MZ1223C
10 Lane Extender
Operation Manual

First Edition

For safety and warning information, please read this manual before attempting to use the equipment.
Keep this manual with the equipment.

ANRITSU CORPORATION

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Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Corporation uses the following safety symbols to indicate safety-related information. Ensure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following symbols may be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

Symbols used in manual

DANGER This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.

WARNING This indicates a hazardous procedure that could result in serious injury or death if not performed properly.

CAUTION This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and in Manual

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.

This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.

This indicates a note. The contents are described in the box.

These indicate that the marked part should be recycled.

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21 October 2011 (First Edition)

For Safety

WARNING ⚠

1. ALWAYS refer to the operation manual when working near locations at which the alert mark shown on the left is attached. If the advice in the operation manual is not followed there is a risk of personal injury or reduced equipment performance. The alert mark shown on the left may also be used with other marks and descriptions to indicate other dangers.

CAUTION ⚠

Use in a residential environment

This instrument is designed for an industrial environment.
In a residential environment this instrument may cause radio interference in which case the user may be required to take adequate measures.

Equipment Certificate

Anritsu Corporation guarantees that this equipment was inspected at shipment and meets the published specifications.

Anritsu Warranty

- During the warranty period, Anritsu Corporation will repair or exchange this software free-of-charge if it proves defective when used as described in the operation manual.
- The warranty period is 6 months from the purchase date.
- The warranty period after repair or exchange will remain 6 months from the original purchase date, or 30 days from the date of repair or exchange, depending on whichever is longer.
- This warranty does not cover damage to this software caused by Acts of God, natural disasters, and misuse or mishandling by the customer.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.

Anritsu Corporation shall assume no liability for injury or financial loss of the customer due to the use of or a failure to be able to use this equipment.

Anritsu Corporation Contact

In the event that this equipment malfunctions, contact an Anritsu Service and Sales office. Contact information can be found on the last page of the printed version of this manual, and is available in a separate file on the CD version.

Notes On Export Management

This product and its manuals may require an Export License/Approval by the Government of the product's country of origin for re-export from your country.

Before re-exporting the product or manuals, please contact us to confirm whether they are export-controlled items or not.

When you dispose of export-controlled items, the products/manuals need to be broken/shredded so as not to be unlawfully used for military purpose.

Notice

The following actions are strictly prohibited for all of the software installed in this product or otherwise provided by Anritsu:

1. This product should be installed indoors. The product performances are not guaranteed under the following conditions; extreme vibrations, dust, direct sunlight, activated gas, variable atmospheric pressure, condensation and static electricity.
2. This product should be used for private industries. It should not be used for medical care, military, aerospace.
3. Note that the CE marking requirements are not met when MZ1223C is inserted into MD1260A. Confirm radiation and emission from MD1260A with your device under the test, and take appropriate measures.
4. This device does not support RoHS and WEEE directives that include lead-free.

About This Manual

The operation manual for the MZ1223C 10 Lane Extender covers the usage precautions, product outline and installation method.

1 Product Outline
This section explains the purpose of this product usage.

2 Before Use
This section explains the standard configuration, applicable parts and connector assignment.

3 How to Use
This section explains how to use this product.

4 Storage
This section explains the procedures and precautions when storing this product.

5 Transportation/ Disposal
This section explains the precautions when transporting and disposing this product.

This operation manual assumes the reader has the following basic knowledge and experiences of:

- Handling optical transmission, data transmission, and high-frequency signal

Table of Contents

1 Outline

This equipment is used by inserting it into the measurement port (part where CFP module installed) of the MD1260A 40/100G Ethernet Analyzer (MD1260A hereafter).
It adapts the CFP connector I/O electrical signals (10.3 or 11.18 Gbit/s) to SMP coaxial connectors.

