Anritsu Advancing beyond

Network Master™ Series

Network Master Pro MT1040A

400G (QSFP-DD) Multirate Module   MU104014A
400G (OSFP) Multirate Module   MU104015A
100G Multirate Module   MU104011A

Network Master Pro

MT1040A Network Master Pro

CDIP
www.cdip.ru
info@cdip.ru
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400G
## - anywhere, anyspeed, anytest

Small

Battery powered for 400G Ethernet measurements

**E**asy-to-use GUI with 9-inch touchscreen for better operability

Flexible

One unit supports multiple standards, including OTN, eCPRI/RoE, Fibre Channel

Optical fiber line measurement in combination with OTDR module

Powerful

Built-in 400G Ethernet FEC analysis function

Simple optical module check function

More efficient work with automated-measurement tools supporting one-button tests
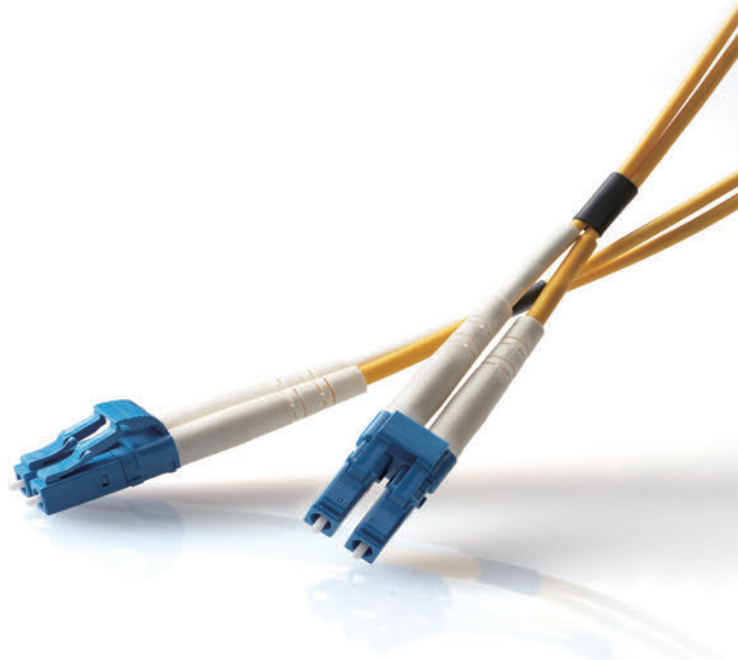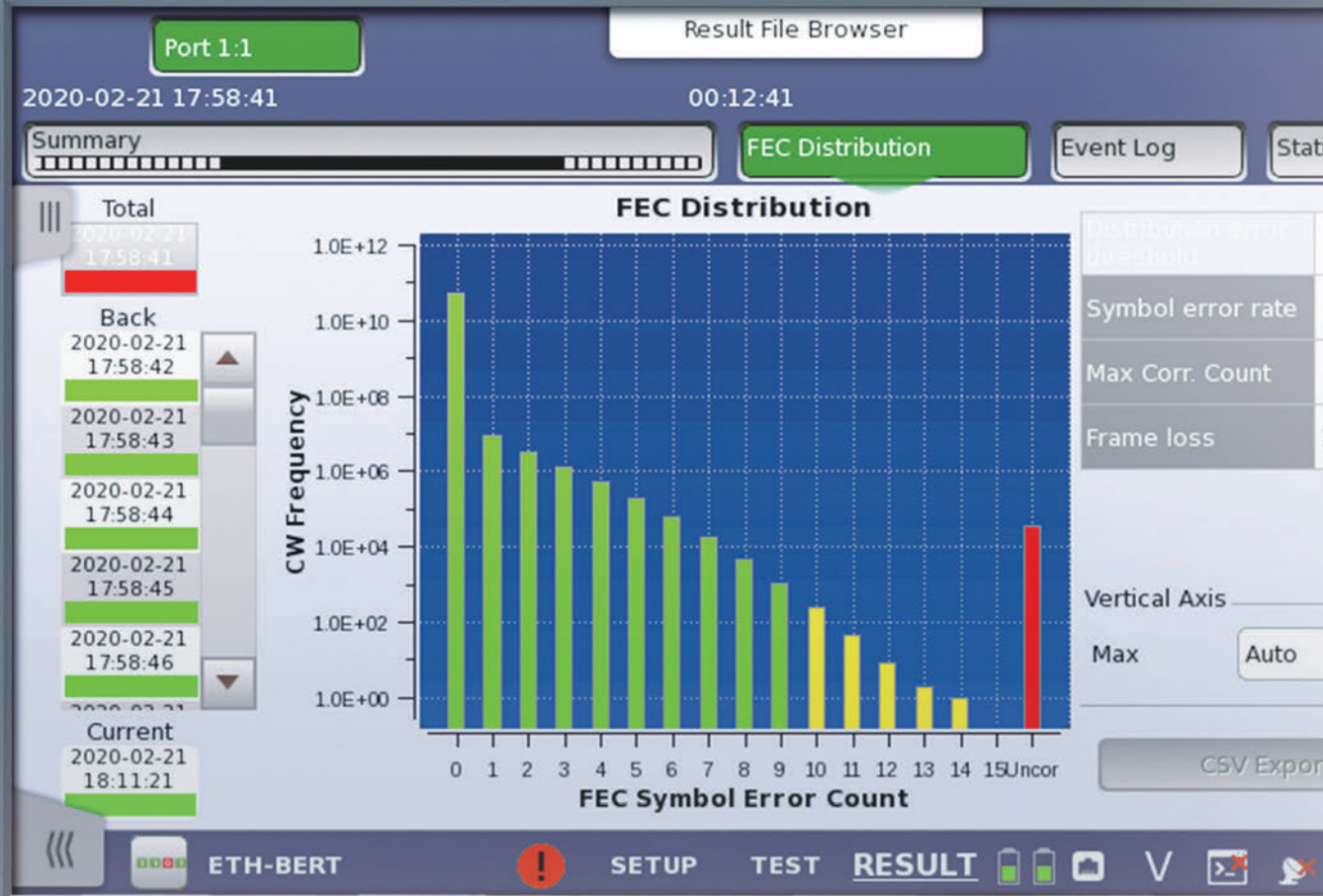
Small ... Compact and Lightweight

With a built-in, large 9-inch touchscreen, the Network Master Pro MT1040A is the ideal instrument for 400G Ethernet tests.

Measurement Modules

	QSFP-DD/QSFP56	OSFP	QSFP28/QSFP+	SFP28/SFP+/SFP	RJ45
MU104014A	1 port		2 ports	2 ports	2 ports
MU104015A		1 port	1 port	2 ports	2 ports
MU104011A			2 ports	2 ports	2 ports

400G (QSFP-DD) Multirate Module MU104014A

400G (OSFP) Multirate Module MU104015A

100G Multirate Module MU104011A

Testing is supported by installing the Activate for 400G Dual/100G Quad Option MT1040A-020 and two measurement modules.

The MT1040A is both AC and battery powered
(with more than 1 hour of 400G tests while on battery power).

Powerful Support for On-site I&M Work

As networks become increasingly advanced, installation and maintenance (I&M) engineers need a good understanding of the technologies supporting metro and mobile networks, data centers, etc., and tester operation. Additionally network commissioning sometimes requires many different measurements, which imposes a heavy load on operators working on-site. With a full range of built-in test functions, the MT1040A helps lighten operators' workloads.

