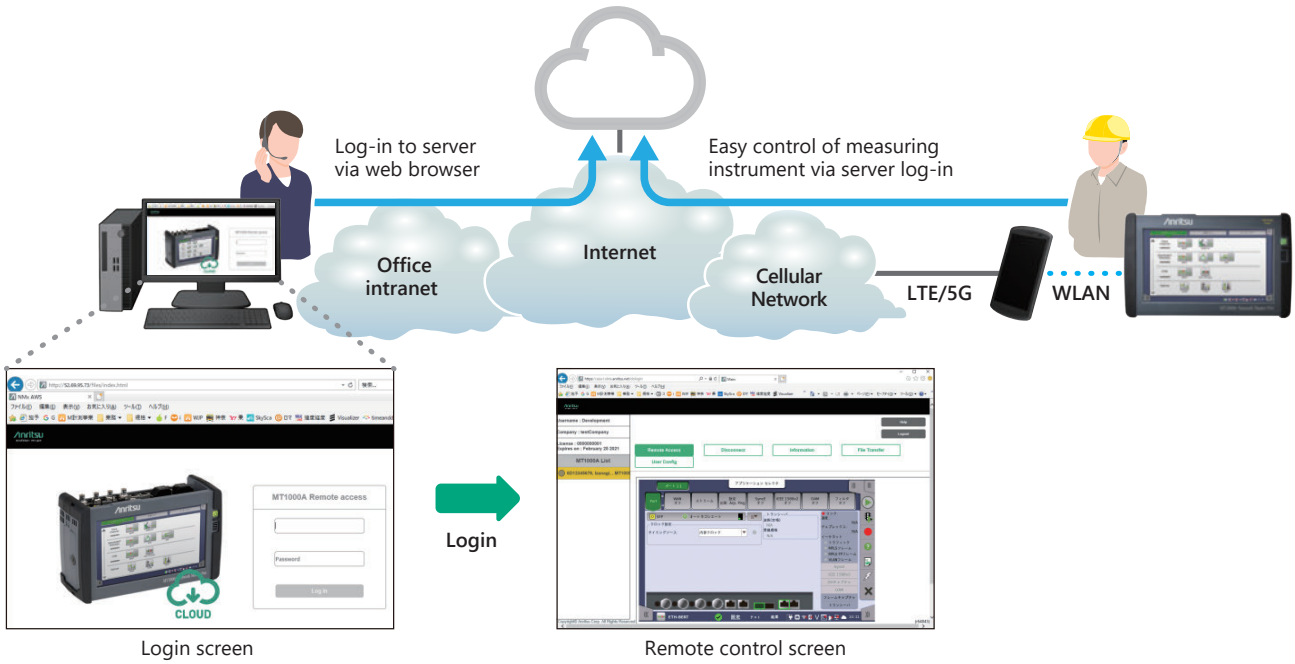
Remotely Controlled Network Installation, Start-up, and Maintenance

The MT1000A has a useful remote function for network installation, start-up and maintenance. Connecting the office and job site via LAN allows engineers in the office to see screens at the on-site instrument while making settings and measurements, and troubleshooting. This provides an efficient link between engineers and on-site measurements to help cut network installation and maintenance costs.



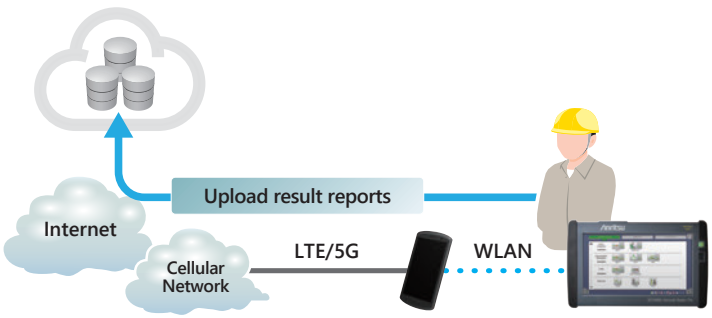
Easy Connections Anywhere Using SORA (Site Over Remote Access)*

Using the MX109020A Site Over Remote Access (SORA hereafter) software measuring instruments can be remotely controlled easily anywhere.
The SORA cloud-based service allows office users to log-in to an Internet webpage to control the measuring instrument from the office via a smartphone.



Uploads Measurement Reports to Cloud Storage

Can upload measurement-result reports to cloud storage via SORA
Linking with the SEEK tool for automatic scenario creation facilitates automation of related processes such as settings, measurement start, pass/fail evaluation, measurement results reporting, etc. The connection between the tester and storage uses secure SSH or HTTPS.



