

Anritsu Advancing beyond

Network Master™ Series

Network Master Pro MT1000A

10G Multirate Module MU100010A1

100G Multirate Module MU100011A

OTDR Module MU100020A/MU100021A/MU100022A/MU100023A

High Performance GNSS Disciplined Oscillator MU100090B



Contents

The MT1000A is configured as a combination of various measurement modules.
It is designed to support a combination of selected measurement modules and options with the main unit.

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Network Master Pro MT1000A Main Frame

Network Master Pro MT1000A: Main Frame

The Network Master Pro MT1000A is a multiplatform designed for field testing that is configured using a combination of transport and optical. The Main Frame controls the test modules which can be changed freely to any custom configuration matching the users testing requirements.



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
G0436A	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
Options	
MT1000A-003*8	Connectivity for WLAN/Bluetooth
MT1000A-005*9	AUX I/O

- 1 Audio (3.5ø: CTIA Standard)
- 2 AUX (D-SUB 15 pin)
- 3 Clock Input
- 4 USB Mini-B
- 5 USB A
- 6 USB A
- 7 Ethernet Service Interface (For remote control)
- 8 DC Input (18 V DC)
- 9 9-inch active TFT display and touch screen
- 10 Power switch
- 11 Speaker

Module Configuration*10

1 Module	<ul style="list-style-type: none"> Transport OTDR Mainframe Mainframe 	<ul style="list-style-type: none"> Mainframe Network Master Pro MT1000A Transport <ul style="list-style-type: none"> 10G Multirate MU100010A1 100G Multirate MU100011A OTDR <ul style="list-style-type: none"> 1310/1550 nm SMF MU100020A 1310/1550/850/1300 nm SMF/MMF MU100021A 1310/1550/1625 nm SMF MU100022A 1310/1550 nm, 1650 nm SMF MU100023A GNSS/Rb <ul style="list-style-type: none"> High Performance GNSS Disciplined Oscillator MU100090B
2 Modules	<ul style="list-style-type: none"> Transport OTDR Mainframe Transport GNSS/Rb Mainframe Mainframe 	
3 Modules	<ul style="list-style-type: none"> Transport OTDR GNSS/Rb Mainframe 	

*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: Composed of B0720A, B0729A, B0730A and B0731A (see pages 15 and 23). Refer to Module Composition for the module combination.

*4: The MT1000A with MT1000A-006 can be used. Use the AC Adaptor G0309A 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. The Bluetooth® mark and logs are owned by Bluetooth SIG, Inc. and are used by Anritsu under license.

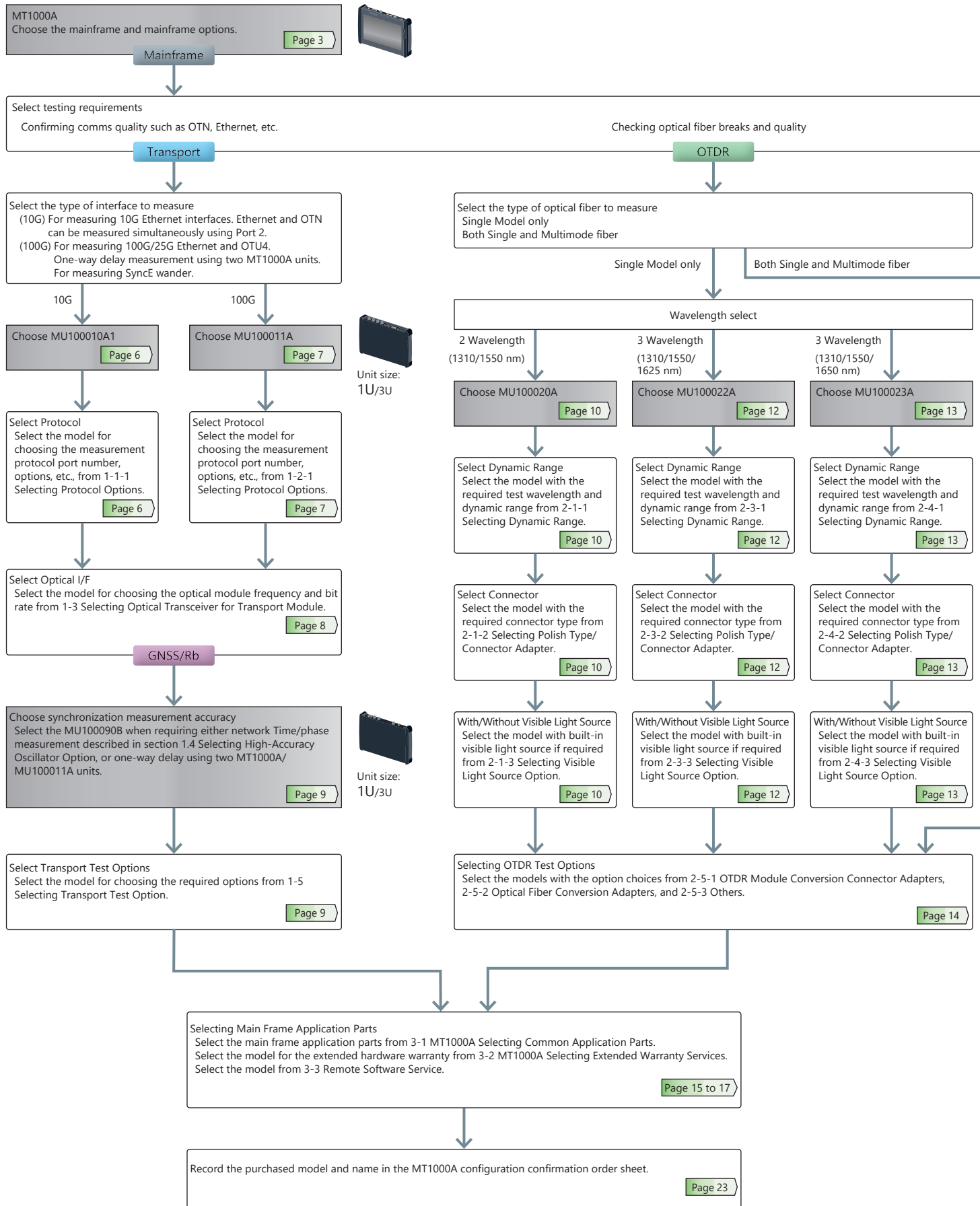
*9: MT1000A-005 is required for MU100090B. To retrofit to the already shipped item, please contact us.

*10: Any modular combination as shown in a figure.

*11: Required if the transport module is not used rear cover.

New Purchase Flowchart

Use this flowchart to select options when purchasing a new MT1000A.





Choose MU100021A
Page 11



Unit size:
1U/3U

Select Dynamic Range
Select the model with the required test wavelength and dynamic range from 2-2-1 Selecting Dynamic Range.
Page 11

Select Connector
Select the model with the required connector type from 2-2-2 Selecting Polish Type/ Connector Adapter.
Page 11

With/Without Visible Light Source
Select the model with built-in visible light source if required from 2-2-3 Selecting Visible Light Source Option.
Page 11

Module Combination Example

- Transport MU100011A
- Mainframe MT1000A



- Transport MU100010A1
- OTDR MU100021A
- Mainframe MT1000A



- Transport MU100011A
- OTDR MU100021A
- GNSS/Rb MU100090B
- Mainframe MT1000A



Transport Module

1-1 10G Multirate Module MU100010A1



The 10G Multirate Module MU100010A1 supports communications network technologies with speeds ranging from 10 Mbps to 10 Gbps. It has the functions and performance required for network I&M tests. In addition, optional test protocols can be selected and added. This excellent expandability helps cut initial capital costs and supports introduction of new functions matching the work schedule.

1-1-1 Selecting Protocol Options

The protocol options are software options for transport technologies supporting each bit rate. At least one Channel option must be selected from the following list.