* CFP: 100 Gigabit Form factor Pluggable Module

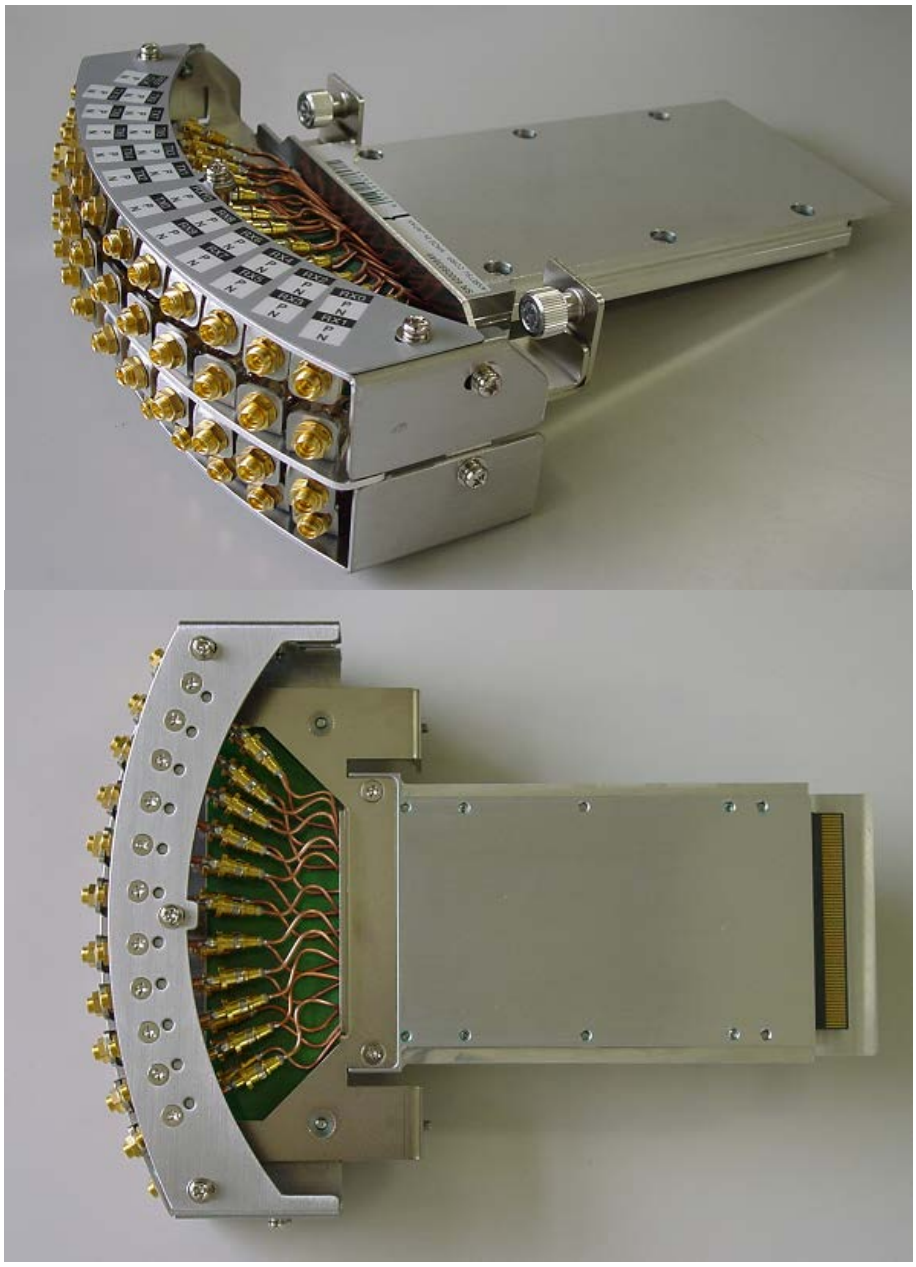

Figure 1-1 MZ1223C 10 Lane Extender External View

2 Before Use

2.1 Standard configuration

Table 2.1-1 lists the standard configuration of the MZ1223C. At unpacking, check that all items are included. Contact your Anritsu Service and Sales Office or agent if any parts are missing or damaged.

Table 2.1-1 Standard configuration for MZ1223C

Item	Product name	Q'ty	Remarks
Mainframe	MZ1223C 10 Lane Extender	1	
Accessory	Z1578A MZ1223C Operation Manual CD-ROM	1	

2.2 Applicable parts

Table 2.2-1 Applicable parts

Model name	Product name	Q'ty	Function	Remarks
J1502A	SMP－SMA Cable	1	SMP (jack)–SMA (plug) cable (400 mm)	
J1503A	SMP－SMP Cable	1	SMP (jack)－SMP (jack) cable (400 mm)	
J1540A	SMP－GPPO Cable	1	SMP (jack)－GPPO (jack) cable (400 mm)	
W3492A	MZ1223C 10 Lane Extender Operation Manual	1		

2.3 External Appearance

Figure 2.3-1 shows the external appearance of the MZ1223C. Units are mm.