* This service can be used in countries and regions where the MT1000A WLAN/Bluetooth option has been approved. For details, contact Anritsu.

* To connect using SORA, you must purchase an option license for the main unit as well as a subscription license.
Refer to the MX109020A leaflet and product introduction for more details. You must agree to the service contract before purchasing SORA.
Refer to the service contract at the following URL: https://www.anritsu.com/en-AU/test-measurement/support/downloads/manuals/dwl20059.

MT1000A + MU100020A/MU100021A/MU100022A/MU100023A

Display		9-inch active TFT display (800 × 480 pixels) and touch screen
Supported Languages		User selectable (English, Japanese, Simplified Chinese, Russian, French, Spanish, Finnish, Korean, German)
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
WLAN Interface*1		IEEE 802.11 b/g/n
Bluetooth® Interface*2		Bluetooth 2.1 +EDR
Audio Interface		For connection of 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 TTL signal in accordance with ITU-T G.703, Connector: BNC
Dimensions and Mass		MU100020A/MU100021A/MU100022A/MU100023A: 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 VAC to 240 VAC, 50 Hz/60 Hz Output: 18 V(dc), 3.62 A (max.) Power Consumption: ≤65 W With MT1000A-006 Input: 100 VAC to 240 VAC, 50 Hz/60 Hz Output: 18 V(dc), 6.6 A (max.) Power Consumption: ≤120 W
Battery		10.8 V rechargeable and replaceable intelligent Li-ion battery Operating time: 6.0 h (with MU100020A/MU100021A/MU100022A/MU100023A), 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/MU100023A) Charging Temperature: 0° to +50°C, ≤85%RH (non-condensing) Storage Temperature: –30° to +60°C, ≤90%RH (non-condensing) (without battery or AC adapter, with MU100020A/MU100021A/MU100022A/MU100023A) –20° to +50°C, ≤90%RH (non-condensing) (with battery and AC adapter, with MU100020A/MU100021A/MU100022A/MU100023A)
CE	EMC	2014/30/EU, EN61326-1, EN61000-3-2
	LVD	2014/35/EU, EN61010-1
	RoHS	2011/65/EU, (EU) 2015/863, EN IEC 63000: 2018
UKCA	EMC	S.I. 2016 No.1091, EN 61326-1, EN61000-3-2
	LVD	S.I. 2016 No.1101, EN 61010-1
	RoHS	S.I. 2012 No.3032, EN IEC 63000:2018

*1: Available for certified countries and regions including USA, Canada, Japan and EU countries. Please visit the Anritsu web site for updated information.
*2: The Bluetooth® mark and logs are owned by Bluetooth SIG, Inc. and are used by Anritsu under license.

MU100020A/MU100021A/MU100022A/MU100023A 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^{-5} ± 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/23A 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

MU100023A OTDR Module

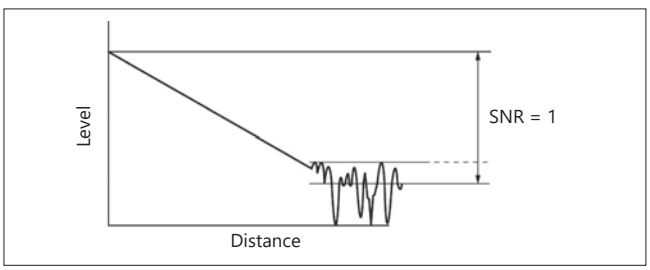
Options	Wavelength*1	Fiber Type	Pulse Width	Dynamic Range*2, *3, *8	Deadzone (Fresnel)*4 (IOR = 1.500000)	Deadzone (Backscatter)*5 (IOR = 1.500000)
MU100023A-021	1310/1550 nm ± 25 nm 1645 nm to 1655 nm	Single Mode Fiber (SMF) 10 µm/125 µm ITU-T G.652	3, 10, 20, 50, 100, 200, 500, 1000, 2000, 4000, 10000, 20000 ns	42/41/35 dB*6	≤80 cm (typ.)	≤5.0/5.5/6.5 m

Laser Safety*9	IEC 60825-1: 2007 CLASS 1M: 21 CFR1040.10 Excludes deviations caused by conformance to Laser Notice No. 50 dated June 24, 2007

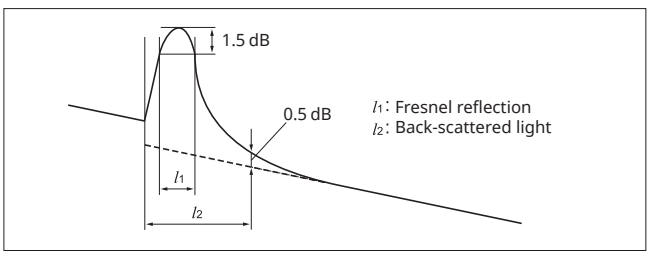
*1: 25°C, Pulse width: 1 µs (1310/1550/1625/1650 nm), 100 ns (850 nm/1300 nm), Except for when charging the battery.