MU100010A1	Bit Rate	Less than 5G	From 6G to 10G	
Transport Technology	No. of Measurement Ports*1	2 (Dual Channel)	1 (Single Channel)	2 (Dual Channel)
Ethernet				
IPv4/IPv6, Y.1564, IEEE 1588 v2, RFC 2544, BER, Multistream, OAM, SyncE, MPLS, MPLS-TP, Multistage VLAN, PBB, Ping/Traceroute, Cable Tests, In-band Control, Auto discovery, Path-through		MU100010A-001 Up to 2.7G Dual Channel	MU100010A-011 Ethernet 10G Single Channel	MU100010A-012 Ethernet 10G Dual Channel
TCP Throughput Test (RFC 6349, iPerf)		MU100010A-020 TCP Throughput		
eCPRI/RoE (IEEE1914.3)				
IPv4/IPv6, BER, VLAN, SyncE, IEEE 1588 v2, E-OAM		MU100010A-001 Up to 2.7G Dual Channel	MU100010A-011 Ethernet 10G Single Channel	MU100010A-012 Ethernet 10G Dual Channel
OTN*2, *3				
Errors/Alarms, Error Performance/Delay/APS Test, FEC Test, O.182 Test, Overhead Editing/Capture, TCM Monitoring/Generation, Tributary Scan		MU100010A-001 Up to 2.7G Dual Channel	MU100010A-051 OTN 10G Single Channel	MU100010A-052 OTN 10G Dual Channel
ODU Multiplexing Addition*4		MU100010A-061 ODU Multiplexing		
ODU Flex Addition*5		—	MU100010A-062 ODU Flex	
CPRI/OBSAI				
CPRI/OBSAI L1: Level/Bit Rate/Frequency deviation Measurement, Alarms/Errors Detection, Unframed BER CPRI/OBSAI L2: Link Status Monitoring, Alarms/Errors Detection, Framed BER Measurement, RTD Measurement, Monitoring using Passthrough		MU100010A-071 CPRI/OBSAI Up to 5G Dual Channel	MU100010A-072 CPRI/OBSAI 6G to 10G Single Channel	MU100010A-073 CPRI/OBSAI 6G to 10G Dual Channel
Fibre Channel				
Performance Test, Signal Generation/Monitoring, Latency, BER, Line Alarm/Error Monitoring		MU100010A-002 FC 1G 2G 4G Dual Channel	MU100010A-091 FC 8G 10G Single Channel	MU100010A-092 FC 8G 10G Dual Channel
SDH/SONET				
Tw-Way Monitoring/Mapping, Errors/Alarms, Error Performance/Delay/APS Test, Header Monitoring/Generation, Pointer Event Generation, Tributary Scan		MU100010A-001 Up to 2.7G Dual Channel	MU100010A-081 STM-64 OC-192 Single Channel	MU100010A-082 STM-64 OC-192 Dual Channel

*1: The channel is not related to the physical port position. The user can freely choose either of the two physical ports assigned to the option via software. For a dual channel setup, the two different ports of one protocol can operate simultaneously, or two different single channel options can operate simultaneously.

*2: Please see the datasheet for supported OTN mapping.

*3: When using the OTN function, the channel can be used as client signal mapped to OTN. For example, when mapping STM-64/OC-192 to OTU2, both the MU100010A-051/052 (for physical port) and the MU100010A-081/082 (for client signal) are required.

*4: When the ODU Multimapping option is installed, OTN multistage mapping measurements are supported. This one option supports both single channel and dual channel.

*5: When the ODU Flex option is installed, since transport is over OTN networks, mappings based on used ODU Flex standard can be measured. This one option supports both single channel and dual channel.

Model	Name	
MU100010A1	10G Multirate Module	
Standard Accessories		
W3935AE	MT1000A Transport Quick Reference Guide:	1 pc
B0692A*	ESD Box (for optical modules):	1 pc

*: Up to four SFP+/SFPs can be stored.

Transport Module

1-2 100G Multirate Module MU100011A



The 100G Multirate Module MU100011A supports communications network technologies with speeds ranging from 10 Mbps to 100 Gbps. It has the functions and performance required for network I&M tests. In addition, optional test protocols can be selected and added. This excellent expandability helps cut initial capital costs and supports introduction of new functions matching the work schedule.

1-2-1 Selecting Protocol Options

The protocol options are software options for transport technologies supporting each bit rate. At least one Channel option must be selected from the following list.

MU100011A	Bit Rate	Up to 10G		Higher than 10G	
		1 (Single Channel)	2 (Dual Channel)	1 (Single Channel)	2 (Dual Channel)
Ethernet					
Transport Technology	No. of Measurement Ports*1				
IPV4/IPV6, Y.1564, IEEE 1588 v2, RFC 2544, BER, Multistream, OAM, SyncE, MPLS, MPLS-TP, Multistage VLAN, PBB, Ping/Traceroute, Cable Tests, In-band Control, Auto discovery, Path-through		MU100011A-001 Up to 10G Single Channel	MU100011A-003 Up to 10G Dual Channel	MU100011A-017*8 Ethernet 25G Single Channel MU100011A-013*9 Ethernet 40G Single Channel MU100011A-015*9 Ethernet 100G Single Channel	—
TCP Throughput Test (RFC 6349, iPerf)		MU100011A-020 TCP Throughput		—	—
SyncE Wander		MU100011A-021*11 SyncE Wander		—	—
100GBASE-SR and single-λ 100G related measurements		—	—	MU100011A-023*8 RS-FEC for 100GBASE-SR4 MU100011A-024*10 RS-FEC(544,514) for 100GBASE-xR MU100011A-015*9 Ethernet 100G Single Channel	—
eCPRI/RoE (IEEE1914.3)					
IPV4/IPV6, BER, VLAN, SyncE, IEEE 1588 v2, E-OAM		MU100011A-001 Up to 10G Single Channel	MU100011A-003 Up to 10G Dual Channel	MU100011A-017*8 Ethernet 25G Single Channel MU100011A-013*9 Ethernet 40G Single Channel MU100011A-015*9 Ethernet 100G Single Channel	MU100011A-075*7, *8 eCPRI/RoE 25G Dual Channel
OTN*2, *3					
Errors/Alarms, Error Performance/Delay/APS Test, FEC Test, O.182 Test, Overhead Editing/Capture, TCM Monitoring/Generation, Tributary Scan		MU100011A-001 Up to 10G Single Channel	MU100011A-003 Up to 10G Dual Channel	MU100011A-053 OTN 40G Single Channel MU100011A-055 OTN 100G Single Channel	—
ODU Multiplexing Addition*2, *4		MU100011A-063 ODU Multiplexing/Multi Stage			
ODU Flex Addition*2, *5		MU100011A-062 ODU Flex		—	
CPRI/OBSAI					
CPRI/OBSAI L1: Level/Bit Rate/Frequency deviation Measurement, Alarms/Errors Detection, Unframed BER CPRI/OBSAI L2: Link Status Monitoring, Alarms/Errors Detection, Framed BER Measurement, RTD Measurement, Monitoring using Passthrough		MU100011A-071 CPRI/OBSAI Up to 10G Single Channel	MU100011A-072 CPRI/OBSAI Up to 10G Dual Channel	MU100011A-073 CPRI 12/25G Single Channel	MU100011A-074 CPRI 12/25G Dual Channel
Fibre Channel					
Performance Test, Signal Generation/Monitoring, Latency, BER, Line Alarm/Error Monitoring		MU100011A-004 Up to 10G FC Single Channel	MU100011A-005 Up to 10G FC Dual Channel	MU100011A-091 FC 16G Single Channel	—
SDH/SONET					
PDH/DSn Test, Tw-Way Monitoring/Mapping, Errors/Alarms, Error Performance/Delay/APS Test, Header Monitoring/Generation, Pointer Event Generation, Tributary Scan		MU100011A-001 Up to 10G Single Channel	MU100011A-003 Up to 10G Dual Channel	MU100011A-083*6 STM-256/OC-768 Client Signal	—

*1: The channel is not related to the physical port position. The user can freely choose either of the two physical ports assigned to the option via software. For a dual channel setup, the two different ports of one protocol can operate simultaneously, or two different single channel options can operate simultaneously. However, both ports must use the same protocol.

*2: Please see the datasheet for supported OTN mapping.

*3: When using the OTN function, the channel can be used as client signal mapped to OTN. For example, when mapping STM-256/OC-768 to OTU4, both the MU100011A-055 (for physical port) and the MU100011A-083 (for client signal) are required.

*4: When the ODU Multiplexing/Multistage option is installed, OTN multistage mapping measurements are supported. This one option supports both single channel and dual channel.

*5: This mapping function is based on the ODU Flex standard for transmissions over OTN networks and supports client signals of any speed. This one option supports both single channel and dual channel.

*6: The MU100011A has no STM-256/OC-768 PHY interface; it can be used for OTN client signals.

*7: Option supports eCPRI/RoE protocol tests only.

*8: Adds 100GBASE-SR FEC On/Off function.

*9: The MU100011A-023 is required for 100GBASE-SR4 FEC control.

*10: Adds FEC On/Off and single-λ 100G FEC analysis functions.

*11: 40G and 100G are not supported.

Model	Name
MU100011A*	100G Multirate Module
Standard Accessories	
W3935AE	MT1000A Transport Quick Reference Guide: 1 pc
B0763A**	ESD Box (for optical modules): 1 pc

*: MT1000A-006 is required for MU100011A.

** : One CFP4 plus either up to two QSFP28s or up to four SFP/SFP+s can be stored.

Transport Module

1-3 Selecting Optical Transceiver for Transport Module

Optical modules supporting the optical standards can be inserted for testing using the MU100010A1/MU100011A. Select the optical module matching the test requirements.