Easy-to-Use GUI with Large 9-inch Touchscreen

The MT1040A has a wide 9-inch touchscreen built-into the wide B5-size case. At on-site testing with no available AC supply, the battery secures 1 hour (average) of continuous, problem-free 400G interface measurements. The GUI is designed for efficient on-site network I&M evaluation work, and fast troubleshooting if a problem occurs. The intuitive user interface also helps shorten operator training times.
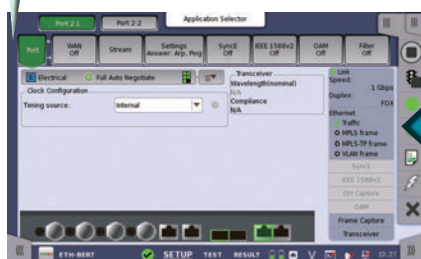
Application Selector

Test Results File Creation

Splitting the settings and results between three screens helps the operator find the required screen quickly.
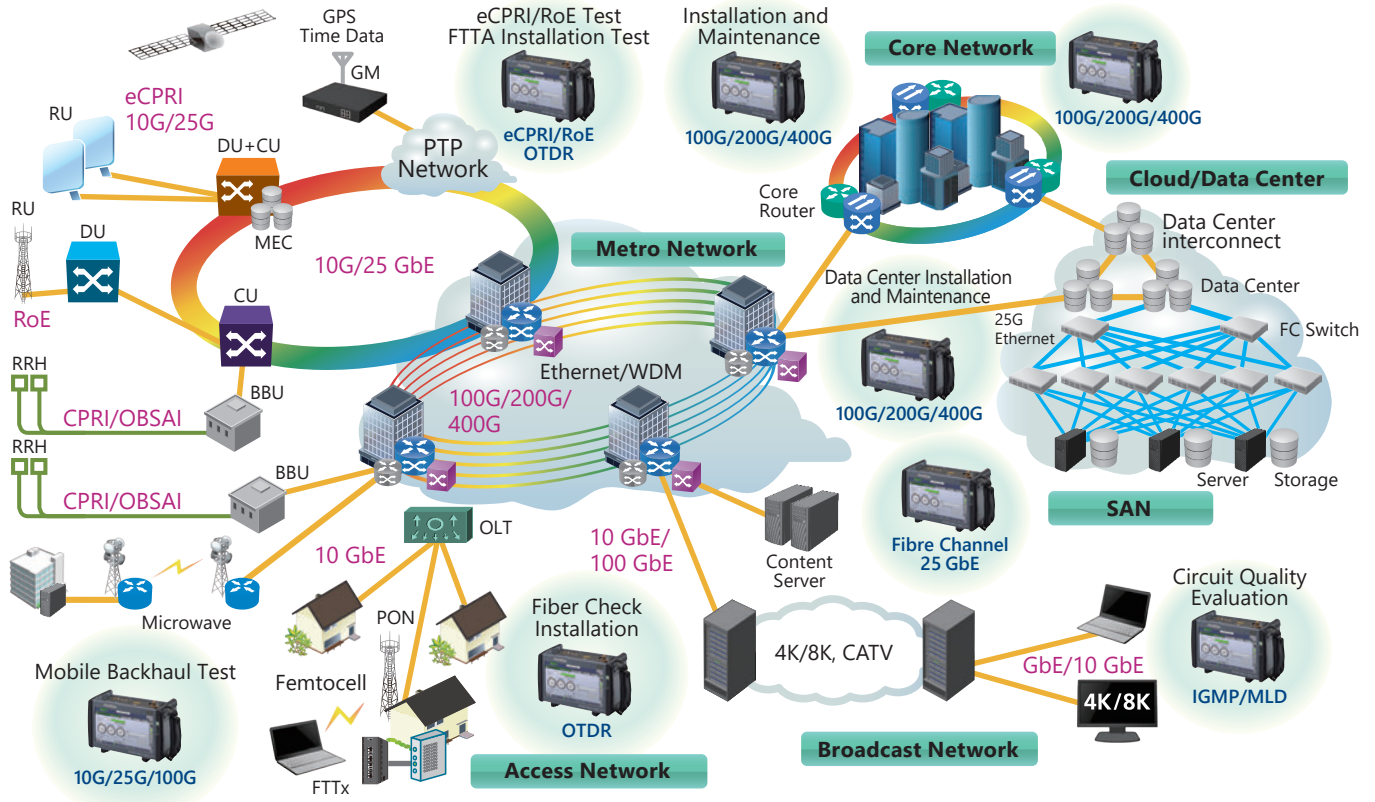
Test Port Setting

Test Condition Setting

Test Results Display

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The Network Master supports all types of network I&M.

The modular design of the Network Master Pro MT1040A platform makes it easy to support I&M for different network configurations. Furthermore, options for each test function can be selected and added as necessary to match the work schedule, helping cut initial capital costs.

Transport Module Interfaces and Protocols

Interface	Ethernet	OTN	SDH/SONET	Fibre Channel	eCPRI	CPRI/OBSAI
QSFP-DD/OSFP	400 GbE	—	—	—	—	—
QSFP56	200 GbE	—	—	—	—	—
QSFP28	100 GbE	OTU4	—	—	100 GbE	—
QSFP+	40 GbE	OTU3	—	—	40 GbE	—
SFP28	25 GbE	—	—	—	25 GbE	CPRI10
SFP/SFP+	GbE/10 GbE	OTU1x/OTU2x	STM1-64/OC3-192	1G/2G/4G/8G/10G/16G FC	GbE/10 GbE	CPRI 1/2/3/4/5/6/7/8/9 OBSAI 1x/2x/4x/8x
RJ45	10/100/1000M	—	—	—	10/100/1000M	—

OTDR Module

This module helps detect fiber-cable faults, such as dust or scratches at fiber-connector end faces, and excessive optical reflections. The built-in Fiber Visualizer function featuring easy report creation and output helps improve work efficiency too.

See page 16 for more details.
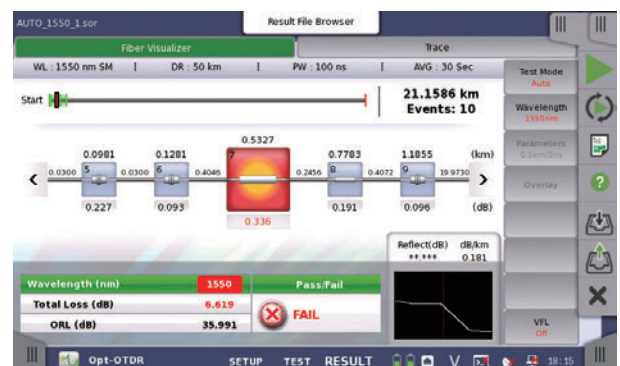
Fiber Visualizer Screen

Transport Application

Ethernet Installation and Troubleshooting

Network operators are introducing new carrier-class technologies, such as VLAN, Q-in-Q, Ethernet OAM, etc., to their Ethernet service menus, increasing test complexity and test time for field technicians.
With connectivity, bandwidth, QoS (Quality of Service), and service-related test functions, the MT1040A is ideal for commissioning and troubleshooting Ethernet networks at speeds up to 400 Gbps.

- BER tests – include Frame Loss and Sequence Error tests
- FEC Analysis
- Automated RFC 2544 tests of Throughput, Frame Loss, Latency or Packet Jitter, Burstability
- Filters – to extract relevant parts of traffic

- Separate pass/fail threshold settings
- Multistream Tx/Rx function (QoS/CoS test)
- Stacked VLAN (Q-in-Q)
- Link Fault Signaling (LFS) Emulation (10 Gbps to 400 Gbps)
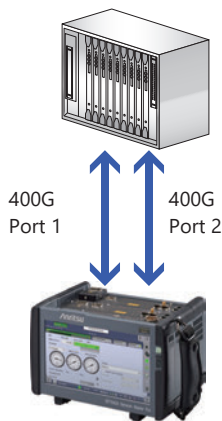
Supports I&M for Multiple Transport Networks

Networks do not only use Ethernet technology. Consequently, in addition to supporting Ethernet, the MT1040A also supports mobile networks using eCPRI and CPRI, core networks using OTN and SONET/SDH, and various other networks such as fiber channel used by data centers and video streaming services. Adding various protocols also facilitates network I&M.

Strong Support Ranging from 400 GbE Equipment Tests to Network I&M

Two measurement modules can be installed in the MT1040A by adding MT1040A-020. As a result, both 400G dual port and 100G 4 port measurements are supported. Customized installed options facilitate applications ranging from equipment inspection to network I&M.