*2: Pulse widths: 20 µs (1310/1550/1625/1650 nm), 500 ns/4 µs (850 nm/1300 nm) Distance range: 100 km (1310/1550/1625/1650 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.



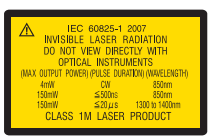
*5: Pulse width 10 ns, return loss 55 dB, Deviation ±0.5 dB, 25 ±5°C

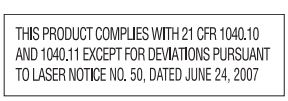
*6: Typical. Subtract 1 dB for guarantee

*7: At measurement of 50 µm/125 µm MM Fiber, the dynamic range drops by about 3.0 dB

*8: At 1650 nm: With background light, 1310/1550 nm, –19 dBm CW light

*9: 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.





Light Source Specifications

Standard on all models

Stabilized Light Source (through OTDR port)				
Options	MU100020A	MU100021A	MU100022A	MU100023A
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	1310/1550 nm ±30 nm 1650 nm ±5 nm
Spectral Width*1	≤5 nm (1310 nm) ≤10 nm (850/1300/1550/1625 nm) ≤3 nm (1650 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	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 (1310/1550/1625/1650 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

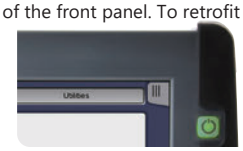
Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A/23A

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.

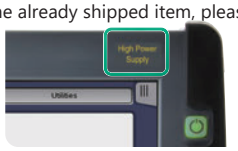
1) Mainframe

Model/Order No.	Name	
MT1000A	Network Master Pro	
	Standard Accessories	
MT1000A-006*1	High Power Supply:	Installed
	Line Cord*2:	1 pc
B0745A	Softcase:	1 pc
B0728A*3	Rear Panel kit:	1 pc
G0385A*4	High Power AC Adaptor:	1 pc
G0310A	Li-ion Battery:	1 pc
Z1746A	Stylus:	1 pc
Z1747A*5	Carrying Strap:	1 pc
Z1748A*6	Handle:	1 pc
Z1817A*7	Utilities ROM:	1 pc
	Main Frame Option	
MT1000A-003*8	Connectivity for WLAN/Bluetooth	
MT1000A-005*9	AUX I/O	

*1: The presence of the MT1000A-006 option can be recognized at the top right of the front panel. To retrofit to the already shipped item, please contact us.



Without MT1000A-006



With in MT1000A-006

*2: One line cord is attached to the area to shipment.
*3: Set of B0720A (Rear Cover) and B0732A (Screw Kit).
Please refer to next page "Module Configuration" for details.
*4: The MT1000A with MT1000A-006 can be used. Use the AC adapter when using the MT1000A without MT1000A-006 installed.
*5: Shoulder strap for MT1000A.
*6: Hand strap for MT1000A.
*7: This DVD includes PDF files and formatting tools of each product's instruction manual (such as W3933AE, W3810AE, W3736AE, W3946AE).
*8: WLAN is available for certified countries and regions including USA, Canada, Japan and EU countries. Please visit the Anritsu web site for updated information.
*9: MT1000A-005 is required for MU100090B. To retrofit to the already shipped item, please contact us.

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.*10	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)	
MU100023A	OTDR Module (1310/1550/1650 nm SMF)	
	Standard Accessories	
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

*10: Factory installed option only and cannot be retrofitted.