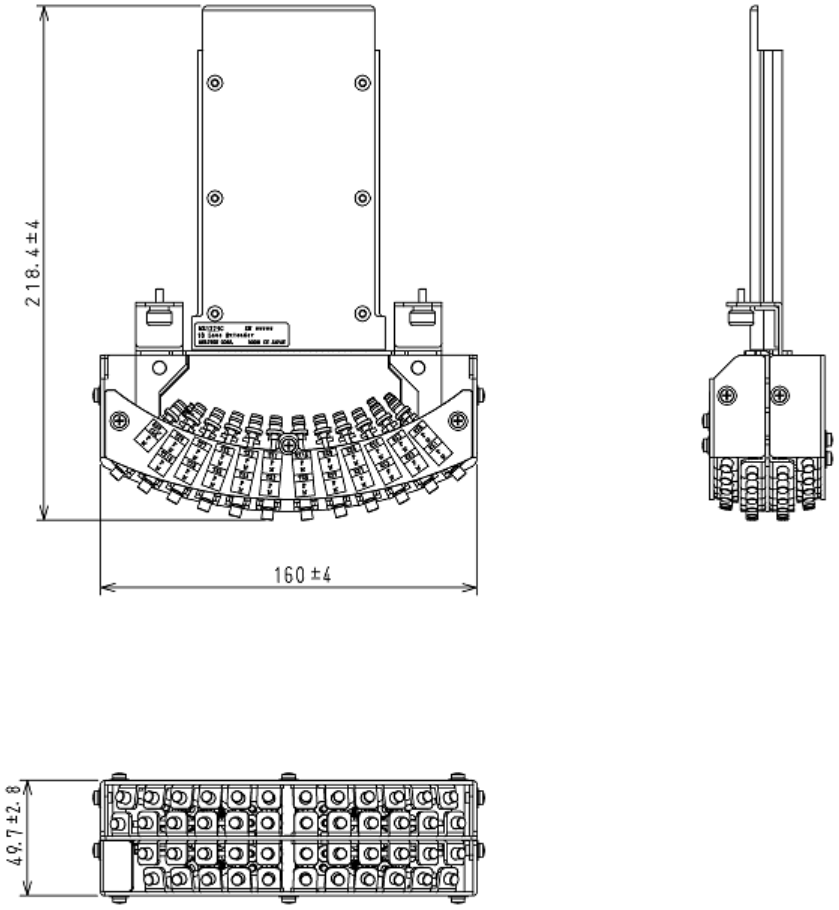

Figure 2.3-1 External Appearance of MZ1223C

2.4 Connector Assignment

Figure 2.4-1 and Table 2.4-1 show the SMP Connector Layout for connecting external lines of MZ1223C.