Laboratory Equipment Tests

On-site I&M Tests

Functions, GUI, Automatic Measurement Scenario Sharing
- Laboratory and on-site field tests with minimum advanced training
- Both separate and shared measurement modules

400G
Port 1

400G
Port 2

400G
Network

400G Dual-port Tester
All-in-one, single-screen detailed laboratory network and equipment tests

Compact 400G Tester
Battery operation for on-site tests and tests between two sites

400G Ethernet FEC Analysis

Ethernet equipment interfaces use optical modules. With some exceptions, pass/fail verification of optical modules up to 100G is performed simply by measuring the bit error rate (BER) for a fixed period of repeated sending and receiving of signals to confirm the error-free status. Similarly, network throughput and latency are measured using a BERT.

However, the 400G Ethernet PMD layer is switching to PAM4 and FEC (Forward Error Correction) to correct errors occurring at optical transceivers and networks transmitting extremely fast signals, and to assure both communications quality and lower costs. FEC is a technology for correcting errors within the correctable range, and assures high reliability as well as extended transmission distance.

MT1040A FEC Symbol Error Measurement

The MT1040A supports both visual monitoring and quantitative measurement of FEC Symbol Errors while communicating using Ethernet Frames. In addition, it supports two types of threshold setting and continuous saving of measurement results at any interval for stability evaluation and analysis of correlations with other events.
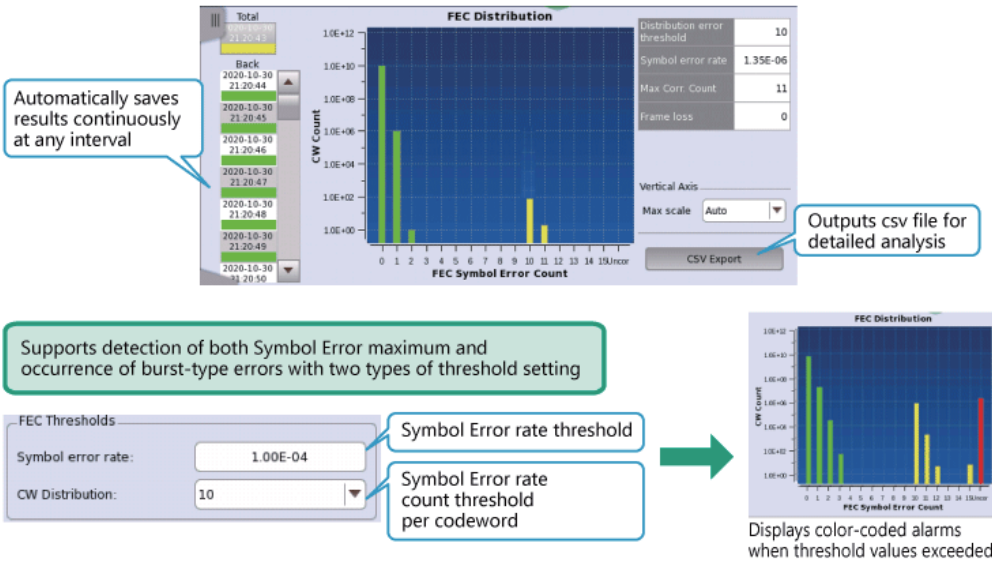
Periodic network monitoring using this function confirms the network load conditions, helping prevent problems.

Easy Optical Module Tests

The MT1040A includes tools for optimized setting of directly connected optical modules. These tools support easy pass/fail tests of optical modules. Moreover, manual access to the optical module MDIO and I2C functions simplifies optical-module checks.

Optical-Module Check
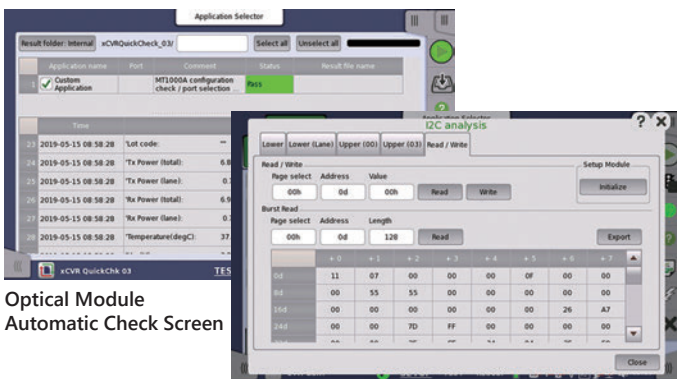
Optical Module
Automatic Check Screen

I2C Analysis Screen

400G Degraded SER Function

The following functions are for testing the equipment 400G Degraded SER function.

(1) Degraded SER Alarm (RD/LD) Generation

(2) Degraded SER Alarm Emulation

Strong Support for I&M Field Technicians

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

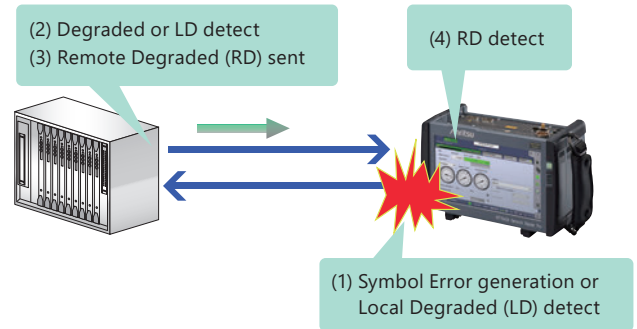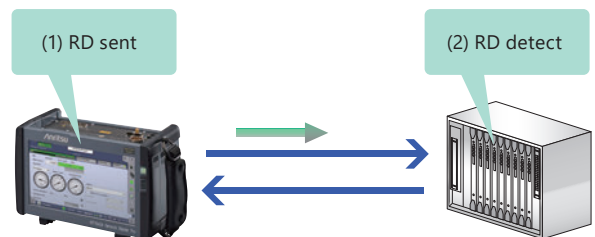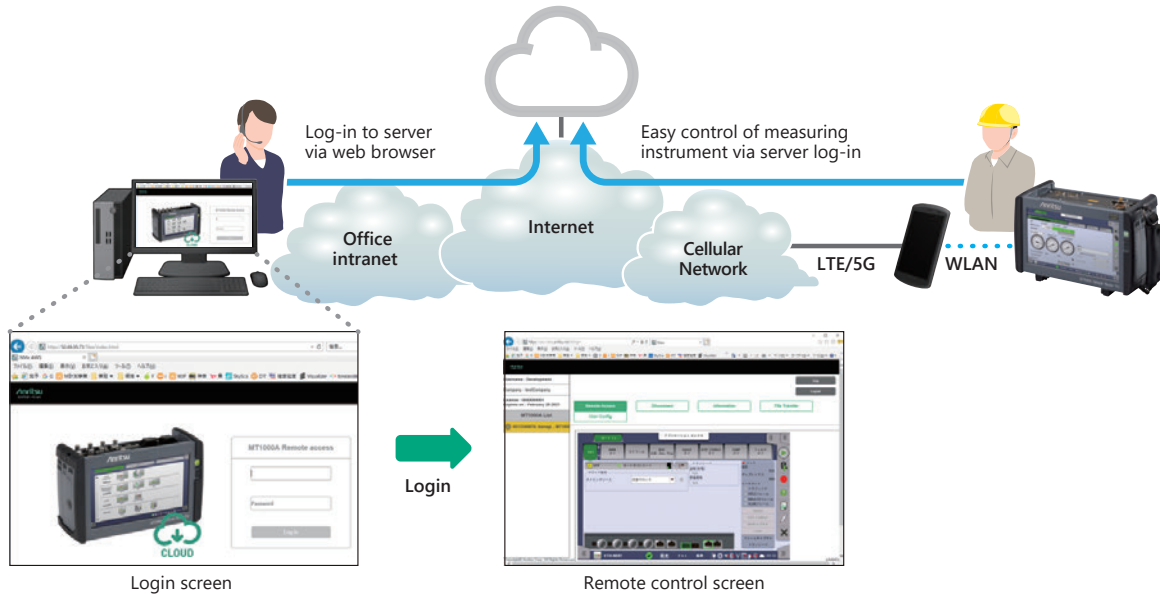Using the Site Over Remote Access MX109020A (SORA hereafter) software measuring instruments can be remotely controlled easily anywhere.
The SORA cloud-based service allows office users to log-in to an Internet webpage to control the measuring instrument from the office via a smartphone.