MU1100010A1	Model/ Order No.	Name	Form Factor	100 Meg Ethernet	156 Meg STM-1	614 Meg CPRI	622 Meg STM-4	768 Meg OBSAI	1GFC	1.23 Gig CPRI	1.25 Gig Ethernet	1.54 Gig OBSAI	2GFC	2.46 Gig CPRI	2.488 Gig STM-16	2.67 Gig OTU1	3.07 Gig CPRI OBSAI	4GFC	4.92 Gig CPRI	6.14 Gig CPRI OBSAI	8GFC	9.83 Gig CPRI	9.95 Gig STM-64	10.1 gig CPRI	10.3 Gig Ethernet	10GFC	10.7 Gig OTU2	11.05 Gig OTU1e	11.09 Gig OTU2e	11.27 Gig OTU1f	11.3 Gig OTU2f	16GFC	25G Ethernet	40G Ethernet	40G OTN	100G Ethernet	100G OTN						
✓	✓	G0332A	100M FX 1310 nm MM SFP	SFP	1310 nm, MM, 2 km																																						
✓	✓	G0319A	Up to 2.7G 1310 nm 15 km SFP	SFP		1310 nm, SM, 15 km																																					
✓	✓	G0320A	Up to 2.7G 1310 nm 40 km SFP	SFP		1310 nm, SM, 40 km																																					
✓	✓	G0321A	Up to 2.7G 1550 nm 80 km SFP	SFP		1550 nm, SM, 80 km																																					
✓	✓	G0328A	1G/2G/4G FC 850 nm SFP	SFP					850 nm, MM, 0.5 km																																		
✓	✓	G0322A	1G/2G/4G FC 1310 nm SFP	SFP					1310 nm, SM, 10 km																																		
✓	✓	G0323A	1G/2G/4G FC 1550 nm SFP	SFP					1550 nm, SM, 40 km																																		
✓	✓	G0315A	10G LR/LW 1310 nm SFP+	SFP+																		1310 nm, SM, 10 km																					
✓	✓	G0316A	10G ER/EW 1550 nm 40 km SFP+	SFP+																		1550 nm, SM, 40 km																					
✓	✓	G0318A	10G ZR/ZW 1550 nm 80 km SFP+	SFP+																		1550 nm, SM, 80 km																					
✓	✓	G0329A	10G LR 1310 nm SFP+	SFP+					1310 nm, SM, 10 km																																		
✓	✓	G0356A	8G FC/10G SR 850 nm SFP+	SFP+																		850 nm, MM, 0.3 km																					
✓		G0386A	16GFC SR 850 nm SFP+	SFP+																																							
✓		G0387A	16GFC LR 1310 nm SFP+	SFP+																																							
✓		G0388A	25G SR 850 nm SFP28	SFP28																																							
✓		G0389A	25G LR 1310 nm SFP28	SFP28																																							
✓		G0359A	40G SR4 850 nm QSFP+	QSFP+																																							
✓		G0334A	40G LR4 1310 nm QSFP+	QSFP+																																							
✓		G0366A	100G SR4 850 nm QSFP28	QSFP28																																							
✓		G0434A	100G LR4 Dual Rate 1310 nm QSFP28	QSFP28																																							
✓		G0426A	QSFP28 100GBASE-DR	QSFP28																																							
✓		G0427A	QSFP28 100GBASE-FR1	QSFP28																																							
✓		G0369A	100G LR4 Dual Rate 1310 nm CFP4	CFP4																																							

1-4 Selecting Transport Test Option

These options are used in combination with the MU100010A1 module. Choose options matching the customer's test requirements. Additionally today, these options cannot be used in combination with the OTDR Module MU100020A/MU100021A/MU100022A/MU100023A.

Model	Name	Notes
G0325A	GPS Receiver	It is required when measuring one-way latency at Ethernet tests. However, it is unnecessary when purchasing MU100090B.
W3933AE	MT1000A Transport Module Operation Manual	Printed manual
W3736AE	MT1000A/MT1100A Remote Scripting Operation Manual	Printed manual
Z1821A	Utilities in USB Stick	USB memory with operation manual, remote scripts instruction manual, etc.
J1583A	Optical Attenuator 10 dB LC/PC to LC/PC	
J1584A	RJ45 Cable 3 m	
J1710A	BNC Cable 0.2 m	BNC cable for MU100090B and main-frame external clock input connector. Impedance: 50Ω
J0127B	COAXIAL CORD, 2.0 M	BNC cable for MU100090B and main-frame external clock input connector. Impedance: 50Ω

Transport Module

1-5 Choosing High-Accuracy Oscillator Option

High Performance GNSS Disciplined Oscillator MU100090B



The High Performance GNSS Disciplined Oscillator MU100090B supplies GPS/GLONASS/Galileo/Beidou/QZSS-synchronized 1PPS, 10 MHz, and Time of Day (ToD) to the MT1000A as references for measuring the network and equipment time periodic error and SyncE frequency deviation using the MU100010A1 or MU100011A.

Adding the MU100011A-021 to the MU100011A supports SyncE Wander. The target measurement signal is the timestamp in the 1PPS or IEEE1588 Ethernet frame. GbE, 10GbE, and 25GbE optical interfaces are supported. In addition, Ethernet one-way delay (OWD) between two distant points can be measured using two MT1000A/MU100011A units and one MU100090B.

Measurement without the MU100090B is possible if either a 10-MHz and 1PPS reference signal can be provided for PTP measurement, or if a 10 MHz signal can be provided for SyncE measurement.

The interface for these signals is the Ext Clock Input of the MT1000A main unit and must meet the 1PPS Ref Input specifications. Additionally, the measurement-result accuracy depends on the signal-source accuracy.

1-5-1 Choosing MU100090B Options

(1) High-Stability/Multi-band Option (MU100090B-001)

Installing this option raises the GNSS reference-timing synchronization accuracy and Holdover performance.

A) GNSS reference-timing synchronization accuracy

Without Option 001: ± 45 ns rms*¹

With Option 001: ± 10 ns rms*²

B) Holdover performance*³

Without Option 001: within 300 ns/10,000 s

With Option 001: within 70 ns/3600 s, within 190 ns/10,000 s

*1: With OSC LED lit continuously for at least 3 hours and using Anritsu antenna under open-sky and GNSS signal synchronized for 30 or more minutes at constant ambient temperature.

*2: After OSC LED lit, using Anritsu antenna under open-sky and GNSS signal synchronized for 30 or more minutes at constant ambient temperature with multi-band setting and antenna position specified.

*3: With OSC LED lit continuously for at least 3 hours and using Anritsu antenna under open-sky and GNSS signal synchronized for 30 or more minutes with ambient temperature change within $\pm 3^\circ\text{C}$ during Holdover.

(2) Multi-GNSS Option (MU100090B-002)

This option can increase the number of selectable GNSS (Global Navigation Satellite System) satellites. For synchronization measurement, at least four satellites must be in line of sight without multipaths. Since adding this option supplements the number of line of sight satellites, it widens the synchronization measurement range.

In addition to using the standard U.S. GPS satellites, adding this option supports use of GLONASS (Russia), Galileo (Europe), Beidou (China), and QZSS (Japan) satellites.

Model/Order No.	Name
MU100090B* ¹	High Performance GNSS Disciplined Oscillator
Standard Accessories	
J1705A	AUX Conversion Adaptor
J1886A* ²	GNSS Antenna
J1710A	BNC Cable (20 cm) × 2
Z2122A	Tripod for GNSS Antenna
MU100090B Option	
MU100090B-001	High Stability/Multi-Band
MU100090B-002	Multi-GNSS
Mandatory MT1000A Option	
MT1000A-005* ³	AUX I/O
MU100011A Option	
MU100011A-021	SyncE Wander
MU100090B Optional Accessories	
J1904A	Antenna Extension Cable 25 m kit
J1905A	Antenna Extension Cable 50 m kit
J1906A	Antenna Extension Cable 75 m kit

*1: Excellent Eco Product non-compliant.

*2: With 5 m cable, IP67 Ingress protection.

*3: MT1000A-005 and Ethernet Options are required for MU100090B.

New Purchase

OTDR Module

2-1 OTDR Module 1310/1550 nm SMF MU100020A



The OTDR Module 1310/1550 nm SMF MU100020A is an OTDR module for single mode fiber use only. It supports all-in-one OTDR, FTTA, and OLTS measurements required for checking optical fiber. Select a model with the dynamic range matching the test requirements. Additionally, combined used with the visible light source options support visual confirmation of fiber breaks, etc.

Model	Name
MU100020A	OTDR Module 1310/1550 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

2-1-1 Selecting Dynamic Range

The MU100020A is available in three models with different dynamic ranges matching the test environment. Select the One matching the test requirements.

Wavelength: Dynamic Range	Model	Name
1310/1550 nm: 39/37.5 dB	MU100020A-020	Standard Dynamic Range
1310/1550 nm: 42/41 dB	MU100020A-021	Enhanced Dynamic Range
1310/1550 nm: 46/46 dB	MU100020A-022	High-Performance Dynamic Range

2-1-2 Selecting Polish Type/Connector Adapter

The MU100020A is available in a total of five models (3 UPC and 2 APC) as listed below. Specify the required connector type at ordering. The specified connector is provided as a standard accessory. The polish type cannot be changed after purchase.