2-2) Select Dynamic Range Type

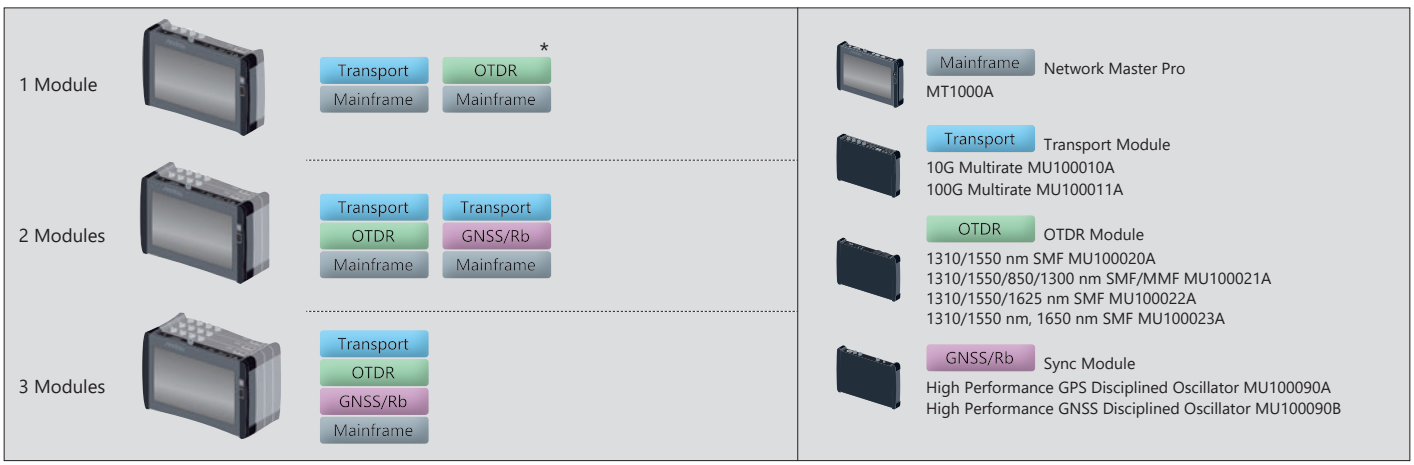
Select one of the following models.

Model/Order No.*11	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)
MU100023A-021	Enhanced Dynamic Range (1310/1550 nm: 42/41 dB, 1650 nm: 35 dB)

*11: Factory installed option only and cannot be retrofitted.

Module Configuration

Any modular combination as shown in a figure.



*: Required if the transport modules is not used rear cover (B0720A).

Ordering Information

Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A/23A

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.*12	Name
MU100020A-010	UPC Polish
MU100020A-011*13	APC Polish
MU100021A-010	UPC Polish
MU100021A-011*13	APC Polish
MU100022A-010	UPC Polish
MU100022A-011*13	APC Polish
MU100023A-010	UPC Polish
MU100023A-011*13	APC Polish

*12: Factory installed option only and cannot be retrofitted.
*13: 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
	For UPC Polish with Option 010
MU100020A-037*14	FC Connector
MU100020A-040*14	SC Connector
MU100021A-037*15	FC Connector
MU100021A-040*15	SC Connector
MU100022A-037*14	FC Connector
MU100022A-040*14	SC Connector
MU100023A-037*18	FC Connector
MU100023A-040*18	SC Connector
	For APC Polish with Option 011
MU100020A-025*14	FC Connector key width 2.0 mm
MU100020A-026*14	SC Connector
MU100021A-025*16	FC Connector key width 2.0 mm
MU100021A-026*17	SC Connector
MU100022A-025*14	FC Connector key width 2.0 mm
MU100022A-026*14	SC Connector
MU100023A-025*18	FC Connector key width 2.0 mm
MU100023A-026*18	SC Connector

*14: One specified connector adapter supplied free of charge.
*15: One each of same connector adapter for SM port and MM port supplied free of charge. Cannot specify different connector adapters for each port.
*16: 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.
*17: 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.
*18: One each of same connector adapter for SM port (1310/1550 nm) and SM port (1650 nm) port supplied free of charge.
Cannot specify different connector adapters for each port.

4) VFL

Model/Order No.*19	Name
MU100020A-002*20	Visual Fault Locator
MU100021A-002*20	Visual Fault Locator
MU100022A-002*20	Visual Fault Locator
MU100023A-002*20	Visual Fault Locator

*19: Factory installed option only and cannot be retrofitted.
*20: 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 MU100023A*21	MU100021A	
For UPC Polish			
	SM port	SM port	MM port
J0617B (FC/UPC)	✓	✓	✓
J0619B (SC/UPC)	✓	✓	✓
For APC Polish			
	SM port	SM port	MM port
J0739A (FC/APC)	✓	✓	N/A
J1697A (SC/APC)	✓	✓	N/A

*21: There are two SM ports — one for 1310/1550 nm, and another for 1650 nm.