Login screen   Remote control screen

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.
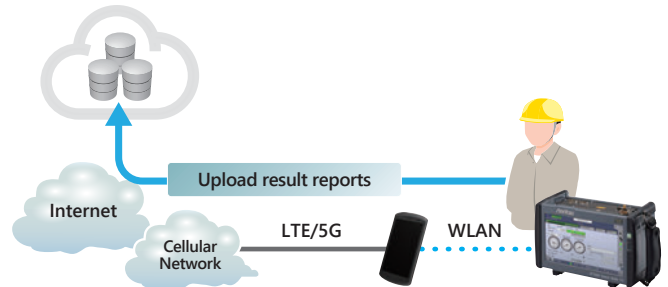
* This service can be used in countries and regions where the MT1040A WLAN/Bluetooth option has been approved. For details, contact Anritsu.

* 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.

One Button Testing

The MT1040A has automatic test functions for simple and efficient
network commissioning. These MT1040A automated test functions run
scenario files created in advance on a PC to perform tests automatically
using preset measurement items, procedures, and pass/fail evaluation
conditions. Since the scenario also handles report creation, evaluation
and results, inexperienced workers can run accurate tests without
operation mistakes and re-tests.

	Setting Test Equipment:	Manual
	Executing Test:	Manual
	Evaluating Results:	Based on data

	Setting Test Equipment:	**Not necessary**
	Executing Test:	**Not necessary**
	Evaluating Results:	**Not necessary**

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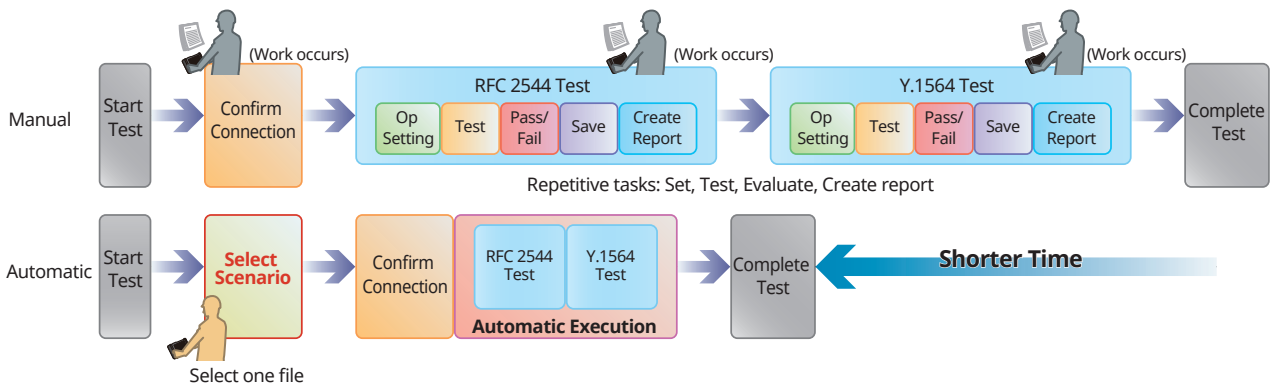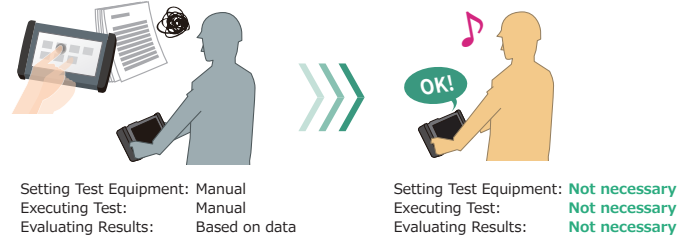
Network Master Pro MT1040A Mainframe Specifications

User Interfaces	
Display	9-inch active TFT display (800 × 480 pixels) and touch screen
Supported Languages	English, Chinese, Japanese, French, Russian, Spanish, Finnish, Korean, German

Service Interfaces	
USB Data Interface	MT1040A operates as host: USB 2.0 type A (2 Ports)
	MT1040A operates as device: USB 2.0 type Mini-B (1 port)
Ethernet Interface	Ethernet 10M/100M/1000M, RJ45 Connector: 1 port
WLAN Interface*	IEEE802.11a/b/g/n (2.4 GHz/5 GHz)
Bluetooth Interface*	Bluetooth (BT2.1+EDR/3.0/4.2 (BLE)) (File access only)

*: Available for certified countries and regions including USA, Japan and EU countries. Please visit the Anritsu web site for updated information.
   The Bluetooth® mark and logos are registered trademarks of Bluetooth SIG, Inc.

Other Interfaces	
AUX Connector	For connection of G0325A GPS receiver
Internal Clock	Accuracy: ±4.6 ppm or less, STRATUM3 compliant
Ext. Clock Input	For connection of external clock signals: SETS (E1: 2.048 Mbps), BITS (DS1: 1.544 Mbps) or 2.048 MHz TTL signal in accordance with ITU-T G.703, 10 MHz Connector: BNC (50Ω)

Miscellaneous		
Storage Capacity	7 Gbyte	
Battery	11.25 V rechargeable and replaceable intelligent Li-ion battery × 2 Operating time: 1 hours (typ., in case of 400 GbE) Charging time: 9 hours (Max.) (2 pcs) Remaining capacity indication: %	
Mains Adapter	G0418A (MT1040A Standard Accessory)	G0419A (MT1040A-020 Accessory)
	Input: 110 VAC to 240 VAC, 50 Hz/60 Hz	Input: 110 VAC to 240 VAC, 50 Hz/60 Hz
	Rated output: 19 VDC, 13.2 A max.	Rated output 18 VDC, 22.2 A max.
	Power consumption: 250 W max.	Power consumption: 420 W max.
Dimensions and Mass	262 (W) × 167 (H) × 68 (D) mm (Exclude Projection, MT1040A) 262 (W) × 167 (H) × 134 (D) mm (Exclude Projection, MT1040A + MU104014A) 262 (W) × 167 (H) × 154 (D) mm (Exclude Projection, MT1040A + MU104014A + MU100020A) 262 (W) × 167 (H) × 187 (D) mm (Exclude Projection, MT1040A + MU104014A + MU104014A) ≤4.7 kg (including MT1040A, MU104014A and battery) ≤5.5 kg (including MT1040A, MU104014A, MU100020A and battery) ≤6.5 kg (including MT1040A, MU104014A, MU104014A and battery)	

Environmental	Operating
	  Temperature: 0°C to +50°C, Humidity: ≤85% RH (non-condensing)
	Charging
	  Temperature: 0°C to +40°C, Humidity: ≤85% RH (non-condensing)
	Storage
	  Temperature: −30°C to +60°C, Humidity: ≤90% RH (non-condensing, without battery and AC adapter)
	       −20°C to +40°C, Humidity: ≤90% RH (non-condensing, with battery and AC adapter)	

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

MT1040A Interface

MT1040A + MU104014A

MT1040A + MU104014A + MU104015A

Network Master Pro MT1040A Multirate Module Specifications

Model		400G (QSFP-DD) Multirate Module MU104014A	400G (OSFP) Multirate Module MU104015A	100G Multirate Module MU104011A
Physical Interface	RJ45 Connector	10/100/1000BASE-T	2	2	2
	SFP Slots	SFF-8431, SFF-8472 compliant, IEEE 802.3ae-2002, IEEE802.3-2008 compliant	2	2	2
	QSFP Slots	SFF-8436, SFF-8472, SFF-8665 compliant, IEEE 802.3ba-2010 compliant	1	1	2
	QSFP-DD/ QSFP56 Slots	QSFP-DD Hardware Specification for QSFP Double Density 8X Pluggable Transceiver – Rev 4.0 compliant OIF-CEI-56G-VSR compliant	1	0	0
	OSFP Slots	Rev2.0: Specification for OSFP Octal Small Form Factor Pluggable Module compliant OIF-CEI-56G-VSR compliant	0	1	0

Bit Rate[1]