Connector Adapter	Polish Type			
	UPC	APC		
	Model	UPC Ultra Physical Contact	Model	APC Angled Physical Contact
FC Connector	MU100020A-010 MU100020A-037		MU100020A-011 MU100020A-025	
SC Connector	MU100020A-010 MU100020A-040		MU100020A-011 MU100020A-026	

2-1-3 Selecting Visible Light Source Option

Breaks in the optical fiber can be detected visually using this light source. This option cannot be added after purchase.

Model	Name	Notes
MU100020A-002	Visual Fault Locator	For direct insertion of 2.5 mm (FC, SC) optical fiber with fixed diameter of 2.5 mm
J1335A	MU/LC Connector Adapter	Required conversion adapter for inserting LC (1.25 mm) optical fiber

New Purchase

OTDR Module

2-2 OTDR Module 1310/1550/850/1300 nm SMF/MMF MU100021A



The OTDR Module 1310/1550/850/1300 nm SMF/MMF MU100021A is an OTDR module for single and multimode fiber use. It supports all-in-one OTDR, FTTA, and OLTS measurements required for checking optical fiber. Select a model with the dynamic range matching the test requirements. Additionally, combined used with the visible light source options support visual confirmation of fiber breaks, etc.

Model	Name
MU100021A	OTDR Module 1310/1550/850/1300 nm SMF/MMF
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

2-2-1 Selecting Dynamic Range

The MU100021A has a fixed dynamic range; select the following model.

Wavelength: Dynamic Range	Model	Name
1310/1550/850/1300 nm: 42/41/29/28 dB	MU100021A-021	Enhanced Dynamic Range

2-2-2 Selecting Polish Type/Connector Adapter

The MU100021A is available in a total of five models (3 UPC and 2 APC) as listed below. Specify the required connector type at ordering. Two specified connectors (for SMF and MMF ports) are provided as standard accessories. The polish type cannot be changed after purchase.

Connector Adapter	Polish Type	UPC*1		APC*1,*2	APC Angled Physical Contact		
		UPC Ultra Physical Contact	UPC Ultra Physical Contact	(SM port only, MM port is UPC)	UPC Ultra Physical Contact	APC Angled Physical Contact	
		Model	MM Port	SM Port	Model	MM Port	SM Port
FC Connector		MU100021A-010 MU100021A-037			MU100021A-011 MU100021A-025		
SC Connector		MU100021A-010 MU100021A-040			MU100021A-011 MU100021A-026		

*1: Different connector adapter types cannot be specified for the SMF and MMF ports.

*2: There is no APC polish type for the MMF port. As a result, this connector adapter polish type is UPC.

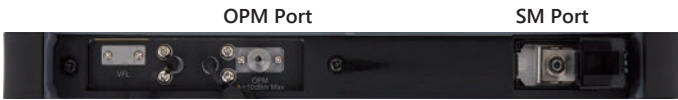
2-2-3 Selecting Visible Light Source Option

Breaks in the optical fiber can be detected by eye using this light source. This option cannot be added by retrofit after purchase.

Model	Name	Notes
MU100021A-002	Visual Fault Locator	For direct insertion of 2.5 mm (FC, SC) optical fiber with fixed diameter of 2.5 mm.
J1335A	MU/LC Connector Adapter	Required conversion adapter for inserting LC (1.25 mm) optical fiber

OTDR Module

2-3 OTDR Module 1310/1550/1625 nm SMF MU100022A



The OTDR Module 1310/1550/1625 nm SMF MU100022A is an OTDR module for single mode fiber use only. It supports all-in-one OTDR, FTTA, and OLTS measurements required for checking optical fiber. Additionally, combined used with the visible light source options support visual confirmation of fiber breaks, etc.

Model	Name
MU100022A	OTDR Module 1310/1550/1625 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

2-3-1 Selecting Dynamic Range

The MU100022A has a fixed dynamic range; select the following model.

Wavelength: Dynamic Range	Model	Name
1310/1550/1625 nm: 46/46/44 dB	MU100022A-022	High-Performance Dynamic Range

2-3-2 Selecting Polish Type/Connector Adapter

The MU100022A is available in a total of five models (3 UPC and 2 APC) as listed below. Specify the required connector type at ordering. The specified connector is provided as a standard accessory. The polish type cannot be changed after purchase.

Connector Adapter	Polish Type			
	UPC	APC		
	Model	UPC Ultra Physical Contact	Model	APC Angled Physical Contact
FC Connector	MU100022A-010 MU100022A-037		MU100022A-011 MU100022A-025	
SC Connector	MU100022A-010 MU100022A-040		MU100022A-011 MU100022A-026	

2-3-3 Selecting Visible Light Source Option

Breaks in the optical fiber can be detected visually using this light source. This option cannot be added after purchase.

Model	Name	Notes
MU100022A-002	Visual Fault Locator	For direct insertion of 2.5 mm (FC, SC) optical fiber with fixed diameter of 2.5 mm
J1335A	MU/LC Connector Adapter	Required conversion adapter for inserting LC (1.25 mm) optical fiber

New Purchase

OTDR Module

2-4 OTDR Module 1310/1550 nm, 1650 nm SMF MU100023A



The OTDR Module 1310/1550 nm, 1650 nm SMF MU100023A is an OTDR module for single mode fiber use only. It supports all-in-one OTDR, FTTA, and OLTS measurements required for checking optical fiber. Additionally, combined used with the visible light source options support visual confirmation of fiber breaks, etc.

Model	Name
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

2-4-1 Selecting Dynamic Range

The MU100023A has a fixed dynamic range; select the following model.

Wavelength: Dynamic Range	Model	Name
1310/1550 nm: 42/41 dB, 1650 nm: 35 dB	MU100023A-021	Enhanced Dynamic Range

2-4-2 Selecting Polish Type/Connector Adapter

The MU100023A is available in a total of five models (3 UPC and 2 APC) as listed below. Specify the required connector type at ordering. The specified connector is provided as a standard accessory. The polish type cannot be changed after purchase.

Connector Adapter	Polish Type			
	UPC*	APC*		
	Model	UPC Ultra Physical Contact	Model	APC Angled Physical Contact
FC Connector	MU100023A-010 MU100023A-037		MU100023A-011 MU100023A-025	
SC Connector	MU100023A-010 MU100023A-040		MU100023A-011 MU100023A-026	

*: Different types of connector adapters cannot be selected for the SM port (1310/1550 nm) and the SM port (1650 nm).

2-4-3 Selecting Visible Light Source Option

Breaks in the optical fiber can be detected visually using this light source. This option cannot be added after purchase.





Model	Name	Notes
MU100023A-002	Visual Fault Locator	For direct insertion of 2.5 mm (FC, SC) optical fiber with fixed diameter of 2.5 mm.
J1335A	MU/LC Connector Adapter	Required conversion adapter for inserting LC (1.25 mm) optical fiber

OTDR Module

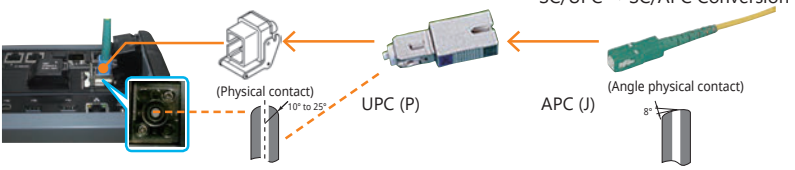
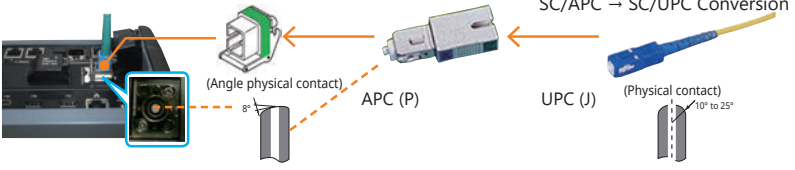
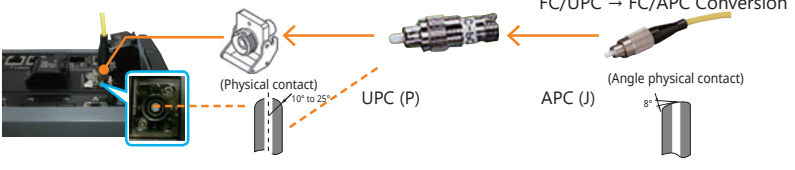
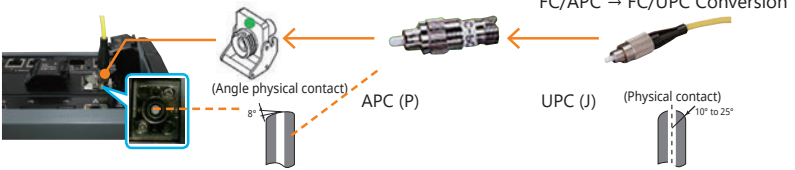
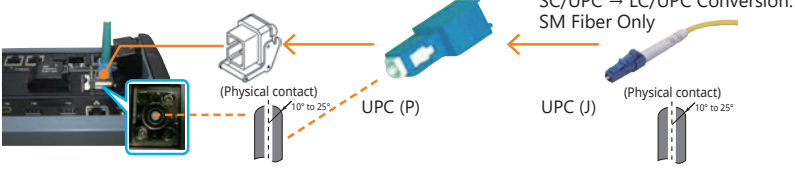
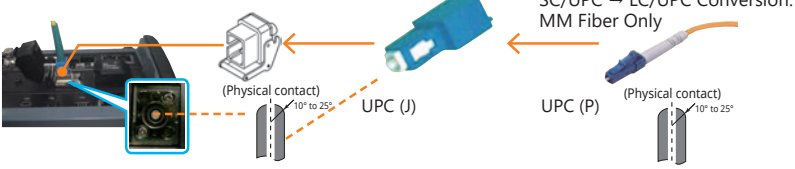
2-5 Selecting MU100020A/MU100021A/MU100022A/MU100023A Options

The OTDR Module connector is available in a total of five types (3 UPC and 2 APC). These connectors can be changed freely by the user. However, connectors with mismatched polish types cannot be used.