Ordering Information

Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A/23A

6) Select Accessories & Replacement Items

Model/Order No.	Name	Description
For MT1000A Mainframe		
B0691B	Hard Case	Up to two installed modules
G0324A	Battery Charger	
G0382A	Autofocus Video Inspection Probe	Fixed x400 magnification (USB Autofocus type). For visually verifying fiber end-face condition using MT1000A Utility application
G0306C	Video Inspection Probe (X400)	Fixed x400 magnification (USB Standard type). For visually verifying fiber end-face condition using MT1000A Utility application
G0309A	AC Adapter	Use the AC Adapter when using the MT1000A without MT1000A-006 installed
B0720A	Rear Cover	MT1000A Rear Cover
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)
For MU100020A/MU100021A/MU100022A/MU100023A OTDR Modules		
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.	Name	Supported Modules
MU100020A-ES210	2 Years Extended Warranty Service	MU100020A
MU100020A-ES310	3 Years Extended Warranty Service	
MU100020A-ES510	5 Years Extended Warranty Service	
MU100021A-ES210	2 Years Extended Warranty Service	MU100021A
MU100021A-ES310	3 Years Extended Warranty Service	
MU100021A-ES510	5 Years Extended Warranty Service	
MU100022A-ES210	2 Years Extended Warranty Service	MU100022A
MU100022A-ES310	3 Years Extended Warranty Service	
MU100022A-ES510	5 Years Extended Warranty Service	
MU100023A-ES210	2 Years Extended Warranty Service	MU100023A
MU100023A-ES310	3 Years Extended Warranty Service	
MU100023A-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.

Ordering Information

Network Master Pro MT1000A, OTDR Module MU100020A/21A/22A/23A

8) Remote Software Service

The following licenses must be purchased to use the MX109020A Site Over Remote Access.

Mainframe Option License

Model/Order No.	Name
MT1000A-003*22	WLAN/Bluetooth Connect
MT1000A-011*23	Site Over Remote Access Connect

*22: WLAN is available for certified countries and regions including USA, Canada, Japan and EU countries. Please visit the Anritsu web site for updated information. Although this product has not been approved by Bluetooth SIG, the supported frequencies are in the range assigned to Bluetooth® communications.
*23: Validity period is unlimited. An open TCP port may be required to allow the MT1000A to be connected from an in-company LAN to MX109020A, depending on the LAN security policy.

Subscription Option License

Model/Order No.	Name
MX109020A*3, *5, *6, *7	Site Over Remote Access Basic License
MX109020A-TL001*3, *4	Site Over Remote Access 1 Year License
MX109020A-001*5	Site Over Remote Access 8 Units
MX109020A-002*5	Site Over Remote Access Unlimited Units
MX109020A-003*8	Centralized Data Management

*3: We recommend purchasing a 1-year license in addition to the basic license.
*4: When extending the usage period, we recommend purchasing in 1-year license periods
*5: Up to two measuring instruments can be remotely controlled simultaneously with the basic license.
This number can be increased to up to 8 units by purchasing the MX109020A-001 option, and up to 100 units by purchasing the MX109020A-002 option.
*6: You must agree to the service terms before purchasing SORA.
Refer to the service terms at the following URL: https://www.anritsu.com/en-AU/test-measurement/support/downloads/manuals/dwl20059
*7: This product cannot be used in some regions and countries; please read the service terms for more details.
*8: Users must provide their own storage at the upload destination.

Related Products

Network Master Pro MT1000A

10G Multirate Module **MU100010A**
100G Multirate Module **MU100011A**

Installing the MU100010A or MU100011A in the MT1000A supports commissioning and maintenance tests of communications networks operating at speeds from 1.5 Mbps to 100 Gbps. In addition to Ethernet, OTN, eCPRI/RoE/CPRI/OBSAI, Fibre Channel and SyncE protocols used by mobile-network base stations are supported too.

Network Master Pro MT1040A

The Network Master Pro MT1040A for 400G networks is a portable tester for evaluating the communications quality of various network types operating at speeds from 10 Mbps to 400 Gbps. The stackable module configuration facilitates dual-port 400G Ethernet measurements using two installed 400G measurement modules.

- All-in-one, multiport network evaluation
- OTDR configuration by re-arranging stackable module configuration
- Efficient on-site automated testing and remote control

MT9090A Series

µOTDR Module **MU909014/15**

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

MU909014/15

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 MT9085 Series

For WAN/MFH/DCI/FTTH Optical Fiber I&M

- Improved operability with powerful synergy of 8-inch touchscreen and hardware keys
- At-a-glance Pass/Fail evaluation using Fiber Visualizer
- All OTDR, OLTS, and Visible Light Source operations on one screen
- Short event dead zone of ≤0.8 m and high dynamic range of 46 dB max.
- Power meter option for measuring optical power up to +30 dBm

Note

Anritsu Advancing beyond

Specifications are subject to change without notice.

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