Standard	Bit Rate	Interfaces
10BASE-T	12.5 Mbit/s	RJ45
100BASE-TX	125 Mbit/s	RJ45
1000BASE-T	1.25 Gbit/s	RJ45
10GBASE-T	10.3125 Gbit/s	RJ45 (SFP+)
100BASE-X	125 Mbit/s	SFP
1000BASE-X	1.25 Gbit/s	SFP
10GBASE-X	10.3125 Gbit/s	SFP+
25 GbE	25.781250000 Gbit/s × 1 Lane	SFP28
40 GbE	10.312500000 Gbit/s × 4 Lane	QSFP+
100 GbE	25.781250000 Gbit/s × 4 Lane	QSFP28
200 GbE	53.125000000 Gbit/s × 4 Lane	QSFP56
400 GbE	53.125000000 Gbit/s × 8 Lane (26.5625 GBd PAM4 × 8 Lane)	QSFP-DD
400 GbE	53.125000000 Gbit/s × 8 Lane (26.5625 GBd PAM4 × 8 Lane)	OSFP
OTU1	2.666057143 Gbit/s	SFP
OTU2	10.709225319 Gbit/s	SFP+
OTU1e	11.049 107143 Gbit/s	SFP+
OTU2e	11.095727848 Gbit/s	SFP+
OTU1f	11.270089286 Gbit/s	SFP+
OTU2f	11.317642405 Gbit/s	SFP+
OTU3e1	11.142743644 Gbit/s × 4 Lane	SFP+
OTU3e2	11.145838894 Gbit/s × 4 Lane	SFP+
OTU3	10.754603390 Gbit/s × 4 Lane	QSFP+
OTU4	27.952493392 Gbit/s × 4 Lane	QSFP28

Standard	Bit Rate	Interfaces
STM-1/OC-3	155.52 Mbit/s	SFP
STM-4/OC-12	622.08 Mbit/s	SFP
STM-16/OC-48	2488.32 Mbit/s	SFP
STM-64/OC-192	9953.28 Mbit/s	SFP+
CPRI1	614.4 Mbit/s	SFP
CPRI2	1228.8 Mbit/s	SFP
CPRI3	2457.6 Mbit/s	SFP
CPRI4	3072.0 Mbit/s	SFP
CPRI5	4915.2 Mbit/s	SFP+
CPRI6	6144.0 Mbit/s	SFP+
CPRI7	9830.4 Mbit/s	SFP+
CPRI8	10137.6 Mbit/s	SFP+
CPRI9	12165.12 Mbit/s	SFP+
CPRI10	24330.24 Mbit/s	SFP28
OBSAI 1x	768 Mbit/s	SFP
OBSAI 2x	1536 Mbit/s	SFP
OBSAI 4x	3072 Mbit/s	SFP
OBSAI 8x	6144 Mbit/s	SFP+
1GFC	1.0625 Gbit/s	SFP
2GFC	2.125 Gbit/s	SFP
4GFC	4.25 Gbit/s	SFP
8GFC	8.5 Gbit/s	SFP
10GFC	10.51875 Gbit/s	SFP+
16GFC	14.025 Gbit/s	SFP+

Miscellaneous	
LED (RJ45)	Yellow: Link, Green: Activity (Blink)
Variable Frequency	According to bit rate −200 ppm to +200 ppm, 0.1 ppm step (operation not assured if optical module specifications exceeded)
Sync Clock	Connector: SMA Female Port 1 only: Divided Clock output synchronized to QSFP-DD/OSFP/QSFP28/SFP28 Tx Data 1/8 or 1/16 Clock according to bit rate (Examples: 200 GbE/400 GbE: 3.22265 GHz @ 1/8 Clock; 1.61133 GHz @ 1/16 Clock) Min - Max: 350 mVp-p to 900 mVp-p 50Ω/AC (Single ended)
Laser Safety[2]	IEC 60825-1: 2007 Class 1M QSFP28: 100GBASE-SR4 QSFP+: 40GBASE-SR4 SFP28: 25GBASE-SR IEC 60825-1: 2007 Class 1 QSFP-DD: 400GBASE-LR4/DR4/FR4 OSFP: 400GBASE-LR4/DR4/FR4 QSFP56: 200GBASE-LR4 QSFP28: 100GBASE-LR4 QSFP+: 40GBASE-LR4 SFP28: 25GBASE-LR SFP+: 10GBASE-LR/ER/ZR SFP: 4G FC (SX), 4G FC (LX), 4G FC (EX) OC-48 LR-1/STM L-16.1, OC-48 LR-2/STM L-16.2 100BASE-FX/LX, 1000BASE-SX/LX/ZX FDA 21CFR1040.10 and 1040.11[3] 21 CFR1040.10 Excludes deviations caused by conformance to Laser Notice No. 50 dated June 24, 2007
Dimensions and Mass	261.6 (W) × 164 (H) × 52.8 (D) mm max. (excluding projections) 2.0 kg max. (without optical modules)
Environmental	Operating: 0°C to +40°C, ≤85% RH (non-condensing) Storage: −30°C to +60°C, ≤90% RH (non-condensing)
CE	EMC	2014/30/EU, EN61326-1, EN61000-3-2
	LVD	2014/35/EU, EN61010-1
	RoHS	2011/65/EU, EN50581

*1: The frequency accuracy depends on the accuracy of the MT1040A internal clock or the external clock of MT1040A.
     Refer to the external interfaces in MT1040A specifications.
*2: Safety measures for laser products
     This product complies with optical safety standards in 21CFR1040.10, 1040.11 and IEC 60825-1; the following descriptive labels are affixed to the product.

*3: Excludes deviations caused by conformance to Laser Notice No. 50 dated June 24, 2007

Ordering Information

Please specify the model/order number, name and quantity when ordering.
The names listed in the table below are Order Names. The actual name of the item may differ from the Order Name.

MT1040A Mainframe

Model/Order No.	Name	
MT1040A	Network Master Pro	
Standard Accessories		
MT1040A-006	High Power Supply*[1]:	1 pc
	Line Cord*[2]:	1 pc
B0745A	Softcase:	1 pc
B0771A*[3]	MT1040A Rear Panel kit:	1 pc
G0418A	AC Adaptor:	1 pc
G0413A	Li-ion Battery:	2 pcs
W4039AE	Quick Reference Guide:	1 pc
Z1746A	Stylus:	1 pc
Z2077A	Utilities ROM:	1 pc
Z2082A	Handle:	1 pc

Software Options*[4]

Model/Order No.	Name
MT1040A-003*[5]	Connectivity for WLAN/Bluetooth
MT1040A-011	Site Over Remote Access Connect

Option for Two Transport Modules*[6]

Model/Order No.	Name
MT1040A-020	Activate for 400G Dual/100G Quad Option
Standard Accessories	
G0419A	AC Adapter (400 W)

Optional Accessories*[7]

Model/Order No.	Name
Operation Manuals	
W4038AE	MT1040A Transport Module Operation Manual
Z1821A*[8]	Utilities in USB Stick
Mechanical Parts and Cases	
B0720A	Rear Panel
B0730A	Screw 2U
B0731A	Screw 3U
B0733A	Hard Case
B0740A	Screw 4U
B0741A	Screw 5U
B0769A*[9]	Screw Kit for MT1040A
B0772A*[10]	Soft Case 5U
B0773A*[10]	Hard Case 5U
Cables	
J1571A	Optical Cable SM LC/PC-SC/PC 3 m
J1575A	Optical Cable SM LC/PC-FC/PC 3 m
J1579A	Optical Cable SM LC/PC-LC/PC 3 m
J1581A	Optical Cable MM LC/PC-LC/PC 3 m
J1583A	Optical Attenuator 10 dB LC/PC-LC/PC
J1584A	RJ45 Cable 3 m
Application Parts	
G0306B*[11]	Video Inspection Probe
G0324A	Battery Charger
G0325A	GPS Receiver
G0382A*[11]	Autofocus Video Inspection Probe

Maintenance Service*[12]

Model/Order No.	Name
MT1040A-ES210	2 Years Extended Warranty Service
MT1040A-ES310	3 Years Extended Warranty Service
MT1040A-ES510	5 Years Extended Warranty Service