2-5-1 OTDR Module Conversion Connector Adapters

Model	UPC (Option 010), SM/MM Ports		APC (Option 011), SM Port	
	J0617B (FC/UPC)	J0619B (SC/UPC)	J0739A (FC/APC)	J1697A (SC/APC)
Name	Changeable Optical Connector (FC-PC)	Changeable Optical Connector (SC)	Changeable Optical Connector (FC-APC)	Changeable Optical Connector (SC-APC)
Form				

2-5-2 Optical Fiber Conversion Adapters

Model	Name	Notes
J1530A	SC Plug-in Converter (UPC (P)-APC (J))	 <p>SC/UPC → SC/APC Conversion</p>
J1531A	SC Plug-in Converter (APC (P)-UPC (J))	 <p>SC/APC → SC/UPC Conversion</p>
J1532A	FC Plug-in Converter (UPC (P)-APC (J))	 <p>FC/UPC → FC/APC Conversion</p>
J1533A	FC Plug-in Converter (APC (P)-UPC (J))	 <p>FC/APC → FC/UPC Conversion</p>
J1534A	LC-SC Plug-in Converter (for SM, SC (P)-LC (J))	 <p>SC/UPC → LC/UPC Conversion. SM Fiber Only</p>
J1535A	LC-SC Plug-in Converter (for MM, SC (P)-LC (J))	 <p>SC/UPC → LC/UPC Conversion. MM Fiber Only</p>

2-5-3 Others

Model	Name	Notes
NETWORKS*	PC Emulation Software for Data Analysis and Reporting	Supports PC running Microsoft Windows 7 and Windows 10 to edit waveform data and create reports
W3810AE	MT1000A MU100020A Network Master Pro Operation Manual	MT1000A and MU100020A/MU100021A/MU100022A/MU100023A operation manuals

*: Reduce the display size of the software to 1920 × 1080 or less.

New Purchase

Optional Accessories, Extended Warranty Services and Remote Software Service

3-1 MT1000A Selecting Optional Accessories

Various application parts make the MT1000A more convenient to use.

Softcase B0745A (Standard Accessory)

This bag with shoulder strap can hold the MT1000A with up to three installed modules.



Hard Case B0784A

This strong plastic case can hold the MT1000A with up to two installed modules. 495 (W) × 391 (H) × 205 (D) mm



Battery Charger G0324A

This is the charger for the MT1000A G0436A Li-ion battery.

This product must not be exported to China.



AC Adapter G0309A

This AC adapter is used with the MT1000A without MT1000A-006. It cannot be used with the MT1000A with MT1000A-006 installed.

Video Inspection Probe G0382A/G0306C

Scratches and dirt on the connector end face are a major cause of degraded communications quality.

The MT1000A has a built-in VIP function for analyzing the condition of the optical connector end face in the utility menu. When the VIP is connected, scratches and dirt on the optical connector end face are visualized (× 400) and the OK/NG status is evaluated based on the IEC61300-3-35 standard.

Anritsu supports VIP Series G0382A (USB Autofocus Type) and G0306C* (USB Standard Type).

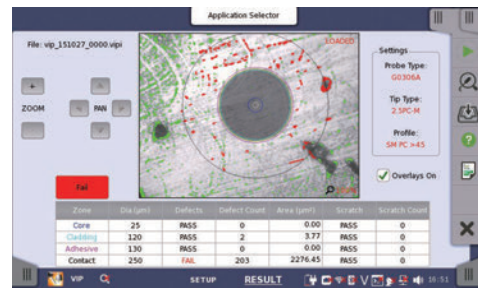


G0382A



G0306C

Different tip types are used by the G0382A and G0306C.



Optical Connector End-face Inspection/Evaluation Screen

*: When checking the end face of some SC-APC-F and FC-APC-F adapters, sometimes, there may be a dark region at the screen edge and the end face may not be checked correctly.

Optical Cables

Model	Name	Notes
J1571A	Optical cable SM LC/PC to SC/PC 3 m	Single core (no paired cables)
J1575A	Optical Cable SM LC/PC to FC/PC 3 m	Single core (no paired cables)
J1579A	Optical Cable SM LC/PC to LC/PC 3 m	Single core (no paired cables)
J1581A	Optical Cable MM LC/PC to LC/PC 3 m	Single core (no paired cables)

MT1000A Module Connection Parts

Model	Name	Notes
B0720A	Rear Panel	MT1000A Rear Panel
B0728A	Rear Panel Kit	Rear Panel (B0720A) and Screw kit (B0732A) (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 (Total 12 pcs)

New Purchase

Optional Accessories, Extended Warranty Services and Remote Software Service

3-2 MT1000A Selecting Extended Warranty Services

The standard warranty period is 1 year. An extended warranty can be purchased for the main frame and the test interface modules as listed below.

Model	Name
MT1000A	
MT1000A-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MT1000A-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MT1000A-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)
MU100010A1	
MU100010A1-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MU100010A1-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MU100010A1-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)
MU100011A	
MU100011A-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MU100011A-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MU100011A-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)
MU100090B	
MU100090B-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MU100090B-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MU100090B-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)

Model	Name
MU100020A	
MU100020A-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MU100020A-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MU100020A-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)
MU100021A	
MU100021A-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MU100021A-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MU100021A-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)
MU100022A	
MU100022A-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MU100022A-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MU100022A-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)
MU100023A	
MU100023A-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MU100023A-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MU100023A-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)

New Purchase

Optional Accessories, Extended Warranty Services and Remote Software Service

3-3 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*1	WLAN/Bluetooth Connect
MT1000A-011*2	Site Over Remote Access Connect

*1: 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.

*2: 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.

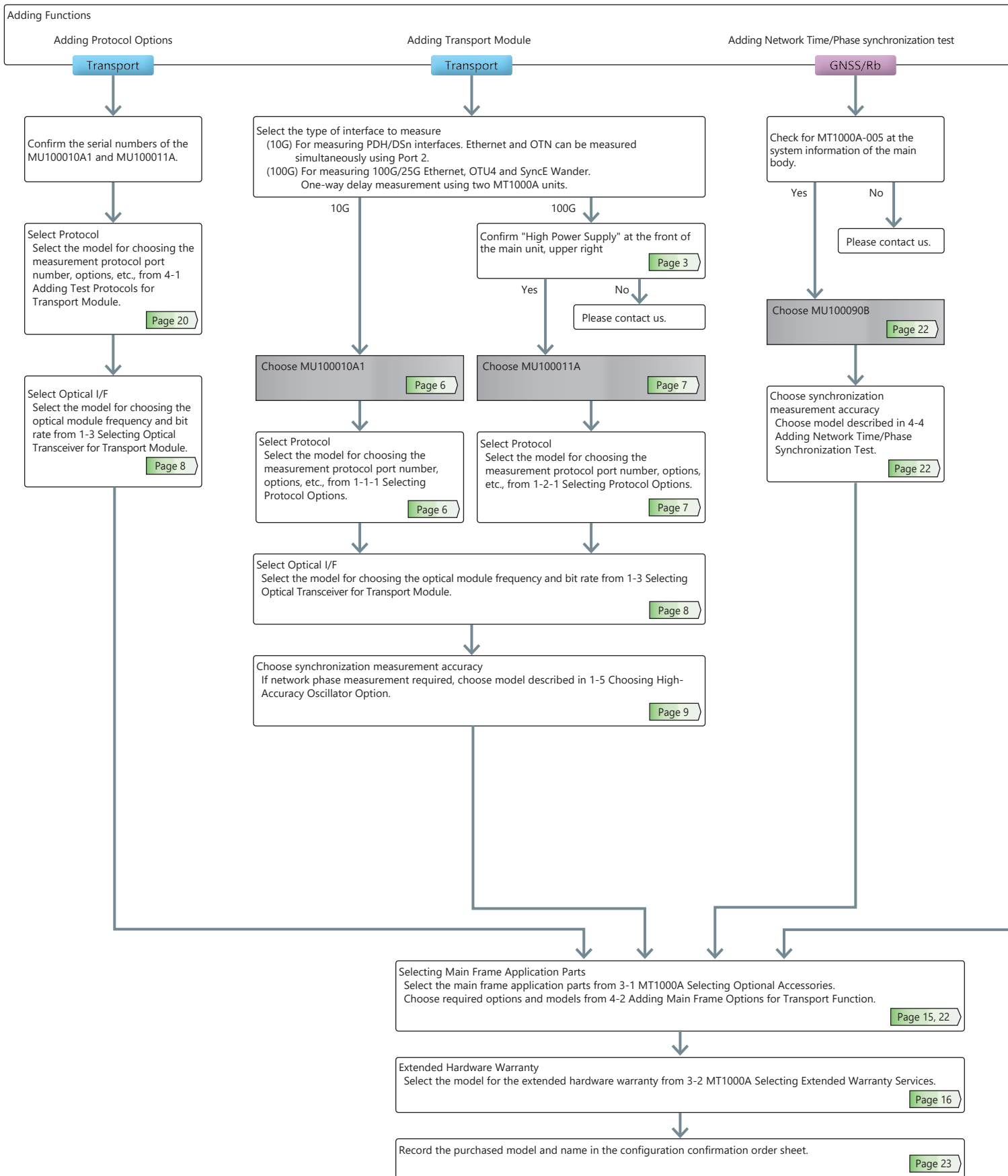
Refer to the service terms at the following URL: <https://www.anritsu.com/en-AU/test-measurement/support/downloads/manuals/dwl20059>