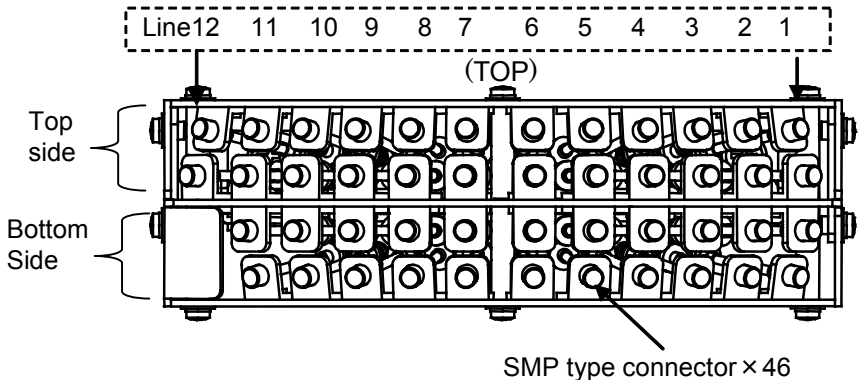

Figure 2.4-1 MZ1223C Connector Alignment

Table 2.4-1 MZ1223C Connector Alignment

Line →	12	11	10	9	8	7	6	5	4	3	2	1
Top side	RefCLK p	Tx 9p	Tx 7p	Tx 5p	Tx 3p	Tx 1p	Rx 10p	Rx 8p	Rx 6p	Rx 4p	Rx 2p	Rx 0p
	RefCLK n	Tx9n	Tx 7n	Tx 5n	Tx 3n	Tx 1n	Rx 10n	Rx 8n	Rx 6n	Rx 4n	Rx 2n	Rx 0n
Bottom side		Tx 10p	Tx 8p	Tx 6p	Tx 4p	Tx 2p	Tx 0p	Rx 9p	Rx 7p	Rx 5p	Rx 3p	Rx 1p
		Tx 10n	Tx 8n	Tx 6n	Tx 4n	Tx 2n	Tx 0n	Rx 9n	Rx 7n	Rx 5n	Rx 3n	Rx 1n

Notes:

1. Each I/O of Tx10p, Tx10n, Rx10p, and Rx10n is not connected with MD1260A when MZ1223C is installed in MD1260A.

2. Tx/Rx indicates transmission signal/reception signal. p/n indicates Positive/Negative sides for a differential interface. The logic level of the sending and receiving signal is 1.4VPMCL (Differential).

3. MZ1223C and MD1260A are DC Coupled, and the capacitor for the AC coupling is not arranged in MZ1223C and MD1260A.

3 How to Use

This section explains how to use the MZ1223C.

3.1 Connection Precautions

To use the MZ1223C properly, follow the connection precautions below:

1. The insert/remove cycles of the CFP connector are about 180. Even though the insert/remove cycles are repeated, the maximum cycles are defined as 180.
   Exceeding the maximum cycle may cause contact resistance increase, damage, or distortion of the CFP connector.
2. The SMP coaxial connector life depends on the connector specifications but is about 480 times. Limit the number of repeated connections to less than 480.
   Exceeding this figure may increase the contact resistance and cause wear and distortion.
3. When installing the MZ1223C in the MD1260A, insert the MZ1223C in the measurement port of the MD1260A. Make sure that the CFP connector is connected, then fix the MZ1223C properly using the fixing screws.

CAUTION ⚠

Do not insert/remove the MZ1223C while the power to MD1260A is on. This may damage MD1260A or connected devices. Before inserting/removing the MZ1223C, make sure to turn off MD1260A.

Use J1502A or J1503A when connecting to the DUT. If the cables other than J1502A, 1503A, or J1540A are used, the required performance may not be obtained.

In addition, 11.18-GHz frequency signals are passed between the CFP connector and SMP coaxial connectors. Parts operating at this frequency are used in the MD1260A and CFP connector. These high-frequency parts and circuits are easily damaged by static electric charges and shorts. Short the signal and ground of coaxial cables before connecting them to the MD1260A to prevent risk of static electrical charges damaging the internal circuits of the MD1260A. Handle the unit with care and always take anti-static precautions, such as wearing an electrostatic discharge wrist band.

When connecting the cable, make sure to insert it in exact alignment with the SMP connector to avoid damaging the pin. When disconnecting a cable from an SMP connector, use the correct tool and make sure to apply torque only at right angles to the connector.

Recommended SMP tools are listed below.

Table 3.1-1 SMP Connector Tools

Manufacture	Model	Name
Rosenberger	19W002-000	Extraction tool
Rosenberger	11W112-000	RF Connector tool