400G (QSFP-DD) Multirate Module MU104014A

Model/Order No.	Name	
MU104014A	400G (QSFP-DD) Multirate Module	
Standard Accessories		
B0768A*[13]	ESD Box:	1 pc
W4039AE*[14]	Transport Module Quick Reference Guide:	1 pc

Protocol Options*[4]

Model/Order No.	Name
Ethernet/eCPRI/RoE	
MU104014A-012	Ethernet up to 25G Dual Channel
MU104014A-013	Ethernet 40G Single Channel
MU104014A-014	Ethernet 40G Dual Channel
MU104014A-015	Ethernet 100G Single Channel
MU104014A-016	Ethernet 100G Dual Channel
MU104014A-020*[15]	TCP Throughput
MU104014A-031	Ethernet 200G Single Channel
MU104014A-033	Ethernet 400G Single Channel
OTN	
MU104014A-052	OTN up to 10G Dual Channel
MU104014A-053	OTN 40G Single Channel
MU104014A-054	OTN 40G Dual Channel
MU104014A-055	OTN 100G Single Channel
MU104014A-056	OTN 100G Dual Channel
MU104014A-063*[16]	ODU Multiplexing/Multi Stage
CPRI/OBSAI	
MU104014A-074	CPRI/OBSAI up to 25G Dual Channel
SDH/SONET	
MU104014A-082	SDH/SONET up to 10G Dual Channel
MU104014A-084*[17]	STM-256/OC-768 Client Signal
Fibre Channel	
MU104014A-092	FC up to 16G Dual Channel

Maintenance Service*[12]

Model/Order No.	Name
MU104014A-ES210	2 Years Extended Warranty Service
MU104014A-ES310	3 Years Extended Warranty Service
MU104014A-ES510	5 Years Extended Warranty Service

*1: The presence of the MT1040A-006 option can be recognized at the top right of the front panel. To retrofit to the already shipped item, please contact us.

Without MT1040A-006   With in MT1040A-006

*2: One line cord is attached to the area to shipment.
*3: Composed of B0720A, B0730A, B0731A, B740A and B0741A.
*4: These options can be retrofitted. The Model/Order No. of retrofit options is "-3**".
   Example
    MT1040A-003 Connectivity for WLAN/Bluetooth becomes MT1040A-303 Connectivity for WLAN/Bluetooth Retrofit.
    When retrofitting an option, please either specify one of the following media along with the relevant option, or Web download.
     Z1849A: DVD-ROM for Retrofit Options
     Z1850A: USB Stick for Retrofit Options
*5: Available for certified countries and regions including USA, Japan and EU countries. Please visit the Anritsu web site for updated information.
*6: Can be added to main unit in which MT1040A-006 already installed. However, battery operation is not possible when using two transponder modules together.
*7: Optional Accessories cannot be repaired.
*8: Include MT1040A Operation Manual and the Remote Script Manual.

Ordering Information

400G (OSFP) Multirate Module MU104015A

Model/Order No.	Name
MU104015A	400G (OSFP) Multirate Module
Standard Accessories	
B0768A[13]	ESD Box: 1 pc
W4039AE[14]	Transport Module Quick Reference Guide: 1 pc

Protocol Options[4]

Model/Order No.	Name
Ethernet/eCPRI/RoE	
MU104015A-012	Ethernet up to 25G Dual Channel
MU104015A-013	Ethernet 40G Single Channel
MU104015A-015	Ethernet 100G Single Channel
MU104015A-020[18]	TCP Throughput
MU104015A-033	Ethernet 400G Single Channel
OTN	
MU104015A-052	OTN up to 10G Dual Channel
MU104015A-053	OTN 40G Single Channel
MU104015A-055	OTN 100G Single Channel
MU104015A-063[19]	ODU Multiplexing/Multi Stage
CPRI/OBSAI	
MU104015A-074	CPRI/OBSAI up to 25G Dual Channel
SDH/SONET	
MU104015A-082	SDH/SONET up to 10G Dual Channel
MU104015A-084[20]	STM-256/OC-768 Client Signal
Fibre Channel	
MU104015A-092	FC up to 16G Dual Channel

Maintenance Service[12]

Model/Order No.	Name
MU104015A-ES210	2 Years Extended Warranty Service
MU104015A-ES310	3 Years Extended Warranty Service
MU104015A-ES510	5 Years Extended Warranty Service

100G Multirate Module MU104011A

Model/Order No.	Name
MU104011A	100G Multirate Module
Standard Accessories	
B0768A[13]	ESD Box: 1 pc
W4039AE[14]	Transport Module Quick Reference Guide: 1 pc

Protocol Options[4]

Model/Order No.	Name
Ethernet/eCPRI/RoE	
MU104011A-012	Ethernet up to 25G Dual Channel
MU104011A-013	Ethernet 40G Single Channel
MU104011A-014	Ethernet 40G Dual Channel
MU104011A-015	Ethernet 100G Single Channel
MU104011A-016	Ethernet 100G Dual Channel
MU104011A-020[21]	TCP Throughput
OTN	
MU104011A-052	OTN up to 10G Dual Channel
MU104011A-053	OTN 40G Single Channel
MU104011A-054	OTN 40G Dual Channel
MU104011A-055	OTN 100G Single Channel
MU104011A-056	OTN 100G Dual Channel
MU104011A-063[22]	ODU Multiplexing/Multi Stage
CPRI/OBSAI	
MU104011A-074	CPRI/OBSAI up to 25G Dual Channel
SDH/SONET	
MU104011A-082	SDH/SONET up to 10G Dual Channel
MU104011A-084[23]	STM-256/OC-768 Client Signal
Fibre Channel	
MU104011A-092	FC up to 16G Dual Channel

Maintenance Service[12]

Model/Order No.	Name
MU104011A-ES210	2 Years Extended Warranty Service
MU104011A-ES310	3 Years Extended Warranty Service
MU104011A-ES510	5 Years Extended Warranty Service

*9: Composed of B0730A, B0731A, B740A and B0741A.
*10: Refer to page 18 for dimensions and external view.
*11: This fiberscope uses the VIP function in the MT1040A Utility menu.
    Different tip types are used by the G0382A and G0306B.

G0382A   G0306B

*12: Available for new purchases only.
*13: The following combination of module patterns can be installed.

	QSFP-DD/QSFP56/QSFP28/QSFP+	SFP28/SFP+/SFP	OSFP
Pattern 1	4	0	1
Pattern 2	3	2	1
Pattern 3	2	4	1
Pattern 4	1	6	1

*14: Accessory only when purchasing MU104014A main unit.
*15: Requires to MU104014A-012.
*16: Requires that at least one of the following option is installed:
    MU104014A-052, MU104014A-053, MU104014A-054, MU104014A-055,
    MU104014A-056
*17: MU104014A does not have a physical interface of the option.
    The option is required for client signal mapped in the OTN.
*18: Requires to MU104015A-012.
*19: Requires that at least one of the following option is installed:
    MU104015A-052, MU104015A-053, MU104015A-055
*20: MU104015A does not have a physical interface of the option.
    The option is required for client signal mapped in the OTN.
*21: Requires to MU104011A-012.
*22: Requires that at least one of the following option is installed:
    MU104011A-052, MU104011A-053, MU104011A-054, MU104011A-055,
    MU104011A-056
*23: MU104011A does not have a physical interface of the option.
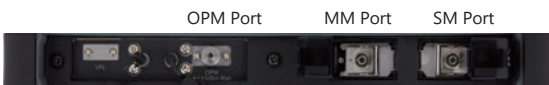   The option is required for client signal mapped in the OTN.

Optical Transceivers Specification

When using any of the MT1040A/MU104014A/MU104015A/MU104011A modules for testing optical interfaces, perform the test by installing the optical modules matching the test standards in the QSFP-DD/OSFP/QSFP28/SFP/SFP+/SFP28 slots. The following table lists the modules and supported standards.