*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.

Additional Purchases Flowchart

Use this flowchart when adding modules and options to a previously purchased MT1000A.



Adding OTDR Module

OTDR

Select the type of optical fiber to measure
Single Mode only
Both Single Mode and Multimode

Single Mode only

Both Single Mode and Multimode

Wavelength select

2 Wavelength
(1310/1550 nm)

3 Wavelength
(1310/1550/
1625 nm)

3 Wavelength
(1310/1550/
1650 nm)

Choose MU100020A
Page 10

Choose MU100022A
Page 12

Choose MU100023A
Page 13

Choose MU100021A
Page 11

Select Dynamic Range
Select the model with the
required test wavelength and
dynamic range from 2-1-1
Selecting Dynamic Range.
Page 10

Select Dynamic Range
Select the model with the
required test wavelength and
dynamic range from 2-3-1
Selecting Dynamic Range.
Page 12

Select Dynamic Range
Select the model with the
required test wavelength and
dynamic range from 2-4-1
Selecting Dynamic Range.
Page 13

Select Dynamic Range
Select the model with the
required test wavelength and
dynamic range from 2-2-1
Selecting Dynamic Range.
Page 11

Select Connector
Select the model with the
required connector type from
2-1-2 Selecting Polish Type/
Connector Adapter.
Page 10

Select Connector
Select the model with the
required connector type from
2-3-2 Selecting Polish Type/
Connector Adapter.
Page 12

Select Connector
Select the model with the
required connector type from
2-4-2 Selecting Polish Type/
Connector Adapter.
Page 13

Select Connector
Select the model with the
required connector type from
2-2-2 Selecting Polish Type/
Connector Adapter.
Page 11

With/Without Visible Light Source
Select the model with built-in
visible light source if required
from 2-1-3 Selecting Visible
Light Source Option.
Page 10

With/Without Visible Light Source
Select the model with built-in
visible light source if required
from 2-3-3 Selecting Visible
Light Source Option.
Page 12

With/Without Visible Light Source
Select the model with built-in
visible light source if required
from 2-4-3 Selecting Visible
Light Source Option.
Page 13

With/Without Visible Light Source
Select the model with built-in
visible light source if required
from 2-2-3 Selecting Visible
Light Source Option.
Page 11

Selecting OTDR Test Options
Select the models with the option choices from 2-5-1 OTDR Module Conversion Connector Adapters, 2-5-2 Optical Fiber Conversion Adapters, and 2-5-3 Others.
Page 14

Additional Purchases

Adding New Options to Previously Purchased MT1000A

Confirm the serial numbers of the MT1000A and MU100010A/MU100010A1/MU100011A.

4-1 Adding Test Protocols for Transport Module

When adding protocol options later, specify one of the following media types as well as the option.

Model	Name
Z1849A	DVD-ROM for Retrofit Options
Z1850A	USB Stick for Retrofit Options

In addition, when purchasing multiple retrofit options at one time, they are all installed using the same media.

<MU100010A/MU100010A1>

To add a new protocol option to a previously purchased MU100010A/MU100010A1, choose the required option from the following list. The MU100010A/MU100010A1 serial number is required to make the purchase.

Adding MU100010A/MU100010A1 Protocol Option	Bit Rate	Less than 5G	From 6G to 10G	
Transport Technology	No. of Measurement Ports*1	2 (Dual Channel)	1 (Single Channel)	2 (Dual Channel)
Ethernet				
IPv4/IPv6, Y.1564, IEEE 1588 v2, RFC 2544, BER, Multistream, OAM, SyncE, MPLS, MPLS-TP, Multistage VLAN, PBB, Ping/Traceroute, Cable Tests, In-band Control, Auto discovery, Path-through		MU100010A-301 Up to 2.7G Dual Channel Retrofit	MU100010A-311 Ethernet 10G Single Channel Retrofit	MU100010A-312 Ethernet 10G Dual Channel Retrofit
TCP Throughput Test (RFC 6349, iPerf)		MU100010A-320 TCP Throughput Retrofit		
eCPRI/RoE (IEEE1914.3)				
IPv4/IPv6, BER, VLAN, SyncE, IEEE 1588 v2, E-OAM		MU100010A-301 Up to 2.7G Dual Channel Retrofit	MU100010A-311 Ethernet 10G Single Channel Retrofit	MU100010A-312 Ethernet 10G Dual Channel Retrofit
OTN*2				
Errors/Alarms, Error Performance/Delay/APS Test, FEC Test, O.182 Test, Overhead Editing/Capture, TCM Monitoring/Generation, Tributary Scan		MU100010A-301 Up to 2.7G Dual Channel Retrofit	MU100010A-351 OTN 10G Single Channel Retrofit	MU100010A-352 OTN 10G Dual Channel Retrofit
ODU Multiplexing Addition*3		MU100010A-361 ODU Multiplexing Retrofit		
ODU Flex Addition*4		—	MU100010A-362 ODU Flex Retrofit	
CPRI/OBSAI				
CPRI/OBSAI L1: Level/Bit Rate/Frequency deviation Measurement, Alarms/Errors Detection, Unframed BER CPRI/OBSAI L2: Link Status Monitoring, Alarms/Errors Detection, Framed BER Measurement, RTD Measurement, Monitoring using Passthrough		MU100010A-371 CPRI/OBSAI Up to 5G Dual Channel Retrofit	MU100010A-372 CPRI/OBSAI 6G to 10G Single Channel Retrofit	MU100010A-373 CPRI/OBSAI 6G to 10G Dual Channel Retrofit
Fibre Channel				
Performance Test, Signal Generation/Monitoring, Latency, BER, Line Alarm/Error Monitoring		MU100010A-302 FC 1G 2G 4G Dual Channel Retrofit	MU100010A-391 FC 8G 10G Single Channel Retrofit	MU100010A-392 FC 8G 10G Dual Channel Retrofit
SDH/SONET, PDH/DSn*5				
PDH/DSn Test, Tw-Way Monitoring/Mapping, Errors/Alarms, Error Performance/Delay/APS Test, Header Monitoring/Generation, Pointer Event Generation, Tributary Scan		MU100010A-301 Up to 2.7G Dual Channel Retrofit	MU100010A-381 STM-64 OC-192 Single Channel Retrofit	MU100010A-382 STM-64 OC-192 Dual Channel Retrofit

*1: The channel is not related to the physical port position. The user can freely choose either of the two physical ports assigned to the option via software.

For a dual channel setup, the two different ports of one protocol can operate simultaneously, or two different single channel options can operate simultaneously.

*2: When using the OTN function, the channel can be used as client signal mapped to OTN. For example, when mapping STM-64/OC-192 to OTU2, both the MU100010A-351/352 (for physical port) and the MU100010A-381/382 (for client signal) are required.

*3: When the ODU Multimapping option is installed, OTN multistage mapping measurements are supported.

This one option supports both single channel and dual channel.

*4: When the ODU Flex option is installed, since transport is over OTN networks, mappings based on used ODU Flex standard can be measured.

This one option supports both single channel and dual channel.

*5: PDH/DSn interface can be tested with MU100010A.

Additional Purchases

Adding New Options to Previously Purchased MT1000A

<MU100011A>

To add a new protocol option to a previously purchased MU100011A, choose the required option from the following list. The MU100011A serial number is required to make the purchase.