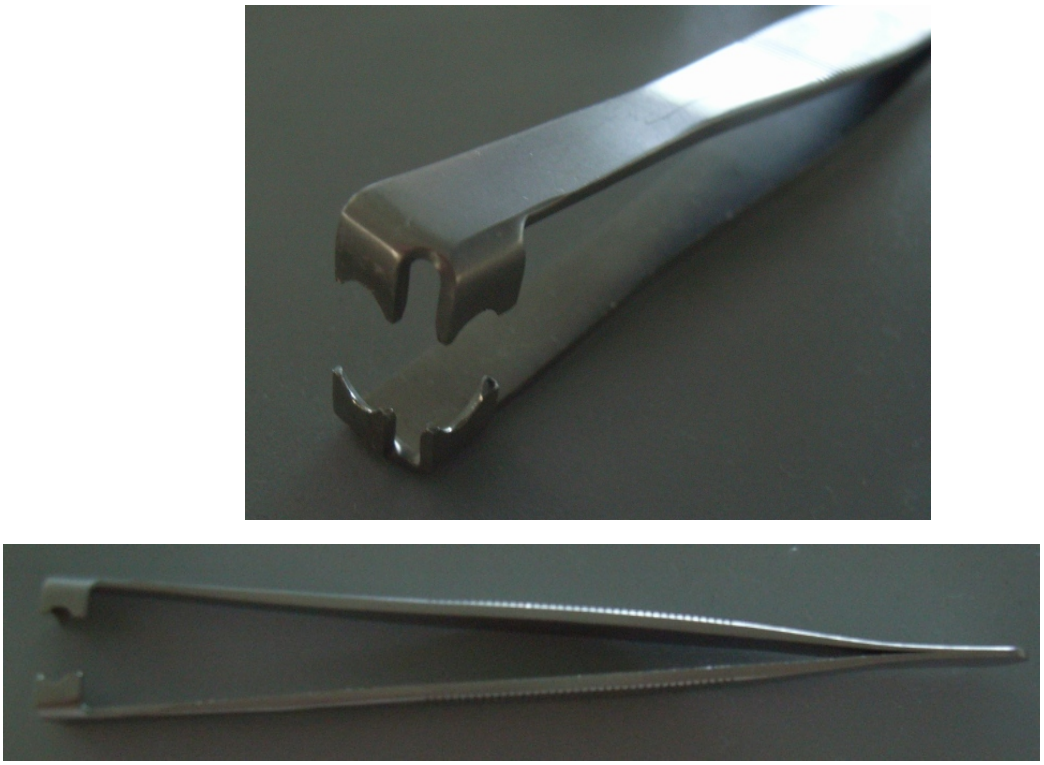

Figure 3.1-1 Appearance of SMP Connector Tool

3.2 Internal connection mapping

This device is based on the Pin Map of the CFP Multi-Source Agreement (MSA) CFP MSA Hardware Specification. It adapts CFP Connector TRx data signals and REFCLK to SMP coaxial connectors.

Table 3.2-1 shows the CFP Connector and SMP Connector pin map.

Only the main TRx signals and REFCLK are adapted; control signals and power are not.

Table 3.2-1 CFP-SMP Connector Mapping

CFP Connector (Top Row)		SMP Connector	
Pin No.	Signal Name	Connector No.	Description
148	GND		
147	REFCLKn	1	REFCLKn
146	REFCLKp	2	REFCLKn
145	GND		
144	TX10n	46	Transmitter data output 10n
143	TX10p	45	Transmitter data output 10p
142	GND		
141	TX9n	13	Transmitter data output 9n
140	TX9p	14	Transmitter data output 9p
139	GND		
138	TX8n	34	Transmitter data output 8n
137	TX8p	33	Transmitter data output 8p
136	GND		
135	TX7n	3	Transmitter data output 7n
134	TX7p	4	Transmitter data output 7p
133	GND		
132	TX6n	44	Transmitter data output 6n
131	TX6p	43	Transmitter data output 6p
130	GND		
129	TX5n	15	Transmitter data output 5n
128	TX5p	16	Transmitter data output 5p
127	GND		
126	TX4n	32	Transmitter data output 4n
125	TX4p	31	Transmitter data output 4p
124	GND		

Table 3.2-1 CFP-SMP Connector Mapping (Cont'd)

CFP Connector (Top Row)		SMP Connector	
Pin No.	Signal Name	Connector No.	Description
123	TX3n	5	Transmitter data output 3n
122	TX3p	6	Transmitter data output 3p
121	GND		
120	TX2n	42	Transmitter data output 2n
119	TX2p	41	Transmitter data output 2p
118	GND		
117	TX1n	17	Transmitter data output 1n
116	TX1p	18	Transmitter data output 1p
115	GND		
114	TX0n	30	Transmitter data output 0n
113	TX0p	29	Transmitter data output 0p
112	GND		
111	GND		
110	RX_DSCn	7	Receiver data input 10n
109	RX_DSCp	8	Receiver data input 10p
108	GND		
107	RX9n	40	Receiver data input 9n
106	RX9p	39	Receiver data input 9p
105	GND		
104	RX8n	19	Receiver data input 8n
103	RX8p	20	Receiver data input 8p
102	GND		
101	RX7n	28	Receiver data input 7n
100	RX7p	27	Receiver data input 7p
99	GND		
98	RX6n	9	Receiver data input 6n
97	RX6p	10	Receiver data input 6p
96	GND		
95	RX5n	38	Receiver data input 5n
94	RX5p	37	Receiver data input 5p