MU104014A	MU104015A	MU104011A	Model/Order No.	Name	Form Factor	100M Ethernet	156M STM-1	614M CPRI	622M STM-4	768M OBSAI	1GFC	1.23G CPRI	1.25G Ethernet	1.54G OBSAI	2GFC	2.46G CPRI	2.488G STM-16	2.67G OTU1	3.07G CPRI OBSAI	4GFC	4.92G CPRI	6.14G CPRI OBSAI	8GFC	9.83G CPRI	9.95G STM-64	10.1G CPRI	10.3G Ethernet	10GFC	10.7G OTU2	11.05G OTU1e	11.09G OTU2e	11.27G OTU1f	11.3G OTU2f	16GFC	25G Ethernet	40G Ethernet	40G OTN	100G Ethernet	100G OTN	200G Ethernet	400G Ethernet
✓	✓	✓	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									850 nm, MM, 0.5 km																					
✓	✓	✓	G0322A	1G/2G/4G FC 1310 nm SFP	SFP						1310 nm, SM, 10 km									1310 nm, SM, 10 km																					
✓	✓	✓	G0323A	1G/2G/4G FC 1550 nm SFP	SFP						1550 nm, SM, 40 km									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+																														850 nm, MM, 0.5 km						
✓	✓	✓	G0387A	16GFC LR 1310 nm SFP+	SFP+																														1310 nm, SM, 10 km						
✓	✓	✓	G0388A	25G SR 850 nm SFP28	SFP28																															850 nm, MM, 0.5 km					
✓	✓	✓	G0389A	25G LR 1310 nm SFP28	SFP28																															1310 nm, SM, 10 km					
✓	✓	✓	G0359A	40G SR4 850 nm QSFP+	QSFP+																																850 nm, MM, 0.1 km				
✓	✓	✓	G0334A	40G LR4 1310 nm QSFP+	QSFP+																																1310 nm, SM, 10 km				
✓	✓	✓	G0366A	100G SR4 850 nm QSFP28	QSFP28																																		850 nm, MM, 0.1 km			
✓	✓	✓	G0364A	100G LR4 1310 nm QSFP28	QSFP28																																		1310 nm, SM, 10 km			
✓	✓	✓	G0365A	100G LR4 Dual Rate 1310 nm QSFP28	QSFP28																																		1310 nm, SM, 10 km			
✓			G0421A	QSFP56 200GBASE-LR4	QSFP56																																				1310 nm, SM, 10 km	
✓			G0402A	QSFP-DD 400GBASE-DR4	QSFP-DD																																					1310 nm, SM, 0.5 km
✓			G0403A	QSFP-DD 400GBASE-FR4	QSFP-DD																																					1310 nm, SM, 2 km
✓			G0404A	QSFP-DD 400GBASE-LR4	QSFP-DD																																					1310 nm, SM, 10 km
	✓		G0405A	OSFP 400GBASE-DR4	OSFP																																					1310 nm, SM, 0.5 km
	✓		G0406A	OSFP 400GBASE-FR4	OSFP																																					1310 nm, SM, 2 km

Ordering Information

OTDR Module MU100020A/MU100021A/MU100022A/MU100023A

Model Name	OTDR Module 1310/1550 nm SMF MU100020A		OTDR Module 1310/1550/850/1300 nm SMF/MMF MU100021A	
Wavelength Model	OPM Port　　　　SM Port		OPM Port　　MM Port　　SM Port	
Standard Accessories	J1693A Universal Connector 2.5 mm for OPM J1694A Universal Connector 1.25 mm for OPM W3811AE Quick Reference Guide			
Dynamic Range*1	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)	
Connector Polish*1	MU100020A-010 UPC Polish	MU100020A-011*2 APC Polish	MU100021A-010 UPC Polish	MU100021A-011*2 APC Polish
Connector Type*3	MU100020A-037 FC Connector MU100020A-039 　DIN 47256 Connector MU100020A-040 SC Connector	MU100020A-025 　FC Connector key width 2.0 mm MU100020A-026 SC Connector	MU100021A-037*4 FC Connector MU100021A-039*4 　DIN 47256 Connector MU100021A-040*4 SC Connector	MU100021A-025*5 　FC Connector key width 2.0 mm MU100021A-026*6 SC Connector
VFL*1	MU100020A-002*7 Visual Fault Locator		MU100021A-002*7 Visual Fault Locator	
Maintenance Service	MU100020A-ES210 2 Years Extended Warranty Service MU100020A-ES310 3 Years Extended Warranty Service MU100020A-ES510 5 Years Extended Warranty Service		MU100021A-ES210 2 Years Extended Warranty Service MU100021A-ES310 3 Years Extended Warranty Service MU100021A-ES510 5 Years Extended Warranty Service	

Model Name	OTDR Module 1310/1550/1625 nm SMF MU100022A		OTDR Module 1310/1550/1650 nm SMF MU100023A	
Wavelength Model	OPM Port　　　　SM Port		OPM Port　SM Port (1650 nm)　SM Port (1310/1550 nm)	
Standard Accessories	J1693A Universal Connector 2.5 mm for OPM J1694A Universal Connector 1.25 mm for OPM W3811AE Quick Reference Guide			
Dynamic Range*1	MU100022A-022 High-Performance Dynamic Range 　　　(1310/1550/1625 nm: 46/46/44 dB)		MU100023A-021 Enhanced Dynamic Range 　　　(1310/1550 nm, 1650 nm: 42/41 dB, 35 dB)	
Connector Tip Polish*1	MU100022A-010 UPC Polish	MU100022A-011*2 APC Polish	MU100023A-010 UPC Polish	MU100023A-011*2 APC Polish
Connector Types*3	MU100022A-037 FC Connector MU100022A-039 　DIN 47256 Connector MU100022A-040 SC Connector	MU100022A-025 　FC Connector key width 2.0 mm MU100022A-026 SC Connector	MU100023A-037 FC Connector MU100023A-039 　DIN 47256 Connector MU100023A-040 SC Connector	MU100023A-025 　FC Connector key width 2.0 mm MU100023A-026 SC Connector
Visual Fault Locator*1	MU100022A-002*7 Visual Fault Locator		MU100023A-002*7 Visual Fault Locator	
Maintenance Service	MU100022A-ES210 2 Years Extended Warranty Service MU100022A-ES310 3 Years Extended Warranty Service MU100022A-ES510 5 Years Extended Warranty Service		MU100023A-ES210 2 Years Extended Warranty Service MU100023A-ES310 3 Years Extended Warranty Service MU100023A-ES510 5 Years Extended Warranty Service	

*1: Factory installed option only and cannot be retrofitted.
*2: An APC connector cannot be specified for the MM port, which uses a UPC connector.
*3: One specified connector adapter supplied free of charge.
*4: One each of same connector adapter for SM port and MM port supplied free of charge. Cannot specify different connector adapters for each port.
*5: 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.
*6: 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.
*7: With built-in dedicated port for 2.5 mm universal optical Rx type visible light source; J1335A required to connect 1.25 mm fiber.

Replacement Adapters

Model/Order No.	MU100020A MU100022A MU100023A*8		MU100021A
For UPC Polish			
	SM port	SM port	MM port
J0617B (FC/UPC)	✓	✓	✓
J0618E (DIN/UPC)	✓	✓	✓
J0619B (SC/UPC)	✓	✓	✓
For APC Polish			
	SM port	SM port	MM port
J0739A (FC/APC)	✓	✓	N/A
J1697A (SC/APC)	✓	✓	N/A

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

OTDR Module Application Parts

Model/Order No.	Name
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

Network Master Pro MT1040A

Method for Adding Measurement Modules

Preparation 1: Version up the software for MT1040A

Install the latest software in the MT1040A.
This software can be obtained from the Anritsu web site.

Preparation 2: Remove the battery pack from Mainframe

1) Disconnect the AC cable.
2) Use screw driver or Coin and remove the battery lid from MT1040A.


3) Remove the battery pack.

Preparation 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 loosing 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.
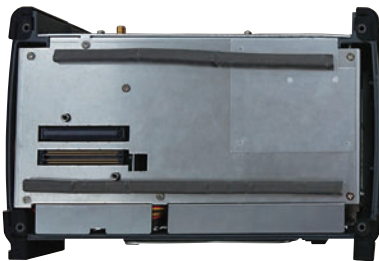
MT1040A Main Unit Back Panel

Attaching the OTDR Modules (MU10002xA)

1) Remove four screws of former module and replace to the next screws. Choose the bolts matching the added module. Use the B0740A for the OTDR module.