Adding MU100011A Protocol Option	Bit Rate No. of Measurement Ports*1	Up to 10G		Higher than 10G	
		1 (Single Channel)	2 (Dual Channel)	1 (Single Channel)	2 (Dual Channel)
Ethernet					
IPv4/IPv6, Y.1564, IEEE 1588 v2, RFC 2544, BER, Multistream, OAM, SyncE, MPLS, MPLS-TP, Multistage VLAN, PBB, Ping/Traceroute, Cable Tests, In-band Control, Auto discovery, Path-through	MU100011A-301 Up to 10G Single Channel Retrofit	MU100011A-303 Up to 10G Dual Channel Retrofit	MU100011A-317*8 Ethernet 25G Single Channel Retrofit	—	
			MU100011A-313*9 Ethernet 40G Single Channel Retrofit	—	
			MU100011A-315*9 Ethernet 100G Single Channel Retrofit	—	
TCP Throughput Test (RFC 6349, iPerf)	MU100011A-320 TCP Throughput		—		—
SyncE Wander	MU100011A-021*11 SyncE Wander		—		—
100GBASE-SR and single-λ 100G related measurements	—	—	MU100011A-323*8 RS-FEC for 100GBASE-SR4 Retrofit	—	
			MU100011A-324*10 RS-FEC(544,514) for 100GBASE-xR Retrofit	—	
			MU100011A-315*9 Ethernet 100G Single Channel Retrofit	—	
eCPRI/RoE (IEEE1914.3)					
IPv4/IPv6, BER, VLAN, SyncE, IEEE 1588 v2, E-OAM	MU100011A-301 Up to 10G Single Channel Retrofit	MU100011A-303 Up to 10G Dual Channel Retrofit	MU100011A-317*8 Ethernet 25G Single Channel Retrofit	MU100011A-375*7,*8 eCPRI/RoE 25G Dual Channel Retrofit	
			MU100011A-313*9 Ethernet 40G Single Channel Retrofit	—	
			MU100011A-315*9 Ethernet 100G Single Channel Retrofit	—	
OTN*2,*3					
Errors/Alarms, Error Performance/Delay/APS Test, FEC Test, O.182 Test, Overhead Editing/Capture, TCM Monitoring/Generation, Tributary Scan	MU100011A-301 Up to 10G Single Channel Retrofit	MU100011A-303 Up to 10G Dual Channel Retrofit	MU100011A-353 OTN 40G Single Channel Retrofit	—	
			MU100011A-355 OTN 100G Single Channel Retrofit	—	
ODU Multiplexing Addition*2,*4	MU100011A-363 ODU Multiplexing/Multi Stage Retrofit		—		
ODU Flex Addition*2,*5	MU100011A-362 ODU Flex Retrofit		—		
CPRI/OBSAI					
CPRI/OBSAI L1: Level/Bit Rate/Frequency deviation Measurement, Alarms/Errors Detection, Unframed BER CPRI/OBSAI L2: Link Status Monitoring, Alarms/Errors Detection, Framed BER Measurement, RTD Measurement, Monitoring using Passthrough	MU100011A-371 CPRI/OBSAI Up to 10G Single Channel Retrofit	MU100011A-372 CPRI/OBSAI Up to 10G Dual Channel Retrofit	MU100011A-373 CPRI 12/25G Single Channel Retrofit	MU100011A-374 CPRI 12/25G Dual Channel Retrofit	
Fibre Channel					
Performance Test, Signal Generation/Monitoring, Latency, BER, Line Alarm/Error Monitoring	MU100011A-304 Up to 10G FC Single Channel Retrofit	MU100011A-305 Up to 10G FC Dual Channel Retrofit	MU100011A-391 FC 16G Single Channel Retrofit	—	
SDH/SONET					
PDH/DSn Test, Tw-Way Monitoring/Mapping, Errors/Alarms, Error Performance/Delay/APS Test, Header Monitoring/Generation, Pointer Event Generation, Tributary Scan	MU100011A-301 Up to 10G Single Channel Retrofit	MU100011A-303 Up to 10G Dual Channel Retrofit	MU100011A-383*6 STM-256/OC-768 Client Signal Retrofit	—	

*1: The channel is not related to the physical port position. The user can freely choose either of the two physical ports assigned to the option via software. For a dual channel setup, the two different ports of one protocol can operate simultaneously, or two different single channel options can operate simultaneously. However, both ports must use the same protocol.

*2: Please see the datasheet for supported OTN mapping.

*3: When using the OTN function, the channel can be used as client signal mapped to OTN.

For example, when mapping STM-256/OC-768 to OTU4, both the MU100011A-355 (for physical port) and the MU100011A-383 (for client signal) are required.

*4: When the ODU Multiplexing/Multistage option is installed, OTN multistage mapping measurements are supported.

This one option supports both single channel and dual channel.

*5: This mapping function is based on the ODUFlex standard for transmissions over OTN networks and supports client signals of any speed.

*6: The MU100011A has no STM-256/OC-768 PHY interface; it can be used for OTN client signals.

*7: Option supports eCPRI/RoE protocol tests only.

*8: Adds 100GBASE-SR FEC On/Off function.

*9: The MU100011A-323 is required for 100GBASE-SR4 FEC control.

*10: Adds FEC On/Off and single-λ 100G FEC analysis functions.

*11: 40G and 100G are not supported.

Additional Purchases

Adding New Options to Previously Purchased MT1000A

4-2 Adding Main Frame Options for Transport Function

The MT1000A serial number is required at purchase.

Model	Name	Notes
MT1000A-303	Connectivity for WLAN/Bluetooth Retrofit	WLAN/Bluetooth options (can be used in approved countries, including N. America, Japan, EU; see Anritsu web site for latest list of countries)

When adding protocol options later, specify one of the following media types as well as the option.

Model	Name
Z1849A	DVD-ROM for Retrofit Options
Z1850A	USB Stick for Retrofit Options
MT1000A-311*1	Site Over Remote Access Connect Retrofit

*1: This option enables remote control of the MT1000A using the Site Over Remote Access MX109020A software. We recommend using in conjunction with the WLAN/Bluetooth option MT1000A-003/303. A WLAN dongle can be used in countries and regions where WLAN is not supported. For a list of supported WLAN dongles, please contact us.

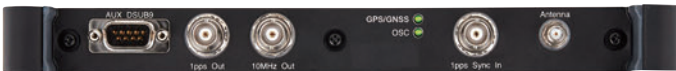
4-3 Adding Transport Module

When adding the MU100010A/MU100010A1 to a previously purchased MT1000A, use the same procedure as for 10G Multirate Module MU100010A/MU100010A1 described on pages 6 thru 8, 16 and 17.

4-4 Adding Network Time/Phase Synchronization Test

Purchase the following products when adding the Network Time/Phase synchronization test and measuring using two synchronized MT1000A units.

High Performance GNSS Disciplined Oscillator MU100090B



Model/Order No.	Name
MU100090B	High Performance GNSS Disciplined Oscillator
Standard Accessories	
J1705A	AUX Conversion Adaptor
J1886A	GNSS Antenna
J1710A	BNC Cable (20 cm) × 2
Z2122A	Tripod for GNSS Antenna
MU100090B Options	
MU100090B-001	High Stability/Multi-Band
MU100090B-002	Multi-GNSS
Mandatory MT1000A Option	
MT1000A-005*2	AUX I/O

Model/Order No.	Name
MU100011A Option	
MU100011A-021	SyncE Wander
Extended Warranty Service	
MU100090B-ES210	2 Years Extended Warranty Service (standard 1 year + 1 year)
MU100090B-ES310	3 Years Extended Warranty Service (standard 1 year + 2 years)
MU100090B-ES510	5 Years Extended Warranty Service (standard 1 year + 4 years)

*2: The MT1000A-005 is mandatory option for use of MU100090B. Confirm if all of MT1000As which you install the MU100090B have MT1000A-005 or not. If they does not have it please contact us.

4-5 Adding OTDR Module

When adding the OTDR Module to a previously purchased MT1000A, use the same procedure as for OTDR Module described on pages 10 thru 17.

4-6 Adding MX109020A Option

Requires MX109020A serial number at purchase.

Model	Name	Notes
MX109020A-TL001	Site Over Remote Access 1 Year License	Extends MX109020A usage period by 1 year
MX109020A-301	Site Over Remote Access 8 Units	Extends number of instruments simultaneously controlled by MX109020A to 8 units
MX109020A-302	Site Over Remote Access Unlimited Units	Extends number of instruments simultaneously controlled by MX109020A to 100 units
MX109020A-303	Centralized Data Management	Supports upload of measurement report from MT1000A to cloud storage

Network Master Pro MT1000A

Configuration Examples

By combining multiple modules, MT1000A can be used as a measuring instrument suitable for the field. There will introduce a configuration example tailored to the exam situation.