Table 3.2-1 CFP-SMP Connector Mapping (Cont'd)

CFP Connector (Top Row)		SMP Connector	
Pin No.	Signal Name	Connector No.	Description
93	GND		
92	RX4n	21	Receiver data input 4n
91	RX4p	22	Receiver data input 4p
90	GND		
89	RX3n	26	Receiver data input 3n
88	RX3p	25	Receiver data input 3p
87	GND		
86	RX2n	11	Receiver data input 2n
85	RX2p	12	Receiver data input 2p
84	GND		
83	RX1n	36	Receiver data input 1n
82	RX1p	35	Receiver data input 1p
81	GND		
80	RX0n	23	Receiver data input 0n
79	RX0p	24	Receiver data input 0p
78	GND		
77	NC		No Connect
76	NC		No Connect
75	GND		

*: Bottom row pins 1 to 74 (1 to 5, 16 to 20, 23, 26, 49, 52, 55 to 59, and 70 to 74) of the CFP connector are connected to GND.

3.3 How to install the MZ1223C in MD1260A

CAUTION ⚠

11.18-GHz frequency signals are passed between the CFP connector and SMP coaxial connectors. Parts operating at this frequency are used in the MD1260A and CFP connector. These high-frequency parts and circuits are easily damaged by static electric charges and shorts. When using this equipment, do not short the SMP connector pin to ground and do not impress electrostatic charges on the SMP connector.

Handle the unit with care and always take anti-static precautions, such as wearing an electrostatic discharge wrist band.

Make sure that the card edge is clean and dust-free when installing the MZ1223C in the MD1260A. Dust on the card edge may cause connector failures and measurement problems.

When the MZ1223C is not installed in the MD1260A, cover the MD1260A CFP slot to keep it free of dust.

1. Wear an electrostatic discharge wrist strap and connect the MZ1223C to the ground terminal of the MD1260A front panel.
2. Slowly press the front end of the MZ1223C along the railing into the port socket, until the flange makes contact.
   Make sure not to damage the pin of the CMP Connector.
   There is a riding heat sink inside the measurement port for ventilation of CFP. Be careful of the friction between the MZ1223C and the riding heat sink when inserting the module.
3. Tighten the fixing screws clockwise (2 locations).