For Adding MU10401xA Module (B0741A)

For Adding OTDR Module (B0740A)

Standard Part (B0731A)
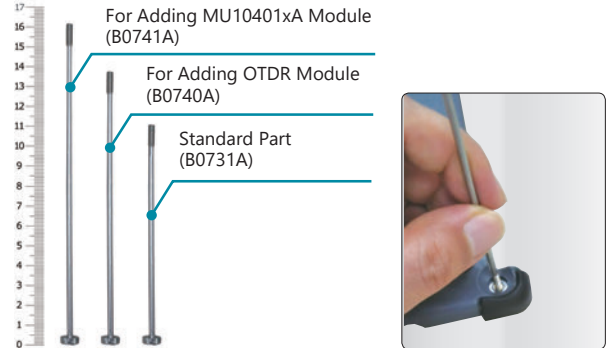
2) Align the OTDR module horizontally with the MT1040A as shown below.

Align the connectors on the left side.

MT1040A Main Unit Side   Measurement Modules Side
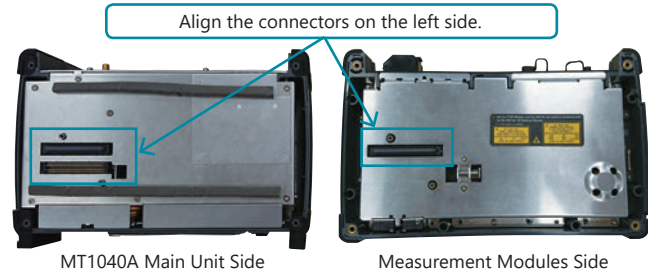
3) Install the OTDR module in the correct MT1040A slot as shown below.
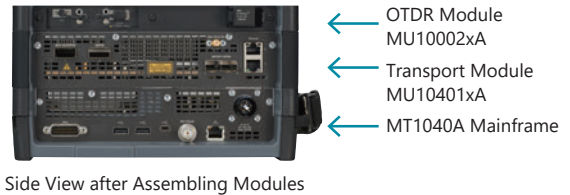
OTDR Module MU10002xA

Transport Module MU10401xA

MT1040A Mainframe

Side View after Assembling Modules

Note: Align the four edges when installing the option; the module connector is easily damaged by misalignment.

4) Secure the module using the B0740A part chosen in step 1.
   After installing the module as shown in the figure on the right, check that there is no gap between the modules.
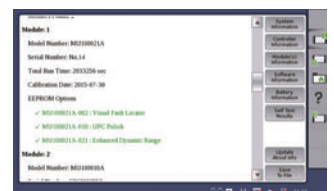

After attaching the modules

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

2) Turn on the MT1040A.
   Please check whether a new module is recognized at the system information.

Network Master Pro MT1040A

Method for Adding Measurement Modules

Adding Transport Module (MU10401xA)

1) Confirm that the MT1040A-020 option is installed in the MT1040A main unit.

2) Choose the bolts matching the added module.
   Use the B0741A for the MU10401xA module

For Adding MU10401xA Module
(B0741A)

For Adding OTDR Module
(B0740A)

Standard Part
(B0731A)
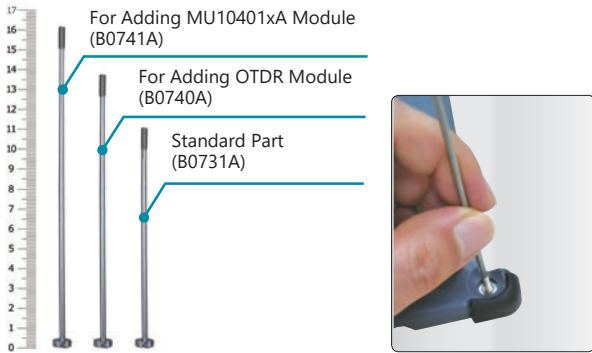
3) Align the transport module horizontally with the MT1040A as shown below.

Align the connectors on the left side.

MT1040A Main Unit Side   Measurement Modules Side
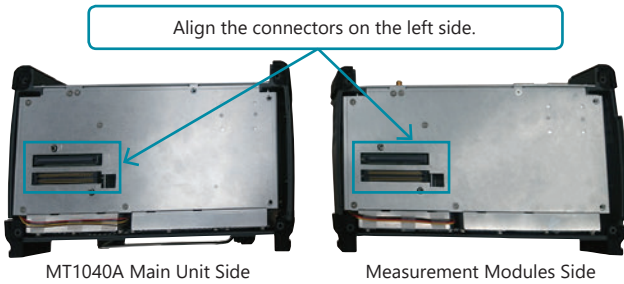
4) Install the transport module in the correct MT1040A slot as shown below.
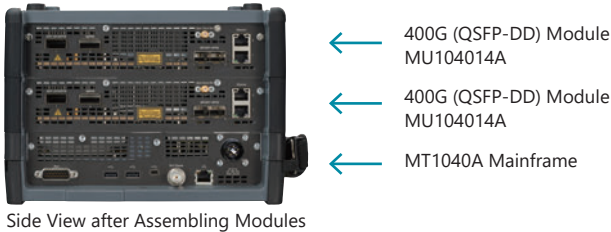
← 400G (QSFP-DD) Module MU104014A

← 400G (QSFP-DD) Module MU104014A
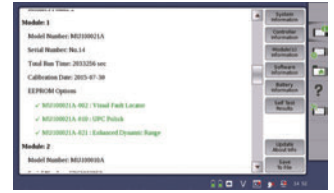
← MT1040A Mainframe

Side View after Assembling Modules

Note: Align the four edges when installing the option; the module connector is easily damaged by misalignment.

5) Secure the module using the B0741A part chosen in step 2.
   After installing the module as shown in the figure on the right, check that there is no gap between the modules.

After attaching the modules

1) Connect the G0419A standard accessory of the MT1040A-020 option to the MT1040A. The G0418A will not start. Additionally, battery operation is not possible when two transport modules are installed.

2) Turn on the MT1040A.
   Please check whether a new module is recognized at the system information.

Remote Software Service

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

Mainframe Option License

Model/Order No.	Name
MT1040A-003[*1]	WLAN/Bluetooth Connect
MT1040A-011[*2]	Site Over Remote Access Connect

[*1]: Available for certified countries and regions including USA, Japan and EU countries. Please visit the Anritsu web site for updated information.
   The Bluetooth® mark and logos are registered trademarks of Bluetooth SIG, Inc.
[*2]: Validity period is unlimited. An open TCP port may be required to allow the MT1040A 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.

Accessories for MT1040A Dual-Module Configuration

The size of the MT1040A depends on the module configuration. Choose the appropriate case.

Module Combination	Mounts	Soft Case		Hard Case	
		B0745A	B0772A	B0733A	B0773A
Standard	B0731A				
+ OTDR Module	B0740A			345 (W) × 238 (H) × 480 (D) mm, 3.5 kg	495 (W) × 338 (H) × 663 (D) mm, 12.3 kg
+ Transport Modules	B0741A				

MT1040A   B0733A   B0773A

Size of Each Hard Case for MT1040A

Network Master Pro MT1040A

Related Products

Network Master Pro MT1000A

Network Masterᴾᴿᴼ

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.

OTDR Module 1310/1550 nm SMF	**MU100020A**
OTDR Module 1310/1550/850/1300 nm SMF/MMF	**MU100021A**
OTDR Module 1310/1550/1625 nm SMF	**MU100022A**
OTDR Module 1310/1550/1650 nm SMF	**MU100023A**

Installing an OTDR Module MU100020A/MU100021A/MU100022A/MU100023A provides the OTDR functions required for optical fiber I&M. Work efficiency is increased by all-in-one support for optical fiber tests and data communications network commissioning.
I&M tests of 1.5 Mbps to 100 Gbps communications networks can be executed by simultaneously installing the MU100010A or MU100011A. In addition to supporting Ethernet, OTN, etc., networks, Mobile base station CPRI and OBSAI, as well as SyncE protocols are also supported.

MT9090A Series

Network Master

µOTDR Module	**MU909014/15**

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

Gigabit Ethernet Module	**MU909060A**

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

CMA5 Series

Light Source/Optical Power Meter
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