I&M for Core/Metro Network

Optical fiber check and 100G transport testing

Model	Name
MT1000A	Network Master Pro
MU100011A	100G Multirate Module
MU100011A-015	Ethernet 100G Single channel
MU100011A-055	OTN 100G Single Channel
G0434A	100G LR4 Dual Rate 1310 nm QSFP28
MU100022A	OTDR Module 1310/1550/1625 nm SMF
MU100022A-022	High-Performance Dynamic Range
MU100022A-010	UPC Polish
MU100022A-037	FC Connector
MU100022A-002	Visual Fault Locator

I&M for Mobile Backhaul

Evaluate SyncE and IEEE 1588 v2 (PTP), and evaluate the time synchronization accuracy of the network.

Model	Name
MT1000A	Network Master Pro
MT1000A-005	AUX I/O
MU100010A1	10G Multirate Module
MU100010A-001	Up to 2.7G Dual Channel
MU100010A-012	Ethernet 10G Dual Channel
G0315A	10G LR/LW 1310 nm SFP+
MU100090B	High Performance GNSS Disciplined Oscillator

I&M for Data Center

Confirm the data quality inside the station building and the communication quality with the IX.

Model	Name
MT1000A	Network Master Pro
MU100011A	100G Multirate Module
MU100011A-001	Up to 10G Dual Channel
MU100011A-017	Ethernet 25G Single Channel
MU100011A-020	TCP Throughput
MU100011A-005	Up to 10G FC Dual Channel
MU100011A-091	FC 16G Single Channel
G0329A	10G LR 1310 nm SFP+
G0356A	8G FC/10G FC SR 850 nm SFP+
G0386A	16GFC SR 850 nm SFP+
G0388A	25G SR 850 nm QSFP+
G0389A	25G LR 1310 nm QSFP+

Order Sheet

When recording different MT1000A configurations on one order sheet, describe each MT1000A configuration on one line with the accompanying options under the relevant line.

Model	Name	Quantity

I&M for Mobile Fronthaul

Evaluate breakage of optical fiber and transmission quality of Ethernet and CPRI/OBSAI.

Model	Name
MT1000A	Network Master Pro
MU100010A1	10G Multirate Module
MU100010A-071	CPRI/OBSAI Up to 5G Dual Channel
MU100010A-073	CPRI/OBSAI 6G to 10G Dual Channel
G0319A	Up to 2.7G 1310 nm 15 km SFP
G0329A	10G LR 1310 nm SFP+
MU100021A	OTDR Module 1310/1550 nm SMF
MU100021A-021	Standard Dynamic Range
MU100021A-010	UPC Polish
MU100021A-040	SC Connector
MU100021A-002	Visual Fault Locator
J1534A	LC-SC Plug-in Converter (SC (P)-LC (J) for SM fiber)
J1535A	LC-SC Plug-in Converter (SC (P)-LC (J) for MM fiber)
68-10-R	SFP (Optical Module), 3.7 Gbps SFP, 850 nm
68-6-R	SFP+ (Optical Module), 8G FC/10G SFP, 1310 nm

Check of Dark Fiber

It will evaluate the disconnection of the dark fiber to be used for the first time and the optical signal quality.

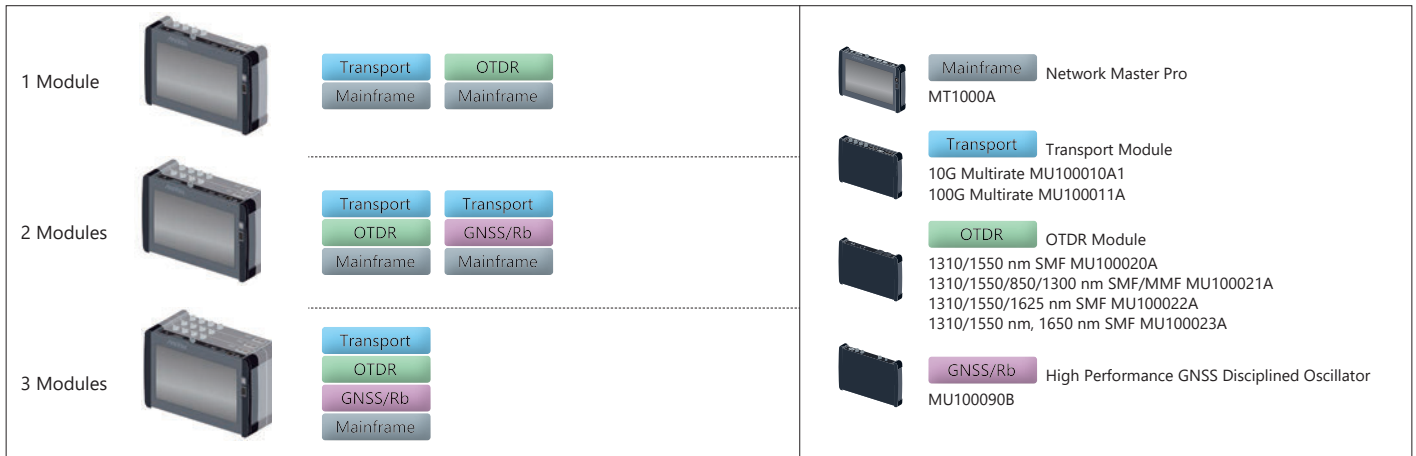
Model	Name
MT1000A	Network Master Pro
MU100022A	OTDR Module 1310/1550/1625 nm SMF
MU100022A-022	High-Performance Dynamic Range
MU100022A-010	UPC Polish
MU100022A-037	FC Connector
MU100022A-002	Visual Fault Locator

Network Master Pro MT1000A

Procedure for Attaching Some Measurement Modules

MT1000A measurement modules can be removed and changed.

Module Configuration



This explains the method and precautions.

Step 1: Version up the software for MT1000A

Install the latest software in the MT1000A. This software can be obtained from the Anritsu web site.

* There are two MT1000A installers; download the installer matching the measurement module to be used.

Step 2: Remove the battery pack from Mainframe

- 1) Disconnect the AC cable.
- 2) Use screw driver or Coin and remove the battery lid from MT1000A.



- 3) Remove the battery pack.



Step 3: Replacing the connected modules

- 1) Place the instrument on its front on a plain surface.
Loosen the screws (shown by the blue circle) on rear side of the connected module.



- 2) After loosening the four screws, lift up the connected module with holding both sides.
If you cannot lift up, loosen the four screws again.
You can see the panel as below.

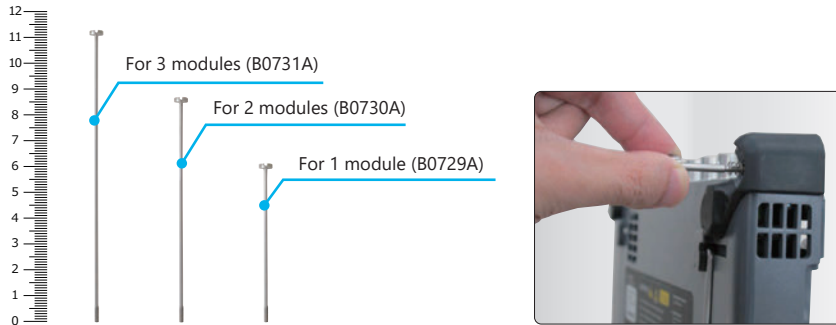


Network Master Pro MT1000A

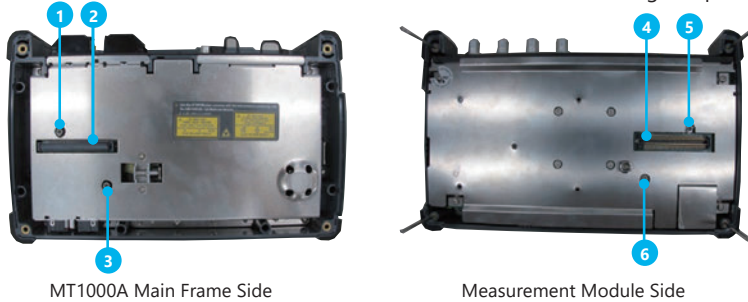
Procedure for Attaching Some Measurement Modules

Step 4: Attaching the new module and the former module

1) Remove four screws of former module and replace to the next screws. Please arrange a screw separately.



2) Attach the former module to the new module. Please check modular turn, referring to 3 pages. Place the former module on the new modules as to connect following pairs: Align the four corners when installing the module. At this time, take care not to let connectors 2 and 4 come into contact with guide pins 1, 3, 5, and 6. Doing so may damage the module connectors.



3) Tighten the four screws.
After the module attachment has finished, the external appearance will be as below.

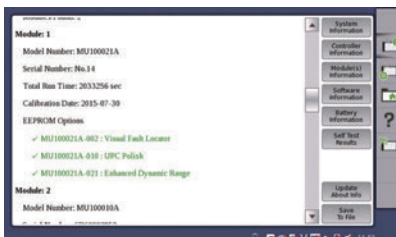


Step 5: After attaching the modules

1) After attaching the modules, connect the AC cable or install the battery packs.



2) Turn on the MT1000A. Please check whether a new module is recognized at the system information



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