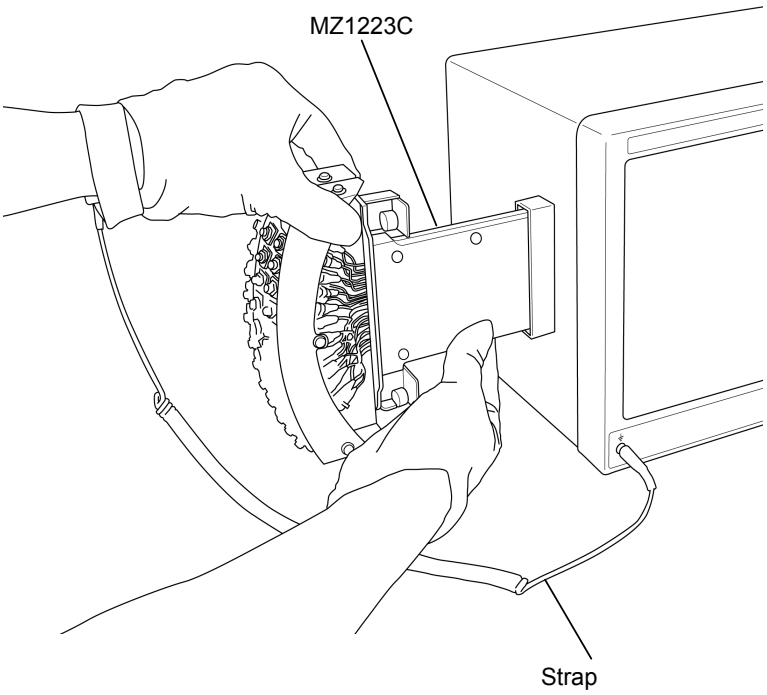

Figure 3.3-1 Countermeasure Against Static Electricity

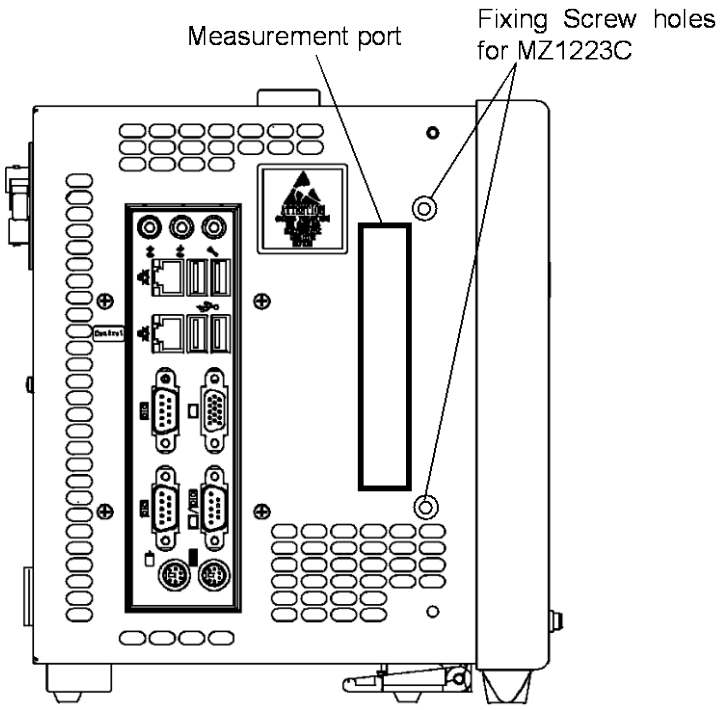

Figure 3.3-2 MD1260A Left side panel

4 Storage Precautions

Wipe dust, fingerprints, stains, spots, etc., from the surface of the MZ1223C before storing it.
Wrap the MZ1223C in plastic or a similar material to protect against dust.
Avoid storing the MZ1223C:

- Places that are exposed to direct sunlight
- Dusty places
- Damp places where condensation may occur on the MZ1223C surface
- Places where there are active gases causing corrosion
- Places where the MZ1223C may be oxidized
- Places where the MZ1223C may be exposed to strong vibration and shock
- Places where the MZ1223C might topple over.
- Places with extreme temperatures and relative humidity such as:
  Temperature: lower than –20°C or higher than 60°C
  Humidity: 80% or more

Recommended storage conditions

The MZ1223C should be stored in a place that meets the ambient conditions above, plus the following conditions if it is not to be used for a long time:

- Temperature 10° to 30°C
- Humidity 40% to 80%

5 Transporting and Disposal

The following describes precautions for transporting and disposing of the MZ1223C.

Repackaging

Repack the MZ1223C Min the packing material (box) in which it was delivered. If the packing material has been thrown away or damaged, repack the MZ1223C as follows:

1. Get a corrugated cardboard, wooden, or aluminum box large enough to pack cushioning material in around the MZ1223C.
2. Wrap the MZ1223C in plastic or a similar material to protect against water droplets, rain, and dust.
3. Put the MZ1223C and accessory box in the packing box.
4. Then, pack the MZ1223C in the box.
5. Put the cushioning material so it cannot move inside the box.
6. Secure the outside of the box with packing cord, adhesive tape, bands, or other similar materials.

Transporting

Avoiding vibrations as much as possible and meet the recommended storage conditions during transport.

Disposal

Follow the instructions of your local waste disposal office when finally disposing of the MZ1223C.

Appendix A Specifications

Table A–1 Specifications

Item	Specifications
Interface Connector	 Host side: CFP MSA Draft1.4 compatible interface Network side: SMP (plug) x 46
Insertion/removal cycles (Max) Host side Network side	 180 (CFP connector) 480 (SMP connector)
Insertion Loss	≤3.5 dB @ 5.59050 GHz (1/2×11.1809793568 Gbit/s) Including connector
Communication quality	Bit error rate: 1.0×10^{-13} or better (Condition) For evaluation: Installed in MD1260A, loopback with semi-rigid cable Bit Rate: 11.1809793568 Gbit/s×10Lane Pattern: PRBS31
Environment Performance Operating Temperature Humidity Range Storage Temperature Humidity Range	 10° to 30°C, 20 % to 80 % (No condensation) –20° to 60°C, 20 % to 80 % (No condensation)
Mass	2 kg or less
Dimension	49.7 (H) × 160 (W) × 218.4(D) mm